Diseases of goats

J Shilkin
MANY of the diseases of goats are common to sheep and cattle, and, as in these species, correct feeding, hygiene and general care and management will assist in the avoidance of serious ailments. In this article an attempt will be made to advise goat-owners on the diagnosis of the more common ailments, and suggestions as to treatment will be offered where possible. It should be appreciated however that where veterinary assistance is obtainable it is preferable to first-aid treatment. A qualified veterinarian has access to newer and more efficient methods of treatment than are available to the layman.

An outline of sound stock-husbandry measures for goat-keepers has already been given in a previous article in this Journal. The risk of losing valuable animals can be lessened by following the suggestions incorporated in that article; by the avoidance of over stocking; the destruction of harmful weeds; the removal of loose wire and other hazards, as well as by cautious grazing on green feed and discriminating use of concentrates.

M ASTITIS

While mastitis may not be the cause of many deaths among milking does, it frequently results in permanent losses in production due to the formation of fibrous tissue in the udder. As with cattle, mastitis may occur in two main forms—either acute or chronic—depending usually on the type of infection which is responsible.

Acute mastitis usually occurs soon after kidding but occasionally appears later in the lactation period, particularly where hygiene is poor. It is characterised by a hot, tense, painful swelling of one or both sides of the udder. The affected quarter or quarters are hard to milk, and the secretions may be watery or bloodstained.

Chronic mastitis may occur at any time during the lactation period and may also be the outcome of a previous acute attack. In some cases the milk may appear perfectly normal. Where it is abnormal it may vary from the presence of a few clots to a curdy, stringy, slimy or watery appearance. At times the teat canal may be found blocked at each milking. Deep-seated ball-like lumps high up in the gland are not uncommon. These indurations, as they are called, are due to deposits of fibrous tissue which replace secreting tissue, and may permanently lower the milk production of an affected quarter.

Treatment.—The use of penicillin suspension put into tubes as prepared for the
treatment of mastitis in cows is most satisfactory. The injection of one tube of at least 25,000 units into the empty quarter at 24-hour intervals for three days is likely to be successful in acute cases. Similar treatment is suggested in chronic cases but may not be so successful.

Where there is considerable pain and swelling in the acute form, hot fomentations and frequent stripping, combined with the use of a stimulating liniment such as eucalyptus liniment may help to alleviate the pain.

Eucalyptus liniment consists of eight parts of soft soap; two parts of eucalyptus oil; eight parts of water. It should be applied freely and the parts thoroughly massaged.

Does affected with mastitis should always be milked after the healthy animals as the disease may be transferred on the hands of the milker. The milk from the affected quarters should be directed into a tin containing antiseptic and then destroyed.

**MILK FEVER**

This condition is most likely to occur in heavy milkers at their second, third or fourth kiddings. It is generally seen within two or three days after kidding but may occur just before, or up to several months after, kidding.

The actual cause of the disease is unknown but it is generally thought to be due to an upset of the parathyroid gland which in turn affects the level of calcium in the bloodstream so that there is a sudden deficiency of this mineral.

**Symptoms.**—The earliest signs of milk fever are loss of appetite and an unsteady gait but these are often overlooked and the animal is found to be recumbent and in a partial or complete coma. The doe may remain in this comatose state and eventually die without regaining consciousness if treatment is not applied.

**Treatment.**—Calcium borogluconate is the standard treatment for this condition. One ounce of calcium borogluconate should be dissolved in four ounces of boiling water which should then be cooled to blood heat. The solution can then be injected subcutaneously (under the skin) into three or four sites in the loose skin of the neck and behind the shoulder. As irritation and swelling of these injection sites may occur, an intravenous injection is preferable but this usually requires the services of a veterinary surgeon.

In most cases the animals regain their feet fairly quickly after treatment, but should not be milked for 24 hours and then only a small quantity of milk should be withdrawn, increasing the quantities over the next two or three days until normal milking is resumed.

