

ORANGE COUNTY 4-H HORSE PROGRAM

LEVEL 3

MEMBERS GUIDE

CATEGORY:

A. Horse Care

1. Internal Parasites of Horses (Pages 1 - 12):

Members should know and be able to discuss the following about the five internal parasites in the Horse Science Book: How they occur, what they do, prevention and treatment.

B. Horse Terminology

1. Gaits of the Horse (Pages 13 - 20):

Members should know and be able to identify all the gaits and their foot sequence as described.

2. Members should know the six "Important Features of a Stride".
3. Members should know the seven definitions described on page 7.

C. Parts of the Horse

1. Conformation (Pages 21 - 27):

Members should be able to describe all the desirable and undesirable conformation characteristics listed.

D. Horse Related Projects (Choice of One):

Credit for this category will be given when one of the projects listed here is shown at County Fair and/or Level Testing Day. A different project must be completed for each level. Each may be counted once towards level credit and must follow directions in guides available in terms of number of required samples.

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|------------------------|-------------------------|-------------------------|
| 1) Forage Board | 7. Bulletin Board | 12. Riding Helmet Cover |
| 2) Feed Board | 8. Tack Box | 13. Field Crops |
| 3) Bedding Board | 9. Breed Scrap Board | |
| 4) Photography Display | 10. Knot Board | |
| 5) Horse Clock | 11. Horse Craft Project | |
| 6) Horse Pin-Up Lamp | | |

INTERNAL PARASITES OF HORSES

According to Webster's Dictionary, a parasite is a plant or animal living in, on, or with another living organism (its host), at whose expense it obtains food and shelter. More than 150 different kinds of parasites have been found to infest horses. Almost all horses harbor some parasites. External types include lice, flies, ticks, mange, and ringworm. The internal types, which we will deal with in this lesson, include strongyles or blood worms, ascarids, stomach worms, pinworms, and bots.

Every horse owner should have his animal on a parasite-prevention and control program. In order to draw up such a program, it is important to know the life cycle of the various worms so that proper preventive and treatment procedures can be followed.

Economic Importance

The effect of the presence of worm parasites are not usually spectacular. However, they do cause decreased work efficiency, poor utilization of food, are one of the causes of colic, may be the cause of intermittent lameness, may cause a chronic cough and bronchitis, and occasionally death due to blood clot. Some adult worms produce toxins that destroy red blood cells, leading to an unthrifty anemic condition. Immature worms migrating through body tissues open the way for bacteria and fungi to enter, causing other serious diseases.

Prevention of parasitism

Internal parasites gain entry to the animal body in the form of eggs, larvae, or adults. This may be largely prevented by various forms of management which break the life cycle of the parasite. Those worms already present will have to be killed by drugs, depending on the kind of parasite present. The following practices have been found to be effective in reducing parasite numbers:

1. Do not feed hay or grain on the floor. This prevents contamination of feeds with manure, which may contain large numbers of parasite eggs or larvae.
2. Do not allow horses to obtain water from barnyard pools or water holes on pasture, since manure drainage into these areas makes them a source of internal parasites.
3. Clean stalls and rebed as often as possible so that there will be less chance of internal parasites getting on feeds from fecal material.
4. If the stall floor is of earth, remove ten to twelve inches once or twice yearly and replace with clean soil.
5. Remove manure from premises daily and either spread on a field where horses will not graze for a year or where the field will be plowed and reseeded before horses have contact with it.
6. If manure must be left near the barn, keep in a covered pit where it can heat and thus kill parasite eggs and larvae. This will also prevent fly breeding.
7. Small, heavily used pastures tend to build up a heavy parasite load. Small exercise yards should not contain pasture grasses which encourage animals to eat contaminated material. It is best to have them

gravelled.

8. Rotate pasture plots as frequently as possible to break the life cycle of the parasites.

9. Flies should be prevented from breeding by keeping surroundings free from manure, wet straw, and bedding.

10. Grain should be kept in covered containers away from flies, birds, and rodents, which may carry parasites from farm to farm.

Treatment

Treatment is a necessary but small part of the total parasite control program. Major emphasis should be on prevention. Even though adult worms are eliminated from the animal, damage has already been done by larval migration through body tissue. All drugs used for worming are dangerous and must be used with extreme care. In most cases, it would be best to have your veterinarian perform this service.

A regular program for worming horses should be adopted in cooperation with your veterinarian. Horses should be wormed in the fall after the first killing frost, and again in the spring before they go out to pasture. If strongyles are a particular problem, continuous low-level feeding of phenothiazine should be considered.

In some areas, worm control programs are organized on a community or county basis. Since some of these parasites are transmitted by insect vectors, area action tends to reduce the possibility of this type of transfer. Such projects should be considered with your veterinarian, your county agent, or your 4-H club leader.

Bot Flies

There are at least three species of horse bot flies. It is their habit to hover about the horse, and then quickly darting toward the animal they glue individual eggs to the hair in a matter of seconds. The female of the common bot usually lays up to 500 eggs. Eggs are usually deposited on the hair of the forelegs, although they may be deposited on the mane, shoulders, belly, chin, and occasionally the flanks.



BOT FLY

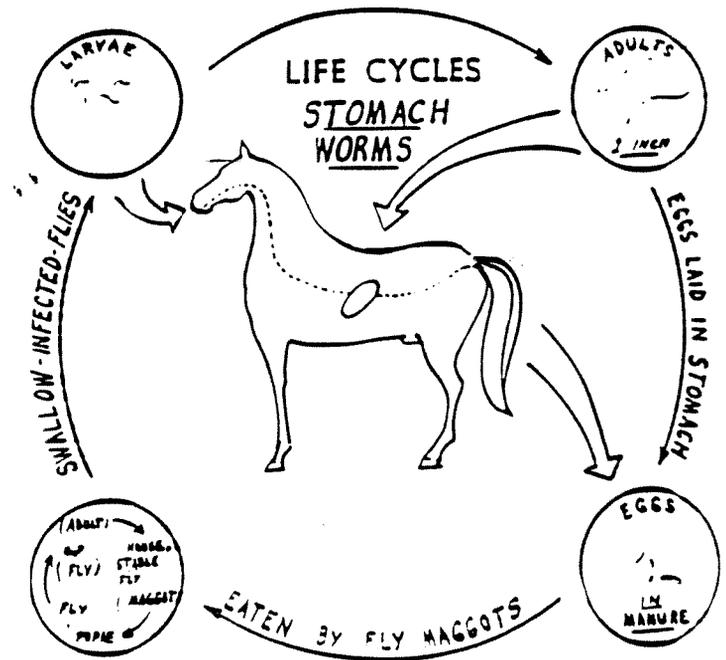
The horse tends to lick or bite itself where the eggs are attached, thus stimulating hatching, and the newly-hatched larvae are taken into the horse's mouth in this manner. Some larvae burrow into the tongue and migrate through the body tissues until they finally arrive in the stomach where they attach to the stomach wall. They arrive in the stomach in from three to four weeks. They mature in the stomach in from ten to eleven months, at which time they release their hold on the stomach wall and pass out with the animal's feces. Mature larvae burrow into the ground and change into pupa stage. In from fifteen to seventeen days the mature bot fly emerges from the pupa case and mates to begin the cycle again.

