

Section 7 **Diseases and problems, what to do about them**

This section of the book describes common problems and diseases that have signs mostly to do with different parts of the body. It tells you what to do about them. If possible diseases for a particular part of the body that cause similar signs are grouped together. The section begins with general rules on how to care for a sick animal.

How to care for a sick animal

It is often more important to look after sick animals properly than to give them medicines.

- Keep a sick animal quiet. Handle it firmly but gently.
- Shelter it from the hot sun, cold wind or rain but make sure it has plenty of fresh air.
- Give the animal plenty of water to drink.
- Give it good food that is easy to eat. Feed sick animals little and often.
- Try to find out what is wrong with the animal and treat any disease as soon as possible.
- Make sure the animal has a clean dry place to lie down.
- Keep the animal sitting up comfortably, so that it can eat and breathe normally. Sick animals cannot move to where they are most comfortable.
- Keep the animal clean. Animals covered in wet faeces attract flies that bring infections. Healthy animals keep themselves clean but sick ones are usually weak and cannot.
- Separate sick animals from healthy ones (p. 92).
- Visit healthy animals to feed and water them before you visit sick ones, to avoid spreading disease.
- Wash yourself and any equipment you used after dealing with a sick animal. When an animal has recovered clean up the place where it has been. Use disinfectants (p. 324) if needed.

The treatment an animal needs depends on what the animal is used for. For example, if you treat an animal with a bad leg and it survives but is *lame* it will not be much use for pulling things, but it might be good for meat. Animals are usually kept for more than one purpose. Most animals provide food or raw materials for people but they are also used for transport and power. They are a store of wealth and often important in peoples' lives and rituals.

17 Diseases and problems mostly to do with animals dying suddenly

The problems shown below are the most common when animals die suddenly, but there are others, such as *poisoning: cyanide* (p. 304), *severe worms* (p. 218), accidents and injuries (p. 65), *navel ill* (p. 251), which you can find on the page numbers noted.

ALWAYS SUSPECT ANTHRAX WHEN ANIMALS DIE SUDDENLY.

Anthrax

Cattle, sheep and goats get *anthrax* most often. **Buffaloes, camels, dogs, horses, mules and donkeys** get anthrax sometimes. **Pigs** also get it but not so severely. **People** can get anthrax.

Signs

Animals become sick with anthrax 12–24 hours after they get infected.

- ◆ Animals, especially *ruminants*, often die before people see any signs of disease, it happens so fast.
- ◆ Sometimes you see animals alive with anthrax. They have a very high *fever* and may have blood in the urine, faeces or milk.
- ◆ They often have difficulty breathing and usually collapse and die after 1–3 days.

Different animals and anthrax

- ◆ Most animals other than cattle have a high fever. They often have swelling under the jaw and sometimes under the neck, chest and abdomen. Some have sores and swellings on the skin.
- ◆ Some animals recover.

Skilled workers can look at a *blood smear* with a microscope to check for anthrax.

In a dead animal dark blood often comes from the nose, mouth and anus. This blood stays liquid and the body does not go stiff after death. (Animals' bodies normally go stiff 1–12 hours after death.)



Other diseases that look like this:

Blackquarter (p. 144), *enterotoxaemia* (p. 146), *lightning* (p. 146), *pasteurellosis* (p. 202), *poisoning: plants* (p. 306).

What to do with the dead body of an animal with anthrax

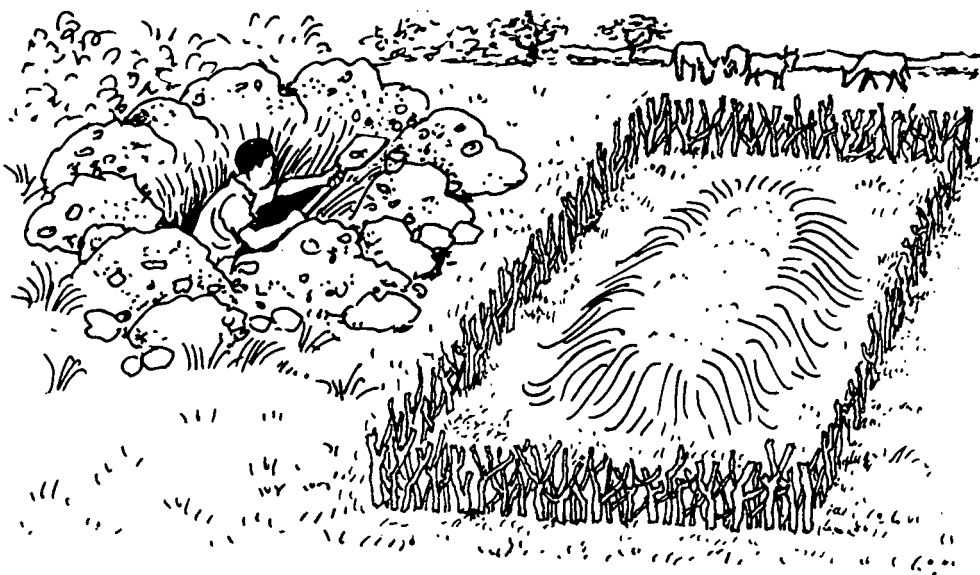
WARNING

DO NOT OPEN A BODY THAT YOU THINK HAS ANTHRAX

The bodies of animals that die of anthrax are dangerous to people and animals. Blood from the body is very infectious. When anthrax microbes in the blood are exposed to air they develop a thick protective wall around themselves. These thick-walled microbes are called *spores*. These spores can live for many years on the ground. They are dangerous. They easily infect animals and people with anthrax. **Do not cut into the body.** It is safest to bury the body if you can.

Bury a body

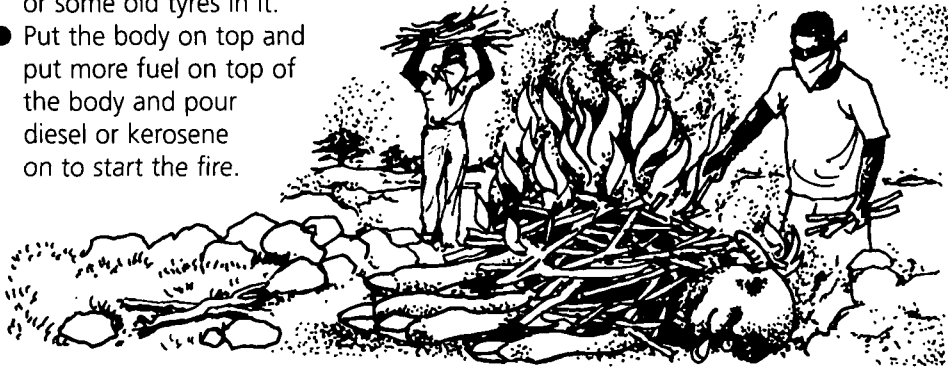
- Bury the body in a hole as deep as a tall man. Dig the hole a long way from water that people and animals drink.
- Bury anything, including soil, that has touched blood from the dead body.
- Put some thorns or a fence to keep animals off the place where you have buried the body.



Burn a body

Sometimes it is difficult to bury a body. It is as good to burn the body but you need a large fire and much fuel. Make a fire that is hot under and over the body.

- Dig a hole (about one metre long and nearly half a metre deep for a large animal) and put dry grass, wood, or some old tyres in it.
- Put the body on top and put more fuel on top of the body and pour diesel or kerosene on to start the fire.



When it is not possible to bury or burn a dead body:

- Cover the body with thorns or with stones to keep away animals or birds that might attack it and open it.

The bodies of animals with anthrax are always dangerous. After three days in the hot sun many microbes inside the body die but the skin has spores on it where blood has come out and they can easily infect animals or people with the disease.

IT IS VERY DANGEROUS TO EAT AN ANIMAL WITH ANTHRAX. ALWAYS BURY OR BURN THE BODY IF YOU CAN.

How animals get anthrax

Animals get anthrax from soil they eat while grazing. They only get it from the soil in places where animals have had the disease before. Anthrax microbes come from the blood of infected animals and live for a long time in the soil. Often the disease happens when animals go back to infected places in wet seasons. Some animals, especially camels, get infected on the skin when they are bitten by flies that carry anthrax.

Anthrax is caused by *bacteria* [*Bacillus Anthracis*].

Treatment

People do not usually see cattle, sheep, goats or camels with anthrax soon enough to treat them. Sometimes when the disease is less severe and happens more slowly there is time to treat animals, especially pigs.

- Give an antibiotic; it works well if you give large doses soon enough (p. 328).
- When some animals in a group die of anthrax, watch the others carefully for 1–2 weeks. Take their temperatures (p. 110) and immediately treat any animals that have a fever.

Prevention and control

- Bury or burn the bodies of animals with anthrax to stop the disease spreading to other animals or people. Avoid taking animals to places where you know there is anthrax infection in the soil.

- *Vaccine* for anthrax is effective and lasts for nearly a year. Many governments organise vaccination every year where the disease is a problem.
- Vaccinate animals one month before they go to an area where the infection is common or one month before a time when you expect the disease to happen.

Blackquarter, Blackleg

Cattle and **sheep** get *blackquarter* most often, **other animals** get it occasionally. Healthy, well-fed, young animals get the disease most often.

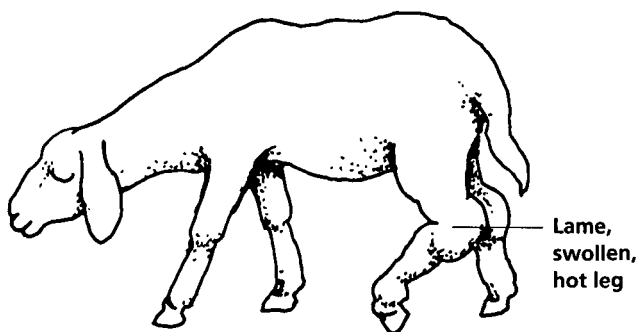
Signs

Animals become sick 1–7 days after they get infected with blackquarter.

- ◆ The wounds where the infection gets in are usually too small to see.
- ◆ This disease usually happens very quickly. Animals often die before they have signs of disease.

Sometimes the disease happens more slowly.

- ◆ The animals are tired and weak. They are very lame. Usually the back legs are lame and they become swollen and hot. You can feel bubbles under the skin over the back legs. The skin is dry and crackles when you touch it.
- ◆ The animals have a high *fever* and most die in 1–2 days.



Other diseases that look like this

Anthrax (p. 141).

How animals get blackquarter

Animals get blackquarter through very small wounds, such as thorn pricks. Infection comes from the soil. *Microbes* get into the soil from the bodies of animals that die from black-quarter and can live in the soil for a long time.

Blackquarter is caused by *bacteria* [*Clostridium chauveoi*].

Treatment

Treatment only works if it starts very soon.

- Give antibiotics (p. 328). Even large doses are not always effective.
- Some people treat blackquarter by cutting into the muscle to let air into the deep muscle where the microbes are. Blackquarter microbes cannot live in air so they are killed. But this does not always work and it can let other infections get in.

Prevention and control

Vaccination for blackquarter is effective and lasts for a year. It is possible to stop this disease from happening. Vaccinate animals every year where this disease is a problem.

When an animal dies of blackquarter, **burn or bury the body** and anything that comes from it or had touched it, as you would for *anthrax* (p. 142). If you cannot do this, put thorns around the body to keep other animals away.

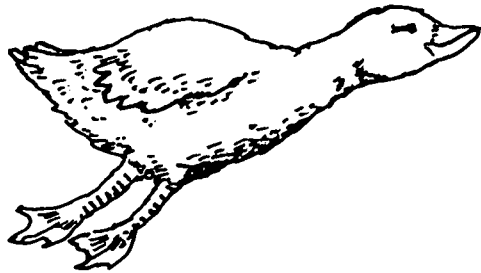
Duck viral hepatitis

Ducks, about one week old, and some other water birds get *duck viral hepatitis*.

Signs

Birds become sick 1–2 days after they get infected with duck viral hepatitis.

- ◆ Almost all the ducks of about one week old that get this disease die. Ducks over two months old do not get the disease.
- ◆ Their eyes are closed.
- ◆ The ducks stop eating, they are weak and tired. They fall over and soon they collapse completely. They stretch out their necks and legs.
- ◆ They die very quickly.



How birds get duck viral hepatitis

They get it from close contact with infected birds. Duck viral hepatitis is caused by *viruses*. [*Picornavirus*]

Treatment

There is no effective treatment for duck viral hepatitis.

Prevention and control

- Isolate infected birds. Move any healthy young ducks away from the place where the infection is.
- There is an effective *vaccine*. Vaccinate ducks when they are 10 days old and adult ducks used for breeding.

Enterotoxaemia, Pulpy kidney

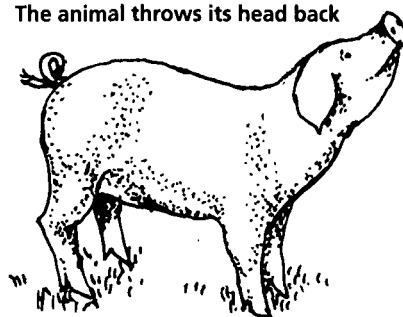
Sheep and **goats** get enterotoxaemia.

Signs

Sheep get the disease most severely.

- ◆ Many animals die before they have signs of disease.
- ◆ Some animals become restless. They are suddenly weak and tired.
- ◆ They throw their heads backwards and stretch their legs out.
- ◆ They soon have convulsions and often die in 1–2 hours.

The animal throws its head back



In a dead animal the *intestines* are dark red. The kidneys are soft. The sac around the heart has blood-stained fluid in it. The abdomen also has blood-stained fluid in it.

How animals get enterotoxaemia

Animals get it when they suddenly eat much better food – when they go to new pasture at the start of a wet season or they start eating grain. Usually animals 1–12 months old get it after they are weaned. Infection comes from the soil. The *microbes* grow quickly in the *intestines* and produce strong poisons that make the animal sick very fast.

Enterotoxaemia is caused by *bacteria*. [*Clostridium perfringens*. Type D].

Treatment

- There is no effective treatment for an animal that already has severe disease.
- Move the group to poorer food immediately. Then slowly give them better food. It may help to give antibiotics (p. 328) to other animals in the group before they become sick.

Prevention and control

- Avoid suddenly moving sheep or goats to a much better pasture.
- Vaccination for enterotoxaemia is effective. If the disease happens often vaccinate pregnant animals 1–2 months before they give birth to protect the new-born animals. Vaccinate young animals when they are two months old. Give two doses three weeks apart. Vaccinate again every six months.

Lightning

Animals hit by lightning sometimes have burns on the skin. The burns are not always easy to see. Look carefully under the hair to find them.

18 Diseases and problems mostly to do with eyes

Blindness

How to tell if an animal can see:

- Animals that cannot see at all walk into things.
- Make a quick movement with your hand towards the animal's eye. If the animal can see it will blink.



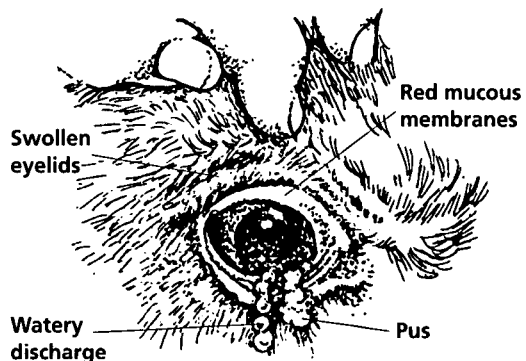
If an animal cannot see with one eye it is usually because of an object in the eye or an injury. If an animal cannot see with either eye and the animal has a fever it usually has an infection. Give an antibiotic (p. 328).

Animals that cannot see are sometimes healthy otherwise. But they have difficulty finding food and they walk into things. It is often best to kill them for meat.

Injury or something in the eye

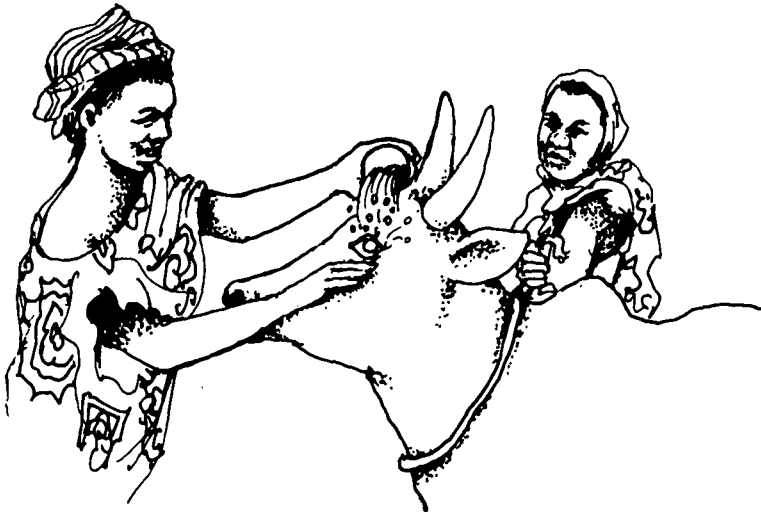
Signs

- ◆ The eye is red and the eyelids are swollen and the animal blinks a lot.
- ◆ A watery *discharge* comes from the eye. If there is infection *pus* may come from the eye.



Treatment

- Get someone to help hold an animal securely and wash your hands before treating eyes.
- Clean around the eye with clean salt water.
- Open the eyelids and check for injury or objects in the eye. If you can see something in the eye take it out. It helps to use a clean wet cloth to take out objects.



Use plenty of clean water or other eyewash (p. 349) to wash grit, small objects or discharge from the eye. In West Africa people use a few drops of vegetable oil to help move small objects out of the eye.

- If there is infection put an antibiotic (p. 349) in the eye. Often, cleaning the eye and keeping it clean will let it recover without antibiotic.

Eyelids turned in

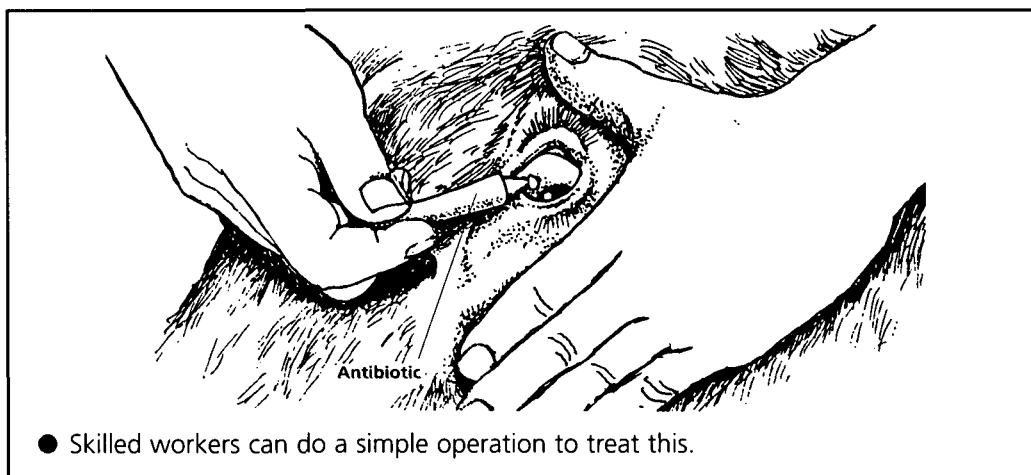
Very young animals especially have this problem; some are born with eyelids that turn in. The eyelashes rub on the front of the eye and damage it.

Signs

- ◆ A watery *discharge* comes from one or both eyes that may be closed with swollen eyelids.
- ◆ The eye is red and inflamed. The centre of the eye becomes cloudy/white and the eye may become so damaged that the animal cannot see.

Treatment

- Lift the eyelid out with your finger and put antibiotic in the eye.
- Turning the eyelid out regularly for a few days sometimes treats this.



Do not use these animals for breeding.

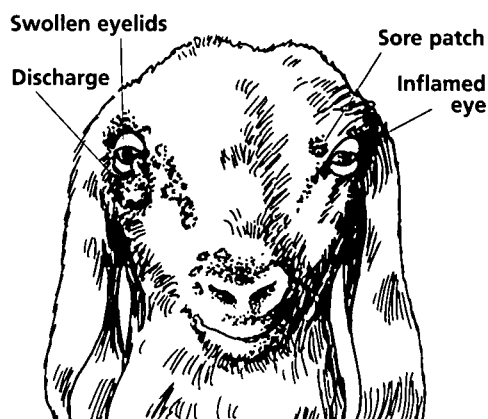
Conjunctivitis, Eye infection

All animals and people can get *conjunctivitis*. Some kinds of animals get a severe kind of conjunctivitis called *kerato-conjunctivitis* (p. 150).

Signs

- ◆ The skin under the eyelids – *conjunctiva* (p. 42) – is red. Sometimes the whole eye is inflamed. The eyelids are swollen.
- ◆ A clear/white/yellow *discharge* often comes from the eye.
- ◆ The animal blinks often and avoids bright sunlight.
- ◆ Sometimes the infection attacks the skin around the eye and causes a sore that can even go down the nose.

Eye infections spread by direct contact and are spread by flies and other insects. They spread more easily, go on for longer and are often more severe when there are many flies or much dust.



Treatment

- Wash the eye with clean water or salt and water.
- Put antibiotic drops, ointment or powder into the eye (p. 349). Skilled workers inject antibiotic under the eyelid. This works well.
- Separate an animal with an infection from healthy animals.
- Wash your hands after treating the animal.

Kerato-conjunctivitis, Pink-eye

Cattle, camels, sheep and **goats** can get *kerato-conjunctivitis*.

Signs

Animals become sick 1–20 days after they get infected.

- ◆ The disease attacks one or both eyes.
- ◆ A clear *discharge* comes from the eye.
- ◆ The *mucous membranes* under the eyelid – the *conjunctiva* – become red.
- ◆ The animals avoid strong sunlight. They blink a lot.
- ◆ The discharge from the eye often becomes grey/white.
- ◆ Most cattle have a small white/grey/yellow spot in the middle of the eye. The spot grows and covers much of the eye.
- ◆ The animal cannot see with the bad eye for a time.

Sheep and goats usually recover after 7–10 days with no treatment.

Cattle usually recover after 3–4 weeks with no treatment.

- ◆ Sometimes the spot becomes red and swells. The eye bulges out and sometimes gets injured.
- ◆ Without treatment sometimes the eye bursts.

How animals get kerato-conjunctivitis

They get it from other infected animals when they touch them. Flies and dust also carry the infection between animals. Cattle do not get the disease from sheep or goats. Sheep and goats do not get the disease from cattle. The disease happens most at dry times in places where there are many flies or much dust.

Kerato-conjunctivitis is caused by a mixture of *bacteria* [*Moraxella*, *Mycoplasma*, *Listeria*, *Chlamydia*].

Treatment

- Many antibiotics are effective. Use ointment or powder to put antibiotic directly into the eye (p. 247).
- Skilled workers inject antibiotic under the *conjunctiva*. This needs to be done skilfully but works well.

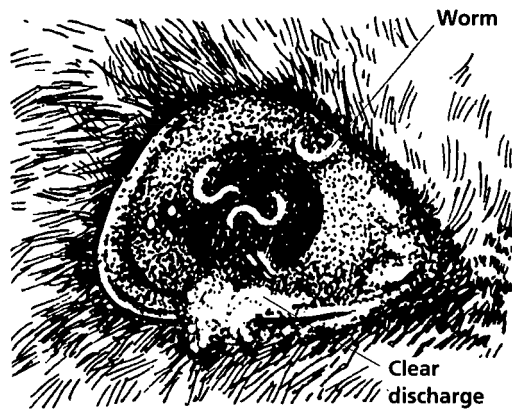
Eyeworms, Thelaziosis

Most animals can get *eyeworms*.

Signs

- ◆ A clear *discharge* may come from one or both eyes. Occasionally the discharge becomes white/grey/yellow and the animal tries to avoid bright light.

- ◆ You can see a thin white *worm* about 2 cm long on the surface of the eye, there are usually no other signs of disease.



How animals get eyeworms

Flies carry the *parasite* from the eyes of infected animals. Eyeworms are a type of *round-worm* (p. 94) [*Thelazia*].

Treatment

- To remove eyeworms from the eyes it helps to use a local anaesthetic eyewash (p. 348). Put 5–10 ml into the eye, wait a minute or two and wash the worms out with clean water (see p. 349).
- Levamisole (p. 337) kills eyeworms. Put 1 per cent solution directly into the eye, or use ivermectin (p. 337).
- Put an antibiotic (p. 349) onto the eye if the *discharge* is cloudy white/yellow.

19 Diseases and problems mostly to do with ears

These are the most common problems but there are others, such as *haematoma* (p. 187).

Ear infection

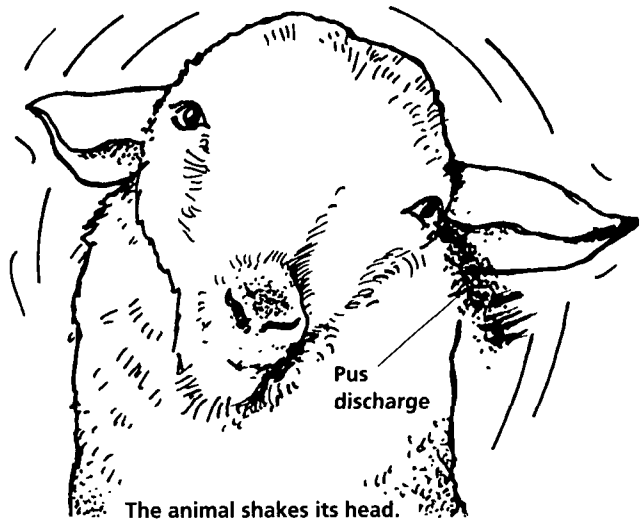
All kinds of animals get ear infections.

Signs

- ◆ Sometimes the animal shakes its head or holds it on one side and has a white/yellow discharge of pus from the ear.

Treatment

- Clean the ear out with clean water, salt water or antiseptic (p. 324).
- Then put an antibiotic (p. 328) into the ear.

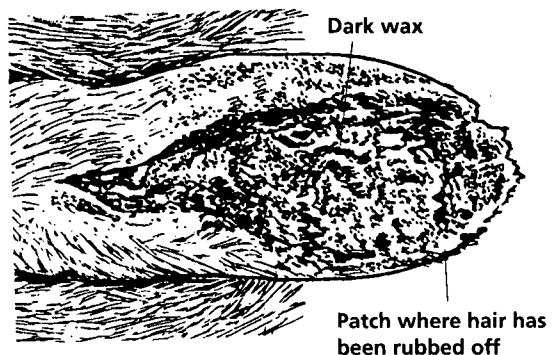


Ear mites

Many animals get ear mites, especially horses, pigs and dogs.

Signs

- ◆ The animals' ears are sensitive to being touched.
- ◆ The animal rubs its ears on things or scratches them. Sometimes the animal rubs hair off its head around the ears when it rubs.
- ◆ It shakes its head.
- ◆ It has much dark wax in the ear.
- ◆ One or both ears hang down.



Animals get ear mites from direct contact with infected animals.

Treatment

Use mild insecticide to kill the mites (p. 349) An insecticide mixed with oil is useful because it softens the wax inside the ear. Ivermectin (p. 337) works.

Earworm, *Rhabditis bovis*

Earworm only happens in Central and East Africa and Madagascar. Only **cattle** get earworm.

Signs

- ◆ Animals have a white/grey/yellow *discharge* from (usually) one ear.
- ◆ They may become thin and not produce much milk.

How animals get earworm

They get it from insecticide dips infected with earworms.

Earworm is a type of *roundworm* (p. 94) [*Rhabditis bovis*].

Treatment and control

Ivermectin (p. 337) works but it is expensive. Some people use tobacco (p. 345).

20 Diseases and problems mostly to do with skin

These are the most common skin problems but there are others. See also, lumps and swellings (p. 186), *glanders* (p. 197).

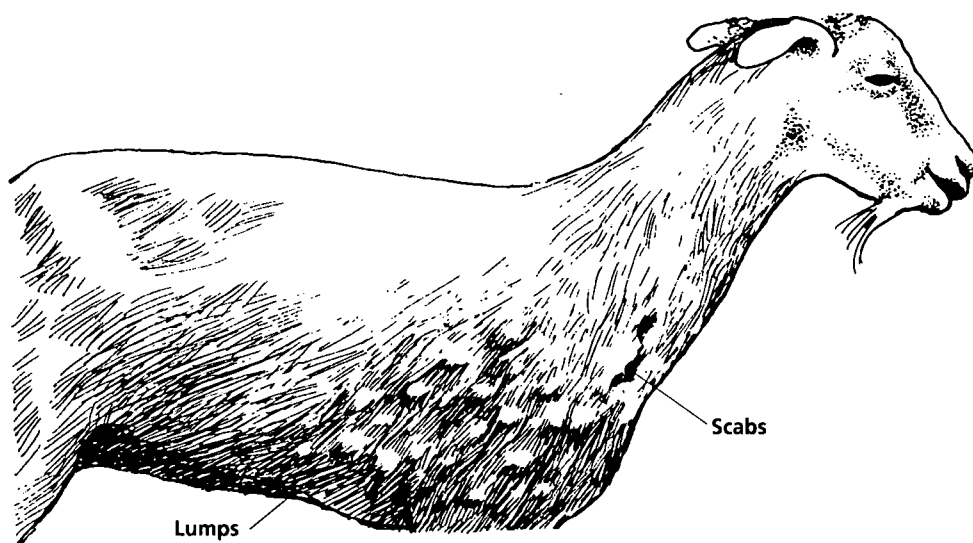
Mange (mites)

All animals and **birds** get *mange*. Young animals can get severe mange badly. **People** sometimes get mange (p. 6) but they do not always get it directly from animals.

Signs

Animals become sick 2–3 weeks after they are attacked by mites.

- ◆ Animals scratch and rub against things because mites bite into the skin and cause a lot of irritation. (Some kinds of mites [*Demodex*] do not make animals scratch and rub). Some animals shake their heads and rub their ears against things because they have mites in the ears.
- ◆ Mange often starts around the ears and the neck. The skin becomes red and some animals lose hair or wool. Skin damaged by mites often gets infected and becomes crusty with scabs. When mange goes on for a long time the skin gets thick and scaly and animals do not produce much milk or meat.
- ◆ When the animal is killed the skin is usually damaged and worth little.



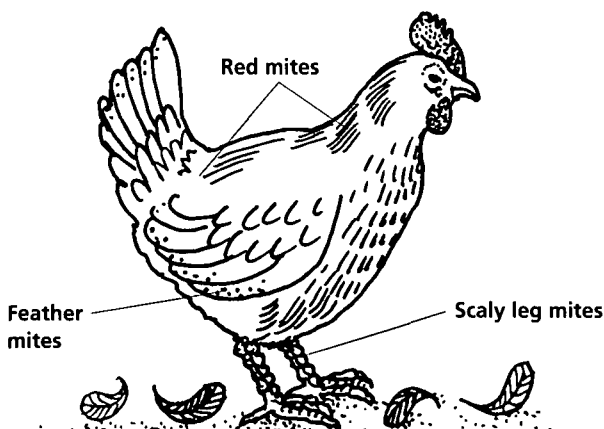
Camels often get severe mange. It starts on the head and neck and under the abdomen but soon spreads over the whole body.

Birds

Red mites. Birds with many of these mites are very irritated. They do not grow, and become thin. Some birds even die. Red mites spread *fowl pox* (p. 179) and other diseases.

Scaly leg mites dig into the skin on birds' legs. The birds have thick scaly legs and often cannot walk properly.

Feather mites live at the base of feathers and cause irritation so birds pull the feathers out.



Other diseases that look like this:

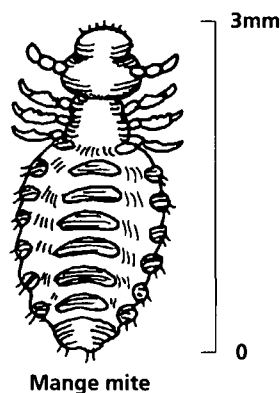
Pox (p. 177); *contagious pustular dermatitis* (p. 167).

How animals get mange

Animals get mange by direct contact with animals infected with *mites*. Mites nearly always live on animals' skin so they spread directly from animal to animal, usually when animals are kept close together in houses. Rarely, animals get mange from mites in the bedding or on the ground.

Mange is caused by small *parasites* called *mites* They are so small you can only just see them. Some mites feed on the surface of an animal's skin, others dig deep into the skin.

Birds Red mites live on the skin of birds. In daytime the mites live in cracks in buildings where birds live. At night they feed on the birds. Females lay eggs in cracks near where the birds sleep.



Treatment and control

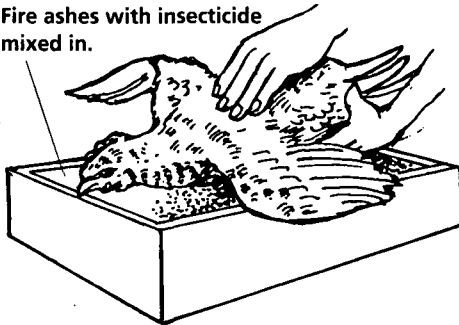
Most insecticides kill mites but sometimes it is difficult to kill mites because they are deep in the skin (p. 342).

- Treat animals quickly and treat all the animals in a group with mange at the same time. Otherwise mites from animals you do not treat will soon spread back to the animals you have treated.
- Treat animals again after two weeks. (Mites lay eggs on the skin of animals and insecticides do not kill the eggs. But the eggs develop into young mites in about a week, and then the second treatment kills them.)
- Clean up the house where the animals live. Some mites and eggs fall onto the ground and can spread back to the animals you have treated. If it is difficult to clean the house and mange keeps coming back, spray insecticide on the ground around where the animals live.

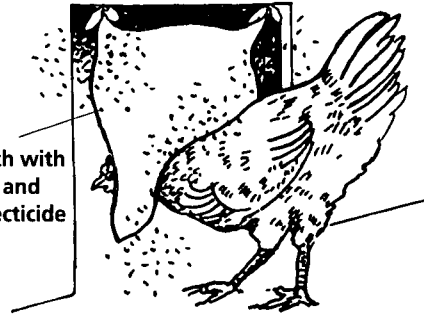
- For mange in the ears, giving ivermectin by injection works well (pp. 337, 344) but it is expensive. You can use any insecticide spray to kill mites in the ear or mix insecticide with vegetable oil and put a few drops into the ear. The oil helps the insecticide get through the ear wax and attack the mites (p. 349).
- Some types of mange are severe and spread very easily so governments have control programmes for them. Sheep get a type of mange [*Psoroptes ovis*] that is controlled like this by dipping every year to control the mites.
- **Birds** You can treat *red mites* and *feather mites* easily with an insecticide dusting powder (p. 342).

It is difficult to treat *scaly leg mites*. Scrubbing the legs with insecticide sometimes works. But often the scabs are so thick the insecticide cannot reach the mites. It is often best to kill the bird for meat.

Fire ashes with insecticide mixed in.



Cloth with ash and insecticide on.

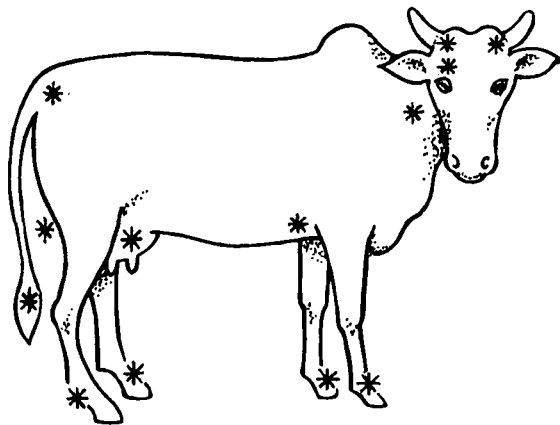


Ticks

Ticks cause skin problems and they spread many important diseases.

Signs

This picture shows the parts of the body where ticks most often live.



- ◆ When animals are bitten by many ticks they can be very irritated and become thin and weak. They may have pale *mucous membranes*.
- ◆ Tick bites often get infected by *bacteria* and turn into *abscesses* (p. 186). The bites damage an animal's skin and make the hide less valuable for leather.
- ◆ Female animals suffer when ticks bite the teats, especially when there are many ticks close together. The teats can get infected where the ticks have been. Some animals get *mastitis* (p. 244) from this.
- ◆ Some animals get sore and infected ears because of tick bites.

Treatment and control

For how to control ticks see pages 106–8.

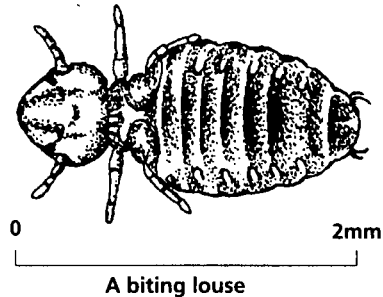
- Treat infected tick *bites* with antibiotic powder or spray (p. 325).

Lice

Lice are insects with no wings, about 1–5 mm long that live on the skin of animals, birds and people. They look like small black dots on the skin and you can see their grey eggs attached to hairs or feathers.

Some lice (*Biting lice*) feed on hair and on the surface of the skin, others (*Sucking lice*) bite through the skin to feed off body fluids.

Animals kept on rangeland rarely have problems with lice but they can be a problem for poorly fed, weak young animals kept in overcrowded places. A few lice do little harm but many lice can be a problem for an animal.



Signs

- ◆ Animals scratch and rub against things, some are so irritated that they never rest and do not eat properly.
- ◆ Some animals or birds lose hair, wool or feathers.
- ◆ A few animals with many lice have pale *mucous membranes*.

Horses, mules and donkeys usually get lice around the tail or on the mane.
Pigs usually have lice around the head and neck and between the legs.

How animals get lice

Lice always live on animals and lay their eggs on animals. So an animal can only get lice from another animal when the animals are close together. But different kinds of lice live on different animals and they do not move from one kind of animal to another.

Treatment and control

- Make sure that animals are properly fed and that animals in houses are not too crowded together. Keep animals outside in the sunlight as much as possible.
- Separate animals with lice from healthy ones and examine new animals carefully for lice. If they have any lice on them, treat them before the lice spread to other animals.
- Most insecticides (p. 339) kill adult lice but some do not kill lice eggs so treat the animals again after two weeks when all the eggs have hatched and before new ones are laid.



Overcrowded pigs

- Always treat all the animals in one place for lice at the same time. Otherwise lice will survive on any animals you do not treat and will soon go back on to animals you have treated.

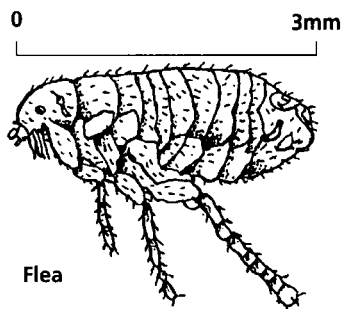
Birds Use insecticide powder or paint the perches with liquid insecticide (p. 344). Before you put a bird in her nest box, treat her and the bedding in the box with insecticide powder to stop her spreading lice and other *parasites* to her young.

Fleas

Fleas have no wings and move around by jumping. They are not often a problem for farm or rangeland animals but can be for **dogs**, **rabbits** and **birds** and sometimes get on to other animals and people. They bite through an animal's skin to suck blood.

Dog fleas carry the *larvae* of tapeworms (p. 101).

Adult fleas lay eggs on the ground. They become larvae on the ground and develop into adults on the ground near where animals live. Adult fleas jump onto animals to feed off their blood.



Signs

- ◆ Animals with fleas itch and are restless, they sometimes damage their coats by scratching.
- ◆ Sometimes fleas look like black spots on the face of birds; they do not move much.

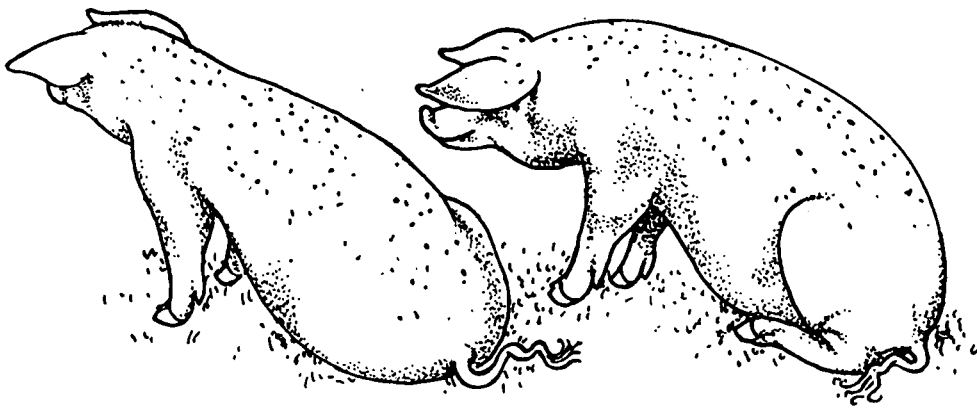
Treatment and control

It is easy to kill fleas with insecticide but it is more difficult to kill flea larvae.

- Use insecticide spray or powder (p. 339) and clean the place where the larvae are.

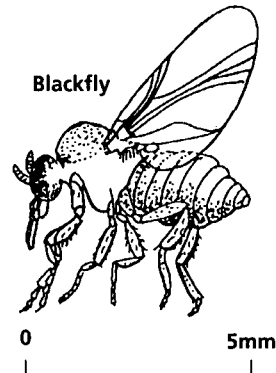
Flies

Many different flies cause problems on the skin and spread disease when they bite animals. To find out how to control flies see page 103.



Flies on pigs

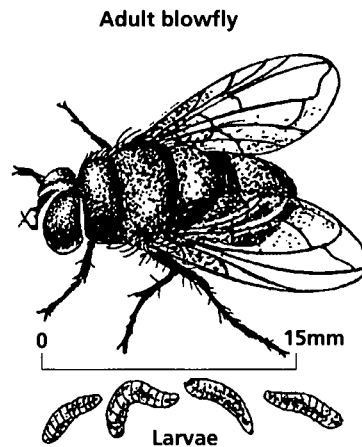
Blackflies [*Simuliidae*]
are small flies 1–5 mm long. Often many flies bite an animal at the same time to feed on blood. They are worst at dawn and at dusk. They spread *worms* that cause skin nodules (p. 185). These flies lay eggs in moving water.



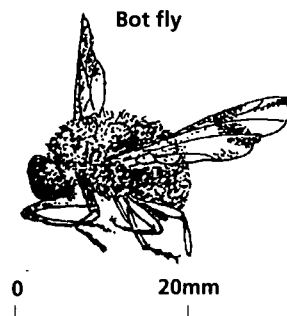
Blowflies [*Calliphoridae*]
..... are usually shiny and bright blue/green or yellow/red or orange/gold, about 5–15 mm long.

They cause *flystrike* (p. 161).

Adult blowflies lay hundreds of eggs on animals' skin when it is damaged. The eggs are about 1 mm long. They hatch into *larvae* (called maggots) after 1–3 days. The larvae feed on the animal's flesh for two weeks and grow to 1–2 cm long, then fall to the ground and dig into the soil. They come out of the ground as new adult flies after 1–3 weeks.



Bot flies [*Gastrophilus*] Stomach bots
..... lay eggs around the head and neck of horses. The eggs develop into larvae that the horse swallows. The larvae – '*Bots*' – stick to the inside of the *stomach*. Sometimes you see many of them in a dead animal but they do not usually cause disease. *Bots* come out in the faeces and develop in the ground into new adult flies.



Camel flies [*Hippobosca*] Ked flies

..... have small wings and do not fly well. They have claws and cling firmly to a camel's skin. They only attack camels but a similar kind of fly attacks sheep. Camel flies do not cause serious problems, though they suck blood and can cause *anaemia* (p. 268). Camel herders say these flies especially attack animals that are already sick. Sick animals sometimes look black because they have so many camel flies and fly faeces on them.

Horn flies [*Haematobia*]

are green/brown, yellow/brown or grey/black. They are about 5 mm long. They live on cattle and cause much irritation. Often many of them attack an animal at once but each fly bites many times a day to feed on blood. They spread *hump sore* (p. 174).

Adult horn flies live all the time on animals – usually at the base of the horns or on the back. Females lay eggs in cattle faeces. The eggs become *larvae* in the faeces and become new adult flies in about 2–4 weeks. (Buffalo flies are like horn flies but are silver/grey with some spots. They attack buffaloes, cattle and even horses.)

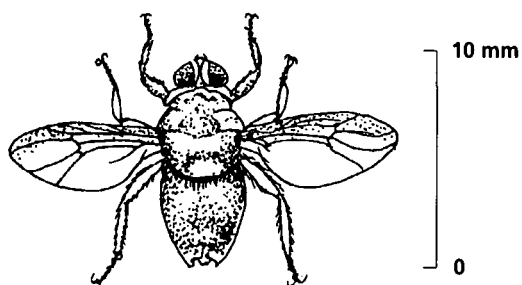
Horse flies [*Tabanidae*]

are usually large (about 2 cm long) and dark brown but some are smaller and grey/yellow or yellow/brown. They are larger than tsetse flies. They bite horses, cattle and people. They cause pain and bleeding when they bite and they spread diseases. They mostly bite animals under the abdomen when it is hot and there is no wind. Other kinds of flies are attracted to the places that bleed.

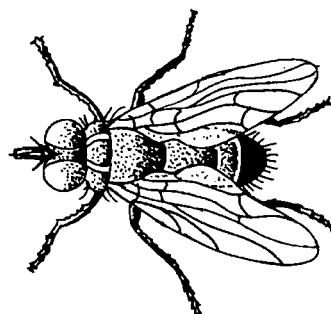
Female horse flies bite animals and suck blood but male flies live on plants. The female lays hundreds of light brown eggs on plants near the edge of water. The eggs become *larvae* after a week and fall to the ground to become new adult flies.

Stable flies [*Stomoxys*]

..... are about 5–10 mm long. They are grey/black with spots and have wings that stick out when they are not moving. They attack cattle, horses and most other animals and birds. Animals can be so annoyed by these flies that they do not eat much and produce little. They spread many diseases. They lay eggs in rotten bedding and old food around animal houses. The eggs become *larvae* that become new adult flies after 2–3 weeks.

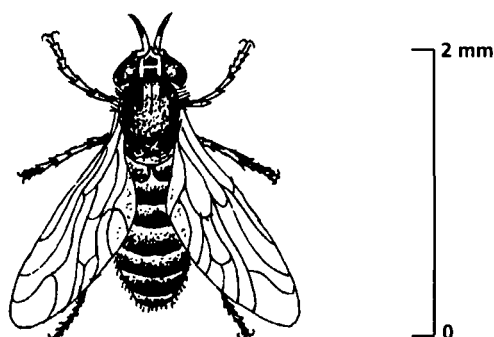


Camel fly

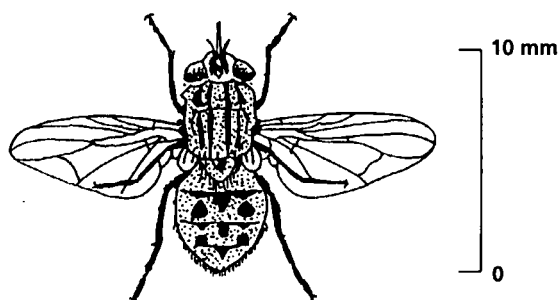


Horn fly

Horse fly

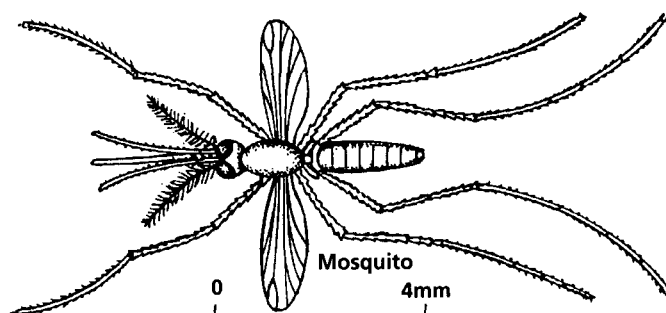


Stable fly



Midges (p. 105) spread *African horse sickness* (p. 270), *bluetongue* (p. 273) and *ephemeral fever* (p. 278).

Mosquitoes spread *ephemeral fever* (p. 278), *heartworm* and *Rift Valley fever* (p. 289).



Sand flies (p. 105) spread *leishmaniosis* (p. 175).

Treatment and control

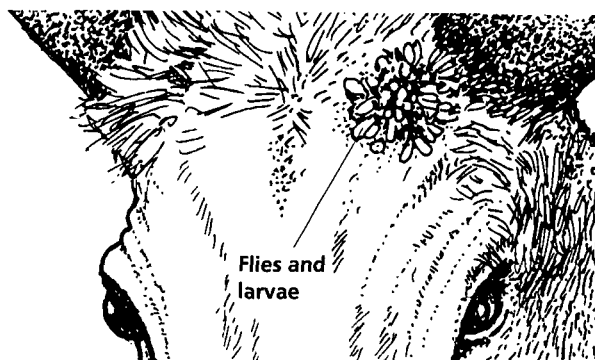
See pages 103–5 for how to control flies.