![Fig. 1.—A healthy goat should be smart and alert in appearance](image)

**HOVEN OR BLOAT**

The cause of this condition is not fully understood. It usually occurs when goats are running on succulent green feed, especially lucerne or clover, but cases have also been seen on dry feed.

**Symptoms.**—Rumination is suspended, respiration becomes difficult and the expression of the animal is anxious. The left flank becomes markedly distended with gas. Death may occur from respiratory failure, caused by the pressure of the gas on the heart and lungs.

**Treatment.**—Pull the tongue as far forward as possible to induce the belching of gas, or pass a narrow rubber tube down the gullet. Four ounces of raw linseed oil plus one teaspoonful of turpentine may be given.

Where the condition is severe, veterinary assistance should be obtained if possible.

**LAMINITIS OR FOUNDER**

This is usually an acute systemic condition in which lameness is the most marked...
symptom. Laminitis may be caused by excessive feeding on wheat or wheat products, travelling on hard roads with badly-trimmed feet and by infection with bacteria.

Symptoms.—Acute lameness is always present. The animal refuses to walk and often progresses on the knees. The feet are hot and tender and there is usually loss of appetite.

Treatment.—Where possible, and where the animal will eat, green feed should replace concentrate feeding. A drench of one or two ounces of raw linseed oil may be given daily and hot bran poultices containing a little raw linseed oil should be applied to the feet and bandaged in place. As an alternative to the poulticing, allowing the animal to stand in a tin of hot water for about 20 minutes two or three times a day may be helpful.

However, treatment with one of the newer antihistamine drugs which are available to veterinary surgeons, may reduce the condition much more quickly.

RETAINED AFTERBIRTH

Retention of portion of the afterbirth is not uncommon in does which have had a difficult kidding, especially where assistance has been given. After three or four days, the opening into the womb is closed tightly and any portions of afterbirth retained commence to putrefy, often resulting in an infection of the womb (Metritis).

Symptoms.—There is usually a chocolate-coloured, gelatinous discharge from the vagina which soils the tail and surrounding areas. Appetite becomes poor, milk yield drops and the doe loses condition.

Treatment.—Early treatment of this condition is important as blood poisoning (Septicaemia) may develop, and this is usually fatal. Veterinary attention is desirable in this condition but in the meantime, the vagina may be washed out with a 2 per cent. Dettol solution and the discharge kept off the tail and hindquarters.

IMPACATION AND CONSTIPATION

These complaints are seen mostly in older animals which are overfed and under-exercised. Dry, hard, or fibrous feed and lack of green feed are commonly responsible for impaction and constipation.

Symptoms.—The animal ceases to chew its cud, loses its appetite and becomes lethargic and dull. There may be a tendency to bloating.

Treatment.—Give five or six ounces of raw linseed oil or paraffin oil plus an enema of about one quart of warm soapy water. When the animal will eat, supply young succulent green feed wherever possible.

Where veterinary assistance is not obtainable the subcutaneous injection of sodium sulphamezathine 33½ per cent. solution would be of value in overcoming any infection produced by the retention of the membranes. This is injected in a dose rate of 15 c.c. per 100 lb. body weight on the first day and 10 c.c. per 100 lb. body weight once daily for the next four or five days.

ENTEROTOXAEMIA

Enterotoxaemia is mainly an acute infectious disease caused by the organism Clostridium welchii, Type D, which is also responsible for the enterotoxaemia or
"pulpy kidney" in sheep. The organisms are normal inhabitants of the small intestine, but under favourable conditions they may produce a powerful toxin. The subsequent absorption of this toxin through the bowel wall generally produces a fatal toxæmia.

Goats of all ages may be affected, but it is probably more common in those over six months old, and animals in good condition are the most susceptible.

Alteration of the physical state of the bowels, such as may occur with a sudden change of feed, or when plentiful supplies of lush feed enable the animals to eat their fill without taking adequate exercise often results in the occurrence of the disease.

