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FILE

MERCY CORPS INTERNATIONAL
QUETTA, PAKISTAN

MCI PARAVETERINARY (PVT) TEACHER TRAINING COURSE

PARTICULARS

LOCATION OF COURSE: MCI, Warehouse Complex, Arbab Karam Khan Road, Quetta

DATES OF COURSE: February 2-15, 1992

DURATION OF COURSE: Two weeks

TEACHING SESSIONS: 12 days with a morning and afternoon session each day, each of 3 hours duration

TOTAL TEACHING HOURS: 72 hours

COURSE PARTICIPANTS: 6-8 Paraveterinarians with previous paraveterinary training by Experiment in International Living (EIL), or by Dutch Committee for Afghanistan (DCA)

PURPOSE OF COURSE: To review basic principles of parveterinary work and to teach paraveterinarians how to transfer their technical knowledge of animal disease management to livestock owners, training them to become Basic Veterinary Workers.

COURSE INSTRUCTORS:

Veterinarians: Dr. Fateh Mohammad
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Teacher/Trainer: Mr. Abdul Qayoom Rehmani

MCI PARAVETERINARIAN TEACHER TRAINING MANUAL

PART 1

LESSON PLAN, OBJECTIVES AND MAIN POINTS

FOR TRAINING OF

BASIC VETERINARY WORKERS

COURSE SYLLABUS

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TOTAL HOURS	----- 72

INTRODUCTION

OBJECTIVES:

To describe the overall purpose and function of the MCI Basic Veterinary Worker Program

To explain the role of the PVTs as trainers and teachers

To describe the present course and its objectives

To discuss how we teach others what we know, especially if our pupils can not read and write

MAIN POINTS:

1. The program is designed to expand the availability of basic animal health care services to livestock owners in SW Afghanistan.
2. This will be accomplished by training a network of Basic Veterinary Workers (BVWs).
3. The BVW is a community member nominated by his community for BVW training. The BVW candidate should have the support and trust of his community and should have either personal experience in livestock raising, experience as a traditional healer or some previous training in first aid or other medical subjects.
4. The BVWs will be trained in basic veterinary skills by paraveterinarians that have completed this training course. These skills will include diagnosis and proper treatment of common livestock diseases.
5. After completing this course, paraveterinarian teacher trainers will train BVW candidates in their own communities using teaching methods learned in this course. Practical demonstrations will be carried out on animals from the community.
6. MCI will provide each BVW with a kit containing necessary equipment and drugs to carry out his tasks.
7. The BVW will charge livestock owners for services and treatments and keep a record of his drug usage. A resupply network will be established so that the workers can purchase new replacement drugs with the money they earned from earlier sale of drugs.

8. The current training course serves two main purposes.

a. To review the knowledge that paraveterinarians currently have about animal health and disease.

b. To teach paraveterinarians the best methods for sharing their knowledge with livestock owners and teaching them to become BVWs.

9. Many candidates for BVW will be unable to read and write. The successful paraveterinarian teacher will require much skill and much patience to properly train the BVW so that he can recognize disease correctly and treat it accurately. Appropriate teaching skills will be emphasized in this course.

10. The technical information provided in this manual of lessons is directed toward the BVW. The paraveterinarian already has knowledge beyond that which is included here. These lessons are to be reviewed during the teacher training course and the material in the lessons is to be used by the PVT during the training of BVWs in the field. This represents the basic information that the BVW needs to know to carry out his activities properly.

LESSON 1. How do we share our knowledge successfully?

OBJECTIVES:

To emphasize that this is primarily a teacher training course, not a technical training course

To introduce the teaching methods that will be used throughout the course such as question/answer, brainstorming, role playing, and practical demonstration

MAIN POINTS:

1. The PVTs learned by attending lectures and taking notes and by reading a training manual.
2. This is a passive kind of learning and requires the skills of reading and writing
3. Students who can not read and write must take an active part in learning
4. The PVTs must learn teaching skills that allow active participation by students who can not read or write.
5. There are several teaching methods that can be used in the field to accomplish active teaching
6. These teaching methods represent student centered techniques rather than teacher centered techniques

LESSON 2. How do animals function?

OBJECTIVES:

To review the basic anatomy and physiology of the major organ systems

To insure that the BVW can associate a certain organ with a certain type of function or activity

MAIN POINTS:

1. Animals, like people, are made up of different organs which work together to give the animal life and keep it healthy.
2. Each organ has one or more special functions.
3. The skin holds the animal together and protects it from injury and from drying out.
4. The skeleton is made of bones and joints. It acts as a frame to support the animal and permits the animal to move about.
5. The muscles act like pulleys and levers to move the skeleton and allow the animal to walk, run, turn its head, chew and breathe in and out.
6. The brain acts as a control center for the animal. It is connected to the senses of sight, smell, hearing, touch, and taste in order to tell the animal what is happening in the world and how to react to it.
7. The brain is also connected to the spinal cord in the animals backbone and the spinal cord is connected to the nerves that travel into the animals limbs. Much like the wires in a telephone system, the nerves carry messages from the brain that organize the animal's movements so that it can walk, run and eat correctly.
8. To live, animals must take oxygen from the air by breathing. The animal breathes through its nose or mouth and air is carried through the windpipe to the lungs in the chest. The lungs is full of many small spaces with thin walls. The oxygen in the air passes through these walls and enters the blood of the animal.
9. The blood system of the animal is like an irrigation

system. It is full of many pipes, called vessels, that carry blood to all parts of the animal's body. The blood carries oxygen and food. Just like crops growing in a field, all parts of the body require a continuous supply of oxygen and food to remain healthy and grow, so the blood must flow all the time. In order for the blood to move through the body continuously, a strong pump is required. This pump is the heart, which is located in the chest between the lungs.

10. The digestive system is made up of the mouth, teeth, esophagus, stomach and intestines the rectum and anus. The function of this system is to gather food from environment and break it down into small useful pieces. This process is called digestion. The useful parts of food are broken down into pieces so small that they can not be seen with the eye. These invisible pieces pass through the walls of the intestine and are absorbed into the blood. The blood carries these useful foods to all parts of the body, along with oxygen. The parts of food that can not be used remain in the intestine and are passed out of the anus as manure.

11. The cow, sheep, goat, and camel have a special stomach called the rumen. This stomach permits these animals to digest rough types of food that other animals can not digest. The rumen is a big vat that takes up much room in the belly. During digestion, much gas is produced in the rumen. In order to remove this gas the cow, sheep, and goat belch frequently. Animals that have a rumen are animals that chew their cud.

12. The liver is a large reddish organ in the belly. Its main purpose is to help with digestion and to store energy for the animal. The digestive system depends on the liver to provide chemicals that are necessary for proper digestion to take place. If the liver is damaged, the animal can not digest properly, even if there is sufficient food.

13. The two kidneys are located in the belly and they work like filters. Their main purpose is to control the amount of water in the animal. If the animal drinks too much, extra water is filtered by the kidney from the blood and passed out of the body as urine. If it is very hot and dry, and water is in short supply, then the kidney preserves water and makes only a small amount of urine. The kidneys also filter out poisons from the body and the urine contains these poisons. If the kidneys stop working, the animal will die of urine poisoning. The kidneys are connected to the bladder, where urine is stored.

14. The penis of the male has two important functions. First, it provides the outlet for urine. Second it is the organ of reproduction. Sperm are produced in the testicles and passed out through two cords in the scrotum to the penis during copulation. To perform castration, these two cords are crushed to prevent sperm passing through.

15. When the female becomes pregnant, the fetus develops in the uterus. This hollow organ is located in the rear of the belly. As the fetus develops it is surrounded by a bag of fluid and tissue that attaches to the inside of the uterus. This is called the placenta. The mother provides oxygen and food to the growing fetus through the placenta. At birth, the baby passes through the vagina. The vagina also serves as the outlet for urine.

LESSON 3. How do we know when animals are healthy?

OBJECTIVES:

To review the signs of normal health and activity for various species of livestock.

To convey to the PVT that he must recognize normal animals in order to contrast health and illness

MAIN POINTS:

1. In order to recognize when an animal is sick, we must know its normal appearance and activity when it is healthy for comparison.
2. Healthy animals are active and interested in their environment. They are alert to danger and react quickly and properly. They welcome food when it is offered and eat without difficulty. They willingly remain with the herd or flock and move when the group moves and eat when the group eats.
3. When the skin is healthy the haircoat or fleece is complete with no patches missing. The skin itself is smooth and unbroken.
4. When the bones and muscles are healthy the animal is strong. It can get up and down without difficulty. It can walk and run without problem. It uses all four feet equally. It moves the head and neck up and down and sideways easily.
5. When the brain, spinal cord and nerves are healthy, the animal is alert and carries out all its normal activities. It can see and hear. Its movements are coordinated when walking, running or eating. When the eyes are normal, they are bright and clear
6. When the lungs are healthy, the animal breathes in and out comfortably and slowly without effort. The nostrils are clean and moist. Coughing is infrequent.
7. When the blood and heart are healthy the animal is strong. The gums and the inside of the mouth and eyelids are pink colored.
8. When the digestive system and liver are healthy, the animal eats with good appetite. The manure looks normal.

In sheep and goats, normal manure is in small dark pellets. In camels, it is larger pellets. In cattle, it is soft and forms discs when it hits the ground. In donkeys and horses, it forms firm round balls.

9. For animals with a rumen, the best evidence that the digestive system is healthy is that the animal belches gas and chews its cud regularly. If you push your hand firmly into the space behind the last rib on the left side of the cow, sheep, or goat, you can feel the regular movements of the rumen.

10. When the kidneys are healthy, the animal is alert and active and urinates several times a day. In all animals the normal urine is clear and yellow colored.

11. When the penis is normal, urine is passed without pain or difficulty. The male is able to have an erection, mount the female and copulate enthusiastically. The testicles are of equal size and not too hard or too soft.

12. When the female is normal, she shows signs of heat and accepts the male. She becomes pregnant and carries the fetus until it is fully grown. She gives birth easily to a healthy baby at the correct time.

13. Just before birth, the udder swells evenly above all teats. At birth, the udder produces a thick golden fluid called first milk or colostrum. It is very important that the baby drinks this colostrum in the first day of life because it helps to protect the baby from diseases. Without this colostrum, the baby is defenseless against disease. Many deaths of young animals occur because the baby did not drink colostrum. When the colostrum is finished, normal milk is produced in the healthy udder.

LESSON 4. How do we know when an animal is sick?

OBJECTIVES:

- To review the concept of sickness
- To introduce the concepts of acute, chronic and subclinical disease
- To identify visible signs of sickness
- To learn to associate certain signs of illness with specific organ systems
- To review the concept of clinical examination
- To develop skills for physical examination

MAIN POINTS:

1. Whenever the animal does not appear or act normally, the animal may be sick. One or more organ systems may not be working properly.
2. Sickness can take several forms. When the animal becomes suddenly sick, it is easy to recognize sickness. Sudden sickness is called acute disease.
3. When the animal becomes sick gradually over a period of many days or weeks, this is called chronic disease. It is more difficult to recognize chronic disease, but if we examine the animal carefully, we may see some changes that show us the animal is sick.
4. Sometimes sick animals just do not eat or grow as well as we expect them to do, but they do not show any signs of disease, even if we examine them carefully. Then we say the disease is hidden disease or a subclinical disease.
5. When sick animals show signs of disease, we can usually connect the signs to different organ systems and figure out which organ system is not working. We do this by careful examination of the animal.
6. In order to be sure that we do not overlook any sign of signs of disease, we must always examine every sick animal completely from front to back and top to bottom. If we use the same method each time, we will not miss any important signs.

7. After we find the signs of sickness and connect them to different organs, we can usually figure out what disease is making the animal sick because each disease has a different set of signs. The act of finding out what disease is present is called diagnosis.
8. When the skin is sick we may see the following signs:
 - Patches of hair or wool are missing
 - The animal rubs or itches
 - The skin looks red or wet
 - The skin has scabs or sores
9. When the muscles and bones are not working
 - The animal may have difficulty getting up
 - It may have difficulty moving its jaws, head or neck
 - It may appear weak
 - It may be sore or painful when it walks or when it is touched
 - It may hold one leg up in the air and not use it
 - A leg may be bent in an unusual position
 - A leg may be swollen and hot or cold to the touch
10. When the brain is sick, the signs we may see are
 - The animal can not get up or use its legs
 - The animal walks in circles
 - The animal walks like a drunkard
 - The animal can not see and walks into walls
 - The animal may appear dumb or aggressive
 - The animal may have fits or convulsions
11. When the breathing system and lungs are not working
 - The animal may have fast or difficult breathing
 - Mild exercise makes the animal breathe harder
 - The animal falls behind the moving flock or herd
 - The belly pushes in and out with each breath
 - The animal can only breathe with its mouth open
 - The animal coughs frequently
 - Crusts and thick white fluid appear at the nostrils
12. When the blood and heart are not working we may see
 - The animal is weak and can not keep up with the flock
 - The animal may get easily tired after mild exercise
 - The inside lining of the mouth and eyes may be white or yellow instead of pink
 - The animal may collect fluid under the jaw.
 - The animal may have red or brown urine

13. When the digestive system is not working, we must figure out which part is not working.

If the problem is in the mouth

- The animal may stop eating
- It may eat but it drops food out of the mouth
- It may drool with strings of saliva hanging from the mouth
- Food may come out of the nose after eating

If the problem is in the rumen

- The animal may stop eating
- The animal will stop belching and chewing its cud
- The belly may get big and tight like a drum, especially on the left side
- The animal may become worried and uncomfortable

If the problem is in the intestines

- The animal may stop making manure (constipation)
- The manure may become more frequent and watery (diarrhea)
- The animal may show signs of pain in the belly

14. If the liver is not working

- The animal may become weak and depressed
- The animal may show signs of pain in the belly
- The lining of the mouth and eyes may become yellow
- The animal may get diarrhea

15. If the problem is in the kidneys

- The animal may stop making urine and show pain in the belly when it tries to urinate
- It may urinate more frequently than usual
- It may make larger volumes of urine than usual

16. If the problem is in the reproductive system of the male animal

- The male may not get the females pregnant
- The testicles may be painful or unequal in size

17. If there is a problem in the reproductive system of the female

- The female may be unable to get pregnant
- If pregnant, the female may lose her baby too early
- Babies may be born weak or dead

18. If there is a problem in the udder

- The udder may be unequal in size
- The udder may be hot or swollen
- The udder may be red or black in color
- The milk may be thick and contain lumps
- The milk may appear to be watery

19. Sometimes the same signs may be due to problems in different organs. For example, sick animals often stop eating no matter what organ is sick. Yellow skin may be due to liver disease or to blood disease.

20. After making a list of the signs he observes, the BVW must decide which organ systems are most likely to be connected to the signs he observes.

21. After he decides what organ systems are involved, the BVW can decide what disease is affecting the sick animal.

LESSON 5. What causes sickness in animals?

OBJECTIVES:

To review the major categories of disease such as traumatic, nutritional, toxic, parasitic and infectious

To emphasize the microscopic nature of infectious agents and the mechanisms they have for causing disease.

To review the animal's response to sickness

MAIN POINTS:

1. Diseases of animals have different causes

2. Some diseases affect some kinds of animals and not others. Other diseases can affect all animals.

3. Some causes of disease are obvious because we can see the cause.

-When a sheep is hit by a truck, we know why its leg is broken.

-When we see an animal itching and find lice on the skin, we know that lice have caused the itching.

-If a cow drinks a bucket of water containing insecticides and then dies, we know the cow has been poisoned.

4. Some causes of disease are not obvious because we can not see them. The most important causes of disease we can not see are worms, bacteria and viruses.

5. Worms can in fact be seen but they live inside the animal. Some live in the lungs, some in the liver, and some in the stomach and intestines. If we look inside these organs in a dead animal, we can find these worms and know they cause disease. When the animal is alive, we must determine that worms are present by looking for the signs of disease caused by worms. What signs of disease are caused by worms?

6. Bacteria and viruses are so small that we can not see them with our eyes, even if we look inside the animal. However, we know that they cause specific types of diseases.

7. When an animal has a fever, it is very likely that the disease is caused by a bacteria or virus. Worms,

7. When an animal has a fever, it is very likely that the disease is caused by a bacteria or virus. Worms, poisonings and injuries usually do not cause fever.
8. Sometimes we see a sign of sickness that may be due to many different causes of disease. For example, diarrhea can be caused by worms, bacteria or viruses. However, if fever is present in addition to diarrhea, worms are not likely to be causing the diarrhea.
9. It is important to know which diseases are caused by worms, bacteria and viruses because we have different drugs for each cause.
10. The drugs that kill worms will not kill bacteria and the drugs that kill bacteria will not kill worms. We do not have any drugs that will kill viruses, but we do have vaccines that will prevent animals from getting sick with some viruses and some bacteria.
11. Proper nutrition can help to prevent disease by keeping the animal strong. Poor nutrition makes the animal weak and more susceptible to infections.
12. Sometimes specific things are missing from the animal's diet and cause disease. For example, when phosphorus is missing from the diet, animals become very thin, do not reproduce and lick bones when they can find them. Adding bone meal to the diet will correct this problem.

LESSON 6. How do we prevent sickness in animals?

OBJECTIVES:

To review the concept of preventive medicine

To review other principles of disease prevention such as closed herds, quarantine, carcass disposal, hygiene, etc.

To review the concept of immunity

To review the role of vaccination

To emphasize the importance of colostrum

To emphasize the importance of preventive worming

MAIN POINTS:

1. It is best to prevent animals from getting sick rather than treating them after they become sick.

2. Animals often get sick with bacteria, viruses and worms because the environment is contaminated with these things, or because they are exposed to other animals that carry these things.

3. Animal houses should be kept clean, especially where babies are born. Bacteria enter into the newborn baby through the navel cord. The navel cord should be dipped in iodine right after birth to kill bacteria.

4. Sick animals or animals that abort should be separated from the flock or herd at the first sign of sickness or abortion. Why is this important?

5. If the farmer buys a new animal it should be kept separately for two weeks to be sure it is healthy before mixing it with the flock or herd.

6. Animals that die of disease should be removed from pastures or houses and buried or burned. They should not be left to decay or be eaten by dogs.

7. Newborn and growing animals get sick and die more often than mature animals. This is because older animals develop a resistance to diseases caused by worms, bacteria and viruses. Newborn animals have no resistance to disease and die from sickness most often.

8. Mature females can pass their resistance to the newborn animal through the colostrum. The best way to reduce sickness and death in newborn animals is to be sure they drink colostrum in the first day of life.

9. Vaccines are another way to build resistance. Injecting vaccines into animals protects them from specific diseases caused by bacteria and viruses.

10. Vaccines are specific for certain diseases. An animal vaccinated for anthrax will only be protected against anthrax and can still get sick from other diseases.

11. Sometimes we know when diseases will occur. For example, diarrhea is common in sheep in the spring and in the autumn. We know that worms cause diarrhea at these times of the year. We can reduce the problem of diarrhea by giving worm medicine to all sheep in the spring and again in the fall, BEFORE diarrhea begins. This is called preventive medicine.

12. To prevent worms in livestock, all animals in the group should receive the worm medicine for stomach and intestinal worms at the end of April and at the end of November. The medicine for liver flukes should also be given at the same time in November only, because the winter is when liver flukes are known to be a problem.

LESSON 7. How do we treat sickness in animals?

OBJECTIVES:

To review the principles of good nursing care

To review the principles of therapeutics

To review the specific uses of different classes of drugs

MAIN POINTS:

1. Sick animals should be separated from the group and kept in a protected place. The animal should be kept clean, warm and dry and have fresh air. If they can not stand up they should have soft bedding.

2. Sick animals that are not eating or drinking can become very dehydrated (dried out), just like a grape becomes a raisin. These animals should be drenched with water if they will not drink. They should be offered only simple foods.

3. Animals with diarrhea become very dry and need to be drenched with solutions of water containing special salts and sugars that are provided in the veterinary kit.

4. Different medicines have different uses. In your kit you have 4 different kinds of medicine that you will use often. They are antiseptics, antibiotics, insecticides, and wormers.

5. Antiseptics are used to clean wounds, protect them from infection and improve healing. They are put directly on the wound.

-Antiseptics are also used to clean your hands and your equipment so that germs are killed and disease is not spread from one animal to another when you do your work. In the kit you have 3 antiseptics.

-Sablon (chlorhexidine) solution is used for cleaning hands, instruments and wounds

-Gentian violet solution is put on wounds after they are cleaned and before they are bandaged

-Zinc oxide ointment is put on wounds that can not be bandaged because of their location.

6. Antibiotics are used to kill bacteria that cause disease.

-The best sign that an animal has a bacterial disease is a fever. We measure fever by using a thermometer. Antibiotics must be put inside the animal to do their job. This can be done in different ways. Some drugs can be given by mouth and some by injection. In your kit you have two antibiotics.

-Sulfa is an antibiotic tablet to be given by mouth. It can be used first in cases of diarrhea and in cases where the animal is sick with a fever but is not too sick and continues to eat.

-Tetracycline is a liquid antibiotic that is given by injection. The injection is given in the muscles, where the drug is absorbed in the blood and circulates in the body to reach all organs. Tetracycline should be given when animals have a fever and appear very sick and have stopped eating.

7. Worm medicines kill worms. They do not kill bacteria. Different kinds of worms belong to different tribes. Worm medicines may kill worms from one family and not another. You have two kinds of worm medicine. Both medicines are given by mouth.

-Fenbendazole kills worms that live in the lung and worms that live in the stomach and intestine.

-Fasinex kills worms that live in the liver (liver flukes)

8. Insecticides kill insects found on the skin of animals. These include lice, ticks and mange mites. Most insecticides are put directly on the skin to contact and kill insects. They can be powders, sprays or dips. Some insecticides can be given by mouth. They are absorbed in the blood and reach the skin by the blood vessels.

9. Insecticides are dangerous poisons. If too much is put on the animal or given by mouth, the animal may be poisoned and die. Insecticides are also dangerous to people. You should wear gloves and a mask when you mix and apply insecticides. Insecticide that is not used should not be dumped in water supplies or left in buckets where animals or children can accidentally drink them.

-The insecticide in your kit is Ditrifon. It is a powder to be mixed in water for dipping animals or pouring on animals.

LESSON 8. What are the common diseases of sheep and goats?