Flystrike, Myiasis

All animals get *flystrike* but **sheep** get it worst and most often. **People** sometimes get flystrike.

Signs

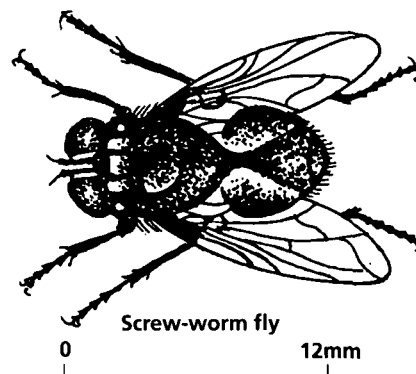
- ◆ Animals are irritated and scratch and rub at a wound with fly *larvae* in it. The larvae can destroy a lot of flesh. The wound often gets infected by *bacteria*.



How animals get flystrike

Animals get flystrike from eggs that blowflies lay in a wound. They lay eggs in very small wounds, such as *tick bites* and on larger wounds, such as *castration wounds*.

The eggs become *larvae* that eat the animal's flesh. (Some people call these larvae *maggots*.) One severe kind of flystrike is caused by *screw-worm fly* larvae.



Treatment and control

- Treat wounds as soon as possible (p. 69). Use a wound dressing that kills fly eggs or larvae (p. 326). Or use a pour-on insecticide that gets into the blood of an animal and kills fly larvae when they eat the animal's flesh.
- Give an antibiotic to stop infection (p. 328).
- Cut wet, dirty wool from around the back legs of sheep.
- Avoid doing castration or other operations when there are many flies.
- Control flies if you can (p. 103).

Insecticides (p. 339) for flystrike include: Cyromazine, Diazinon, Fenthion and Trichlorphon.

Allergy

All animals can have an *allergy*.

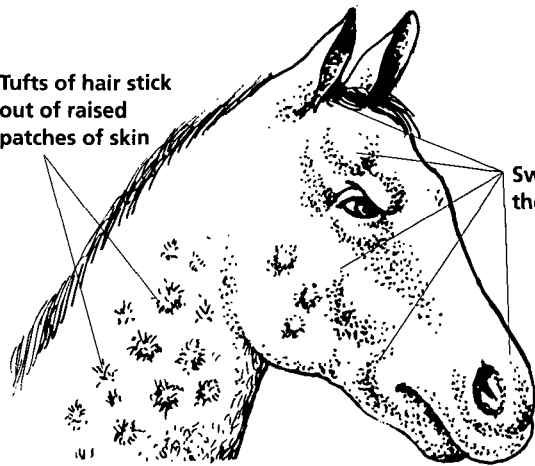


Signs

An allergy can be mild or severe, the signs vary a lot but often include:

- ◆ Animals suddenly have swelling under the skin and may have raised patches on the skin with tufts of hairs that stick out.
- ◆ They breathe fast and the breathing is distressed. Sometimes the reaction in the lungs is so bad the animal cannot breathe.

Tufts of hair stick out of raised patches of skin



Swelling under the skin

How animals get an allergy

Animals have an allergy when they are in contact with something they are sensitive to. The body reacts with a lot of *inflammation*. The things that animals and people are sensitive to include insect stings, certain plants and some medicines, such as penicillin.

Horses get an allergy, with raised tufts of hair on the skin, called *sweet itch*, when they are bitten by midges [*Culicoides*].

Treatment

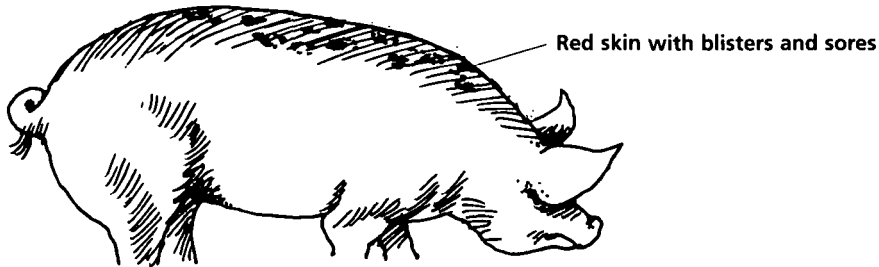
Most animals recover with no treatment quite quickly. They recover sooner when they are no longer in contact with the thing they are sensitive to. If an allergy is severe skilled workers give *antihistamine*. If it is very severe and the breathing is very distressed they also use other special medicines.

Sunburn

Animals, especially **pigs** or **horses** imported from cooler places, get burned by the sun. This happens especially on parts of the body where there is little hair. It happens on the backs of pigs with white skin and around the nose of pale horses.

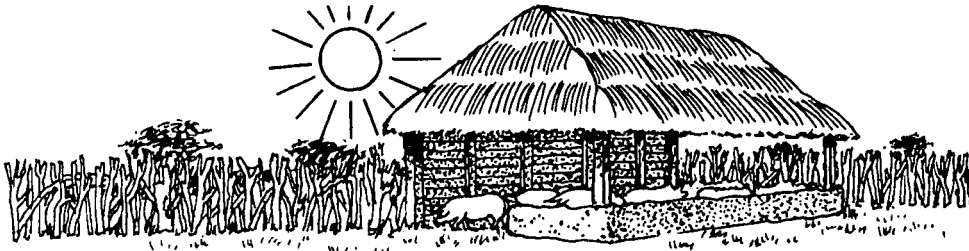
Signs

- ◆ The skin becomes red. It is wet and sometimes has blisters on it. Pieces of skin fall off leaving sores that bleed.



Treatment

- Use wound dressing or antibiotic powder to prevent infection (p. 324).
- Provide good shade for the animals.



Animals in shade

Photosensitisation

Some poisons, especially plant poisons make the skin of animals, especially **cattle** and **sheep**, very sensitive to sunlight – they cause *photosensitisation*.

Signs

- ◆ The pale coloured parts of the skin become red and inflamed and the skin cracks open. This often happens on the back and around the nose but can happen anywhere on the body. Sometimes the skin dries up and large pieces of skin fall off leaving a sore red patch underneath.
- ◆ The *mucous membranes* sometimes become yellow.



- ◆ Most animals do not become sick but a few of them become very sick.
- ◆ **Sheep** get cracked skin on the face and sometimes the skin falls off in large scabs. This happens when they are poisoned by a small fungus [*Pithomyces chartarum*] that lives on dead plants on the ground.

How animals get photosensitisation

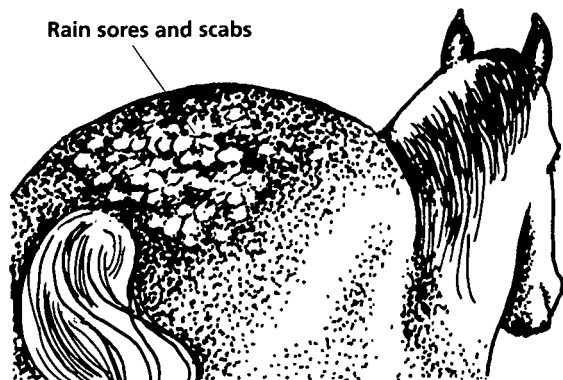
They get it when they eat poisons that the liver cannot destroy and which make the skin very sensitive to sunlight. The poisons usually come from plants, or fungi that live on plants.

Treatment

- Put the animals into the shade and keep them away from bright sunlight for a few days.
- Put a wound dressing (p. 324) on the cracks and sore places.
- Give an antibiotic by injection to treat infection if the skin is very damaged.
- Move the animals to a different pasture away from the plants you suspect poisoned them. Some plants are only poisonous at certain times and the pasture may be safe to return to later in the year.

Rain sores

Horses, mules, donkeys Horses get sores on the skin when the skin is wet for a long time. They get scabs on the back and shoulders when they are left out in the rain for a long time with no shelter. They also get cracks and scabs in the skin around the feet. Sometimes *pus* comes from these cracks.



Treatment and prevention

- Wash and rub gently with antiseptic to remove the scabs (p. 324).
- Dry the sore area carefully.
- Keep the animal in the dry.
- Use antibiotic powder or a wound dressing that dries the sores (p. 324).

Prevent this problem by not letting horses stay wet for too long. Give them shelter and brush them dry after they have been in the rain for a long time.

Saddle sores

Any animal can get *saddle sores*.

Signs

Animals have sores on the skin where ropes or harness has rubbed them. Some animals have more sensitive skin than others and often get sores from harness or ropes. Dried sweat mixed with sand or dust between the harness and the skin often helps cause sores. Some animals get sores when it rains and water gets between the harness and the skin.

- ◆ Some animals have round dry sores with curled up edges and normal skin in the centre (sometimes called a set-fast). This type of sore takes a long time to recover on its own.

Treatment

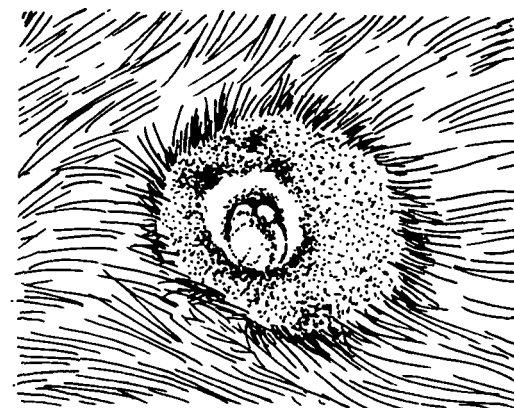
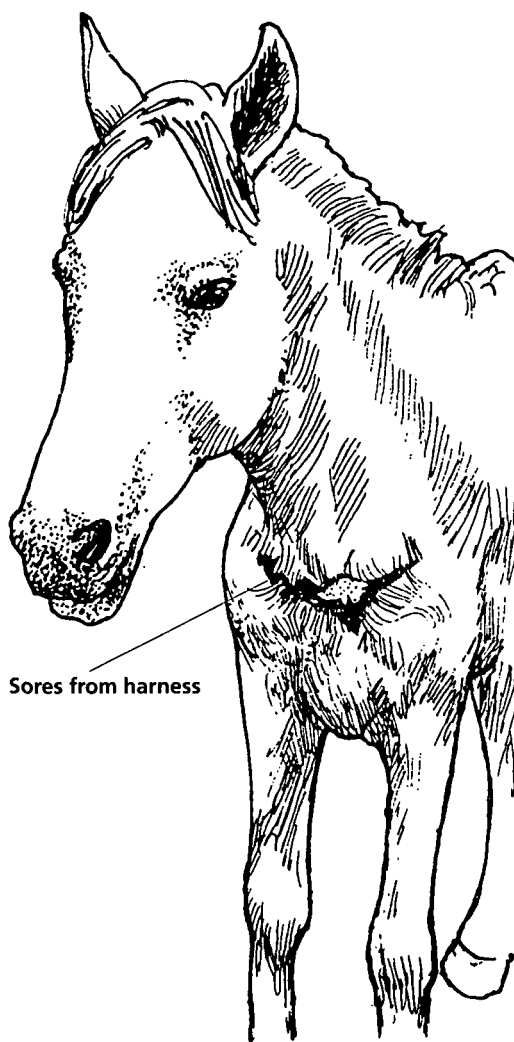
- Stop the harness rubbing. Change the way it fits or use padding to keep it away from the sore spot and give the place where the sore is a rest.
- Clean the sore with antiseptic and put on a dressing that dries it (p. 324).

The sore will usually recover in a few days.

People in West and Central Africa put the powdered bark of *Adenium obesum* trees onto sores to repel flies and birds and help the animal to recover. But the juice from this tree is poisonous and can cause diarrhoea.

Keep it away from the eyes because it damages them.

To treat a set-fast, skilled workers usually use a local anaesthetic (p. 348) then cut the piece of skin off and put antiseptic on the wound.



Saddle sore (set fast)

Anhydrosis, Dry coat

Horses get *anhydrosis*. Riding horses imported to hot wet areas get it most. Imported dairy cattle get it rarely.

Signs

Animals with anhydrosis cannot sweat even when they are hot.

- ◆ Horses have fast distressed breathing after they have worked.
- ◆ They have a high temperature.
- ◆ At first they sweat much more than normal. Soon they only sweat from a few parts of the body: the neck, middle of the back or between the front legs. After a few weeks they only sweat on the top of the neck.
- ◆ The coat looks rough and dry.
- ◆ Some horses lose hair around the head.
- ◆ A few horses die suddenly while they are working.

How animals get anhydrosis

This is not an infectious disease. It does not spread to other animals. It happens because some animals cannot adjust to living in hot places.

Treatment and control

- Move animals to a cooler place and they will recover. Or keep the animals as cool as possible and do not make them work in hot sun.
- Make sure they have enough water to drink and enough salt (p. 231).
- Give them plenty of fresh green food.
- Skilled workers can give special medicines but they do not always work.

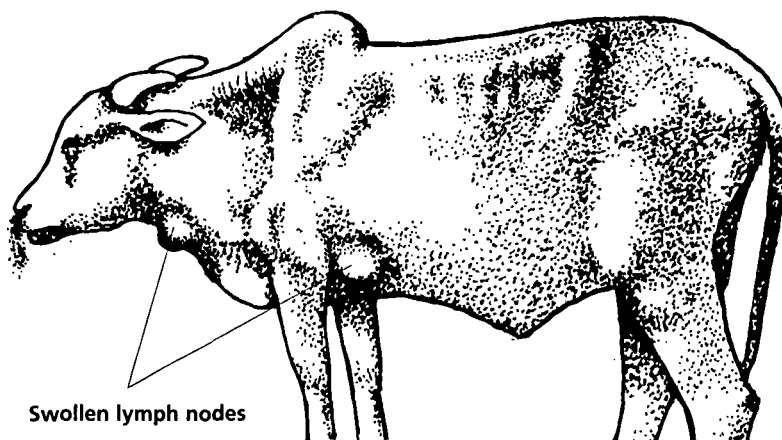
Besnoitiosis, Globidiosis

Cattle get besnoitiosis. **Horses, mules, donkeys** and **goats** occasionally get it.

Signs

Cattle become sick 7–10 days after they are infected.

- ◆ They have swollen *lymph nodes* under the skin (p. 41).



- ◆ Some animals have a clear *discharge* from the nose and eyes. They try to avoid bright sunlight. Sometimes there are white patches on the eye.
- ◆ The animals have *diarrhoea* and a high *fever*.
- ◆ Some animals die after about 10 days. Animals that recover have lumps under the skin. Their skin becomes thickened and they lose some hair.
- ◆ **Goats** have lumps in their ears and around the genitals. They have white patches on their eyes. Pregnant goats abort and many become infertile. New-born goats are weak and some die.
- ◆ **Horses, mules** and **donkeys** have the same signs as cattle but do not have such severe disease.

Other diseases that look like this:

Dermatophilosis (p. 170); *lumpy skin disease* (p. 176); *malignant catarrhal fever* (p. 287).

How animals get besnoitiosis

Infection is probably spread by biting flies but infection may come from cats.

Besnoitiosis is caused by *protozoa* [*Besnoitia*].

Treatment

There is no good treatment but skilled workers can give medicines to help animals recover.

Prevention and control

- Separate sick animals from healthy ones (p. 92).
- In Southern Africa people use a *vaccine* that is effective.

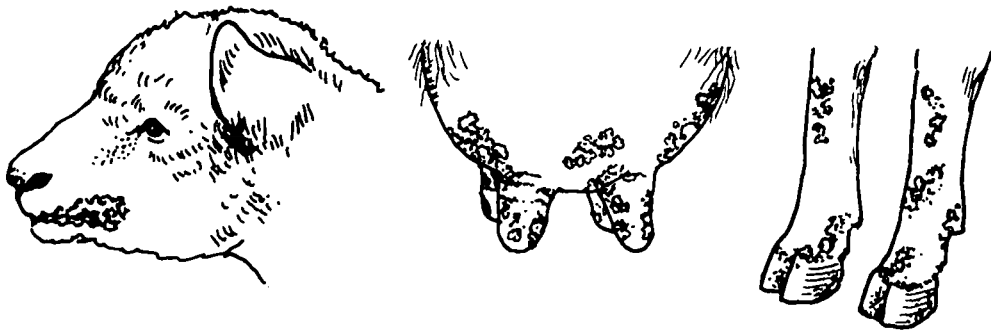
Contagious pustular dermatitis, Contagious ecthyma, Orf

Sheep and **goats** get *contagious pustular dermatitis* most often. **Dogs** or other animals get it rarely. **People** can also get contagious pustular dermatitis (p. 6).

Signs

Many animals in a group usually get the disease at the same time.

- ◆ Animals have small raised red sores on the skin.
- ◆ Baby sheep that are sucking their mothers have sores around the lips and eyes. They often stop sucking because their mouths are sore. The mothers have sores on the teats and udder.
- ◆ Older animals usually have sores on the legs and feet. But sores happen anywhere the skin is injured and infection can get in.
- ◆ Several small sores often join together and have thick scabs over them. Some scabs break off and there is much bleeding under them.



Red, raised sores and scabs

- ◆ Sometimes flies lay eggs on the sore places and cause *flystrike* (p. 161).
- ◆ Most animals recover with no treatment in 1–2 months. If animals get the disease again it is usually mild and they recover in 1–2 weeks with no treatment.

Other diseases that look like this:

Bluetongue (p. 273); *foot and mouth disease* (p. 279); *sheep pox* (p. 177).

How animals get contagious pustular dermatitis

Animals get it from direct contact with sick animals or from contact with infected scabs. The *microbes* can live for months in dry scabs from infected animals. Infection gets in through small injuries in the skin.

Dogs can get this disease from the meat of infected animals. Baby **sheep** and **goats** get the disease from their mothers. Adult females can carry infection for a long time but not have signs of disease. When they give birth the disease comes back and infects the young.

Contagious pustular dermatitis is caused by *viruses* [*Parapox*].

Treatment

There is no effective treatment for contagious pustular dermatitis.

- Help the animal to recover by cleaning sores with antiseptic and use antibiotic powder or spray (p. 324) to treat infection and dry the wounds.
- Small doses of the *worm medicine* levamisole (p. 337) sometimes help healing.

Prevention and control

- Do not mix infected animals with healthy ones. Isolate infected animals to stop the disease spreading (p. 92).
- *Vaccine* for contagious pustular dermatitis is effective. But animals usually recover without treatment so it is rarely worth vaccinating them. It may be worth vaccinating animals when you know they have been near infected animals or vaccinating healthy animals before you mix them with a group that has infection.
- People in East Africa make their own vaccine by crushing a scab from an infected sheep with glycerine. They scratch the vaccine onto the leg of a healthy animal to vaccinate it, but this can cause disease.

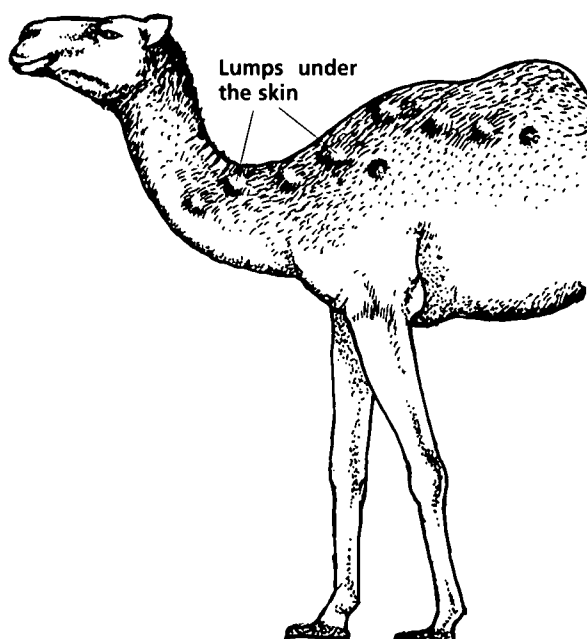
Contagious skin necrosis

Only **camels** get contagious skin necrosis.

Signs

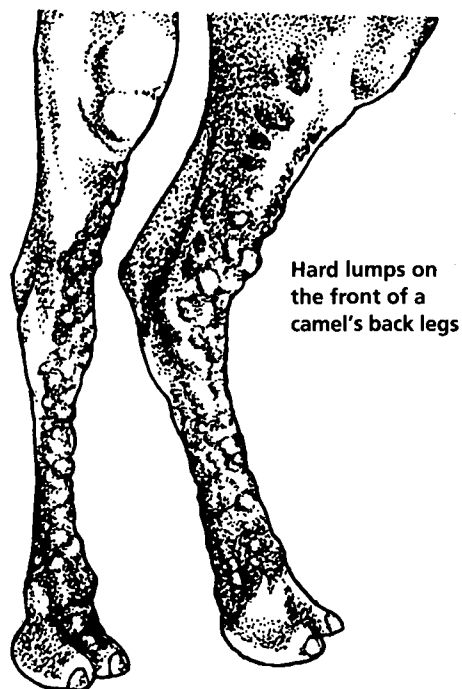
Usually several camels have contagious skin necrosis at the same time.

- ◆ The camels have lumps under the skin, usually on the back, the hump and around the base of the neck.
- ◆ The lumps have *pus* in them and break open to become open sores. Some of them become deep ulcers that grow if they are not treated.



Other diseases that look like this

Camels sometimes get hard lumps on the front of their back legs that look like contagious skin necrosis, especially in wet seasons. The hard lumps often break open leaving a sore that bleeds. These lumps are difficult to treat but do not cause the animal much of a problem. If the lumps break open and become sores put antibiotic powder or wound dressing on them to dry them and prevent infection (p. 324).



How animals get contagious skin necrosis

They get it from touching infected camels. Infection gets in through small injuries in the skin.

Contagious skin necrosis is caused by several *bacteria* together. [*Streptothrix* with *Actinomyces*/*Corynebacteria*/*Staphylococci*/*Streptococci*]. It is not caused by a lack of salt, as many people used to think.

Treatment

- Remove any *pus*.
- Wash the sores with water or antiseptic and put antibiotic powder or spray on them (p. 324).
- Some camel herders cut open the *abscess* and clean out pus and dead flesh. They burn around the abscess with a hot iron to stop infection spreading and put juice from a euphorbia tree [*Euphorbia* species] inside the wound to cauterise it.
- People in Kenya put a mixture of iodine and Vaseline (p. 326) on the sores after they have drained any pus. Other people make a paste from the boiled bark of *Commiphora africana* trees. When the paste is cool they mix it with urine and put it on the open sore to help it to heal.

Dermatophilosis, Streptothricosis, Lumpy wool

Dermatophilosis happens in Africa and Asia. It is usually a mild disease except in West and Central Africa, Zambia and Madagascar where it is often severe. **Cattle** get dermatophilosis most often. **Goats, sheep** (lumpy wool disease) and **horses** get it occasionally.

Signs

- ◆ The animals have swellings in places where the skin has been damaged. The swellings become open sores that develop scabs. The scabs become large and the skin becomes thickened. If the scabs get rubbed off these sores bleed.

Swellings under damaged skin



- ◆ Animals that get severe disease do not graze properly. They become thin and weak. Some animals die because they do not eat.
- ◆ The disease usually goes on for about a month. When it is hot and wet for a long time the disease goes on longer.
- ◆ **Sheep** that get the disease on woolly parts of the body have large, hard, thickly matted lumps of wool.

Skilled workers can look at a scab or piece of damaged skin to check for this disease with a microscope.

Other diseases that look like this:

Besnoitiosis (p. 166); *lumpy skin disease* (p. 176); *mange* (p. 154); *ringworm* (p. 180); **Camels** *Contagious skin necrosis* (p. 169).

How animals get dermatophilosis

Animals usually get dermatophilosis when there are long wet times then periods of hot sun. Damaged skin encourages the disease, especially when damaged by *tick* [*Amblyomma*] bites or damaged by flies, birds or thorns. Insects or birds carry the disease from an infected animal. Some animals get infected by direct contact with infected animals. Occasionally infection spreads through the air.

Dermatophilosis is caused by *microbes* like large *bacteria* [*Dermatophilus congolensis*]. These microbes only live on the skin of animals. Many animals have these microbes on their skin but most of the time the microbes do not cause disease.

Treatment

- Animals often recover with no treatment especially when it is hot and dry. But the microbes can stay alive on an animal's skin and cause disease again when it is wet.
- Putting medicine on the scabs does not usually work.
- Giving an antibiotic by injection (p. 328) may help to treat the disease itself. It also helps to stop the damaged skin getting infected by bacteria.

Prevention and control

- Try to avoid the skin damage that lets this disease happen.
- Control *ticks* that cause skin damage (p. 105).
- Control flies if possible (p. 103).
- If the disease is a serious problem, make a shelter to protect the animals from rain but make sure they have plenty of fresh air.
- In a settled place try to remove sharp thorn scrub from fields where animals are kept.
- Kill animals that have very severe disease to stop it spreading to other animals.

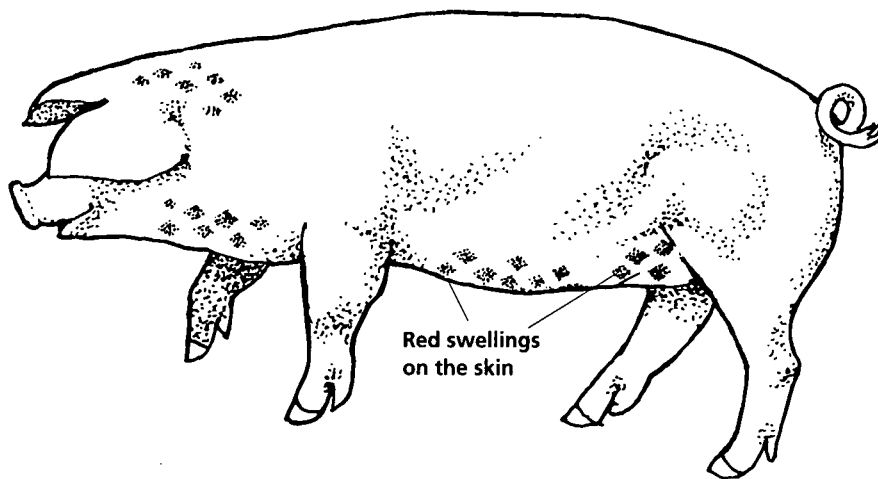
Erysipelas

Pigs get *erysipelas* very often in many parts of the world. Young **sheep** also get it. **People** occasionally get *erysipelas* (p. 6).

Signs

Pigs become sick 1–14 days after they get infected with *erysipelas*. Sometimes the disease is **mild**:

- ◆ The pigs have red swellings about 5 cm across on the skin, especially on the head and neck, under the abdomen and between the legs.



- ◆ They are weak and tired and have a low *fever* but most recover after about two weeks.

Sometimes the disease is **severe** and happens very fast:

- ◆ The pigs have red swellings on the skin and have a *discharge* from the eyes.
- ◆ They are weak and tired and do not eat. They have a high *fever*.
- ◆ Many animals collapse and die after 3–4 days. A few animals die suddenly, especially if they are made to run about. Others recover slowly.

Sometimes the disease is **less severe** but it goes on for a long time:

- ◆ The animals are lame and have hot, swollen joints for a few weeks. Then the swelling gets smaller but the legs often become stiff.

Sheep, especially young sheep become sick two weeks after they get infected:

- ◆ They become lame and have hot, swollen joints for a few weeks. Then the swelling gets smaller and the legs often become stiff.

How animals get erysipelas

Pigs get infection from direct contact with infected animals or from *contaminated* things. Infection comes from the faeces of infected animals.

Sheep get infection when they are born or from operations, such as castration.

Erysipelas is caused by *bacteria* [*Erysipelothrix*].

Treatment

- Treatment works if you start it soon enough.
- Give an antibiotic as soon as possible. Penicillin works well (p. 332).

Prevention and control

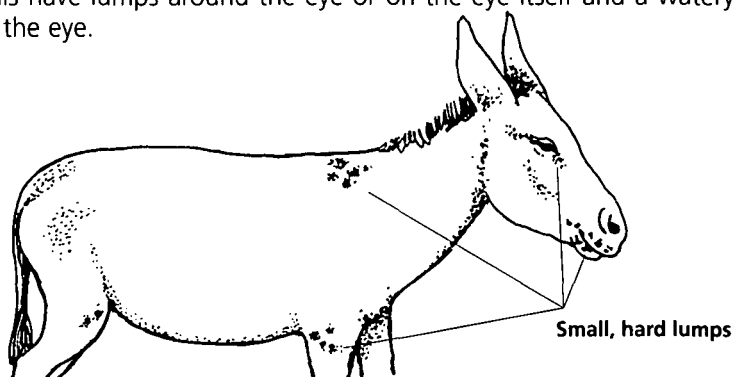
- Keep animals clean to avoid infection (p. 91).
- *Vaccines* for erysipelas only protect the animal for a short time and are not often worth using.

Habronemosis, Summer sores

Horses, mules and donkeys get *habronemosis*.

Signs

- ◆ Animals have small hard lumps on the skin around the nose and lips or around the legs and shoulders. They rub these lumps, which break open and become sores. The sores become larger and scabs grow over them.
- ◆ Some animals have lumps around the eye or on the eye itself and a watery *discharge* comes from the eye.



How animals get *habronemosis*

House flies or stable flies spread the disease when they leave tiny *worms* on small folds or wounds on an animal's skin. The worms come from the faeces of infected animals. (The animals eat some worms from around the lips and the worms develop in an animal's stomach before they are passed in the faeces.) Flies' larvae living in animals' faeces get infected with the worms. The disease happens most in hot wet seasons.

Habronemosis is caused by small (2 cm) *roundworms* [*Habronema*].

Treatment, prevention and control

- Ivermectin (p. 337) works but it is expensive.
- People put caustic chemicals on the sores to slowly burn them away. Never use caustic chemicals near the eyes, it will damage them very severely.
- To avoid this problem remove faeces from around the places where horses live.
- Treat small wounds quickly and protect them from flies.

Horn cancer

Cattle and buffaloes get *horn cancer*. Usually only Haryana cattle get it.

Signs

- ◆ The horn becomes loose and comes away from the skin.
- ◆ You can see a grey/yellow lump at the base of the horn. It is covered with blood and mucus, it smells bad and is often infected.

- ◆ Sometimes a white/yellow *discharge* comes from the nose.
- ◆ The cancer spreads inside the animal to other parts of the body.

How animals get horn cancer

Animals usually get it when the horn has been injured. It is not an infection. Castrated males get it most often.

Treatment

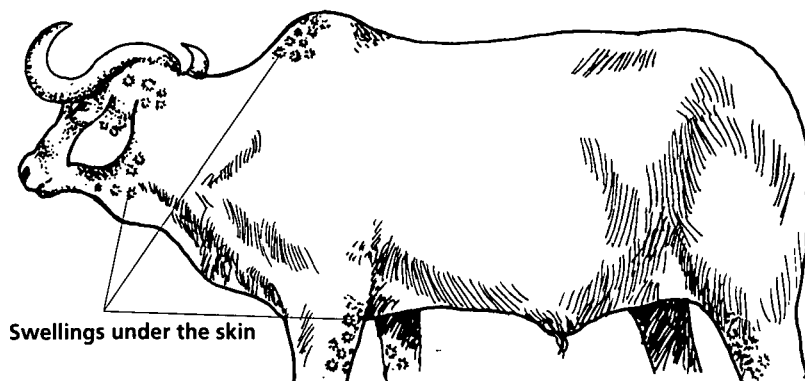
- Skilled workers can cut out the cancer. This often works if they do it before the cancer spreads to other parts of the body.
- Sometimes they use special medicines to control the cancer but they do not always work.

Hump sore, Stephanofilariosis

Hump sore only happens in Asia. **Cattle** and **buffaloes** get hump sore.

Signs

- ◆ Animals have small swellings under the skin that join together and become sores. The swellings are often on the hump but they may be around the head and neck or on the ears or legs.
- ◆ After a time the swellings bleed and the skin becomes thick and scaly.



How animals get hump sore

They get infected by flies that carry tiny *worms* from animals with hump sore. Hump sore is caused by small *roundworms* (2–10 mm) [*Stephanofilaria*].

Treatment

- Put insecticide (p. 339) onto the swelling to kill the *worms*.
- Some worm medicines are effective, especially ivermectin injections (p. 337).

Leeches

All animals, especially, **cattle**, **buffaloes** and **camels** can get leeches on the skin when they stand in water, or inside the mouth and nose when they drink. **People** can also get leeches.

Signs

- ◆ Blood comes from the legs, nose or mouth at places where leeches bite. Leeches attach to the skin and cut through it to get blood. They produce chemicals that stop blood from clotting.

Treatment

- To make leeches let go of the skin, people put salt on them or use insecticide or tobacco mixed with water (p. 345).
- Remove leeches from the skin or inside the mouth with a cloth. Put salt on the cloth to help make the leeches let go and to help grip them.
- To remove them from the nose hold the animal firmly and push insecticide mixes with water (about the strength of a dip) up the nose with a syringe with no needle. Hold the nose level so the liquid does not come out or go down the *trachea*. Use about 10 ml for a small animal and 50 ml for a large animal. When the leech lets go it comes out onto the ground or the animal swallows it.

Leishmaniosis, Leishmaniasis

Leishmaniosis happens in North Africa and Asia. **Dogs** get leishmaniosis. Rarely, other animals get it or become infected with no signs of disease. **People** can get it (p. 6).

Signs

- ◆ Usually animals have sores on the skin, especially around the nose, mouth, eyes and tips of the ears. Some of the hair around these sores falls out. Dogs often recover from this with no treatment.
- ◆ Rarely the disease also spreads inside the body and goes on for a long time. Then the dog also has diarrhoea. With no treatment it becomes thin and dies.

How animals get leishmaniosis

They get it when they are bitten by infected *sand flies* (p. 105). Sand flies get infected when they bite infected wild animals that live in holes in the ground. One type of *parasite* [*Leishmania tropica*] causes disease mostly on the skin, another [*Leishmania infantum*] mostly inside the body.

Treatment

It is difficult to treat leishmaniosis effectively. Skilled workers sometimes treat dogs with special medicines.

Prevention and control

- Killing an infected dog helps stop the disease spreading to people.

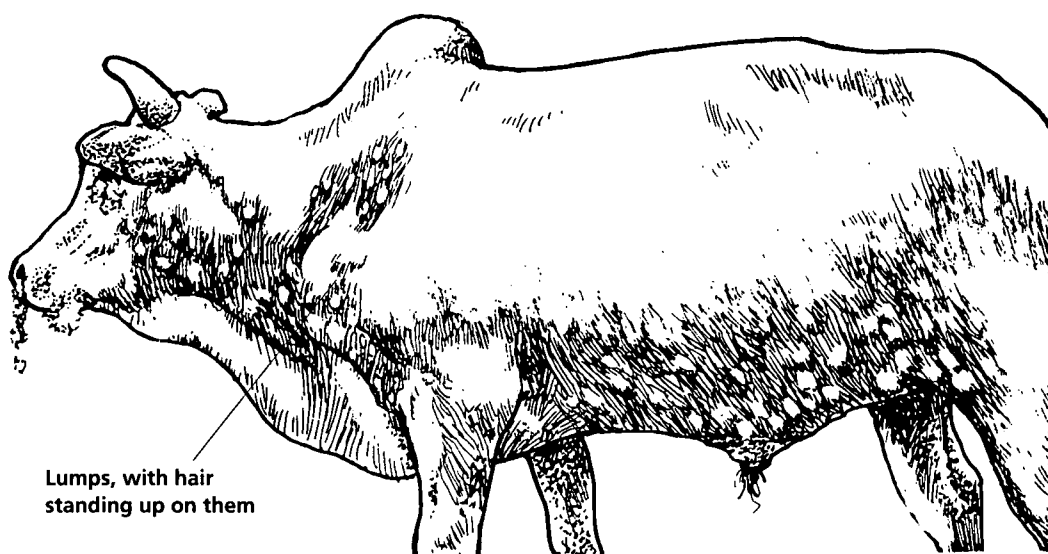
Lumpy skin disease

Lumpy skin disease does not usually happen in Asia. Only **cattle** get lumpy skin disease.

Signs

Cattle become sick 10–20 days after they get infected.

- ◆ The animals have much *saliva* coming from the mouth. A clear *discharge* comes from the eyes and nose. Later the *discharge* from the nose becomes grey/white.
- ◆ The cattle are weak and tired and stop eating. They have a *fever* that sometimes goes down after 1–2 days but it goes up again. Animals produce little milk and pregnant cattle often abort.



- ◆ Lumps appear on the body, usually around the head and neck, under the abdomen, on the legs, or around the genitals and the udder.
- ◆ The lumps are hard and usually all about the same size. The hair on the lumps stands up. Softer, yellow/grey lumps may appear on the mouth. They rub off easily leaving sore red patches.
- ◆ Many of the lumps on the skin turn into sores that get infected and become deep wounds. Most of these dry up and heal after a few weeks but they leave scars that damage the hide. Some lumps become hard and do not go away.
- ◆ Cattle do not usually die but they take months to recover and a few of them become very thin.
- ◆ Occasionally the disease is very mild, animals only have a low *fever* and lumps on the skin that heal in about six weeks.

Other diseases that look like this:

Besnoitiosis (p. 166); *dermatophilosis* (p. 170); *ringworm* (p. 180).

How animals get lumpy skin disease

They get it when they are bitten by insects that suck blood, such as mosquitoes. The disease happens most when there are many insects at the start of a wet season. Imported breeds of cattle get the disease more easily than local cattle.

Lumpy skin disease is caused by *viruses* [Capripox].

Treatment

There is no treatment for lumpy skin disease. Give an antibiotic injection (p. 326) to stop the damaged skin getting infected by *bacteria*.

Prevention and control

- *Vaccination* for lumpy skin disease is effective. Vaccinate healthy animals in contact with the disease.

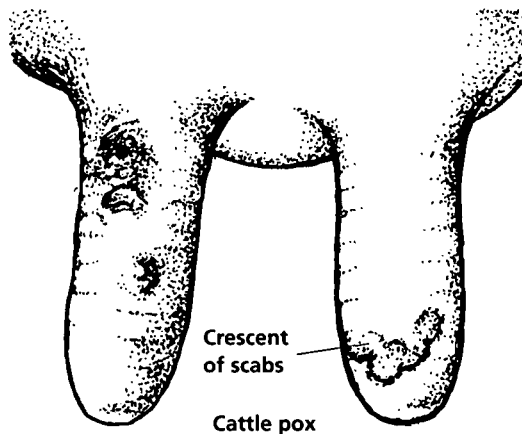
Pox

Most pox diseases happen in Africa and Asia but horse pox does not. *Sheep and goat pox* happens in Africa north of the equator and in Asia. **Most animals** can get pox diseases but each animal gets a different type of pox disease.

Signs

Cattle become sick 5–10 days after they get infected.

- ◆ They have small red sores on the teats at places where there are small injuries. The sores soon have scabs over them. When the scabs fall off they leave a crescent of smaller scabs.
- ◆ Sometimes the disease goes on for a long time. The teats become rough with many grey/yellow scabs.
- ◆ Animals usually recover in 2–8 weeks.

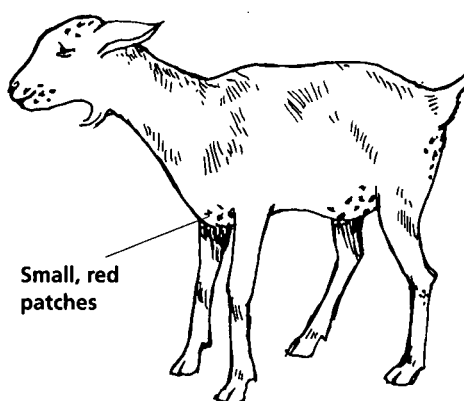


Buffaloes only have mild disease. They have blisters on the udder and under the tail. Baby animals have blisters around the mouth.

Sheep or goats become sick 1–7 days after they get infected. Very young sheep get the most severe disease. Some very young sheep die before they have signs of disease.

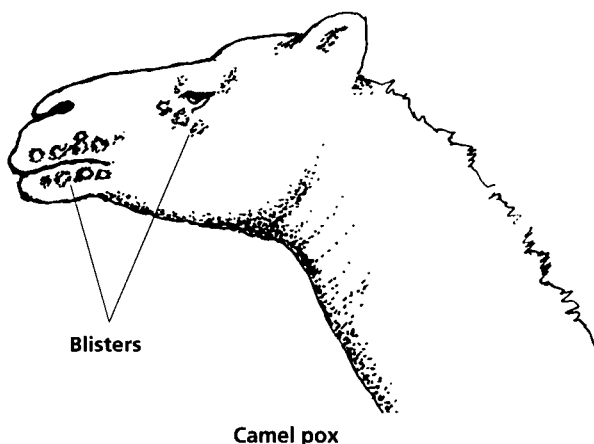
- ◆ Most animals are weak and tired and stop eating. They have a high *fever* for a short time. A watery *discharge* comes from the nose and eyes. Much *saliva* comes from the mouth.
- ◆ They have small red patches on the skin (p. 178) – usually around the mouth, on the head, under the tail and between the legs. The patches become swellings under the skin. Then they become blisters that break and become open sores. The sores soon have scabs over them.

- ◆ Animals often have distressed breathing – they have blisters inside the lungs too.
- ◆ Pregnant sheep and goats often abort.



Camels become sick 5–15 days after they get infected. They usually only get mild disease around the mouth.

- ◆ They have a low *fever*.
- ◆ They have swelling around the lips and blisters that fill with *pus* in the mouth and around the lips. It is painful for the animal to eat. They may also have blisters around the genitals.
- ◆ Camels usually recover in 2–3 weeks but often have scars where the blisters were.

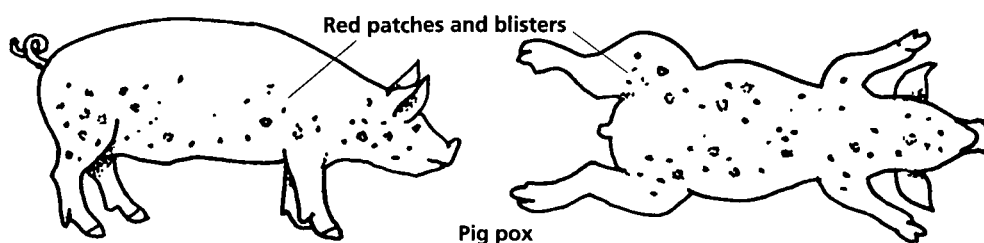


Young camels 6–24 months old can get severe disease that involves the whole head:

- ◆ They stop eating and have a high *fever*. They have diarrhoea and become *dehydrated*.
- ◆ They have blisters around the lips and eyes that spread over the head and may spread over the whole body. Some blisters break open and become sores that bleed.
- ◆ A watery *discharge* comes from the eyes. Some animals cannot see properly.
- ◆ A few animals die after 1–2 weeks because the head swells so much they cannot breathe. Most animals recover.

Pigs become sick 4–14 days after they get infected. *Pig pox* is a mild disease.

- ◆ The pigs have a low *fever*.
- ◆ They have red patches on the skin. These become blisters that break and become open sores with brown/black scabs over them. The blisters are on the abdomen and between the legs when pigs are bitten by *lice*, or along the back when they are bitten by *stable flies* (p. 160). Adult female pigs get blisters on the teats when they suckle infected baby pigs.



- ◆ Most pigs recover in 2–8 weeks.

Birds get *fowl pox* most often when they are older.

- ◆ They have blisters around the head and inside the beak and eyelids. They also have blisters under the wings and on the feet. The blisters soon break and become scabs.



- ◆ The birds have a clear *discharge* from the beak and eyes. They have *pus* around the eye and pus may come from the nostrils. Some birds have a thickened membrane inside the mouth.
- ◆ Most birds recover but fowl pox reduces their *resistance* to other diseases.
- ◆ A few birds get more severe disease and quickly become thin and may die.

Other diseases that look like this:

Bluetongue (p. 273); *foot and mouth disease* (p. 279); *mange* (p. 154); *contagious pustular dermatitis* (p. 167).

How animals get pox diseases

Pox diseases spread by direct contact between animals and on *contaminated* things. Many animals get infection from people who have touched infected animals. Animals, especially buffaloes, get it when they are milked by people who have touched infected animals.

Infection comes from the blisters and scabs of infected animals. Infection can live for a long time in dry scabs that fall off.

Cattle, buffaloes Baby animals get pox from infected mothers. They are infected for life and may become sick when they are adults.

Camels Pox spreads quickly through a group of camels, especially in or just after wet seasons.

Pigs usually only get *pig pox* when they are 3–6 weeks old. They get it from touching infected pigs or when they are bitten by *lice* (p. 157) or *stable flies* (p. 160) that carry infection.

Birds get *fowl pox* from direct contact with sick birds or from insect bites.

Animals and birds that have had pox are usually *immune* and rarely get the disease again.

All pox diseases are caused by *viruses*: *Sheep* and *goat pox* [*Capripox* – some types attack sheep, others attack goats]. *pig pox* [*Suipox*]. *buffalo pox* [*Orthopox*]. *camel pox* [*Orthopox*]. *cattle* [*Parapox*]. (Cowpox is a different disease. It only happens to cattle, cats and people in Western Europe. It is like smallpox, a disease of people, that no longer exists anywhere.)

Treatment

There is no treatment for pox diseases but you can help animals to recover:

- If the sores are bad or deep put antibiotic or antiseptic on them. Be careful not to spread the disease further. Use wound dressings that dry up the sores. If the skin becomes infected by *bacteria* give antibiotic by injection (p. 328).
- **Camels** Skilled workers can give special medicines to reduce swelling of the head but this can be dangerous because the medicines stop animals from fighting off infection.
- **Birds** It is best not to put medicine on the scabs, you are more likely to spread the disease than treat it.

Prevention and control

- **Isolate** infected animals by moving healthy animals away from them. Avoid moving infected animals to areas without the disease.
- **Vaccinate** healthy animals that have been near infected animals.
- Avoid using, or disinfect (p. 324), things that have touched infected animals.
- Make sure that new-born animals drink enough *colostrum*, this gives them some *immunity* to pox diseases from their mothers.
- Those people who milk infected animals should not milk healthy ones. It is best not to drink the milk from infected buffaloes.
- **Sheep, goats** Vaccination is effective.
- **Camels** New vaccines for *camel pox* are effective but difficult to get. Some people make their own vaccine for camel pox. They mix scabs from infected camels with milk and prick the lips of healthy new-born camels to protect them. **This may work but is dangerous because it can cause severe disease.**
- **Pigs** Vaccination is effective. Control the *lice* (p. 157) or *flies* (p. 103) that spread the disease.
- **Birds** Vaccination is effective. Vaccinate birds every year. You can do this at the same time as you vaccinate for *Newcastle disease* (p. 208).

Ringworm

All animals can get *ringworm*, but usually only animals kept in houses get it. **People** can get ringworm (p. 6).

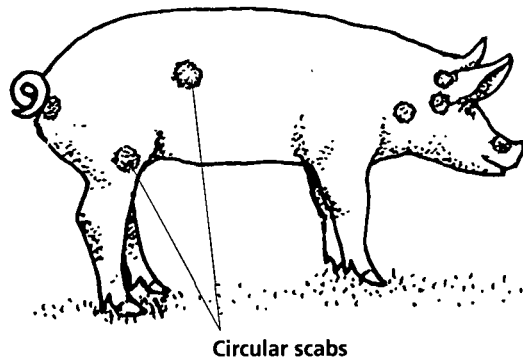


Signs

Animals become sick with ringworm 7–28 days after they get infected.

- ◆ Animals have a circular scab on the skin about 3 cm across. Scabs usually happen first around the nose, above the eyes, on the ears or under the tail. The skin under the dry scab is wet. Scabs soon join together and become thicker.

- ◆ After several days the scabs fall off. The skin underneath becomes dry and grey/white.
- ◆ Animals do not scratch much when they have ringworm. But they sometimes scratch a lot if the scabs become infected by *bacteria*.
- ◆ The scabs fall off after a few weeks and leave patches with no hair.
- ◆ Animals slowly recover even without treatment. The hair grows back in about three months.
- ◆ **Horses, mules and donkeys** have white/grey scabs that are hard to see. They have patches with no hair on the head, over the back and over the back legs that soon spread over the body. They recover without treatment in 4–6 weeks.
- ◆ **Pigs** usually have small red patches that become dark coloured crusty scabs.
- ◆ **Camels** up to three years old get ringworm most and the scabs are usually on the head or neck.
- ◆ **Dogs** usually have small scabs around the head and ears.



How animals get ringworm

They get it when they touch infected animals and from *contaminated* buildings, ropes and other things. Sometimes birds spread the disease. Animals get ringworm more often when it is hot and wet.

Ringworm is caused by *fungi* [*Microsporum* and *Trichophyton*]. It is **not** caused by a worm.