BOT LARVA



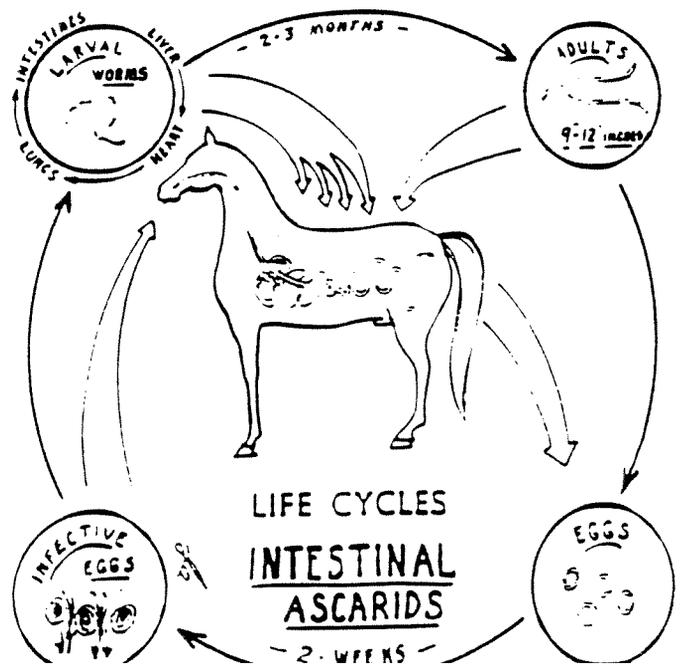
Stomach Worms

There are at least ten different types of stomach worms, four of which are known to cause lesions, resulting in an inflammation of the stomach wall. The larval forms of the larger stomach worms are thought to be responsible for a skin disease of horses called "summer sores." The larger stomach worms are approximately an inch to an inch and a half in length. Adult worms in the horse's stomach lay eggs which are passed out with the manure and picked up by maggots (larval forms) of the house fly or small stable fly. The stomach worm eggs hatch in the head region of the adult fly where they had come to rest as the fly matured. Horses probably swallow infested flies accidentally, or larval worms may leave the flies while they are feeding on the moisture around the horse's lips. Once in the horse's mouth, they are readily swallowed and mature into adult worms in the horse's stomach to repeat the cycle.



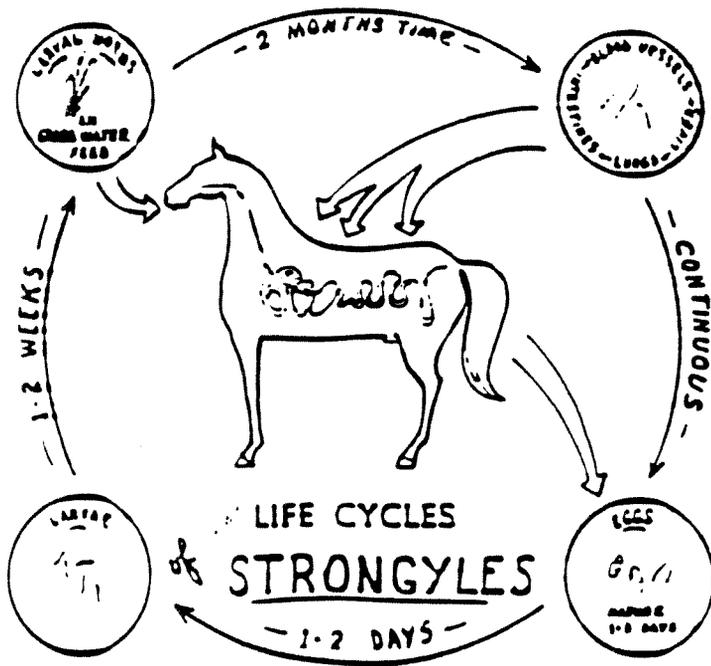
Ascarids (intestinal worms)

Adult worms in the small intestines deposit eggs which pass out with the manure. During warm weather, embryos develop within the eggs and are infective in about two weeks. Embryonating eggs are swallowed by grazing horses, the embryos are liberated in the small intestine, penetrate the gut wall, and are taken by the blood stream to the heart and lungs. After about one week's period, the larvae escape from the lungs, migrate up the trachea to the throat region where they are once again swallowed and the worms develop to maturity in the small intestine. Adults are approximately nine to twelve inches in length.



Strongyles (blood worms, palisade worms)

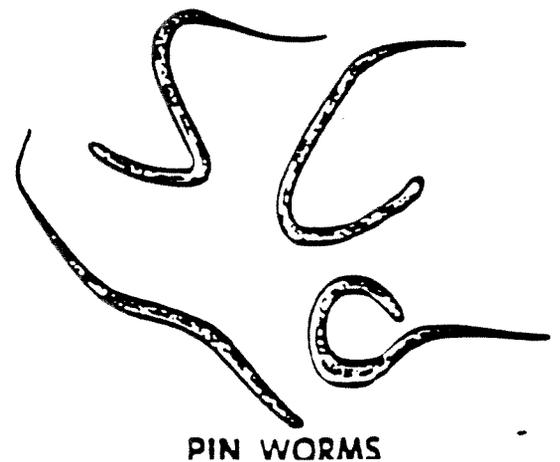
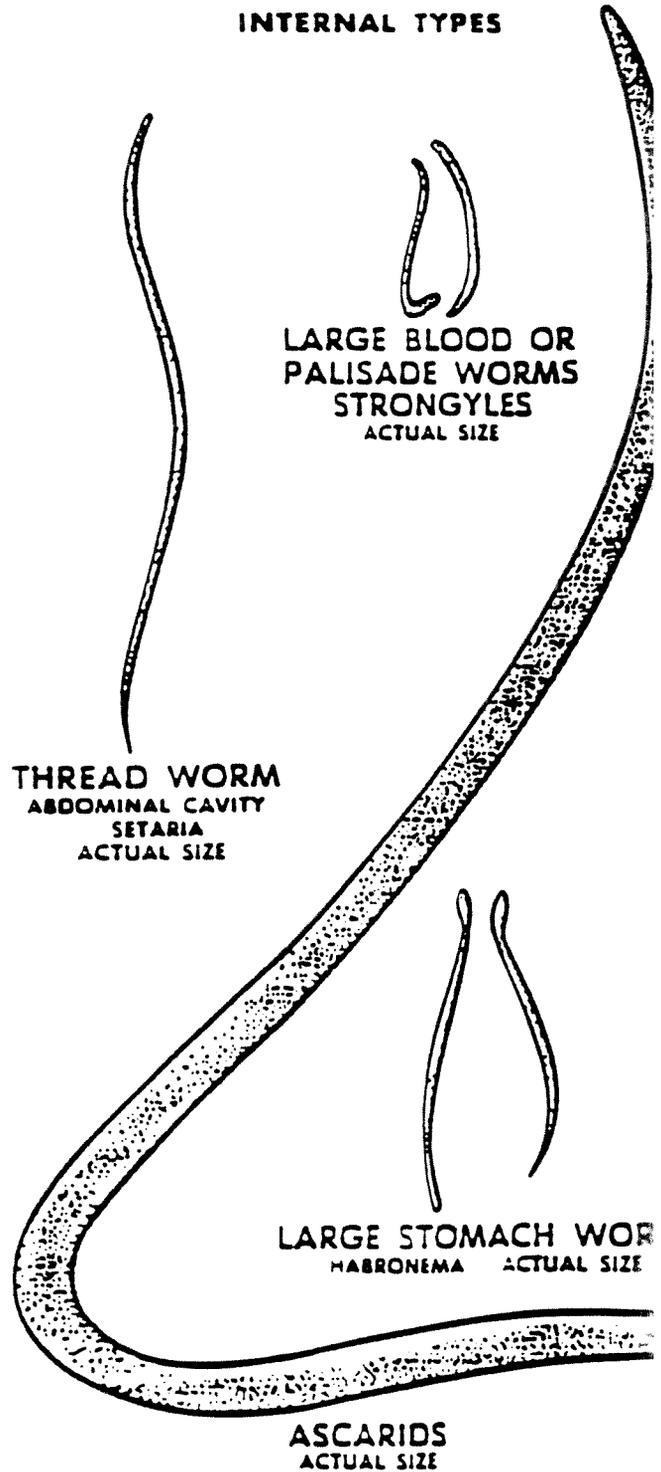
The horse strongyles are a large group of approximately forty species infesting horses. Most of them are less than an inch in length and scarcely visible to the unaided eye. They are usually found firmly attached within the host, sucking blood. Female worms deposit large numbers of eggs which leave the horse with the manure. After the eggs hatch, the larvae molt twice before becoming infective. Infective larvae climb to the upper portions of pasture grasses and are usually swallowed by horses during grazing. Larvae migrate to various organs within the body, depending somewhat upon the species. Those that favor the walls of the arteries are responsible for certain types of lameness and even death due to embolism by restricting or blocking blood flow in the arteries.