Symptoms.—There are two well-defined forms—acute and sub-acute and possibly a third, a chronic form.

In the acute form, the most noticeable symptoms are a sudden loss of appetite, severe watery diarrhoea which may be blood-stained, marked abdominal pain, violent movements and screams of pain followed by coma and death. The temperature may be high and the respiration accelerated and death usually occurs within several hours, or up to 36 hours after the appearance of symptoms.

In milking animals, there is a sudden drop in milk production at the milking prior to the onset of symptoms.

The subacute form is characterised by a loss of appetite and softening of the droppings which rapidly become diarrhoeic, and may contain some blood. The animal is dull and listless, but the severe abdominal pain seen in the acute form is absent. There is, in this form too, a sudden drop in production in milking animals and the symptoms may persist for several days before death occurs.

There is some doubt about a chronic form, but there have been reports of a condition in which anaemia and wasting occurred over a period of months and which was attributed to C. welchii infection.

Post-mortem Symptoms.—As with sheep, post-mortem findings are not very evident, particularly if the examination is carried out soon after death, but small haemorrhages of the heart muscle and sac and inflammation of the fourth stomach and small intestine are usually present.

Diagnosis.—A presumptive diagnosis, particularly of the acute form, can usually be made on the symptoms, but an accurate diagnosis requires laboratory examination of small bowel contents or faeces.

Treatment.—Treatment with sulphamezathine by mouth may be effective provided the initial dosage is high and subsequent doses maintained at proper intervals for a sufficient length of time. For this purpose, 2 grammes (4 tablets) for each 20 lb. weight given as the initial dose followed by 1 gramme (2 tablets) for each 20 lb. weight at 12 hourly intervals until the diarrhoea ceases, would be a suitable dose rate.

Pulpy Kidney Antitoxin may also be used for treatment, and for this purpose the injection should be carried out as early as possible. At least 20 ccs. should be injected but up to 100 ccs. may be used if thought necessary.

The combination of sulphamezathine and antitoxin treatment is likely to be more successful than either alone, but as will be mentioned later, the use of antitoxin has some dangers, particularly with the Saanen breed.

Prevention.—As it seems that a sudden change to succulent feed is an important factor in “triggering off” the infection, every care should be taken to accustom the animals to new fodder gradually.

When cases occur, it may be possible to protect the remainder with antitoxin which confers immunity for two or three weeks. However, antitoxin is comparatively expensive, and as there are some special dangers in the use of antitoxin, it is probable that preventive vaccination designed to maintain a high level of immunity throughout the year is the more practical procedure. This is particularly important in goats in which the seasonal incidence seen in sheep does not necessarily occur.

For this purpose a special vaccine for goats has been prepared by the Commonwealth Serum Laboratories, and this is given by subcutaneous injection in a dose of 1 cc. followed successively at intervals of one week, by doses of 2 ccs., 3 ccs., and 4 ccs. A further dose, also at an interval of one week may be given with advantage.

In order to maintain the level of immunity, re-vaccination at intervals of approximately six months is advisable.
Every penny you deposit with the "R. & I." stays in Western Australia. This is equally true whether you have a Savings Account or Cheque Account, or both. Like you, the "R. & I." is West Australian and its funds work to help WA people and to assist WA development. That's why where you bank does make a difference. The "R. & I." offers a complete banking service and will welcome your custom.

Please mention the "Journal of Agriculture of W.A.," when writing to advertisers.
KNOCK FEEDING COSTS TO ROCK BOTTOM!

WITH THE

HY-PUT
HAMMERMILL

• PROCESSES ALL STOCK FOODS
• MAKES FEED MORE PALATABLE
• MIXES TO YOUR SPECIFICATIONS

Foil 10" and 16" Grind Chambers and Double-screen area give MAXIMUM capacity.

HY-PUT means high OUTPUT—the big feature of the AGSERV Hammermill.