Treatment

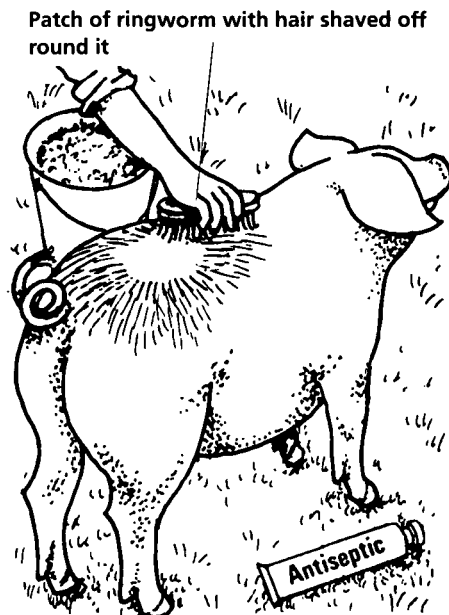
Animals usually recover from ringworm with no treatment but it may take 2–3 months. They recover sooner when it is dry and sunny.

To help recovery:

- Shave the hair around the place with ringworm. Burn the hair you have shaved off because it is infected.
- Scrape the scabs off gently. Use soapy water and a brush.
- Put antiseptic on the sore area (p. 324).

Animals treated like this can recover in 2–3 weeks.

- Give griseofulvin (p. 331) by mouth or put it directly on the sore area. This medicine is expensive but animals treated with it start to recover in about ten days. Other medicines that you put on the skin are also effective (p. 328).



Prevention and control

- Isolate and treat animals with ringworm.
- Use disinfectant (p. 324) to clean *contaminated* places and things before using them for healthy animals. Direct sunlight kills ringworm *microbes*.
- *Vaccinating* for ringworm is expensive. It is rarely worth using a vaccine. Animals that recover from ringworm do not usually get the disease again.

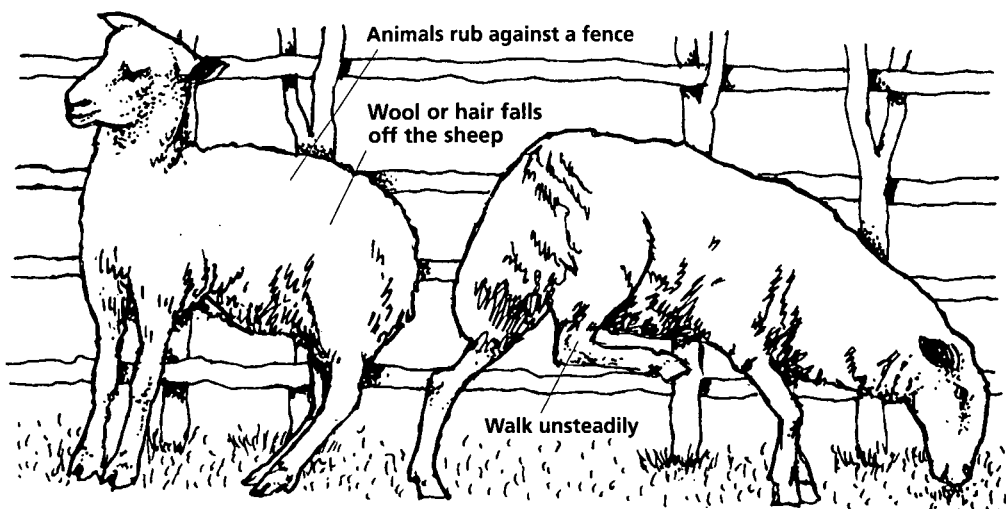
Scrapie

Scrapie happens in Africa and Asia when animals have been imported from Europe. **Sheep** and occasionally **goats** get scrapie.

Signs

Animals become sick 2–4 years after they get infected with scrapie.

- ◆ They behave unusually. They rub against things and bite themselves because the disease makes them irritated. If you pinch them on the back they make biting movements with their lips.



- ◆ They walk unsteadily.
- ◆ They do **not** have a fever.
- ◆ Animals do not recover. They are sick for 1–6 months. Then they become thin and weak and they die.

Other diseases that look like this:

Mange (p. 154); lice (p. 157).

How animals get scrapie

They get it from their mothers soon after they are born. Infection usually comes from milk or the placenta and membranes that come out after birth. Some animals get infection from pastures where infected animals have been.

Scrapie is caused by pieces of protein like small *viruses*.

Treatment and control

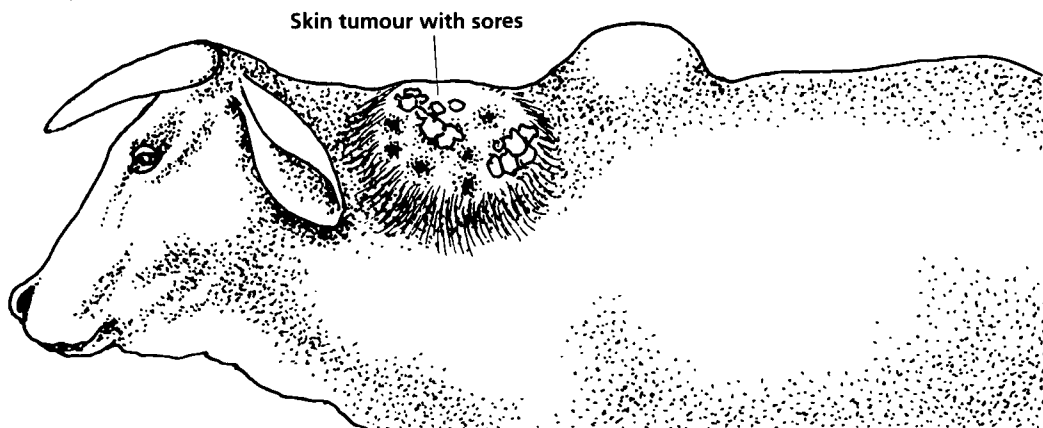
There is no treatment for scrapie. **Avoid importing animals with scrapie.**

Skin tumours

All animals can get *tumours* on the skin. **People** do not usually get *skin tumours* from animals.

Signs

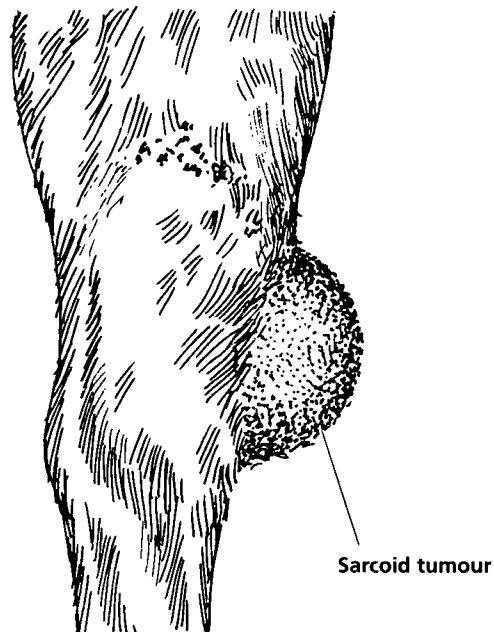
- ◆ Hard lumps on the skin that are not hot are often tumours. These lumps usually grow slowly. Sometimes the skin over a tumour is injured and the lump has open sores on it. There are many different kinds of skin tumours but the most common ones are hard and dry and look like this.



- ◆ These skin tumours often appear 3–12 weeks after animals get infected.
- ◆ They often grow on the genitals and on the teats. These tumours do no harm but they sometimes interfere with milking. Sometimes they make mating difficult.
- ◆ **Horses, mules and donkeys** sometimes get skin tumours that look like these, they are called *sarcoids*. They grow at the base of the ear and low on the legs of horses. They do not spread through the body but they sometimes grow back after they are cut off.

Horses often get small tumours around the nose and mouth. These usually disappear after 1–6 months with no treatment.

Old grey horses sometimes get skin tumours around the base of the tail. They are called *melanoma* and they spread inside the body.



- ◆ **Camels** about a year old get small skin tumours around the lips and nose. Older camels get tumours, especially on the teats. The tumours go away after a few months with no treatment.

Skilled workers need complicated laboratory tests to decide what kind of tumour an animal has.

How animals get skin tumours

Only some types of skin tumours spread to other animals. The types that spread are more often on younger animals. Usually there are more than one or two of this type of tumour on an animal.

Animals get the types of skin tumour that can spread from direct contact with animals that have skin tumours. They often get skin tumours after they mate with an infected animal. Infection with these types of tumour usually gets in to the body through small wounds. Some families of animals seem to get skin tumours more often than others.

Skin tumours are sometimes caused by *viruses* [*Papavovirus*].

Treatment and control

You cannot treat most tumours.

Some tumours do not spread to other parts of the body (these are called *benign* tumours). Skilled workers sometimes remove these tumours.

Some tumours spread to other parts of the body (these are called *malign* tumours). It is not worth operating to remove these because they come back in other parts of the body.

- Skilled workers can make *vaccines* for some skin tumours from the tumours themselves. They usually inject the vaccine into or under the skin and give another injection two weeks later. These vaccines often work. Other medicines are not very effective.
- Some people cut or pull skin tumours off or tie a thread around the base of the tumour. These treatments do not work well. They can cause more tumours to grow.
- If a tumour has open sores on it, treat it with an antibiotic to stop infection. Use antibiotic powder or wound dressing (p. 324).

Many tumours fall off after 3–18 months with no treatment. This is why some people claim they can make tumours go away and even ask for money to do this.

Sweating sickness

This disease does not usually happen in Asia. It happens in Africa south of the equator. Only **very young cattle** get *sweating sickness*.

Signs

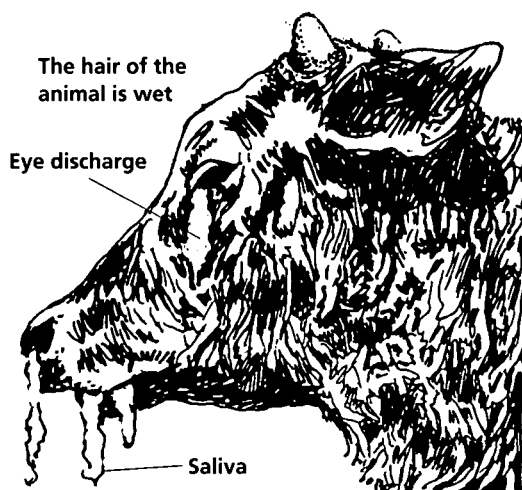
Animals become sick 5–10 days after they are bitten by *ticks*.

- ◆ The head and the rest of the body becomes wet.

- ◆ Much *saliva* comes from the mouth and a clear *discharge* comes from the eyes and nose. The *mucous membranes* are red.
- ◆ The animals look weak and tired and have a high *fever*. Some die after 1–7 days with no treatment.

How animals get sweating sickness

They get it when they are bitten by *ticks* [*Hyalomma*]. This disease is not an infection, it happens because sometimes the *saliva* of ticks is poisonous.



Treatment and control

- Remove the *ticks* (p. 108) as quickly as possible.
- Give an antibiotic (p. 328) to treat *bacterial* infection.
- Control the disease by controlling *ticks* (p. 105).

Worm nodules, Onchocercosis

Cattle, buffaloes, horses, mules, donkeys and camels can get *worm nodules*.

Signs

- ◆ Animals have small lumps (called nodules) just under the skin. The lumps are full of *worms* and *worm larvae*.
- ◆ **Cattle** usually have lumps on the legs, around the genitals, on the neck and between the front legs.
- ◆ **Horses** usually have lumps near the feet and on the neck.

Skilled workers can check a piece from one of the lumps for these worms with a microscope.

How animals get worm nodules

Midges and flies get infected when they feed on these lumps. They spread the worms to healthy animals they bite.

These worms are thin white *roundworms* (about 20 cm) [*Onchocerca*].

Treatment and control

- Ivermectin works well, other medicines are less effective (p. 337).
- Try to control flies (p. 103) that spread the worms.

21 Diseases and problems mostly to do with lumps and swellings

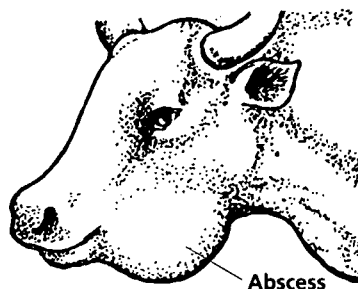
This chapter looks at some common reasons for lumps and swellings but there are others. See the last chapter on diseases and problems mostly to do with skin such as *allergy* (p. 162), *lumpy skin disease* (p. 176), *worm nodules* (p. 185), and *skin tumours* (p. 183).

Abscesses

All animals can get *abscesses*. They usually happen on the skin where there has been a wound but some diseases cause abscesses under the skin or deep inside the body.

Signs

- ◆ Abscesses often start as hard, hot swellings then become softer. The lumps are full of *pus*. You cannot make them smaller by gently squeezing them (unless they burst).
- ◆ Some abscesses feel hard, the skin over them is tight because they have so much *pus* in them. They often become soft and burst, releasing pus. An abscess often has a dark patch with no hair on it where the skin becomes thinner at the place where it will burst.



Other diseases that look like this:

Haematoma (p. 187); *hernia* (p. 188); *skin tumour* (p. 183).

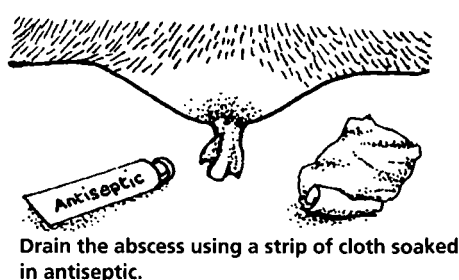
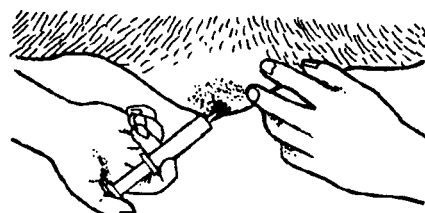
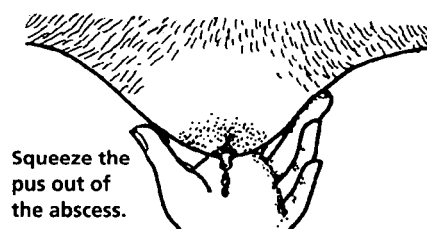
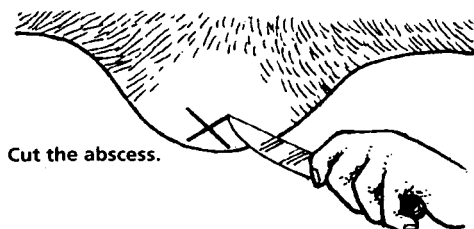
Treatment

Abscesses often burst and heal with no treatment. There is no need to give antibiotic injections to animals with abscesses unless they have a *fever* or are sick. Antibiotics can stop abscesses becoming soft and bursting. They can make an abscess grow a thick wall around itself and stay for a long time.

- If an abscess is not soft and ready to burst, hold a cloth soaked in hot water over it for a few minutes several times a day until it becomes softer and ready to burst. Or put a *poultice* (p. 327) onto an abscess to make it burst. Or wait till it is soft and cut into it to drain *pus* out of it.
- Make an X-shaped cut into the abscess at the lowest point so that pus can drain out easily. Squeeze it till pus stops coming out. Sometimes clean blood comes out after the pus. This is a good sign that you have drained all the pus.
- When you have squeezed out all the pus, wash out the abscess. Use an old syringe, without a needle, filled with clean water or antiseptic (p. 324) to wash out any pus that is left. Washing the abscess out two or three times is usually enough.

- Some abscesses need to drain for a few days before all the pus comes out. To stop the hole you have made from closing, soak a long strip of cloth in antiseptic and push it through the hole. Leave a short piece hanging out. Pull a short length out every day until the abscess has drained.

- Wash your hands after treating abscesses and clean any equipment you have used.



Camels

Camels often get abscesses in the *lymph nodes* at the base of the neck. They also get them on the hump, the shoulders or on the back legs. Some of these abscesses are large and much pus comes from them.

Abscesses inside the body:

Camel herders in East Africa say their camels also get abscesses deep inside the body that make the camels sick. They call this disease 'Mala' It is difficult to treat.

Antibiotics do not always work and can make the problem worse or go on for longer.

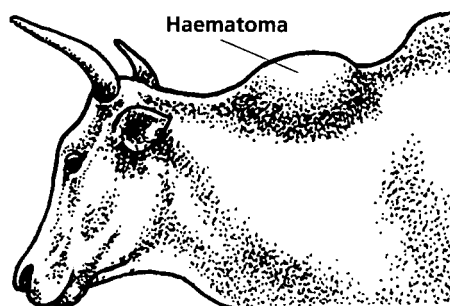


Haematoma

All animals can have *haematomas*.

Signs

- ◆ Animals have a lump under the skin after they are injured, e.g. by a kick.
- ◆ The swelling is soft and grows for a few hours – possibly a few days after the injury; it may become very large. You cannot make the swelling smaller by squeezing it gently.
- ◆ The animal shows no pain if you handle the swelling.



How animals get haematomas

The lump is full of blood. The injury has made the animal bleed under the skin.

Treatment

- Pour cold water over the swelling soon after it happens to help stop the bleeding inside. Otherwise leave these swellings alone. They become smaller and harder and usually disappear after 2–4 weeks. Sometimes the animal has a small hard lump for life but it is harmless.

Pour cold water
on to a
haematoma.



- If the swelling is large and on a part of the body that annoys the animal, skilled workers can drain the swelling. They wait a few days for bleeding inside the animal to stop, then cut into the lowest part of the swelling. But infection can get into the cut and the animal sometimes needs an antibiotic (p. 328).

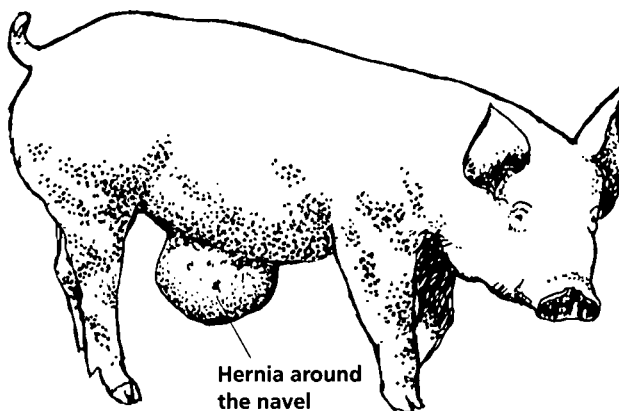
Hernia

Any animal can have a *hernia*.

Signs

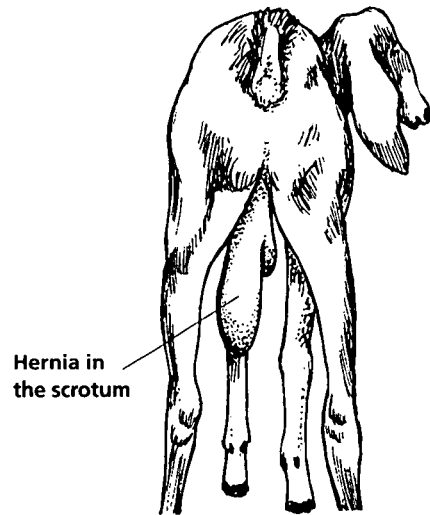
Hernia around the navel:

- ◆ Hernias often appear as a swelling around the *navel* of a very young animal. The swelling is full of parts of the *intestines* that have come through the hole where the *umbilical cord* comes out.
- ◆ You can usually push the contents of the swelling back through the hole by squeezing it gently but the swelling soon comes back again.
- ◆ Sometimes another animal licks a swelling like this and makes it worse. The skin sometimes breaks and intestines come out.



Hernia in the scrotum:

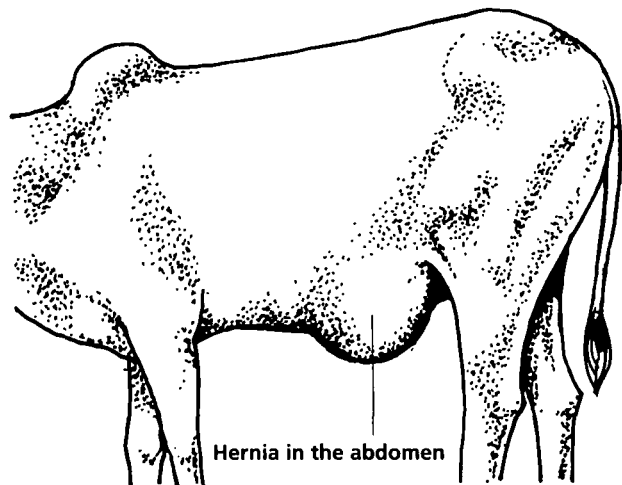
- ◆ One side of the *scrotum* becomes swollen, sometimes it is very large. Young pigs or goats often have hernias like this.



Hernia in the scrotum

Hernia in other parts of the body:

- ◆ Hernias sometimes happen around the abdomen, especially after an injury, for example, by another animal's horn. The swelling can be very large.



Hernia in the abdomen

Other problems that look like this:

Abscesses around the *navel* are full of *pus*. You cannot make them smaller by squeezing them gently.

How animals get hernias

A hernia happens when a layer of muscle breaks and some of the body contents, such as part of the *intestine*, come out through the hole and form a lump under the skin or in the *scrotum*.

Treatment

- Small hernias at the *navel* usually disappear as an animal grows.
- Skilled workers can operate to treat a hernia by pushing its contents back into the abdomen and stitching the broken muscles back together. But this is difficult and expensive. If the swelling is very large or the *intestines* have come out through the skin, kill the animal for meat.

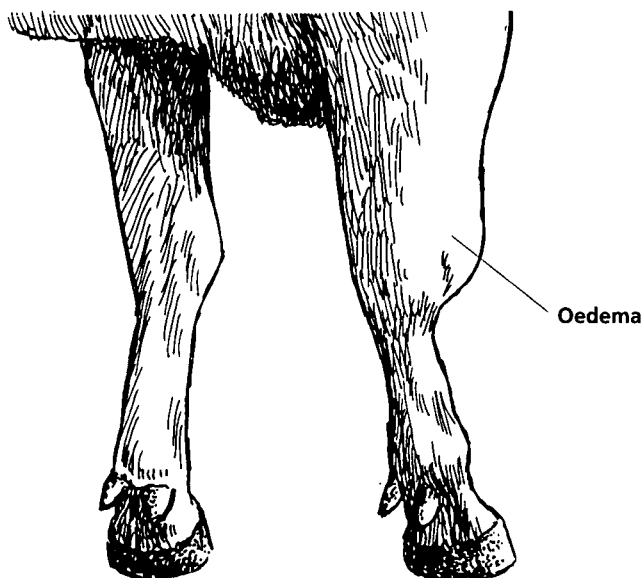
Always check before you castrate an animal that the *scrotum* is not swollen. If it is swollen **do not castrate the animal. It is dangerous.** The intestines inside the hernia will fall out and the animal will die. Skilled workers rarely repair these hernias; it is difficult.

Oedema, large areas of swelling

Any animal can have *oedema* – a large area of swelling under the skin.

Signs

- ◆ Animals have swelling on the lower parts of the body, often under the jaw, under the abdomen or in the legs.
- ◆ Oedema under the jaw is often a sign that an animal has *worms* (p. 218) or *liver fluke disease* (p. 285).



How animals get oedema

It is often part of the body's reaction to infection. The body produces a lot of fluid that gathers under the skin and becomes a swelling that may spread over a large area of the body, especially the lower parts of the body.

Treatment

The only way to treat this kind of swelling is to treat the disease that causes it.

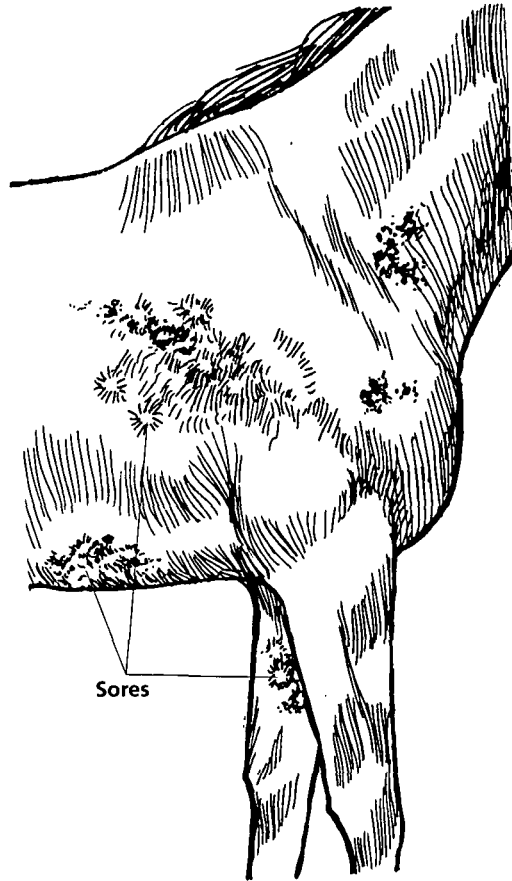
Epizootic lymphangitis

This disease happens in Africa north of the equator and in Asia. Only **horses, mules and donkeys** get *epizootic lymphangitis*. **Donkeys** do not get it often. Some people say **camels** get it occasionally.

Signs

Animals become sick with epizootic lymphangitis 4–12 weeks after they get infected.

- ◆ The animals have small wet sores at places on the skin where the infection gets in. The sores are usually inside the front legs, under the abdomen, around the shoulders and on the neck. Sometimes they are also around the mouth and nose.
- ◆ Lumps appear under the skin near where the sores are. The lumps are swollen *lymph nodes* and vessels that become larger and softer. They burst and much yellow *pus* comes from them. They become deep sores and sometimes several of them join together to become one large sore.
- ◆ Pus comes from these sores for 1–2 weeks then they dry up and have a scab over them. The scab falls off and pus comes from the sore again. The scabs over the sores fall off a few times. And each time the sores get smaller. After 2–3 months the sores heal.
- ◆ Well fed animals that live in hot dry places with much sunshine often recover with no treatment. But sometimes the sores go on for many months and the animals become thin and weak.



In a dead animal lymph nodes under the skin and the lymph vessels between them are large and full of pus.

Other diseases that look like this:

Glanders (p. 197); *ulcerative lymphangitis* (p. 193).

Skilled workers can check the pus from wounds with a microscope to identify this disease.

How animals get epizootic lymphangitis

Animals get infected by direct contact with infected animals or *contaminated* things. They usually get it when many of them live together in one place. They also get it when they are bitten by flies that have fed on an infected animal. Infection gets in to the body through small wounds in the skin that often come from harness that does not fit.

Epizootic lymphangitis is caused by *fungi* [*Histoplasma farciminosum*].

Treatment

- Isolate and treat infected animals as soon as possible.
- You can cut sores out with a knife and dress the wound with antiseptic (p. 324) but treatment often does not work, even when skilled workers do it.

Sometimes the disease seems to go away but it comes back about a year later.

Prevention and control

- Clean anything contaminated by infected animals with strong disinfectant. This disease easily spreads from one animal to another on things.
 - Burn any bedding used by infected animals.
 - Cover the wounds so that flies cannot get to them and spread infection.
 - There is a *vaccine* for this disease but it does not work well.
 - Animals that have had the disease become *immune* and do not get it again.
-

Farcy

Only **cattle** and **buffaloes** get *farcy*.



Signs

- ◆ The animals have lumps full of *pus* under the skin on the neck and between the front legs.



- ◆ The animals do not rub or scratch the lumps.

Other diseases that look like this:

Tuberculosis (p. 205).

How animals get farcy

They get it from close contact with infected animals or from *contaminated* things. Infection gets into the body through small cuts and wounds in the skin.

Farcy is caused by *bacteria* [*Mycobacteria* and *Nocardia*]. Infection with these microbes can confuse tests for *tuberculosis* (p. 205).

Treatment

Medicines do not work. If you cut the lumps open and drain them they usually come back. But treatment may not be needed because the disease does not usually make an animal very sick even when the lumps look bad.

Prevention and control

- Separate animals with farcy from healthy animals if there are only one or two of them. But in some places many animals have farcy and it may not be worth separating them.
- Disinfect things that infected animals have touched.

Ulcerative lymphangitis

Horses get *ulcerative lymphangitis* but it is not common. **Mules** and **donkeys** do not get it so often. **Cattle**, **pigs** and **camels** get it rarely.

Signs

- ◆ Small lumps appear under the skin on the legs, especially near the foot. The animal's legs swell up and feel hot.
- ◆ The lumps become larger and burst and white/yellow/green *pus* comes out. The pus may have blood in it. Hard swellings may appear further up the leg.
- ◆ When the *abscesses* have burst they leave an open sore that heals in 2–3 weeks.



Other diseases that look like this:

Epizootic lymphangitis (p. 190); *glanders* (p. 197).

How animals get ulcerative lymphangitis

Animals get infection through small wounds in the skin. They get it more often when they live in crowded, wet dirty places. Infection can live in the soil for a long time.

Ulcerative lymphangitis is caused by *bacteria* [*Corynebacterium pseudotuberculosis*].

Treatment

- Cut into the *abscess* with a knife to drain the *pus*.
- Scrape out the inside of the hole and wash it out with antiseptic (p. 324). This usually works.
- People in East Africa put the juice from euphorbia trees [*Euphorbia* species] onto the sores to cauterise and disinfect them. But this may distress the animal.
- If the animal does not recover give antibiotic by injection (p. 328).

22 Diseases and problems mostly to do with breathing

Coughing and distressed (noisy) breathing

Even healthy animals cough occasionally, especially if they eat dry dusty food. But **if animals cough often it is a sign of disease**. Animals usually cough (or sneeze) or have noisy breathing because they have infection with *microbes* or *parasites* in the lungs (see *pneumonia* (p. 195)) Sometimes they have *abscesses* (p. 186) in the lungs. They also cough and sneeze when they have *fly larvae* or something, such as a thorn, in the nose (p. 202).

Birds get many diseases with signs of distressed breathing, especially at cold, wet times. Some of these diseases, such as *infectious bronchitis* and *chronic respiratory disease*, are not in this book because it is almost impossible, even for skilled workers, to tell them apart without complicated tests. You will need skilled help to deal with these diseases. But easily **the most likely cause of severe disease with distressed breathing in birds is Newcastle disease (p. 208)**. You cannot treat *Newcastle disease* but you can treat some of the other breathing problems that birds have with antibiotics (p. 328).

Treating distressed breathing

- If an animal with distressed breathing has *fever* and a *discharge* from the nose or eyes, give antibiotics (p. 328).
- If an animal coughs but has no *fever* and no *discharge* from the nose, treat for *lungworms* (p. 200).
- People in Asia put crushed garlic [*Allium species*] in animals' or birds' food to help them recover from breathing problems.

Preventing breathing problems

- Vaccinate animals and birds against important diseases in your area, for example, vaccinate birds for *Newcastle disease*.
- Do not keep too many animals or birds crowded together in one house.
- Do not feed very dusty food, especially to horses; put some water with it.
- Protect very young animals from cold wind and rain.
- Control *lungworms* (p. 201).
- Be careful when giving medicine by mouth that it does not go down the *trachea* into the lungs.

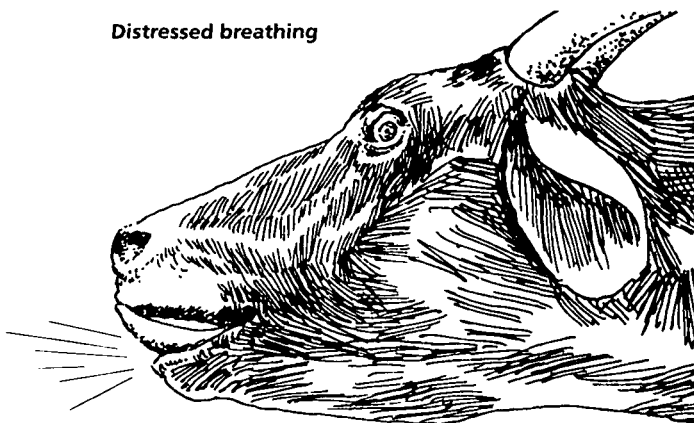
Pneumonia

All animals can get *pneumonia*. Any infection in the lungs is called pneumonia. (Infection in the *bronchi* is called *bronchitis*.) Animals get it most when they are weak, poorly fed or kept in small houses with little fresh air on dirty wet bedding. Pneumonia is a sign of many severe diseases. Animals also get pneumonia when they have been given liquid medicine by mouth that went into the *trachea* by mistake.

Signs

- ◆ Animals cough, have fast distressed breathing and often have a *discharge* from the nose. They usually have a *fever*.
- ◆ Animals with severe pneumonia often breathe through the mouth as well as the nose. They make a grunting sound with each breath because they feel pain in the chest.
- ◆ They seem to fight to get air and may stretch their necks out, trying to get air.

Distressed breathing



In a dead body the lungs are dark coloured. There is often fluid in them and they are heavy. Cut off a piece and drop it into some water – normal lung floats, lung from animals with pneumonia usually sinks.

Treatment

- **Make sure that animals have plenty of fresh air.**
- Antibiotics (p. 328) often work well. They stop infection by *bacteria* even when pneumonia is caused by *viruses* or *parasites* that antibiotics do not kill.
- In cool, wet areas, animals that cough a lot and have much watery *discharge* from the nose and mouth may have *lungworms* (p. 200). Give them *worm medicine* (p. 336).

Contagious bovine pleuropneumonia, CBPP

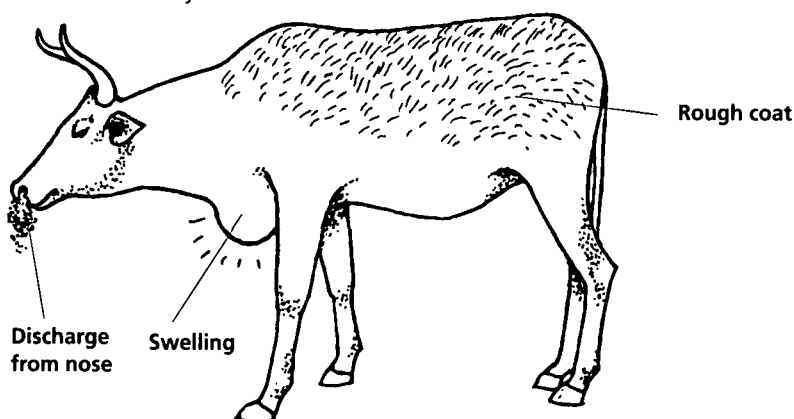
Cattle and **buffaloes** get *CBPP*.

Signs

Animals become sick about a month after they get infected with *CBPP*.

- ◆ With **severe disease** that happens fast animals have a high *fever*. They are tired and weak. They soon stop eating and their coats become rough.

- ◆ They have fast and distressed breathing. They cough. Often they grunt with pain as they breathe out. Cattle very sick with CBPP stand facing the wind. They have their front legs wide apart and stretch their head forwards. They are trying hard to get more air into their lungs.
- ◆ Sometimes when the disease is very severe a thick yellow *discharge* comes from the nose. And there is swelling under the chest.
- ◆ Some animals with very severe disease die.



- ◆ With **mild disease** that often goes on for a long time, animals have few signs. But if you disturb the animals when they are resting, they often begin coughing.

Carrier animals:

Many animals recover from CBPP. Animals that recover seem healthy but they are dangerous *carriers* of CBPP. Often they still have infection deep in their lungs. They can become sick again many months later. Some people call these animals 'lungers'; they can breathe infection out into the air and infect others.

How animals get CBPP

They get infected through the air from the breath of other animals. Animals usually get the disease when many of them are kept close together at night. They easily catch CBPP from each other. Large groups of cattle that are *stressed* are most likely to suffer.

CBPP is caused by microbes like small *bacteria* [*Mycoplasma mycoides mycoides*].

Treatment

It is best not to treat cattle for CBPP. When you treat animals for CBPP with antibiotic they recover but still carry infection. These carrier animals ('lungers') make it difficult to get rid of the disease completely.

Prevention and control

Many countries where CBPP is common have control programmes (p. 93) for it. Work with these programmes to help get rid of the disease. *Vaccines* against CBPP are used in control programmes. Control programmes usually start with vaccinating twice in one year, then once every year. Some strong vaccines cause bad reactions but weaker vaccines do not protect animals for long. In areas where CBPP does not usually happen programmes often aim to control the disease, if it happens, by killing infected animals and those in contact with them.

Contagious caprine pleuropneumonia, CCPP

CCPP happens in Africa north of the equator and in parts of Asia. **Goats** and occasionally **sheep** get CCPP.

Signs

Usually many animals are sick at the same time. They become sick 20–30 days after they get infected with CCPP.

- ◆ Some animals die before they have signs of disease.
- ◆ **With severe disease** that happens quickly; animals cough and have a *discharge* from the nose. They have distressed breathing. They are weak and tired and have a high fever.
- ◆ Many goats die after 4–5 days.
- ◆ **With mild disease** that goes on for a long time animals cough and have a *discharge* from the nose.
- ◆ Some animals have diarrhoea. They become thin and look very sick. Most animals recover slowly but some become very sick and die.

In a dead animal the lungs are very dark. They have some yellow *pus* on them. Often they stick to the side of the chest and the chest has much yellow fluid in it.

How animals get CCPP

They get it from close contact with infected animals. Infection comes from discharges from the noses of infected animals. Animals often carry infection but have no signs of disease.

CCPP is caused by *mycoplasmas* [*Mycoplasma* species] – they are like small *bacteria*.

Treatment

In an area where people are trying to eradicate CCPP it is best not to treat it because treatment makes some animals into carriers. In these areas it is better to isolate or kill sick animals. But if you are not trying to eradicate the disease you can treat CCPP.

If you think an animal has CCPP start treating all the animals in its group as soon as possible. Antibiotics often work when treatment starts soon enough. They can stop healthy animals in contact with sick ones from getting disease. Tylosin (p. 333) works well but you can also use tetracycline (p. 333).

Prevention and control

- *Vaccines* for CCPP are effective in some areas but not in others.

Glanders

The disease happens mostly in Asia, especially in Mongolia. It happens occasionally in West and Central Africa. **Horses, mules and donkeys** get *glanders* most often. Other animals get it occasionally. **People** rarely get *glanders* (p. 6).

Signs

Animals become sick with glanders 2–25 weeks after they get infected.

When the disease happens quickly, usually when **mules** and **donkeys** get it, the signs are:

- ◆ The animals have distressed breathing. They cough and have a *discharge* from the nose. They sneeze out the discharge from time to time.
- ◆ They have swollen *lymph nodes* under the jaw. They have a *fever*.
- ◆ Some animals die after two weeks.

When the disease goes on for a long time, usually when **horses** get it (this is more common), the signs are:

- ◆ The animals cough and a clear *discharge* comes from the nose. The discharge becomes thick and grey/yellow. Sometimes it is red/brown with blood in it.
- ◆ Animals may have lumps inside the nose and on the skin around the neck. Thick grey/yellow *pus* comes from these lumps when they break.
- ◆ The animals look weak and tired and become thin. They have a *fever* that comes and goes.
- ◆ Most animals die eventually.

In a dead animal there are small lumps (about 1 cm) in the lungs and sometimes in the liver.

Other diseases that look like this:

Epizootic lymphangitis (p. 190); *strangles* (p. 204).

How animals get glanders

They get glanders from water or food *contaminated* by animals with glanders. They also get it from contaminated saddles and harnesses. Dogs get it by eating meat from dead animals with glanders.

Glanders is caused by *bacteria* [*Pseudomonas mallei*].

Treatment

No treatment is effective.

Prevention and control

- Immediately isolate animals you suspect have glanders.
- Do not let them drink from the same water bowls as healthy animals.
- Be careful not to spread glanders from sick animals to healthy ones on food, ropes or other things.
- Kill animals with glanders as soon as possible. They are unlikely to recover. The disease spreads easily and there is no treatment so this is the only way to control it.
- Some governments try to eradicate glanders. It is possible to eradicate glanders.
- Skilled workers test animals for infection with a small injection into the skin under the eye. They kill animals that carry glanders.
- Wash yourself carefully after handling animals with glanders.
- It is best not to eat meat from animals with glanders.

Heartworm, *Dirofilariosis*

Dogs get *heartworm*. **People** get heartworm rarely (p. 6).

Signs

- ◆ The dog has distressed breathing and coughs.
- ◆ It is weak and easily becomes tired.
- ◆ It stops eating and may vomit.
- ◆ It cannot walk normally.
- ◆ Sometimes a dog has pale *mucous membranes*.
- ◆ Later the dog has a swollen abdomen and swelling under the skin.
- ◆ Skilled workers can look for heartworms in a fresh *blood smear*.

How animals get heartworm

Mosquitoes get heartworms from infected animals and spread them to animals they bite. The disease happens most in hot, wet places. Heartworms are thin white *roundworms* (30 cm) [*Dirofilaria immitis*]. They live inside the heart and in large *veins* and *arteries* near the heart.

Treatment and control

Treatment for heartworm is effective but needs skilled help. The medicines used, such as levamisole or tetracyclines, kill *worms* that live in the blood. Sometimes dead worms go into the heart and stop it working so the animal dies. It is difficult to protect dogs against heartworm. Give diethylcarbamazine (5.5 mg/kg by mouth) every day for a week every six weeks while there are many mosquitoes and for another two months. Or give ivermectin once every month when there are many mosquitoes.

WARNING

Some dogs are poisoned by ivermectin (p. 337).

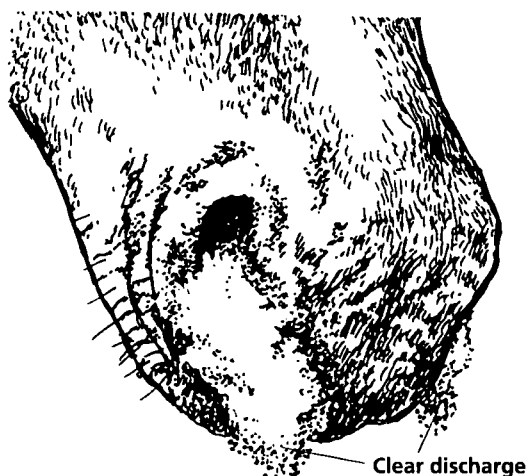
Influenza

Horses, birds and rarely **pigs** get *influenza*.

Signs

Animals become sick 1–4 days after they get infected with influenza.

- ◆ They have a high *fever*.
- ◆ **Horses** have a clear *discharge* coming from the nose. The discharge soon becomes white/grey/yellow. They have a loud cough.



- ◆ **Pigs** have distressed breathing. They sneeze and cough. A clear *discharge* comes from the eyes. Most recover in 1–2 weeks with no treatment.
- ◆ **Birds** with influenza have the same signs as birds with many other diseases that have signs to do with breathing (p. 128).

Other diseases that look like this:

Many diseases that have signs to do with breathing look the same (p. 128).

How animals get influenza

They get infection through the air when they are close to infected animals.

Influenza is caused by *viruses* [*Influenza Type A*].

Treatment, prevention and control

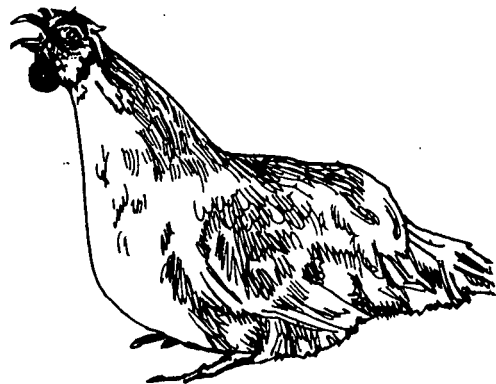
Vaccination is not usually worthwhile except for **horses**. Vaccination of horses is effective. Vaccinate animals twice, three months apart. Then vaccinate them every six months.

Lungworms, Parasitic bronchitis

Only animals that live in cool, wet places get *lungworms*. **Cattle, sheep, goats** and occasionally **horses, mules, donkeys** and **pigs** get lungworm disease, especially when they are young.

Signs

- ◆ Animals have distressed breathing and cough.
- ◆ They do not grow normally.
- ◆ They do not have a *fever*.
- ◆ **Sheep** and **goats** are usually sick for a long time. They cough and have fast distressed breathing with a clear/white *discharge* from the nose. They do not have a *fever*.
- ◆ **Horses** often get lungworm disease but **donkeys** do not usually suffer much. (Horses can get lungworms from donkeys.)
- ◆ **Birds** have distressed breathing and cough and gasp to get air. Some birds die because they cannot breathe.



- ◆ Skilled workers look at faeces with a microscope to check for lungworm.

In a **dead animal** the *trachea* and *bronchi* have *worms*, *mucus* and some blood in them. **Birds** have bright red (2 cm) worms in the trachea.

Other diseases that look like this:

Pneumonia (p. 195).

How animals get lungworm disease

They get it from *lungworm larvae* on pasture. Lungworm larvae come from the faeces of animals with lungworms. An animal eats the larvae when it grazes and they go into the *intestines*. The larvae dig through the intestine and go through the body into the lungs to become adults about a month after the animal ate them. The adult lungworms (5–10 cm) live in lungs or *trachea* and produce eggs that develop into larvae which the animal coughs out onto the ground. The animal also swallows some larvae, these come out in the faeces. One animal can *contaminate* the pasture with many millions of larvae that develop on the ground and can infect other animals after about a week.

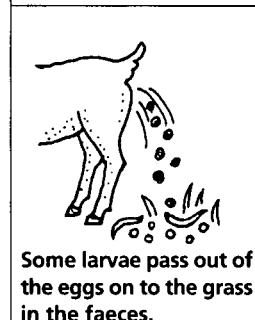
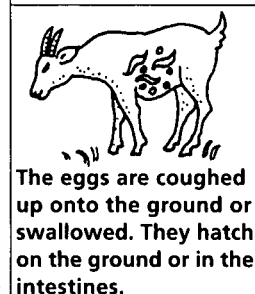
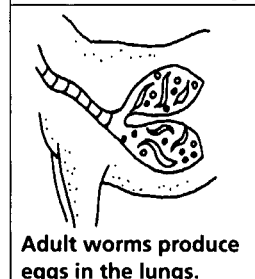
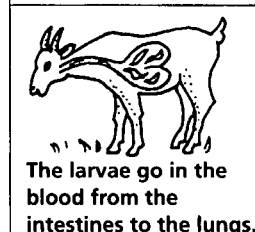
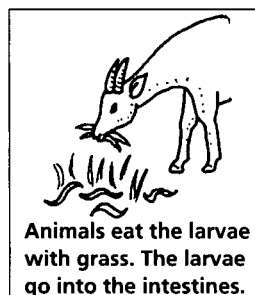
Lungworm disease is caused by types of *roundworms* [*Dictyocaulus* and others].

Treatment

- Treatment is not effective after the disease has become severe. But many *worm medicines* (p. 336) work if you give them soon enough.
- When you treat animals for lungworm disease, move them away from pasture contaminated with lungworm larvae. Preferably move them to dry pastures.

Prevention and control

- To control lungworms give worm medicine, e.g. levamisole (p. 337) three times, three weeks apart. Give the first medicine as soon as animals go to pasture that might have lungworm larvae on it.
- **Cattle, sheep and horses** get different kinds of lungworms so it is safe to move one of these kinds of animal on to pastures grazed by another kind.
- Keep young animals separate from adults that have or have just had lungworms.
- Some people breed animals, especially sheep, that are *resistant* to some worms.
- Prevent lungworms as you do *roundworms* (p. 94).

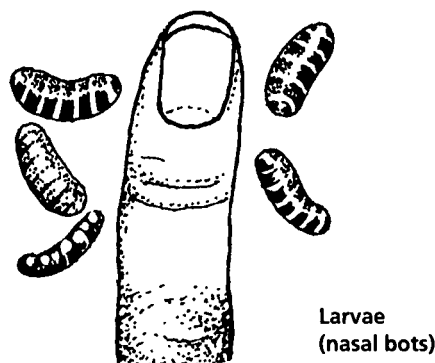


Nasal bots

Horses, camels, sheep and goats get *nasal bots*.

Signs

- ◆ Animals sneeze and some have a grey/white/yellow *discharge* from the nose.
- ◆ They sneeze *larvae (bots)* out onto the ground.



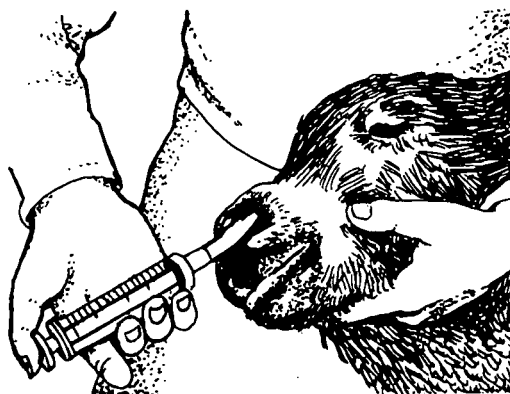
How animals get nasal bots

Nasal bot flies lay eggs in and around an animal's nose. The eggs become *larvae* (1 cm) inside the nose. They fall to the ground when an animal sneezes, and develop in the soil into new adult flies. The flies that cause this are:

Horse [*Rhinoestrus*], **Sheep/goat** [*Oestrus ovis*], **Camel** [*Cephalopina titillator*].

Treatment and control

- Many insecticides kill nasal bots (p. 339). Give them by injection or use an insecticide spray up the nose.
- People in Kenya push insecticide mixed with water up the nose with a tube attached to a syringe.
- **Horses** Scrape off any bot fly eggs around the nose.