Pinworms

Pinworms are approximately two to three inch long white-appearing worms with long slender tails. They are frequently seen in the feces of infected animals. The worms mature in the large intestines, and females full of eggs proceed outward through the small colon and the rectum, sometimes crawling out of the anal opening. The irritation causes infested animals to rub themselves against posts and other objects. Adult worms in this manner are crushed, at times leaving the eggs glued to the anal region. Normally, however, the eggs develop in manure and are picked up during grazing or feeding by horses to repeat the cycle. The vigorous rubbing of the posterior parts results in the loss of hair and occasionally injury may result in secondary infection. Fourth stage larvae are also found attached to the mucosa of the colon and are voracious feeders.

INTERNAL TYPES



PIN WORMS

Tapeworms

Tapeworms inhabit the large and small intestines of the horse. They are generally of little significance in the horse unless present in large numbers when they may cause unthriftiness, digestive disturbance, and sometimes anemia. A. perfoliata is the commonest form and produces small inflamed areas and ulcers at the seat of attachment. In heavy infestations the feces may be covered with blood-stained mucus. If tapeworms travel to the cecum they attach to the wall and can cause perforation. This becomes a critical condition, and may lead to death of the horse.

Evidence of tapeworm infestation is rarely visible in the feces and diagnoses must depend on microscopic fecal examination. The current treatment is a double dose of Strongaid paste wormer.

GLOSSARY

Anemic (a nē'mik). Deficient in red corpuscles of the blood; a state causing paleness, weakness, heart palpitation.

Bronchitis (brōn kī'tis). Inflammation of the bronchial tubes (extensions of the windpipe).

Colic (kōl'ik). An acute abdominal pain; may be caused by a great variety of disorders.

Embolism (ēm'bō lizm). The lodgment of an abnormal or foreign particle, such as an air bubble or blood clot, in a tube or canal of the circulatory system, which tube being too small to permit its passage.

Embryos (ēm'bñ ōz). Organisms in the early stages of development, as before hatching from the egg.

Insect vector (vek'tēr). An insect which carries and transmits disease-causing microorganisms.

Larva (lār'vā). The immature, wormlike form into which certain insects hatch from the egg.

Maggot (māg'ūt). A soft-bodied, grublike, footless larva of an insect, as of the housefly; applied especially to forms living in decaying matter.

Molt (mōlt). To cast off or shed the hair, feathers, horns, outer layer of skin, etc., being replaced by new growth.

Parasite (pār'ā sīt). A plant or animal living in, on, or with another living organism (its host), at whose expense it obtains food and shelter.

Pupa (pū'pā). An intermediate, usually motionless, form assumed by metabolic insects after the larval stage, and maintained until the beginning of the adult stage; a chrysalis.

Trachea (trā'kē a). The main tube of the respiratory system; the windpipe.

Internal Parasites

More than 150 types of internal parasites are known to infect horses. From a practical standpoint the most important ones are *strongyles*, *ascariids*, *pinworms*, and *bots*. The digestive tract, or stomach and intestines, is the most commonly affected area, although larvae migrate through all tissues of a horse's body.

Life cycles of strongyles, ascariids, and pinworms are similar in that they are classified into a large group of parasites known as roundworms. Bots are the larvae of an insect, the bot fly.

Every horse is infected by one or more of these parasites, and for this reason should be on a parasite prevention and control program. A general knowledge and understanding of the nature of these parasites and their development is essential before necessary prevention and control measures can be effectively applied.

Unless control measures are practiced, internal parasites are likely to increase and cause severe injury or death of the horse. Injury or harm to the horse is related to (1) the kind of parasites, (2) number involved, and (3) the time over which the parasites are acquired.

Strongyles are the most injurious, whereas ascariids, bots, and pinworms are generally less harmful. A few parasites may be tolerated by the horse without apparent signs of ill effect, but larger numbers are quite apt to be harmful.

Acquiring a large number within a few days may overwhelm and kill a horse, however, getting the same number over a period of weeks or months is generally much less harmful.

Horses affected the most by parasites are young sucklings or weanlings and yearlings. Generally speaking, ascariid and pinworm infections are problems restricted to young horses. This is because resistance or immunity is built up by the time a horse is two or three years old, in most cases. On the other hand, strongyles and bots affect horses of all ages. Even so, the young are much more severely affected than older horses. See the Table for a brief outline of the location, ages affected, injury, and symptoms.

Parasite Life Is In Five Stages

Each species of parasite has a specific life cycle. Fortunately, from a control and treatment standpoint, the four species are rather similar. They involve five stages, two of which are inside the horse and three on the ground. Since all of the parasites pass out in the droppings, controlling the manure goes a long way toward ridding the horse of parasites.

The general life cycle starts with stage one where the eggs are passed out to the pasture; in stage two they are hatched and become infective; in stage three they have crawled up on grass and

High concentration of horses of mixed ages in a pasture with short grass encourages parasite build up.



Common Horse Parasites

	Location	Ages Affected	Injury & Symptoms
1. Strongyles	<ul style="list-style-type: none"> a. Larvae—arteries, liver and gut wall b. Adults—large intestine 	All ages but young especially susceptible.	<ul style="list-style-type: none"> a. retarded growth b. loss of weight c. poor appetite d. rough hair coats e. general weakness f. anemia g. recurrent colics h. death
2. Ascarids	<ul style="list-style-type: none"> a. Larvae—liver & lungs b. Adults—small intestine 	Young under 2 years old.	<ul style="list-style-type: none"> a. retarded growth b. pot bellied c. rough hair coat d. digestive upsets (colic) e. pneumonia f. death (ruptured intestine)
3. Bots	<ul style="list-style-type: none"> a. Eggs—on hair b. Larvae—tongue c. Bots—stomach 	All ages.	<ul style="list-style-type: none"> a. excitement (by flies) b. digestive upsets c. retarded growth d. poor condition e. death (stomach rupture)
4. Pinworms	<ul style="list-style-type: none"> a. Larvae—large intestine b. Adults—large intestine and rectum 	Larvae—all ages	<ul style="list-style-type: none"> a. digestive disturbances b. retarded growth c. tail rubbing

are ingested by the horse completing the development outside the animal. Stage four is the migration of immature worms through the tissue. Stage five is the reproductive stage where mature worms have occupied the intestinal tract.

Strongyles: Strongyle eggs (Stage 1) leave the horse via the feces and contaminate the ground, paddock or pasture. Under optimum conditions, strongyle eggs hatch and develop into infective larvae in one week (Stage 2).

These larvae are encased in a thin skin or sheath which protects them to some extent from the environment and they may live for several months. They are quite active and crawl up on grass or other pasture forage. Thus they become available to the horse and are consumed (Stage 3) in grazing. Some may get into water and are taken in when the horse drinks.

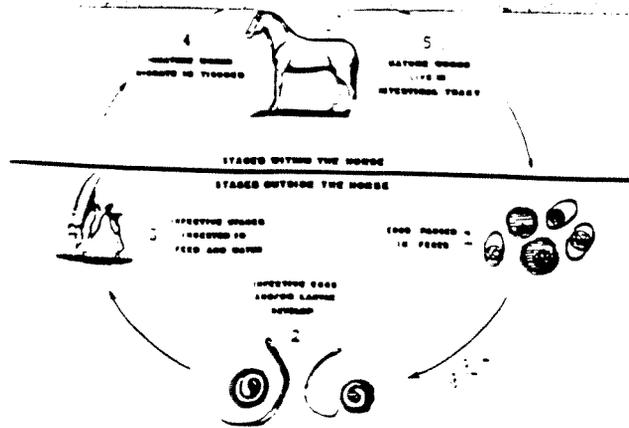
After strongyle larvae are swallowed, further development occurs but there are marked differences between large and small strongyles during this stage (Stage 4) of the cycle. Large strongyle larvae (*Strongylus vulgaris*) migrate extensively within the walls of the arteries that supply blood to the gastro-intestinal tract. These are commonly referred to as "bloodworms." Damage to the arterial walls by this parasite causes an aneurysm, an enlargement of the blood vessel.

Blood clots also form as a result of the blood worms migrating in the arteries. These clots shut off the blood supply to the intestine and result in colics. Complete blockage of the arteries may occur, and when this happens the animal dies. Thus, *S. vulgaris* is the most harmful and dangerous of all the internal parasites.