OBJECTIVES:

To review the clinical signs of major diseases affecting sheep and goats in Afghanistan

To have the PVT and BVW recognize the different categories of disease

To identify the correct category of drug to use for each disease

MAIN POINTS:

1. The major diseases are as follows:

Viral - Sheep and Goat Pox (Chichak, Kaway)

Bacterial - Anthrax (Tak), Enterotoxemia (Rikhack, Lewantob), Brucellosis (Noxan), CCPP (Busmarg),

Internal Parasites - Stomach and Intestinal worms (Nas chinjai), Lung worms (Sazhai chinjai, spansai), Liver flukes (Garg)

Insects - Mange (Poon, Rashk), Lice (Spazhy), Ticks (Mongaur)

Mixed Causes - Lamb/kid Diarrhea (Ishal, Danasamal), Pneumonia (Sinah Baghel), Sunstroke (Jal)

2. Each disease can be recognized by different signs (See appendix)

3. The following diseases can be treated with antibiotics

Anthrax (Tak)
CCPP (Busmarg)
Diarrhea (Ishal)
Pneumonia (Sinah Baghel)

4. The following diseases can be treated with worm medicines

Stomach and intestinal worms (Nas chinjai)
Lungworms (Sazhai chinjai, spansai)
Liver flukes (Garg)

5. The following diseases can be treated with

insecticides

Mange (Poon)
Lice (Spazhy)
Ticks (Mongaur)

6. The following diseases can be treated with other methods

Sunstroke (Jal) - Put animal in cold water until temperature is normal

7. The following diseases are better prevented by vaccination before they occur than by treatment after they occur.

Anthrax (Tak)
Brucellosis (Naxon)
Enterotoxemia (Lewantob, Rikhack)
Pox (Chichak, Kaway)

LESSON 9. What are the common diseases of cattle?

OBJECTIVES:

To review the clinical signs of the major diseases affecting cattle in Afghanistan

To have the PVT and BVW recognize the different categories of disease

To identify the correct category of drug to use for each disease

MAIN POINTS:

The major diseases are as follows:

Viral - Foot and Mouth Disease (Tabakh)

Bacterial - Anthrax (Tak), Blackleg (Nesabaz),
Brucellosis (Naxon), Hemorrhagic Septicemia (Gowmarg)

Internal Parasites - Stomach and Intestinal worms
(Nas chinjai), Lungworms (Sazhai chinjai, spansai), Liver
flukes (Garg)

External Parasites - Lice (Spazhy), Ticks (Mongaur)

Nutritional - Tympany (Tambe), Grain Overload (?),
Constipation (Qubzet), Phosphorus deficiency (Dehaduqo
khorel)

Mixed Causes - Pneumonia (Sinha Baghel, Takhak), Diarrhea
(Ishal, Danasamal)

MAIN POINTS:

1. Each disease can be recognized by different signs. (See appendix)

2. The following diseases can be treated with antibiotics

Anthrax (Tak)
Hemorrhagic Septicemia (Gomarg)
Pneumonia (Sinha Baghel, Takhak)
Diarrhea (Ishal)

3. The following diseases can be treated with worm medicines

Stomach and intestinal worms (Nas chinjai)

Lungworms (Sazhai chinjai, spansai)
Liver flukes (Garg)

4. The following diseases can be treated with insecticides

Lice (Spazhy)
Ticks (Mongaur)

5. The following diseases can be treated with other methods

Tympany (Tambe) - give vegetable oil by drench. Make the animal walk or run. If animal will not get up and looks like it will die, a hole can be made in the belly to let the gas escape. The exact procedure for this is discussed in Lesson 15.

Grain overload (?) - Keep animal away from grain. Mix stomach powder in water, give by drench. Repeat in 4 hours if necessary.

Constipation (Qubzet) - Mix laxative in water. Give by drench. Repeat next day if necessary.

Phosphorus deficiency (Dehadugo khorel) - Add ground up animal bones to the diet of the affected animals.

6. The following diseases are better prevented by vaccination before they occur than by treatment after they occur.

Anthrax (Tak)
Blackleg (Nesabaz)
Brucellosis (Naxon)
Hemorrhagic Septicemia (Gowmarg)
Foot and Mouth Disease (Tabakh)

LESSON 10. What are the common diseases of donkeys and horses?

OBJECTIVES:

To review the clinical signs of the major diseases affecting donkeys and horses in Afghanistan

To have the PVT and BVW recognize the different categories of disease

To identify the correct category of drug to use for each disease

MAIN POINTS

1. The major diseases of horses and donkeys are as follows:

Bacterial - Tetanus (Qisar), Glanders (Reezish, Zukam)

Internal Parasites - Stomach and Intestinal Worms (Nas chinjai)

Mixed Causes - Wounds, Saddle Sores, Foot Abscesses, Pneumonia (Tokhak)

2. Each disease can be recognized by different signs (See appendix)

3. The following diseases can be treated with antibiotics

Glanders (Reezish, Zukam)

Pneumonia (Tokhak)

Foot Abscess

4. The following diseases can be treated with worm medicines

Stomach and intestinal worms (Nas chinjai)

5. The following diseases can be treated with other methods

Foot Abscess - With the hoof knife, the sole of the foot should be cut away over the abscess to allow the pus to come out. The abscess should be cleaned out with antiseptic solution. A clean bandage should be put on the

foot. The animal should be rested in a clean, dry place for at least 1 week.

Saddle sores and wounds (Zachmun) - The affected area should be cleaned with antiseptic solutions. Zinc oxide ointment should be applied to the affected area daily. For sores due to rubbing, the animal should be rested and put in harness until there is healing.

7. The following diseases are better prevented by vaccination before they occur than treated after they occur.

Tetanus (Qisar)

LESSON 11. What are the common diseases of camels?

OBJECTIVES:

To review the clinical signs of the major diseases affecting camels in Afghanistan.

To have the PVT and BVW recognize the different categories of disease

To identify the correct category of drug to use for each disease

MAIN POINTS:

1. The major diseases of camels are as follows:

Internal Blood Parasites - Surra (Mach)

External Parasites - Mange (Poon), Ticks (Mongaur)

Mixed Causes - Skin necrosis (Depost najury), Pneumonia (Tokhak)

2. Each disease can be recognized by different signs (See appendix)

3. The following diseases can be treated with antibiotics

Pneumonia (Tokhak)

Skin necrosis (Depost najury)

4. The following diseases can be treated with insecticides

Mange (Poon)

5. The following diseases can be treated with other methods

Surra (Mach) - The treatment of this disease requires injection of a special medicine not provided in your kit. It is called suramin.

LESSON 12. How do we control animals for examination and treatment?

OBJECTIVES:

To review physical examination procedures including temperature, pulse, respiration, and assessment of rumen function.

To review basic restraint techniques for animals

MAIN POINTS:

1. When asked to look at sick animals, it is very useful to stand and examine them from a distance, before you try to catch them and handle them. Once they are disturbed, they behave differently. See how many signs of disease you can identify BEFORE you disturb the animal. Count the breathing rate before the animal gets excited by catching it.
2. Once the animal is handled, examination and treatment is much easier when the animal is restrained properly. There is less chance of injury to the animal and the BVW.
3. The farmer knows his animals. Have the farmer help with restraint.
4. A halter is very useful to restrain a cow and can also be used on sheep and goats.
5. A sheep can be put on its rump to quiet it during examination or treatment.
6. The horse or donkey should also have a halter and a lead rope that is held by the farmer. The horse should not be tied in case the horse gets frightened. If it falls over backwards when tied it could break its neck or a leg.
7. When working on a horse's leg, it is useful to lift the opposite leg. Then the horse will not be able to lift the leg you are working on.
8. When doing painful procedures on a horse, it is helpful to use a nose twitch or ear twitch. This distracts the horse from its pain and makes it easier for you to work.

9. Taking the temperature is very important. Some things to remember are:
- a. Shake the thermometer down before you use it.
 - b. Moisten it with spit before you put it in the anus.
 - c. Leave it in the rectum for a FULL 2 MINUTES to get an accurate temperature reading.
 - d. Hold on to the thermometer. If you let go, the animal may push it from the anus and it will break on the ground.
10. Always remember to examine the whole animal from one end to the other, and from top to bottom.
11. Use your mind, your hands, your eyes, your nose and ears to identify all signs of disease.

NORMAL TEMPERATURES FOR ANIMALS

GOAT	38.5 - 40.5 C	101.3 - 104.9 F
SHEEP	38.5 - 40.0 C	101.3 - 104.0 F
CATTLE	37.5 - 39.5 C	99.5 - 103.1 F
HORSE	37.5 - 38.5 C	99.5 - 101.3 F
DONKEY	37.5 - 38.5 C	99.5 - 101.3 F
BUFFALO	37.5 - 39.0 C	99.5 - 102.2 F
CAMEL	35.0 - 38.5 C	95.0 - 101.5 F

Normal temperatures tend to be higher in newborn and young animals than in adults. In very hot weather body temperature can be elevated even when animals are normal. If you are in doubt that an animal has a fever, take the temperatures of healthy looking animals in the group and see if their temperatures are as high as the animal you think is sick. If all temperatures are high, then this is probably not a fever.

LESSON 13. How do we choose the right kind and amount of medicine?

OBJECTIVES:

Review the main classes of drugs and their use, mainly insecticides, anthelmintics, antibiotics and antiseptics.

Review the selection of drugs on the basis of signs

Review concepts of dosage

MAIN POINTS:

Choosing the right drug

1. Different diseases are caused by different germs but may produce the same signs. We can not always know what is causing the signs but we can choose the right drug to use by noting the signs.

2. Antibiotics should always be given when the animal has a fever. If the animal still is eating, then the tablet antibiotic can be given by mouth. If the animal is not eating, then the liquid antibiotic should be given by injection. The liquid antibiotic should always be given to all animals in the group when some animals in the group have died suddenly.

3. In addition to fever and sudden death, antibiotics should be given when you see any of the following signs.

Diarrhea
White discharge from the nostrils
Coughing
Difficult breathing
Hot swellings on the udder
Hot swellings on the feet or legs with lameness
Wounds that are swollen or draining
Cloudiness or discharge in the eyes

4. Worm medicines should be given when you see any of the following signs

Diarrhea
Thin animals that will not gain weight
Coughing
Swelling with fluid under the jaws
Pale animals with white color on the gums and under the eyelids

5. Worms in the liver and worms in the stomach and intestine make the same signs, so both medicines should be given.
6. As you can see, when diarrhea or coughing occur, it may be difficult to figure out the cause. It is ok to give an antibiotic and a wormer at the same time in these cases.
7. Insecticides are given when you see any of the following signs
 - Hair or wool loss
 - Itching and rubbing
 - Thickening of the skin
 - Insects are seen on the skin
8. For wounds and abscesses, antiseptics are applied to the wound or in the abscess after draining
9. For constipation, magnesium sulfate powder is mixed with water and given by mouth.
10. If tympany is present, then vegetable oils are given by mouth.
11. If the animal has a belly ache from eating too much grain, then the stomach powder is mixed with water and given by mouth.

Proper Dosing of Drugs

1. Drugs can cure disease, but they also can be dangerous. If too much is given, the drug can poison the animal and possibly kill it. If too little is given, the drug will not work
2. The correct amount of drug to use is based on the size of the animal.. The correct amount of drug is called the dose.
3. Some drugs are effective if given once. Some drugs must be given repeatedly for a number of days to be effective.
4. Some drugs can be harmful to people if they eat the meat or drink the milk of animals that have received the drug. It is best if milk is not used from the animal for 4 days after treatment and that the animal not be slaughtered for meat for 10 days after treatment. Be sure to ask the farmer if he wants to kill the animal for meat before you give it drugs.

5. The proper dose for each drug in the kit for each type of animal and size of animal is given in a separate section of the BVW Training Manual. A picture book of drug doses is also provided for BVWs that can not read.

LESSON 14. How do we give medicines correctly?

OBJECTIVES:

To review the proper techniques for oral drenching, oral administration of boluses, use of insecticides, administration of intramuscular and subcutaneous injections, and proper care of syringes and needles.

MAIN POINTS:

1. Giving liquids by mouth

a. When liquid medicines are given by mouth, there is a big risk that the medicine will go down the windpipe into the lungs instead of down the esophagus into the stomach. If medicine goes into the lungs, the animal may die.

b. To prevent this, the head of the animal should not be tilted upwards. The mouth should always be held below the eyes.

c. The medicine should be given SLOWLY to allow the animal to swallow it and not have it run down the throat. Watch for swallowing motions in the throat while you are giving the medicine.

2. Giving tablets by mouth

a. Use a tube or pipe to give tablets.

b. Examine the tube before you use it. Be sure it does not have sharp edges or rough surface that will injure the mouth of the animal.

c. Be gentle when you put the tube in the animal's mouth so the tube does not cause injury.

d. Pass the tube just to the back of the mouth, behind the base of the tongue. If you put it in too far, you may give the tablet into the windpipe. If you do not put it in far enough, the animal will spit the tablet out.

e. If you give a tablet with your hand, be careful. Do not put your fingers between the back teeth of the animal or they will be crushed.

3. Use of insecticides

a. Insecticides are dangerous poisons that can kill people and animals. Much care should be taken when using these chemicals.

b. Do not breath dust when mixing solutions. Wear a mask.

c. Do not get powders or solutions on your skin. Wear gloves.

d. Do not leave powders or solutions in places where children or animals can eat them accidentally.

e. Do not dump leftover solutions into water supplies or where animals may graze or eat.

f. Be sure to use the correct dose.

4. Intramuscular injections

a. Use only the proper sites for injection (see diagram)

b. Select a clean spot on the animal. Do not pass the needle through mud or manure on the skin or the animal will develop an abscess where the injection was given.

c. Make sure you are in a safe place when you stick the needle in so you are not kicked.

d. Pull back on the plunger of the syringe before you inject. Look for blood backing up in the syringe. If blood is present do not give the medicine because you will be giving it in the blood instead of the muscle. Choose a different spot and start again.

e. In small animals, do not give more than 5 cc of medicine in one spot.

f. In big animals, do not give more than 15 cc of medicine in one spot.

g. Injections with tetracycline are painful to the animal. Be sure to tell the farmer first that the animal may become lame so he is not surprised.

5. Care of needles and syringes.

a. Do not mix medicines in a syringe. Try to keep

one syringe for each type of medicine you use.

b. Clean the syringe at the end of each day you use it. Do this by removing the plunger from the barrel and wash each piece in clean water. Then soak the plunger and barrel separately in the solution for at least 15 minutes. Let it dry and then put it back together. Keep the syringe in a clean container when you are not using it.

c. Needles should be cleaned immediately after they are used. If blood or medicine is allowed to harden in the needle, you may not be able to remove it and the needle will be ruined. After cleaning, store the needles in a container of antiseptic solution. This solution should be replaced regularly to keep it clean and strong.

d. Needles should be sharpened regularly so that injection will be easy for the BVW and the animal.

LESSON 15. What procedures are useful to know?

OBJECTIVES:

To review techniques of wound management and bandaging.

To review foot trimming

To review the indications and technique of bloodless castration

MAIN POINTS:

1. Wound Management - Wounds need to be treated to prevent death from blood loss, infections with bacteria and maggots, tetanus, and permanent lameness.
 - a. Wounds should be treated early, not late. If seen late, then dead skin and muscle should be trimmed away. It is extremely important to treat wounds in horses and donkeys right away to avoid tetanus (Ousar).
 - b. If bleeding is present it should be stopped with a tourniquet placed between the wound and the heart. Gauze should be held firmly over the bleeding area to help the blood to clot.
 - c. When bleeding is stopped, the wound should be examined and wood, wire, glass, or other objects should be removed if present.
 - d. The wound should be thoroughly irrigated and washed using antiseptic solutions.
 - e. An antiseptic ointment should be smeared over the wound.
 - f. When possible, the wound should be covered with a CLEAN bandage (not dirty rags) to protect it from dirt and flies.
 - g. Bandages on legs must not be too tight or the blood will not be able to flow normally into the leg.
 - h. If the wound can not be covered, then ointment should be applied every day and insecticide solution should be painted around the wound to prevent maggots from forming.
 - i. If the wound is deep or if the animal appears sick, then an antibiotic injection should be given at the time the wound is cleaned.

2. Opening abscesses - This will relieve pain and swelling and make the animal feel better.

a. Always take the animal away from the herd to open an abscess so other animals are not exposed to the germs that come out.

b. Always open the abscess at the bottom so that the pus will continue to drain out. Make a big opening with your knife that will stay open. Squeeze out the pus into a container or rag and burn it. Do not let the pus run onto the ground.

c. Flush the abscess with antiseptic solution after the pus is squeezed out.

3. Foot trimming - If the hooves are too long, the animal is more likely to get infections in the foot and become lame. Feet should be inspected regularly and overgrown feet trimmed with a knife.

4. Removing gas from the rumen in an emergency - When cows, sheep, or goats appear to be dying from tympany, it may be necessary to put a hole in the rumen to let the gas escape.

a. This must be done only on the left side of the animal, just behind the last rib and one width of the hand below the backbone in sheep and goats and two widths of the hand in cows.

b. The knife should be clean. The blade should point from front to back, not up and down. The hole should be just big enough to let the gas escape freely.

c. The animal should have an antibiotic injection to prevent infection in the belly from the knife wound.

5. Castration - When farmers want their animals castrated, the BVW can use the Burdizzo castrating tool. With this tool, there is no bleeding and the risk of infection is very low.

a. Castration is easier to do on young animals than old animals.

b. The object is to crush the two cords that carry sperm away from the testicles. If the cords are crushed properly, it is not necessary to remove the testicles.

c. The cords can be felt at the top of the scrotum above

the testicles. Each cord must be crushed separately, not both at once. Each cord should be crushed at two separate locations.

d. The cord is pushed away from the center of the scrotum and the Burdizzo is placed around the cord. The Burdizzo is closed and the cord is crushed. Then the Burdizzo is moved down the cord about 2 cm and the same cord is crushed again.

e. The Burdizzo is then moved to the other cord, and the procedure is repeated on the other side.

LESSON 16. Why must I keep records of my activities?

OBJECTIVES:

- To review the need for treatment records
- To introduce the accounts book
- To explain simple bookkeeping procedures

MAIN POINTS:

1. The BVW will charge a fee for his services.
2. When the BVW uses up his medicines, he will have to buy more from MCI. It will not be given free. Some of the money that the BVW earns from treating sick animals should be saved to buy more drugs.
3. The record book will show MCI what kinds of animals the BVW is seeing, what kinds of sickness he is treating and what drugs he is using.
4. This will help MCI to do the following.
 - a. Determine which drugs are needed in larger quantities.
 - b. Determine which drugs are not being used by the BVW,
 - c. Improve the drug supply system to the BVW.

CLOSING SESSION

OBJECTIVES:

1. To review the purpose of the course
2. To orient PVTs about the one week test training course that follows this course.
3. To answer questions of PVT trainers

MCI PARAVETERINARIAN TEACHER TRAINING MANUAL

PART 2

**DESCRIPTIONS OF IMPORTANT DISEASES
OF LIVESTOCK
IN AFGHANISTAN**

DISEASES OF SHEEP AND GOATS

LUNGWORMS IN SHEEP AND GOATS

1. Young animals are the most severely affected, during their first season on pasture.
2. The adult Lungworms live in the airways of the lung and lay eggs. The eggs are coughed up and swallowed and spread onto the pasture with the animal's manure. The eggs hatch and are eaten by other grazing animals who then become infected as well.
3. Sickness is caused by irritation of the young worms deep in the lung tissue causing pneumonia, or by adult worms blocking small airways.
4. The obvious signs are coughing, difficult breathing, and weight loss. Usually there is no fever.
5. Some animals may show no signs of disease but may pass eggs that can survive on the pasture through the cold winter. These eggs infect animals that begin grazing in the spring.
6. If infected animals are slaughtered, small worms, like threads, may be seen in the airways and the lung may contain small gray spots.
7. Most animals are cured by Panacur treatment. When even one animal in a group shows signs of lungworms, ALL animals in the group should be given Panacure. Animals with fever should also receive antibiotics.

SHEEP AND GOAT POX

1. This is a virus disease that affects sheep and goats.
2. The disease is spread by contact with sick animals or by contact with tools or housing contaminated with virus. Infected animals are most contagious during the second week of infection.
3. Signs first appear 2-14 days after infection.
4. Signs of disease are mostly in the skin. Red, raised sores can be seen, especially where wool is sparse. These may be anywhere on the body, including the mouth and udder. Eating or milking may be very painful.
5. Young animals may show fever, lethargy, and nasal discharge early, and may even die before skin is affected.
6. In dead or slaughtered animals, the sores that are seen on the skin may also be seen in the throat and stomach.
7. Treatment is not useful, just provide food that is easy to eat, and water. If fever is present, give antibiotics.
8. Most animals will recover, but skin lesions will have scabs and may leave scars where hair and wool will not grow again.
9. Annual vaccination is the best control. Animals that have the disease once will not get it again.

ANTHRAX IN SHEEP AND GOATS

1. Anthrax is an infectious disease caused by a bacteria that can remain in the soil for a lifetime. It is very important to prevent this bacteria from contaminating the soil where animals graze.
2. Animals are infected by grazing or breathing in contaminated soil, contaminated feed and water, or contact with sick animals.
3. This is a dangerous disease, usually fatal to all animals and sometimes to humans.
4. Animals often die suddenly or show signs of disease for only a day or two before they die. These signs include fever, depression, rapid breathing, red or bleeding gums, bloody milk, urine and manure, and swollen tongue. Animals usually collapse and have convulsions before dying.
5. The carcass decomposes and bloats rapidly. Dark blood passes from the mouth, nose, and anus of the dead animal and this blood does not clot.
6. The soil becomes contaminated when the bacteria leaks from the dead animal. The carcass should not be cut open. The carcass manure and contaminated soil should be buried deeply (2 m) or completely burned.
7. Sick animals should be isolated, to avoid contaminating others. Wild animals must be kept away from sick and dead animals.
8. Oxytetracycline may be a useful treatment if given early, but few animals will survive. Healthy animals should be treated with oxytetracycline when any animal in the group has signs of anthrax.
9. Annual vaccination is the best way to prevent the disease and is especially important in areas that have ever had anthrax before.

ENTEROTOXEMIA (LAMB DYSENTERY)

1. This disease is seen in young lambs under 2 weeks of age.
2. It is caused by a bacteria that is found in the soil
3. Lambs are infected by sucking on contaminated teats or from contaminated pasture.
4. Only lambs under 2 weeks of age get the disease. Affected lambs have a painful stance and cry out in pain. They have a yellowish, diarrhoea that may contain streaks of blood. Death occurs quickly.
5. In a dead lamb, the inside of the intestine is very inflamed, with bloody patches on the surface.
6. Treatment is not very effective. If some lambs have died, other healthy lambs can be given antibiotics.
7. To prevent this disease, pregnant sheep should be given enterotoxemia vaccine during the last month of their pregnancy. When the lambs drink colostrum from vaccinated ewes, they will be protected against enterotoxemia during the first 2 weeks of life.

CONTAGIOUS CAPRINE PLEUROPNEUMONIA
(CCPP)

1. This disease is caused by a bacteria and occurs mainly in goats, and sometimes in sheep.
2. The bacteria does not live for long outside of animals, but some goats may carry the bacteria for a long time without getting sick. These animals are the source of infection for other goats and sheep.
3. The bacteria is spread to healthy animals through the nasal discharges or coughing of sick animals and carrier animals.
4. The disease causes a very bad pneumonia. Sick goats are very weak and depressed and stand with their heads down. They have discharges from the nose, coughing, and difficult breathing. They have a high fever. The signs last for 2-5 days and then very many of the affected animals die.
5. In a dead animal the lungs look very bad. They are dark colored, firm and covered with strings of pus. It is common for the lung to stick to the rib cage. There is much fluid in the chest.
6. Treatment can be helpful. Oxytetracycline should be given to all goats and sheep in a group as soon as you think that CCPP might be present. Treatment is more effective if started early.
7. Treatment will allow many animals to recover from the disease, but some of these animals will become carriers. These animals should be slaughtered before new animals are purchased so that the new animals will not become infected.
8. A vaccine can be given to prevent CCPP but it is not now available in Afghanistan.