An insecticide is given using a syringe with a tube

Pasteurellosis

Cattle, sheep, goats and **pigs** get *pasteurellosis*. **Cattle** and **buffaloes** also get a very severe type of pasteurellosis called *haemorrhagic septicaemia* (p. 283).

Signs

Animals usually become sick 7–10 days after they get infected. Many animals in a group usually get this disease at the same time. The disease spreads fast. Animals out at pasture do not get this disease so often.

- ◆ Some animals stop eating and look tired and weak; they have a high fever.
- ◆ They often cough a lot and have distressed breathing that becomes worse.
- ◆ Some animals collapse and die in a few hours.
- ◆ Other animals are sick for several days.
- ◆ They lose weight and become thin and weak. Sometimes they have a swollen abdomen.
- ◆ They grind their teeth.
- ◆ Their breathing is often rapid but weak.
- ◆ They usually have diarrhoea.
- ◆ They die after 5–6 days if they are not treated.

In a dead animal both lungs have dense red/grey patches in them. The airways have mucus in them. Animals that were sick for several days have yellow fluid in the chest and in the sac around the heart.

Other diseases that look like this:

CBPP (p. 195), *pneumonia* (p. 195).

How animals get pasteurellosis

Animals get pasteurellosis from close contact with other animals. They get it by breathing in infection from other animals. They usually get it when they are kept close together, especially when they are kept in hot, damp buildings without much air. This often happens when animals are transported. (Some people call this disease *shipping fever*.) Animals also get pasteurellosis when they suffer *stress* for other reasons.

Pasteurellosis is caused by *bacteria* [*Pasteurella multocida/haemolytica*].

Treatment

- Many antibiotics are effective (p. 328).

Prevention and control

- Avoid keeping animals in hot, damp, overcrowded conditions. Be sure that animals in ships and vehicles have plenty of air.
- There are dead *vaccines* for pasteurellosis. You need to vaccinate every year and vaccines are not always effective. Good vaccines should be made from the type of *bacteria* that cause disease in your area.
- Animals that have had pasteurellosis are *immune*, but only for a few months.

Snoring disease

Snoring disease only happens in the Indian sub-continent. **Cattle, buffaloes and horses** get snoring disease.



Signs

- ◆ The animals have noisy, distressed breathing and a white/yellow/grey *discharge* comes from the nose.

How animals get snoring disease

Animals get infected with *blood flukes* from water snails. They get infected through the skin or from drinking the water where infected snails live. Animals can get the disease from snails that people have infected. The disease usually happens in places where there is water all year round.

Snoring disease is caused by *blood flukes* [*Schistosoma*] (p. 222).

Treatment

- Metrifonate, Trichlorphon, Praziquantel – an expensive medicine used for people with bilharzia – and other medicines are effective (p. 338). **Some of these medicines are dangerous for the animal.**

Prevention and control

- Control *blood flukes* in the same way as you control *liver flukes* (p. 99) by avoiding wet places where there are many snails that carry the *parasites*.

Strangles

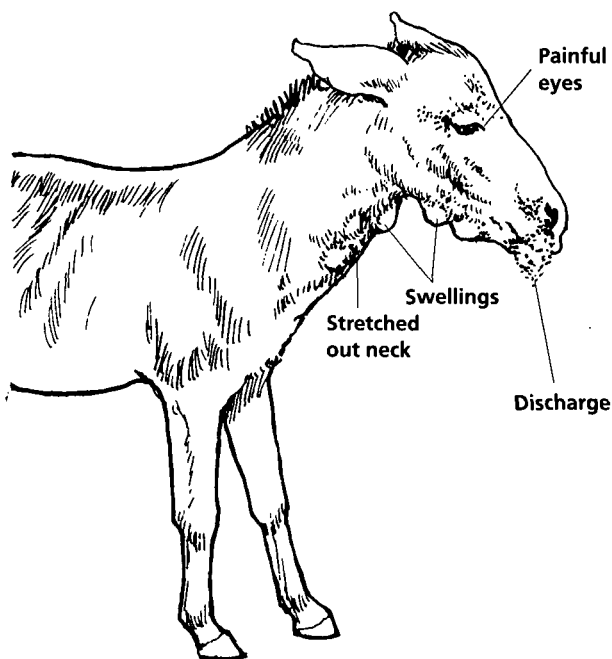
Horses, mules and donkeys get *strangles*. Young animals get it most often, especially when many of them are crowded together.



Signs

Animals become sick 4–8 days after they get infected with strangles.

- ◆ The animals stop eating.
- ◆ They have a *fever*.
- ◆ They have a watery *discharge* coming from the nose. The discharge soon becomes thick, white/yellow.
- ◆ Some animals have painful eyes and try to avoid bright light.
- ◆ They cough and sneeze and stretch their heads out.
- ◆ Their breathing is very noisy.
- ◆ Food and water sometimes come back through the nose.
- ◆ There are swellings under the jaw and around the neck. These swellings are *lymph nodes* that have *abscesses* in them. The swellings burst after 1–2 weeks. Thick white/ yellow *pus* comes from them.
- ◆ Most animals are sick for 3–4 weeks. They recover but they are thin and weak. A few animals die if they are not treated. Some animals seem to recover. But they become sick again months later if the animal suffers *stress*.



How animals get strangles

They get it from close contact with infected animals. They also get it from pasture and things that infected animals have *contaminated*. Infection comes from *abscesses* and *discharges* from the nose of infected animals.

Strangles is caused by *bacteria* [*Streptococcus equi*].

Treatment

- Isolate and treat animals as soon as possible.
- Give an antibiotic (p. 328).
- People in Senegal use aromatic leaves of the *Boscia senegalensis* tree. They chop the leaves and put two handfuls in a bag for the animal to breathe (p. 350). The smell of these leaves make the animal produce more mucus from the nose and this helps the animals to recover. **But the leaves are poisonous and they do not let the animal breathe from the bag for more than 5 minutes.**
- Skilled workers can cut open the *abscesses* to let the *pus* out (p. 186). You can do this but be careful. **It is dangerous to the animal because the abscesses are often close to important veins, arteries and nerves.**

Prevention and control

- Clean and disinfect places where infected animals have been.
- Vaccination for strangles is effective.

Tuberculosis

Cattle, buffaloes and **camels** get *tuberculosis*. Cattle kept out at pasture all the time do not often get tuberculosis. **Sheep, goats** and **horses** rarely get tuberculosis. **Birds, pigs** and other animals sometimes get different types of tuberculosis. **People** can get tuberculosis (p. 6).

Signs

Animals become sick with tuberculosis several years after they get infected. So animals with signs of tuberculosis are usually old.

- ◆ Older animals start to cough occasionally, then they cough most of the time. They have a dry cough at first then they cough up white/yellow mucus. This mucus is very infectious.
- ◆ They lose weight and become thin.
- ◆ Some of the *lymph nodes* under the skin swell up. You can see and feel these, especially on the neck and the front legs.
- ◆ Animals sometimes have enlarged udders that feel hard and lumpy and the milk may become yellow, with *pus* in it.
- ◆ Animals become thin and weak then they die after a long time.
- ◆ **Birds** get tuberculosis but they are often not very sick. Some older birds become thin. They sometimes have pale or yellow combs. A few birds become lame. A few birds die suddenly with no sign of disease.

In a **dead animal** there are usually hard swellings with pus inside them – *abscesses* – inside the body. Sometimes there are only one or two. Sometimes there are many small abscesses in the chest and abdomen.

Other diseases that look like this:

Farcy (p. 192).

How animals get tuberculosis

They get it from close contact with infected animals. They usually get it when they are close together in a building. Baby animals get it from drinking infected milk. Animals that live out on pasture all the time rarely get tuberculosis.

Camels rarely get tuberculosis except when they live close to infected cattle. Tuberculosis is caused by *bacteria* [*Mycobacterium*].

Treatment

There is no treatment for tuberculosis.

Prevention and control

- There is no vaccine for cattle with tuberculosis.
- When animals are kept in houses, make sure:
 - They are not too crowded.
 - There is enough fresh air.
 - The house is cleaned out often.
 - The animals are properly fed.
 - Clean and disinfect houses where infected animals have been.
- It is best not to eat the meat from an animal with tuberculosis. But sometimes people are very hungry. If there are only a few *abscesses* and you can see them clearly, carefully cut them out without opening them and dispose of them before cooking the meat properly and eating it. If there are many abscesses spread though the body, dispose of the whole body. **DO NOT EAT IT, it is dangerous.**

Testing for tuberculosis

In some countries there are control programmes for tuberculosis. Work with these programmes to help control the disease. The only way to control tuberculosis in cattle is to test them for infection and to dispose of infected animals. Skilled veterinary workers can test for infection by giving small protein injections into the skin on the neck or near the base of the tail. After three days they look at the place where these injections were put to see if they are swollen. If the skin has reacted by swelling the animal has probably got tuberculosis or has been in contact with it.

Avian coryza

Chickens and other **birds** get this disease.

Signs

Birds become sick 1–10 days after they get infected with avian coryza.

- ◆ The birds have distressed and noisy breathing (see p. 128). They sneeze and have a *discharge* from the nostrils. The discharge is clear then it is white/yellow and smells bad.
- ◆ The birds shake their heads and stretch their necks out. They have a discharge from the eyes and have swelling around the head.
- ◆ They stop laying eggs.
- ◆ Birds with mild disease have a clear discharge from the beak and cough and sneeze occasionally.

Other diseases that look like this:

Newcastle disease (p. 208).

How birds get avian coryza

They get it from *contaminated* water and food. They also get it from birds with the disease and from birds that carry infection but are not sick.

Avian coryza is caused by bacteria [*Haemophilus* and others].

Treatment and control

- If there is much swelling around the head give an antibiotic (p. 328).
- Keep birds in clean conditions and make sure they are well fed. Give them plenty of clean water.

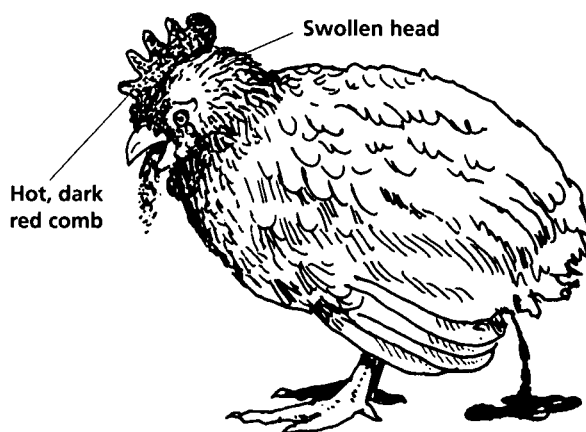
Fowl cholera, Pasteurellosis

Chickens, ducks and many other **birds** get *fowl cholera*.

Signs

Birds become sick 2–10 days after they get infected with fowl cholera.

- ◆ **With severe disease** that happens fast; some birds die suddenly before they look sick.
- ◆ Many birds are tired and weak. They do not eat much. The feathers look rough. Sometimes the head is swollen. The comb and wattle are hot and dark red.



- ◆ They have fast, distressed breathing. They cough and sneeze. A clear/yellow *discharge* comes from the eyes and beak. This makes breathing difficult.
- ◆ Many birds have severe watery green/grey/yellow diarrhoea. The feathers around the tail become dirty with faeces.
- ◆ Many birds die after 2–3 days.
- ◆ **With mild disease** that goes on longer (usually male birds), the comb and wattle often become pale. A clear discharge comes from the beak. There is swelling around the eyes.

Other diseases that look like this:

Newcastle disease (below); *salmonellosis* (p. 235); *avian coryza* (p. 207).

How birds get fowl cholera

They get it from contact with sick birds or from water and things *contaminated* by infected birds. Sometimes wild birds bring the infection.

Fowl cholera is caused by *bacteria* [*Pasteurella multocida*].

Treatment

- It is usually not effective to treat birds that have already got signs of the disease.
- Move healthy birds away to a clean place and treat them. Or remove the sick birds and treat the others.
- Give an antibiotic in the food or water for a few days (p. 315).
- You can try to treat valuable birds by injecting antibiotic into the muscle (p. 328), but it does not often work.

Prevention and control

- If the birds live in houses make sure the houses are kept clean.
- Make sure birds have clean water to drink. Avoid giving them water that has been *contaminated* by other birds.
- Empty any house where sick birds have been. Clean it and disinfect it.
- *Vaccination* for fowl cholera is effective. But you need skilled help to decide if this disease is causing the problem, then you need to vaccinate the birds every year.

Newcastle disease, Fowl pest

Chickens and other tame and wild **birds** get *Newcastle disease*. **It is the most important disease that village poultry get.**



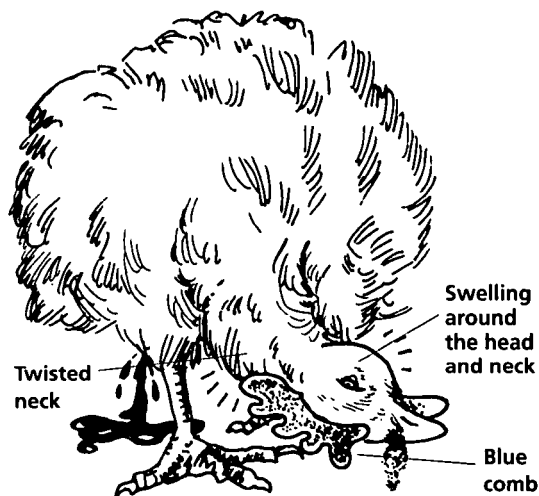
Signs

Usually many birds in one place get Newcastle disease at the same time. Sometimes it is **very severe**, especially for young birds:

- ◆ Many birds die suddenly before they have signs of disease. Often nearly all the young birds in one place die but only a few adults die.

Sometimes the disease is a little **less severe**:

- ◆ The birds stop eating and become weak and tired.
- ◆ They stop laying eggs.
- ◆ They have watery green diarrhoea and become *dehydrated*.
- ◆ They cough and sneeze and a *discharge* comes from the nostrils.
- ◆ They often have swelling around the head and neck. The comb turns blue.
- ◆ Some birds have a paralysed wing or leg, or have a twisted neck. Sometimes the birds shake.
- ◆ Many birds collapse and soon die.



Sometimes the disease is **mild**:

- ◆ The birds have distressed breathing.
- ◆ They do not eat much and lay fewer eggs than normal

In a dead bird with severe Newcastle disease there are bloody patches in the *intestine*. Some birds have thick yellow air sacs. Most birds have some mucus in the *trachea*.

Other diseases that look like this:

Avian coryza (p. 207); *fowl cholera* (p. 207).

How birds get Newcastle disease

They get it through the air and from eggs, faeces and the dead bodies of infected birds. They often get it from drinking water *contaminated* by faeces from sick birds. Wild birds help spread the disease. Wild animals and dogs spread the disease when they carry away dead infected birds.

Newcastle disease happens most often at the start of a wet season. Wild birds often bring the disease at the same time each year.

Newcastle disease is caused by *viruses* [*Paramyxovirus*].

Treatment

There is no treatment for Newcastle disease. If Newcastle disease happens:

- Kill the sick birds and bury them a long way from healthy birds.
- Keep any birds that have been properly vaccinated but watch them closely for signs of disease. Sell all the birds that have not been properly vaccinated; people can eat them. Do not keep these birds to eat them one by one. They will soon spread disease and die. As soon as they look sick nobody will want to buy them or eat them.
- Clean enclosures and houses where the birds live by clearing away faeces and using disinfectant (p. 324).
- Wait at least four weeks before bringing in new birds and vaccinate them as soon as they arrive.

Prevention and control

- Keep birds away from water *contaminated* by faeces from infected birds.
- Give birds clean water to drink from clean bowls. Refill the bowls often.
- If birds live in houses keep them on slats so that the faeces fall through.
- Don't keep chickens, guinea fowl, pigeons and ducks close together. Some birds, especially pigeons and ducks, carry Newcastle disease even if they do not become sick.
- Some people avoid Newcastle disease by selling or eating their birds at the start of a wet season.

Vaccination for Newcastle disease

Live and dead vaccines are very effective. Some governments give out free vaccine. Use the live vaccine. Dead vaccine is only useful for large groups of laying or breeding birds. (Some people are trying new vaccines that you give in drinking water.)

Most vaccine is freeze dried and needs diluting. Dilute dry vaccine with distilled water. Do not use water from a tap. Put one drop in the bird's eye and one in the nostril. Vaccinate adult birds by injection under the skin under the wing.

Vaccine only lasts for a few hours after you have mixed it with water. There is often enough in one bottle to vaccinate many birds. It is a good idea to get people from villages nearby to come and get vaccine when you dilute it. Then they can take it back to their village while it still effective.

Vaccinate birds when they are 7–10 days old and again two months later. Do this before the start of a wet season. Newcastle disease vaccine protects birds for about six months. People often vaccinate birds every three months because new chicks are always hatching and they are not sure which birds have been vaccinated.

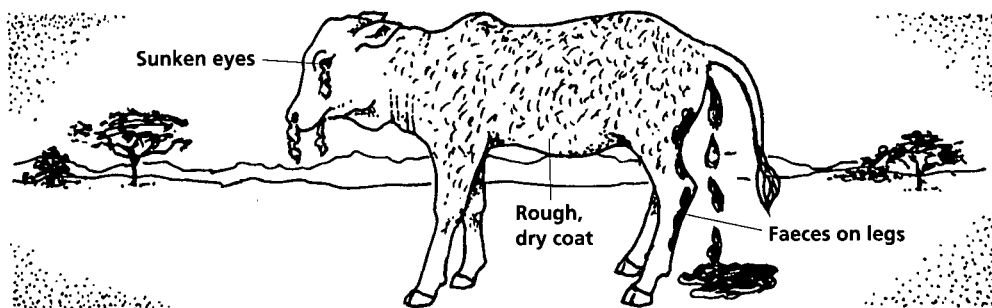
Some people use traditional methods of vaccination but modern vaccines are cheap, effective and easy to use (p. 353).

23 Diseases and problems mostly to do with eating and digestion

The diseases and problems looked at in this chapter are the most common ones but other problems also have signs to do with eating and *digestion*. See also *poor feeding* (p. 45), *liver flukes* (p. 285), *plant poisoning* (p. 306).

Diarrhoea

Animals with *diarrhoea* have watery faeces and pass them often. Sometimes the faeces are an unusual colour and smell foul. There is sometimes blood in the faeces. The back legs are dirty with faeces. Diarrhoea is a common sign of many diseases, especially *worms* (p. 218) or *flukes* (p. 285). See page 130 for a guide to more of these diseases.



Problems to do with diarrhoea

- Animals become *dehydrated* (p. 267) if diarrhoea goes on for long. They become weak and do not *ruminate*. They have dry skin and a rough coat and their eyes sink into the head.
- Diarrhoea is dangerous for young animals. They quickly lose a lot of water in their faeces and become dehydrated.
- Animals often get diarrhoea when they have worms. It is also a sign of many diseases (pp. 130–3).

Animals often have diarrhoea when:

- Their food suddenly changes, especially when they are weaned from milk.
- They have too much milk or wet, green food or too much of one kind of food, e.g. grain.
- They are infected by *microbes* that they fight off.
- When they suffer *stress*, especially **horses**.
- A new-born horse is about a week old and its mother is in heat.
- Male **camels** sometimes have diarrhoea in the mating season.

These animals usually recover quickly with no treatment but when diarrhoea does not stop in a day or two or is very severe or the animal has a *fever* it needs treatment.

Treatment for diarrhoea

- Stop the animal from drinking milk for two days.
- Give plenty of water to drink. Giving water is helpful, but it is better to give water with some sugar and salt in it, see *rehydration fluid* (p. 346). **It is very important to give fluids to replace what an animal loses, especially for very young animals. Give some fluid every few hours.**
- Many people give animals some liquid they make, by boiling the bark from trees in water and letting it cool, to help them recover.
- Antibiotics sometimes help stop diarrhoea but usually they don't. Antibiotics only treat diarrhoea caused by *bacteria* that they can kill.

Preventing diarrhoea

- Make sure that new-born animals get colostrum to drink as soon as possible (p. 62).
- Control *worms* (p. 94).
- Give the animal proper food and clean water.
- Do not suddenly graze animals on wet pasture. Wait till later in the day when pastures become drier. Avoid suddenly giving a lot of wet, green food and then a lot of water to drink.
- Vaccinate animals for the most severe diseases that cause diarrhoea in your area. Some vaccines that you give to the mother protect her offspring.
- Remove faeces often from houses where animals live.
- Avoid keeping too many animals in one place.

Constipation

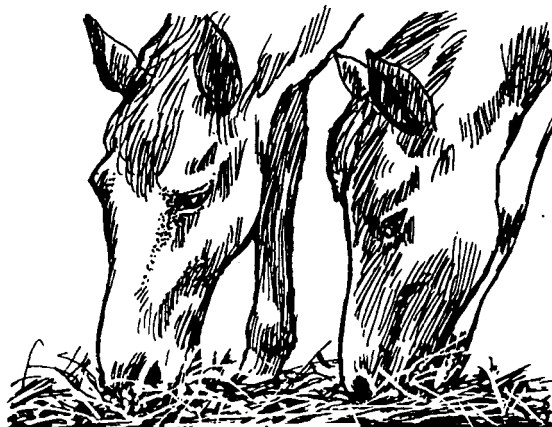
Animals with constipation do not pass faeces often. They often strain to pass faeces.

Signs

- ◆ If the animal passes faeces they are dry and hard.
- ◆ There is no sign of faeces that the animal has passed in the night.

Some reasons why animals get constipation

- They sometimes get it when they suddenly get different food.
- When an animal has a severe disease it often has constipation at first that changes to diarrhoea later.
- Animals get constipation when they eat dry food with much fibre in it and when they have much too little water to drink.
- Animals kept in houses are more likely to be constipated if they do not move around.



Fibrous, dry straw

- It can happen when an animal has a blockage in the *intestine* or when it has severe injuries of the back legs.
- It is also a sign of several diseases (p. 130).
- **Pigs** often have constipation soon before they give birth (p. 53).
- **Horses, mules and donkeys**

sometimes do not pass faeces soon after they are born, which they should do. If this happens the new-born animal will not lie still, it gets up and lies down and kicks its legs about. It strains to pass faeces. If it behaves like this and has not passed faeces 12 hours after it is born, help it to pass faeces by putting some liquid into the *rectum*. Use a rubber tube like this. Lubricate the tube with some vegetable oil or some soapy water. Push the tube gently through the *anus* and pour in about half a litre of warm water with some soap in it. Or use about half a cup (100 ml) of liquid paraffin or a cup (200 ml) of vegetable oil.

Use a syringe with a rubber tube on the end instead of a needle.

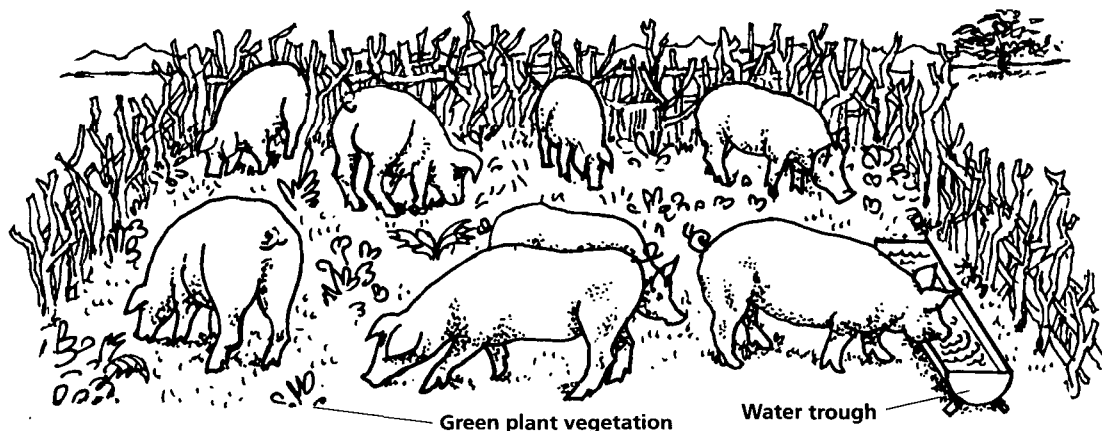


Treatment for constipation

- Make sure the animal has plenty of water to drink.
- Give a laxative medicine (p. 346).

Preventing constipation

- Make sure that animals have plenty of water to drink and there is room for them to move around.
- Give some green food every day.
- Do not *stress* the animals.
- Keep the houses where animals live clean.

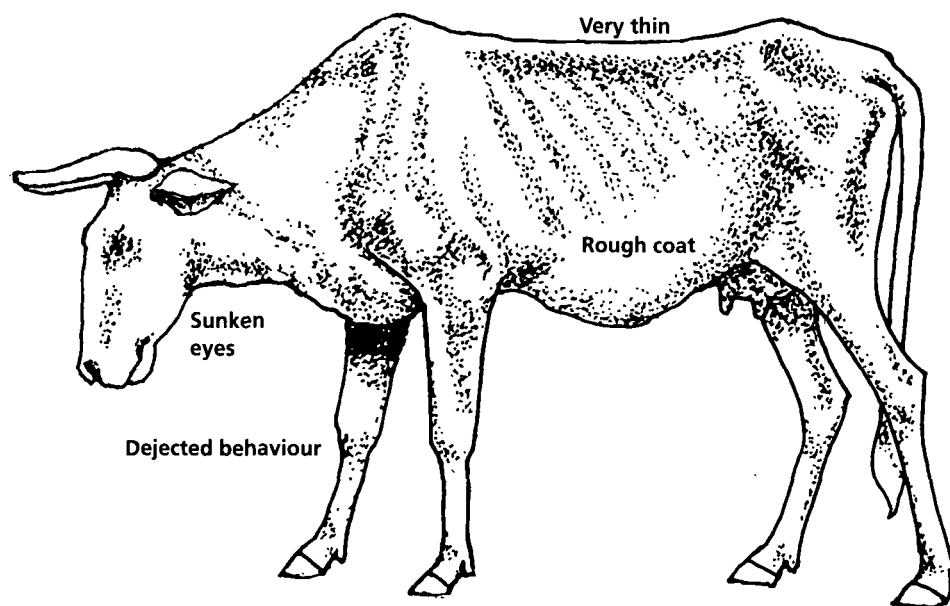


Green plant vegetation

Water trough

Loss of appetite, Eating less than normal

Animals that eat much less than normal look dull and become tired and weak; they soon become thin.



An animal or bird eats less than normal because:

- It has a problem in its mouth or with its teeth.
- It has a *fever* or other disease.
- It is suffering from pain.
- It is very hot in the sun.
- It has worked too hard.
- It is only given poor quality food. It is given food irregularly.
- It has many *worm parasites*.
- It has a problem in the *stomach* or *intestines*.
- It is suffering from *stress*.

Treating animals that eat less than normal

If there is nothing stuck in the *oesophagus* and you can find no other obvious reason why an animal is not eating:

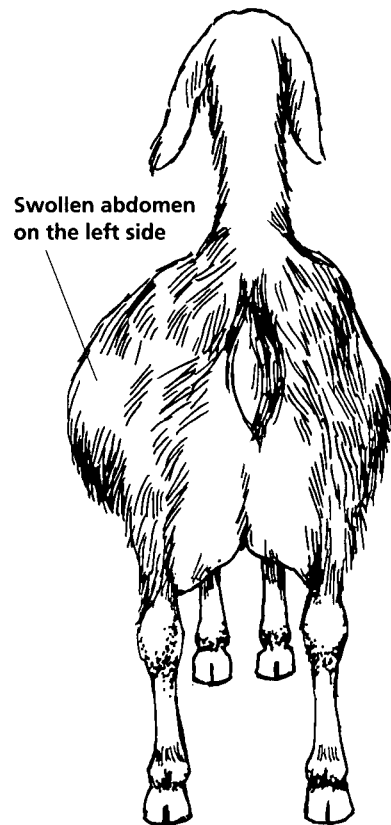
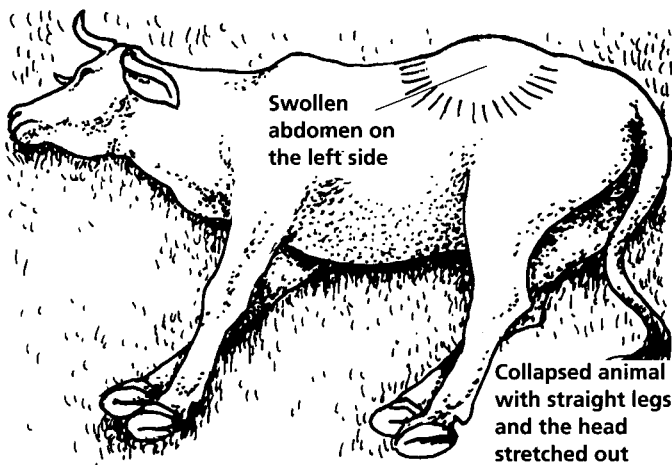
- Check to see if the animal has a *fever* (p. 266).
- If the animal has no fever treat it for *worms* if you think they are a problem (p. 218).
- Try changing the animal's food slowly. Introduce a new food a little at a time. Some people add something to food to stimulate animals to eat:
 - They add half a cup (100 ml) of molasses to 1 kg of food for a few days.
 - They add 1 small spoon of salt and two small spoons of sugar to 1 kg of food.
 - They add pulp or juice from tamarind fruits [*Tamarindus indica*].

Bloat

Cattle, buffaloes, sheep and goats get **bloat**. Occasionally **camels** get it.

Signs

- ◆ The abdomen is very large on the left side; if the abdomen is very swollen the animal has distressed breathing.
- ◆ The animal stops eating.
- ◆ Sometimes green froth comes out of the nose and mouth.
- ◆ Some animals have a little diarrhoea.
- ◆ Sometimes the animal kicks its side or lies down and sticks its legs out and if the animal has bloat for a long time it collapses with its head stretched out.



How animals get bloat

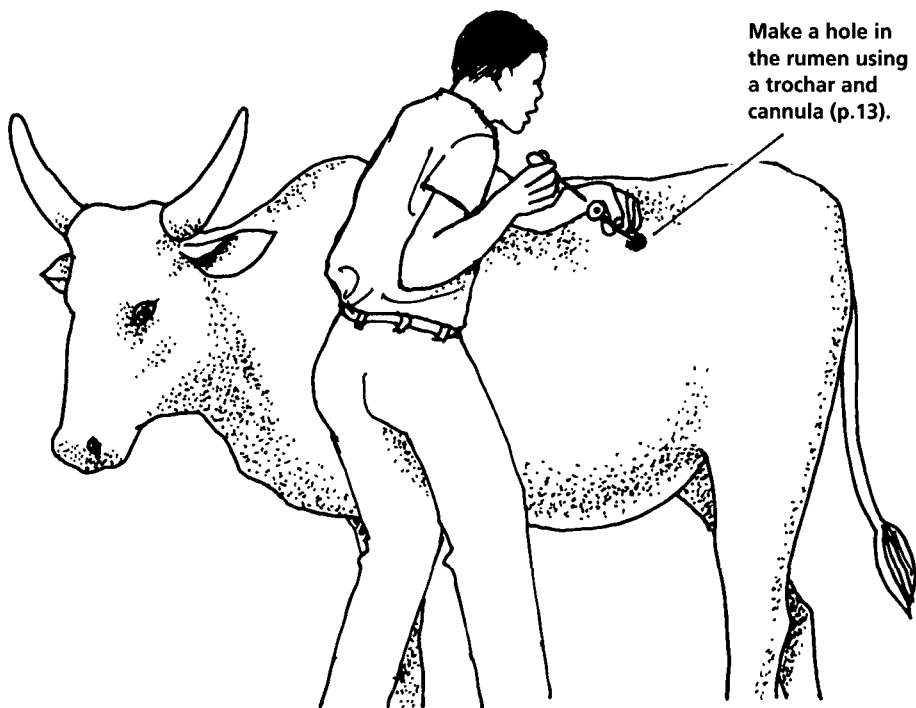
Animals get *frothy bloat* – the *rumen* is full of froth – because their *digestion* is upset. Usually several animals get this at the same time. They get it when they eat a lot of wet, green pasture, especially with many legumes in it or when they have eaten ripe fruits or other food that ferments easily. Some plants and poisons cause sudden and severe bloat. Animals also get it when the food they eat is suddenly changed. Frothy bloat often happens at the start of a wet season and often happens again if animals continue to graze wet pasture. Move them to a less rich, drier pasture.

Animals get *gassy bloat* – the rumen is full of gas – when the *oesophagus* is blocked. Usually only one or two animals get this at the same time. They get it when they choke on something (p. 228) or when they have eaten plastic bags (p. 227) or when they have a disease, such as *tetanus* (p. 263), that paralyzes them.

Bloat happens because gas or froth in the rumen (p. 35) cannot escape. Food being digested in the rumen always makes a lot of gas. Usually animals let this gas out of the rumen by belching every minute or two. But when animals eat things that make froth inside the rumen or have a blocked oesophagus they cannot belch the froth or gas out and the rumen swells with froth or gas.

Treatment

- Do not feed the animal for a few hours. Make it move about.
- For animals with frothy bloat that is not severe, give a bloat medicine by mouth (p. 347). Rub the left side of the abdomen to help mix up the medicine.
- Give bloat medicine once a day for 2–3 days until the animal recovers. Be careful giving the medicine. The animal's rumen is already full of froth and the animal will not swallow easily. Give small amounts of the medicine at a time slowly.
- If the animal will not swallow, use one of these other methods to treat it.
 - 1 In Asia people tie a rope across the animal's mouth and tie it around the head to make the animal chew at the rope to stimulate it to belch.
 - 2 For gassy bloat or when frothy bloat is severe and the animal is distressed:
 - Puncture the skin and the rumen to let the gas out. Use a knife or any sharp thing. The best thing to use is a *trochar* and *cannula* (p. 13).



- Make the hole a hand's width behind the last rib and a hand away from the edge of the back bone. Push hard, the skin is very tough. Gas and froth come out when you make the hole.
- It helps to put a tube (*cannula*) into the hole to keep the hole open. Pour some bloat medicine or vegetable oil through the tube into the rumen to help stop bloat happening again. When you remove the tube the hole seals itself, you do not need to stitch it.
- 3 Skilled workers sometimes put a *stomach tube* (p. 318) down the *oesophagus* to let gas and froth come out of the tube, then they pour medicine down the tube.

Prevention

- Feed animals with dry grass to fill them up before you put them onto new wet green pasture.
 - Do not give water to animals just before you put them onto wet pasture.
 - Do not put animals onto wet green pasture early in the morning but wait until the sun has made the pasture drier.
 - Only put animals on a new wet green pasture for an hour or two each day and slowly increase the time they have on the new pasture. After a week they will be used to it and are much less likely to get bloat.
 - When you change the food that you give to animals, do it slowly. If you start feeding grain to animals start with a small amount each day.
-

Colic

Horses, mules and donkeys get attacks of sudden and severe pain in the abdomen that make them behave unusually. This may be *colic*. Mules and donkeys have this problem less often than horses. **Other animals** occasionally get colic.

Signs

- ◆ The animal does not eat much and looks tired and weak.
- ◆ It becomes nervous. It gets up and down and may kick at its side or turn and bite at itself. Sometimes it sits down with its front legs stretched out. If the colic is severe the animal sometimes lies on the ground and kicks into the air (see page 76).
- ◆ Sometimes the abdomen looks swollen on the right side.
- ◆ Sometimes the animal will not urinate.
- ◆ It often does not pass faeces but it sometimes has diarrhoea later.
- ◆ It often sweats a lot and breathes very fast.
- ◆ The *mucous membranes* are often very bright red or dark red/blue.
- ◆ Sometimes the animal seems to recover then has colic again and sometimes the animal goes quiet and seems to recover but then it suddenly dies. This happens if the *stomach* breaks.

Other problems that look like this:

If a female has a large swollen abdomen and seems to be in pain but has fluid coming from the *vagina* she may be about to give birth.

How animals get colic

An animal usually gets colic because:

- It has eaten too much dry food (especially if they have not had enough water), too much grain, too much very green food or some rotten food. Forage easily rots if it is badly kept or very wet.
- The animal has eaten food that makes much gas in the *intestine*.
- The animal has been drinking a lot of cold water too soon after working.
- Animals have bad teeth and have not chewed their food properly.

- Colic often happens at the start of a wet season when there are green shoots for animals to graze but the ground is still dry and dusty and animals eat a lot of soil with the shoots.
- The animal has blocked or twisted *intestines*. **This is serious** and the animal often dies.
- Worms can block the intestines when there are many of them.

Horses get colic for many different reasons. It is difficult even for skilled veterinary workers to decide why a horse has colic. Sometimes you can find out why a horse had colic by looking inside the body after it is dead.

Treatment

When colic is caused by bad food or worms but the intestine is not blocked you can often treat the animal.

- Keep the horse moving. Do not let it lie down. Make it walk about several times every hour until it recovers.
- Give a laxative medicine such as vegetable oil or magnesium sulphate (p. 346). It is best to give this with a *stomach tube* (p. 318).
- If the animal has eaten much dry food this often cures the colic.
- Some people give medicines with ginger or pepper in them to help an animal to recover from colic.

If the horse does not recover after two or three hours, try to get skilled help. Skilled workers can give special medicines for colic. These medicines relax the stomach and intestines and can help the animal recover but are not always effective.

If the intestine is completely blocked or twisted the animal will probably not recover. Even skilled veterinary workers cannot always treat horses with colic successfully. Some horses with colic will die.

Prevention

- Check the animal's teeth often and file them if needed (p. 85).
- Treat the animal for *worms* (p. 336).
- Do not let animals drink immediately after working hard.
- Do not let the animal have too much grain at one time.
- Give animals water to drink **before** they eat.

Worms (roundworms), Parasitic gastro-enteritis

All animals and birds can get many different types of *roundworms* (p. 94). Young animals suffer most, especially in wet seasons. Animals do not often get worms in very dry places. Worms are only a problem near to water and when it rains but animals from dry places that have not had worms much before get very severe disease.

Poorly fed animals often have worms; they are thin because they are poorly fed **and** because they have worms. They need treatment for worms **and** better food.

Signs

Animals with worms usually do not have a fever

- ◆ Animals do not grow well, even with good food. They eat less than normal, become thin, weak and easily tired (see p. 214).
- ◆ They have a rough coat.
- ◆ They often have *diarrhoea* and may become *dehydrated*.
- ◆ Some animals have pale *mucous membranes*.
- ◆ Animals may have a swelling under the jaw and may also have swelling under the abdomen.
- ◆ **Goats** suffer very severe disease. Adult goats suffer as much as younger ones.
- ◆ **Horses, mules and donkeys** sometimes have severe pain in the abdomen – *colic* (p. 217) – because of worms. They sometimes have long white worms with thin tails in the faeces – *whipworms* (p. 221).
- ◆ **Pigs** often get large *roundworms* [*Ascaris suum*]. Adult pigs do not become sick. Young pigs under about four months old do not grow properly and become thin. They get other diseases more easily than normal. Occasionally they have difficulty breathing and some have *diarrhoea*.

Birds get worms most when many of them are kept together in a large group. They often get *roundworms* and *tapeworms* at the same time. Young birds suffer most from worms.

- ◆ The birds eat less than normal and do not grow normally. They become thin. The feathers look rough and some feathers fall out. They lay very few eggs.
- ◆ They have *diarrhoea* that comes and goes. The faeces sometimes have blood and mucus in them. Some birds have worms in the faeces.
- ◆ Some birds die.

Rarely, especially when worms infect animals they do not usually infect, they damage parts of the body, such as the brain, and cause unusual signs of disease, for example, *blindness* or *uncoordination*.

In a dead animal you can see some larger worms but others are too small to see easily. Some worms live in the *abomasum* – others live in the *intestines*. (*Tapeworms* (p. 101) are much larger and often live near the end of the intestine.)

Other diseases that look like this:

Liver flukes (p. 285). Find out if animals have worms or liver flukes because the treatment is different for liver flukes.

How animals get worms

Animals usually get worms from pasture contaminated with many worm eggs or larvae (p. 95). Worms often cause disease at the start of a wet season because many worm larvae all start to develop on the pasture at the same time. Worms usually make animals thin and stop them from growing properly because:

- Worms take some of an animal's food and stop the animal digesting its food properly.
- Sometimes there are so many worms that they block the *intestine*.
- Some worms damage parts of the body, e.g. the *liver* or *lungs*.
- Some feed on an animal's blood and make the animal bleed inside, then the animal has pale *mucous membranes* – *anaemia* (p. 268).
- Animals with many worms eat less than normal.

Treatment and control

- Give worm medicines (p. 336) to animals that become thin and have diarrhoea but no fever.
- If you think worms are causing a sudden and severe problem treat all cattle under three years old and sheep and goats under two years old immediately. Move the animals as soon as they have been treated to a safe pasture if possible (p. 96).
- **Control worms** to stop animals becoming sick and unproductive (p. 94).

Ascaris worms

Cattle, buffaloes, horses, mules, donkeys, pigs and **dogs** get *ascaris* worms. **Young animals** suffer most often, especially when many animals are kept on the piece of ground for a long time. Young buffaloes often get ascaris worms. **People** get some kinds of ascaris worms from animals, especially from dogs.



Signs

- ◆ **With severe disease** that happens quickly, animals cough and have distressed breathing.
- ◆ **With mild disease** that goes on for a long time, animals do not grow normally and become thin. They have a rough coat. They occasionally have diarrhoea and some animals vomit. They may have a swollen abdomen.

In a dead animal, pigs have white spots in the liver.

Other diseases that look like this:

Flukes (p. 285); *pneumonia* (p. 195); *worms* (p. 218).

How animals get ascaris worms

Animals get ascaris worms from ascaris eggs on pasture or on the soil in pens or enclosures. The eggs come from the faeces of animals with ascaris worms. Ascaris worm eggs develop into larvae in an animal's *intestines*. The larvae dig through the intestine and go into the *liver* and the *lungs*. They develop in the lungs and go up the *trachea* into the mouth. The animal swallows them. Then they develop into adult ascaris worms in the animal's intestines. They produce eggs that come out in the faeces about two months after the animal was infected. **Dogs** can get ascaris worms before they are born from their mothers. New-born dogs can get them through the milk.

Ascaris worms are types of *roundworms*: **horses** [*Parascaris equorum*], **cattle, buffaloes** [*Toxocara vitulorum*], **pigs** [*Ascaris suum*], **dogs** [*Toxocara canis*].

Treatment and control

See page 94 for how to control *roundworms*.

- Many worm medicines, e.g. fenbendazole or piperazine, work well (p. 337).

- Keep very young children away from dogs. Make sure children have clean hands before they eat. Keep the places where dogs live clean and dry. These worms do not live for long in dry places.
- Give worm medicine e.g. fenbendazole (50 g/kg) every day to pregnant dogs for two weeks before they give birth and for two weeks afterwards. Give worm medicine to dogs when they are two weeks old. If the mother has not been having medicine, treat her at the same time. Treat the mother and baby dogs again after three weeks.

Hookworm

Cattle, buffaloes, sheep, goats and dogs get hookworms. They usually get hookworms when many animals are kept together in one place.

Signs

- ◆ Animals do not have a *fever*. They stop eating, do not grow normally and become thin (see p. 214).
- ◆ They have a rough coat.
- ◆ Some animals have pale *mucous membranes*.
- ◆ **Dogs** have sores on the skin where the *hookworm larvae* dig through. They often have diarrhoea and there is often blood in the faeces. They have pale mucous membranes. Very young dogs sometimes die in 1–4 days. Dogs usually also get different worms at the same time.

How animals get hookworms

Animals get infected by hookworm larvae that dig through the skin or by eating food contaminated with hookworm larvae. Infection usually comes from wet places contaminated with faeces of animals with hookworms. Different animals get different kinds of hookworms.

Hookworms are types of *roundworms* [*Ancylostoma*, *Bunostomum*, *Gaigeria*, *Agriostomum*]. Hookworms are usually 2–3 cm long, they live in the small *intestine* and suck blood.

Treatment, prevention and control

Treat animals for hookworms as for other *roundworms* (p. 220).

Whipworm, Pinworm

Signs

- ◆ **Horses** have long (15 cm) white whipworms with thin tails in the faeces.
- ◆ A horse rubs its tail against things. Whipworms lay eggs around the animal's *anus* and cause irritation around the tail.

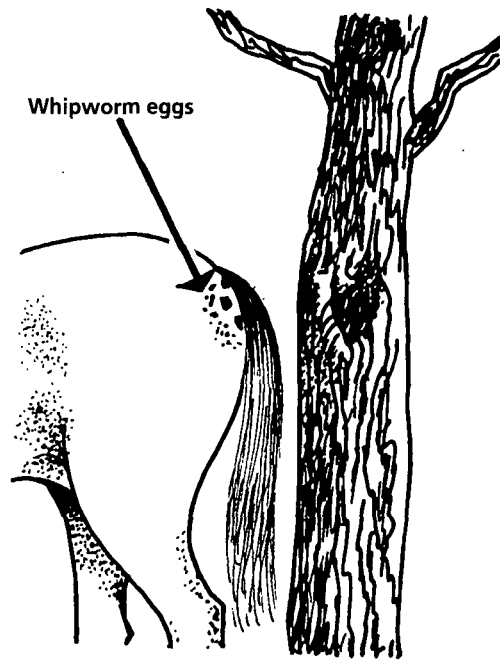
How animals get whipworm

Adult whipworms live in a horse's *intestines* and come out to lay eggs around the *anus*. The eggs develop into larvae and fall onto the ground. Another horse gets infected when it eats larvae on pasture.

Whipworms are types of *roundworms* [*Oxyuris*].

Treatment and control

- Wash and brush horses often to remove whipworm eggs from around the tail.
- The worm medicine you give to control other *worms* (p. 00) will control whipworm as well.



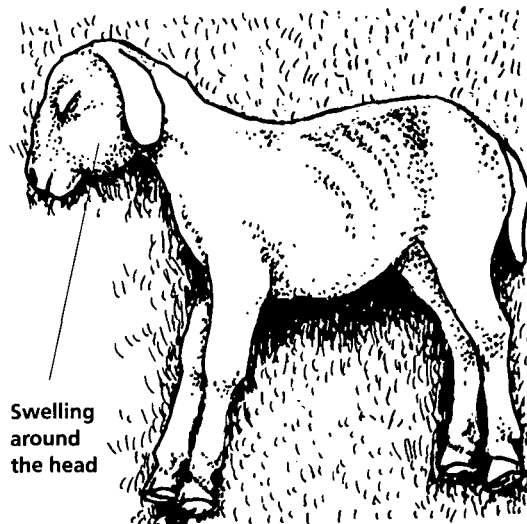
Blood flukes, Schistosomosis

All animals can get *blood flukes*. **People** get blood flukes (*Bilharzia*) (p. 6).

Signs

Animals become sick 7–9 weeks after they get infected with blood flukes.

- ◆ **With mild disease**, which happens most often, animals do not grow normally and become thin. They are weak and easily get other diseases.
- ◆ **With more severe disease**, which sheep and goats get occasionally, some animals have diarrhoea. There is often blood in the faeces. Animals stop eating and become *dehydrated*, they may have pale *mucous membranes*.
- ◆ Some animals are very sick. They have swelling around the head. Some collapse and die.



Skilled workers can check the faeces of a sick animal for blood fluke eggs.

Other diseases that look like this:

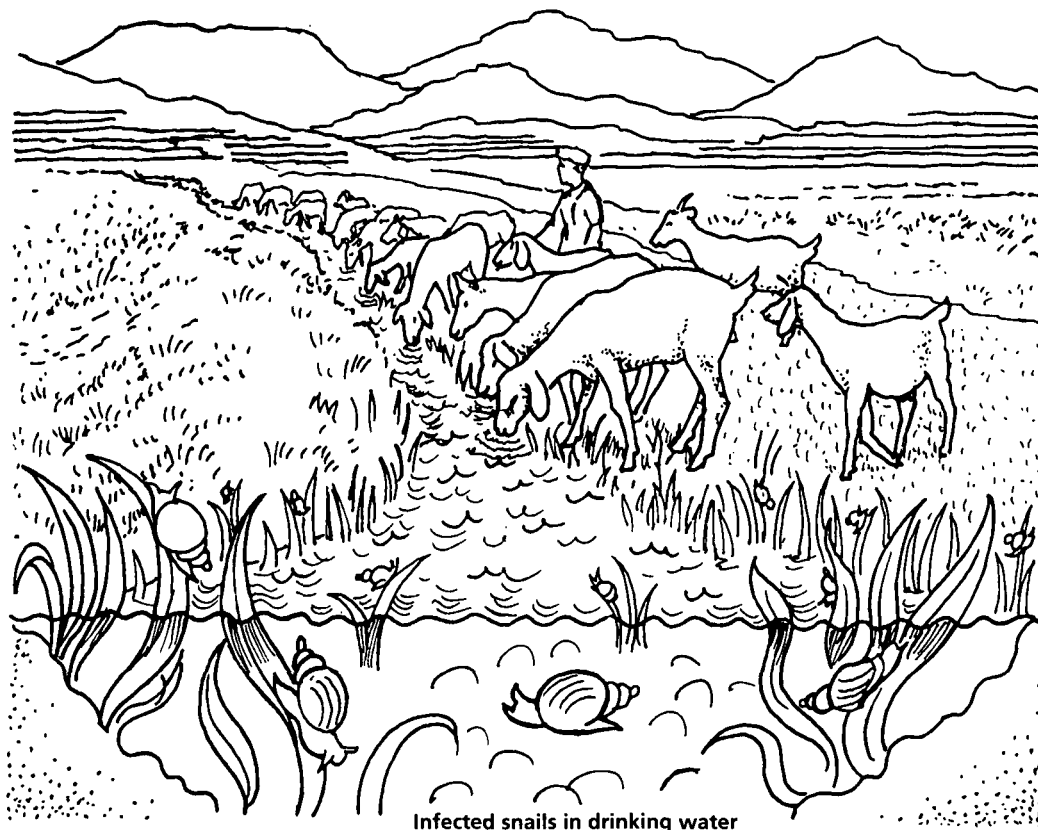
Liver flukes (p. 285); *worms* (p. 218).