The new AGSERV HY-PUT sets the pace in hammermills, giving greater output at lower cost. One of the HY-PUT's important features is its extra large feeding mouth into the grinding chamber. This greatly reduces the "teasing" of sections of baled material and helps make the AGSERV HY-PUT the ultimate in mechanised fodder production.

PRICE: 10" £225, 16" £275

EASY TERMS: Quarter Cash, balance in easy instalments

From the W.A. Distributors:

BARROW LINTON'S
763-7 WELLINGTON STREET, PERTH. BA9151

Please mention the "Journal of Agriculture of W.A.," when writing to advertisers
In the case of the white Saanen breed particularly, there appears to be an idiosyncrasy to the injection of Pulpy Kidney sera and vaccines—and possibly other vaccines—and collapse, abortion and deaths are possible if care is not taken. This condition is known as anaphylactic shock and may occur where an animal is first sensitised with a foreign protein and then injected ten or more days later with further amounts of the protein. For this reason, the special vaccine for goats has been prepared in such a manner that the foreign protein it contains has been reduced to a minimum and vaccination is carried out with small doses at intervals of one week. It is important to remember that these intervals should not exceed one week.

**SORE TEATS**

Chapped or cracked teats may occur when the teats are not dried after milking particularly in cold weather. Teats may be also torn by barbed wire, thorns, etc.

**Treatment.**—Small wounds may be treated by first dressing with an antiseptic solution such as Dettol, drying, and then binding the teat with adhesive plaster to draw the edges together. Instead of hand milking it is preferable to allow the kid to suck for a few days.

For large lacerated wounds where suturing may be necessary, treatment by a veterinarian is desirable.

For chapped and cracked teats the following ointment is useful:

- Lanolin 1 oz.
- Vaseline 1 oz.
- Salicylic Acid ½ oz.

This should be applied twice daily after milking. A 2 per cent. acriflavine emulsion used in the same way is also useful.

**GOAT POX**

This is due to a virus, very similar to the virus causing cow pox. Goats of all ages are susceptible but older animals are more commonly affected. The virus is present in the crusts covering the sores and infection spreads by direct or indirect contact. The usual course of the diseases is about three weeks and the incubation period from one or two days to a week.

**Symptoms.**—It is generally a fairly mild condition but loss of appetite and fever may occur. Small reddened areas first appear on the teats and udder. These later become raised as watery blisters and progress to pus-filled pox sores. After a few days these are replaced by scabs, which finally fall off leaving white sunken areas.

Goat pox is transmissible to humans and usually affects the hands. One attack in the goat produces a lifelong immunity against further attacks.

**Treatment.**—Affected animals should be separated and, if in milk, should be milked last. The milk is considered unsafe for
several days before and after the vesicle formation. Salicylic acid ointment as recommended for sore teats should be applied twice daily.

Fig. 4—Sick goats will sometimes benefit by being rugged if the weather is cold. A cornsack will often serve the purpose.

CYSTITIS (INFLAMMATION OF THE BLADDER)

Cystitis is a condition which occasionally occurs after kidding but may occur at other periods.

Symptoms.—The main symptom is constant straining, with the passage of small quantities of urine. Scalding of the skin surrounding the breech occurs, and the urine is often cloudy and may contain pus or blood clots.

Treatment.—If veterinary assistance is not obtainable, half a teaspoonful of bicarbonate of soda in barley water and 1 oz. raw linseed oil daily may be administered as a drench, or two Rexamene tablets (5 grain) may be given twice daily for five days.

OPHTHalmIA (PINK EYE)

This condition is caused by minute organisms known as Rickettsias. It is a contagious disease spread by flies and by contact with the discharges from affected eyes.

Symptoms.—A watery discharge is usually the first sign of this disease. The mucous membranes of the eye become intensely congested and, because the cornea of the eye is infected, there is usually a bluish-white film over the eyeball. In severe cases the eyeball may rupture. Depending, too, on the severity of the condition and the success of any treatment, there may be temporary or permanent blindness. Milk production drops and there may be a rapid loss in the condition of the animal.

