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### Diseases of goats

J Shilkin

*Department of Agriculture*

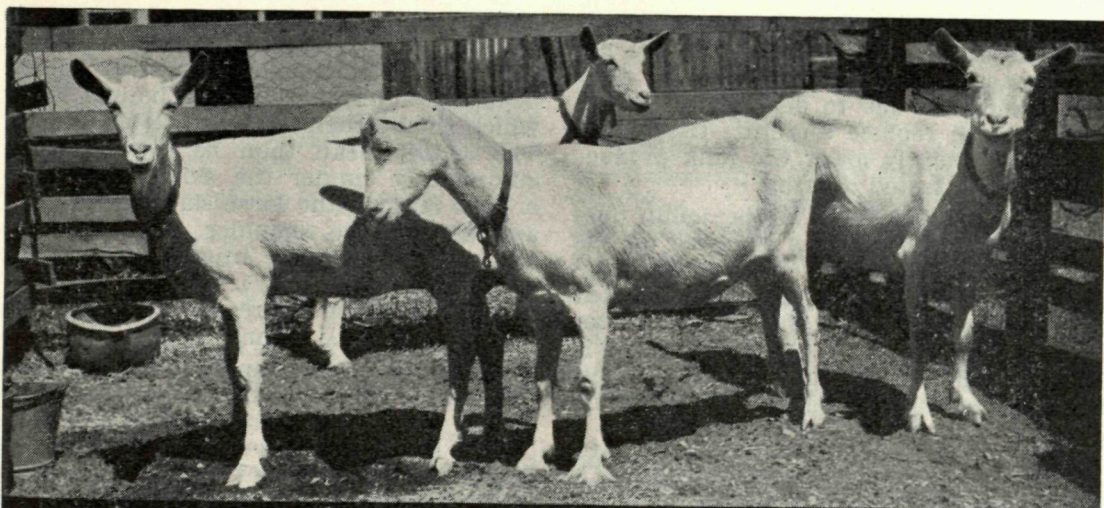
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# DISEASES *of* GOATS

*By J. Shilkin B.V.Sc. Senior Veterinary Surgeon*

**M**ANY 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.

## MASTITIS.

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.

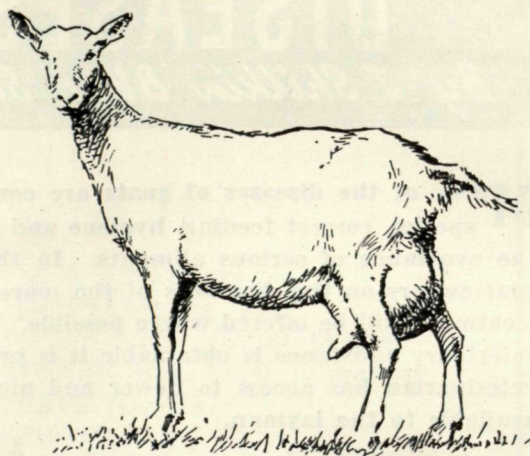


Fig. 1.—A healthy goat should be smart and alert in appearance

### 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.

### IMPACTION 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 to 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.

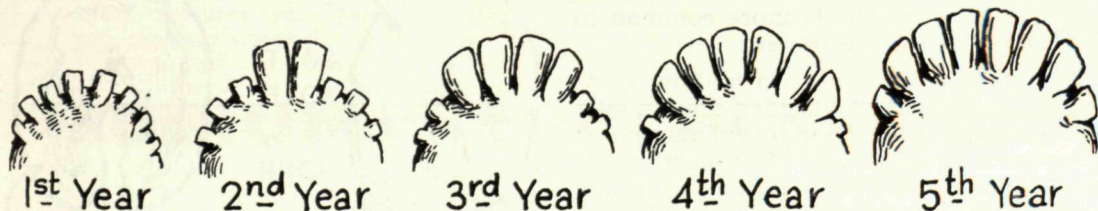
### RETAINED AFTERBIRTH.

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.

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.



## THE AGE OF A GOAT SHOWN BY THE TEETH

Fig. 2.—The dentition of the goat is similar to that of the sheep. In the second year, the two central permanent incisors appear with two more each succeeding year. Eight permanent teeth are seen in the fifth year when the animal is "full-mouthed"



## 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 1oz.

Vaseline 1oz.