How animals get blood flukes

Animals get infected through the skin or from drinking water where infected snails live. Animals can get the disease from snails that people have infected. The disease usually happens in places where there is water all year round.

Adult blood flukes live in blood vessels inside an animal's *abdomen*. They produce eggs that go into the *intestine* and come out in the animal's faeces. Young forms of blood flukes live in snails as *liver flukes* do.

Blood flukes are types of *flukes* [*Schistosoma*].



Treatment

- Metrifonate, Trichlorphon, Praziquantel (an expensive medicine used for people with bilharzia) and other medicines are effective (p. 338). **Some are dangerous for the animal.**

Prevention and control

- Control blood flukes as you control *liver flukes* (p. 99).
- Keep animals away from wet places where there are many snails that carry the *parasites*.

Rumen flukes, Paramphistomosis

.....
Young **cattle, sheep** and **goats** get *rumen flukes*.

Signs

- ◆ Rumen flukes rarely make animals sick but occasionally animals have diarrhoea that goes on for a long time and become thin and do not grow.
- ◆ The faeces smell foul and may have rumen flukes in them.

In a dead animal you can easily see rumen flukes, looking like red grains of rice (5–15 mm) stuck to the inside of the rumen.

How animals get rumen flukes

Animals get rumen flukes from infected snails.

Rumen flukes are types of *flukes* [*Paramphistoma*].

Treatment and control

- Treatment is not usually needed because rumen flukes rarely make animals sick.
- Treat and control rumen flukes as you do *liver flukes* (p. 99).

Coccidiosis

All kinds of animals, especially **very young animals**, get *coccidiosis*. **Birds** under two months old often get coccidiosis, some older birds get it.

Signs

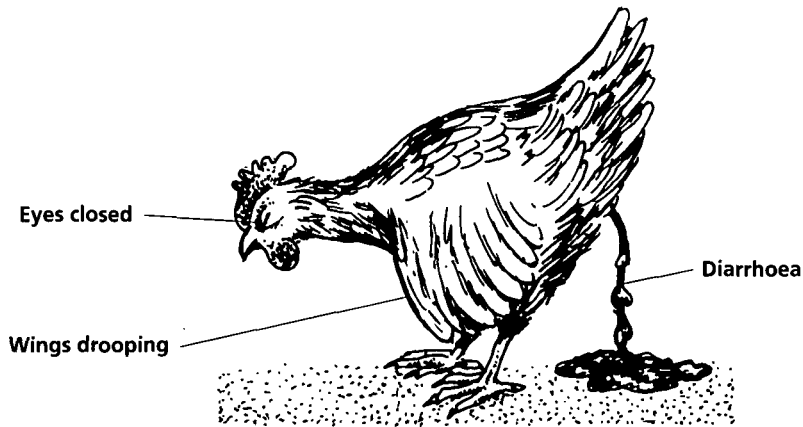
- ◆ Animals eat less than normal and become tired and weak (see p. 214).
- ◆ They have diarrhoea that may be severe, with blood and mucus in the faeces. Animals strain to pass faeces.
- ◆ Most animals recover with no treatment but with severe disease they may take a few weeks to recover and are thin. A few animals die.

Rabbits, especially under four months old, get coccidiosis.

- ◆ They have diarrhoea often, with blood in the faeces. They lose weight but often have swollen abdomens.
- ◆ Many rabbits die.

Birds become tired and weak.

- ◆ Young birds often have blood in the faeces after 4–5 days. Later there is much blood in the faeces.
- ◆ Sometimes many young birds die after 2–3 weeks.
- ◆ Older birds have diarrhoea and lose weight. They eat little and become weak and tired, their eyes are closed and their wings hang down.
- ◆ Many birds die.



Skilled workers can check the faeces of sick animals or birds for coccidiosis.

How animals get coccidiosis

They get it from food or water *contaminated* by faeces of infected animals. Animals only become sick with coccidiosis from large doses of infection, usually when they live in wet, dirty places very contaminated by faeces. Each kind of animal or bird gets a different type of coccidiosis and they do not infect each other.

Coccidiosis is caused by *protozoa* [*Eimeria* or *Isospora*].

Treatment

- Start treatment as soon as possible, several medicines are effective. (p. 331).
- You can give some medicines in food or drinking water.

Prevention and control

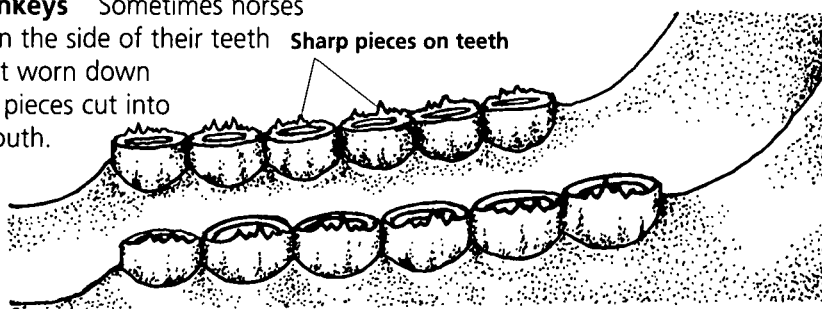
- Separate sick animals from healthy ones and treat them as soon as possible.
- Keep animals on clean dry bedding.
- Clean faeces, away from places where the animals live. Coccidiosis *microbes* live in faeces, especially when they are wet.
- Put feeding and drinking bowls high up to stop faeces getting in them.



- Keep adult and young animals separate.
- Reduce the number of animals kept in one place.
- If coccidiosis becomes a problem in a building, take out all the birds or animals and clean the building with disinfectant (p. 324).
- In dry places where birds are not kept close together in large groups people often do not treat coccidiosis. They let the disease build up to a low level so that birds become *immune*.

Bad teeth

Horses, mules, donkeys Sometimes horses have sharp pieces on the side of their teeth where they have not worn down normally. The sharp pieces cut into the inside of the mouth.

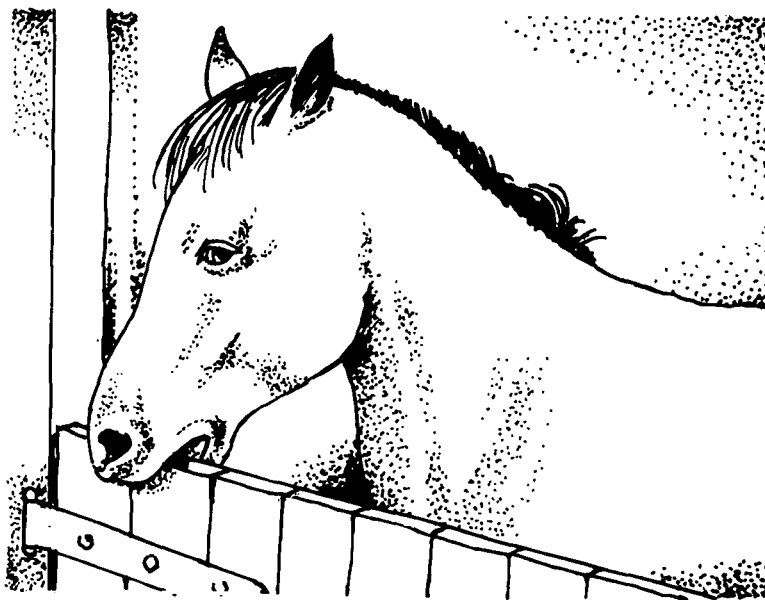


Treatment

- File the teeth with a rasp (p. 85).

Crib biting

Horses kept in buildings sometimes get bad habits. They chew or suck at the doors and other parts of the building. To stop them doing this put something bitter tasting on what they are eating. Aloes [*Aloe species*] are good for this. You can make a special collar that makes it difficult for them to get at the parts they have been biting. Horses learn these habits from other horses that already do them. Keep young, innocent horses away from those that already have bad habits.

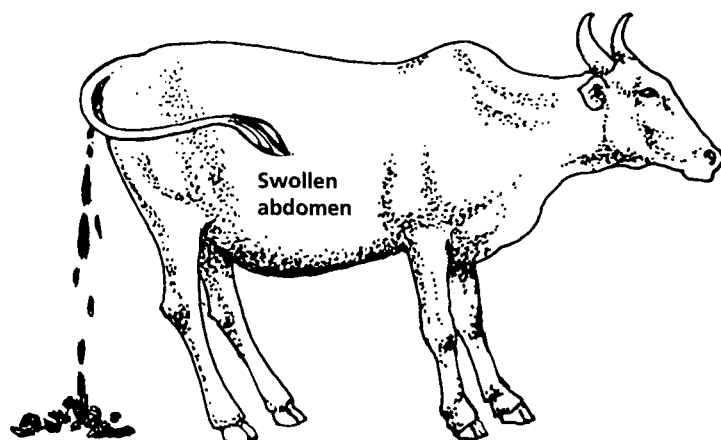


Overeating grain

Cattle, especially young cattle, sometimes eat too much grain or other concentrated food at one time. This usually happens when animals break into a food store and help themselves.

Signs

- ◆ The animals stagger about. They look 'drunk'.
- ◆ The left side of the abdomen is swollen and firm.
- ◆ Often the animals have diarrhoea.
- ◆ They become *dehydrated*.
- ◆ Some of them collapse and die within a few days.



Treatment

- Make sure the animals cannot get more grain to eat.
- Give them as much water to drink as they want.
- Give some alkaline medicine, e.g. magnesium hydroxide or aluminium hydroxide (p. 348) as soon as possible by mouth. (Grain turns to acid in the *rumen*. The alkali medicine works against the acid.)
- Skilled workers can give special fluids by injection into a *vein* for dehydration.

Eating plastic bags

Animals, especially **goats**, often eat plastic bags and they usually do not harm the animal but they can make animals become sick.

Signs

- ◆ A few days after an animal has eaten a plastic bag it suddenly stops eating.
- ◆ It has pain in the *abdomen* and *diarrhoea*, sometimes there is blood in the faeces.
- ◆ Some animals become very weak and die after a few days.

Treatment

- There is no easy treatment for this. If you think an animal is sick because it ate a plastic bag, kill it for meat before it becomes very sick.
- Try to stop animals eating plastic bags.

Something stuck in the mouth

This can happen to **any animal**, especially **dogs**.

Signs

- ◆ The animal often has much *saliva* coming from the mouth. The object is often stuck between the teeth, especially across the mouth between the top teeth.



A piece of wood stuck between the teeth

Treatment

- Open the mouth (p. 24) and remove the object.
- Clean any wound in the mouth with salt water or mild antiseptic (p. 324).

Something stuck in the oesophagus, Choke

This happens most to **horses**, **mules** and **donkeys** when they eat something large like a large piece of vegetable.

Signs

- ◆ The animal is often distressed.
- ◆ It coughs and behaves nervously.
- ◆ Much *saliva* comes from the mouth (see p. 263). Sometimes food and saliva come back out of the nose.
- ◆ Sometimes you can see and feel a lump on the left side of the neck where the object is.

Treatment

- Do not let the animal drink or try to eat until the blockage has gone.
- Try to gently massage the lump back up the neck so that the object comes back into the mouth and take it out.
- If this is difficult, put a small amount (25 ml) of vegetable oil in the mouth. This lubricates the *oesophagus*. It may make it easier to massage the lump back up the neck and it may let the animal swallow normally.
- Skilled workers can move objects like this by pushing them down the oesophagus with a tube. **This is dangerous to try yourself**; if the oesophagus breaks the animal will die.

Lack of minerals

All animals can suffer from a lack of minerals. Animals usually suffer from a lack of several different minerals at the same time. It is usually difficult even for skilled workers to decide which minerals an animal lacks. Remember that if animals are not growing well it may be through poor feeding, or worms, rather than a lack of minerals.

Signs

- ◆ Animals do not eat as much as normal and become thin even when they have enough food.
- ◆ They give less milk than normal.
- ◆ They have a dull coat and rough hair that stands up.
- ◆ They do not grow normally and do not become mature at a normal age.
- ◆ They start to lick bones or earth and sometimes dig the ground with a foot.
- ◆ Females do not show good signs of heat and do not easily become pregnant, some become infertile.

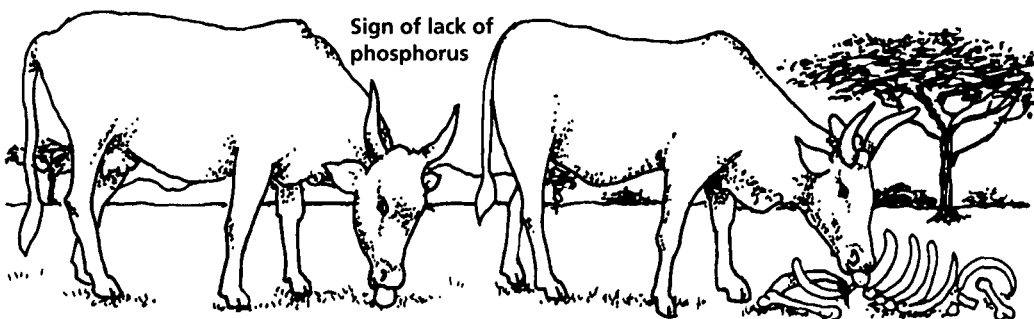
Lack of salt

- ◆ Animals lick soil and some drink other animals' urine.

Lack of phosphorus

Lack of phosphorus is common because the soil and the plants in many areas do not have much phosphorus in them.

- ◆ Females that give a lot of milk suffer most.
- ◆ When animals suffer severely from lack of phosphorus their appetite changes. They lick the ground and eat the bones of any dead bodies lying on the ground.



Lack of iron

Most animals get enough iron from their ordinary food but baby pigs that live in houses and only drink milk sometimes do not get enough iron because milk does not have much iron in it. The larger, stronger pigs suffer first.

- ◆ They become weak and shiver and do not eat. They get diseases easily.
- ◆ They have very pale *mucous membranes*.

Lack of iodine

- ◆ New-born and young animals may have no hair.
- ◆ When the lack of iodine is severe animals have a swelling in the neck. (This is the *thyroid gland*). In places where people get these swellings because of a lack of iodine, animals also often lack iodine.

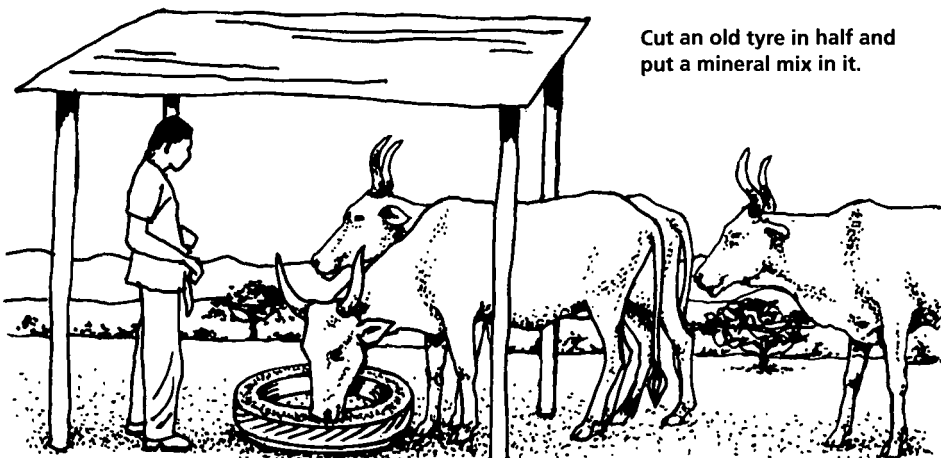
Treatment and prevention

- These are some simple mixtures that help provide animals with enough minerals:

Mix 1	Mix 2	Mix 3	Mix 4	Mix 5
Mix a large pinch (about 1 g) of wood ash every day with the animals' food for every 10 kg of bodyweight.	2 parts: salt 2 parts: bone meal* or crushed bones	2 parts: salt 2 parts: bone meal 1 part: rock phosphate	2 parts: salt 2 parts: bone meal 1 part: lime	1 part: salt 4 parts: wood ash
(* 'Bone meal' is sometimes available – it is a powder of bones that have been dried and finely ground.)				

Let the animals eat as much of one of these mineral mixtures as they want. Put minerals in boxes to stop animals spreading them on the ground and wasting them.

- This person in Kenya is using an old tyre to give minerals to some cattle.



Cut an old tyre in half and put a mineral mix in it.

- Try to keep the rain off the minerals or they will wash away.
- Take animals to graze in places where there are more minerals in the soil and plants – at least for part of the year. In some places the grazing high on the hills has had the minerals washed out of it so people take their animals to graze in the valleys.

Lack of salt

Give animals about 500 g of salt in 100 kg of food. Camels need about 1 kg of salt every week – this is about eight times as much as cattle or sheep need. Birds only get about half the salt they need in their normal food so give them an extra two pinches (2 g) of salt in each kg of food.

Give small amounts of salt like this all the time. **Do not give a lot of salt all on one day to animals that do not usually get salt.** It can make them very sick and stress them so that other diseases appear.

- Take the animals to salty pastures.
- Put a block of salt for the animals to lick. This is a good way of giving salt to animals but it is expensive.

Lack of phosphorus

- Bone meal helps to prevent a lack of phosphorus, so do some foods, such as cottonseed cake, which have a lot of phosphorus in them.
- In areas where animals often lack phosphorus, put phosphorus *fertiliser* on the fields so that plants will have more phosphorus in them.

Lack of iron

- Give baby pigs in houses extra iron.
- Most soil especially red soil has iron in it, so put some soil into the pen for the baby pigs to eat.
- Or give injections of iron.

Lack of iodine

- Where lack of iodine is a severe problem it is most important to give extra iodine to pregnant animals.
- The easiest way to give iodine to animals is to use salt that has had iodine added to it.

Fowl typhoid

Birds get *fowl typhoid*.

Signs

Birds become sick 4–7 days after they get infected.

The disease is severe in places where it has not happened before:

- ◆ Some birds die before they have signs of disease.
- ◆ Some birds are tired and weak and have a high *fever*. They stand with their wings down. Their eyes are closed. The feathers are rough and the comb is dark red. They stop eating but they drink a lot of water. They have yellow/brown/green diarrhoea that smells bad (see pp. 130, 225).

- ◆ Many birds die in 2–7 days.

Sometimes **the disease is not so severe** and goes on for a long time. In places where the disease often happens, most birds have this kind of disease.

- ◆ A few birds die after 2–4 weeks.
- ◆ Some birds recover but still carry the infection.

How birds get fowl typhoid

They get it from direct contact with infected birds or from food, water or things *contaminated* by faeces from infected birds. Infection also comes from the dead bodies of infected birds. People spread infection on their clothes and feet. Eggs sometimes carry the infection.

Fowl typhoid is caused by *bacteria* [*Salmonella gallinarum*].

Treatment, prevention and control

- Give medicine in the drinking water as soon as the disease happens.
- Furazolidone and other medicines are effective (p. 329).
- It is difficult to control fowl typhoid and needs the help of skilled laboratory workers. If birds seem to be sick with fowl typhoid it is best to kill them. Cook them well before you eat them. Bury any parts of the bird you do not cook and eat, to stop the disease spreading.

Johne's disease, Paratuberculosis

.....
Johne's disease only happens in cooler, wetter places. **Cattle, buffaloes, camels, sheep and goats** get *Johne's disease*.

Signs

Animals get infected with *Johne's disease* when they are under six months old, and become sick after they are two years old.

- ◆ Animals produce less milk than expected and slowly become thin, but they still eat normally.
- ◆ They have diarrhoea that comes and goes. After 1–2 months they have constant watery diarrhoea. The faeces smell bad.
- ◆ Animals do not usually recover. After 2–6 months they become weak. They collapse and die.
- ◆ **Sheep** rarely get *Johne's disease*. They only become sick after they are three years old. They become very thin and have rough coats. Much later they have diarrhoea and then die after a few days.

In a dead animal parts of the *intestines* are thickened.

How animals get Johne's disease

They get it from infected food, water or milk. Infection comes from the faeces of infected animals. Animals often have infection but do not become sick.

Johne's disease is caused by *bacteria* [*Mycobacterium paratuberculosis*].

Treatment

There is no treatment for Johne's disease.

Prevention and control

- Isolate sick animals. Kill them for meat before they spread the disease to others. The new-born animals from infected mothers are usually infected. Kill them before they become sick. Avoid buying sick animals (p. 47).
- Prevent infected faeces getting into food and water. Place feed bowls high up.
- Clean up places where infected animals have been with strong disinfectant (p. 324).
Pasture will be free of infection after one year.
- Skilled workers can use *vaccine* to help control the disease but it is not often worth using.

Lamb dysentery

Only **sheep** less than two weeks old get *lamb dysentery*.

Signs

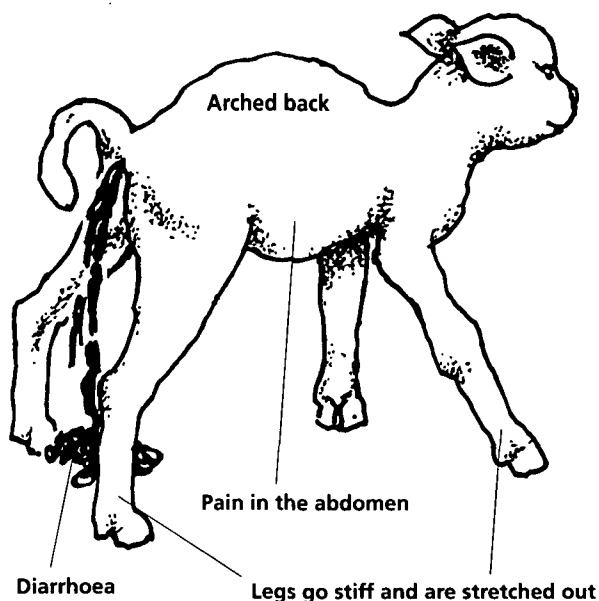
- ◆ The animals have pain in the abdomen and arch their backs and stretch their legs out stiffly.
- ◆ They have diarrhoea. The faeces are yellow and sometimes have blood in them. Very soon the animals die.

In a dead animal the *intestines* are very dark red. Sometimes parts of the intestines are stuck together.

How animals get lamb dysentery

They get infection from the ground or from their mother's teats.

Lamb dysentery is caused by *bacteria* that live in the soil [*Clostridium perfringens*, Type B]. They produce poison that causes this disease.



Treatment

- Antibiotics (p. 328) may work if you give them soon enough, but they do not work after the diarrhoea has started and there is blood in it.

Prevention and control

- When some animals in a group become sick with lamb dysentery give an antibiotic e.g. tetracycline (p. 333) to others that are still healthy to stop them getting the disease.
- There is an effective *vaccine* for lamb dysentery. (Vaccine for lamb dysentery often comes mixed with vaccine for *enterotoxaemia* (p. 146)). For lamb dysentery give the vaccine to the pregnant mothers. Vaccinate a little more than one month before you think the lambs will be born; 3–4 months after the mothers were mated.
- New-born animals will get *immunity* to lamb dysentery from the colostrum they drink from their mothers.

Mucosal disease, Bovine virus diarrhoea

Only **cattle** get *mucosal disease*.

Signs

Mucosal disease (and the milder form of it called *bovine virus diarrhoea*) are complicated diseases that look like *rinderpest* (p. 290) except that usually only one or two animals get this disease at the same time. You will need skilled help to tell these diseases apart and to control them.

- ◆ Some animals with mucosal disease give birth to offspring that cannot see properly or have deformed limbs.

How animals get mucosal disease

Adult cattle get infected through the air. Infected pregnant cattle pass infection to the *foetus*.

Mucosal disease is caused by *viruses* [*Pestivirus*].

Treatment and control

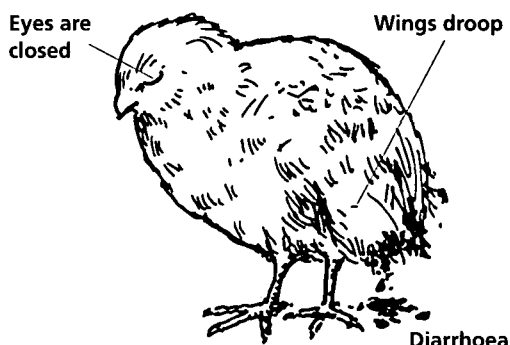
There is no treatment for mucosal disease or bovine virus diarrhoea. *Vaccines* for mucosal disease are complicated to use and you will need skilled help. In places where this disease is a problem skilled workers usually vaccinate females 2–3 weeks before they mate. It is expensive to control this disease.

Pullorum disease, Bacillary white diarrhoea

Birds get *pullorum* disease.

Signs

- ◆ Birds under 20 days old suddenly become tired and weak. They stand with their wings down. Their eyes are closed. The feathers are rough. They cry out all the time.
- ◆ Many birds have white/grey diarrhoea. The feathers around the *anus* become covered in faeces.
- ◆ Many birds collapse and die when they are 10–20 days old.
- ◆ Some birds recover but still carry the infection.



How birds get *pullorum* disease

They get it from the egg when it hatches. Many birds that recover from the disease carry infection and can lay infected eggs. Birds also get the disease from direct contact with infected birds or *contaminated* things.

Pullorum disease is caused by *bacteria* [*Salmonella pullorum*].

Treatment and control

- It is complicated to control this disease. Skilled workers need to test blood samples to check for the infection.
- Kill the sick birds but cook them well before you eat them. Bury any parts of the bird you do not cook and eat, to stop the disease spreading.

Salmonellosis

All animals and **birds** get *salmonellosis*. **People** often get *salmonellosis* (p. 6).

Many different types of salmonellosis microbes cause many different signs of disease. It is difficult to know if salmonellosis causes signs of disease without help from skilled workers and complicated laboratory tests. Salmonellosis makes many animals sick, especially in cooler, wetter places where animals are kept in houses or in large groups. Animals that always live out on pasture rarely get salmonellosis.

Signs

Animals usually become sick a few days after they get infected.

- ◆ **Adult animals** often have a high *fever*. They have severe watery diarrhoea that smells bad, with blood or mucus in the faeces. Pregnant animals often abort.

◆ **Animals about a month old** often have a high fever. They have severe watery diarrhoea that smells bad, with blood or mucus in the faeces. They become *dehydrated*. Some cough and breathe fast. Some have hot, swollen joints. Some have dead, black flesh at the ends of the ears and tail.

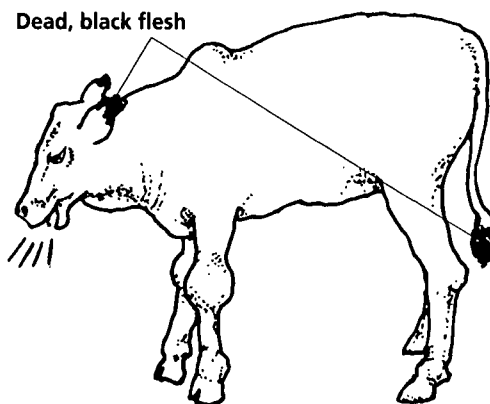
◆ **Animals 1–14 days old** often have a high fever. They have pale white/brown faeces that may have blood in them. They stagger about and collapse and die after 1–7 days with no treatment.

◆ **Animals of any age** sometimes get very severe forms of salmonellosis and die rapidly. All animals take a long time to recover if they are not treated.

◆ **Horses, mules, donkeys and camels** do not get the disease so often. But if camels get it they may have severe disease and often die.

◆ **Pigs** often have dark red patches on the skin under the abdomen.

◆ **Birds** get two main kinds of salmonellosis: *pullorum disease* (p. 235) and *fowl typhoid* (p. 231). Both diseases cause diarrhoea and death. Other types of salmonellosis also cause diarrhoea.



How animals get salmonellosis

They get it from food or water *contaminated* by faeces from infected animals or people. Adult animals become sick with salmonellosis more often when they are *stressed*.

Salmonellosis is caused by *bacteria* [*Salmonella* species]. People call many of the diseases caused by these bacteria 'paratyphoid'.

Treatment

- Treat animals as soon as possible.
- Many antibiotics are effective (p. 328).
- You can give medicines for salmonellosis by injection or by mouth or put medicine in the food or drinking water.
- Give rehydration fluid (p. 346) to young animals that suffer badly and are dehydrated.

Prevention and control

- Keep healthy animals away from sick ones. It is difficult to stop salmonellosis spreading because some infected animals have no signs of disease. These carrier animals can be infected for many months and spread salmonellosis to other animals.
- Avoid contamination of water and feed with faeces from animals that may be infected.

It is complicated to control salmonellosis properly. Skilled workers need to check faeces samples to identify the *microbes*. They sometimes use *vaccines* to control the disease but this is complicated and rarely the best way to prevent the disease.

24 Diseases and problems mostly to do with reproduction and the udder

These are common problems but there are others, e.g. *leptospirosis* (p. 284), *dourine* (p. 297).

Animals not in heat when expected

Usually if an animal does not have a heat period it is because she is pregnant. (p. 00). Females kept away from males are not stimulated to show heat. This sometimes makes it difficult to see if they are in heat. Some animals are only in heat for a short time at night when nobody sees them. Animals often do not show heat when they are thin and poorly fed or when they have a disease or many *worm parasites*.

Treatment

- Give better food or give *worm* medicines (p. 336). Thin animals often have worms and are poorly fed.
- Keep female animals close enough to a male to see and smell him. Or keep them with the male so that he can mate with them when they let him.
- Skilled workers can feel the *ovaries*. They sometimes use *hormones* to make animals have heat again. If these medicines are given to pregnant animals by mistake they will make them abort.
- **Pigs** Put a pig in heat with others you want to make come in heat. Put an adult male where the females can see him and smell him. Put urine from a male pig in the female's pen for a few days.

Animals mate but do not become pregnant

Sometimes a male animal is *sterile* – none of the females he mates with become pregnant.

- Check that the male does not have a *fever*, that he is well fed and not thin.
- Check that he does not have to mate with too many females.
- If a male animal is sick and has a fever, wait for about two weeks after the fever has gone before using him to mate again.
- If a male animal makes some females pregnant but not others it is more likely that the females cannot become pregnant.
- Often this is because they are mated at the wrong time of their heat, especially when they are mated too late after heat has started.

Animals in heat more often than normal

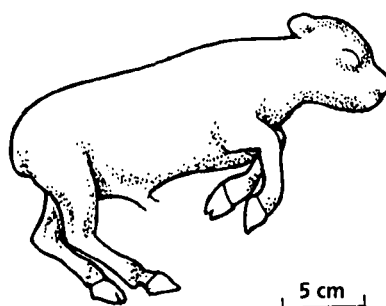
Sometimes a female animal is in heat much more often than normal and the heat is very obvious. This is usually caused by a disease in the *ovaries*. The ovary produces too much *sex-hormone* and this makes the animal behave strangely. Skilled workers can examine the ovaries and sometimes use hormones to treat this problem.

Abortions

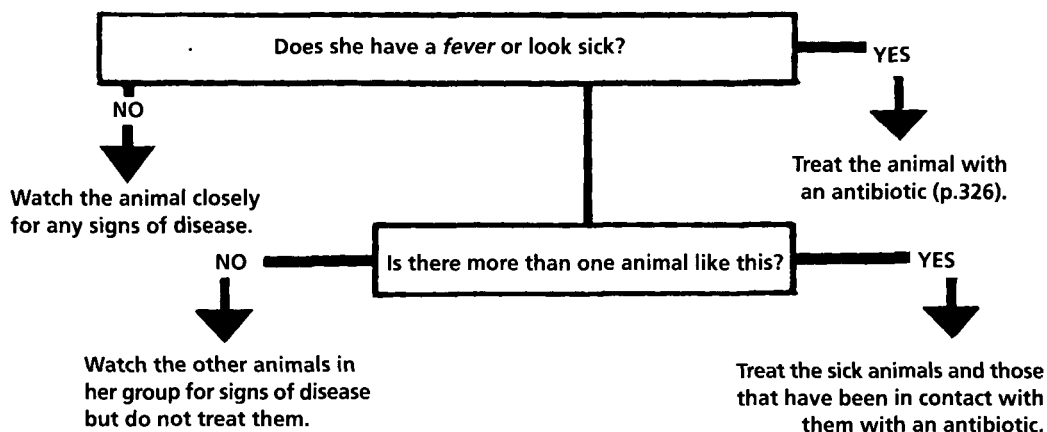
Some animals abort because of *infection*. The infection can be dangerous to other animals. It can make other pregnant females abort too. Sometimes many animals in a group abort at the same time.

What to do about abortions

- Isolate an animal that aborts from other animals. Especially keep her away from other pregnant animals.
- Move the healthy animals away to a clean place. There may be infection on the ground where the abortion was.
- Bury or burn a dead *foetus*, together with the *placenta*.
- Clean up the place where these have been and wash yourself.
- If only one animal aborts it is often not because of infection.
- If more than one animal aborts it is often because of infection.
- Check if the animal that aborts has *fever*.



Dead foetus



More about abortion

It is difficult, even for skilled veterinary workers, to find out what caused an abortion. For skilled workers to investigate abortions they will need the *placenta*, blood samples or the *foetus* itself.

Brucellosis

Cattle, sheep, goats and **pigs** get *brucellosis*. Goats get it more often than sheep do. **Camels** occasionally get it. **People** get *brucellosis* (p. 6).

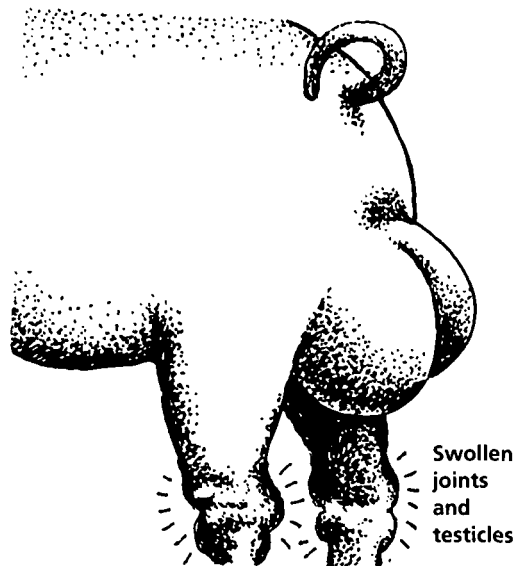
Signs

Animals become sick many months after they get infected with brucellosis.

- ◆ They have abortions, usually about 5–6 months after they mated. After an abortion many cows do not let go of the *placenta* (p. 241).
- ◆ The *uterus* becomes infected (p. 241). Sometimes this infection is severe and even kills the animal but often it is milder, goes on a for a long time and may make the cow *sterile*.
- ◆ When several animals get brucellosis at the same time, a few of them have abortions. Some give birth to dead offspring. Some produce very weak offspring. Many animals get infection in the uterus and become infertile.
- ◆ When cattle that have not had the infection before move to a place where infection is common they get severe disease. Many animals have abortions at the same time.
- ◆ Male animals often have swollen joints, especially the knees. And they have very swollen *testicles*. The swelling lasts a long time. When it goes down the male is usually sterile.



Weak, new-born pig



Swollen joints and testicles

How animals get brucellosis

Animals get brucellosis from direct contact with infected animals or from eating grass or other food *contaminated* by infected animals. Most infection comes from aborted *foetuses*, *placentas* and *discharges* that come from the *vagina* soon after an infected animal aborts or gives birth. Infected animals often have tails covered in discharge and this helps spread infection. Infection gets in to an animal's body through the skin or *mucous membranes*.

Brucellosis is a problem for settled farmers who keep many animals close together. It is not a problem for animals kept on rangeland, but these animals sometimes carry infection with no signs of disease.

Brucellosis is caused by *bacteria* [*Brucella abortus* and others].

Treatment

There is no effective treatment for brucellosis.

Prevention and control

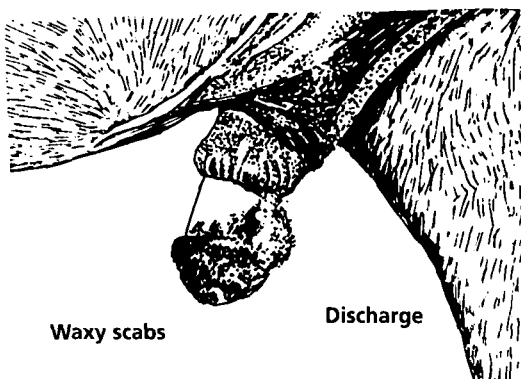
- Isolate cows that have abortions for three weeks.
- Dispose of anything *contaminated* with infection, preferably by burying it.
- Some people make a fire over the place where the abortion happened to clean the ground.
- Vaccines for brucellosis are effective. Vaccinate female animals when they are about six months old.
- Skilled workers can test blood to tell if an animal is infected. Get rid of animals that carry infection. **These animals are dangerous because people get sick from drinking their milk.**
- Some governments have programmes to control brucellosis.

Discharge from the penis

Any animal – usually **horses, mules and donkeys** – get this problem.

Signs

- ◆ A *discharge* comes from the *penis* or the sheath around it – prepuce. The *discharge* is often white/yellow.
- ◆ The animal rubs the penis or sheath on things because it is irritated. The penis extends out of the sheath.
- ◆ There are waxy scabs and *pus* in the folds of the penis.



Treatment

- Hold the sheath with one hand and gently pull the penis out with the other hand.
- Wash the penis clean with salt and water or soap and water then with clean water to remove the soap.
- Put a mild, oily wound dressing (p. 324) on the penis.
- Some horses have infection of the penis often. You may have to repeat this after a month. If the discharge does not stop, give antibiotic by injection (p. 328).

Metritis, Infected uterus

A clear or blood-stained red/brown *discharge* often comes from the *vagina* after a healthy animal has given birth. It does not smell foul. But a white/yellow discharge or a bad smell is a sign of infection in the *uterus*. This is called *metritis* and animals sometimes get it soon after they have given birth. Infection gets into the uterus through the *vulva* and vagina, especially when an animal gives birth in a dirty place. Animals often get metritis when the *placenta* does not come out.

Signs

With mild infection:

- ◆ Cloudy white *discharge* comes from the *vulva*. The discharge does not smell very bad.
- ◆ The animal does not have a *fever*. She is not sick.

With severe infection:

- ◆ Yellow or dark brown discharge comes from the vulva. It smells bad.
- ◆ The animal sometimes has a fever. She becomes very sick and stops eating, sometimes she lies down and will not get up. The microbes in the uterus produce powerful poisons.
- ◆ Some animals die after a few days. Some animals recover but they cannot have any more young; they are *sterile*. Other animals recover but they do not easily become pregnant again; they are *infertile*.

Treatment

- Treat the animal immediately if she has a fever or if she looks sick and has discharge.
- Give an antibiotic injection (p. 328). (Some people put antibiotic tablets into the uterus by hand but this is not the best way to treat metritis.) Even severe infection can be treated.

Prevention

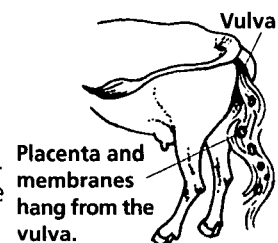
- Make sure the place where an animal gives birth is clean and dry. Do not always use the same place without cleaning it up.
- Wash your hands and arms carefully with soap or disinfectant (p. 324) before putting them into an animal to help with a birth. You can cause infection if your hands and arms are not clean.

Animals often get metritis after a difficult birth because the vagina or cervix have been damaged.

Retained placenta

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The *placenta* should come out soon after an animal has given birth. Sometimes it stays inside the animal and rots. Sometimes the placenta and membranes hang from the *vulva* for a long time.



Treatment

If the placenta does not come out:

Cattle, buffaloes

- Wash your hand and arm, with soap or disinfectant.
- People in East Africa make disinfectant from the plant *Cotyledon barbeyi*.
- Put your arm into the *vagina* and grip the placenta.
- Pull very gently. If the placenta comes out easily pull it out. If it is difficult to pull it out leave it there. If some placenta hangs out, cut it off.
- Put some antibiotic (p. 350) through the *cervix* into the *uterus*.
- If the animal has a *fever* or looks sick give an antibiotic by injection (p. 328).
- Encourage new-born animals to suck the mother as soon as possible after they are born. This helps make the uterus contract and squeeze the placenta out.
- People in Kenya give cattle a drink made from *Salvadora persica* to make the placenta come out.

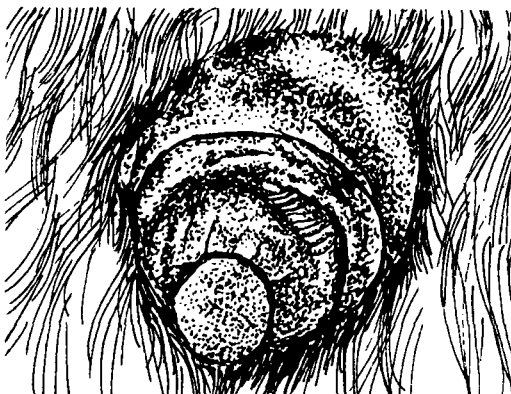
Horses and donkeys

The placenta usually comes out in less than three hours after birth. Sometimes a large part of it hangs from the vulva for another 4–5 hours before it all comes out.

- Tie the membranes in a knot to stop the animal treading on them. Never pull on the placenta and membranes, except very gently or you will damage the *uterus*.
- Skilled workers often give antibiotic injections and use special medicines to make the placenta come out because horses can become very sick if it has not come out after eight hours.

Prolapsed vagina

Sometimes the *vagina* is pushed out through the *vulva*. **Most female animals** can get a prolapsed vagina. It often happens to **buffaloes** and **camels**. Sometimes it happens again the next time they are pregnant. It usually happens when the animal has been pregnant for a long time, soon before it gives birth.



Signs

- ◆ A red swelling comes out of the vulva. This is the vagina that has been pushed out and turned inside out. It is not very dangerous for the animal unless infection gets in.
- ◆ Infection can cause abortion or make the animal very sick.

Treatment and prevention

- Wash the prolapse carefully.
- Treat any wounds with antibiotic powder or wound dressing (p. 324). Flies like to lay eggs on the prolapse so look for any fly damage and treat with a dressing that kills fly larvae (p. 326).
- Make the animal stand with its tail higher than its head. Push the prolapse back inside with both hands.
- Hold the vulva closed for a few minutes. Keep the animal standing up for as long as possible. She may push the prolapse out again when she lies down.
- Some people stitch the vulva closed to keep the prolapse in (see p. 78). This is not always needed and can cause infection around the stitches. Only do this if the prolapse keeps happening. Stitch with strong tape. **Remember to take the stitches out before the animal gives birth.**
- If the animal lives tied up in a house it helps to make the back of the place where it lies higher than the front.



Prolapsed uterus

See EMERGENCIES (p. 76) for treatment.

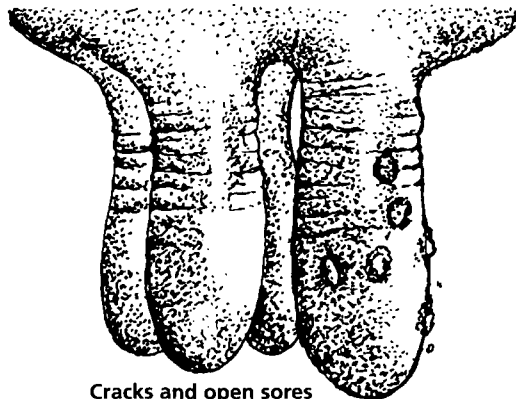
THIS IS AN EMERGENCY. START TREATMENT IMMEDIATELY.

Sore teats

Cattle, buffaloes and other animals that are milked get sore teats most often when they start to be milked soon after they have given birth, especially when they have given birth the first time.

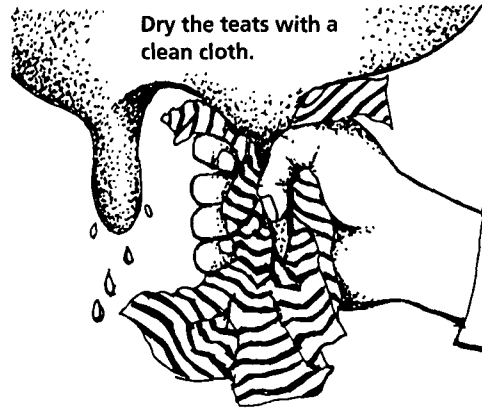
Signs

- ◆ The skin on the teats is cracked and there are painful open sores. Infection gets in to small cracks in the skin of the teats. Infection comes from faeces or from the ground. It spreads from one teat to another or to another animal on the milker's hands.
- ◆ The teat becomes swollen and red, the animal is restless when she is milked.



Treatment

- It helps to handle and gently rub the teats of the animal before she gives birth and starts to be milked.
- Hold animals securely while they are milked. Do not hold the animal in place by its teats.
- If the udder is washed with water or made wet by the calf drinking, dry the teats with a clean cloth before milking.



- Keep the place where animals are milked clean.

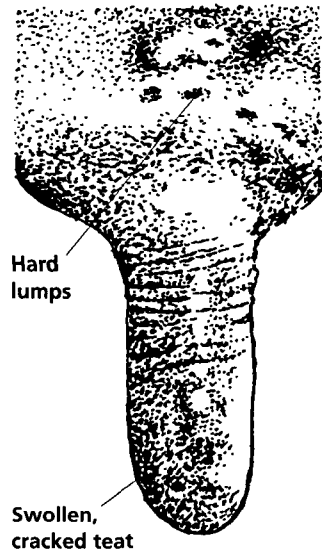
Mastitis

All animals that produce milk can get *mastitis*. Mastitis is an infection in the *udder*. Sometimes it is very mild and just slightly changes the milk. Sometimes it is severe, it happens very fast, the animal is very sick and may die.

Sheep and **goats** sometimes get very severe mastitis called *contagious agalactia* (p. 245).

Signs

- ◆ Mastitis infection is often in the udder for some time before signs appear. Sometimes animals give less milk.
- ◆ The milk looks different. It is watery, discoloured or has lumps in it. Sometimes it is stained with blood and looks pink.
- ◆ The teats are swollen and tender. Sometimes there are wounds or cracks on the teats.
- ◆ The animal resists being milked.
- ◆ The udder is hot. It looks reddened. It sometimes becomes swollen or hard.
- ◆ Often only one teat has signs of disease.
- ◆ The udder sometimes has hard lumps in it that are painful to the animal when you touch them.
- ◆ Some types of very severe mastitis make the udder become dark blue/black. It feels cool if you touch it. These are very bad signs and when they happen the animal stops eating and becomes very sick.



How animals get mastitis

They usually get infection through the end of the teat. Some infection comes from injuries around the teats or udder. Sometimes infection comes in the blood, especially when the animal has another disease. Animals get mastitis most often when they have just had babies and are giving most milk.

Pigs get mastitis, sometimes when their teats are bitten by the sharp teeth of baby pigs.

Treatment

- Treat the animal as soon as possible.
- If an animal has signs of mastitis milk her until the udder is empty. Do this as often as you can. Keep the udder as empty as possible. Infected milk can spread infection to another animal. Be careful not to spread mastitis to other animals.
- Put an antibiotic directly into the udder. Many antibiotics work well (pp. 328, 331). If the disease is severe, also give an antibiotic by injection.

Prevention

- Keep everything as clean as possible around the time of milking.
- Clean the udder before and after milking.
- Keep the place where the animal is milked clean.
- Milk animals with mastitis last to avoid spreading infection to others.
- After milking, keep the animal in a clean place at least for an hour. Feed animals after milking them. Then they stand up to eat and do not lie down where it is dirty. It is especially easy for infection to get in to the udder after milking. **The teat does not close completely until about one hour after milking.**

Contagious agalactia

Sheep and **goats** get *contagious agalactia*.



Signs

- ◆ The udder feels hot and causes the animal pain.
- ◆ The milk is thick and yellow/green with lumps in it. Sometimes it is watery with lumps in it. If the disease goes on for a long time the animal stops producing milk.
- ◆ The animals are weak and tired, they stop eating and have a *fever*.
- ◆ Pregnant animals often abort when they are very pregnant.
- ◆ Some animals have hot swollen joints. They become lame, especially when more than one leg has swollen joints. Some joints have *abscesses* in them.
- ◆ Sometimes a clear *discharge* comes from the eyes. The animals do not like bright sunlight. The centre of the eyes becomes white then red. Usually the eyes recover in a few days but a few animals become blind.
- ◆ Some young animals have *pneumonia* (p. 195) and many of these die. Most other animals recover.