It is most likely to occur in the warmer months when flies are prevalent.

Treatment.—The most effective treatment is chloromycetin eye ointment squeezed into the eye night and morning. If the treatment is commenced in the early stages, one day's treatment may suffice, but more severe cases may require treatment for three or four days.

Penicillin eye ointment and sulphacetamide eye ointment are also satisfactory preparations to use for treatment.

Where none of the above preparations is available, bathe the eyes twice daily in a solution of one teaspoonful of common salt to one pint of water and then place a few drops of 10 per cent. argyrol in each eye.

RINGWORM

This condition is caused by a fungus which affects the hair fibres and follicles causing the hair to fall out, leaving circular bare areas. It is usually seen in badly-nourished animals and is readily transmitted by contact to other goats.

Treatment.—The affected areas should be thoroughly washed with warm water to which has been added one tablespoonful of washing soda to every gallon of water. When dry, apply a 2 per cent. solution of sodium hyposulphite (photographic "hypo") or ordinary tincture of iodine to the bare areas. Treatment should be continued until the infection appears to have been overcome, when short new hairs may be seen on the bare patches.

WORM INFESTATION

Heavy worm infestation may be responsible for serious losses of condition and lowered production. As with sheep, it is the young animals that are most likely to suffer heavily from internal parasites but certain types of worms, particularly the large stomach worms, may cause mortality in older animals.
Symptoms.—The most common symptom is a progressive loss of condition, but this symptom may be overlooked if animals are on a poor diet. In severely-affected goats, loss of condition may progress until a state of emaciation is reached. While diarrhoea is frequently present it does not necessarily appear as a constant symptom. The type of worm present generally determines the presence of otherwise of diarrhoea. There is usually a progressive reduction in milk supply, gradual loss of appetite and harsh staring coat. In the case of stomach worm infestation there may be a swelling under the jaw—the so-called ‘bottle jaw’ —and a severe anaemia.

Treatment.—Before treatment is carried out, veterinary examination of the dropings in order to determine the type and extent of infestation is desirable. For most of the stomach and intestinal parasites which are likely to be encountered, phenothiazine is the most efficient drug to use. This is sold under various proprietary names and can usually be obtained in 1 lb. and 7 lb. packets. The phenothiazine is mixed with water to form a suspension and directions regarding mixing are supplied with the preparation. The suspension is given as a drench in the following dose rates:—

- Adults—1½ oz. powder.
- 12-18 months—1 oz.
- 8-12 months—¾ oz.
- 3-8 months—½ oz.

Does should not be treated within four weeks of kidding, but should be treated about two weeks after kidding. Kids should be treated when they reach three months and all doses should be repeated after an interval of a fortnight. Following dosing with phenothiazine there may be a red pigmentation of the skin in white goats after two or three days. This pigmentation is not harmful but it may persist for some weeks.

Prevention.—Prevention of worm infestation is far preferable to treatment. Overstocking of pastures is dangerous and the avoidance of moist damp areas is most important. If this cannot be carried out animals should be treated with phenothiazine every six to eight weeks.

Good feeding helps to control the ill effects of worm infestation.

DIARRHOEA

In adult goats this trouble is likely to be due to worms, ingestion of certain weeds or too rapid a change from one feed to another. In kids it may be due to worms or careless feeding.

Worms are dealt with elsewhere in this article. When diarrhoea is due to other causes, removal of the cause and correct attention to hygiene and good animal husbandry practices are important. Persistent diarrhoea is most exhausting to the animal, resulting in considerable loss of condition and should be treated promptly.

Treatment.—A mixture of bicarbonate of soda, charcoal, prepared chalk, and ginger (four ounces of each), is useful. This is given in doses of one tablespoonful twice daily mixed with a little water. Where there appears to be considerable pain, 10 drops of chlorodyne may be added. Where scouring persists, veterinary attention should be obtained if possible. Sulphaguanadine tablets (0.5 grams) are often effective in the treatment of diarrhoea, the dose being six tablets initially, followed by three every three hours.