TETANUS IN SHEEP AND GOATS

1. Tetanus is a bacterial infection that is often fatal to animals and humans. The bacteria that causes this disease is passed in the manure of animals and remains in the soil for a long time.
2. The bacteria enters wounds caused by injury, shearing, castration, or cuts in the mouth from rough food. Dirty tools and instruments often carry the tetanus bacteria.
3. The bacteria multiplies at the site of the wound and produces a poison that is absorbed in the blood and paralyzes the animal. The animal may get sick many days after the wound is infected.
4. The signs are stiffness of legs and neck and tail, shaking, nervousness and drooling. Soon the animal may be unable to open its mouth, chew, swallow or walk. The rumen becomes tympanic. Animals lie with stiff legs and the neck curved backwards and die.
5. Treatment is not very effective but some animals may recover.
6. To prevent tetanus, instruments for shearing and castration should be kept clean. ALL DEEP WOUNDS SHOULD BE CLEANED IMMEDIATELY WITH ANTISEPTICS.
7. Tetanus vaccine will protect animals from tetanus.
8. All wounds should be cleaned and tended quickly.
9. Tetanus is rare and usually less severe in cattle, and may recover with antibiotics and vaccine.

BRUCELLOSIS IN GOATS AND SHEEP

1. This disease is very much the same as the disease in cattle. Goats are more commonly affected than sheep. Goat brucellosis is caused by a bacteria that is a close relative of the bacteria that causes the disease in cattle.
2. The disease in goats and sheep also can cause sickness in people, especially from drinking the milk of infected goats.
3. The main sign is abortion, but sometimes goats will also have signs of fever, diarrhea, lameness, a swollen udder, and thick milk.
4. Goats that abort should be isolated from the herd. Their milk should not be drunk by people.
5. Treatment is not effective. Goats with brucellosis should be killed.
6. A good vaccine exists to prevent brucellosis in goats.

BIGHEAD

1. Bighead is a special form of the disease blackleg. It is caused by the same bacteria.
2. The disease is seen mostly in male sheep because sheep bang their heads together when they fight.
3. This fighting makes small wounds on the head that become contaminated with the bacteria.
4. The bacteria produces inflammation and gas.
5. The heads of the affected animals swell up. The skin cracks and yellow fluid oozes out. Gas bubbles may be felt under the skin.
6. The bacteria also produces poisons which are absorbed in the blood and can make the animal weak, cause fever, and sometimes death.
7. Treatment should be started early in the disease. Oxytetracycline injection is helpful. Also, a knife can be used to cut the skin over the swelled areas to allow the poisons to drain out of the animal instead of being absorbed. This must be done carefully to avoid cutting blood vessels and nerves.
8. Vaccination for blackleg will help prevent big head also

DISEASES OF CATTLE

DISEASES OF CATTLE

1. Calves are more severely affected than sheep, goats, or adult cattle.
2. Infection occurs the same way as in sheep and goats, but more damage is caused by young worms in the lung.
3. Signs may occur suddenly in calves or adults on infected pasture. Diarrhea may occur early, followed by very rapid breathing and heart rate, a frequent cough, mild discharge from the nose, and high fever. These signs get worse quickly and many calves may die in 3-10 days.
4. A slower development of disease is more common, with fast, deep breathing, coughing fits, and weights loss. Signs may last 3-4 weeks. Animals gradually improve with few dying, but many calves will grow poorly and may develop other diseases.
5. Threadlike worms can be seen in the airways of dead or slaughtered animals.
6. Cattle lung worm is also treated and prevented with deworming treatment (Panacur). Antibiotics are given also to animals with fever.

ANTHRAX IN CATTLE

1. The disease is the same as in sheep and goats.
2. Cows are more likely to show abortions and blood in the milk before they die.
3. When one cow shows signs of anthrax, all healthy cows should be treated with oxytetracycline
4. Annual vaccination is the best protection against anthrax. Milk should not be used for a few days after the vaccine.

BRUCELLOSIS IN CATTLE

1. Brucellosis is an infectious disease of cattle caused by a bacteria. The main sign of disease is abortion near the end of pregnancy.
2. Infected cows carry this bacteria without signs of disease until they become pregnant. Then the bacteria moves to the growing calf and kills it causing abortion. Abortions occur after the fifth month of pregnancy. Many times the cow will pass the dead calf, unseen by the farmer, but the placenta will remain in the cow, hanging out from the back end.
3. The dead calf, the placenta, and the birth fluids contain many of the bacteria. Other cows that lick the dead calf, the placenta or the ground where the calf was dropped will also become infected. These cows will also abort if they are pregnant.
4. Humans can become infected by handling the dead calf and placenta. They can also become infected by drinking milk from cows with the bacteria. MILK FROM COWS SHOULD ALWAYS BE BOILED BEFORE HUMANS DRINK IT. The disease causes repeating fevers in people.
5. When bulls get this disease, they develop pain and swelling in the testicles and can no longer make cows pregnant.
6. Cows that abort from this disease may abort again the next time they are bred. The bacteria may continue to be passed in the milk. It is dangerous to keep these cows as milking cows or the farmers's family may become sick with fever.
7. Treatment is not effective in this disease.
8. If brucellosis is suspected in a cow with abortion the cow should be separated immediately from other cows and the dead calf and birth tissues should be burned or buried. The cow should be destroyed to protect the rest of the herd and the farmer's family.
9. There is a very good vaccine for protecting cattle against brucellosis. The vaccine is given to female cattle when they are between 4 and 8 months of age.

DISEASES OF HORSES AND DONKEYS

DISEASES OF HORSES AND DONKEYS

TETANUS IN HORSES AND DONKEYS

1. This is the same disease as is seen in sheep and goats.
2. Horses and donkeys are the most vulnerable of all animals to tetanus. ALL DEEP WOUNDS SHOULD BE CLEANED WITH ANTISEPTICS IMMEDIATELY AND ANTIBIOTICS SHOULD BE GIVEN.
3. Treatment is of little value and should not be attempted.
4. Vaccinate annually, also before foaling and at weaning.

HARNESS AND SADDLE SORES

1. These sores commonly develop in horses and donkeys used to pull carts. At first they do not appear serious, but if the farmer continues to use the animal for work and the sores are not treated, these sores can become serious and the animals may not be able to work for a long time.
2. The sores develop when the skin is damaged by constant rubbing of harnesses or saddles that do not fit well on the animals. The damaged skin is invaded by bacteria, and serious infections occur.
3. The skin looks raw, may have a discharge, and is painful to the horse.
4. THE MOST IMPORTANT PART OF TREATMENT IS TO REST THE HORSE AND LEAVE HARNESSES AND SADDLES OFF THE ANIMAL UNTIL HEALING HAS OCCURRED.
5. The sores should be cleaned with antiseptic solutions and a zinc oxide ointment smeared on the sores daily. If flies are bothering the sores, some insecticide solution can be painted on the edges of the sores.
6. If sores are deep, or if the animal has a fever or stops eating, then antibiotic tablets should be given to the animal.

DISEASES COMMON TO MANY TYPES OF ANIMALS

DISEASES COMMON TO MANY TYPES OF ANIMALS

STOMACH AND INTESTINAL WORMS

1. There are many different kinds of roundworms that live in the stomach and intestines of animals. All types of livestock are affected by these worms.
2. The adult worms live in the digestive system of the animal. They lay eggs that are passed out in the manure. These eggs hatch on pasture and produce young worms that crawl up onto grass and other plants and wait to be eaten by animals that are grazing.
3. When the animal eats these young worms, they remain in the stomach or intestine and grow into adult worms. They also begin to lay eggs that pass in the manure.
4. In a short time, the pasture becomes contaminated with many eggs and all the grazing animals become infected with worms. The eggs and young worms best survive on pasture when the weather is not too hot or not too cold, and there is good moisture from rain. The spring is a very dangerous time for animals to become infected with worms.
5. In the animal, the worms drink the animal's blood and eat the animal's food. The animal becomes thin and weak from loss of blood and competition for food from the worms. Young animals are more susceptible than adult animals. During their first grazing season, many young animals will die from worm infection if the grazing lands are heavily contaminated with worms.
6. Animals with worms do not grow well and remain thin even when there is a lot to eat. Many will develop diarrhea. If you look at the gums or lining of the mouth and eye, these areas will be pale or white, rather than pink. The hair coat becomes dull and dry and rough looking. Sometimes animals will develop a swelling under the jaw which is loose and full of fluid. Young animals may have so many worms that they will die from loss of blood before they show any of these other signs. Worms should always be suspected when young animals that are grazing are found dead.
7. Dead animals should be opened and inspected for worms in the intestine, stomach and liver. The worms of the stomach and intestine are very small, and can just be seen with the eye. It is necessary to wash away the contents of the stomach gently with water and look for the tiny worms attached to the lining of the stomach and intestine. The liver should be inspected for liver flukes. Liver fluke disease can produce the exact same signs of disease as stomach worms, but a different medicine must be used for treatment. Therefore it is important to know if liver flukes are present.

8. There are very good medicines for killing stomach and intestinal worms. In the kit there is fenbendazole for this purpose. When worms are diagnosed in a group of animals, ALL animals in the group should be given fenbendazole and the animals should be moved to a new grazing area where less young worms are present. Moving the animals will prevent them from becoming reinfected with young worms after they are treated.

9. To prevent worms, it is a good idea to treat all animals in a herd with fenbendazole at the beginning of the spring grazing season, before the animals show signs of sickness. Young lambs, calves and kids 3 weeks of age or older should be included in the treatment. Animals should be watched carefully for the first signs of worm disease and all animals should be treated again if signs of worms are seen. Animals should be moved to new grazing areas frequently so that the buildup of eggs and young worms on pasture is avoided.

10. All animals should be treated again with fenbendazole at the beginning of winter. The reason for this is to kill all worms in the animal that might compete for food in the wintertime when food is less available and the animal needs it all for survival.

RUMEN FLUKES

1. There is a special worm that lives in the rumen of cattle, sheep and goats. It is in the same family as the worm that lives in the liver and produces Garg. It is different than the roundworms that live in the stomach and intestine. The medicine that kills roundworms, fenbendazole, will not kill the rumen worm, but the medicine that kills liver worms, Fasinex, will kill the rumen worm.
2. The animals are infected when they eat young worms living on grass and other plants. These young worms attach to the intestine and drink blood. When they become adults, they move to the rumen and lay eggs that are passed in the manure. The eggs are eaten by snails. The eggs hatch and leave the snail as young worms that climb up onto grass where they are eaten by grazing animals. Animals that graze near irrigation ditches where snails live are more at risk of rumen worms and liver worms.
3. The signs of rumen worms are just the same as stomach and intestinal worms. The only way to know if rumen worms are present is to look carefully in the rumen of dead animals to find this worm. It is much bigger than the other stomach and intestinal worms and is easy to see with the eye. It is attached to the lining of the rumen. The rumen contents must be washed away before the worms can be seen.
4. When animals are treated for liver worms, the rumen worms will also be killed.

BLACKLEG

1. Blackleg is caused by a gas-producing bacteria. The bacteria lives in the soil and in the digestive tract of healthy animals.
2. Young cattle are most commonly affected, but older animals may also get the disease.
3. In affected animals, the bacteria passes from the intestine into the bloodstream after it is eaten. It goes to the muscles where it grows and produces gas bubbles and poisons.
4. It is a rapid disease; the brief fever is usually not noticed, then the animal is usually lame in an affected leg and looks depressed.
5. Swelling the affected muscles increases, eventually the skin becomes cold and dry.
6. Death usually occurs within 1-2 days, many animals are found dead with no earlier signs.
7. Early treatment with antibiotics may be tried, but is rarely useful.
8. When the carcass is examined, any affected muscles are dark, spongy and usually contain watery fluid, with gas bubbles. The gas bubbles can be felt under the skin by pressing your hand on the affected leg.
9. Vaccines can be given to protect animals. In an outbreak, all animals can be vaccinated and antibiotics are given to healthy animals to prevent more cases from occurring.
10. Carcasses, especially affected limbs, should be burnt or buried to reduce spread by wild animals or soil contamination.

FOOT AND MOUTH DISEASE

1. Foot and mouth disease is caused by a virus.
2. The virus is highly contagious and the disease can spread very quickly through a herd of cattle causing much disease and death. Sheep and goats only get a mild disease, but cattle suffer greatly.
3. The virus is spread by direct contact between infected and non-infected animals. Infected animals spread the virus mostly by coughing, saliva and nasal discharges. Feed contaminated by saliva can infect other animals eating the feed.
4. Mixing of cattle from different herds on common grazing can lead to spread of disease to new herds
5. Affected cattle will suddenly become depressed and stop producing milk. They will have a very high fever. This is followed by the appearance of very painful sores inside the mouth. The animals will have difficulty eating and drool large amounts of saliva. Sores will also appear at the tops of the feet and the animals will become lame. Sores may also appear on the teats.
6. Young animals are very likely to die. Older animals may recover but they become very thin and are likely to develop other diseases such as pneumonia.
7. This is a virus disease, so treatment with antibiotics will not help.
8. Affected animals should be separated from the herd immediately.
9. A vaccine can be used to prevent the disease. The protection does not last a long time, and cattle should be vaccinated every year.

OVEREATING OF GRAIN

1. Grains such as wheat or corn are valuable foods for livestock. They provide much energy for work and help to fatten animals. However, too much grain or a sudden change to grain feeding can cause the animals to become sick.
2. When too much grain is fed at once, it is digested very rapidly and much acid is produced. This acid is very irritating to the stomach and intestines. It causes an ache in the belly and diarrhea. The animals lose much water in the diarrhea and become dried out. Some animals may die. Others will have permanent damage to the intestines from the acid and will have a permanent problem of poor growth and health. Some may become lame from sore feet.
3. The disease is seen in animals one or two days after they are turned out onto grain fields or fed grain for the first time. The animals become depressed, they stop eating, and some develop diarrhea and some develop tympany.. The ones that are worst affected will become very weak and dehydrated and will lie down and die, with much groaning and grunting.
4. For treatment, animals should be removed from grain fields immediately. You should stop feeding any grain. Animals that are already lying down are difficult to treat and should be slaughtered right away for meat. The animals that are still walking around should be given only dried grass or hay to eat for one or two days. In the BVW kit there is an anti-acid drug to help return the stomach and intestines to normal. This can be mixed with water and given to the sick animal by mouth. This treatment can be repeated every 12 hours until the animal begins to look better and starts to eat again.
5. The disease is prevented by controlling the amount of grain animals eat. If animals are put onto grain fields, they should only be allowed to remain for 1 or 2 hours the first day, 4-6 hours the second day, and 12 hours the third day. If you are feeding grain, you should begin with a small amount the first day and increased gradually to the full amount over a period of 3 or 4 days. This slow increase in grain feeding allows the rumen and intestines to adapt to the acid in the grain.

SUNSTROKE

1. Sunstroke occurs when animals have constant exposure to the sun in very hot weather, when they are worked hard in hot weather and when they do not have enough water in hot weather. Sheep are most affected because of their wool.
2. In very hot weather and direct sunlight, the animal can not cool himself adequately. The body temperature begins to rise and becomes extremely high. When this happens, the systems of the body can not function properly. The animal breaks down and dies like an engine running without oil.
3. Animals with sunstroke first have an increased breathing and heart rate and a very high fever, often greater than 41 degrees. They become depressed and incoordinated and begin to stumble when walking. Working animals may show spasms or twitching of the muscles. Over a period of several hours, the animals will collapse, have convulsions and die.
4. The best way to recognize this disease is to take animals temperature. Even though infectious diseases can cause fever, the fever is never as high as it is in sunstroke.
5. Treatment is to cool the animal by pouring cold water on it or putting it in a river or pond. You should continue to take the temperature. It is bad if the temperature goes down below normal. Only leave the animal in the water until the temperature goes down to 39 degrees. All the animals in the group should be given water to drink, and, if possible, moved to a shaded area. Pregnant animals that recover from sunstroke may abort, and, in sheep, the wool may fall out, though it will grow back in later.

METRITIS

1. Metritis is an inflammation of the uterus, usually caused by bacteria. It occurs after the baby is born. It may be seen in all types of livestock.

2. Metritis is more likely to occur in certain situations. These are

a. The female animal does not pass the membranes from the uterus after giving birth.

b. The female has difficulty giving birth.

c. The farmer puts his hands or arms inside the female to help with the birth.

d. The female gives birth in an area that is wet, muddy or contaminated with much manure.

3. When females develop metritis, they may stop eating, look depressed, and have a fever. The birth membranes may be seen hanging from the back end of the animal. In normal animals, a brown discharge may come from the vagina for many days after birth. The discharge has no odor. In animals with metritis, this discharge may be thick and whitish or yellowish, being full of pus. In metritis, this discharge frequently has a very bad odor.

4. Antibiotics are used to treat metritis. Oxytetracycline injection in the muscle is very useful. Antibiotic tablets should not be put directly into the uterus. The membranes should not be pulled from the animal. They should be allowed to fall out by themselves with time. If they are dragging behind the animal and are contaminated with manure, the part that is hanging out can be cut away with a knife. If the membranes are pulled, it may be difficult to get the animal to become pregnant again.

MASTITIS

1. Mastitis is an inflammation of the udder. It is usually caused by bacteria that enter into the udder through the opening in the teat. The bacteria multiply and grow in the milk and invade the milk producing tissue in the udder. The udder becomes hot and swollen and the milk appears abnormal. All types of milking animals can get mastitis, but it is most common in cows.
2. Some things make mastitis more likely to occur. These are
 - a. Cows are more susceptible to mastitis in the first week or two after giving birth.
 - b. Bacteria are most likely to enter the teat in the hour right after milking. This is because the teat opening stays relaxed during this time and does not close tightly until later.
 - c. If cows lay down right after milking, they expose the teat to more contamination.
 - d. If cows are forced to live in dirty housing with wet floors and much manure, then bacteria are always present, waiting to enter the udder.
 - e. If cows are milked without cleaning mud and manure off of the teats before milking begins.
3. There are different kinds of bacteria causing mastitis. Some make the whole animal sick. The animal stops eating, gets depressed, has a fever, becomes weak and may even die. Some kinds of mastitis are restricted to the udder. The animals remain eating and healthy looking, but the udder or part of the udder becomes hot and swollen, and reddish looking. The milk is abnormal. It may appear watery, or it may be thick and contain lumps or flakes. Sometimes, especially in sheep, the skin of the udder becomes blue or black and feels cold to the touch and the animal looks very sick. This kind of mastitis is very bad and the animal will probably die.
4. In all cases of mastitis, antibiotic injections should be given in the muscle. Oxytetracycline is good for treating mastitis. It is also important for the farmer to milk out the affected parts of the udder as often as every 2 hours during the first day that the animal has mastitis. When the animal is milked out, bacteria and poisons are removed from the udder before they can do more damage. This milking out may be even more important than giving antibiotic injections. Even if there is very little milk, the milking out should be done repeatedly.
5. To prevent mastitis, the cow should be milked in a clean place. The udder should be dry and clean of manure before milking is started. Animals should remain standing for 1 hour after milking. This is easy to do if the animals are fed at that time. Housing for milking animals should be kept clean, with good, clean, dry bedding.

LICE

1. Lice are insects that live on the skin of animals and birds. Some lice feed by chewing on the skin. Others feed by sucking blood from the skin.
2. Lice cause irritation of the skin and animals with lice do much itching and scratching. Animals may be bothered by lice so much that they stop eating and lose weight. The hair and wool or feathers may be damaged and fall out. Young animals with many blood sucking lice will become weak and pale and may die from loss of blood.
3. Lice are a more common problem in winter. Lice spread from one animal to another when the animals touch each other. If the hair or wool is parted and the skin is examined carefully, lice can be seen on the skin with the eye, although they are very small.
4. The lice live their whole lives on the animal's skin. They lay eggs which hatch on the animal and grow to adult lice.
5. Lice are controlled by applying insecticides to the animal. This can be done by making insecticide baths and dipping the animals or by pouring the insecticide solutions over the animals back.
6. Insecticides will kill the adult lice but will not kill the eggs. Therefore we must wait for the eggs to hatch 14 days later and treat the animal a second time to kill the new lice.
7. When you treat animals for lice, all animals must be treated at the same time or the treated animals will get new lice right away from the untreated animals.
8. Farmers must be taught that insecticides are dangerous and shown the proper techniques for using them and disposing of them carefully.

MANGE

1. Mange is a skin disease caused by insects called mites.
2. Mites are very small insects that live in the skin of animals. They are very small and can not be seen with the eye. All animals can get mange from mites. Young animals get worse problems than old animals. In Afghanistan, camels and goats and sheep have the most serious problems with mange.
3. Mites are worse than lice. They dig holes into the skin to feed. This causes terrible itching to the animal.
4. The hair and wool falls out and the skin becomes thick and scaly.
5. Sometimes the skin that is damaged by mites becomes weakened and bacteria invade the skin to cause additional infection and problems.
6. Mange is most common in the winter. When feed is in short supply in the winter, animals with mange may become so weak from the disease that they will die.
7. The mites spread from animal to animal when they are housed together in close contact. The mange mite usually lives its whole life on the animal. Eggs are laid by adult mites on the skin of the animal and then grow into adult mites.
8. Sometimes, the mites will fall off the animals and survive for a short time in the bedding and housing. Contaminated housing and bedding can be a source of mite infection.
9. Insecticides will kill the adult mites but will not kill the eggs. Therefore we must wait for the eggs to hatch 14 days later and treat the animal a second time to kill the new mites.
10. When you treat animals for mites, all animals must be treated at the same time or the treated animals will get new mites right away from the untreated animals. Animal houses should be cleaned and new bedding put in. Sometimes it is necessary to spray insecticide in the animal houses to kill mites that have fallen from the animals. The animals should be removed from the houses when this is done.
11. Farmers must be taught that insecticides are dangerous and shown the proper techniques for using them and disposing of them carefully.

TICKS

1. Ticks are large insects that attach to the skin of animals and suck blood. They are easily seen with the eye.
2. Ticks may be found anywhere on the animals body but they like to locate in special areas including the ears and near the base of the tail.
3. Animals, especially young animals can be weakened by ticks because much blood can be eaten by the ticks.
4. Ticks are also important because they can carry different viruse and bacteria which are introduced into the animals blood stream when the ticks are feeding. This leads to the spread of infectious diseases.
5. Ticks are difficult to control on animals because the tick lives part of its life away from the animal
6. The young ticks live on grasses, trees and bushes and wait for animals to walk by. Then they drop on the animal, attach to the skin and begin to suck blood.
7. Ticks will also live in animal houses, in small cracks in the mud walls.
8. Tick control is difficult because only the ticks living on the animals can be killed with insecticides. As soon as the treated animal returns to grazing, new young ticks will attach to the animal.
9. For this reason, animals must be dipped in insecticides as often as once a week in places where ticks are a serious problem.
10. If an animal only has a small number of ticks, these can be pulled off the animal by hand.
11. Animal houses can be sprayed with insecticide to kill young ticks living in the walls.
12. Farmers must be warned that insecticides are dangerous and be taught how to use them and dispose of them properly.