How animals get contagious agalactia

They get it from direct contact with infected animals. They also get it from places and things *contaminated* by infected animals. Infection also comes from the milk. Young animals get the disease from drinking infected milk.

Contagious agalactia is caused by *mycoplasmas* [*Mycoplasma agalactiae*] – they are like *bacteria*.

Treatment

Treatment is usually not effective. But you can try giving an antibiotic such as tetracycline or tylosin (p. 331). This may work if you give it soon enough.

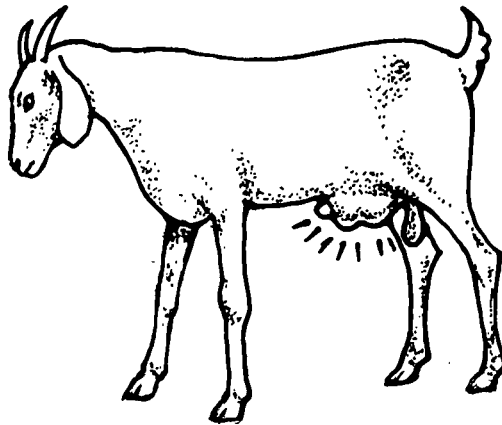
Prevention and control

- Isolate sick animals and disinfect buildings they have used.
- Vaccines are not always effective.
- Skilled workers test blood or milk samples to check for animals that carry infection. This can help you avoid bringing new animals with the disease into a group.

25 Diseases and problems mostly to do with urine

Blocked urethra

This happens most often to young male **cattle** and **sheep** and male animals that have been castrated. They cannot produce urine because the urethra (p. 37) is damaged or blocked with stones. The stones are made of minerals that come from the urine. Sometimes the urethra is damaged because the animal has been badly castrated.



The sheath around the penis is swollen.

Signs

- ◆ The animal feels pain and strains when it passes urine.
- ◆ It passes very little or no urine. There is no sign of urine on the ground near the animal.
- ◆ The animal has a rough coat. It will not lie down and rest. After a few days the animal's breath smells bad. The animal may have a high *fever*.

Treatment and prevention

- It is difficult to treat this. It is usually best to kill the animal for meat.
- Sometimes the bladder fills up with so much urine that it bursts and the animal becomes very sick and dies. Skilled workers can push a thin tube back up the *penis* to let the urine out or do an operation to repair the damage. This is complicated and expensive.
- Prevent this problem by giving plenty of fresh water to drink.

Babesiosis, Redwater fever

Cattle and **dogs** get *babesiosis* most often. **Buffaloes, horses, mules, donkeys, sheep, goats** and **pigs** occasionally get it.

Signs

Animals become sick 1–4 weeks after they get bitten by infected *ticks*. Adult cattle get more severe disease than young cattle.

- ◆ They have red urine.
- ◆ They become weak and tired and do not move or eat much. They have a high *fever*. The *mucous membranes* are pale and soon become yellow.
- ◆ The animal's breathing is fast and distressed. The heart beats very fast and loudly – sometimes you can hear it when you stand near the animal.
- ◆ Some animals die after 2–4 days. Most animals die after a few weeks with no treatment. Some animals recover after a long time. Some animals, especially cattle under six months old, only get mild disease. They recover after 3–4 weeks.

Animals that recover still carry infection and if they suffer *stress* they become sick again.

Horses, mules and **donkeys** get babesiosis, especially when they are young. It is usually mild but sometimes goes on for a long time.

- ◆ They often have a low fever and pale mucous membranes but no other signs.
- ◆ A few animals have red urine and some have yellow mucous membranes.

Dogs usually get a mild disease that goes on for a long time.

- ◆ They have pale mucous membranes.
- ◆ They are weak and get tired easily.
- ◆ They have a low fever for a few days.

Dogs that have never had infection before get very severe disease when they go to a place where infection is common.

- ◆ They suddenly have a high fever.
- ◆ The mucous membranes are very pale and become yellow.
- ◆ Some dogs die in a few hours.

Dogs that recover still carry the infection and ticks can spread disease from these dogs. Wild animals also carry infection and ticks get infection from them.

Skilled workers check for babesiosis by looking at *blood smears* (p. 118) with a microscope.

In a dead animal the flesh is yellow. The blood is thin and watery. The liver and the *lymph nodes* are larger than normal.

How animals get babesiosis

Animals get babesiosis when they are bitten by different kinds of infected *ticks* (p. 105). Babesiosis usually happens most in wet seasons, when there are many ticks. Different kinds of animals get different types of babesiosis so one kind of animal does not get babesiosis from ticks infected by other kinds of animal.

Babesiosis is caused by *protozoa* [*Babesia bigemina* and others] (Some people call these *microbes* 'piroplasms.')

Treatment

- Give imidocarb (p. 331). It is effective but many people use diminazene aceturate (Berenil) (p. 330) because it also treats *trypanosomosis* (p. 295). The sooner you begin treatment the quicker recovery will be.
- The powerful medicines used to treat babesiosis are also **poisonous**, especially for dogs and horses. These animals are difficult to treat because they need large doses that can poison them. You will need skilled help.
- It is often best not to treat animals for mild babesiosis, especially when they are young. Then they will become *immune* to the disease and be protected against getting infected again.

Prevention and control

- Prevent babesiosis by controlling ticks that carry the disease.
- There are live *vaccines* for babesiosis but they need careful handling and skilled use. There is no effective vaccine that is easy to use yet.
- Treat animals that have not had the infection before they go to a place where it is common. Watch the animals closely for signs of disease for several weeks after they arrive. Treat them if they become sick.
- **Horses, mules, donkeys and dogs** It is usually best to let a new horse or dog get naturally infected slowly and develop immunity. But watch the animal closely for signs of disease. Treat it immediately if it becomes sick.

26 Diseases and problems mostly to do with behaviour and movement

This chapter looks at common reasons why animals behave or move unusually but there are others, e.g. *ephemeral fever* (p. 278), *attack by flies* (p. 158), *scrapie* (p. 182).

Lameness

All animals suffer from lameness. Animals are often lame when they have injured a leg but not broken (p. 73) it.

Signs

- ◆ The animal limps and does not walk normally (p. 118).
- ◆ It is slower than other animals in its group.
- ◆ It only puts a little weight on the injured leg. It resents the leg being handled and examined.
- ◆ There is often heat, swelling and pain (*inflammation*) at the place that has been injured.

Treatment

To treat injuries to the leg that are not broken bones:

- Rest the animal until it recovers.
- Graze it near home.
- Put a hot *poultice* over the injured area for a few days (p. 327). Make sure the dressing is not too hot. You should be able to handle it comfortably.
- Skilled workers give special medicines, e.g. corticosteroid.

Arthritis

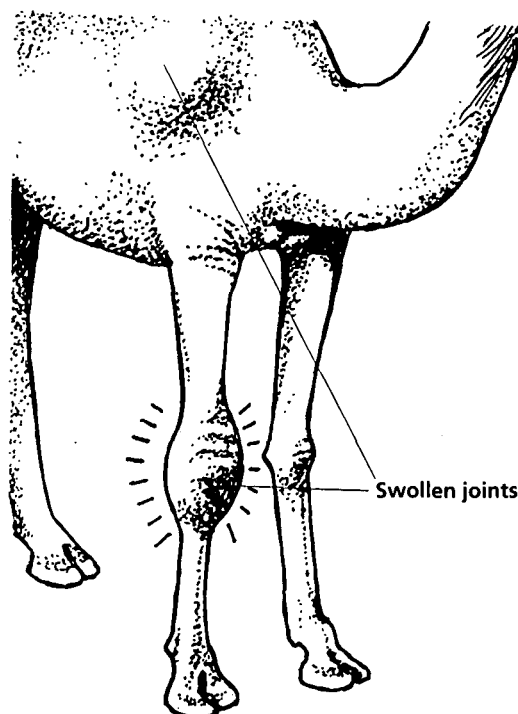
All animals can get *arthritis*.

Arthritis is the inflammation of a *joint*. Arthritis sometimes comes from infection. Baby animals get arthritis when infection gets into their blood through the *navel* soon after they are born. Infection is carried in the blood to the joints. Some people call this problem *navel ill* (p. 251)

Older animals and animals that have had severe infections get arthritis that goes on for a long time. Animals also get arthritis when they have some important diseases.

Signs

- ◆ The animal has pain in a joint and is usually lame on that leg.
- ◆ The joint is hot and swollen. The animal cannot bend the joint very much.
- ◆ Sometimes arthritis goes on for a long time and the joint is often swollen but not hot.
- ◆ The joint may make a grinding noise when the animal moves. If you put your hand over the joint you can feel the rough surfaces of the bones inside grinding against each other.



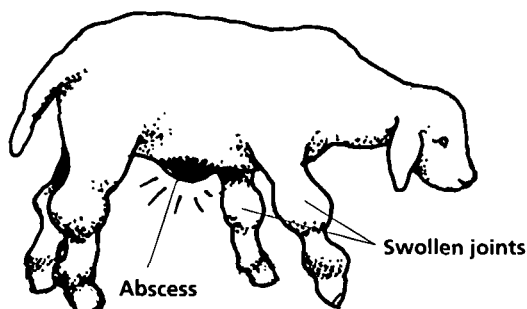
Treatment

- Antibiotic injections (p. 328) sometimes work when arthritis has not been going on for long. When it has been going on for a long time the joint is usually damaged and antibiotic does not work.
- Skilled workers can give special medicines to stop the *inflammation* and reduce the pain. (They give corticosteroid, butazolidone or aspirin.)

Navel ill, Joint ill

Signs

- ◆ A new-born animal is lame, it may be very lame with all its joints swollen. It does not eat and is weak and tired.



- ◆ It may have an *abscess* swollen with *pus* around the *navel*.
- ◆ Sometimes it has cloudy eyes.

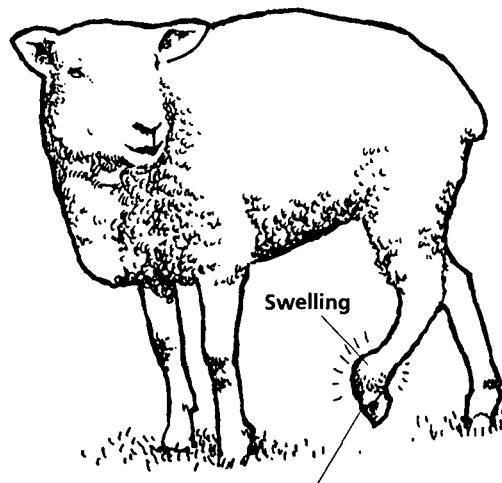
Treatment and control

- Drain the abscess (p. 186).
- Give an antibiotic (p. 328).
- Put antiseptic on the navel of new-born animals (p. 62).

Foot abscess

Signs

- ◆ Animals with an abscess in the foot are usually lame on one leg and the foot may be hot, sometimes there is swelling above the hoof. If you press under the foot the animal feels pain. An *abscess* can be deep inside the foot. It is caused by infection that gets in through a crack under the foot.



Pus draining out above the hoof.

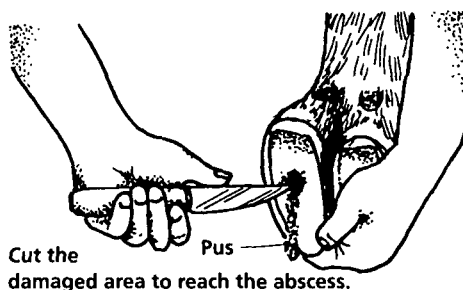
- ◆ **Horses, mules and donkeys** with infection in the foot may have yellow/white *pus* that comes from a wound, or the underneath of the foot may be wet, black and smell bad.
- ◆ **Camels** often get thorns in the pad of the foot and usually the thorn goes through the foot and comes out of the top without a problem. But sometimes they get an abscess and they need a *poultice* (327).

Treatment

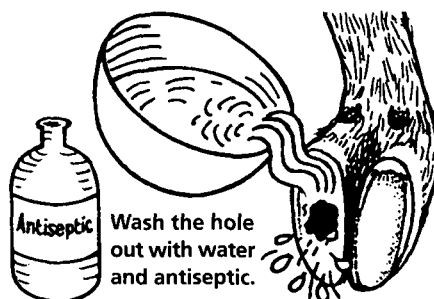
- Wash the whole foot using water as hot as you can put your hand in.



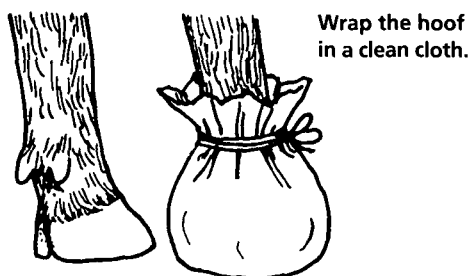
- Cut away at dark or damaged areas under the foot, especially if there is a crack. When you have cut far enough in to reach an abscess, pus will come out. Pus from cattle's feet is usually brown/grey and watery. Some blood sometimes comes out too.



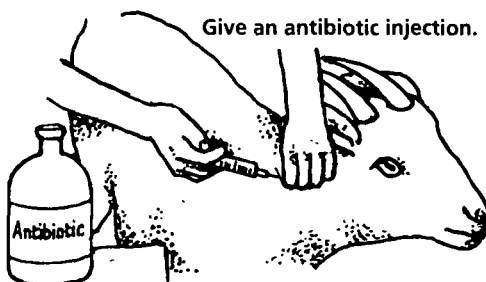
- Wash out the hole you make with water or antiseptic (p. 324).



- If the animal lives in a dirty place wrap the foot in a bandage for a few days to keep dirt out of the open hole. If the foot does not heal put a poultice on it (p. 327) – some people tie a wet goatskin round the foot.



- Give an antibiotic by injection or put antibiotic into the wound (p. 328).
- Let the animal rest for a few days.



Footrot

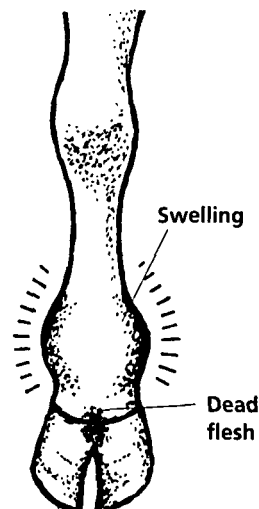
Cattle, buffaloes, sheep and rarely **goats** get *footrot*. Only animals that live in wet places get it.

Signs

- ◆ Animals become very lame on one or more legs.
- ◆ There is swelling between the two claws and sometimes further up the leg. There is dead flesh between the two claws that looks damaged and crusty. Sometimes this dead flesh is very deep.
- ◆ Rarely *footrot* is severe and makes animals sick. They have *fever* and become thin.

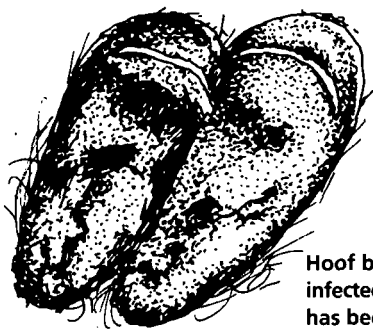
How animals get footrot

They get it from the soil where infected animals have been.
Footrot is caused by *bacteria* [*Fusiformis necrophorus* and others].

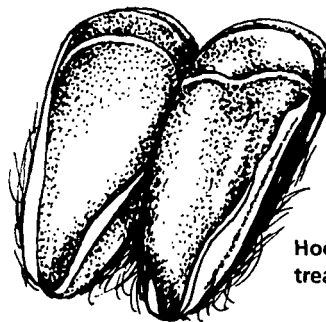


Treatment

- Isolate animals with severe footrot to stop infection spreading to others.
- Wash the foot, especially the skin between the claws. Use hot water – as hot as you can put your hand in – if possible. Put antiseptic in the water (p. 324).
- Cut away any decayed part of the hoof to remove the infection that is often underneath it.



Hoof before the infected, decayed part has been cut away.



Hoof after treatment.

- For cattle, use a stick or a feather to put a caustic chemical (p. 351) on the damaged place between the claws.

WARNING

Do not use copper for sheep as it poisons them if they lick it or eat it

- Put antibiotic spray or powder where you have cleaned away dead flesh.
- Inject an antibiotic; one injection is usually enough to treat the animal (p. 328).

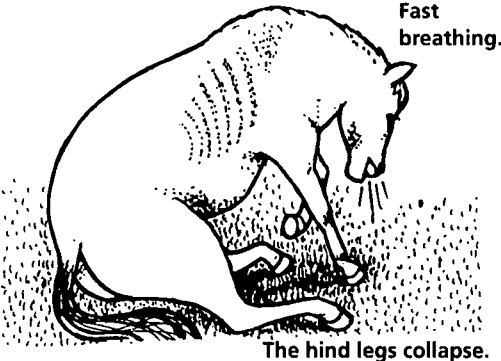
Prevention and control

- Treat infected animals as soon as possible to stop infection spreading to others.
- People in East Africa move their animals across hot sand to drier places to control footrot.

Azoturia, Tying up, Exertional myopathy

Only **horses, mules** and **donkeys** get *azoturia*.

Signs

- ◆ The animal becomes sick 1–4 hours after it starts working.
 - ◆ The animal sweats a lot.
 - ◆ It has stiff back legs. It will not move even when encouraged.
 - ◆ If you let the animal rest completely it may recover after a few hours. If it does not rest it often sits down on its back legs. Then it collapses and lies on its side. The animal looks distressed and tries to get up. It breathes fast and it may have a *fever*.
- 
- ◆ The animal often passes little urine but with difficulty. The urine is dark brown/red.
 - ◆ If the animal rests as soon as these signs appear it will usually recover in a few days. Animals that collapse and lie down for a long time do not recover. They often stop urinating and die after a few days.

In a dead animal when you cut into the big muscles of the back leg they look pale (like cooked meat). The *bladder* often has dark brown/red urine in it.

How animals get azoturia

This disease is not infectious – it does not spread from one animal to another. Azoturia only happens when animals that have been rested for a time suddenly work hard.

Treatment

- Rest the animal immediately but keep it standing up – even if you need a sling to help.
- When the animal begins to recover, encourage it to walk – slowly at first.
- Encourage the animal to drink as much water as possible. It is a good sign when it starts to urinate normally.
- There is no effective treatment but skilled workers can give special medicines to help recovery.

Prevention and control

- When working animals are not working make sure they have exercise and are not fed too much grain.
- Return animals to work gradually after they have rested for a long time.

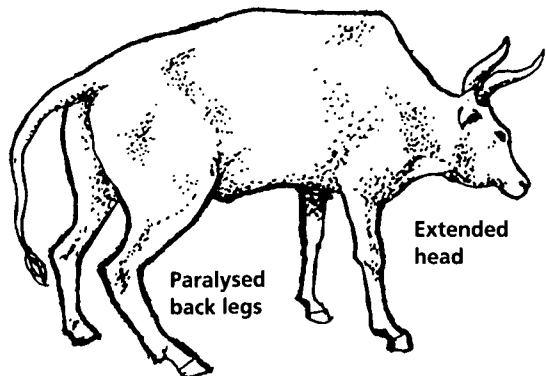
Botulism

All kinds of animals and **birds** get *botulism* occasionally. **Chickens** and **ducks** often get botulism.

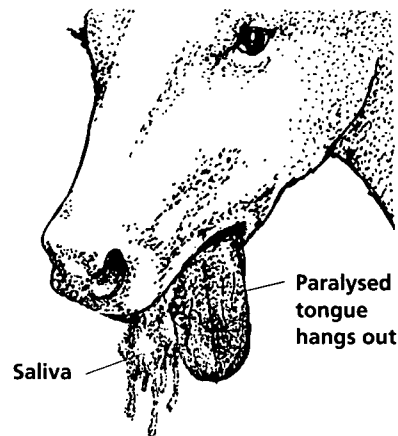
Signs

Often only one or two animals get botulism but when animals lack *phosphorus* many get it at the same time (see p. 257). Animals become sick 4–5 days after they eat food with botulism poison in it.

- ◆ The animals move about a lot and do not rest but they do not have a *fever*.
- ◆ The back legs become weak and paralysed and animals often collapse. The front legs and the head and neck become weak and paralysed. Cattle often lie on their chest with their head on the ground to one side



- ◆ The animal's tongue is paralysed and hangs out. Much *saliva* comes from the mouth. The animal cannot chew or swallow.



If an animal eats much poisoned food the disease happens fast. Some animals die in a few hours. Most animals die quietly after 3–5 days. A few animals recover after about a month.

How animals get botulism

Animals and birds get botulism from eating decayed food that has poison made by *botulism microbes* in it. These microbes are *bacteria* [*Clostridium botulinum*]. People get a different type of botulism, usually from badly preserved food. They do not get it directly from animals.

Botulism and lack of phosphorus

A lack of the mineral *phosphorus* makes animals behave unusually and eat everything, including stones, sticks and bones. The bones they eat sometimes still have pieces of decaying flesh on them. If the bones come from a body that was infected with botulism, the animals get botulism from these bits of flesh. The botulism poison is very strong, a piece of infected flesh smaller than the size of a finger can kill an adult cow.

In areas where there is little phosphorus in the soil or plants, many animals lack phosphorus and eat bones. In very dry times many animals die so there are many dead bodies for them to scavenge and many animals may suffer from botulism at once.

Treatment

There is no treatment for botulism.

- Help animals with only mild disease to recover. They will have difficulty eating so give them soft, wet food such as fresh grass.

Prevention and control

- Make sure animals get enough phosphorus. Give bone meal or provide licks containing phosphorus (p. 230).
- There is an effective *vaccine* for botulism. When one or two animals die from botulism, immediately vaccinate other animals that may have eaten the same food. In places where animals often lack phosphorus it is a good idea to vaccinate animals, especially cattle, every year.

Heartwater, Cowdriosis

This disease does not usually happen in Asia, it is common in Africa. **Cattle, goats, sheep** and rarely **camels** get *heartwater*.

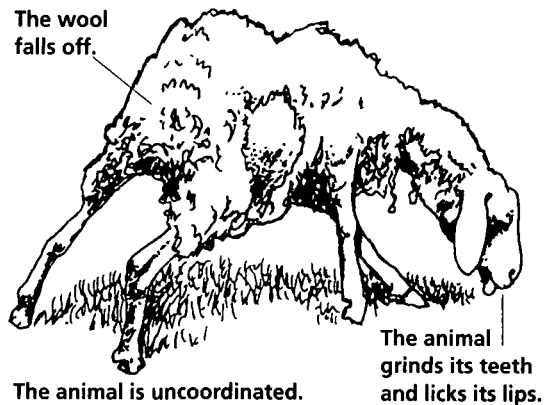
Signs

Animals become sick 1–4 weeks after they are bitten by infected *ticks*. Occasionally the disease is **very severe** and happens very quickly.

- ◆ Animals suddenly have a high *fever*.
- ◆ They collapse, have *convulsions* and die in a few hours.

Usually the disease is **severe**.

- ◆ The animals eat less than normal. They have a high fever almost until they die.
- ◆ They become nervous and easily frightened. They are *uncoordinated* and lift their legs up very high when they walk. They go round in circles. Sometimes they run at things or people. They grind their teeth and lick their lips.
- ◆ They collapse, first onto their chest, then onto their side. They kick a lot, have convulsions and die after 1–7 days.



Some animals have **mild disease**. Sheep, goats and very young cattle usually only get mild disease.

- ◆ A few animals have diarrhoea. The faeces often have blood in them.
- ◆ The animals have a low fever but few other signs of disease.

In a **dead animal** the sac around the heart is full of fluid. Cattle have less fluid around the heart than sheep or goats. There is also fluid in the chest and the *abdomen*. The *spleen* and many *lymph nodes* are swollen.

Other diseases that look like this:

Anthrax (p. 141); East Coast fever (p. 276); *poisoning*: strychnine (p. 308); *tetanus* (p. 263); *rabies* (p. 260).

How animals get heartwater

They get it when they are bitten by *bont ticks* [*Amblyomma*] (p. 105). They do not get the disease from direct contact with other animals. Ticks get infection from animals with the disease and from infected animals with no signs of disease. These ticks also live on many different wild animals and birds some of the time and occasionally get infection from them.

Heartwater is sometimes very severe for young animals born on dry open pasture where there are no ticks. In a dry season these young animals are moved to grazing where there are ticks and they get infected. They have no *immunity* so they get severe disease. Many of them die. Animals imported from places where heartwater does not happen often get very severe disease.

Heartwater is caused by *rickettsia* [*Cowdria ruminantium*] – like small *bacteria*.

Treatment

- Treatment only works if it is started soon enough. Give an antibiotic, tetracycline and some other medicines are effective (p. 333).
- Check other animals in a group with a sick animal and immediately treat any that have a *fever*.
- Most of the sick animals that behave unusually, e.g. walk in circles, will die but you can help others to recover (p. 140).
- Skilled workers can use complicated medicines to help the animals recover.

Prevention and control

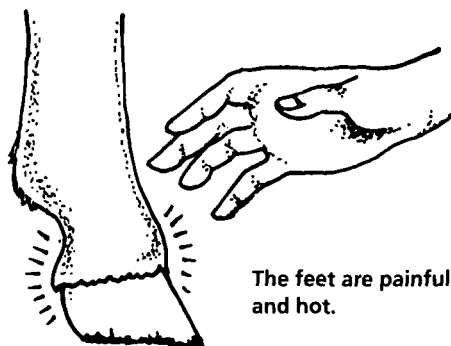
- Control the ticks that spread the disease (p. 105).
- Fodder sometimes has ticks in it so if possible avoid using fodder that might carry infected ticks.
- It is possible to immunise animals against heartwater but it is complicated and needs skilled help. Immunising is done by giving infected blood into a *vein* but this often makes animals sick and they have to be treated at the same time.

Laminitis

Horses and occasionally **mules** and **donkeys** get *laminitis*. Animals get laminitis when they have eaten too much grain or too much green food. They also get it when they have drunk too much cold water while they are still hot after they have worked. Sometimes females get laminitis when the *placenta* does not come out.

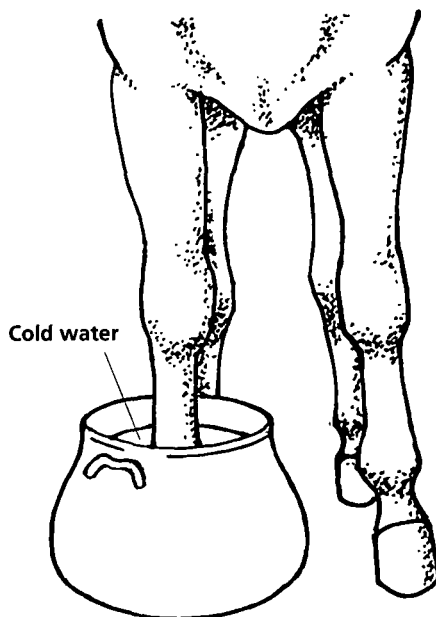
Signs

- ◆ The animal will not move. It keeps moving its weight from one foot to another and may lie down.
- ◆ The animal sweats.
- ◆ The feet are hot to touch.



Treatment

- Remove the feed that might have caused the problem and give different food of poorer quality for a few days. Avoid feeding too much grain.
- Give a mild laxative such as bran mash (p. 347).
- Cool the feet down. Make the animal stand in a river or pour cold water on the feet in a metal bowl.
- Make the animal walk about as soon as it can.
- Some animals recover with no treatment. Skilled workers can give other medicines, e.g. corticosteroids, to help treat laminitis if it goes on for long.

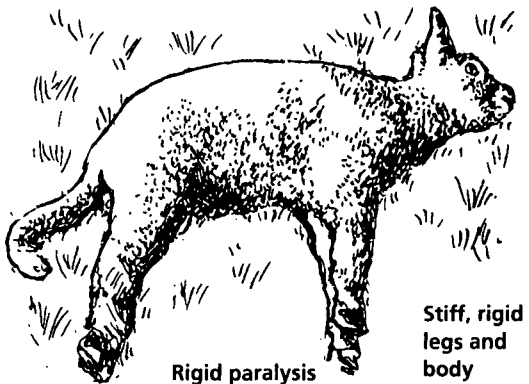


Paralysis

Animals sometimes cannot move all or part of their bodies, this is called *paralysis*. Animals become paralysed when they are badly injured or when they have some diseases that damage the nervous system.

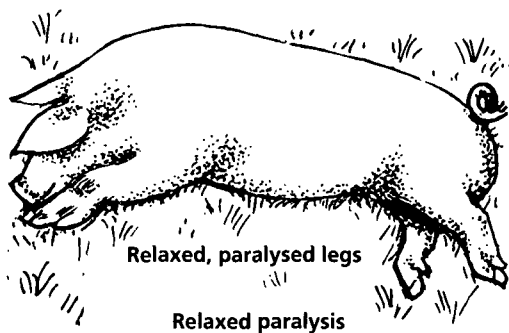
Rigid paralysis

Sometimes when animals are paralysed they are stiff and rigid. They cannot move their legs and you cannot bend them because they are too stiff.



Relaxed paralysis

Sometimes paralysed animals are relaxed and quiet, they cannot move their legs but the legs are relaxed and you can easily bend them.



Rabies

All animals can get *rabies*. **Birds** do not get rabies. **People** can get rabies and it can kill them (p. 6).

WARNING

People may offer to protect you or your animals from rabies through magic or religion. Some people believe this can protect them and their animals. **THIS IS NOT TRUE. IT IS VERY DANGEROUS TO BELIEVE THIS.** People and animals are not protected from rabies like this. People who believe that magic or religion makes them safe if they are bitten by an animal with rabies might not go to a health worker for proper help. Anyone bitten by an animal with rabies who does not go to a health worker as soon as possible for treatment might die. Once a person has become very sick with rabies there is no treatment.

People get rabies from the saliva of an animal with rabies. They get it when they are bitten or when the animal's saliva gets into the person's blood through a scratch or wound. The animal is very often mad and aggressive because of the disease. People almost never get rabies from other people.

- Keep children away from animals that start to behave strangely.
- Avoid any animal that has been bitten by a dog and has become aggressive. If you have to handle an animal like this be very careful to avoid its saliva. You do not have to get bitten to get rabies, you can get it if the animal's saliva gets on to a cut in your skin.
- Wash yourself very well with strong antiseptic (p. 324) if possible after handling an animal you think has rabies.

Signs

Animals usually become sick with rabies 1–2 months after they are bitten by an infected animal. They rarely become sick sooner and it may be a year before they become sick. Animals with rabies do not recover. They are usually only sick with rabies for a few days before they die.

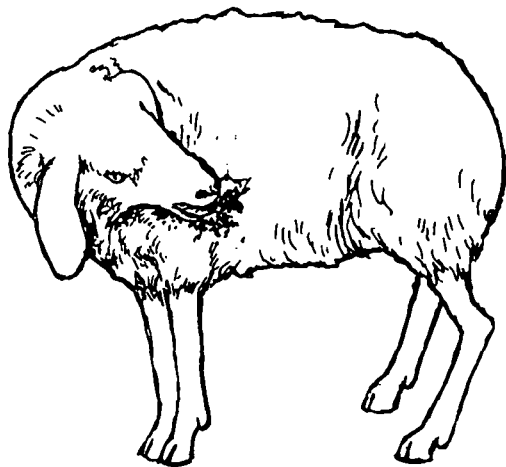
- ◆ Rabies usually happens in stages but the signs vary a lot. Some animals with rabies are never aggressive, others are very aggressive all the time until they collapse and die.

In the first stage of rabies animals behave unusually:

- ◆ A quiet animal may become noisy or an aggressive animal may become quiet.
- ◆ The animal does not eat or drink and usually does not have a *fever*.
- ◆ Sometimes *saliva* comes from the mouth. The saliva has infection in it even before the animal looks sick.
- ◆ Some animals start biting and barking like a dog. And some chew at the part of the body where they were bitten. Male animals may try to mate.



**Excessive
saliva**



**Animal chews the place on its
body where it has been bitten.**

In the second stage of rabies some animals are **aggressive**:

- ◆ After 3–5 days the animal loses all fear and becomes very aggressive. It bites anything and suddenly attacks people and things. Saliva comes from its mouth.

- ◆ It is *uncoordinated* and its voice changes.

In the second stage of rabies some animals are **quiet**:

- ◆ After 3–5 days the animal becomes paralysed. The back legs and muscles in the jaw and neck become paralysed first, then the rest of the body is paralysed (see p. 260). All the muscles relax. The animal is quiet. It cannot swallow or chew. Saliva comes from its mouth.

Then animals that have been aggressive and those that have been quiet become unconscious and die in a few hours.

Different animals and signs of rabies

Cattle often go away from other animals. They make a continuous low cry and grind their teeth. They kick the ground with their feet and run at people and things.

Sheep and **goats** cry out continuously. They become nervous and excited.

Horses, mules and **donkeys** often roll on the ground. They grind their teeth and cry out a lot. Their back legs become paralysed, they collapse and die.

Camels become nervous and sensitive to things around them. They bite the tails of other camels. They sometimes hold their head high and rush off, lifting their legs higher than normal. Sometimes they are aggressive to people but usually they are not. Male camels look like they do in the mating season (p. 51).

Dogs attack other dogs and people and bite with no warning. They eat strange things, such as pieces of wood, metal and stones. They make a low cry. They soon become very thin. Some have a watery *discharge* from the eyes. They usually die after they have been sick for about ten days. Dogs that are sick for much longer than 10 days usually do not have rabies.

In a **dead animal** there is nothing to see that tells you it has died of rabies. But dogs sometimes have sticks, stones or pieces of metal they have eaten in their *stomachs*. Skilled workers in a well equipped laboratory can examine the brain of a dead animal to see if it had rabies.

Other diseases that look like this:

Babesiosis (p. 248); *heartwater* (p. 257); *theileriosis* (p. 294). Sometimes animals that have been very frightened, such as by lions, or bitten by some kinds of snake look as if they have rabies.

How animals get rabies

They get it from the saliva when they are bitten by animals that carry infection. Animals that bite and most often spread the disease are: dogs, foxes, wolves, hyenas and bats.

Rabies microbes move from the wound where they get in along the nerves to the brain. The nearer the wound is to the brain the sooner the animal becomes sick.

The *microbes* that cause rabies are *viruses* [*Rhabdovirus*].

Treatment

There is no treatment for rabies. Animals that get rabies will die.

DO NOT TRY TO TREAT AN ANIMAL WITH RABIES. It is very dangerous. You can easily get rabies from the animal's saliva.

- Isolate an animal you suspect has rabies and be very careful about handling it. When an animal you think has rabies has bitten someone it is useful to keep it alive for a time to find out if it has rabies or not. But tie the animal up or keep it in a secure place where it cannot bite other people. If the animal lives for 14 days or more it has almost certainly not got rabies. If the animal dies, bury the body or burn it (p. 142). **DO NOT EAT IT.**
- If you are unsure or still think an animal has rabies kill it and bury or burn the body, do not eat it.

Prevention and control

- Control stray dogs. If you suspect a dog has rabies tell local health workers as soon as possible. Kill the dog and bury it (or tie it up for a time – see above). If the dog has bitten anyone take the person to a health worker for treatment as soon as possible.
- Vaccines for rabies are effective. (Rarely, an animal that has been vaccinated can still get another type of rabies that the vaccine does not protect against.) It is useful to vaccinate dogs to stop them spreading rabies to other animals and people. (Scientists are trying to make a rabies vaccine for giving to dogs with their food to make it easy to vaccinate many dogs without catching them.) It is rarely worth vaccinating cattle unless many of them become sick with rabies.
- Work together with others to help a control programme for rabies if there is one in your area.

Tetanus

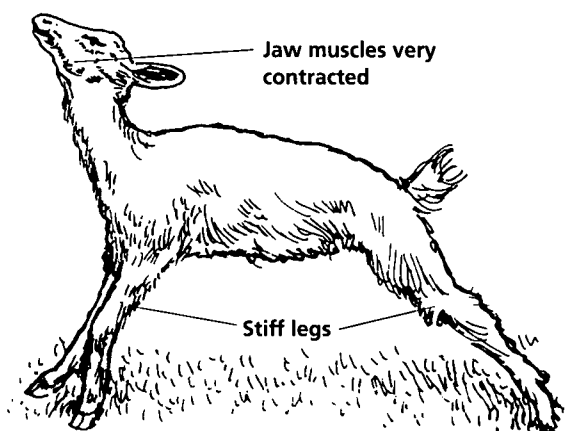
All animals can get *tetanus*. **Horses**, young **sheep** and **goats** suffer most.



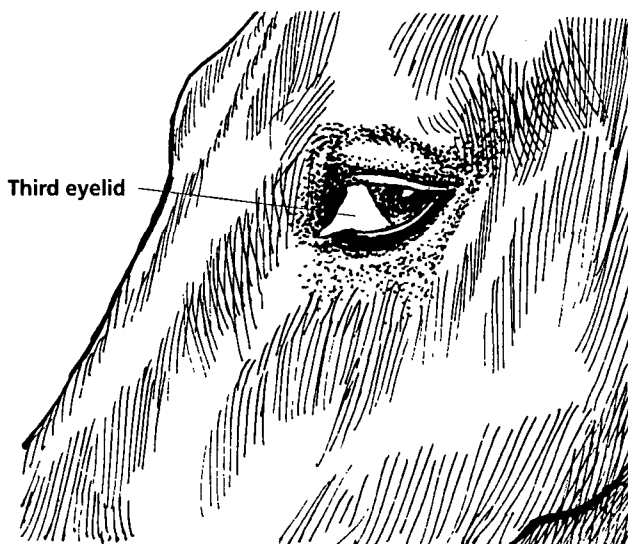
Signs

Animals become sick with tetanus 3–100 days after they get infected.

- ◆ The legs become stiff and the animal moves stiffly.
- ◆ The animal becomes nervous, especially when something disturbs it.
- ◆ The muscles of the jaw and cheeks contract in spasm and the animal cannot eat or drink. After several days many muscles contract in spasms and the whole body becomes rigid.



- ◆ The third eyelid comes across the eye.
- ◆ The animal has difficulty breathing.
- ◆ After 5–7 days it usually has convulsions, cannot breathe and dies. Animals rarely recover from tetanus.



Other diseases that look like this:

Poisoning: strychnine (p. 308).

How animals get tetanus

They get it when they are injured. Infection comes from the soil and gets into the body through a wound. Male animals often get it after they are castrated and females get it from the hands of people who assist with a difficult birth. Horses often get tetanus from wounds in their feet. Baby animals get infection through the *navel*. Infected animals pass tetanus microbes in their faeces. The microbes can live for many years in soil and people carry infection from the soil on their hands and arms.

Tetanus is caused by *bacteria* [*Clostridium tetani*].

Treatment

Treatment for tetanus is usually not effective. Skilled workers may use special medicines to help animals recover but they often do not work.

Prevention and control

- Wash out deep wounds with antiseptic (p. 324).
- Do operations, such as castrations, in a clean place. Sterilise the instruments used for castrations and other operations (p. 71).
- Wash your hands and arms (p. 55) before putting them inside an animal to help with birth.
- Put antiseptic (p. 62) on the navel of new-born animals. Iodine is very good for this.
- *Vaccine* for tetanus works for a year. It is only worth vaccinating animals in places where tetanus is a big problem, or vaccinating valuable horses.

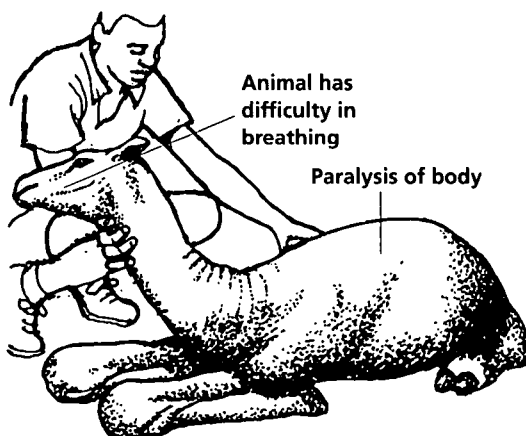
Tick paralysis

Most animals, especially young **cattle, camels** and **dogs** get *tick paralysis*. **Birds**, especially **ducks**, occasionally get it. **People**, especially children, rarely get it (p. 6).



Signs

- ◆ The animal cannot walk normally. The back legs become paralysed, then the front legs and the rest of the body. The muscles around the chest become paralysed and the animal cannot breathe.
- ◆ The body temperature is lower than normal.
- ◆ Dogs sometimes vomit.
- ◆ Animals collapse and, without treatment, they die in 1–5 days.



How animals get tick paralysis

They get it when they are bitten by ticks. This disease is not an infection. It happens because the *saliva* of some ticks is poisonous; even one tick can cause the disease.

Treatment, prevention and control

- Remove all the ticks from the animal as soon as possible (p. 108) and move the animal into the shade. Animals recover quickly after the ticks are removed.
- Move animals away from places where the ticks are. In Somalia, where many animals get tick paralysis, people even use trucks to move camels away from these places.
- Skilled workers can use special medicines to treat dogs.
- Control ticks to prevent this disease (p. 105).

27 Diseases and problems to do with many different parts of the body

Fever

All animals can have a *fever*. An animal has a 'high fever' when its body temperature is more than 2°C above normal. It has a 'low fever' if its body temperature is about 1°C above normal. See page 110 for normal temperatures.

Animals often have a fever when they are infected with *microbes*. Most microbes that make animals sick cause a fever. *Worms* and *flukes* make animals sick. They usually do **not** cause a fever.

It is dangerous for an animal to have a temperature that is too high. But fever can help animals to fight infection. When the body is hotter than normal, the processes inside it go faster than normal, including the processes that help animals to fight off microbes.

Fever, on its own, does not help you to tell what is wrong with an animal because it is such a common sign of disease. But it warns you that an animal has an infection. Together with other signs, it helps you decide what is wrong with an animal.

Signs

- ◆ The animal's body feels hot. Check with a thermometer (p. 110).
- ◆ The animal looks weak and tired (see p. 113).
- ◆ The coat looks rough and dull.
- ◆ The animal does not eat as much as normal but often drinks a lot of water.
- ◆ The eyes are dull and the nose is sometimes dry.

Treatment

- Isolate an animal with fever from others in its group (see p. 92).
- Shade it from the hot sun and give it plenty of clean water to drink.
- If the animal has a *high* fever do not offer it food for one day. Watch the animal closely to see if the fever goes down. As the fever goes down offer the animal good quality food.
- Look for other signs to find out why the animal has a fever. If you can decide which disease is causing the fever treat the animal for it as soon as possible.
- If the animal is sick and has a fever, give an antibiotic to kill *microbes* (p. 328) even if you do not know which disease it has. If the fever does not come down after you have given a full treatment with antibiotic – usually 3–5 days – try a different antibiotic.

Dehydration

An animal is *dehydrated* when it has too little water in its body. Animals become dehydrated when:

- They have diarrhoea and lose a lot of water in the faeces.
- They are sick, especially with a disease that has gone on for a long time, or with a disease that damages the kidneys (p. 37).
- They do not have enough water to drink, especially when they are sick, or have a blockage in the *oesophagus* and cannot drink normally.
- They are very hot (p. 268).
- They lose a lot of blood.

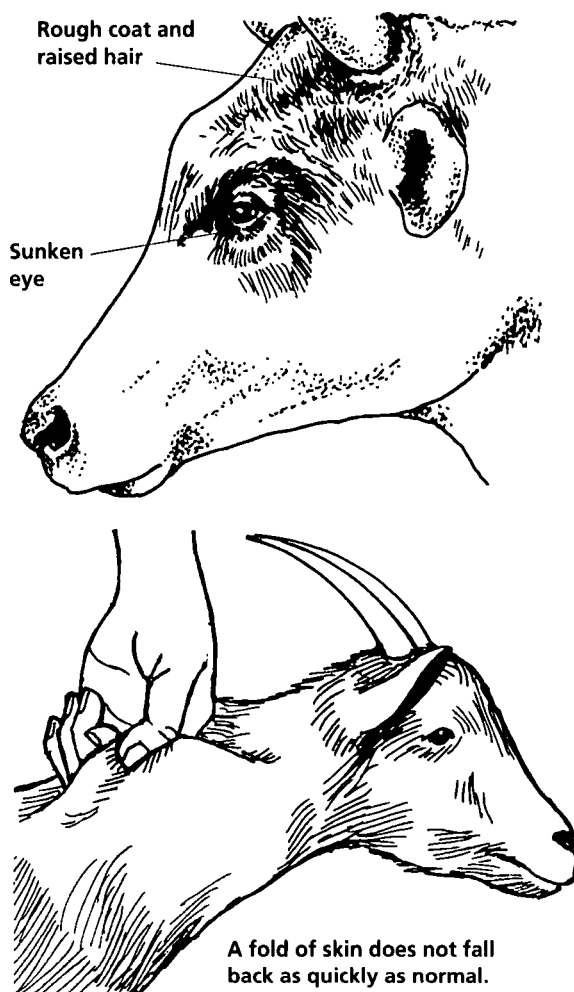
More than half the weight of an animal's body is water. Blood (about one tenth of the animal's weight) is nearly all water. The rest of the water is in the flesh and bones. All the water inside an animal has salt, sugar, and other chemicals in it. When an animal loses a lot of water it also loses these important chemicals. **Animals lose water all the time.** They lose it in urine and faeces, in sweat from the skin and in the damp air they breathe out. They lose even more water when they produce milk or give birth. **They need to replace this water** by drinking or eating food with water in it.

Signs

- ◆ The animal has a dry skin and rough coat with raised hair.
- ◆ The eyes sink into the head.
- ◆ It wants to drink often and is weak and tired.

- ◆ When you lift up a fold of skin it does not fall back as quickly as normal.
- ◆ The animal passes very little urine or has very dark urine. It has constipation, the faeces are dry.

When you see these signs an animal has probably lost about one tenth of its body water (large cattle could have lost 20–30 litres).



Treatment

- **Give the animal plenty of water to drink.** Or better still give water mixed with some sugar and salt. See *rehydration fluid* (p. 346).
- Treat diarrhoea quickly (p. 211).

Prevention

- Don't graze animals too far from water. Always give them enough water to drink. It is especially important to give sick animals plenty of water to drink.
- Keep animals shaded from the hot sun in the middle of the day if possible.
- Keep animals healthy so they do not get diarrhoea or diseases.
- Treat sick animals as soon as you can, especially for diarrhoea (p. 211).

Anaemia, Pale or white mucous membranes

Animals with *anaemia* have pale/white *mucous membranes*. Pale/white mucous membranes are common signs that animals have a disease or problem that causes anaemia, e.g. baby pigs have pale mucous membranes when they lack iron (p. 230). Together with other signs, pale mucous membranes warn you that an animal has an important disease and help you work out what the problem is.

Anaemia happens when there are not enough *red blood cells* in the blood or they are damaged. This is important because red blood cells carry oxygen that the body needs to stay alive.

Immediate treatment for pale mucous membranes

- Animals with mucous membranes that **quickly** become pale have usually lost a lot of blood or have severe disease. They may be bleeding inside. Try to find out where they are bleeding from and stop the bleeding (p. 66).
- Animals with mucous membranes that **slowly** become pale very often have *worms* or another disease that has gone on for a long time (p. 218). Treat them for worms or the disease you think they have.

Heatstroke, Sunstroke, Overheating

All animals and **birds** get *heatstroke*. **Sheep** get it most often because of their thick wool. **People** get heatstroke from extremely hot sun – they do not get it from animals.

Signs

- ◆ Animals become weak and stagger about.
- ◆ They breathe much faster than normal and the heart beats fast. They have a very high fever – it is often much higher than the fever that happens with most diseases.
- ◆ Some pregnant animals have abortions. This happens even after they seem to have recovered.
- ◆ **Sheep** with heatstroke often lose wool but it grows back when they recover.
- ◆ After a few hours they collapse, some animals have convulsions and die.

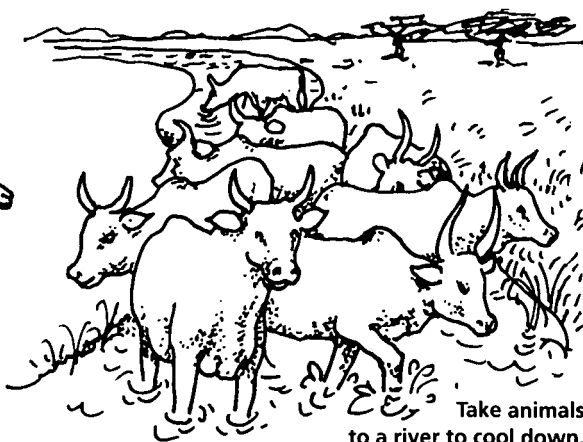
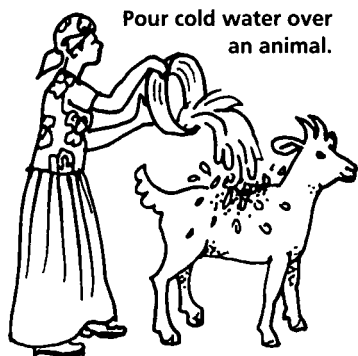
How animals get heatstroke

It happens when animals get too hot from the sun, and they get it inside very hot buildings. They are more likely to get heatstroke when they do not have enough water to drink and when they have to work hard in the hot sun.