Development of the large strongyle larvae requires a long period of time—about six months—before they become sexually mature worms. These adult worms (Stage 5) are attached to the inner surface of the large intestine, and are quite active bloodsuckers. The females lay eggs which leave the body in the feces to complete the cycle.

Small strongyle larvae (Stage 4) penetrate the wall of the intestine. Their development causes nodule formations in the walls. This injury is much less serious than that caused by large strongyle larvae but is no less important because it interferes with digestion. Development of small strongyle larvae require about six weeks, relatively rapid compared with large strongyles. Mature, small strongyles (Stage 5) also live in the large intestine, but for the most part they are not attached to the lining and do not suck blood. The mature females lay eggs which are discharged in the feces.

Ascarids: The ascariid cycle is also initiated by the passage of eggs in the feces (Stage 1).



Five stages of parasite life cycle. Eggs incubate and hatch; horse eats larvae and immature worms feed on tissue; mature worms reproduce in horse's intestine.

Under favorable conditions ascarid eggs develop to the infective stage (Stage 2) in two weeks. Ascarid larvae remain in their thick, tough egg shells which are quite resistant to environmental conditions, so pastures, paddocks, and stables may remain infested for a matter of years.

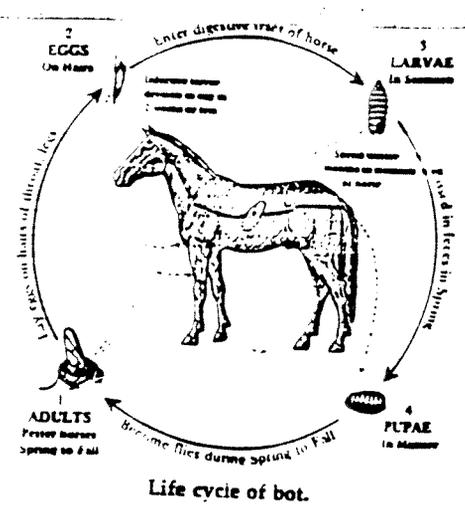
Infection of the horse (Stage 3) occurs while grazing or drinking materials contaminated with infective ascarid eggs. Inside the stomach the eggs hatch and the larvae penetrate the walls. They migrate (Stage 4) in the bloodstream to the liver and to the lungs. After a short period of development in the lungs they are coughed up, and swallowed. This brings them back to the small intestine where they develop into mature worms (Stage 5) and start egg production in about 10 weeks to complete the cycle.

Ascarids don't suck blood but they are the largest of the parasites of the horse, attaining lengths of 10 to 12 inches. Masses of ascarids may rupture the small intestine and result in peritonitis which usually kills the horse.

Pinworms: Pinworm eggs (Stage 1) are deposited under the horse's tail by rupture of the gravid females, or are voided in the feces. The eggs are sticky and adhere to stable walls, fixtures, fences, bedding, etc. Development to the infective stage (Stage 2) is quite rapid, requiring three to five days. The infective eggs are swallowed (Stage 3) in contaminated feed or water or by licking and chewing on walls, fences, etc.

Larval development (Stage 4) takes place in the large intestine, without penetration and migration in the tissues. Development of mature worms (Stage 5) takes about five months. The main damage from pinworm infection is the irritation to the anal region caused by the egg deposits from the ruptured females. Thus the affected horse rubs his rear quarters on any available object, and this results in a loss of hair from the tail.

Bots: The bot cycle of development is similar in many respects to that of the worm parasites. The adult bot flies attack the horse and deposit eggs (Stage 1) on the hairs, mostly on the legs, chest, neck, throat and around the mouth. De-



Life cycle of bot.

velopment of infective larvae in the eggs (Stage 2) takes one week. These eggs hatch and the larvae gain access to the horse's mouth (Stage 3) either by active migration or when the horse bites or chews at his legs, etc. Inside the mouth the larvae invade the tongue or gums.

After a developmental period of three weeks the larvae emerge, are swallowed, and attach themselves to the lining of the stomach. The larvae in the stomach are commonly referred to as "bots." They remain attached to the stomach for several months. In essence, this period spent in the stomach is a mechanism for overwintering.

In the spring and summer, the bots detach themselves from the stomach wall and are passed to the outside in the feces. Thence they are discharged, burrow into the ground and pupate. After about three weeks, the adult flies emerge from the pupae to complete the cycle. In temperate regions, there is only one cycle completed each year.

Prevention and Control

Sanitation and management practices should be used to assist in controlling internal parasite infections. Remember that foals are born free of internal parasites, they get them from direct or indirect contact with older animals that are carrying the infections. All of the worm parasites discussed here use feces or manure as the means of spreading the infections by contamination of feed and water supplies or the environment.

Transfer stages of these worm parasites do not actively seek the host to complete the infection process. Instead, they rely on chance to be picked up and swallowed. Thus only a very small percentage actually complete this hazardous step in the life cycle. To compensate for this, large numbers of eggs are produced by the female worms to start the transfer process.

Sanitation and management practices aid in controlling or minimizing spread of the infections. These practices assist the natural destruc-

transfer stages. Also, susceptible animals should have limited contact with contaminated pastures, paddocks, or stables.

The checklist here includes sanitation and management practices that have been found effective in reducing numbers of parasites.

Checklist for Parasite Control

1. Proper manure disposal.
 - Stable manure—compost before spreading on pasture, or spread on crop-land and other ungrazed areas.
 - Small corrals or paddocks—pick up all manure and compost or dispose as above.
2. Pasture Management
 - Practice frequent mowing and chain harrowing.
 - Avoid overstocking.
 - Rotate grazing as much as practicable.
 - Graze young animals separate from older horses.
 - Follow horses with cattle or sheep before returning to horses.
3. Feed
 - Provide mangers, racks or bunks for hay and grain.
 - Do not feed off of ground.
4. Water
 - Provide clean water supply
 - Avoid sources contaminated with feces.
5. Removal of bot eggs
 - Clip egg bearing hairs or sponge affected areas with warm water.

Treatment

In addition to the sanitation and management practices above, treating animals with specific drugs, commonly referred to as anthelmintics, is generally necessary to get effective control. These drugs remove the parasites from the intestinal tract. Thus the treated animal is relieved of the immediate damage or injury caused by parasites. But probably more important is removing the parasites which breaks the cycle. This serves to reduce contamination of the environment with transfer stages thereby limiting the spread of the infections and protecting animals from reinfection. In most cases, your veterinarian should administer anthelmintics. Follow his counsel and advice on a parasite control program.



Horses should be wormed regularly to help control internal parasites. Here a veterinarian uses a stomach tube in treating a horse.

A number of new drugs have been developed in recent years. Some are effective against all four of the important kinds of parasites and thus are referred to as "broad-spectrum" in action. Others are most effective against one or two of the kinds of parasites and these are known as "specific" anthelmintics.

Most drugs are best administered by stomach tube, a procedure requiring a veterinarian's knowledge and skill to obtain most effective action. Some of these drugs, and others, can be given by mixing the proper dose in the grain ration. When the feed method is used, give special attention to see that the medicated grain is consumed by the animal if you expect results.

The veterinarian's services can include a microscopic examination of fecal samples for an indication of the kinds and relative numbers of worm parasites in the animals. This, along with other information such as numbers and ages of animals, type and amount of pasture, provides the veterinarian with a basis for selecting drugs and frequency of treatments for the particular situation.

With main emphasis on strongyle control, only one or two treatments per year may be needed. Whereas others with factors or circumstances favoring heavy infections may take as many as six treatments per year to maintain effective control. Include all horses on a farm in the control program. New stock or transient boarders should be treated and quarantined for a week or so before they are placed on pasture or otherwise allowed to mingle with resident horses.

Parasitic infections are tough to deal with. Success in controlling them must be a determined and continual effort. Internal parasites are the most common danger to the health and well-being of horses, and a constant battle must be waged.

This educational material is provided for use in official 4-H projects conducted by the Cooperative Extension Service of the State Land-Grant Universities and U.S. Department of Agriculture cooperating.