DIARRHEA IN YOUNG ANIMALS

1. When the manure of an animal turns to water, we say the animal has diarrhea
2. There are many different causes of diarrhea including viruses, bacteria, worms and poisons.
3. Diarrhea can kill animals. Much of the water in the body is lost if diarrhea continues for a long time. The animals become very dehydrated and this leads to death.
4. The animals most likely to die from diarrhea are the very young,
5. The most important treatment for diarrhea in young animals is to give them plenty of fluids.
6. In the kit are small sachets of powder called ORS, this powder contains important salts and sugars that are lost by the animal in the diarrhea. The loss of the salts and sugars make the animal very weak.
7. By mixing these powders in water and feeding them to young animals, we can keep the animal from becoming weak and dehydrated.
8. Most of the viruses and bacteria that cause diarrhea in young animals will disappear in a few days if the animal is kept alive with ORS solutions.
9. Giving oral antibiotics to young animals may help if the diarrhea is caused by a bacteria, but it is difficult to know when bacteria are causing the problem. Giving ORS solution is a much more important treatment.
10. Kids and lambs should receive at least 250 cc of ORS solution 3 times a day.
11. Calves should receive at least 1 liter of ORS solution 3 times a day.
12. Young animals with diarrhea should be placed in a dry shelter away from cold and wind and rain.

PNEUMONIA

1. Pneumonia is an inflammation of the lungs and airways that causes difficult breathing, pain and a reduced intake of oxygen.
2. Many different things cause pneumonia, including bacteria, viruses, worms, poison gases and others. It is very difficult sometimes to know which of these things is causing the problem.
3. Certain conditions weaken the lungs and make the animal more susceptible to pneumonia. These things include poor nutrition, weather conditions that change frequently from hot to cold and dry to wet, hard work, and bad air.
4. Bad air is very important. Animals must have fresh air moving in their houses. It is more harmful for the animal to breathe bad air than to be cold. Therefore, animals should not be closed up in houses without windows in the winter time to keep them warm. If no fresh air comes in, poison gases from the urine and manure build up in the house and weaken the lungs. You can smell when the air is bad. If you do not like the smell, then you can be sure that the animals do not like it either.
5. The main signs of pneumonia are rapid breathing, difficult breathing, discharges from the nose and coughing. When the pneumonia is very bad, animals may hold their head and neck straight out in front of them and breathe through their mouths and make a grunting noise when they breath. Animals often have fever with pneumonia.
6. Animals with pneumonia should be protected from the rain and wind, but should be allowed to have fresh air. The animal should be treated with antibiotics. If coughing is a major sign of the pneumonia, then worm medicine should also be given in case lungworms are present.
7. The chances for a complete recovery are better when pneumonia is recognized early and treatment is begun right away. If you wait until the animal is breathing through its mouth and grunting, the animal will probably not recover, even with treatment.

FOOT ABSCESSSES

1. Foot abscesses are caused by bacterial infection of cracks in the wall of the hoof or wounds in the sole of the foot.
2. After injury, wet or dirty environment will increase the risk of bacteria contaminating the injury.
3. The main sign of disease is that the animal becomes lame in the affected leg. Pressing on the sole of the foot increases the animal's pain. Sometimes the infection spreads through the leg and swelling is seen above the foot.
4. Pus building up inside the foot increases pressure and pain. The first step in treatment is to examine the foot carefully and inspect it for soft or dark areas.
5. With a hoof knife, these areas should be cut away until the pocket of pus is reached and can drain out easily. Some bleeding will occur also.
6. Flush the hole out repeatedly with antiseptic solution. Dry the foot and put a bandage on it to prevent wetness and reinfection. Be sure the bandage is not too tight so blood circulation is not damaged. Remove bandage and inspect the wound every 3 days until it is healed.
7. Rest the animal in a dry stall.
8. Horses often have puncture wounds of the sole of the foot from stepping on nails. These wounds can lead to tetanus. Vaccinating horses and donkeys for tetanus will prevent this problem from occurring after puncture wounds.

CONSTIPATION

1. When an animal is unable to produce manure, we say it has constipation.
2. There are many causes of constipation. These include:
 - a. Inadequate water supply for animals which makes the contents of the stomach and intestine become hard.
 - b. Animal foods that are poor quality and high in fiber such as straw.
 - c. In the late stages of pregnancy, the big fetus and uterus press on the intestines and block the passage of manure.
 - d. The animal has an injury or wound on the rectum that makes it painful to pass manure.
 - e. The animal has a blockage of the intestine.
3. The signs of constipation include the following:
 - a. Straining to pass manure.
 - b. Production of small amounts of hard or dry manure.
 - c. A rumen that feels hard when the hand is pressed against the left side of the animal.
 - d. Swelling of the belly.
4. The treatment for constipation is directed towards softening the manure so it will pass easily. Treatments include:
 - a. Providing plenty of water for the animal to drink as much as it will take. If the animal will not drink, water should be given as a drench.
 - b. Giving a laxative medicine. In the BVW kit there is Magnesium sulfate. A sheep or goat should get 50 grams (1 measuring cup) and cow 250 grams (2 measuring cups). This is mixed with water and given by mouth as a drench.
 - c. Vegetable or cooking oil will help to soften the manure. A sheep or goat should get 50 cc and a cow, 250cc. This should be given by mouth slowly and carefully so that the oil does not go in the lungs and cause pneumonia.

SURRA

1. Surra is an important disease of camels. It can also occur in horses, but is less common.
2. It is caused by a parasite that lives in the blood.
3. The parasite is transmitted from one camel to another by biting flies. First the fly bites an infected animal and drinks its blood. Then, when it bites another camel to eat, it injects the parasite into the second camel causing it to become infected. The parasite can live in flies for 10 days. A swelling occurs at the site where the camel is bitten by the fly.
4. After an incubation period of 5 to 10 days, the sick animal develops a high fever, becomes depressed, stops eating, and has a discharge from the eyes. All the lymph nodes become swollen and some animals develop diarrhea. Pregnant females will have abortion. The urine may have a strong odor and may be dark brown. In the acute form, affected animals will die after 3 or 4 days. In the chronic form, animals remain alive for a long time, but they have repeated fevers and they lose weight until they become very thin and weak and die.
5. The disease can be treated with Naganol (Suramin) or Berenil. Naganol is given intravenously. The dose for an adult camel is 5 grams diluted in 50 cc of distilled water. Berenil is given intramuscularly. The dose is 3.5 mg/kg and the total amount required is mixed in cold water to make a 7% solution.

LIVER FLUKES

1. This is a very important disease of sheep, goats and cattle. It also affects camels. The disease is caused by an internal parasite, the liver fluke which is shaped like the leaf of the apricot tree and is about 2-7 cm in length.
2. The larvae of the liver fluke live in snails that are found in water. Snails are very common in slow moving water such as in irrigation ditches, canals, and ponds. The snails release the larvae into the water.
3. When animals drink from contaminated water supplies, they drink the liver fluke larvae. These larvae migrate out of the intestine into the liver. When they arrive in the liver, they migrate through it to the gall bladder where they mature into adult liver flukes.
4. Adult liver flukes live in the gall bladder and lay eggs that are passed in the manure of animals. When the manure is passed into water, the eggs hatch and the larvae are eaten by snails. This completes the life cycle.
5. There are two forms of the disease, acute and chronic. The acute form occurs when the larvae are migrating through the liver. If there are many larvae, the liver is severely damaged and the animal will show signs of pain in the belly, become very depressed and may die within a day. If there are not many larvae, the animal may be depressed and stop eating for a few days, but will survive.
6. The chronic form occurs when the larvae reach the gall bladder and mature into adult worms. These worms irritate the liver and drink blood. Affected animals lose weight and become thin and weak. They may have white or yellow mucous membranes on the eye and in the mouth. Some animals will develop diarrhea. If they become very thin and weak they will die.
7. In dead or slaughtered animals, it is easy to make the diagnosis. The liver will look shrunken, discolored and feel hard. If you cut it, there will be black tracks through the liver where the larvae traveled. In the chronic form, adult liver flukes will be found when you open the gall bladder.
8. When liver flukes are diagnosed, all animals in the herd should be treated immediately. In the BVW kit is Fasinex. This drug is very effective at killing young flukes and adult flukes.
9. To prevent liver flukes, animals should be given water from wells or fast moving rivers and not be allowed to drink from ditches and canals. Copper sulfate solution can be put in ditches to kill snails, but this can poison sheep.

GLANDERS OF HORSES AND DONKEYS

1. This is a chronic infection of horses and donkeys caused by a bacteria.
2. Infected animals discharge the bacteria from their noses and contaminate the environment, allowing other horses and donkeys in the same place to become infected. This happens when animals eat or drink together.
3. The main signs of this disease are in the respiratory tract and skin.
4. In the acute form of the disease, animals develop a high fever, a cough, and a nasal discharge. Bad sores (ulcers) develop inside the nose on the mucous membranes. Lumps or nodules may also develop on the skin of the legs and the belly. Animals may die in a few days from septicemia.
5. In the chronic form, there is a persistent cough, difficult breathing, and bleeding from the nose. The cartilage of the nose may become swollen with lumps or nodules. Lymph nodes around the head become enlarged. Lumps occur on the skin which swell and rupture, releasing pus which looks like honey. Animals may remain sick for many months. They continue to have drainage from the nose or skin lumps and lose much weight and become thin. A few animals will recover, but most die.
6. Treatment is not very successful in this disease. Oxytetracycline may be helpful.
7. Because this is a chronic, contagious disease. Affected animals should be isolated from other horses and donkeys and fed and watered separately. The owner should be encouraged to kill horses that are affected with this disease.
8. This disease can be transmitted to man so you should be careful and wash your hands after touching pus or nasal discharges. The meat from sick animals should not be eaten.

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TYMPANY

1. Tympany is a disease of cattle, sheep and goats. It only occurs in animals that have a rumen. The disease occurs when gas builds up in the rumen and the animal is not able to remove it by belching. In animals with a rumen, gas is normally belched all day long, but after eating fresh grass or grain, the gas bubbles become trapped in the rumen as foam and can not escape.
2. The most common cause of tympany is a sudden change in the animal's feed, especially if the animal is suddenly allowed to eat fresh, green grass on new pastures in the spring. It can also occur when grain is suddenly added to the diet. It can also occur if something becomes stuck in the esophagus so gas is trapped in the stomach. In this case, the gas in the rumen is free, not trapped in foam, but can not escape because the esophagus is blocked.
3. Animals with tympany will develop a large, tight swelling on the left side of the belly visible behind the ribs. The animals become nervous and uncomfortable. Breathing becomes rapid. If the animal has something stuck in the esophagus, then the animal will also show signs of drooling large amounts of saliva. If the gas is not released, the rumen becomes so big that it presses on the lungs and the animal is unable to breathe. These animals fall down and die.
4. Animals with tympany should be forced to walk or run. The movement will break up the gas bubbles and allow gas to escape from the rumen. If this does not work, vegetable oil should be given to the animal by drench, 50 cc to a sheep or goat, 250 cc to a small cow and 500 cc to a big cow. After giving the oil the animal should be walked again. Pressing on the left side of the belly may help to push out some of the gas. Standing the animal with the front end higher than the back end may also help to release the gas.
5. If treatment does not work and the animal gets worse, it may be necessary to take a knife and puncture the rumen in the area behind the last rib on the left side. This will allow the gas to escape and save the animal's life. However, the knife may cause infection in the belly, and antibiotics should be given to animals after this is done.
6. Tympany can be prevented by not making sudden changes in the feed. Animals should be put on pasture a little bit at a time. They should be fed straw before they go out for the first time so they will not overeat fresh grass. Restrict animals to only a few hours the first day, and increase the time every day until they are left out permanently after one week. When adding grain to the diet, do not give the full amount the first day, but build it up gradually over several days.

MCI PARAVETERINARIAN TEACHER TRAINING MANUAL

PART 3

TREATMENT GUIDE FOR MEDICATIONS
IN THE BASIC VETERINARY WORKER FIELD KIT

NAME OF DRUG: Fasinex 250

ACTIVE INGREDIENT: Triclabendazole

PACKAGE: Plastic bottle of 80 tablets

COST OF PACKAGE: 75 Rupees (1 Rupee per tablet)

FORM OF DRUG: Long pink tablet with the letters DUD written on it.

CONCENTRATION OF DRUG: 250 mg/tablet

FOR USE IN: Cattle, Sheep and Goats

ROUTE OF ADMINISTRATION: By mouth

MIXING INSTRUCTIONS: Use as provided

DOSAGE: 10 mg/kg of body weight

AMOUNT GIVEN:

Newborn goats and sheep: Do not give to lambs and kids under 1 month of age.

Growing goats and sheep: 1 tablet

Adult goats and sheep: 2 tablets

Growing cattle and small cattle: 6 tablets

Adult cattle and large cattle: 12 tablets

FREQUENCY OF DOSE: One dose is effective

USES FOR DRUG: For the treatment and prevention of liver flukes and rumen flukes.

PRECAUTIONS: Do not drink milk from treated animals for 4 days. Do not slaughter treated animals for 10 days

REMARKS: This drug can be given in the spring and fall to all cattle, sheep and goats to prevent liver fluke disease. It can also be given whenever signs of liver fluke disease are seen.

NAME OF DRUG: Panacur-250

ACTIVE INGREDIENT: Fenbendazole

PACKAGE: Box of 50 tablets in blister packs

COST OF PACKAGE: 240 Rupees (5 Rupees per tablet)

FORM OF DRUG: Long white tablet with the letters DEM written on it.

CONCENTRATION OF DRUG: 250 mg per tablet

FOR USE IN: Sheep and goats and calves and foals

ROUTE OF ADMINISTRATION: By mouth

MIXING INSTRUCTIONS: Use as provided

DOSAGE: 5mg/kg of body weight

AMOUNT GIVEN:

Newborn goats and sheep: Do not use in lambs and kids under 1 month of age.

Growing goats and sheep: One half (1/2) tablet

Adult goats and sheep: One tablet

Calves and foals (Over 6 week old): One tablet

FREQUENCY OF DOSE: One dose is effective

USE OF DRUG: For the treatment and prevention of lungworms, stomach worms and intestinal worms.

PRECAUTIONS: Do not drink milk from treated animals for 4 days after treatment. Do not slaughter animals for meat for 10 days after treatment.

REMARKS: This drug should be given to animals in the spring and fall to help prevent lungworms, stomach worms and intestinal worms. It can also be given to treat animals when signs of worms are seen.

This drug is the same as Panacur 750 except in a lower concentration for treating small animals

NAME OF DRUG: Panacur 750

ACTIVE INGREDIENT: Fenbendazole

PACKAGE: Plastic bottle of 50 tablets

COST OF PACKAGE: 610 Rupees (12.20 Rupees per tablet)

FORM OF DRUG: Long white tablet with the letters PANACUR written on it.

CONCENTRATION OF DRUG: 750 mg per tablet

FOR USE IN: Adult cattle, adult horses, adult donkeys and adult camels

ROUTE OF ADMINISTRATION: By mouth

MIXING INSTRUCTIONS: Use as provided

DOSAGE: 5mg/kg of body weight

AMOUNT GIVEN:

Adult cattle: 2 tablets

Adult donkey: 2 tablets

Adult horse: 3 tablets

Adult camel: 4 tablets

FREQUENCY OF DOSE: One dose is effective

USE OF DRUG: For the treatment and prevention of lungworms, stomach worms and intestinal worms.

PRECAUTIONS: Do not drink milk from treated animals for 4 days after treatment. Do not slaughter animals for meat for 10 days after treatment.

REMARKS: This drug should be given to animals in the spring and fall to help prevent lungworms, stomach worms and intestinal worms. It can also be given to treat animals when signs of worms are seen.

This drug is the same as Panacur 250 except in a higher concentration for treating large animals.

NAME OF DRUG: Ditrifon

ACTIVE INGREDIENT: Dimethylester of (2,2,2-trichloro-1-hydroxyethyl)-phosphonic acid.

PACKAGE: Tin of 1000g with plastic bag inside containing powder. A measuring spoon for 15g is supplied with each package.

COST OF PACKAGE: 280 Rupees (4 rupees per measuring spoon)

FORM OF DRUG: Powder for preparation of solutions

CONCENTRATION OF DRUG: 100% Dimethylester of (2,2,2-trichloro-1-hydroxyethyl)-phosphonic acid.

FOR USE IN: Cattle, sheep, goats and camels

ROUTE OF ADMINISTRATION: To be made into a 0.15% solution for dipping or bathing animals.

MIXING INSTRUCTIONS: See PRECAUTIONS below. For treating a small number of animals, 10 liters of solution can be prepared by putting 1 measuring spoon in 10 liters of water. For treating large numbers of animals, 7 measuring spoons can be added to 66 liters of water. The entire contents of 1 tin can be added to 660 liters of water to treat whole herds of animals.

DOSAGE: A solution of 0.15% .

AMOUNT GIVEN:

All animals should be thoroughly soaked with the solution over their entire body. For small animals they can be dipped into a large drum. For large animals, the solution can be poured on, or a pit can be dug and filled with solution so the animals can walk through it. Do not allow the animals head to go under water.

FREQUENCY OF DOSE: Animals are treated once and then a second time 10-14 days later.

USE OF DRUG: This is an insecticide. Use only for the treatment of mange and to remove lice and ticks.

PRECAUTIONS: The powder and the solution you make from it are dangerous poisons. Keep powder stored away from children and animals. Wear gloves and a mask when you handle the powder and solution. Do not eat, drink or smoke when using this drug. Do not allow people or children to drink this solution. When finished with treatment, dispose of excess solution in a safe place away from drinking water supplies. Wash all equipment thoroughly after use. Wash your hands. Do not rub eyes with dirty hands. Do not use the measuring spoon for measuring other drugs. Do not drink

the milk of milking animals for 2 days after treatment.

REMARKS: The second treatment 10-14 days later is important to kill new mites, or lice that have hatched since the time of the first treatment.

NAME OF DRUG: Rasomycine-LA

ACTIVE INGREDIENT: Oxytetracycline

PACKAGE: 30 cc Glass Vial with Rubber Stopper for injection. Vial comes in a box.

COST OF PACKAGE: 38 Rupee (1.3 Rupees for each cc)

FORM OF DRUG: Liquid for injection

CONCENTRATION OF DRUG: 200 mg/cc

FOR USE IN: All ages and species of animals

ROUTE OF ADMINISTRATION: By injection into muscle with needle and syringe

MIXING INSTRUCTIONS: Use as provided. Remove required amount from vial with needle and syringe. Clean the top of the vial with disinfectant solution before and after removing liquid.

DOSAGE: 20mg/kg of body weight.

AMOUNT GIVEN:

Newborn goats and sheep: 1 cc

Growing goats and sheep: 2.5 cc

Adult goats and sheep and young calves and foals: 4 cc

Growing cattle and growing horses and donkeys: 15 cc

Adult cattle and donkeys: 30 cc

Adult horses and camels: 40 cc

FREQUENCY OF DOSE: Give once. If animal is still sick, repeat injection 48 hours later. DO NOT GIVE THIS MEDICINE EVERY DAY.

USE OF DRUG: For all sick animals when a bacterial infection is suspected. This should be determined on the basis of a fever. Common bacterial diseases include pneumonia, diarrhea, mastitis, metritis and wounds with pus. When animals are suspected of dying of anthrax, blackleg or CCPP, all other animals in the group should be given an injection of this drug to prevent further cases.

PRECAUTIONS: Injection of this drug in the muscle of animals is very painful. No more than 5 cc should be given in one location to sheep and goats. No more than 15 cc should be given in one location to cattle, horses, donkeys and camels.

Do not drink milk from treated animals for 4 days after last treatment. Do not slaughter and eat meat of treated animals for 10 days after last treatment.

REMARKS: Clean needle and syringe after using this drug or needle will become blocked.

NAME OF DRUG: Strinacin

ACTIVE INGREDIENT: Triple Sulfa and Streptomycin Antibiotics

PACKAGE: Jar containing 20 tablets

COST OF PACKAGE: 87.55 Rupees (5 Rupees per tablet)

FORM OF DRUG: Tablet

CONCENTRATION OF DRUG: 5 g of antibiotic per tablet

FOR USE IN: All species of animals

ROUTE OF ADMINISTRATION: By mouth

MIXING INSTRUCTIONS: Use as provided

DOSAGE: 145 mg/kg of body weight

AMOUNT GIVEN:

Newborn goats and sheep: 1/2 tablet

Growing goats and sheep: 1 tablet

Adult goats and sheep and young calves and foals: 1 and 1/2 tablets
(1.5)

Growing cattle and growing horses and donkeys: 4 tablets

Adult cattle and donkeys: 8 tablets

Adult horses and camels: 10 tablets

FREQUENCY OF DOSE: Give the tablets once a day for three consecutive days.

USE OF DRUG: For treatment of bacterial infections, especially diarrhea.

PRECAUTIONS: Do not give more than the recommended dose or animals may develop kidney problems.

REMARKS: This drug can be used instead of oxytetracycline when you think animals have a bacterial infection (fever) but they are still eating and do not look very sick. It should be used first when animals have diarrhea.

NAME OF DRUG: Tetracycline Eye Ointment

ACTIVE INGREDIENT: Tetracycline

PACKAGE: Small tube in a box

COST OF PACKAGE: 2.5 Rupees

FORM OF DRUG: Ointment

CONCENTRATION OF DRUG: 1% ointment

FOR USE IN: All ages and species of animals

ROUTE OF ADMINISTRATION: Carefully squeezed into the space between the eyeball and the lower eyelid.

MIXING INSTRUCTIONS: Use as provided.

DOSAGE: Not measured

AMOUNT GIVEN: For all animals, hold the eyelids open and gently squeeze a small amount of the ointment in the space between the eyeball and the lower eyelid. Do not touch the end of the tube to the eyeball. Then close the eyelids and massage so the ointment covers the whole surface of the eye.

FREQUENCY OF DOSE: Give morning and evening every day. Stop when the eye looks better.

USE OF DRUG: For infections and injuries of the eye. When eye ball looks red or pink or cloudy and there is discharge from the eye.

PRECAUTIONS: Be careful when giving this medicine so that the eye is not injured by the metal end of the tube. If you touch the tube to an infected eye, it will become contaminated and the infection can be spread to other animals next time you use the medicine.

REMARKS: If the eye does not improve, make sure that there is no object stuck in the eye like a small piece of wood or a seed.

NAME OF DRUG: Zinc oxide in petroleum jelly

ACTIVE INGREDIENT: Zinc oxide

PACKAGE: Box of Zinc oxide (300 g) and a bag of petroleum jelly (500 g)

COST OF PACKAGE: 30 Rupees

FORM OF DRUG: Powder and jelly to be mixed together to make an ointment.