LICE

Goats may be infested with two types of lice—biting and sucking types.

Infestation can occur at all ages, but kids are the most susceptible. In adult animals it is usually the weak and unthrifty that suffer a heavy infestation. Lousy goats have a rough appearance due to constant rubbing against projecting objects in an attempt to relieve the irritation.

The eggs are laid in a sticky secretion which mats the hair together. Hatching occurs in one to two weeks and the adult stage is reached in a further three to five weeks. Although it is normal for lice to spend the whole of their lives on the goat, under favourable conditions they may survive off the host for up to 18 days, so that clean animals may become infested through indirect contact. As with lice in other animals, infestation is usually heaviest in the autumn and winter months.

Treatment.—Sucking lice are more difficult to kill than the biting lice. DDT and
Gammexane are both effective against these parasites and these preparations have a residual value which prevents re-infestation for some days following treatment.

DDT can be used as a spray (1 per cent.) or as a powder (10 per cent.). Particular care should be paid to the flank and neck regions.

Gammexane emulsion or suspension as prepared for the treatment of sheep is also very effective.

---

**Furrowing Helps to Reclaim Salt Land**

This photograph shows the effect derived from furrowing badly salt-affected land in the eastern wheatbelt in aiding the re-establishment of plant growth. The plants in the background are bluebush plants. By furrowing the bare salty soil and excluding stock, young bluebush plants and barley grass are establishing in the roughened soil. Bluebush seed spreads rapidly by wind and this area with no work other than grazing protection and furrowing will quickly become a complete stand of bluebush, such as is shown in the background.
Produce your toughest conditions — THEY WON'T STOP THIS TRIO!

SUPER SURE-GRIP with "Torque Control"

Twist power in the axle is torque. The deep, positive bite of Goodyear Super Sure-Grip makes the most of torque output to give every ounce of energy your tractor motor generates. With this traction-action at the point of power you cover more ground on less fuel no matter what the job.

1. WEDGE IN GRIP
Ruler straight edges come closer together at the shoulder so that loose soil is clutched firmly — doesn't slide out but holds tight to exert extra pull.

2. OPEN CENTRE
With the centre open and smooth between the lug surfaces, soil is quickly released in a continuing self-cleaning action.

3. LONG EVEN TREAD LIFE
Because Goodyear straight lugs work against the soil evenly, they wear evenly, roll smoothly on the road, last longer.

NEW! NOTCHED RIB FRONT TYRE with exclusive "GRAVEL GUARD"

This one has huskiness and something more. The special Notched Rib Tread takes a "gearwheel" grip that gives it precise steering all the way. An important and exclusive feature is the "Gravel Guard," a protective rim flange cover of tough rubber to prevent stones and snags penetrating between rim flange and tyre and causing damage to tyre or tube.

GOOD YEAR TUBES
Pre-Shaped to fit tyres and rims just right.

Most tractor tyre tubes are built in standard round mould without regard to tyre or wide-base rim in which it seats. Goodyear Tubes, on the other hand, are moulded to conform to tyre and rim, resulting in more uniform seating and elimination of excess strain on particular areas.

MORE FARMERS PREFER GOODYEAR TRACTOR TYRES THAN ANY OTHER KIND!

Please mention the "Journal of Agriculture of W.A." when writing to advertisers.
Malcolm Moore Graders

Several models available, all ideal for station road maintenance, contour ditching, fence lines, etc. All bargain priced. Make an offer.

from only £350

International TD 18

Two units to choose from, with or without equipment. We must sell these. Any reasonable offer considered.

BEST OFFER

Allis Chalmers HD 9

An extra good machine right through. Equipped for earthworks or clearing. Outstanding value for money.

extra good £4,000

Please mention the "Journal of Agriculture of W.A." when writing to advertisers.