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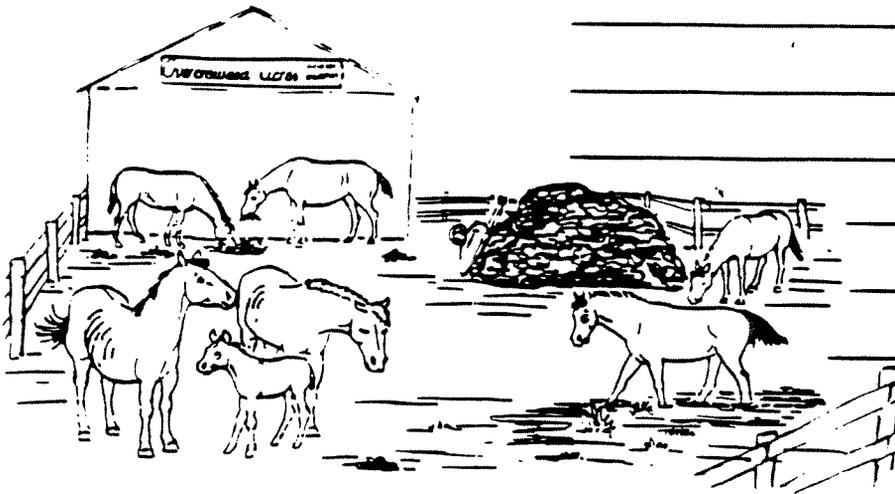
WORKSHEET

by Jane S. Tuttle

Controlling Internal Parasites

Q. Are these horses heavily parasitized? How can you tell?

A. _____



Q. What are the most harmful internal parasites of horses? Which one is the larval (maggot) stage of a fly? What classification do the others fall into?

A. _____

Q. Fill in the blanks:

A. Usually _____ are the most dangerous. _____ horses are most susceptible to parasites and suffer the greatest damage. _____ and _____ are usually restricted to young horses since older horses acquire immunity with age. _____ and _____

Q. Fill in the parasites and their symptoms:

<i>Parasite</i>	<i>Location</i>	<i>Ages affected</i>	<i>Symptoms</i>
1. _____	Larvae: arteries, liver & gut wall Adult: large intestine	All ages, but young especially susceptible	_____
2. _____	Eggs: on hair of body Larvae: tongue Older larvae: stomach	All ages	_____
3. _____	Larvae: liver & lungs Adult: small intestine	Larvae: all ages Adult: young	_____
4. _____	Larvae: large intestine Adult: large intestine & rectum	Larvae: all ages Adult: young	_____

Q. For each parasite in the table above, what is the main damage?

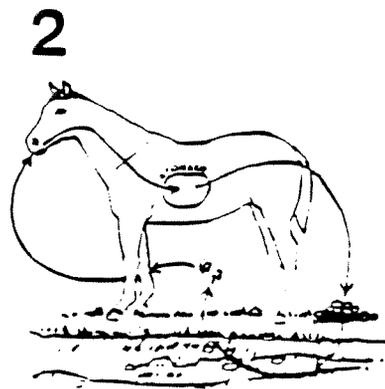
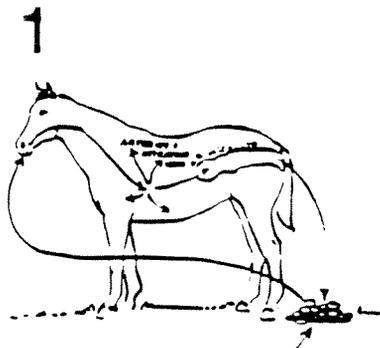
- A.** 1. _____

 2. _____

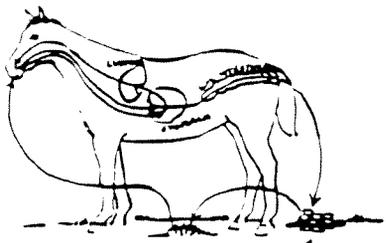
 3. _____

 4. _____

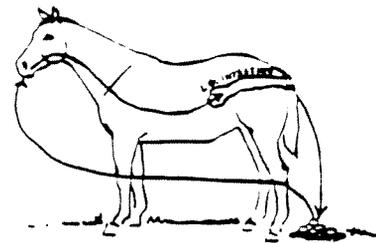
Q. For each parasite life cycle, fill in the name of the parasite and each of its stages:



3



4



Q. Wild horses were seldom bothered by massive internal parasite infestations. Why?

A. _____

Q. What are "bloodworms" and why are they particularly dangerous?

A. _____

Q. Is there any value in fecal sampling by a veterinarian?

A. _____

Q. Fill in the blank:

A. The four major internal parasites of horses all rely on _____ to spread infections.

Q. What is the most effective method of administering drugs for internal parasites?

A. _____

Q. What sanitation measures should be taken to help control internal parasites?

A. _____

WORKSHEET



ANSWERS

How Can You Tell—These horses are probably heavily parasitized. The pasture overcrowded with horses of all ages. They are in poor condition. The swampy area promotes unsanitary conditions; horses may drink contaminated water, and dirty water promotes breeding ground for flies, mosquitoes. Improper manure handling promotes kinds of internal parasites and infests the area with eggs and infective stages. The horses infect themselves by being fed from the ground; hay and grain should be fed in off-ground containers.

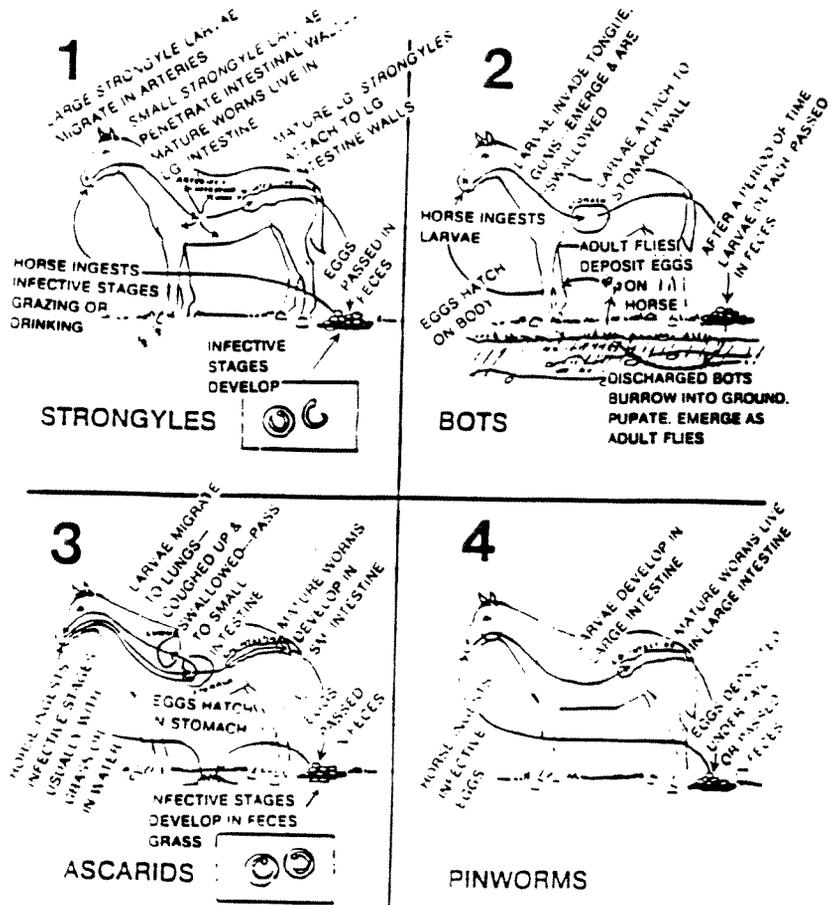
Most Harmful—Strongyles, ascariids, pinworms, and bots; **Maggot**—bots; **Classification**—roundworms.

Blanks—Strongyles; young; ascariids and pinworms; strongyles; bots.

Parasites And Symptoms—1. Strongyles: Retarded growth, weight loss, appetite, rough coat, general weakness, anemia, recurrent colics, death. 2. Bots: Excitement (by flies digestive upsets, retarded growth, poor condition, death. 3. Ascariids: Retarded growth, pot belly, rough coat, digestive upsets, pneumonia, death. 4. Pinworms: Digestive disturbances, retarded growth, tail rubbing.

Main Damage—1. Damage to arterial walls; cause blood clots; injure intestinal walls. 2. Damage to stomach walls. 3. Penetrate liver and lungs. May cause intestine to rupture. 4. Irritation in anal region.