CONCENTRATION OF DRUG: 10% Zinc oxide ointment

FOR USE IN: All species of animals

ROUTE OF ADMINISTRATION: Applied to the skin with fingers.

MIXING INSTRUCTIONS: Add one full measuring cup (50g) of the zinc oxide powder to one bag (500g) of petroleum jelly. Mix completely. This makes a 10% zinc oxide ointment. After mixing, transfer some or all of the mixture to the plastic jar provided for carrying the ointment in the field.

DOSAGE: No specific dose

AMOUNT GIVEN:

In all animals, cover the wound or injury completely with the ointment.

FREQUENCY OF DOSE: Apply as often as necessary to keep the wound covered. Apply every day until the wound begins to heal.

USE OF DRUG: This ointment will protect the skin from abrasions and help to heal skin injuries associated with wounds and harness and saddle sores.

PRECAUTIONS: None

REMARKS: After mixing, store the ointment in a jar with a tight cover to keep clean and avoid mess.

NAME OF DRUG: Savlon

ACTIVE INGREDIENT: Chlorhexidine

PACKAGE: 1 liter plastic bottle

COST OF PACKAGE: 57 Rupees

FORM OF DRUG: Concentrated solution to be diluted.

CONCENTRATION OF DRUG: Provided as a 1.5% concentrate solution.

FOR USE IN: All species of animals and for disinfection of equipment and washing hands.

ROUTE OF ADMINISTRATION: Add to wash water when cleaning wounds.

MIXING INSTRUCTIONS: You are provided with an empty 1 liter plastic bottle for mixing and storage of dilute Savlon solution.. Remove 10 cc of Savlon concentrate from the Savlon bottle using a syringe. Squirt into empty bottle and fill empty bottle to top with clean water. Shake well to mix. DO NOT USE THE Savlon MIXING SYRINGE FOR OTHER PURPOSES. CLEAN SYRINGE AFTER EACH USE.

DOSAGE: One part Savlon per 100 cc of water (10 cc/liter)

AMOUNT GIVEN: As much as needed for thorough wound cleaning and cleaning of instruments.

FREQUENCY OF DOSE: Instruments should be left in chlorhexidine solution to soak for at least 15 minutes to be disinfected.

USE OF DRUG: For the cleansing of wounds before treatment. Also for the disinfection of instruments and equipment.

PRECAUTIONS: DO NOT USE THIS PRODUCT DIRECTLY FROM THE BOTTLE. IT MUST BE DILUTED BEFORE CONTACT WITH SKIN OF ANIMALS OR HUMANS.

REMARKS: It is not necessary to carry the Savlon container with you. A small amount can be transferred to a small container to mix up disinfecting solution as you need it in the field. 100 cc will make up 10 liters of solution.

NAME OF DRUG: Gentian violet

ACTIVE INGREDIENT: Gentian violet

PACKAGE: Small paper sachet containing 5 grams of gentian violet, as green crystals.

COST OF PACKAGE: 4 Rupees

FORM OF DRUG: Powder to be mixed with water to make a solution.

CONCENTRATION OF DRUG: Final solution after mixing is 1% concentration of gentian violet.

FOR USE IN: All species of animals for the treatment of deep or infected wounds

ROUTE OF ADMINISTRATION: Solution is painted on or squirted in wounds.

MIXING INSTRUCTIONS: You are provided with an empty 1 liter plastic bottle for mixing and storage of gentian violet. Add one 5g paper packet of gentian violet powder to 1/2 liter of clean water and mix completely.

DOSAGE: No specific dose

AMOUNT GIVEN:

Cover the wound completely with gentian violet. In deep wounds, put gentian violet in a syringe and squirt into the wound.

FREQUENCY OF DOSE: One treatment is usually sufficient. If wound is healing slowly this can be repeated as needed.

USE OF DRUG: Gentian violet is an antiseptic that helps to kill bacteria in wounds and helps them to heal.

PRECAUTIONS: Gentian violet stains the skin. If you get it on your hands, they will be colored for many days. Keep solution in a tightly closed, unbreakable bottle so it does not leak and stain your other equipment and drugs.

REMARKS: In serious wounds, or when animal has a fever, antibiotics may be needed in addition to topical treatment with gentian violet.

NAME OF DRUG: Tincture of iodine

ACTIVE INGREDIENT: Iodine

PACKAGE: 450 cc bottle

COST OF PACKAGE: 25.30 Rupees

FORM OF DRUG: Solution

CONCENTRATION OF DRUG: 2% iodine and 2.5% potassium iodide.

FOR USE IN: All animal species

ROUTE OF ADMINISTRATION: Topical application to wounds and to the umbilicus of newborn animals

MIXING INSTRUCTIONS: Use as provided

DOSAGE: No specific dose

AMOUNT GIVEN: Cover the wound completely with iodine. Cover the umbilical cord completely with iodine. The end of the umbilical cord should be dipped into the iodine solution.

FREQUENCY OF DOSE: One application is usually sufficient. The umbilical cord of newborns should be dipped in iodine immediately after birth

USE OF DRUG: As an antiseptic for the treatment of wounds and to protect newborn animals from becoming infected with bacteria through the umbilical cord.

PRECAUTIONS: This is a poison if taken internally. Do not drink or let animals drink. This solution stains the hands and clothing. Use carefully. Do not get in eyes. Keep the bottle protected from breakage and leakage.

REMARKS: This medicine can be dispensed in small containers (50-100 cc) so that they can paint the umbilical cords of newborn animals at the time of birth to prevent infections. It can also be used to treat wounds instead of gentian violet

NAME OF DRUG: Magnesium sulphate

ACTIVE INGREDIENT: Magnesium sulphate

PACKAGE: 300 g box of powder

COST OF PACKAGE: 4 Rupees

FORM OF DRUG: Powder (salt) to be mixed in solution

CONCENTRATION OF DRUG: 100% Magnesium sulfate

FOR USE IN: All species of animals.

ROUTE OF ADMINISTRATION: By mouth using a drenching bottle

MIXING INSTRUCTIONS: The correct amount of powder is determined for each animal on the basis of size. The powder is measured out with the measuring cup and mixed completely with water. Use only enough water to allow the powder to dissolve. If you use too much water, you will have trouble getting the animal to take it all.

DOSAGE: 1 gram powder/kg of body weight in cattle, sheep, goats, and camels. 0.1 gram powder/kg in horses and donkeys.

AMOUNT GIVEN:

Newborn goats and sheep: Do not use

Growing goats and sheep: 1/2 measuring cup in water

Adult goats and sheep and young calves and foals: 1 measuring cup in water

Growing cattle: 3 measuring cups in water

Adult cattle: 6 measuring cups in water

Adult camels: 8 measuring cups in water

Growing horses and donkeys: 1/2 measuring cup in water

Adult horses and donkeys: 1 measuring cup in water

FREQUENCY OF DOSE: Treat once a day until the animal begins to make manure.

USE OF DRUG: This drug is for the treatment of constipation only.

PRECAUTIONS: DO NOT USE MORE THAN ONCE A DAY or the animal will develop diarrhea

REMARKS: None

NAME OF DRUG: Sodium bicarbonate

ACTIVE INGREDIENT: Sodium bicarbonate

PACKAGE: 300 gram box

COST OF PACKAGE: 6.50 Rupees

FORM OF DRUG: Powder to be mixed in solution

CONCENTRATION OF DRUG: 100% sodium bicarbonate

FOR USE IN: Cattle, sheep and goats

ROUTE OF ADMINISTRATION: By mouth using a drench bottle

MIXING INSTRUCTIONS: The correct amount of powder is determined for each animal on the basis of size. The powder is measured out with the measuring cup and mixed completely with water. Use only enough water to allow the powder to dissolve. If you use too much water, you will have trouble getting the animal to take it all. Gas bubbles may develop when you mix this powder with water. Wait for the bubbles to go away before giving the solution to the animal.

DOSAGE: 1 gram of powder/kg of body weight

AMOUNT GIVEN:

Newborn goats and sheep: Do not use

Growing goats and sheep: 1/2 measuring cup in water

Adult goats and sheep and young calves: 1 measuring cup in water

Growing cattle: 3 measuring cups in water

Adult cattle: 6 measuring cups in water

FREQUENCY OF DOSE: Give once. If animals do not improve in 3 hours, repeat the dose. Do not give a third time.

USE OF DRUG: This is an antacid. It is used only for the treatment of grain overload in cattle sheep and goat

PRECAUTIONS: Do not give to horses or donkeys. This drug can cause colic. Do not use more than the recommended dose in cattle sheep and goats or they may develop tympany.

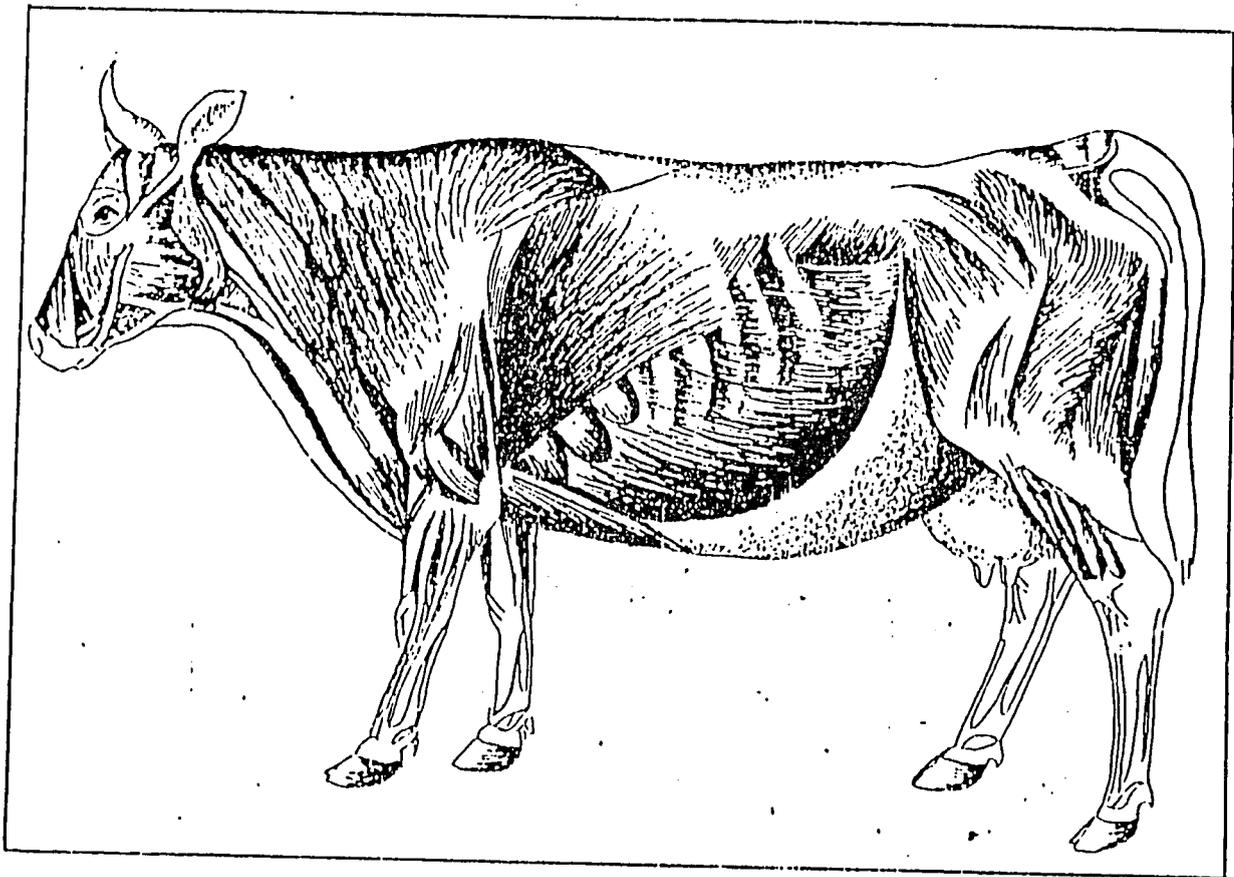
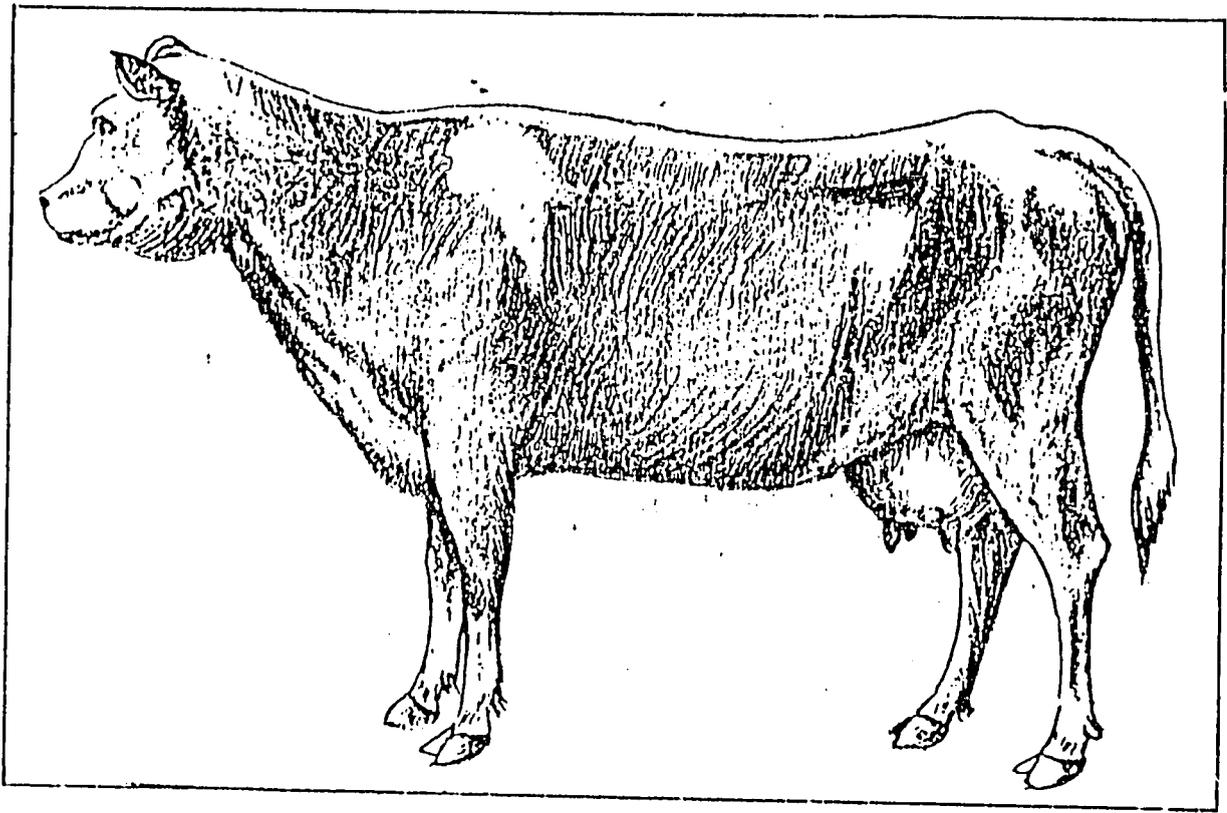
REMARKS: None

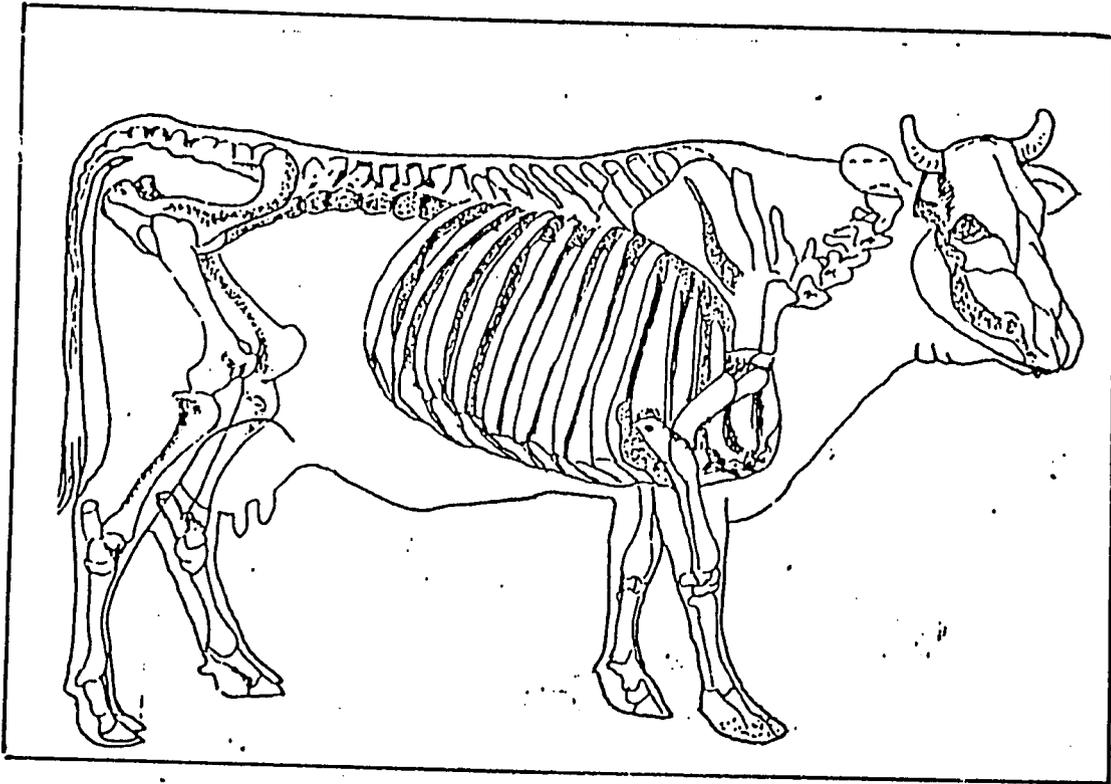
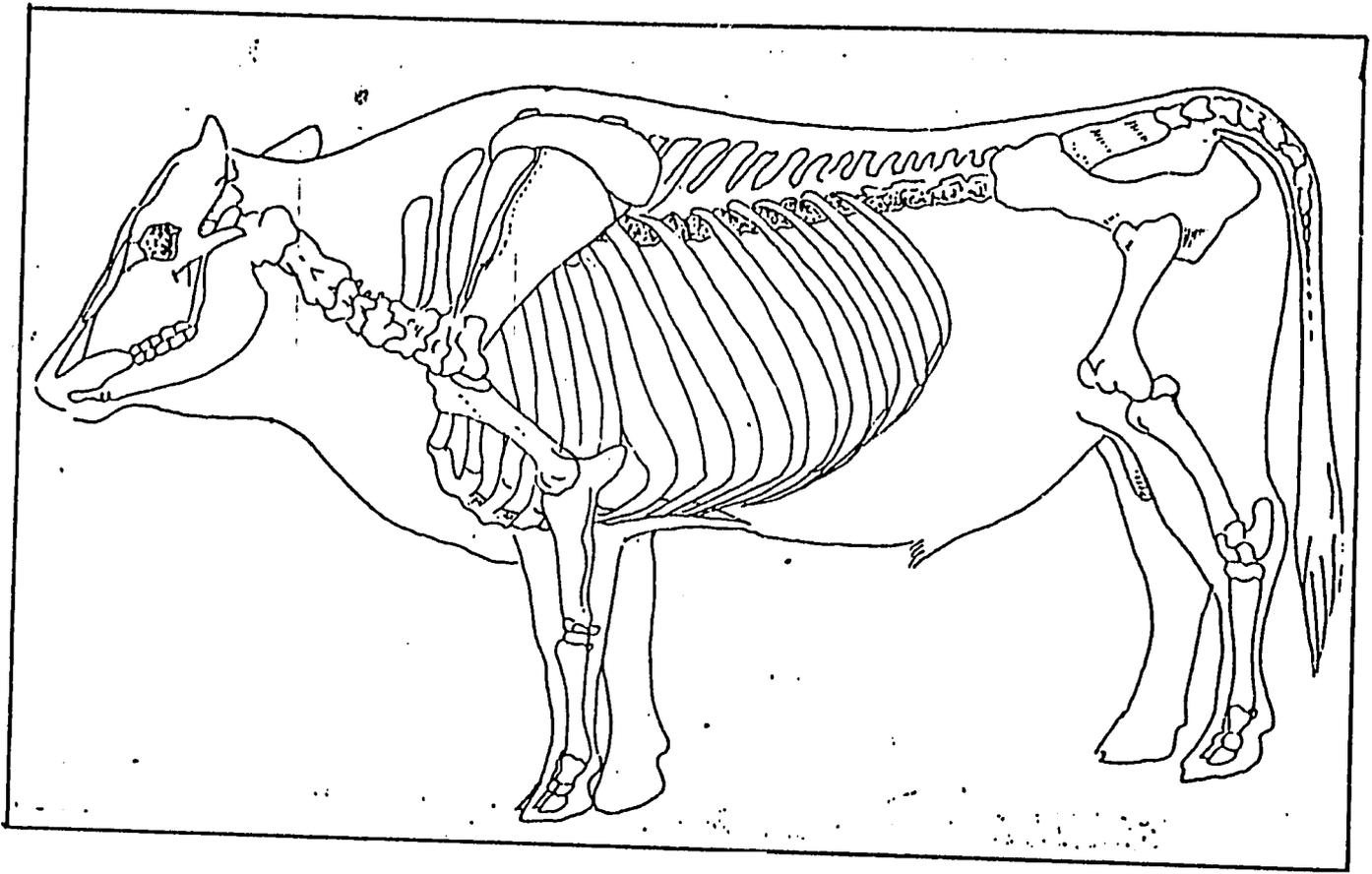
NAME OF DRUG: Rehydro Salts (ORS)
ACTIVE INGREDIENT: Sodium chloride, potassium chloride, glucose
PACKAGE: Box containing 20 sachets of powder
COST OF PACKAGE: 33 Rupees (1.7 Rupees per sachet)
FORM OF DRUG: Powder for preparing solutions
CONCENTRATION OF DRUG: Not applicable
FOR USE IN: Young calves, lambs, kids, and foals
ROUTE OF ADMINISTRATION: By mouth with syringe or drenching bottle
MIXING INSTRUCTIONS: Add one packet to 1 liter of water. Mix completely
DOSAGE: Depends on size of animal
AMOUNT GIVEN:
Lambs and kids: Give 1/2 liter of solution 3 times a day
Calves and foals: Give 1 and 1/2 liters of solution 3 times a day
FREQUENCY OF DOSE: 3 times a day
USE OF DRUG: For treatment of diarrhea in young animals to prevent dehydration
PRECAUTIONS: Do not mix with milk, use water only.
REMARKS: The recommended amounts are the minimum amounts required. If the animal will drink more than the recommended amounts, this is good.