Salicylic Acid  $\frac{1}{2}$ oz.

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

## ENTERO-TOXAEMIA.

This is an acute infectious disease which is common in sheep in W.A., but which may also affect goats.

It is caused by a specific germ called *Clostridium Welchii* type D, a normal inhabitant of the bowel which multiplies rapidly under favourable conditions and produces a powerful toxin. This toxin is then absorbed from the bowel producing a toxæmia which is usually fatal.

Anything which results in a slowing down of the bowel movements may result in favourable conditions for the multiplication of these bacteria and the resultant toxin production. Outbreaks of the disease are common during periods when plentiful supplies of lush feed enable the animals to eat their fill without taking adequate exercise. The disease may attack goats of all ages but is more common in those over six months of age.

**Symptoms.**—The onset in milking goats is usually marked by a sudden drop in milk yield, loss of appetite and severe diarrhoea; sometimes bloodstained. The diarrhoea is often accompanied by persistent straining and there appears to be considerable abdominal pain. Death usually occurs within 36 hours of the commencement of diarrhoea and is usually accompanied by convulsive struggling.

Putrefaction sets in rapidly after death and in particular the kidneys become decomposed and "pulpy"—hence the popular term "pulpy kidney disease" in connection with sheep.

**Diagnosis.**—The diagnosis can be definitely confirmed by examination in the laboratory of the contents of the small intestine. This material should be collected immediately after the death of the animal. The small intestine should be tied at its junction with the fourth stomach and again where it joins the caecum or blind gut. This section is then removed and squeezed between the fingers so that the contents are forced to one end where they can be transferred to a suitable glass jar or other container. As a preservative a few drops of chloroform ( $\frac{1}{2}$  c.c. to every 100 c.c. of bowel contents) should be added. This should then be forwarded to the Veterinary Pathologist, Department of Agriculture, Perth, without delay.

**Treatment and Prevention.**—For treatment of the disease, that is where deaths have already occurred, Pulpy Kidney Anti-

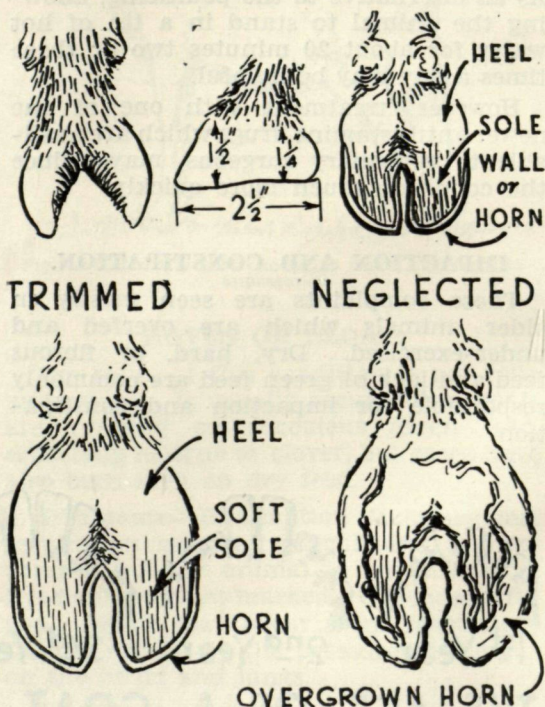


Fig. 3.—The hooves should be kept trimmed, and the top drawing shows the approximate proportions of a sound foot. Overgrown horn may cause lameness or lead to foot infections



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- 2** Before milking, flush milking machines, coolers, cans, etc., with Sodium Hypochlorite.
- 3** When herd is milked, dip teats in Sodium Hypochlorite Solution. Clean and sterilise all the equipment.

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toxin obtainable from the Commonwealth Serum Laboratories, may be injected into the remaining animals in doses of 20 c.c. or more intramuscularly or subcutaneously.

For prevention, 4 c.c. of the anti-toxin may be given subcutaneously to kids and from 5 to 10 c.c. to larger animals.