Life Cycles—



Wild Horses—They were seldom bothered because their range was much larger. Groups of horses did not graze the same area for long periods of time. Thus the chance of reinfestation was lower.

Bloodworms—Bloodworms are large strongyles. They can damage or block arteries, and/or cause blood clotting.

Sampling—Fecal sampling is valuable. It determines which parasites are present, and prevents unnecessary medication of horses, saving time, money and stress of the horse.

Fill In—Feces (manure).

Most Effective—Stomach tube.

Sanitation Measures—Some sanitation to include: Proper manure disposal (compost, spread on crop land); keep stable yard free of manure; clip pastures; chain narrow pastures; rotate grazing; separate young horses from older; follow horses with cattle or sheep if pastures available; do not feed on ground; provide clean water in clean containers; clip bot eggs from horses' bodies.

GAITS OF THE HORSE

The rhythmic characteristic movement of a horse's feet and legs in motion are called gaits. The three natural gaits of the horse are the walk, trot, and gallop. The rack and slow gait of the American Saddle horse, running walk of the Tennessee Walking horse, and the pace of the Standardbred may be natural or acquired. A natural gait is one that is performed by natural impulse and without training. The acquired gaits are the result of specific training and practice. The acquired gaits are the canter, rack, and the slow gaits. The slow gaits are the stepping pace, the running walk, the fox trot, and the amble.

Walk

The walk is a slow, natural, flat footed, four beat gait. Each foot takes off from and strikes the ground independently of the other three feet. It is known as the foundation gait, as the horse may be asked to change to other gaits while working at the walk. The sequence of hoof beats after the horse is in motion can be described according to this pattern: right fore, left rear, left fore, right rear. Although a natural gait, it is one that can be improved with training.

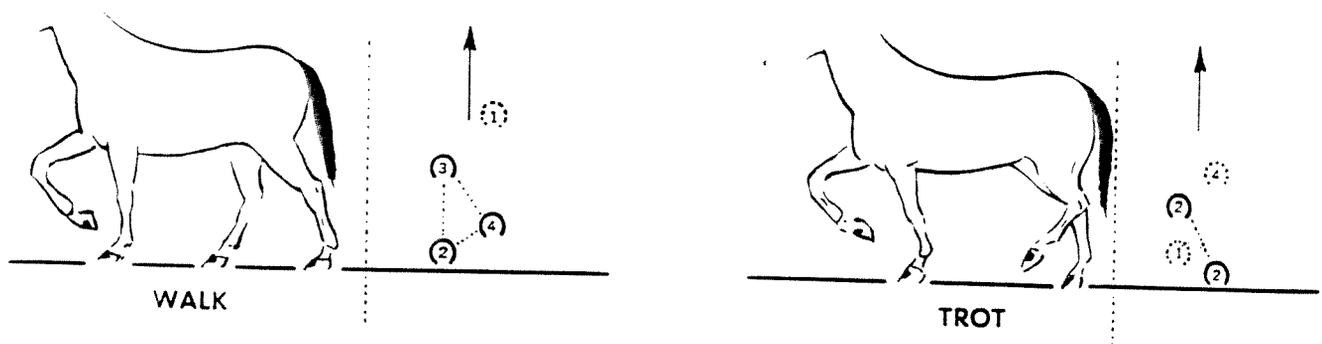
The horse must move straight and true at the walk. The feet of the straight moving horse point and move in the exact direction the horse travels. This horse moves efficiently as the shortest distance between two points is a straight line. The walk must show vigor and be brisk, with a stride of reasonable length in keeping with the size of the horse. The American Saddle horse must pick up his feet with energy, displaying a proud walk. His ankles and knees are easily flexed, while the hocks should be carried well under his body producing high action and animation. Horses with a short, stubby stride are rough to ride and are more prone to soreness and other faults. Horses whose hind hoof prints contact or over-reach the front hoof prints have good length of stride and absorb more road shock than those having shorter strides. Horses with a longer stride move with less effort in covering greater distance.

At the walk a horse never has more than three nor less than two feet bearing weight at the same time, making up a triangular base of support. A well trained horse should walk at least four miles an hour.

Trot

The trot is a rapid two beat diagonal gait. The forefoot on one side and the opposite hind foot take off and strike the ground at the same time. The horse works from one pair of diagonals to the other pair. The weight of the horse is distributed first by one diagonal and then the opposite diagonal. Then all four feet are off the ground at the same time for a moment. The trot should be square balanced and springy with a straight forward movement of the feet. The Hackney displays the collected trot with extreme flexion of knees and hocks that produces a high stepping gait. The Standardbred exhibits the extended trot with the length and rapidity of individual strides. The jog-trot is a slow, smooth, ground covering gait exhibited in western classes.

At a sitting trot a horse moves at approximately six miles per hour. At a posting trot he travels at approximately eight miles per hour.

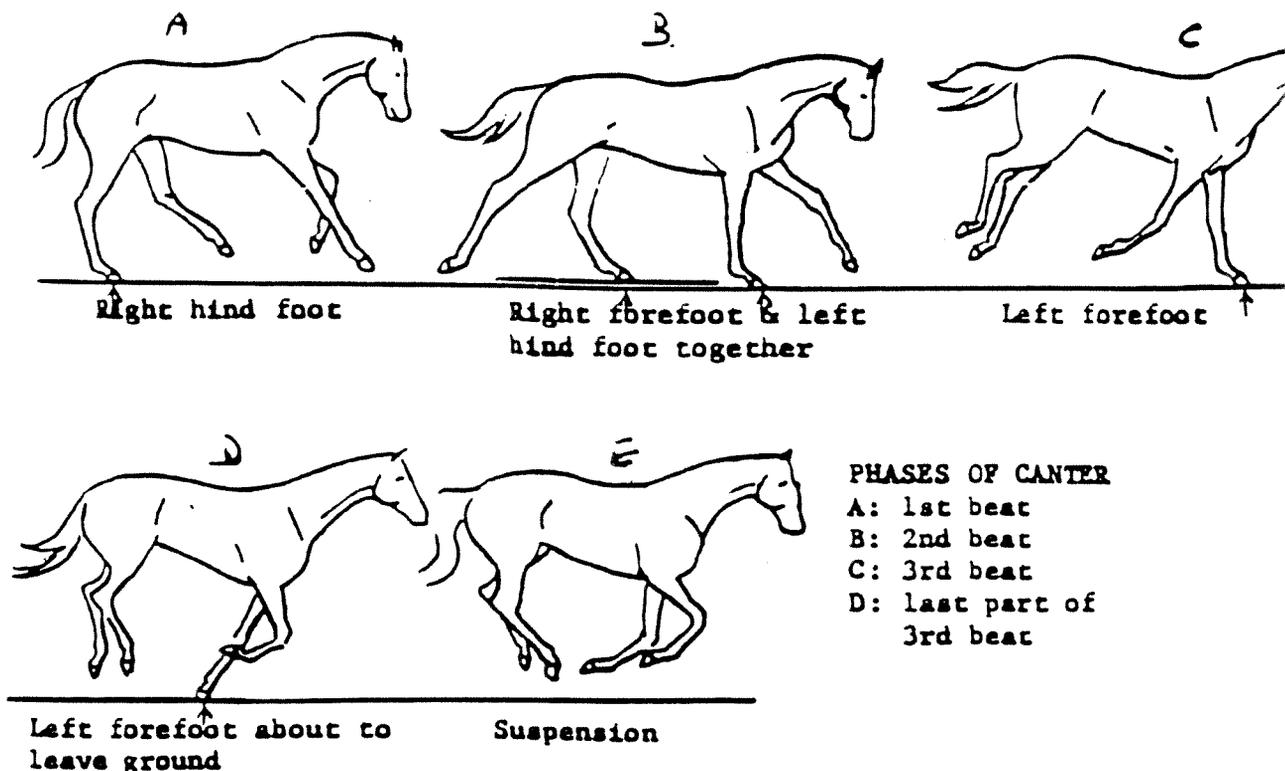


Canter

The canter is an easy rhythmical three beat gait. It is not a straight forward gait as the walk, but is a slight diagonal movement, either right or left. It is executed with either a right or left "lead".