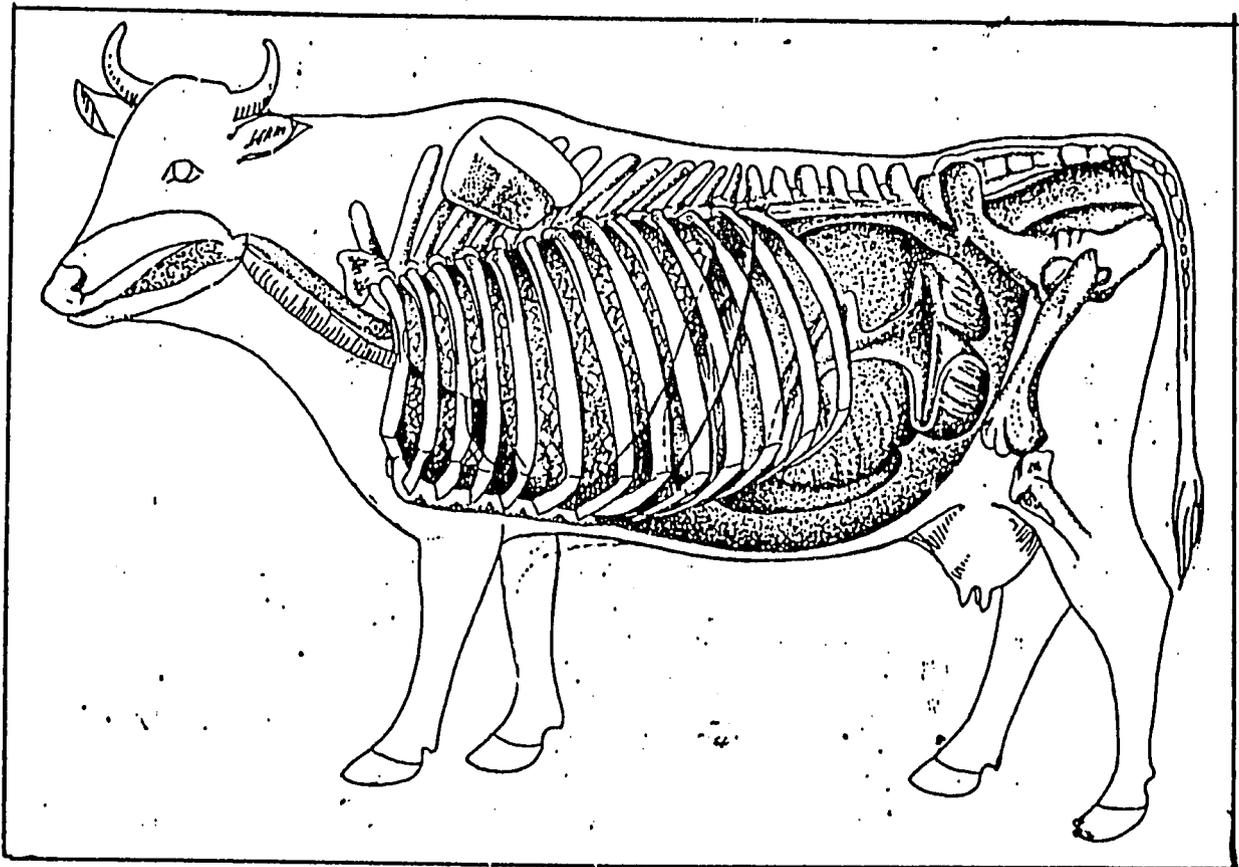
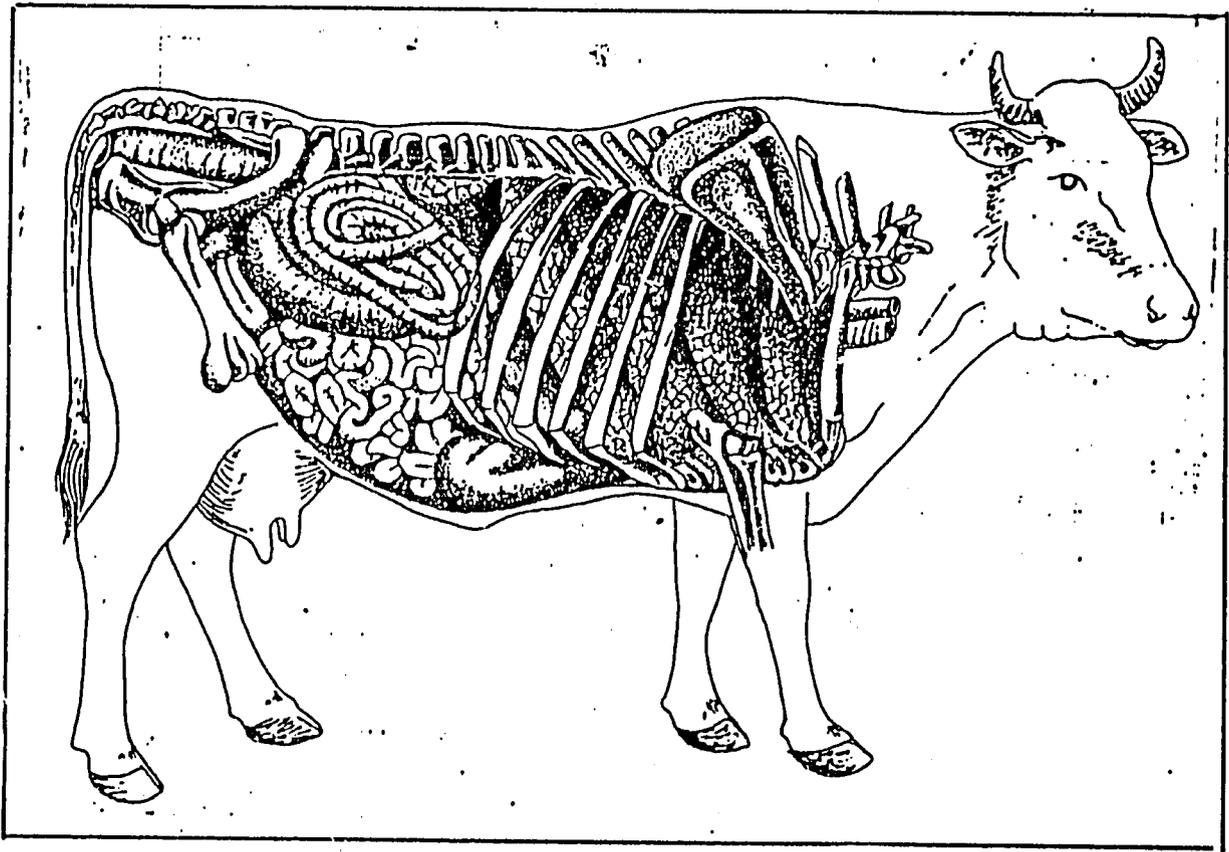
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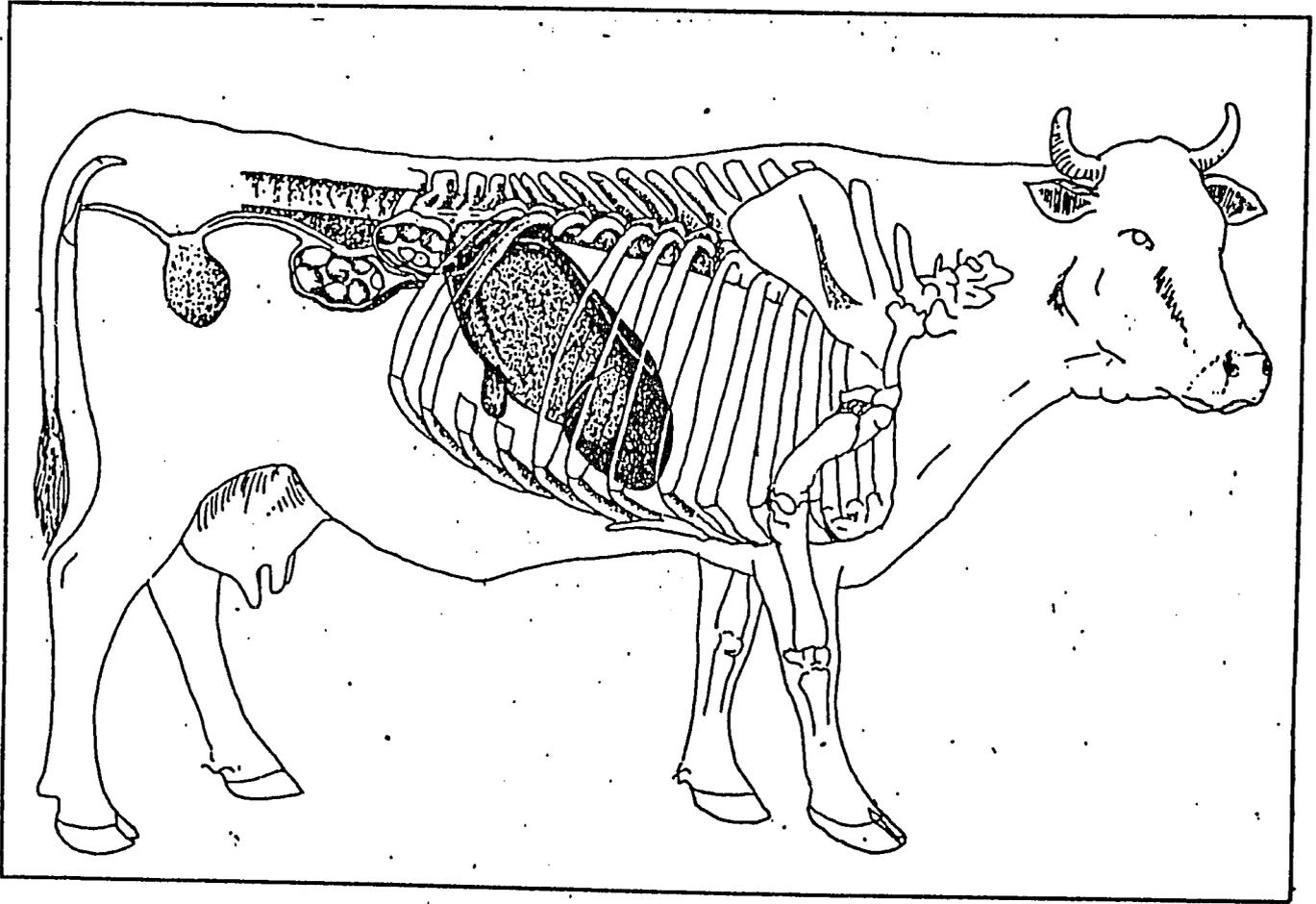
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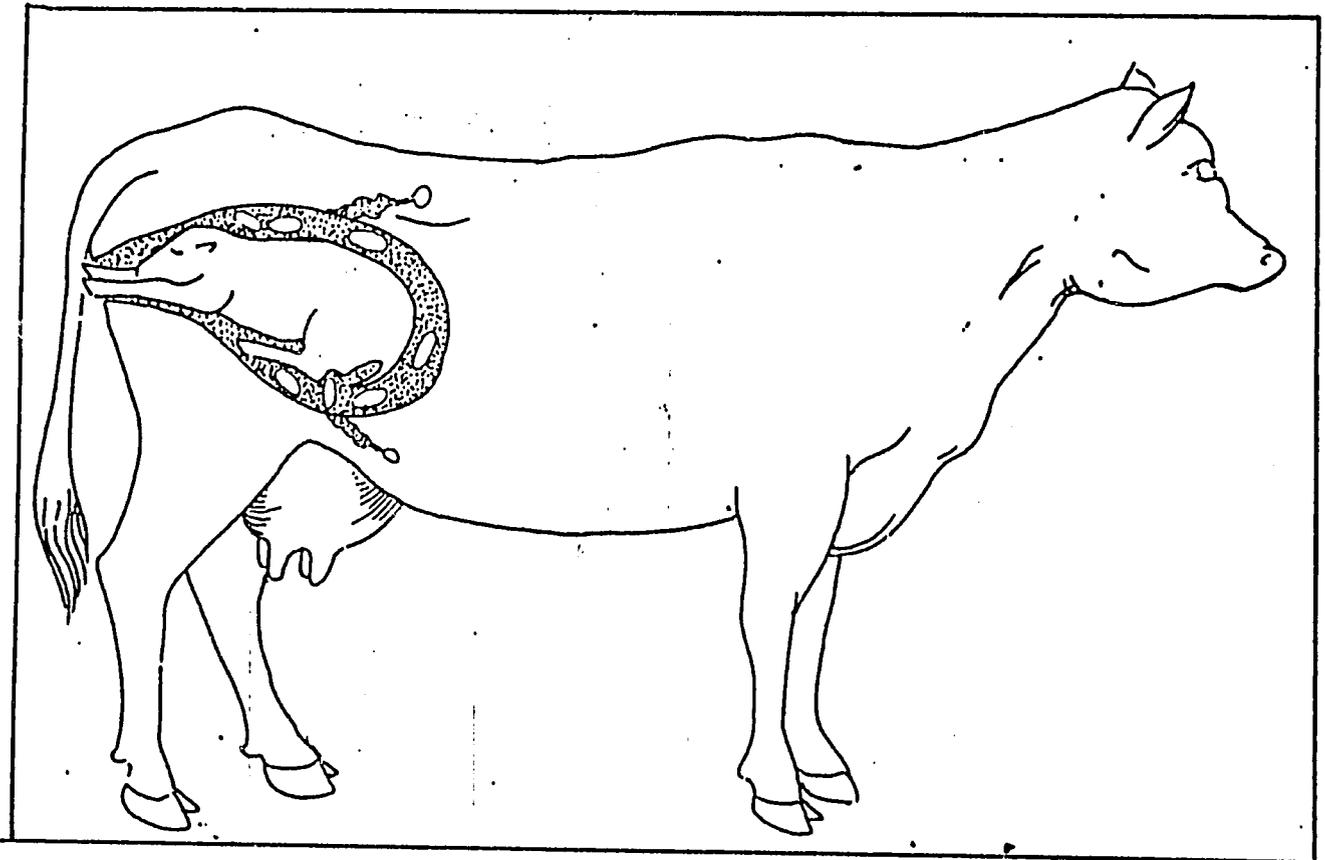
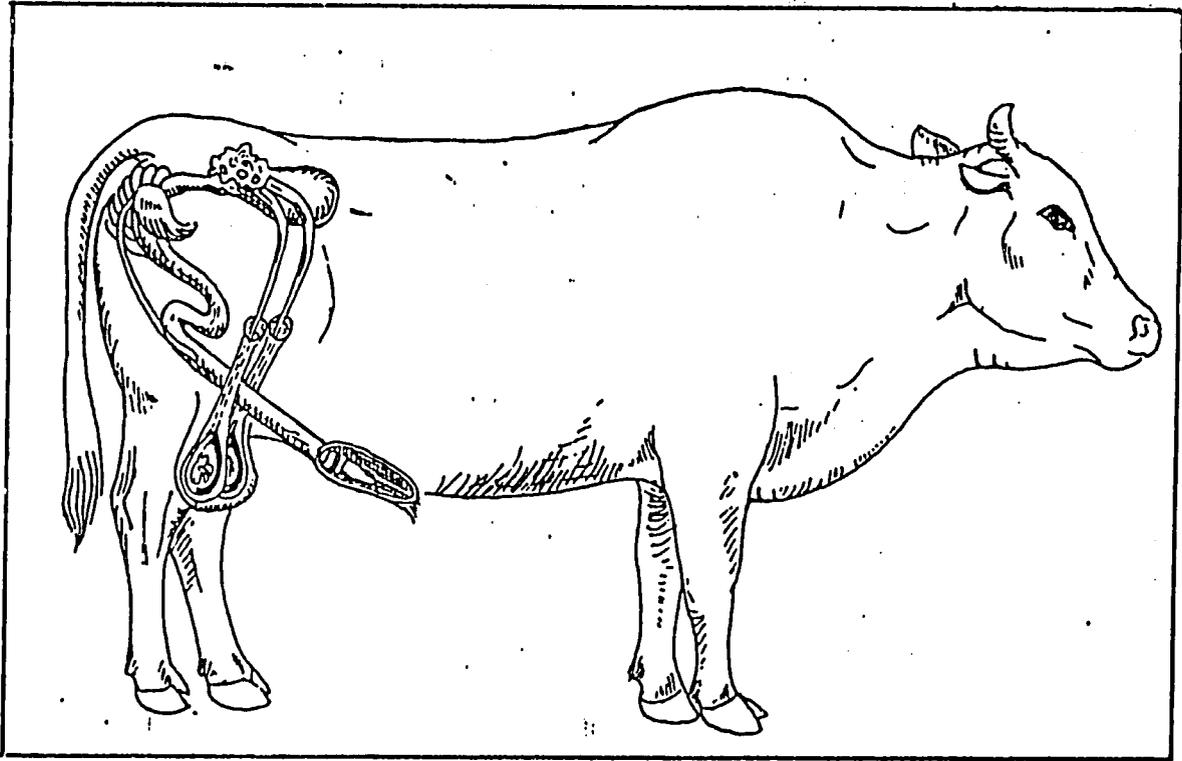


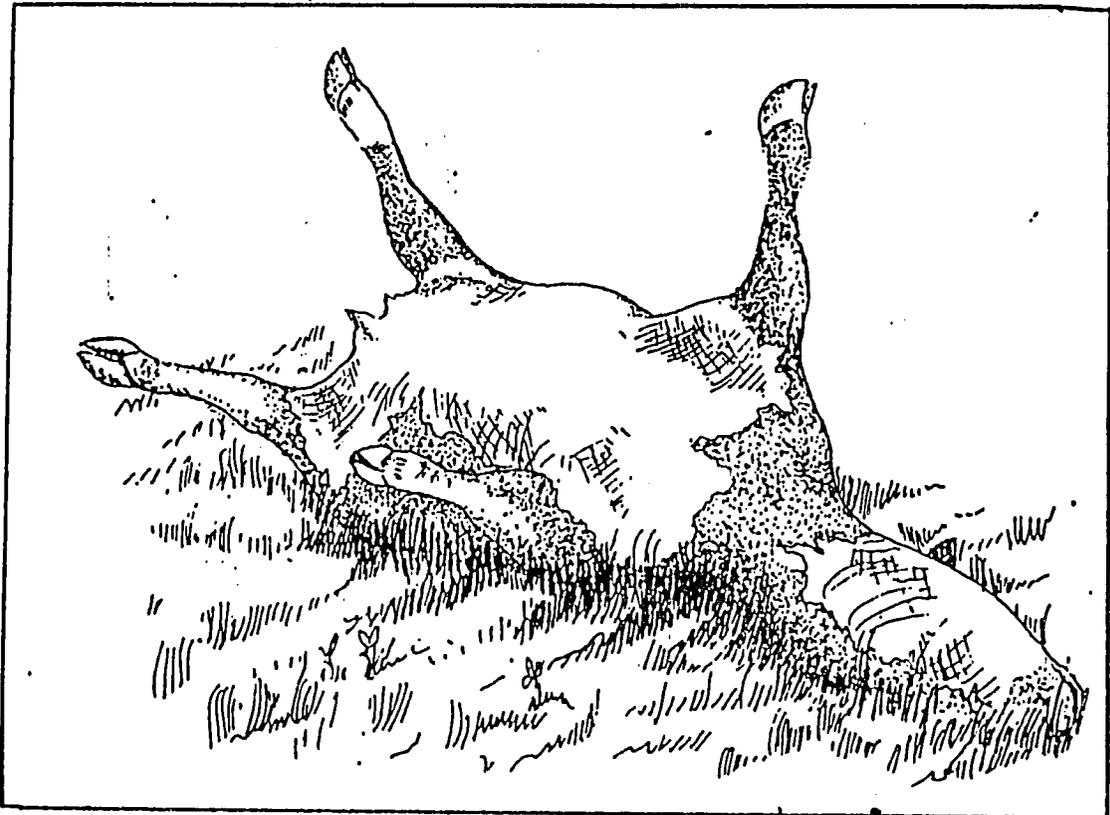
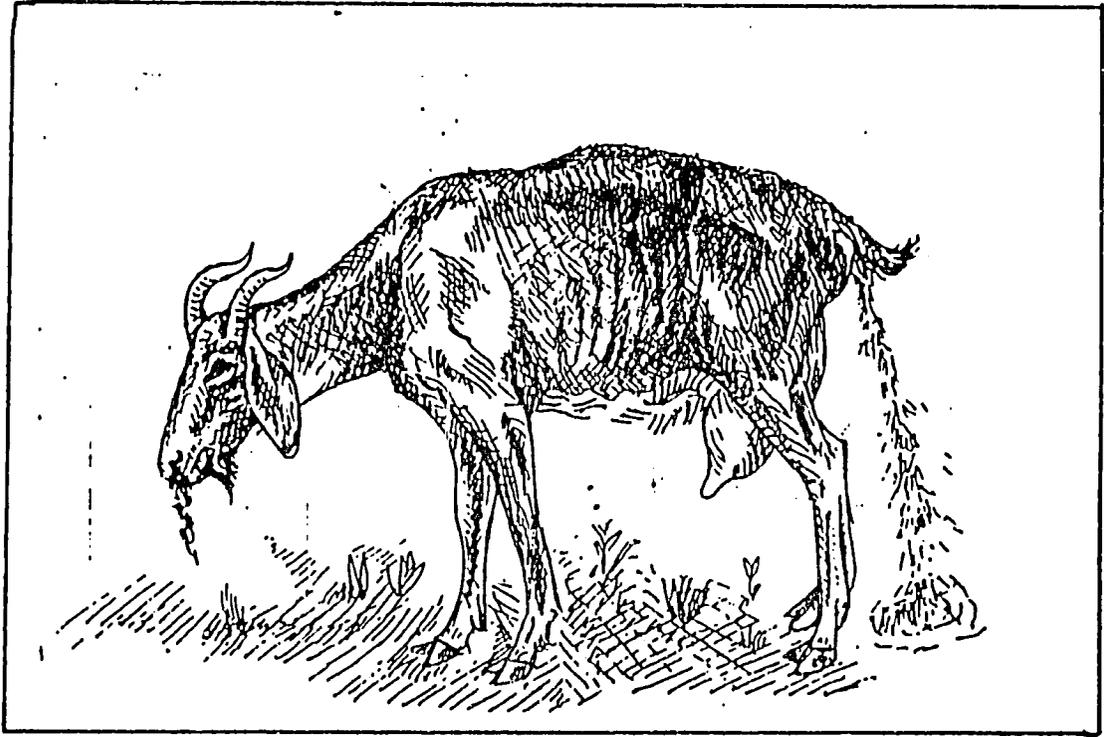