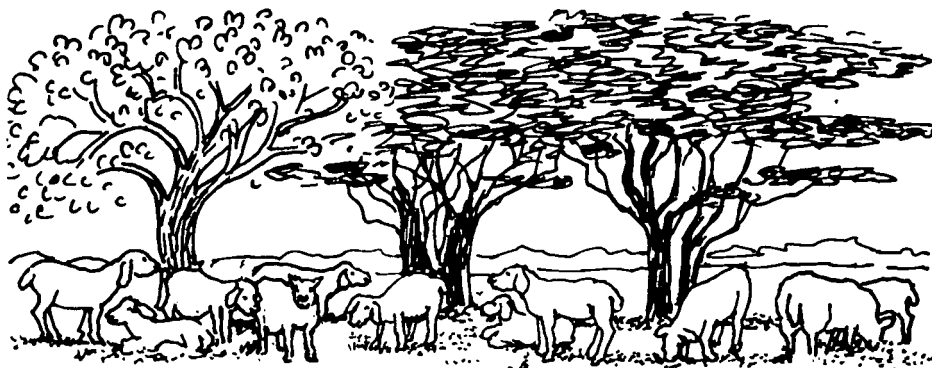
The animals get so hot that they cannot control the temperature of their bodies.

Treatment

- Cool the animal down as fast as possible. Pour cold water over it or put it into some cold water. Move the animal into the shade. If the animal is part of a group, move the whole group into the shade.
- Continue to cool the animal until it looks better and it does not have a fever any more.



Move animals into the shade.



Prevention and control

- Ensure that animals have enough to drink.
- Keep animals shaded in the middle of the day and try not to work animals too hard when the sun is very hot.
- **Buffaloes** and **pigs** have few sweat *glands* in their skin so they cannot cool themselves down by sweating and need water or mud to cool themselves in.

African horse sickness

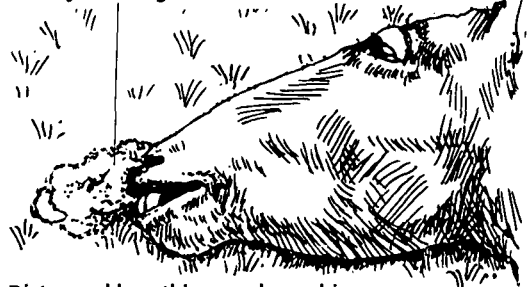
African horse sickness happens in Asia as well as Africa. **Horses, mules** and **donkeys** get African horse sickness. Usually only imported animals get the disease, local horses and donkeys rarely become sick.

Signs

Many animals often get the disease at the same time. Animals become sick with African horse sickness 2–20 days after they get infected. Sometimes African horse sickness causes signs mostly to do with **breathing**.

- ◆ The disease quickly becomes very severe and animals have a high fever.
- ◆ They have distressed breathing and cough. They have much white/yellow frothy *discharge* from the nose.
- ◆ They have dark *mucous membranes*. Small blood vessels in the membranes look swollen.
- ◆ Animals soon collapse and die. They often die within a day.

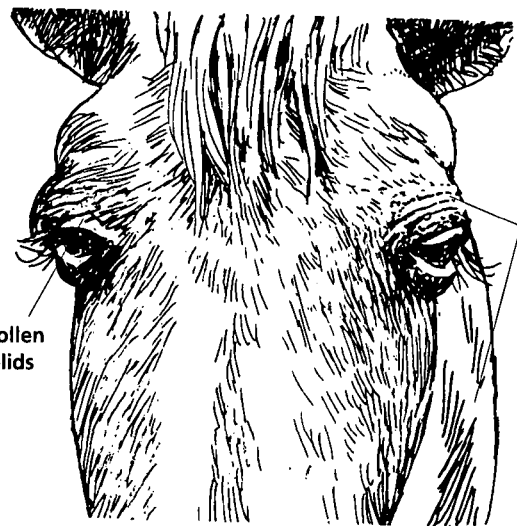
Frothy discharge from the nose



Distressed breathing, and coughing

Sometimes African horse sickness causes signs mostly to do with **swelling around the head**. Then the disease does not happen so quickly.

- ◆ Flesh in the hollows above the eyes swells up and the swelling may spread down the neck to the chest.
- ◆ Animals have a fever that sometimes lasts for a few days.
- ◆ They have dark red/blue mucous membranes. After a few days small blood vessels in the mucous membranes start to bleed. The gums and tongue are often dark red/blue. The eyes are red.
- ◆ After a few days the animals breathe very fast and are very distressed.
- ◆ Some animals die in 1–2 weeks. A few animals recover after 2–3 weeks.



Swollen eyelids

Swelling above the eyes and down the neck.

Animals often have a mixture of both types of African horse sickness.

How animals get African horse sickness

Animals get African horse sickness when they are bitten by infected midges (p. 105) that fly at night. The midges can blow hundreds of kilometres in the wind and spread disease to places where it does not usually happen. The disease happens most at the start of a wet season when there are many midges. Animals imported from areas where the disease does not happen suffer most. (*Vaccinate* them).

In Africa the *virus* lives in zebras but does not make them sick. Dogs occasionally get African horse sickness from eating infected meat.

African horse sickness is caused by *viruses* [*Orbivirus*].

Treatment

There is no effective treatment for African horse sickness.

Prevention and control

It is important to prevent African horse sickness because there is no treatment.

- *Vaccine* for African horse sickness is effective. Vaccinate horses over six months old every year before a wet season. Do not give the vaccine to pregnant animals.
- Keep imported horses in midge-proof buildings at night in the wet season; it is almost impossible to control the number of midges (p. 105).

Anaplasmosis

Cattle get *anaplasmosis* most often. **Buffaloes, camels, sheep** and **goats** occasionally get it. Animals suffer most when they have never had the infection and move to areas where the disease is common. Other animals usually only get very mild anaplasmosis but they get severe disease when they go from areas without the disease to an area with much infection.



Signs

Animals become sick 20–28 days after they get infected with anaplasmosis.

- ◆ They soon have pale *mucous membranes* that may become yellow.
- ◆ They breathe faster than normal and have a very fast heartbeat. They have a high *fever*.
- ◆ They stop eating and do not pass faeces.
- ◆ Pregnant cows *abort*.
- ◆ Older animals that have never been infected before get very severe disease and often die in 3–4 days. Animals less than six months old do not get severe disease.

Some animals get **less severe** disease that goes on for a few weeks.

- ◆ They become weak and tired and become thin. They are unsteady on their legs.
- ◆ They have a fever that comes and goes.
- ◆ They recover after a few weeks but they are very weak.

Animals that recover from anaplasmosis are weak for a long time. They easily get other diseases and die.

In a dead animal the blood looks thin and watery. The flesh is pale/yellow. The *liver* is yellow/orange. The *gall bladder* is large and full of brown/green liquid. The *kidneys* are large and soft. The *spleen* is large and dark.

Other diseases that look like this:

Babesiosis (p. 248); *trypanosomosis* (p. 295); *liver fluke* (p. 285).

Cattle often get other diseases that *ticks* carry, e.g. *babesiosis* (p. 248) at the same time and the signs of disease are complicated.

Skilled workers can check a *blood smear* (p. 118) for anaplasmosis. But they do not always find the microbes because they disappear from the blood when the disease is most obvious.

How animals get anaplasmosis

Animals usually get anaplasmosis when they are bitten by infected *ticks*. The disease happens most often in wet seasons when there are many ticks. But biting flies can also spread the disease, and people occasionally spread it on injection needles or the knives used for castrations.

All animals that recover from anaplasmosis still carry infection and many animals get infected when they are young but do not become sick. These carrier animals sometimes become sick if they suffer *stress*.

Anaplasmosis is caused by *rickettsia* [*Anaplasma* species]. They are like small *bacteria*.

Treatment

Treatment works well if you start it soon enough. It is not effective after the mucous membranes have become very pale.

- Give an antibiotic, tetracycline works well (p. 333). Inject it into a *vein*. Or give imidocarb (p. 331) but this is less effective.
- Give animals good food and plenty of water to drink and give some wet green food or medicine to make the animal pass faeces (p. 346).

Prevention

- Prevent anaplasmosis by controlling the *ticks* that spread it (p. 105).
- Because young animals do not usually get severe disease they can develop *immunity* without becoming sick. It is safer to move young animals into areas where anaplasmosis is common.
- It is difficult and complicated to control anaplasmosis and needs skilled help. Skilled workers find out which animals carry the infection by checking *blood smears*. Sometimes they *vaccinate* animals using blood from infected animals. This often works but it makes some animals become sick and need treatment. They also use other types of vaccine. In areas where the disease is not common they also treat healthy animals that might carry infection.

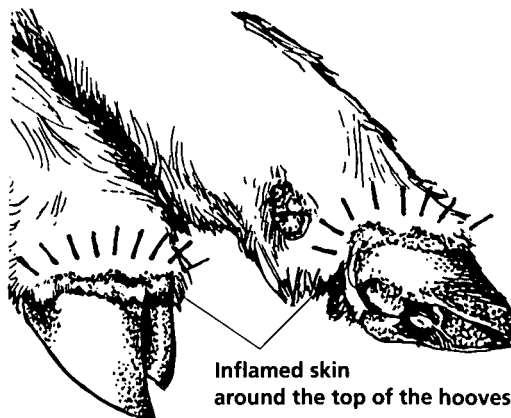
Bluetongue

Infection with *bluetongue* is common in most of Africa and Asia. But animals do not usually become sick except in South Africa and some parts of Asia or when they have been imported from places where there is no infection. **Sheep** and **goats** get bluetongue. **Cattle** and other animals carry infection but do not usually have signs of disease.

Signs

Animals become sick with bluetongue 1–14 days after they get infected.

- ◆ The *mucous membranes* inside the mouth and nose become dark blue/red after 1–2 days. The tongue and lips sometimes become dark blue/red and swollen. Sometimes the whole head swells up. Much *saliva* comes from the mouth (see p. 115).
- ◆ A clear *discharge* comes from the nose. Soon the discharge from the nose becomes white/grey/yellow, later it has some blood in it. The discharge dries and forms scabs that block the nostrils.
- ◆ The animals stop eating and they have a high *fever* that comes and goes.
- ◆ After 5–10 days the animals become stiff and lame. The skin around the top of the hooves becomes hot and red. Some animals have dark red/blue rings around the top of their feet.



- ◆ Many animals have such painful feet they lie down and will not move. They soon become thin and weak. Sheep often lose wool.
- ◆ Some animals die after about a week. Others recover after 1–2 months.

Other diseases that look like this:

Contagious pustular dermatitis (p. 167); *foot and mouth disease* (p. 279); *goat plague* (p. 282); *sheep pox* (p. 177).

How animals get bluetongue

Animals get infected with bluetongue when they are bitten by midges or occasionally by mosquitoes (p. 105) that carry infection. The disease happens most in wet seasons when there are many midges. In places where infection is common, such as, most of Africa and much of Asia, animals are *immune* and do not become sick but in places where the infection is not common, such as South Africa, animals that get infected become sick. Animals imported from places where there is no infection, such as Europe, become sick easily and you should vaccinate them.

Bluetongue is caused by *viruses* [*Orbivirus*].

Treatment

- There is no treatment for bluetongue. It helps to give an antibiotic by injection (p. 328) to stop infection by *bacteria* and to prevent *pneumonia*.
- Shade the animals from the hot sun. Wash the scabs around the mouth and nose with water and antiseptic (p. 324).

Prevention and control

- Move animals away from places where there are many midges. In a wet season move them to high ground where there are no midges (p. 105).
- Some people burn fires at night to make smoke to repel the midges.
- Some people use insecticides to repel midges, but they are expensive (p. 339).
- In Southern Africa some people keep cattle together with sheep and goats at night. Midges prefer to bite cattle so they do not bite the sheep and goats so much. Cattle do not get the disease so it does not matter if they are bitten.
- There are *vaccines* for bluetongue. Vaccinate animals a month before a wet season. The vaccine is effective in 10 days and protects animals for a year.
- Avoid moving animals from areas where there is no infection to places where infection is common, or vaccinate them. Vaccinate animals every year in areas without infection that are near to areas where it is common.

Canine ehrlichiosis, Nairobi bleeding disease

Only **dogs** get *canine ehrlichiosis*. This disease happens in many countries in Africa and Asia.

Signs

Dogs become sick 7–21 days after they get infected.

- ◆ The dog does not eat and it vomits. It has a *fever* that comes and goes. It is weak and tired.
- ◆ Some dogs recover in 7–14 days.
- ◆ Most dogs have small spots of bleeding on the *mucous membranes*. Some also have spots of bleeding on the skin where there is little hair.
- ◆ They have blood coming from the nose. They have red urine and blood in the faeces and vomit.
- ◆ Some dogs become very thin and die. Sometimes a dog seems to recover but after a few weeks it starts bleeding again. Often it suddenly has blood coming from one or both sides of the nose. Sometimes the bleeding is so severe that the dog dies in a few hours.

Other diseases that look like this:

Babesiosis (p. 248) – This often happens at the same time as ehrlichiosis; *distemper* (p. 275); *poisoning: rat poison* (p. 308); *trypanosomosis* (p. 295).

How animals get canine ehrlichiosis

Dogs get it when they are bitten by infected *ticks*. Dogs that have not had the infection before get very severe disease

Canine ehrlichiosis is caused by *rickettsia* [*Ehrlichia canis*] – they are like *bacteria*. It is spread by Brown Dog Ticks [*Rhipicephalus sanguineus*] (p. 105).

Treatment and control

- Give tetracycline (p. 333) **immediately**. It works when the disease happens quickly but not when the disease goes on for a long time or if it comes back.
- When dogs move from places where there are no ticks to places where this disease happens, watch them carefully for a few weeks, especially in wet seasons when there are many ticks. Treat them if they become sick.
- Control ticks that spread the infection (p. 00).

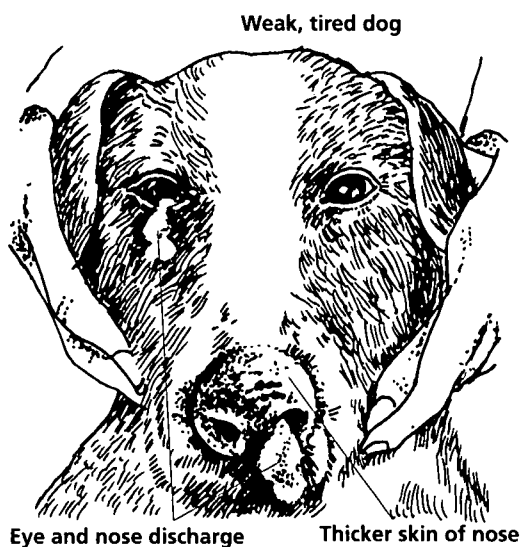
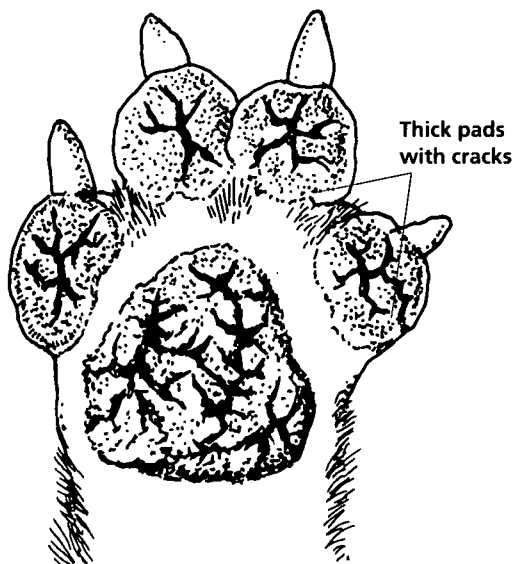
Distemper, Hardpad

Dogs get *distemper*.

Signs

Animals become sick 1–3 weeks after they get infected.

- ◆ The animal has a *fever* for a few days. The fever goes down but it comes back again.
- ◆ The dog becomes weak and tired and does not eat as much as normal.
- ◆ The eyes are red. A grey/white/yellow *discharge* comes from the eyes and nose.
- ◆ Occasionally the skin of the nose and under the feet becomes thick and hard.



- ◆ The dog often has diarrhoea.
- ◆ Some dogs recover.

Sometimes a dog seems to recover but it becomes sick again.

- ◆ It behaves unusually. It cannot walk normally, sometimes the back legs are paralysed. It has muscle tremors. Much *saliva* comes from the mouth. It collapses, has convulsions and passes faeces and urine.
- ◆ Some dogs die after 2–3 weeks. Some die after several months.

How animals get distemper

They get it from direct contact with infected dogs, through the air or from things contaminated by infected dogs.

Distemper is caused by *viruses* [*Paramyxovirus*].

Treatment

There is no treatment but you can help dogs to recover:

- Give the dog plenty of water to drink and good food.
- Keep it out of the sun.
- Some people give dogs aspirin or paracetamol to help reduce the *fever*.
- Skilled workers use special medicines to help animals recover.

Prevention and control

- *Vaccination* for distemper is effective.

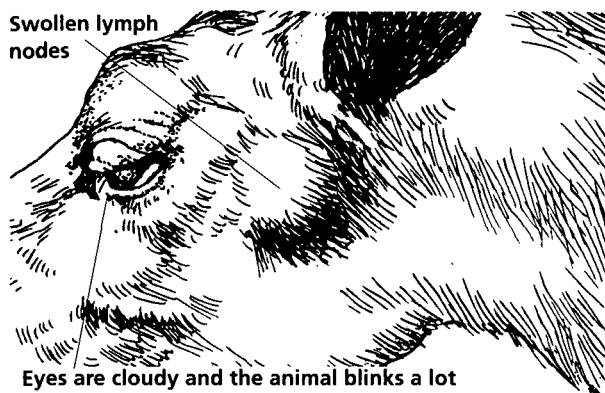
East Coast fever

East Coast fever only happens in Eastern and Central Africa. Only **cattle** get East Coast fever.

Signs

Animals become sick 10–20 days after they are bitten by infected *ticks*.

- ◆ *Lymph nodes* under the skin (p. 41) swell up under the ears where the ticks bite. (People often do not notice this sign.) Soon there are swellings in front of the shoulder and the knee and sometimes other parts of the body as other lymph nodes swell up.
- ◆ The animals have a high *fever*. They are tired and weak, eat little and become thin. They give little milk.



- ◆ Sometimes they cough and show signs of *pneumonia* (p. 195).
- ◆ Some animals have diarrhoea with blood in the faeces.
- ◆ Occasionally the eyes become cloudy and animals blink often.
- ◆ Sometimes cattle behave unusually and go round in circles. The back legs may become paralysed.

Cattle that move from places where East Coast fever does not usually happen to an area where it is common get very severe disease. It often kills nearly all of them; they collapse and die about three weeks after they were bitten by infected ticks.

- ◆ Sometimes cattle get *babesiosis* (p. 248) at the same time as East Coast fever.
- ◆ Skilled workers check for East Coast fever by looking at a *blood smear* with a microscope.

In a dead animal the *trachea* often has froth in it and froth comes out of the nose. Many lymph nodes are swollen with fluid and often dark with blood.

Other diseases that look like this:

Malignant catarrhal fever (p. 287); *tropical theileriosis* (p. 294); *corridor disease* (p. 278).

How animals get East Coast fever

They get it when they are bitten by infected ticks (p. 105). The disease does not spread directly from one animal to another. Sometimes infected ticks are moved long distances with forage and they can come from grass by the roadside.

East Coast fever is a form of *theileriosis* and is caused by *protozoa* [*Theileria parva parva*].

The ticks that spread East Coast fever are Brown Ear Ticks [*Rhipicephalus appendiculatus*]; these are different from the ticks that spread *babesiosis* (p. 248).

Treatment

- Treatment for East Coast fever is expensive. Medicines, such as buparvaquone, parvaquone and halofuginone, are effective (p. 330). Oxytetracycline (p. 333) also works if you give it very soon after an animal is bitten by infected ticks.
- Cattle often get *pneumonia* (p. 195) about a week after they recover from East Coast fever so watch the animals carefully and treat them with an antibiotic if they show any signs of this.

Prevention and control

- To control East Coast fever control the ticks that carry it (p. 105).
- Effective vaccines that are easy to use are not available yet.

Deliberate infection and treatment for East Coast fever

An effective way to prevent East Coast fever is to give animals the disease on purpose and treat it at the same time. This makes them *immune*. In Kenya veterinary

workers inject an animal under the skin just in front of the shoulder with crushed infected ticks. At the same time they give long-acting oxytetracycline to treat the disease, but about one animal in twenty becomes sick. You need to check the animals' temperature every day. If a fever develops they need more treatment. So skilled workers take samples from any sick animals to see if the fever is caused by East Coast fever. If it is they immediately treat the animal with buparvaquone (p. 330).

In places where East Coast fever is common young animals often get the disease once or twice. They become immune for life and will not get the disease again. Strong, well-fed young animals that get the disease will recover and not stop growing.

Corridor disease

Corridor disease looks like East Coast fever (p. 276) but is not so severe. **Cattle** get it from ticks that have fed on wild buffaloes that carry the disease.

Corridor disease is another form of *theileriosis*. It is caused by *protozoa* [*Theileria parva lawrencei*].

Treat and control Corridor disease like East Coast fever (p. 277).

Ephemeral fever, Three day sickness

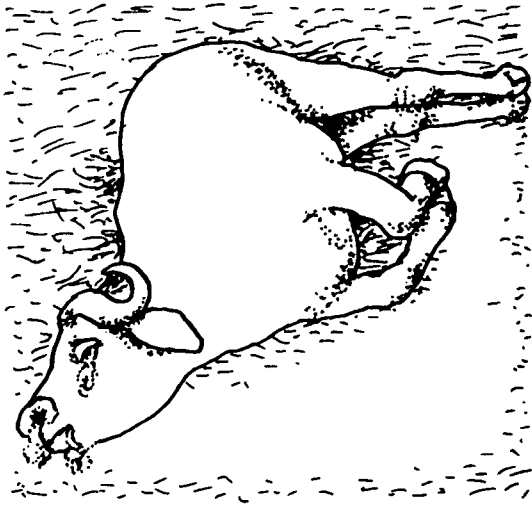
Only **cattle** and **buffaloes** get *ephemeral fever*. Well-fed animals in good condition get this disease most often. Very young cattle do not get it often.

Signs

Animals become sick 2–7 days after they are bitten by infected midges or mosquitoes.

- ◆ The animals suddenly give much less milk and stop eating.
- ◆ They suddenly have a high fever that soon falls but then the fever comes and goes.
- ◆ Some have a watery *discharge* coming from the eyes and nose and they often have much *saliva* coming from the mouth.
- ◆ After 1–2 days they have muscle tremors. The legs become stiff and weak and the animals do not walk normally. They often lie down. Their back legs are stiff and stick out. Some animals that lie down get *bloat* (p. 215).
- ◆ A few animals collapse and die but most animals start to eat again about three days after they became sick. Their legs are stiff and weak for about two more days. Then they recover but they will not produce more milk until the next lactation.

In a dead animal all the *lymph nodes* (p. 41) are large and watery.



How animals get ephemeral fever

Animals do not get it directly from other infected animals. They only get it when they are bitten by infected midges or mosquitoes (p. 105). Sometimes these insects carry the disease from infected wild animals. The wind can blow infected midges for hundreds of kilometres.

Ephemeral fever is caused by *viruses* [*Rhabdoviruses*].

Treatment

- There is no treatment. Animals almost always recover after a few days.
- When a sick animal lies down for many hours keep moving it from one side to the other.

Prevention and control

- There is not a good *vaccine* for ephemeral fever yet.
- It is not possible to control the midges that spread this disease.
- Animals that have had this disease rarely get it again.

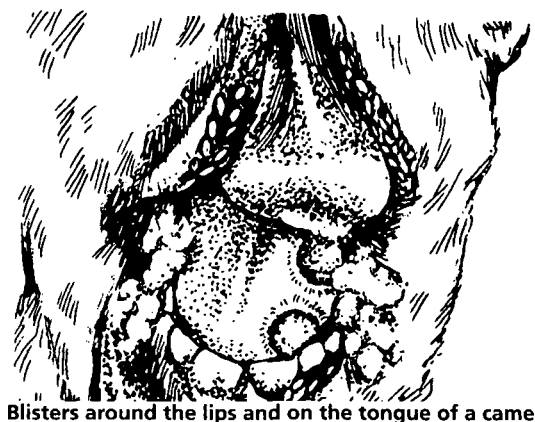
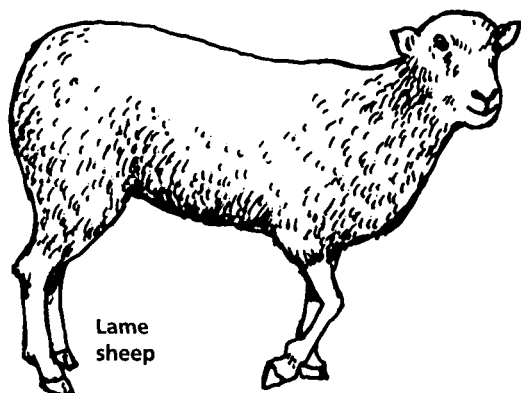
Foot and mouth disease

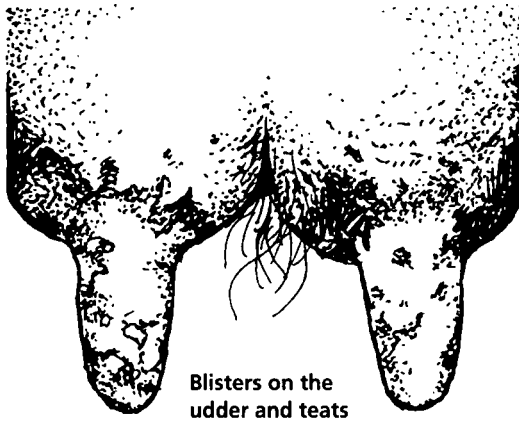
Cattle, buffaloes, camels, sheep, goats and **pigs** all get *foot and mouth disease*. European breeds of cattle get foot and mouth disease much more severely than Zebu and other local breeds.

Signs

Animals become sick with foot and mouth disease 2–14 days after they get infected.

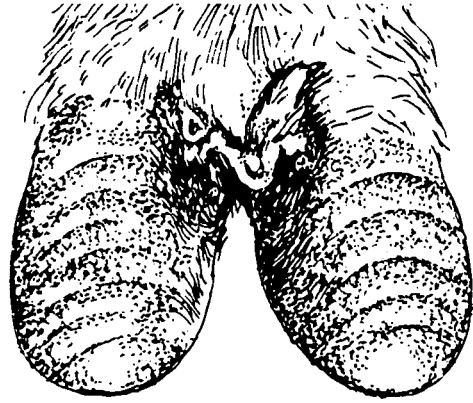
- ◆ The animals are very lame – usually all four feet are painful.
- ◆ The animals are weak and tired and have a high *fever*. They stop eating and become thin. Their coats look rough and dull. They produce no milk.
- ◆ They have blisters inside the mouth, especially on the tongue and much *saliva* comes from the mouth. They have blisters on the feet, especially just above and between the





Blisters on the udder and teats

Blisters between the claws of a goat's foot

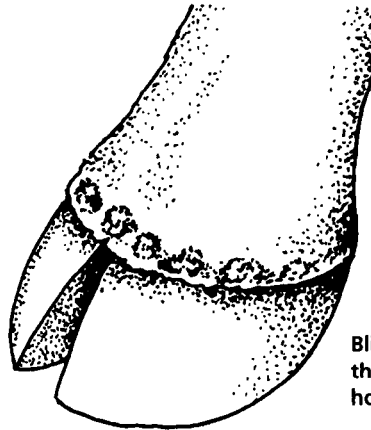


claws. Some animals also have blisters on the teats. When the blisters around the hoof are very bad the hoof may fall off. Blisters usually heal after two weeks. But they sometimes get infected by *bacteria* and take longer to heal.

- ◆ Pregnant animals often have abortions.

Most animals recover from mild disease. Many animals recover from severe disease but they are often very thin for a long time.

Baby animals sometimes get very severe foot and mouth disease and can die suddenly before they have signs of disease.



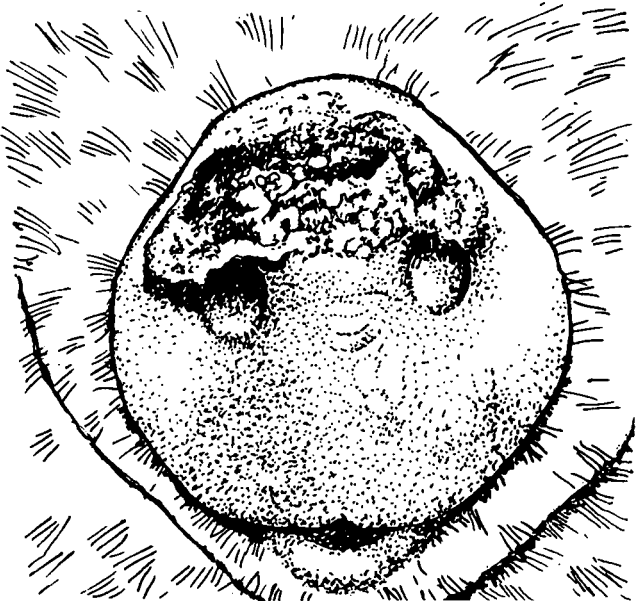
Blisters around the top of the hoof

Sheep and goats get a much milder type of foot and mouth disease.

- ◆ They have blisters in the mouth. The blisters are often very small. Most of them are on the dental pad. It is difficult to see blisters on the feet. But the feet are painful and the animals are often lame. They usually recover but are often thin for a long time.

Pigs eat very little and have much *saliva* and froth coming from the mouth and nose. They have blisters on the nose, mouth, feet and sometimes the udder. The feet are very painful and the hooves often fall off. Baby pigs often die with no signs of disease.

In a **dead animal** there are blisters in the mouth and *oesophagus* but not in the rest of the *intestine*. Sometimes there are blisters in the *rumen*. The heart muscle of baby animals has grey patches/stripes in it.



Blisters on the snout of a pig

How animals get foot and mouth disease

Animals get infection from direct contact with infected animals. Infection comes from the saliva, discharges from the nose and the coughing of infected animals. Feed gets infected by the saliva of infected animals. Animals also get infection from people or things that infected animals have touched. People carry infection for about 24 hours after they have been with infected animals. Infection can also spread hundreds of kilometres through the air, especially when it is cool and damp.

Animals that recover do not spread infection to other animals.

Foot and mouth disease is caused by *viruses* [*Apthovirus*].

Treatment

There is no treatment for foot and mouth disease but you can help animals to recover:

- Give them plenty of water and shade them from the hot sun.
- Encourage them to eat. Give soft green food. Fresh grass is better than hard hay. The blisters in the mouth make it painful for the animal to eat.
- Give an antibiotic (p. 328) to stop the blisters getting infected by *bacteria*.

Prevention and control

Foot and mouth disease is one of the most infectious diseases of livestock and it easily spreads a long way, so many governments try to control it and some have eradicated it. Work with others to help control programmes to stop the disease from coming back.

- Keep healthy animals a long distance from places where there is infection.
- *Vaccines* for foot and mouth disease are effective but they are expensive and complicated to use. You need a vaccine exactly the same type as the foot and mouth disease in your area. It is difficult to use these vaccines properly without skilled help. Usually you need to vaccinate twice every year.
- It is a good idea to vaccinate animals that work to prevent them becoming lame, even in places where the disease is mild and other animals are not vaccinated.
- In places where foot and mouth disease is common and often mild some people spread the disease on purpose so that animals get infected and develop *immunity*. They mix healthy animals with infected ones. The animals only get mild disease and recover quickly and cannot get the disease again. New-born animals from mothers that have been infected like this are also immune. They will be saved from the severe type of foot and mouth disease that very young animals suffer. Some animals become lame but these people spread the disease in time for animals to recover before they make a long journey to better grazing.
- Some herders who live where foot and mouth disease is common vaccinate their animals directly. They push a thorn into a blister on the tongue of an infected animal. Then they scratch the tongue of an uninfected animal with the infected thorn to infect the animal and make it become immune to the disease.

Goat plague, Peste des Petits Ruminants, PPR

Only **goats** and occasionally **sheep** get *goat plague*.

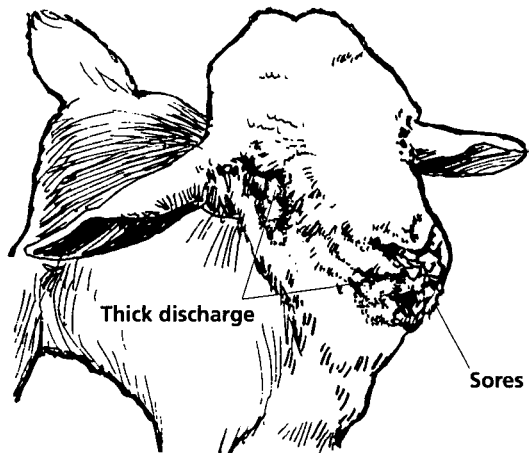
Signs

Many animals usually get this disease at the same time. In places where the disease has not happened before, animals get severe disease that looks like *rinderpest* (p. 290) and many animals die.

In places where the disease happens often, **goats** sometimes only get mild disease, **sheep** usually only ever get mild disease.

- ◆ They have a clear *discharge* coming from the nose and they have sores in the mouth that come and go.
- ◆ They have diarrhoea that comes and goes and they have a low *fever*.
- ◆ Most of these animals recover after 10–20 days.

In a **dead animal** the eyes and nose have dirty white/grey *discharges* round them. The skin is usually covered with bad-smelling, watery faeces. The mouth has many sores in it. There is *pus* in the lungs.



Other diseases that look like this:

Bluetongue (p. 273); *CCPP* (p. 197). In India goats and sheep also get *rinderpest* (p. 290) and it looks the same as *goat plague*.

How animals get goat plague

Animals get infection from close contact with sick animals. The disease spreads like *rinderpest* does (p. 291).

Goat plague is caused by *viruses* [*Paramyxovirus*].

Treatment

- There is no treatment for goat plague but skilled workers can use special medicines to help animals recover.
- It helps to give an antibiotic (p. 328) to stop infection with *bacteria*.

Prevention and control

- Isolate animals with signs of goat plague immediately. Move healthy animals away to a clean place.

- **Vaccination** for goat plague is effective. Vaccinate all the sheep and goats that have been in contact with sick animals. Look at the vaccinated animals very closely every day. If one shows signs of disease put it with the sick ones that have been isolated.
- It is important to vaccinate animals in areas where the disease does not often happen if there is a risk of sick animals from elsewhere being brought through the area. The sheep and goats of nomadic herders are often *resistant* to goat plague but they sometimes are infected even if they do not look sick. The sheep and goats of settled animal keepers are usually not resistant and can get severe disease from the nomadic animals.
- If you take animals to a market but do not sell them and bring them back it is a good idea to keep them separate from other animals because they may have become infected at the market.

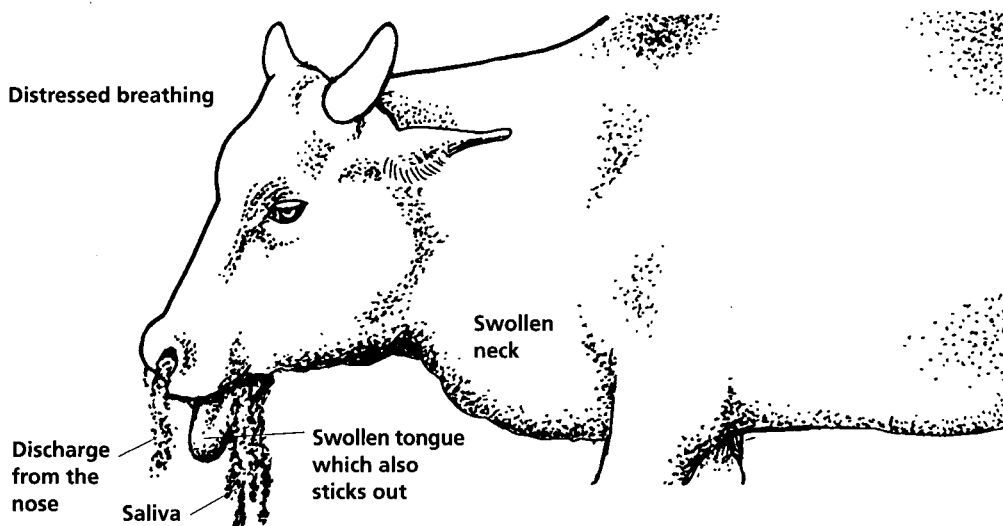
Haemorrhagic septicaemia, HS, Pasteurellosis

In Africa this disease happens occasionally and happens suddenly in places where it has not happened before. In Asia it is a serious problem and happens often, usually at the start of the wet season. At this time cattle and buffaloes are weak after the dry season and are starting to work. Because they are weak they get this disease more easily.

Cattle and **buffaloes** get *haemorrhagic septicaemia* most often. **Camels** sometimes get it.

Signs

- ◆ The animals stand still much of the time and it is difficult to move them. They are tired and weak and have a high *fever*.
- ◆ Very soon much *saliva* comes from the mouth and a clear *discharge* comes from the nose.
- ◆ The animals have a swelling under the jaw that spreads and the whole neck swells up. Sometimes the swelling spreads to the head and the front legs. The swelling feels warm. The animal's tongue swells up and sometimes it sticks out. The swelling stops the animal breathing properly. Some animals have distressed and noisy breathing.



- ◆ Most animals collapse and die within 1–2 days.

In a dead animal much yellow/brown fluid comes from the swelling if you cut into it.

Other diseases that look like this:

Anthrax (p. 141); *blackquarter* (p. 144), *pasteurellosis* (p. 202).

How animals get haemorrhagic septicaemia

Animals get the disease from direct contact with infected animals. It often spreads when animals are herded close together at night or when they are herded together for vaccination. Sometimes animals get it when they meet infected herds at watering places. Some animals that have no sign of disease carry the infection.

Haemorrhagic septicaemia is caused by *bacteria* [*Pasteurella multocida*].

Treatment

Treatment works well if it is started soon enough. If treatment starts too late it can make the disease suddenly much worse and the animal will die. It may even die while you treat it.

- Give an antibiotic, e.g. oxytetracycline (p. 333), as soon as you suspect an animal has haemorrhagic septicaemia and give an antibiotic to all the other animals that have been near to it.

Prevention and control

- Keep sick animals, and those that have been near them, away from healthy animals.
- Be careful not to carry infection from sick animals to healthy ones. People carry this disease on their feet, clothes and other things.
- *Vaccination* is useful in places where the disease happens often. It is effective from two weeks after you give it. It is difficult to use this vaccine properly. The best vaccines work for a year, other types only work for a few months. Vaccinate animals one month before you expect the disease to happen. In many places the best time to vaccinate is one month before the wet season.
- **Buffaloes** get haemorrhagic septicaemia very badly. Vaccinate them.
- **Camels** occasionally get haemorrhagic septicaemia; you can vaccinate them.

Leptospirosis

All animals can get *leptospirosis*. **People** can get leptospirosis (p. 6).

Signs

Animals become sick 5–20 days after they get infected with leptospirosis. Animals have so many different signs that it is impossible to tell whether a sick animal has leptospirosis without complicated laboratory tests.

The signs that animals have include:

- ◆ Many animals carry the infection but have no signs of disease.
- ◆ Animals have abortions. They give birth to weak offspring.
- ◆ Some animals: have a *fever*, are weak and tired, have *mastitis* (p. 244), produce less milk, do not eat, have yellow *mucous membranes*, have blood in the urine.
- ◆ **Dogs** vomit and have blood coming from the mouth and the mucous membranes. They have diarrhoea with blood in the faeces. They have yellow mucous membranes. A few dogs recover, most die.
- ◆ **Horses, mules and donkeys** Horses sometimes have damaged eyes (called periodic ophthalmia or moon blindness) months after they have leptospirosis. They become frightened of sunlight. They have a clear discharge from the eyes. The eyes become cloudy and red. The animal recovers from this. But it happens again a few times and the animal becomes blind. There is no treatment for this.

How animals get leptospirosis

They get it from water and wet ground *contaminated* by urine or *discharges* from infected animals. They also get it from direct contact with infected animals.

Leptospirosis is caused by *bacteria* [*Leptospira hardjo*, *icterohaemorrhagiae* and others]. Many leptospirosis microbes live in an animal's kidneys.

Treatment

It is difficult to be sure that animals have *leptospirosis*. But if skilled workers think this disease is a problem they start treatment as soon as possible. Antibiotics, especially streptomycin, are effective (p. 332).

Prevention and control

Vaccination is effective and lasts for a year. But, except for dogs, it is complicated to choose the correct vaccine.

Liver fluke disease, Fasciolosis

Cattle, buffaloes, camels, horses, mules, donkeys, sheep, goats, pigs and rabbits get *liver fluke* disease. **People** sometimes get infected with liver flukes (p. 6).



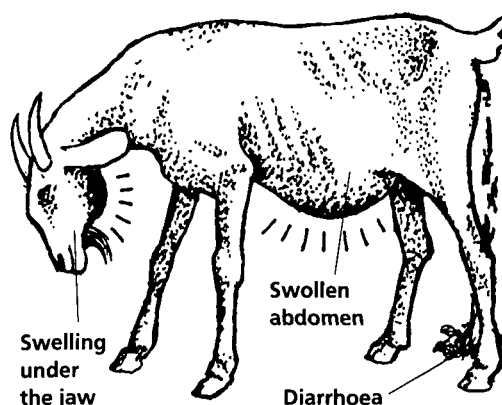
Signs

Severe liver fluke disease that happens quickly is called *acute liver fluke disease*. Sheep and goats usually get this type of disease, especially when they are young. Cattle do not get it often. Animals often get it at the start of a dry season when they graze in places that have just been flooded.

- ◆ Some animals die before they have signs of disease. Usually animals are very sick for a few days.
- ◆ They are tired and weak and stop eating but they do not usually have a *fever*.
- ◆ The *mucous membranes* are pale.
- ◆ Some animals die after 1–3 days. Many animals recover but are still sick with less severe disease for a long time.

Less severe liver fluke disease that goes on for a long time is called *chronic liver fluke disease*. **Cattle, sheep and goats** get this type of disease.

- ◆ Animals slowly become thin and weak and produce little milk.
- ◆ They do not usually have a fever.
- ◆ They often have diarrhoea and may have swelling under the jaw and some have a swollen abdomen.



- ◆ The *mucous membranes* are pale and may become yellow.
- ◆ A few animals die after about eight weeks with no treatment. Many animals recover after 3–6 months, but they are very thin.

Skilled workers can check faeces for liver fluke eggs. They only find eggs from animals with chronic liver fluke disease which is caused by adult liver flukes that lay eggs. Young liver flukes that cause acute liver fluke disease, when many of them infect an animal at the same time, are not old enough to lay eggs.

In a dead animal with *acute liver fluke disease* you can see small dark brown/black liver flukes in the liver. The liver is large and dark and there is much red/brown liquid in the abdomen, especially of sheep and goats. The flesh is often pale.

In a dead animal with *chronic liver fluke disease* you cannot usually see any liver flukes in the liver but parts of the liver may be thickened and tough. The flesh is often pale.

How animals get liver fluke disease

They get infected with liver flukes (p. 99) from wet places where snails live. Some animals get infected with liver flukes when they go to a wet place but only become sick later when they return home to a dry place. So animals can have liver fluke disease in dry areas where there are no liver flukes, a long way from where they were infected.

Liver fluke disease is caused by small flat worms [*Fasciola hepatica*, *Fasciola gigantica*].

Treatment

- Many *worm* medicines work well for chronic liver fluke disease. But only some medicines, such as triclabendazole, kill young liver flukes and work for acute liver fluke disease (p. 338).
- It is difficult to treat animals that have had liver fluke disease for a long time because the *liver* is damaged. Skilled workers may give injections of vitamin B to help recovery.

Prevention and control

See page 99.

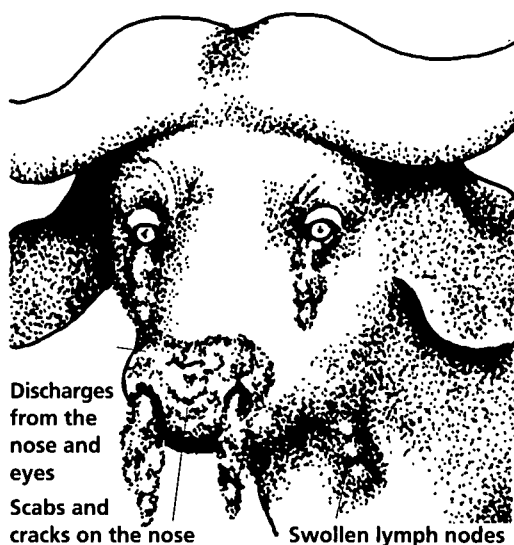
Malignant catarrhal fever, MCF

Cattle and **buffaloes** get *malignant catarrhal fever*.

Signs

Usually only one or two animals have this disease at the same time otherwise it looks like *rinderpest* (p. 290). Animals become sick 3–4 weeks after they get infected with malignant catarrhal fever.

- ◆ They become very weak and tired and stop eating. They have a high fever that does not go down. The *lymph nodes* in the head and neck swell up (p. 41).
- ◆ The *mucous membranes* are dark red. Soon there are sores on the membranes in the mouth and nose.
- ◆ A clear *discharge* that soon becomes white/grey comes from the eyes and nose. Much *saliva* comes from the mouth. The nose becomes cracked and covered in scabs. Dried *discharge* often blocks the nose.
- ◆ The animals blink a lot and try to keep away from bright sunlight. The centre of the eyes becomes white.
- ◆ Animals that get the disease from sheep often have diarrhoea, sometimes with blood in the faeces.
- ◆ Animals that get the disease from wildebeest rarely have diarrhoea.
- ◆ Some animals become lame. Some have tremors under the skin and become *un-coordinated* and aggressive.
- ◆ Most animals die after 1–2 weeks. Animals that recover often have weak or deformed offspring.



In a dead animal the body is thin and covered in wet faeces. The lymph nodes of the head and neck are very large. The *trachea* is lined with dead grey tissue.

Other diseases that look like this:

Bovine virus diarrhoea (p. 234); *foot and mouth disease* (p. 279); *rinderpest* (p. 290).

How animals get malignant catarrhal fever

Everywhere in the world animals get it from infected sheep, especially from new-born sheep. In Africa animals also get it from baby wildebeest; they can get it from the ground for up to one day after infected baby wildebeest have been there. Cattle do not get it directly from other cattle.

Malignant catarrhal fever is caused by *viruses* [*Herpes*].

Treatment

There is no treatment for malignant catarrhal fever.

Prevention and control

- There is no effective *vaccine* for malignant catarrhal fever.
- Keep cattle away from wildebeest that are giving birth. In places where cattle get malignant catarrhal fever from sheep, keep the cattle away from sheep, especially from sheep that are giving birth.

Nairobi sheep disease

Nairobi sheep disease only happens in East and Central Africa but a disease (Ganjam virus) that looks like this happens in India. **Sheep** and **goats** get Nairobi sheep disease.

Signs

Animals become sick 4–14 days after they get infected with Nairobi sheep disease. Adults get more severe disease than young animals.

- ◆ A grey/white *discharge* comes from the nose and eyes.
- ◆ The animals have diarrhoea. The faeces are often green and watery with blood and mucus in them.
- ◆ The animals are weak and tired, they stop eating and suddenly have a high *fever* that comes and goes.
- ◆ Pregnant animals often have abortions.
- ◆ Many animals die after 3–10 days.

Other diseases that look like this:

Goat plague (p. 282).

How animals get Nairobi sheep disease

They get it from infected *ticks* [*Rhipicephalus*, *Amblyomma*], they do not get it from direct contact with other animals. Only animals that have never had the infection become sick. Animals that move for the first time to areas with infected ticks get severe disease. Sometimes animals bring infected ticks to areas where the disease has not happened before.

Nairobi sheep disease is caused by *viruses* [*Nairovirus*].

Treatment and control

- There is no treatment. *Vaccines* are effective. Vaccinate animals that move to areas with infected ticks. Vaccinate them before they move or as soon as possible after they move.
- Animals that recover from Nairobi sheep disease are *immune* and do not get the disease again.

Rift Valley fever

Rift Valley fever happens in North and Central Africa and now in parts of West Africa. **Cattle, buffaloes, sheep, goats and camels** get Rift Valley fever. **People** get Rift Valley fever. Sometimes it kills them (p. 00). (The people who get Rift Valley fever are usually laboratory or veterinary workers and others who handle the dead bodies of infected animals.)