The canter starts with one hind foot striking the ground, then the other hind foot and diagonal front foot strike the ground together followed by the remaining front foot striking the ground. The hoof beats of a horse cantering correctly to the left are (1) right hind, (2) the diagonal left hind and right front together, and (3) left front. The correct sequence of beats in cantering to the right are (1) left hind, (2) the diagonal right hind and left front together, and (3) right front. The two unpaired legs that beat alone bear more weight and are subject to more strain than the diagonal legs that beat together. The lead should be changed at intervals because of the added strain on the legs and feet that strike separately. A horse can execute a sharper turn with greater ease and start quicker if he leads with the inside (correct) leg lead. The lope is a medium fast, collected canter exhibited in western classes.

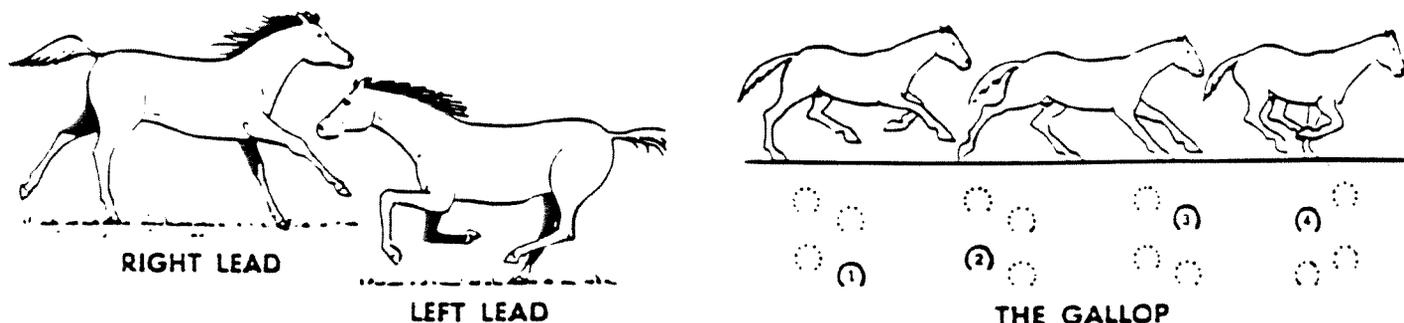
A simple change of lead is executed by bringing the horse down to a trot before picking up the opposite lead. A flying change of lead is executed during the moment of suspension without breaking the gait. At a canter a horse moves at approximately 10-12 miles per hour.



Gallop or Run

The gallop is a four beat gait. The gait is similar to the canter except that the paired diagonals do not land at the same time. The hind leg hits just before the fore leg. The lead limbs bear the full weight of the horse. In the left lead, the sequence of beats

is (1) right hindleg, (2) left hindleg, (3) right foreleg, (4) left foreleg. A period of suspension follows the four beats. If the horse changes leads it will do so during the moment of suspension. A horse moves at approximately 14-16 miles per hour at a hand gallop, and 18-20 miles per hour at an extended gallop.



Stepping Pace

This is a slow, lateral, four beat gait. Each of the four feet strike the ground at separate intervals. In the take off, the lateral hind and front feet start almost together, but the hind foot strikes the ground ahead of the front foot on the same side. The horse moves with his weight well back on the hind quarters and with high action in front. It is a modified pace without the rolling action of the true pace. The sequence of beats is right hind, right front, left hind, and left front. This is the fourth gait of five-gaited show horses.

Running Walk

This is a natural slow gait of the Tennessee Walking horse. It is a diagonal four beat gait. Each foot takes off and strikes at separate intervals with the front foot striking the ground before the diagonal hind foot. The hind quarters propel the horse in motion. The hind feet over-reach the front feet from several to over 36 inches producing a smooth gliding motion. This gait is very comfortable to both horse and rider. Front action is desired with little hock action, as this would prevent his long overstep and characteristic walk. The Walking horse must flick his ears, nod his head, and chomps his bit in rhythm with his action to be genuine. Normal travel expected of the horse is 7 to 8 miles per hour.

Fox Trot

This gait is a slow, short, broken, somewhat uncollected nodding trot. The hind foot strikes the ground an instant before the diagonal front foot. It is not as comfortable to ride as the running walk or the stepping pace.

Amble

The amble is a lateral gait. It is different from the pace by being slower and more broken in cadence. It is not a show gait. The hind foot may land slightly before the fore foot.

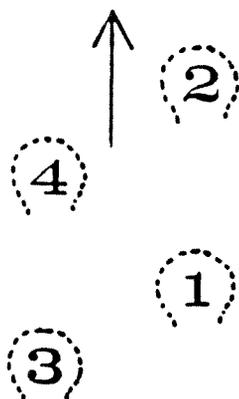
Rack

The rack is a fast, flashy, evenly timed, four beat gait. The feet start and stop at the same intervals of time of each other. The sequence of beats is similar to the sequence of the stepping pace. It is characterized by considerable knee action and extreme speed. The squatting form and climbing action of the stepping pace are apparent. The front legs appear to trot and hind legs appear to be

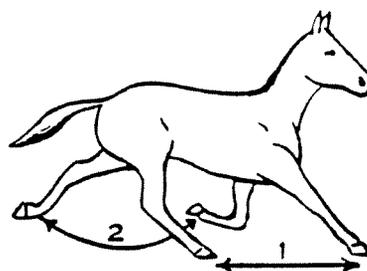
pacing with rather stiff back action. The gait must be performed with ease and grace and ample height to the stride but with form and action maintained. Speed is not as necessary for the 3-gaited horse as it is for the five-gaited horse. The horse can rack for only several minutes without breaking as practically every muscle is used in the gait. It is an easy gait to ride. It is the fifth gait requested of the American Saddle horse.

Pace

The pace is a fast, two beat gait. The front and hind feet on the same side start and stop at the same time. The feet rise little above the ground. All four feet are off the dirt for a moment. The base of support is always on the two lateral legs. Pacers have the ability to start quickly at considerable speed. The pace does not produce the concussion evident in the gallop or run. It produces more or less side or rolling motion. The pace is a speed gait rather than a road gait.



THE STEPPING PACE



THE PACE

Important Features of a Stride

1. Balance - the ability of a horse to control his action in order to travel collectedly and in correct form.
2. Directness - the line in which the foot is carried during the stride.
3. Height - the amount of foot elevation in the stride, determined by the radius of the arc described.
4. Length - the distance from the point of breaking over in preparation for flight in a stride to the point of surface contact of the same foot.
5. Rapidity - the time used in taking one stride.
6. Regularity - the precision sequence with which each stride is taken in turn.

Definitions

Diagonal gait - is one in which the front foot and opposite hind foot take off and stop at the same time. The legs and feet move in diagonal pairs in performing the gait. (Trot)

Good mover - is the expression used when horses gaits are executed in a smooth, collected manner, and action is not excessive or labored.

Rough or Hard gaited - is the expression used when the stride lacks spring or action, therefore causing unnecessary rider fatigue.

Flashy or High gaited - refers to the action when a horse folds his knees, with the forearm nearly horizontal momentarily, flexes the hock noticeably, and lifts his body high from the ground.

Lateral gait - the legs and feet move in lateral pairs in performing the gait. The front and hind feet on the same side of the horse start and stop at the same time. (Pace)

Action - The way in which the horse lifts his front and hind feet, flexing or bending his knees and ankles.

Stride - the distance from imprint to imprint by a horse's foot when completing one step.

Posting - means rising slightly up and forward out of the saddle on alternate beats of the trot. Saddle and Hunt seat riders must learn the rising or posting trot. Western riders do not post. When circling, it is important to be on the correct diagonal. When circling clockwise rise as the left front leg of the horse is moving forward. When circling counterclockwise rise as the right front leg moves forward. If the rider needs to change diagonals he should sit one beat of the trot. The reason for being on the correct diagonal is that the horse's legs are in the best position to bear the full strain of the rider's weight.