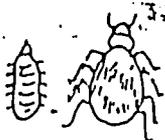


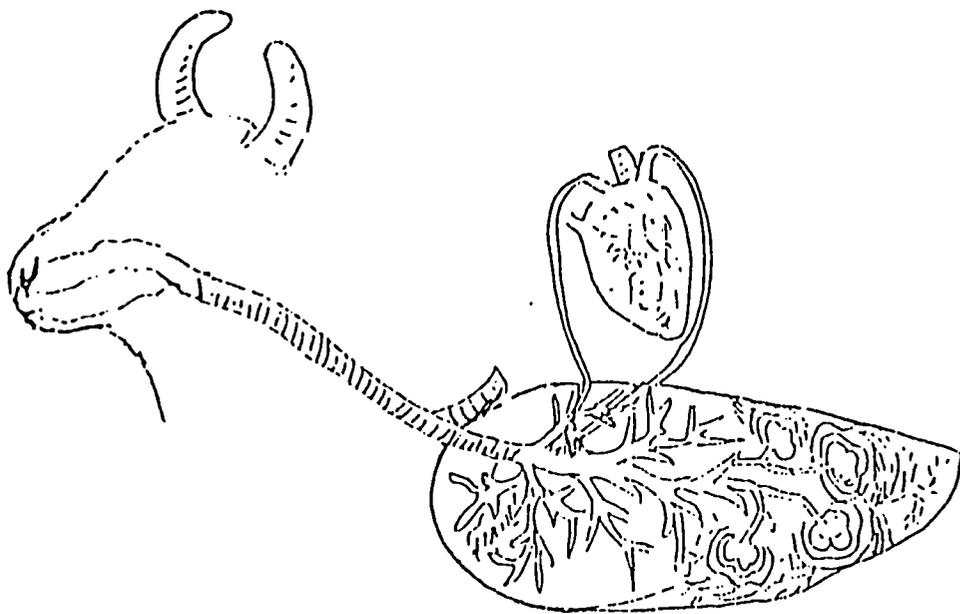
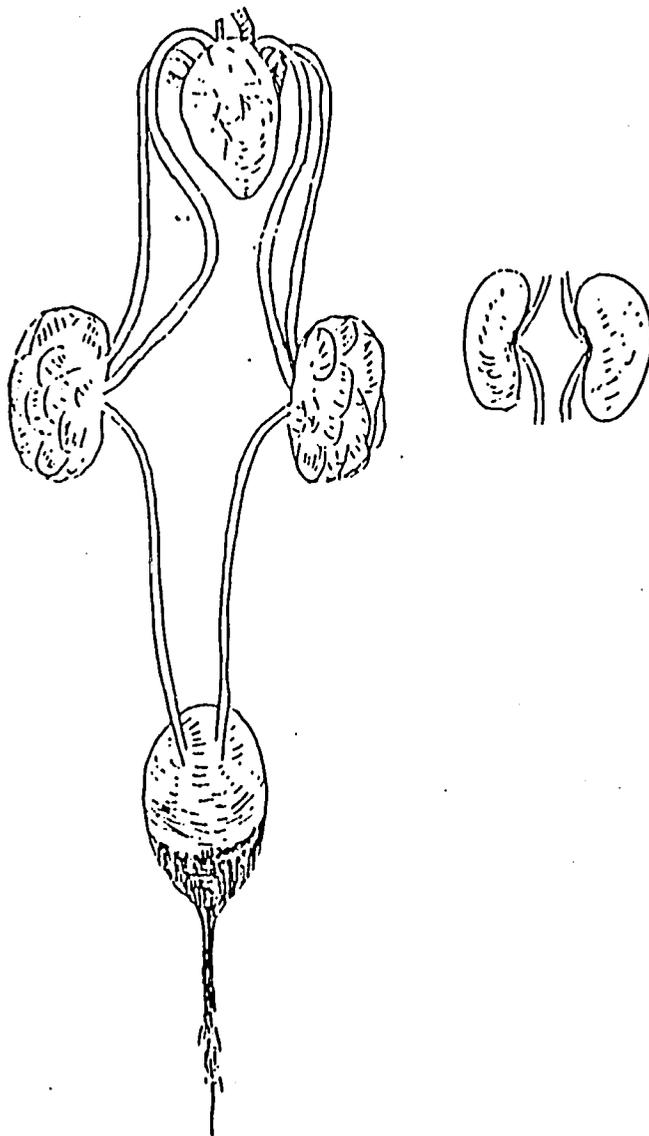


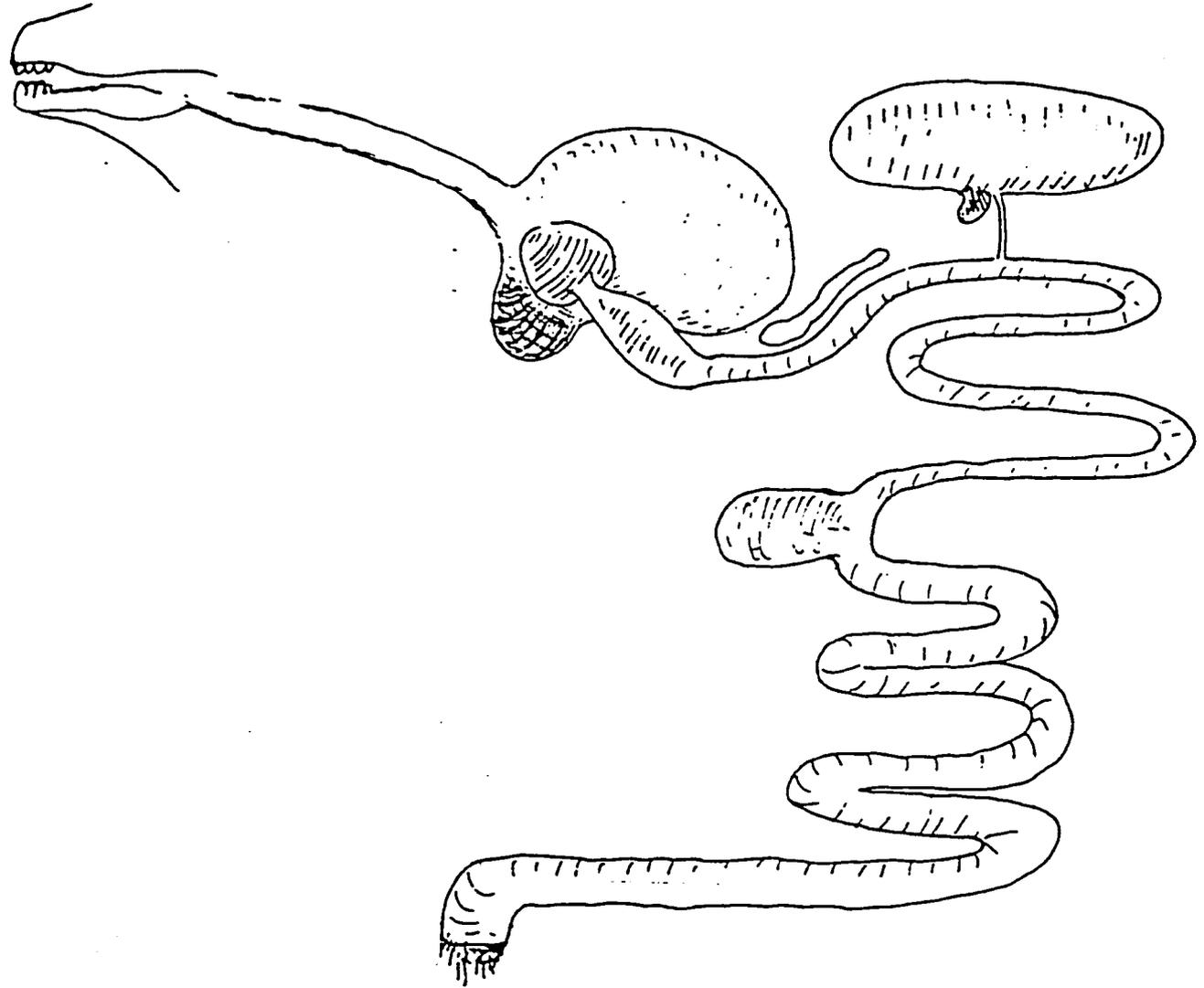
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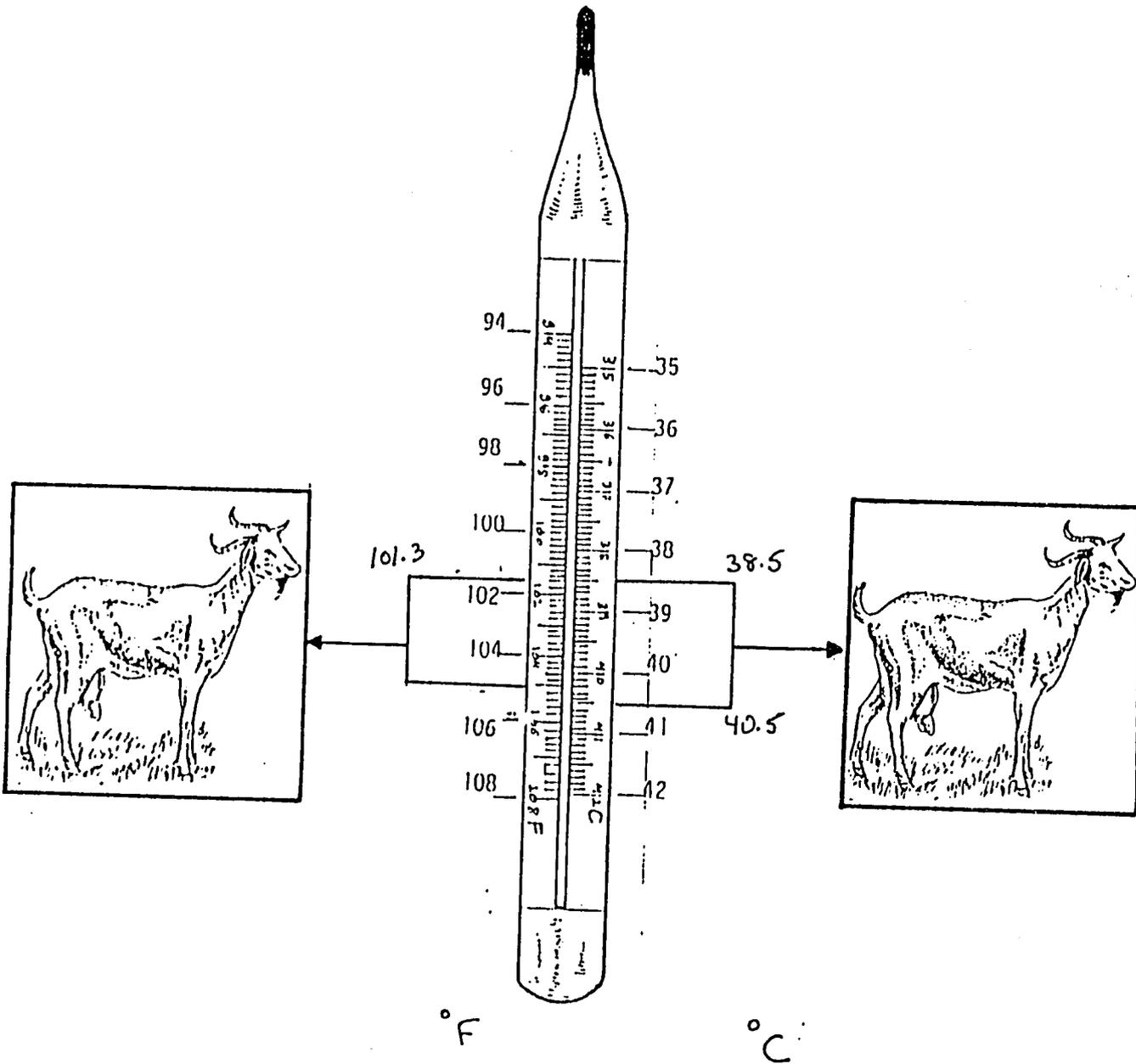


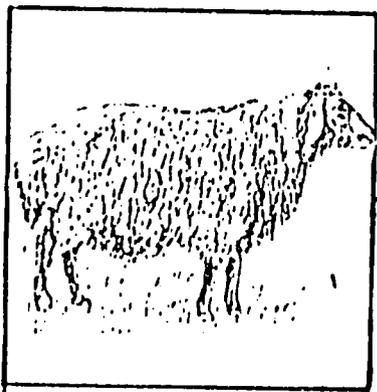




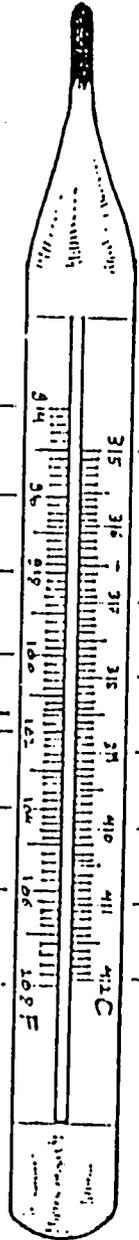






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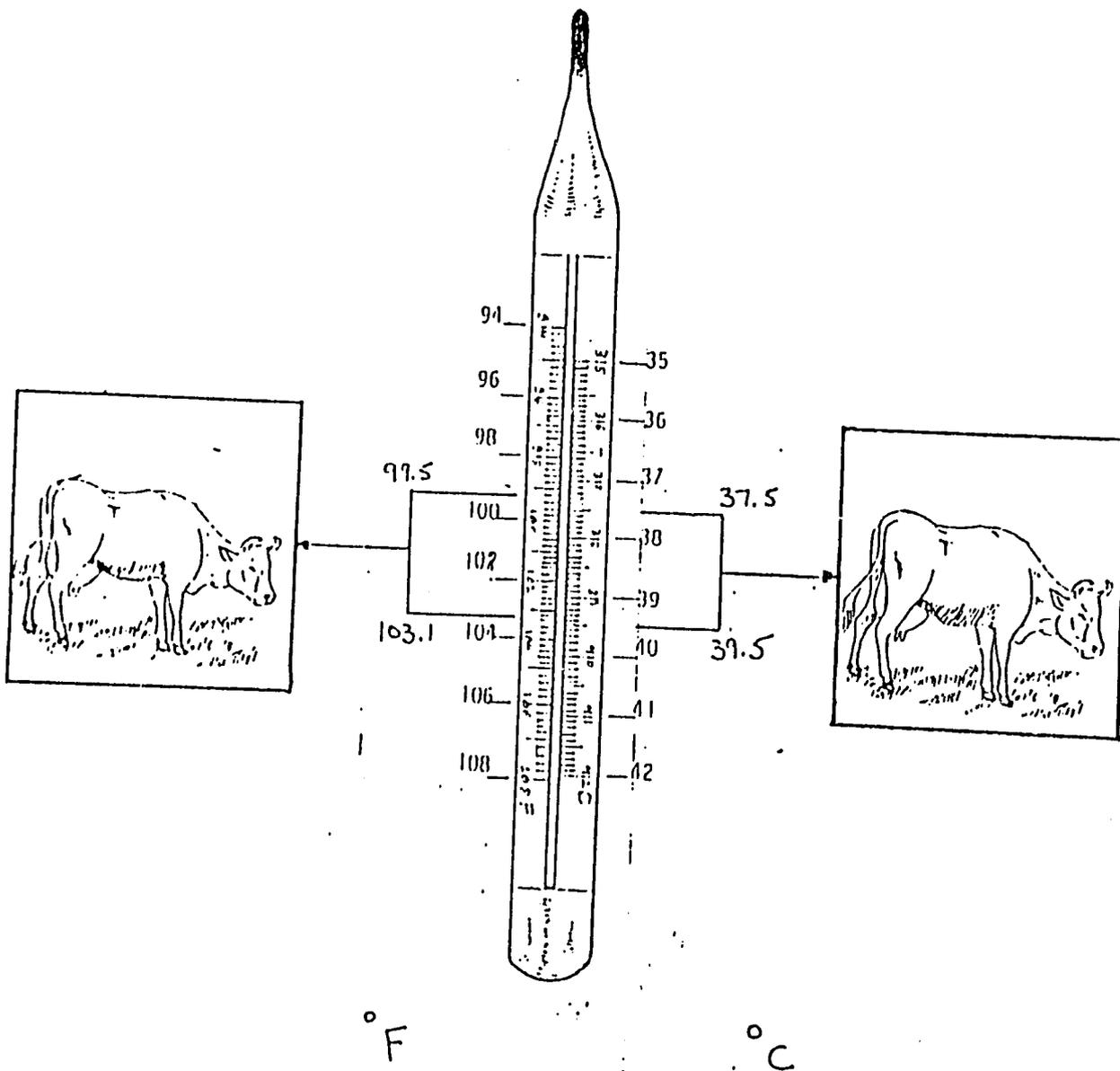
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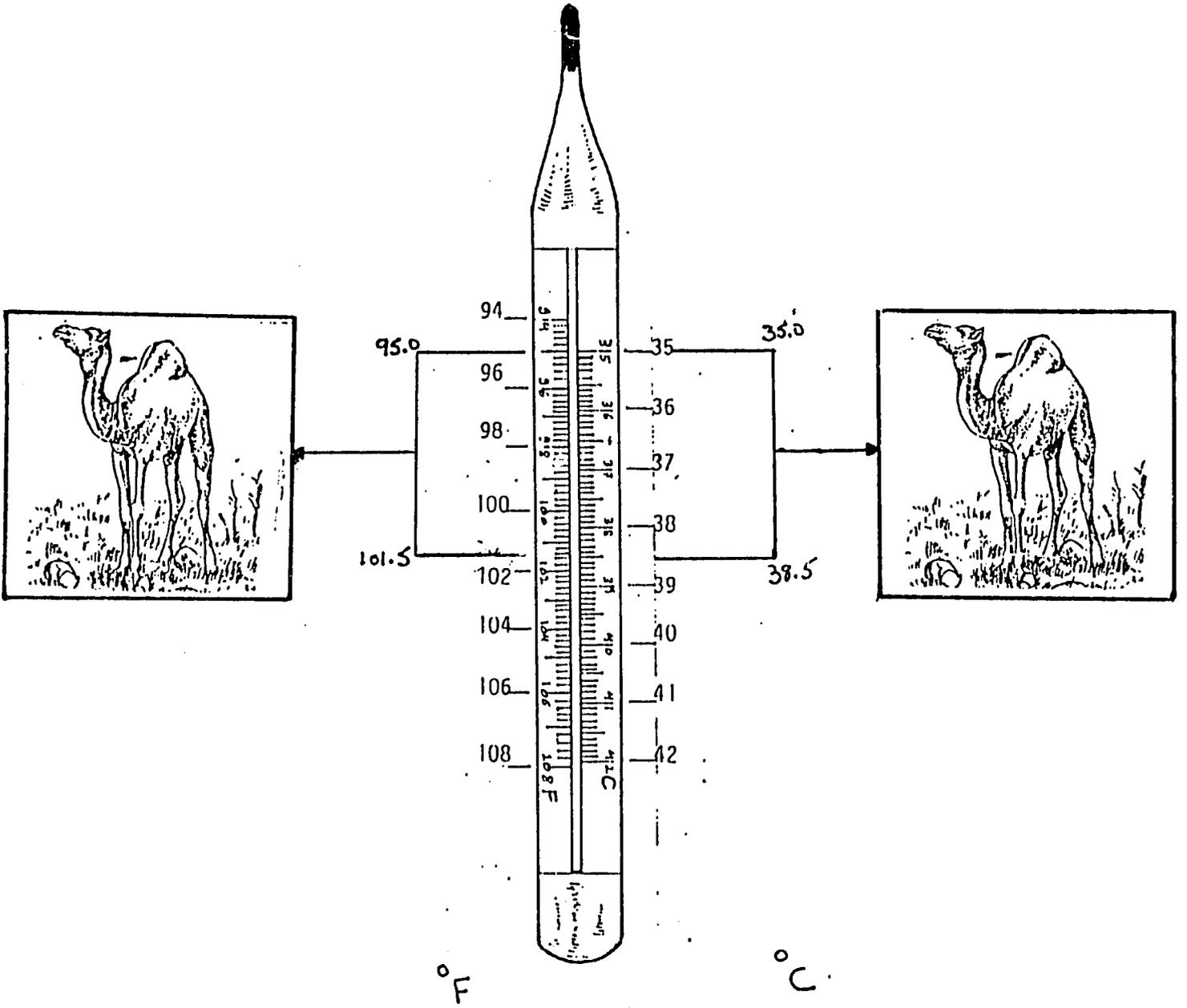