The anti-toxin, although it confers protection on the animal almost immediately, only confers such protection for a relatively short period; two or three weeks. The anti-toxin also is comparatively expensive. Consequently where enterotoxaemia is likely to occur it would be preferable to vaccinate animals with enterotoxaemia vaccine which produces a much more durable immunity and is a more economical and practical procedure than the use of anti-toxin. It does however, take several weeks before the immunity is sufficiently developed to withstand the disease when exposed to infection.

Since goats do not respond to vaccination as readily as sheep it is advisable to give a second dose four weeks after the first injection. The dose in both cases is 5 c.c. injected subcutaneously beneath the skin of the thigh or brisket.

A warning should be given here in connection with the all-white Saanen breed. These animals appear to have an idiosyncrasy to vaccines and it is possible for collapse, abortion and death to occur when vaccination is carried out on them.

### 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.

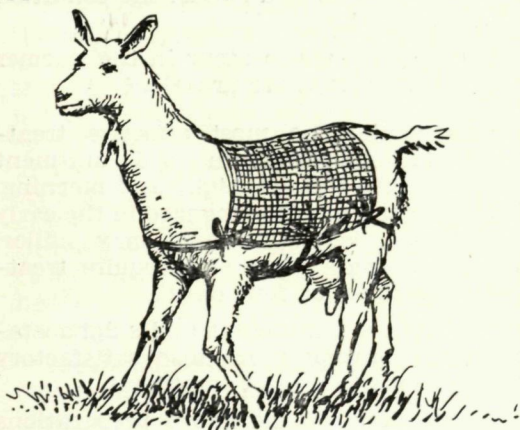


Fig. 4.—Sick goats will sometimes benefit by being rugged if the weather is cold. A cornsack will often serve the purpose

### 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 1oz. 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 or 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 droppings 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.

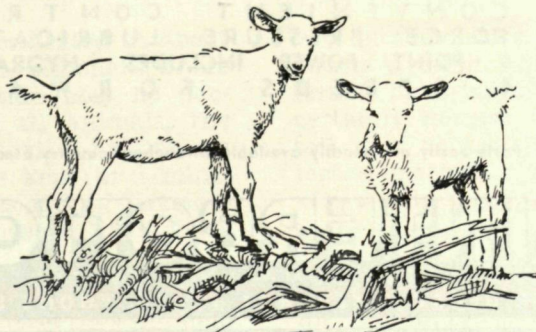
Lousy goats have a rough appearance due to constant rubbing against projecting objects in an attempt to relieve the irritation.

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 reinfestation 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.

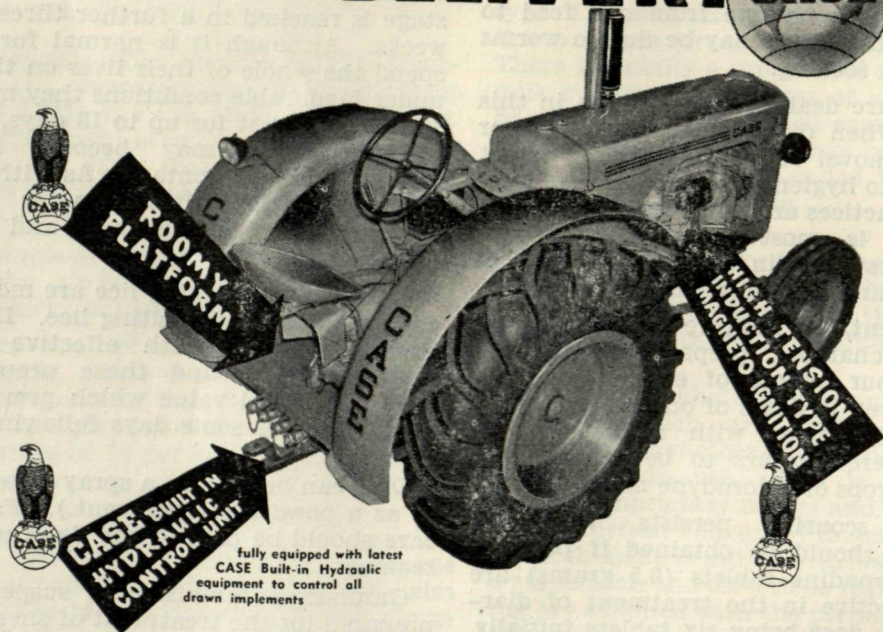




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