Signs

Animals become sick with Rift Valley fever 1–5 days after they get infected. The signs animals have depends on their age. **Baby and young animals** have very severe disease that happens fast:

- ◆ The animals have a high *fever*.
- ◆ They have a *discharge* coming from the nose and food comes back out of the mouth.
- ◆ They stagger about. Young animals usually collapse and die within a few days. Baby animals often collapse and die within a few hours.

Adult animals have less severe disease that happens slowly:

- ◆ The animals look weak and tired and have a low *fever*.
- ◆ Pregnant animals usually have abortions.

Most adult animals recover. But a few have severe disease, like very young animals, and die in 1–2 days.

WARNING

It is dangerous to open the body of an animal with Rift Valley fever because people can get this disease. Dispose of the body carefully like the body of an animal with *anthrax* (p. 142).

How animals get Rift Valley fever

They get it when they are bitten by infected mosquitoes. This disease only happens every few years. It usually happens after a very wet time when many mosquitoes hatch from infected eggs that have been lying dormant in dry mud.

Rift Valley fever is caused by *viruses* [*Phlebovirus*].

Treatment

There is no treatment for Rift Valley fever.

Prevention and control

- There are *vaccines* for Rift Valley fever. But the disease does not happen often, so it is not usually worth vaccinating animals. Some government veterinary services vaccinate animals at risk when conditions are very wet and they expect the disease.
- It is best **not** to move animals from places where Rift Valley fever happens.

Rinderpest

Rinderpest happens in Africa and parts of Asia. It is now rare and has been *eradicated* in most areas but it stays alive in remote places where there is no vaccination. The disease spreads quickly and kills so many animals that it is important to **watch out for rinderpest**. Many countries do not have rinderpest now but it can come back again, even in places where it has not been seen for a long time. Outbreaks of rinderpest can happen when infected animals move into areas where there is no rinderpest.

Cattle and **buffaloes** can get rinderpest world-wide. In Asia, **pigs** get rinderpest. In India, **sheep** and **goats** get it. **Horses**, **mules** and **donkeys** never get rinderpest. **Camels** do not get it and most scientists say that camels do not carry rinderpest or infect other animals with it.

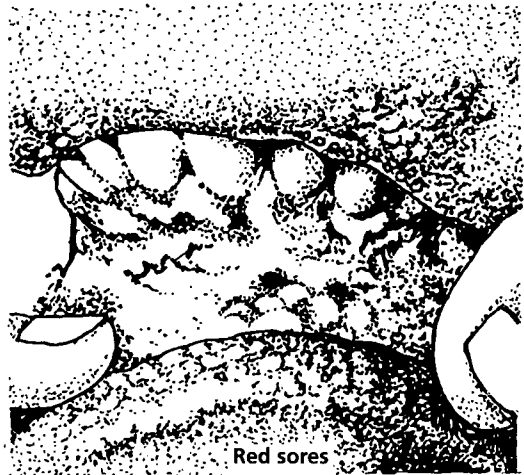
Signs

In most outbreaks of rinderpest some animals suffer much worse than others. Some rinderpest microbes cause severe disease, others only cause mild disease. Some animals have some *immunity* to rinderpest so do not get severe disease. (This includes animals that have been badly vaccinated and animals about six months old that still have immunity from their mothers.) Animals about a year old usually suffer most in areas where people vaccinate for rinderpest. These young cattle have lost the immunity they got from their mothers and have often still not been vaccinated so they easily get severe disease.

Animals become sick with rinderpest 1–3 weeks after they get infected.

With **severe** rinderpest:

- ◆ Animals have a high *fever* – often over 40°C – two days before they look sick. After three days the fever slowly goes down.
- ◆ The animals will not rest and stand on their own. They are tired and weak and do not move much. They hold their heads down and their ears droop. They stop eating.
- ◆ They have a clear *discharge* from the eyes and nose about two days after the fever started. It soon becomes white/grey.
- ◆ Much *saliva* comes from the mouth and small grey patches appear inside the mouth, especially on the gums and dental pad. The patches become covered with white cheesy scabs that rub off leaving red sores.
- ◆ Animals have distressed breathing and often cough and grind their teeth. Their breath smells foul and their noses become dry and cracked.
- ◆ They have severe watery diarrhoea about five days after the fever started. The faeces have blood, mucus and strips of *intestine* that look like pieces of cloth in them. Animals strain with pain when they pass faeces. Very soon the animals become *dehydrated* and very thin.
- ◆ Animals with most severe disease start to die about 14 days after the fever started. Animals that had less severe disease slowly begin to recover.



With **mild** rinderpest:

- ◆ The animals have a *fever*. They have some watery *discharge* from the eyes and nose and *saliva* comes from the mouth.
- ◆ They have small pale/white sores in the mouth that become red.
- ◆ Sometimes they have mild diarrhoea.

In a **dead animal** there are many ulcers in the abomasum and intestines. The contents of the intestines and the *rectum* are watery and often have blood in them.

Other diseases that look like this:

Malignant catarrhal fever (p. 287); *foot and mouth disease* (p. 279); *mucosal disease* (p. 234); *kerato-conjunctivitis* (p. 150).

How animals get rinderpest

Animals get rinderpest from close contact with sick animals and from drinking water *contaminated* with the faeces of sick animals. Infection comes from the breath, saliva, faeces, and discharges from sick animals. Infection gets into the body when the animal breathes in the rinderpest microbes. People do not usually spread the disease on their feet or clothes. Wild animals can carry the disease and can get infected by livestock. Wild animals soon stop carrying the disease when rinderpest is eradicated from animals that people keep in the area.

Zebu cattle are more *resistant* to rinderpest than other breeds. European breeds of cattle get rinderpest very severely. Only properly vaccinated adult animals and animals that have recovered from the disease are fully *immune* to it. Animals that recover from rinderpest only carry the disease for a few days.

Rinderpest is caused by *viruses* [*Paramyxovirus*].

Treatment

There is no treatment for rinderpest but you can help to stop animals with mild rinderpest from dying (p. 140).

Prevention and control

- Isolate rinderpest suspects from other cattle. Move healthy animals away from the sick ones.
- Tell the veterinary services **immediately** if you suspect rinderpest.
- Avoid buying animals from infected areas or taking healthy animals to areas with the disease. Only buy animals that have been properly vaccinated and marked.
- Keep new animals separate from yours for three weeks. Make sure they have no signs of this disease before you mix them with your own group.
- **Work together with control programmes to vaccinate animals against rinderpest** and mark them with the official ear mark. Animals with the mark will be easier to sell and may be more valuable because other people can tell that they have been vaccinated and are safe from the disease. Modern rinderpest vaccines are effective and some of them can tolerate not being kept cold. But they must be kept cold and used as soon as they are diluted (p. 353).

- Allow veterinary workers to take *blood samples* for tests. This does not harm the animals and lets veterinary workers find out if vaccines have worked.
- Learn how to recognise rinderpest – and help others to as well.

Rinderpest control programmes

Most countries have a control programme for rinderpest. The Pan African Rinderpest Campaign (PARC) operates together with governments in many countries across Africa and aims to control the disease by vaccination. Work together with others to help the control programme in your area. Help veterinary workers by giving them good information (p. 47).

Swine fever, Hog cholera

Swine fever happens in many places in Asia. It does not usually happen in Africa except in parts of West Africa and Madagascar. Only **pigs** get swine fever.

Signs

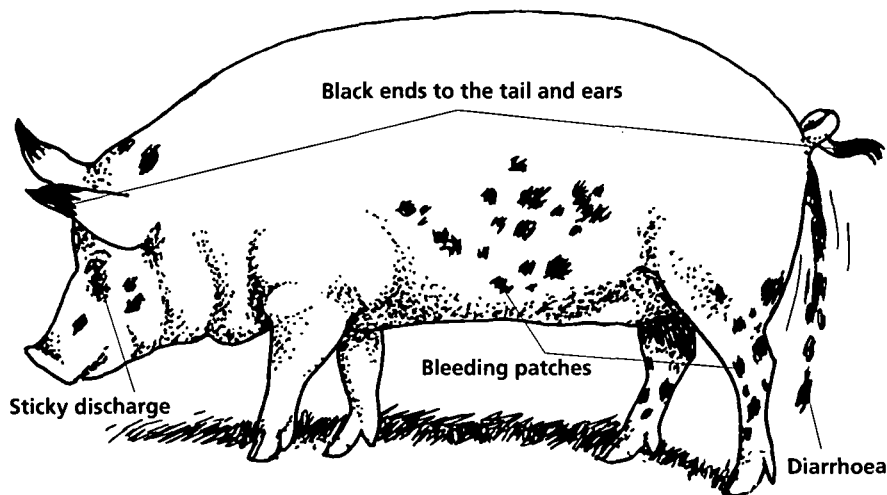
Some pigs get infected with swine fever **before they are born**:

- ◆ The mother often has an abortion. Some new-born pigs are very weak and soon die.
- ◆ Some new-born pigs have no sign of disease but they carry infection for a long time and pass it on to their own offspring.

Some pigs get infected with swine fever **after they are born**:

Pigs become sick 4–10 days after they get infected with swine fever.

- ◆ They have severe diarrhoea and they vomit. They stop eating but they drink a lot of water.
- ◆ They become weak and tired and often lie close together. They soon have a high fever.
- ◆ A sticky *discharge* comes from the eyes that sticks the eyelids together.



- ◆ Often the ends of the ears and the tail become black. Some pigs have brown patches on the abdomen, head and legs.

- ◆ The pigs walk unsteadily and go round in circles. They have tremors.
- ◆ The back legs are paralysed and many pigs collapse and die. A few pigs recover but they have a fever that comes and goes and are sick for a long time.

In a dead animal the intestines, lungs, kidneys and lymph nodes often have patches of blood on them.

Other diseases that look like this:

African swine fever (below).

How pigs get swine fever

Some pigs get infection from their mothers before they are born. Some get it through the air or from direct contact with sick pigs. They get it from food *contaminated* by discharges, urine or faeces from sick pigs. They also get it when they eat waste food with infected pig-meat in it.

Swine fever is caused by *viruses* [*Pestiviruses*].

Treatment

There is no treatment for swine fever.

Prevention and control

Swine fever is such a severe disease and spreads so quickly that many countries have control programmes for it. If you suspect this disease, tell the veterinary services. Some countries control the disease with vaccination or try to keep the disease out completely. They do not allow people to import pigs or pig-meat and they make pig keepers boil all the waste food they feed to their pigs.

- *Vaccinating* pigs regularly for swine fever is effective.
- Avoid feeding pig-meat to pigs because it can carry this infection. Boiling waste food used to feed pigs kills infection in any pig-meat that is in the waste food.
- Bury the bodies of pigs that die of swine fever, **do not eat them**.

African swine fever

African swine fever does not usually happen in Asia. Only **pigs** get African swine fever.

Signs

African swine fever looks like the type of swine fever that pigs get when they get infected after they are born (p. 292).

How animals get African swine fever

Pigs get African swine fever when they are bitten by infected *ticks*. Infection comes from warthogs and wild pigs that the ticks also live on. The wild animals carry the infection but they do not become sick. Pigs also get the disease from eating waste food with pieces of

pig-meat in it. They also get it by direct contact with sick pigs. Infection spreads quickly from sick pigs to healthy ones in a group.

African swine fever is caused by *viruses* [*Iridoviruses*]. (They are different to the ones that cause *swine fever*). African swine fever is spread by soft *ticks* [*Ornithodoros*] (p. 106).

Treatment

There is no treatment for African swine fever.

Prevention and control

- Vaccines for African swine fever are not very effective. *Swine fever vaccine* is not effective for African swine fever.
- Fence the pigs in to keep them away from wild pigs.

Tropical theileriosis, Mediterranean Coast fever

This disease only happens in North Africa and Asia. **Cattle** and **buffaloes** get *tropical theileriosis*. Imported animals get it most. Cattle get it most when they are young. In Northern Africa and parts of Asia **sheep** get another type of theileriosis that looks like this (*malignant ovine theileriosis*)

Signs

Animals become sick 7–28 days after they get infected.

- ◆ The animals have distressed breathing but they do not cough. They have a fever.
- ◆ A clear *discharge* comes from the eyes and the nose.
- ◆ The *lymph nodes* just under the skin swell up (p. 41).
- ◆ The *mucous membranes* are pale and become yellow.
- ◆ The animals eat less than normal and have constipation. After about a week the constipation changes to diarrhoea. Sometimes the faeces have blood in them.
- ◆ Pregnant animals often abort.
- ◆ Many animals die after 10–14 days.

Skilled workers can look at *blood smears* with a microscope to check for tropical theileriosis.

Other diseases that look like this:

Anaplasmosis (p. 271); *babesiosis* (p. 248). It also looks like another type of theileriosis – *East Coast fever* (p. 276) but East Coast fever only happens in Central and East Africa where this disease does not happen.

How animals get tropical theileriosis

They get it when they are bitten by infected *ticks* [*Hyalomma*]. Tropical theileriosis is a type of theileriosis and is caused by *protozoa*: **cattle** [*Theileria annulata*], **sheep** [*Theileria hirci*].

Treatment

- Treat and control tropical theileriosis like *East Coast fever* (p. 276).
- Buparvaquone is the best treatment (p. 330), tetracycline is not very effective.

Prevention and control

- The best way to control theileriosis is to control the *ticks* that spread it (p. 105).
- In some places animals get infected but they do not have signs of disease. There is a balance between infection and the animal's *resistance* to it. In these places there is no need to control the disease (p. 106).
- Sometimes skilled workers protect animals by deliberately infecting them and treating them at the same time, like they do for *East Coast fever* (p. 277).

Trypanosomosis spread by tsetse flies

Trypanosomosis that is spread by tsetse flies (see p. 103) **only happens in Africa south of the Sahara**, where there are tsetse flies, but is **common and probably the most important animal disease there**.

All animals can get trypanosomosis spread by tsetse flies. **People** get trypanosomosis when they are bitten by tsetse flies – sleeping sickness (p. 6). (In Africa and Asia animals get other kinds of trypanosomosis not spread by tsetse flies, see: *dourine* (p. 297) and *surra* (p. 298).

Trypanosomosis of any kind is also called *trypanosomiasis*.



Signs

Animals become sick with trypanosomosis 1–3 weeks after they are bitten by infected tsetse flies. The disease usually goes on for a long time.

- ◆ The animals are weak and easily tired; they do not keep up with the rest of their group.
- ◆ They have rough, dull coats and slowly lose weight and become thin. Females give less milk.
- ◆ A watery *discharge* comes from the eyes and sometimes the eyes are cloudy. The animals blink a lot.
- ◆ They have swollen *lymph nodes* (p. 41) that are easy to see just under the skin.
- ◆ The *mucous membranes* are often pale and slowly become paler over some weeks.
- ◆ The animals have a *fever* that comes and goes. They usually have fever for several weeks then the fever goes down but it comes back. Even when the animals no longer have a fever they become weak and thin.
- ◆ Pregnant animals often abort or have weak offspring and some animals become infertile.
- ◆ Poor feeding, *stress* or overwork make this disease more severe.
- ◆ Some animals recover slowly without any treatment, others become very sick, collapse and die after a few months. This happens especially when they have been bitten again

by infected tsetse flies. Occasionally the disease is severe and happens very quickly, then some animals die after about two weeks.

All animals have signs like these but other kinds of animals also have other signs:

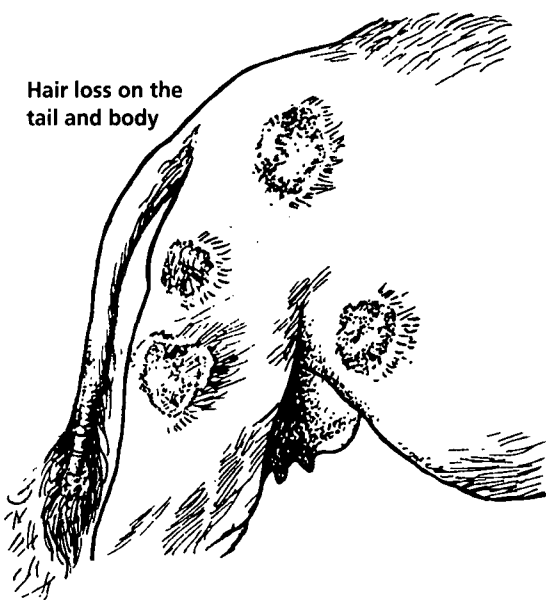
Horses, mules and donkeys may have swollen legs and swelling under the abdomen.

Camels The hump becomes smaller and hair falls out especially from the tail – but this happens with other diseases that go on for a long time too.

Pigs sometimes get very severe disease that happens fast. (This makes it difficult to breed pigs where there are tsetse flies.) They breathe very fast and stop eating and have a high fever. They collapse and die in one or two days.

Dogs often have cloudy eyes, sometimes they cannot see.

Hair loss on the tail and body



Skilled workers check for trypanosomosis by looking at *blood smears* (p. 118) with a microscope but the *microbes* are not always in the blood when the animal is sick and sometimes are hard to see.

In a dead animal the flesh is paler than normal. Sometimes there is much water around the heart.

Other diseases that look like this:

Worms (p. 218); *poor feeding* (p. 45).

How animals get trypanosomosis

Animals get infected with this kind of trypanosomosis when they are bitten by infected tsetse flies (p. 103). Tsetse flies get infected when they bite infected animals. Some animals carry the infection for years without becoming sick. Many wild animals carry *trypanosomes* but do not become sick; tsetse flies often get infection from these wild animals and spread it to livestock.

Trypanosomosis is caused by *protozoa* called *trypanosomes*. Most trypanosomes that make animals sick are spread by tsetse flies [*Trypanosoma brucei*, *T. congolense*, *T. simiae*, *T. suis*, *T. vivax*].

Other trypanosomes are not spread by tsetse flies, see: *dourine* (p. 297) or *surra* (p. 298).

Treatment

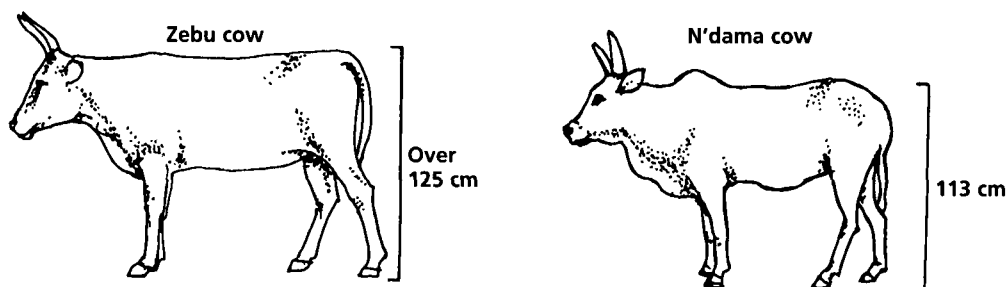
- Medicines for trypanosomosis are effective. But they are difficult to use properly because trypanosomes easily become *resistant* to medicines (p. 334).
- Some medicines prevent trypanosomosis, others treat it (p. 334).
- There are no effective local or traditional treatments for trypanosomosis.
- Some animals recover with good food and rest from work but they can become sick again.

Prevention and control

- Avoid areas with tsetse flies if you can. Most herders know where tsetse flies are and understand where and when it is safe to graze their animals (p. 103).
- Use trypanosome medicines to protect animals while they have to move through an area with tsetse flies.
- Avoid using trypanosome medicine routinely to prevent trypanosomosis if possible and seek skilled help if you do. It is better to control tsetse flies if you can (p. 103).

Trypanosome-tolerant breeds of cattle

Some types of cattle, such as **N'dama** cattle, which have lived in Africa for 7000 years, tolerate trypanosomes to an extent – they do not get trypanosomosis as severely as other cattle do. Some people use this type of cattle as a way to avoid trypanosomosis. N'dama cattle are good for meat but are small and not very good for work. They do not produce much milk. **Zebu** cattle are much more common in Africa and are more productive. They have been in Africa for more than 1000 years but have not become tolerant to trypanosomes. People have tried breeding N'dama cattle with Zebu cattle. But nobody has yet found an easy way to breed them so that they have tolerant offspring.



Trypanosomosis: dourine

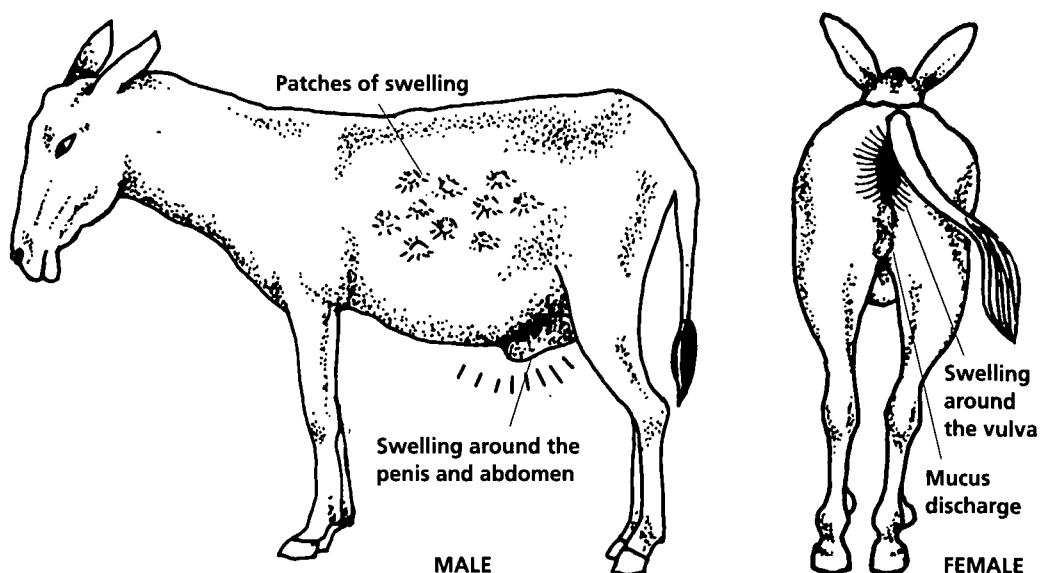
Dourine happens in Asia and Africa – especially in North-East, Southern and parts of West Africa. Only **horses** and **donkeys** get dourine.

Signs

Animals become sick several weeks after they get infected. The disease happens **slowly**.

- ◆ Clear mucus comes from the *penis* or *vagina*. The genitals swell up and swelling may spread forwards under the abdomen and even under the chest.
- ◆ Sometimes swollen raised patches appear on the side of the animal. These patches go away after about a day.
- ◆ The animals become very weak and thin and have a low *fever* that comes and goes.

- ◆ The back legs become very thin and animals become lame. After many months the animals become paralysed. Sometimes animals are *uncoordinated*.
- ◆ With no treatment, animals die after a year or more.



How animals get dourine

They get it when they mate with an infected animal. One infected male can spread the disease to many females very quickly.

Dourine is caused by *protozoa* [*Trypanosoma equiperdum*].

Treatment

- Treatment is rarely effective. Try to stop animals getting this disease.
- Some trypanosome medicines may help (p. 332) but these medicines are very strong and can be poisonous for horses if you give too much of them.

Prevention and control

- Avoid bringing infected horses to areas without the disease.
- Do not use new horses for breeding until you are sure they do not carry this disease. Skilled workers can examine a blood sample to see if a horse carries the infection. If a horse is carrying dourine, kill it or stop it from breeding by castrating it.

Trypanosomosis: Surra, Camel trypanosomosis

This disease happens in Asia and Northern Africa; occasionally it happens in places in Africa where trypanosomosis is also spread by tsetse flies.

Camels and **horses** suffer most from *surra* but **cattle, buffaloes, mules, donkeys, dogs** and **Asian elephants** also get it. Other animals get the infection but do not usually become sick. **This is probably the most important infectious disease that camels get.** **People** do not get *surra*.



Signs

Animals become sick with *surra* 7–10 days after they get infected by flies. When *surra* is **severe** and happens quickly:

- ◆ Animals soon become tired and weak and stop eating. They have a high *fever*.
- ◆ They have a clear *discharge* from the eyes. Sometimes the eyes are cloudy and the animal cannot see.
- ◆ The urine often becomes dark and some animals have diarrhoea.
- ◆ Some animals have abortions.
- ◆ Some animals die after a few days.
- ◆ **Horses** often have swelling under the abdomen and down the legs.
- ◆ **Camels** sit in the sun and do not seek the shade of trees like the rest of the group. The inside of the thighs becomes white or pale coloured. (The inside of the thighs are normally stained dark, orange/black with dried urine.) Some people can tell from the smell of a camel's urine that it has *surra*.

When *surra* is **mild**:

- ◆ Animals have some of the signs like animals with more severe disease but they are sick for a long time.
- ◆ The animals slowly lose weight and they have a *fever* that comes and goes.
- ◆ With no treatment animals become very weak and die.
- ◆ **Camels** often lose hair especially from the tail (see p. 296). (But this happens when an animal has been sick for a long time from other diseases too.)

Skilled workers can check for *surra* by looking at a *blood smear* (p. 118) with a microscope.

How animals get *surra*

They get *surra* when bitten by flies that carry infection from infected animals. *Surra* happens most in hot, wet seasons with many flies. The flies that spread *surra* are **not** tsetse flies, but biting flies, such as stable flies (p. 160). They live in wet, bushy places and very quickly spread *surra* from infected animals to healthy ones nearby. Camels often get infected by flies that have bitten infected sheep or goats that carry infection but do not look sick.

Surra is caused by *protozoa* [*Trypanosoma evansi*].

Treatment

- Trypanosome medicines are effective but difficult to use properly. They are poisonous if you give too much.
- Trypanosomes easily become *resistant* to medicines (p. 334).

Be careful using cattle trypanosome medicines for camels. Many of them do not work for camels and some of them are poisonous. **NEVER USE BERENIL (DIMINAZENE ACETURATE) FOR CAMELS** – it usually kills them (p. 335).

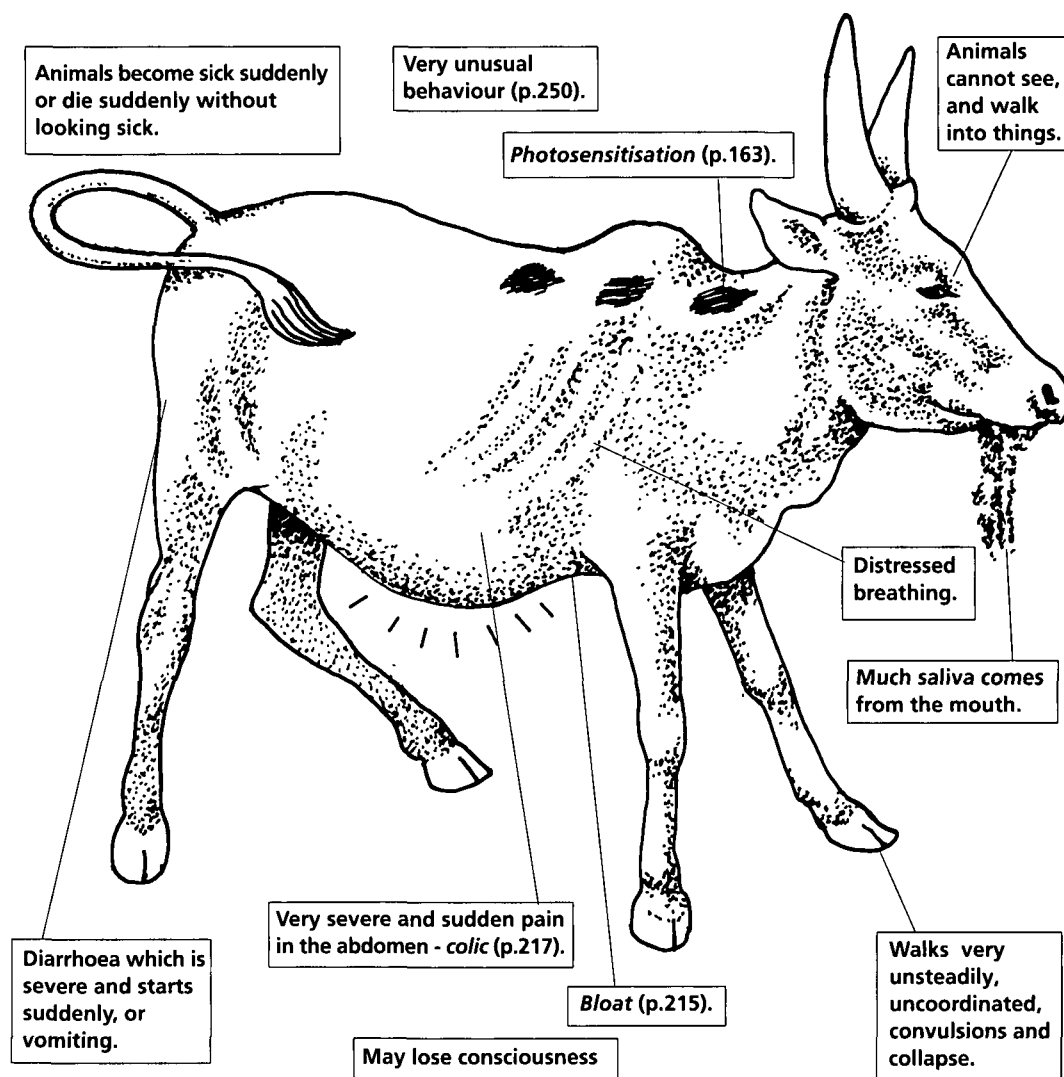
Prevention and control

- Keep animals away from places where there are many biting flies, such as river banks where there are many trees. Be especially careful when there are other animals there. Wait at least half an hour after other animals have moved on before herding animals into these places. The flies that spread surra usually spread infection straight from one animal to another because trypanosomes usually cannot live on the fly for more than about half an hour.
- If you have to take animals to places where other animals may carry trypanosomes, take them in the middle of the day. There are less flies when the sun is very hot.
- Move camels often to keep them away from the flies that hatch from faeces. Flies that spread surra lay their eggs in faeces.

28 Common poisons and what to do about them

Signs of poisoning

Signs that an animal has been poisoned vary a lot and are confusing but may include:



It is often difficult to find out what has poisoned an animal – or whether the signs are caused by a disease rather than a poison. It is also difficult to treat poisoning, even for skilled veterinary workers.

EMERGENCY TREATMENT

- Try to find out what has poisoned an animal. If you find out what the poison is, take it away from the animals or take the animals away from the poison. If you discover the container that a poison came from, read the label on it. It often has directions about treatment.
- If you are convinced an animal is poisoned but cannot find out what the poison was, treat the animal for whatever signs you see. You can do some safe, simple things that may help for many kinds of poisoning.
- Make sure the animal has plenty of water to drink and try one of these treatments:

For animals that look very tired or drunk or collapse:

- Encourage the animal to move about.
- Boil strong tea or coffee and let it cool. Give it to the animal to drink if it will. If it won't drink, give the liquid by mouth.
- You can give one of the treatments below as well.

For animals that are nervous, distressed or have pain in the abdomen:

- Give 100 g magnesium sulphate in half a litre of water by mouth to small animals. Give 500 g in a litre of water by mouth to large animals. Only use about 50 g for horses. Magnesium sulphate is useful for treating poisoning. It makes more water go into the *intestine* from the body and gives the animal diarrhoea so any poison in the intestine mixes with water and comes out quickly in the faeces.
- Or give about 1–2 litres of one of these liquid medicines to large animals or about 1/2–1 litre to small animals:
 - 1 Mix a small handful of fine charcoal powder in about one litre of water. Give by mouth. Give every day for a few days if needed.
 - 2 Mix kaolin (fine white clay powder) in water until it is a milky liquid. Give by mouth. For a large animal use about 200 g of kaolin, for a small animal use about 10 g. Give every day for a few days if needed.
- Give vegetable oil by mouth.
- Give milk or coconut milk by mouth.
- Mix ground cereals or rice with water and give by mouth.
- Mix six eggs and 1/2 kg sugar with about one litre of water and give by mouth.

Prevention

You can help to stop animals being poisoned if you:

- Make sure animals are well fed and healthy. They are much less likely to eat poisonous plants or scavenge for food and eat poisons by mistake.
- Do not graze animals where you know there are poisonous plants (p. 306).
- Avoid pasture that has just been sprayed with herbicides or pesticides.
- Do not let animals graze near rubbish where people have thrown things that may be poisonous, such as old paint.

An A–Z of common poisons and what to do about them

Acids

Sometimes animals are poisoned by acid that comes from vehicle batteries.



Signs

- ◆ Diarrhoea.
- ◆ Vomiting.
- ◆ Pain in the abdomen.

Treatment

- Give sodium bicarbonate (baking powder), chalk or clay (pp. 345, 348).
- Mix one of these with water and give plenty to the animal to drink. If the animal will not drink, give this in a bottle by mouth (p. 317). Then give vegetable oil or milk by mouth.

Aflatoxin

Aflatoxin is a poison that comes from a fungus [*Aspergillus flavus*] that grows in badly dried groundnut meal.



Signs

- ◆ **Cattle** grind their teeth, cannot see, walk in circles, collapse.
- ◆ **Pigs** have yellow *mucous membranes*, become weak and do not eat.
- ◆ **Dogs** have very severe diarrhoea that is nearly all blood. Many dogs die.
- ◆ **Birds** have very distressed breathing. They do not move much and are weak. They do not walk normally. They become thin and often die. Chickens with mild poisoning lay few eggs and do not grow normally. Ducks and turkeys are very sensitive to this poison.

Treatment

There is no treatment.

- Change the food.
- Avoid using groundnut meal for turkeys or ducks.

Arsenic

Animals sometimes get poisoned by old insecticides that were made of arsenic.



Signs

- ◆ The animals are weak and tired.
- ◆ They have much *saliva* coming from the mouth, abdominal pain, stagger, collapse and die.

Treatment

- Treatment is difficult.
- Skilled workers use special medicines (Dimercaprol or sodium thiosulphate).

Bleach

Sometimes animals are poisoned by bleach (and other alkalis).



Signs

- ◆ Diarrhoea.
- ◆ Some animals vomit.
- ◆ There is abdominal pain.

Treatment

- Mix vinegar, preferably, or fruit juice with water and ground cereal and give about 2 litres to large animals or 1/2–1 litre to small animals by mouth.
- Then give vegetable oil or milk (p. 347).

Cassava

Some kinds of cassava have cyanide in the roots unless they are boiled.

See cyanide (p. 304) for signs and treatment.

Castor-oil plant or castor-oilseed cake

Castor-oil plants are common; people crush the plants to produce castor oil. Castor-oilseed cake is what is left when the plants have been crushed for oil.



Signs

- ◆ Animals start to get sick a few hours after they eat the poison.
- ◆ They have very watery severe diarrhoea. Sometimes there is blood in the faeces.
- ◆ They are weak and tired. They look very sick.
- ◆ **Cattle** collapse. They have convulsions and die.

- ◆ **Pigs** vomit.
- ◆ **Horses, mules** and **donkeys** have severe pain in the abdomen – *colic* (p. 217), sweat and stagger about.

Treatment

- There is no treatment.
- Many animals recover if they stop eating the cake but a few of them die.
- Skilled workers can give sedatives to calm the animal.

Copper sulphate

Copper is very poisonous for sheep. They sometimes get poisoned by copper used in foot-baths or for killing the snails that carry *liver fluke*.

Signs

- ◆ Abdominal pain.
- ◆ Much *saliva* coming from the mouth.
- ◆ Diarrhoea.
- ◆ Animals collapse and die.

Treatment

- Try one of the liquid medicines on page 302.
- Skilled workers give special medicines (ammonium molybdate and sodium sulphate).

Cyanide

Some plants have the poison cyanide in them such as: cassava, linseed, Sudan grass and many types of sorghum. New green plants that grow very fast after rain have most cyanide in them and cause poisoning most often.

Cattle suffer from cyanide poisoning more often than other animals but other animals, especially sheep, get poisoned by cyanide.

Signs

- ◆ Cyanide poisoning happens quickly. Animals die suddenly.
- ◆ The animals have distressed breathing.
- ◆ They have brilliant red *mucous membranes*.
- ◆ The animals stagger about, collapse, have convulsions and usually die in a few minutes but sometimes they die in a few hours.

Treatment

- Take all the animals away from the food you think is poisonous.
- Try giving charcoal and water or one of the oily liquid medicines on page 302. But this is usually not effective.
- Skilled workers can only treat cyanide poisoning as soon as signs of poisoning are seen.

They usually give an injection into the *vein* immediately. (Sodium nitrite 20 mg/kg and sodium thiosulphate 40 mg/kg.) After the injection the animal still needs more medicines until it recovers. Give sodium thiosulphate (large animal: 15g, small animal: 5g) by mouth every half hour until the animal seems better.

Derris

The *Derris elliptica* plant is used as an insecticide and it poisons animals that eat it or the powder made from it. They cannot walk normally; they stagger and die. Treat as for insecticide poisoning (p. 305).

Insect bites and stings (bees, wasps, hornets, scorpions)

Some insect bites or stings cause very severe reactions with much swelling. Horses especially have severe reactions.

Signs

- ◆ They have diarrhoea.
- ◆ Distressed breathing.
- ◆ Some have yellow *mucous membranes*.
- ◆ Some have red urine.

Treatment

- Wash the swelling with sodium bicarbonate and water.
- Skilled workers give special medicines (antihistamine and corticosteroid).

Insecticide

Find out what type of chemical the insecticide is. Most modern insecticides are organophosphates (below), some are pyrethroids (p. 305). If you cannot find out what the chemical is but are certain that insecticide is the problem, treat for organophosphate poisoning.

Organophosphate insecticide

Many modern insecticides are organophosphates. **These are strong and dangerous poisons.** They can get into an animal (or a person) by mouth or through the skin.

Signs

- ◆ The animals behave unusually. They often stagger about and have tremors or *twitches* under the skin.

- ◆ Much *saliva* comes from the mouth. A clear *discharge* comes from the eyes and the eyes have very small pupils.
- ◆ Animals have pain in the abdomen. They do not eat much. Some animals vomit. They may urinate more often than usual.
- ◆ They have distressed breathing.
- ◆ They soon become paralysed. They collapse and die.

Treatment

- Wash any chemical off the body with plenty of water. Water with soap is better.
- Get a skilled worker to give atropine sulphate injection. (Inject 0.1 mg/kg slowly into a *vein*. Or inject 0.4 mg/kg under the skin.) Give another injection after half an hour if the animal does not start to recover.
- If an animal has swallowed the poison give a medicine such as powdered charcoal (p. 346).

Pyrethroid insecticide

Pyrethroid insecticides are poisonous; many of them go through the skin. Animals are easily poisoned if you use too much insecticide. The signs and treatment for pyrethroid insecticides are like those for organophosphates.

Kerosene (paraffin)

Sometimes animals are poisoned by kerosene or other fuel. They usually get poisoned when there is little clean water for them to drink so they drink dirty water with fuel in it.

Signs

- ◆ The animals are weak and tired.
- ◆ Some animals vomit.
- ◆ They collapse.

Treatment

Give vegetable oil by mouth.

Lantana camara

This is a common plant in many places. The leaves poison cattle especially.

Signs

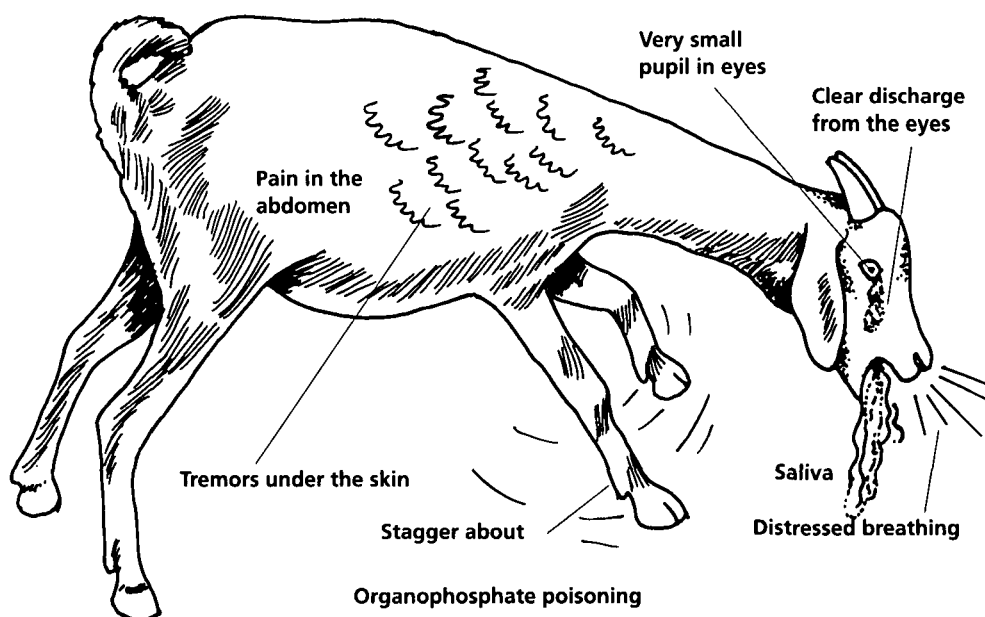
- ◆ The animals are weak and tired, they have diarrhoea with blood in it, they have yellow *mucous membranes* (p. 112) and *photosensitisation* (p. 163).
- ◆ They stagger about and may become partly paralysed. Some animals die in 3–4 days.

Treatment

- Shade the animals from the sun until they recover and give them plenty of fresh water.
 - Give charcoal and water by mouth (p. 302).
 - Treat the *photosensitisation* (p. 164).
- It is best to dig the plants out and burn them but it is often difficult.

Lead

Animals are poisoned by lead from paint or old vehicle batteries.





Signs

- ◆ They are weak and tired, they do not eat much and have pain in the abdomen.
- ◆ They have constipation or diarrhoea.
- ◆ Much *saliva* comes from the mouth.
- ◆ They become nervous, they cannot see and they have convulsions.

Treatment

- Give one of the liquid medicines on page 302.
- Skilled workers give special medicines (EDTA).

Leucaena leucocephala

This tree is often used as forage for animals. They get poisoned if they eat too much of it. The tree has a poison called mimosine in it. Horses are poisoned most often but cattle, sheep, goats and pigs can be poisoned. Some animals are more sensitive to this poison than others.



Signs

- ◆ Animals lose some hair or wool. **Horses** lose hair especially on the neck and tail.
- ◆ Animals become thin. They may be *uncoordinated*. Sometimes they cannot see for a time.
- ◆ Occasionally pregnant animals that have eaten a lot of *Leucaena* have abortions. They may give birth to dead or weak offspring. The new-born animals sometimes have a swelling under the neck or are deformed.

Treatment

- Stop feeding *Leucaena* immediately. Only start feeding it again in small amounts.
- Avoid giving animals more than half their food as *Leucaena*. It is best only to give about a tenth of the animal's food as *Leucaena*.

Mercury

Mercury usually comes from seed dressings.



Signs

- ◆ Animals become sick a few weeks after they have eaten the poison.
- ◆ They do not eat much.
- ◆ They cannot walk properly.
- ◆ They cannot see.
- ◆ They have diarrhoea.

Treatment

- Treatment is difficult.

- Skilled workers give special medicines (Dimercaprol).

Overeating grain

Animals get poisoned if they eat too much grain or other concentrated food (p. 227), e.g. when they break into a food store. If an animal is very sick it is often best to kill it for meat.

Poisonous plants

Strange pastures

Animals often live where there are many poisonous plants. They usually do not eat them or do not eat enough of them to get poisoned. Somehow the animals 'learn' to avoid the poisonous plants. When animals go to a strange pasture they need to 'learn' to avoid poisonous plants there. To let animals 'learn' about a strange pasture without being poisoned, only **put them on the new pasture for a short time each day** then gradually increase the time they spend on it.

Dangerous pastures

After very dry times, fires or when pastures have been overgrazed often the only plants that survive are poisonous plants with deep roots. The animals have no choice but to eat these plants which they normally avoid and they get poisoned. To avoid this, **take extra forage to the animals if you possibly can** while the pasture recovers.



Signs

There are many different signs of plant poisoning, including *photosensitisation* (p. 163). Suspect that animals have been poisoned by plants when they have been grazing strange or dangerous pasture and you can find no other reason why they are sick.

Treatment

- When you know that a sick animal has eaten a lot of poisonous plants, give one of the liquid medicines on page 302.
- If cattle, buffaloes, sheep or goats are very sick because of plant poisoning, skilled workers can cut open the *rumen* and take out the plants by hand. If the plants are very poisonous this sometimes saves the animal's life.

Rat poison

See **Warfarin** (p. 308).

Seeds

Seeds for planting to grow crops have often been covered with chemicals to protect them from insects and disease. These chemicals are often coloured, but not always, and they are often poisonous. Do not let animals eat seed that is for planting. If animals do eat seeds, try to find out what the seeds were covered with and treat for that.

Seeds are often covered with **mercury** (p. 306) or **organophosphate** (p. 304).

Senecio plants

There are hundreds of different kinds of senecio plants; they all look different but nearly all of them have yellow flowers. Senecio plants are poisonous and they survive dry times or fires and make pastures dangerous. All animals can be poisoned by senecio but **cattle, horses, sheep and goats** get poisoned most often.



Signs

When animals only eat **small amounts** of these plants the poisoning takes a long time.

- ◆ The animals eat little and become thin.
- ◆ They have diarrhoea or constipation and may strain to pass faeces.
- ◆ Some have yellow *mucous membranes*.
- ◆ When animals eat **a lot** of senecio plants at one time the poisoning is sudden. The animals die suddenly before they look sick.

Treatment

- There is no treatment for senecio poisoning.
- Try to take animals away from the plants. In settled places remove senecio from the fields. Dig out or pull up and remove the senecio and burn it. Dry senecio plants are dangerous, animals like to eat them because they are less bitter than fresh green ones.

Snake bites

Snakes usually avoid animals but if they attack, they often bite animals on the legs or on the head.



Signs

- ◆ Most animals have a swelling on the leg or face at the place where they were bitten and few other signs. When animals are bitten by cobra-type snakes the swelling often does not happen until 3–4 days after the animal is bitten.
- ◆ Some animals behave nervously, become tense and stand with a curved back.
- ◆ They may have blood coming from the nose and have red urine. A few die in less than one hour.

Treatment

- Keep animals in a quiet place. Do not make the animal walk or move about.
- If you can find the bite marks, make a small cut just through the skin to let the snake poison out. Do not cut deep into the swelling, it does not help.
- Pour cold water over the swelling.
- Tie a rope or bandage tightly above the bite. But after 20 minutes release the rope for a minute or two then tighten it again for another 20 minutes. Do this two or three times.
- Give an antibiotic (p. 328) by injection into muscle, especially if the animal was bitten by any type of adder. The poison from adders kills flesh and the dead flesh gets infected quickly.
- Give *antiserum* by injection; inject some into muscle and a little into the place where the snake bit. *Skilled workers often have antiserum that they can give to animals or people. If snake bite is common in your area, keep some antiserum cold in a refrigerator.*
- Skilled workers also give special medicines (corticosteroid).

Electric shock treatment for snake bites (and other bites)

Some people use electric shocks to treat people with snake bites and insect stings. A few people use this treatment for animals.

- Give four or five shocks with 5–10 seconds between them at the place that was bitten. Earth the part of the body near to where you give the shock.
- A spark plug lead from an engine or an electric cattle prod works. (Each shock should be 20–25 kva at less than 1 ma for 1–2 seconds.)

Sorghum

Sometimes sorghum plants have cyanide in them, especially new green plants that grow very fast after rain. See **cyanide** (p. 304) for signs and treatment.

Strychnine

Strychnine is very poisonous, people use it to kill predators such as jackals.



Signs

- ◆ Animals are nervous and easily excited.
- ◆ They have much *saliva* coming from the mouth. Some animals vomit.
- ◆ They become rigid and have convulsions.

Treatment

- Treatment is difficult.
- Skilled workers use sedatives or anaesthetics to calm the animal.

Toads

Dogs sometimes eat toads that are poisonous.



Signs

- ◆ They have much *saliva* coming from the mouth and do not eat much.
- ◆ They become distressed. Many animals recover with no treatment.

Treatment

- Wash the mouth out with water or water and sodium bicarbonate.
- Skilled workers give special medicines (atropine, antihistamine or corticosteroid).

Tobacco/Nicotine sulphate

These are powerful poisons, sometimes used as insecticides.



Signs

- ◆ Animals have much *saliva* coming from the mouth, some animals vomit.
- ◆ They have pain in the abdomen and diarrhoea.
- ◆ They stagger, are *uncoordinated* and have convulsions.
- ◆ They become paralysed and die.

Treatment

There is no treatment

Warfarin

This is a common rat poison and animals, especially dogs, often eat it by mistake.



Signs

- ◆ Animals have pale membranes and are weak and tired.
- ◆ They have diarrhoea and some animals vomit.
- ◆ They become lame.

Treatment

- Skilled workers give special medicine (vitamin K1).

Weed-killers (herbicides)

Try to find the weed-killer container. It often has directions about treatment. Or give one of the liquid medicines, e.g. charcoal or kaolin and water (p. 302).