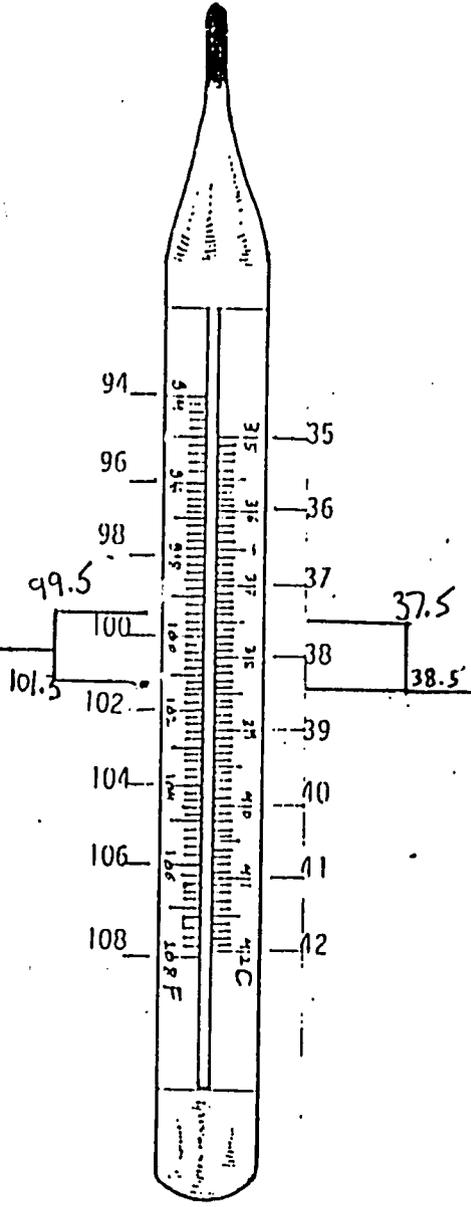
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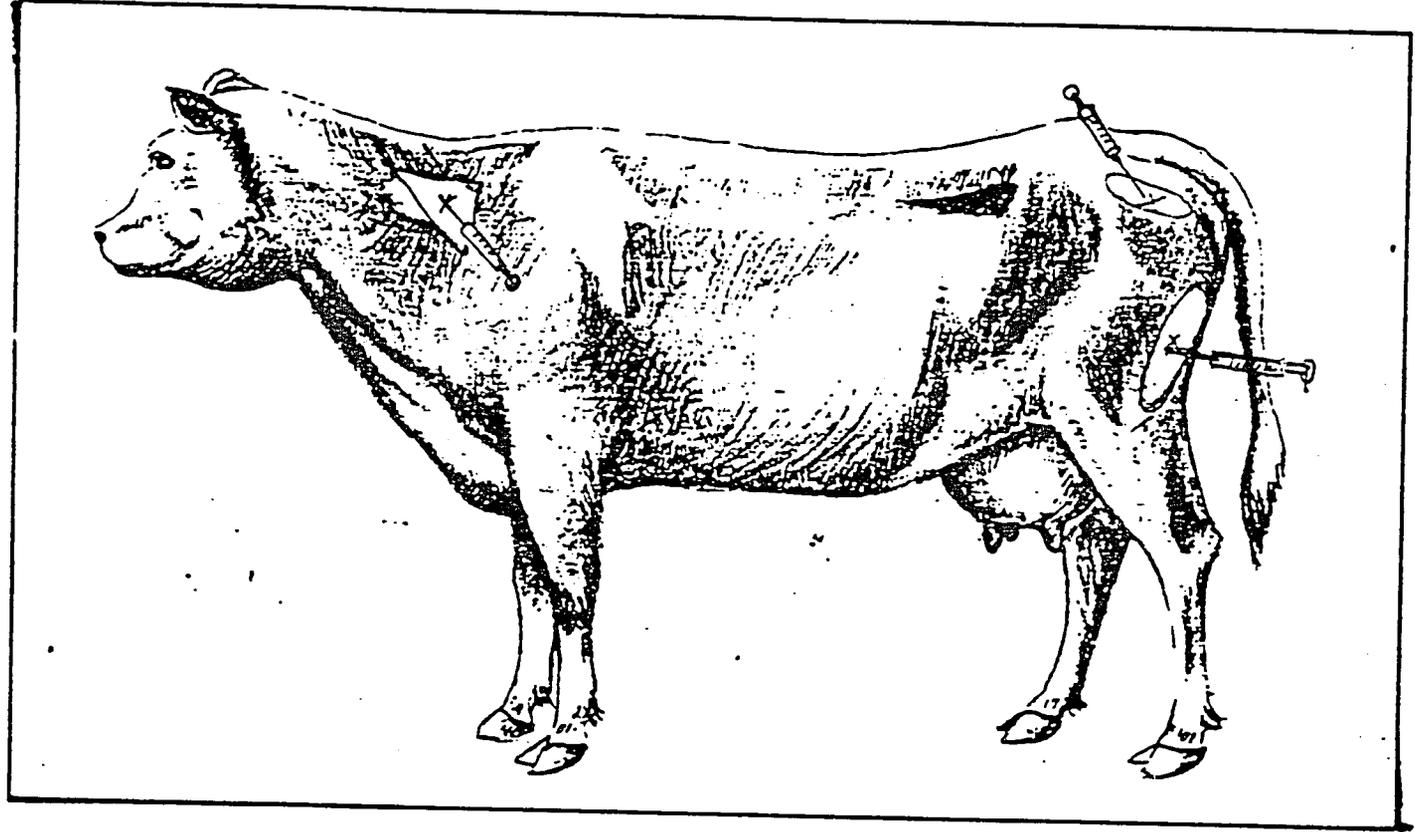
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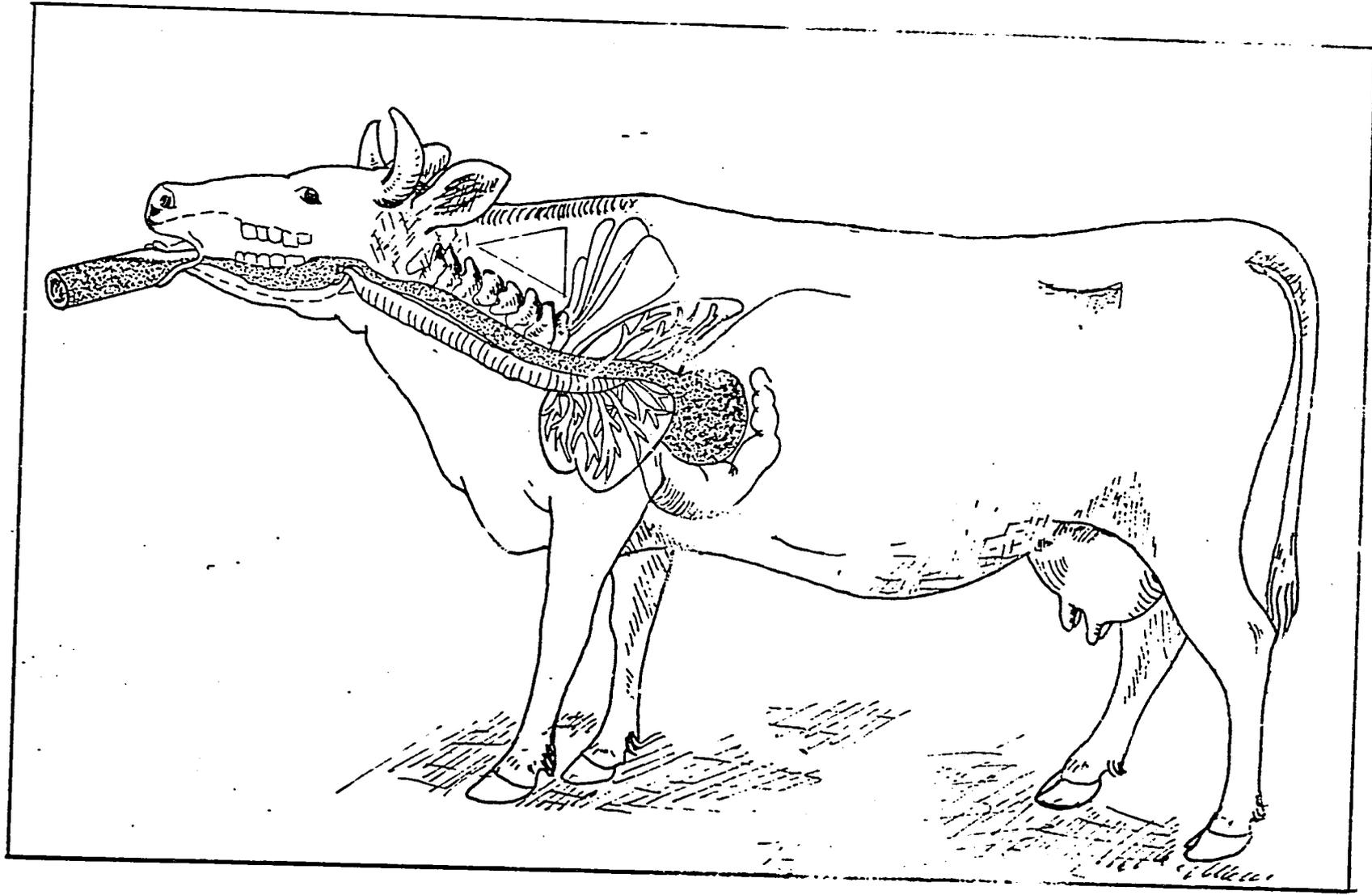




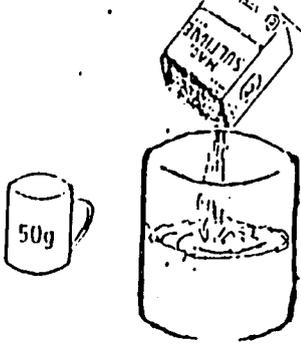
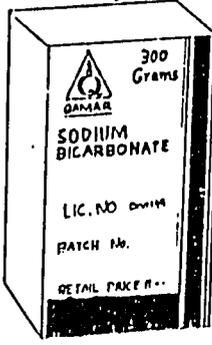
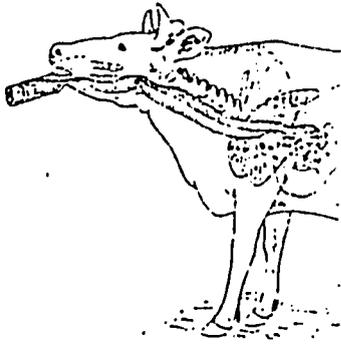
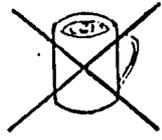
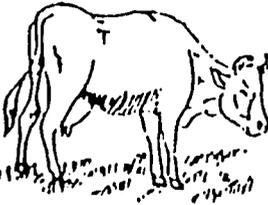
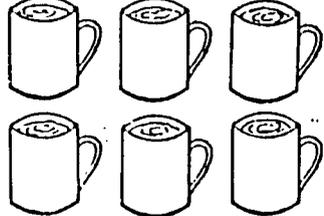




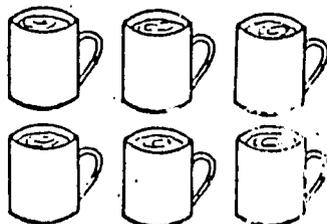
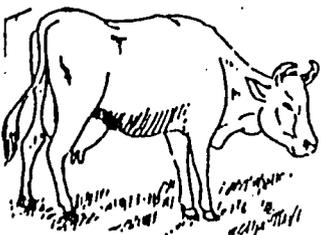
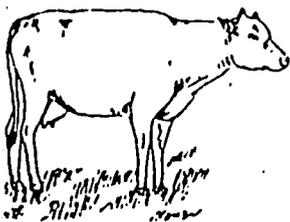
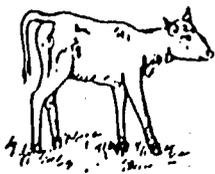
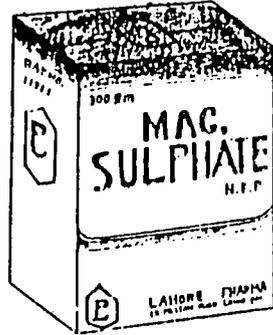
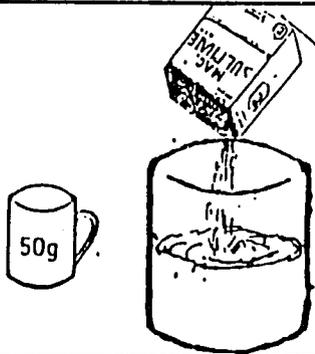
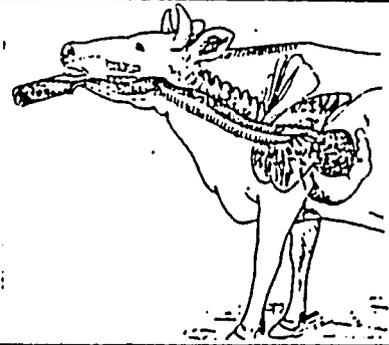




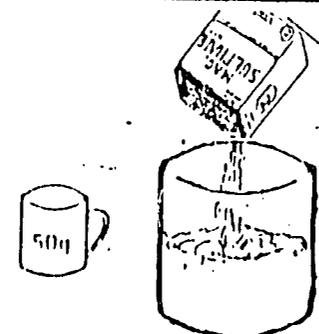
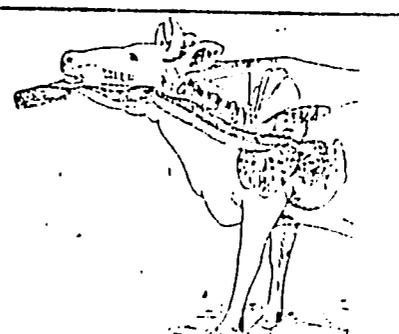
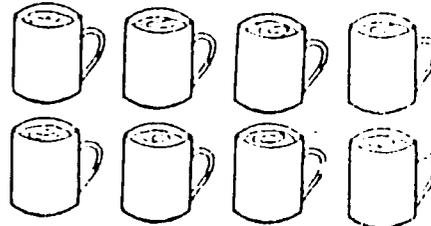
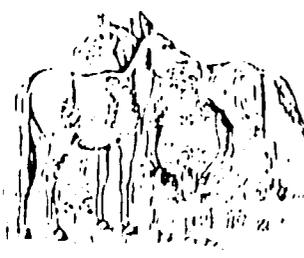
SODIUM BICARBONATE

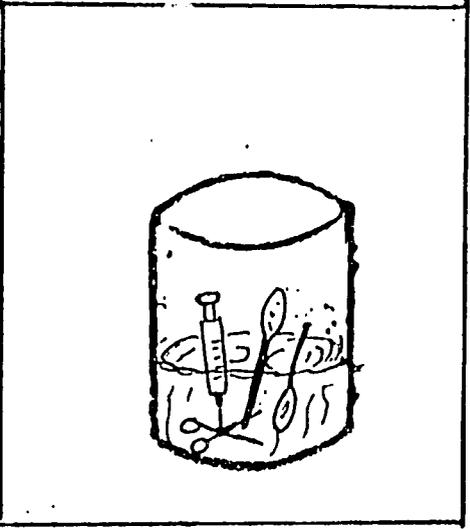
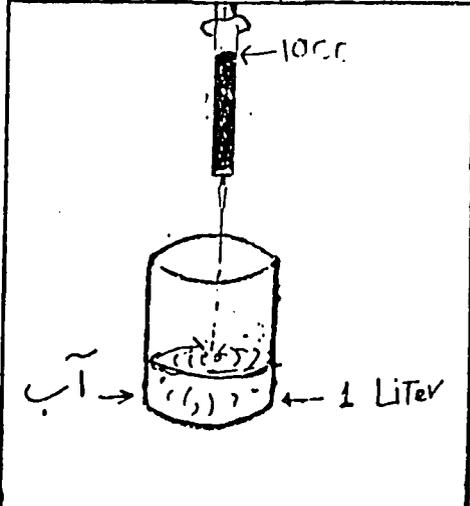
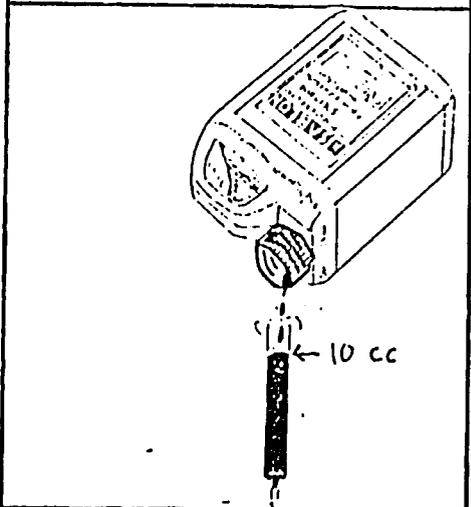
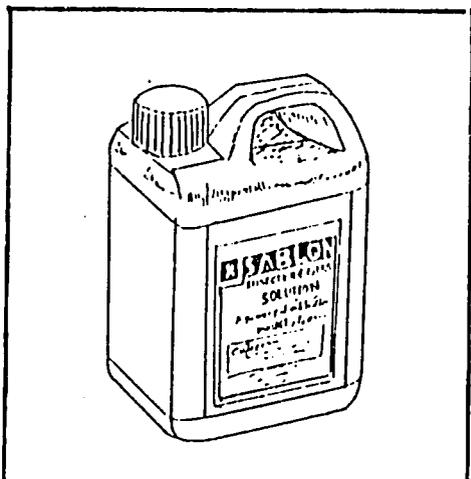
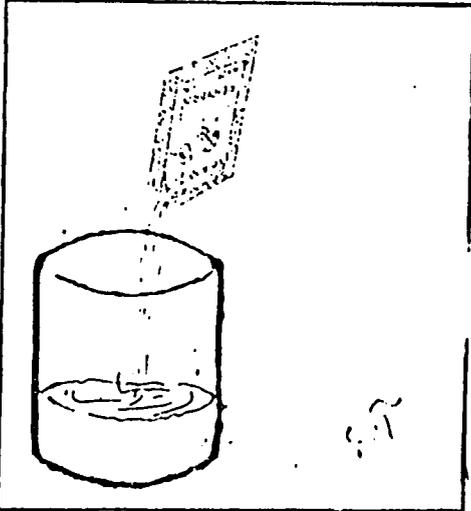
 <p>50g</p>	 <p>300 Grams SODIUM BICARBONATE LIC. NO. 01111 BATCH No. RETAIL PRICE R. 1.00</p>	
		
		
		
		
		
		

Mag. sulphate

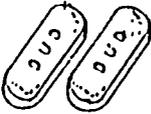
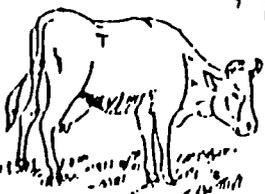
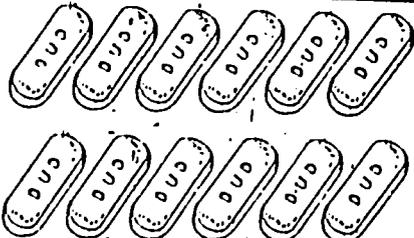


Mag. sulphate

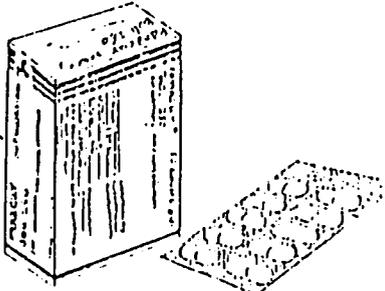
		
		
		
		



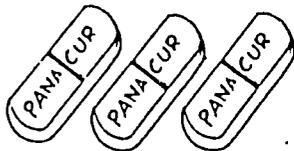
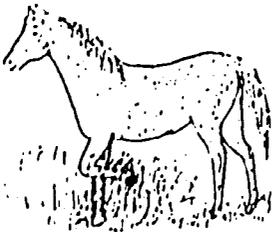
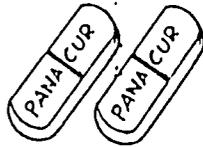
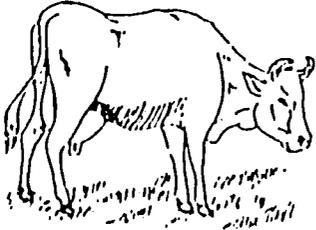
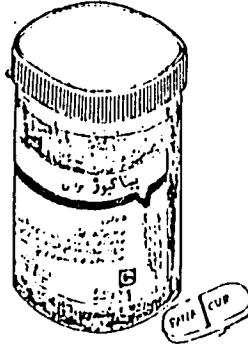
FASINEX 250

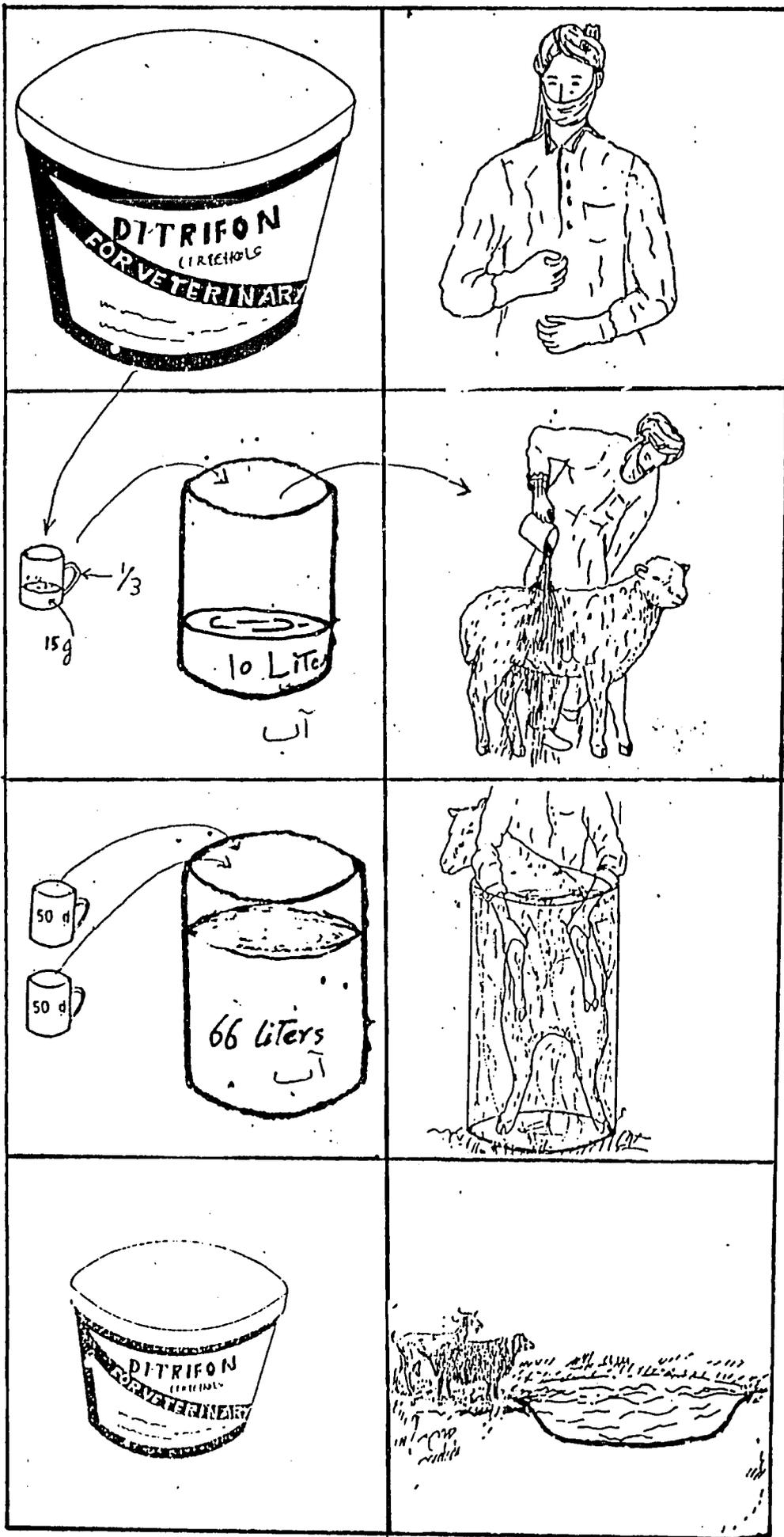
		
		
		
		
		
		
		

Panacur 250

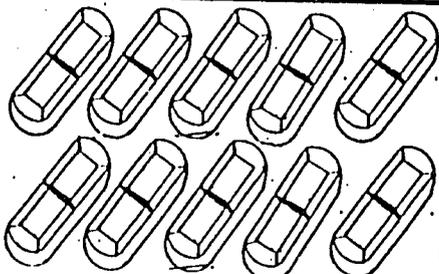
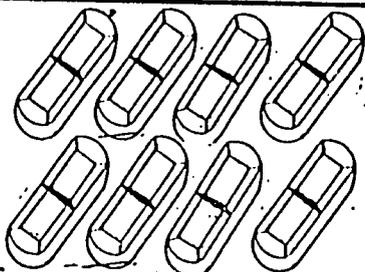
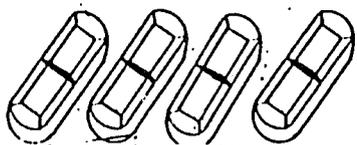
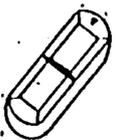
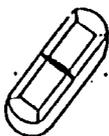
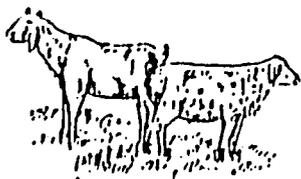
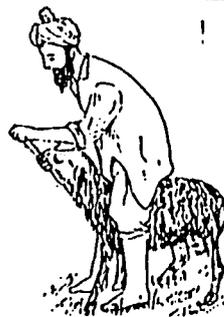
		
		
		
		
		

PANCUR BOLI 750





Strinacin



RASOMYCINE LA