Members worksheet for Gaits of the Horse:

Name the three gaits natural to most horses:

(1) _____ (2) _____ (3) _____

Name two additional natural gaits and the breeds that exhibit them:

(1) _____ (2) _____

What is the difference between leads and diagonals? _____

What is a flying change of lead? A simple change? _____

What is "posting"; when is it done and who does it? _____

Is it proper for a Western rider to post in an equitation class when asked to perform an extended trot? _____

How does a posting rider change diagonals? _____

When posting, how can you tell if you are on the correct diagonal? _____

Match the description at the left with the gait on the right:

- | | |
|---|-----------|
| 1. Three beat gait | a. Walk |
| 2. Two beat diagonal gait | b. Trot |
| 3. Two beat lateral gait | c. Canter |
| 4. Slow four beat gait | d. Gallop |
| 5. Fast extended four beat gait | e. Pace |
| 6. Fast four beat gait with only one foot on the ground at a time | f. Rack |

Give the approximate average speed of the following gaits:

Flat-footed walk _____

Running Walk _____

Slow trot or jog _____

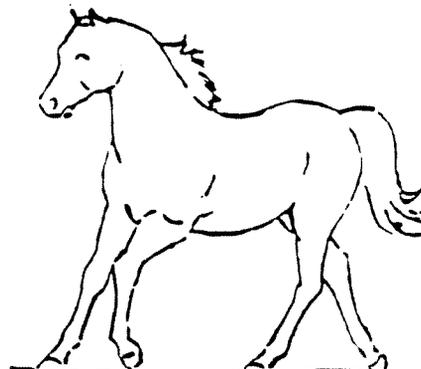
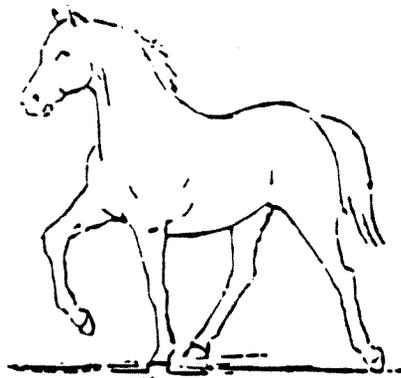
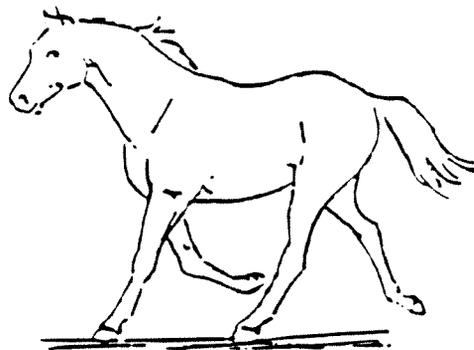
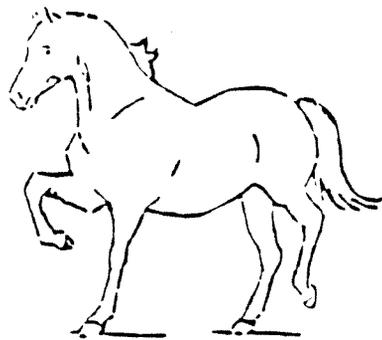
Extended trot _____

Slow Canter or lope _____

Hand gallop _____

Extended gallop _____

Identify the gait performed by each horse below:



CONFORMATION

Conformation includes type, muscling, balance and structural smoothness. It also includes the form and proportion of the various parts of the body.

When evaluating a horse's conformation, you must:

- Know the parts of a horse and their location
- Know which parts are most important and the most desirable form of each part
- Visualize the ideal horse, perfect in all respects
- Make keen observations of horses and compare them to his ideal
- Weigh the good and bad points of each horse
- Develop a system of examining horses so you do not overlook important points.

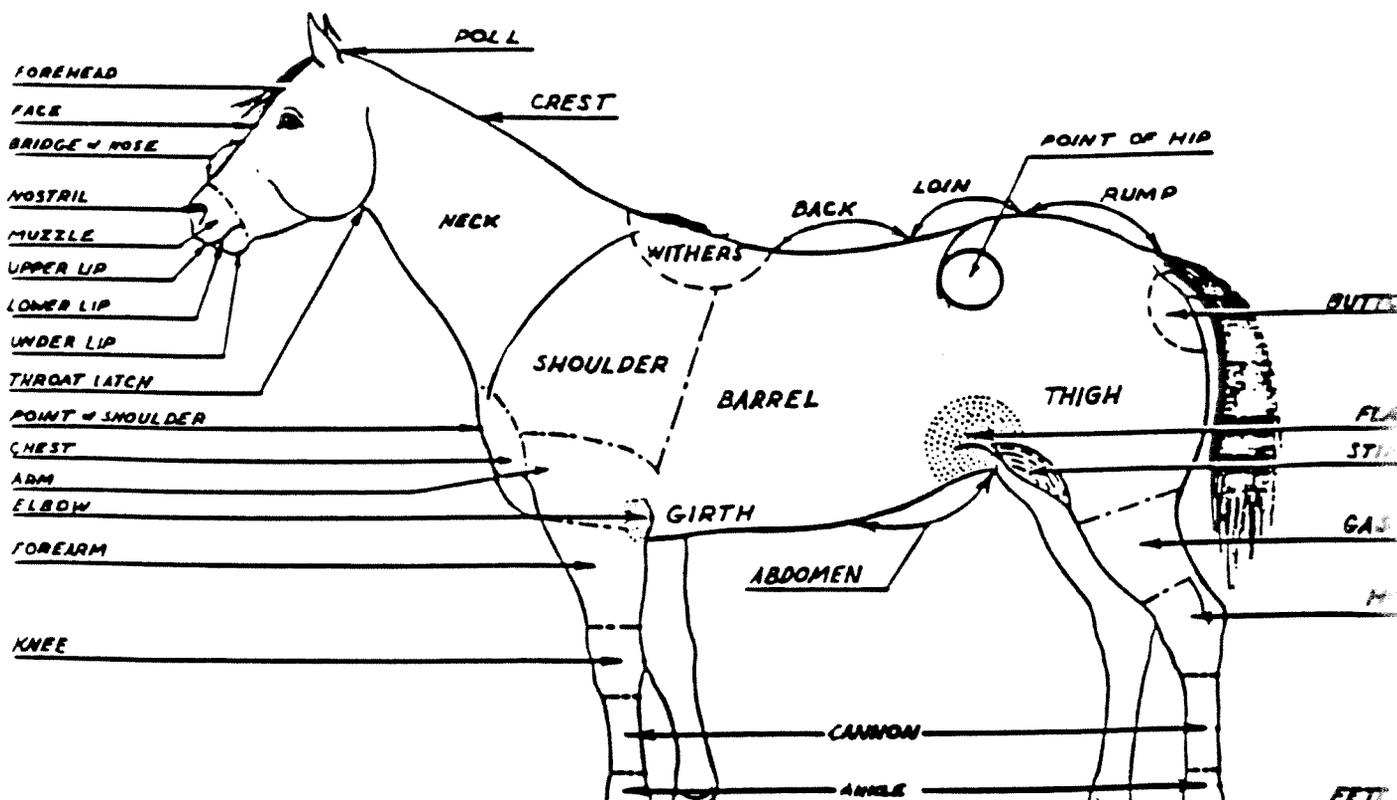
Type depends upon the function a horse is to perform.

Desirable type in a saddle horse requires a horse of medium size and weight, generally ranging in height from 14.2 to 17 hands and weighing from 900 to 1300 pounds, depending on the breed. This horse should have a long, sloping shoulder, a long croup, a fairly short back, and a snort, strong coupling. The bottom line is much longer than the top line, allowing a long stride.

Both fore and rear quarters show an adequate amount of muscling for the breed. The chest is deep and the ribs well sprung.

Legs are clean, flat-boned and medium to short in length.

Muscling. Both the quantity and the quality of muscle are important. Muscles should bulge and be distinctly visible on the surface under the skin. The muscles in the arm, forearm, chest, stifle and gaskin should be smooth, long and well attached. Long tapering forearm and gaskin muscles that tie in well at the knee and hock both inside and outside are preferred to short, "bunchy" muscles.



Balance. A balanced appearance comes from the forequarter and hindquarter appearing to be of nearly equal size and development. They "fit" together well. A heavy-fronted horse that is narrow and shallow in the rear quarter is not balanced, neither is a heavy-quartered horse that is narrow, flat, and shallow in the front.

Smoothness. When all the parts of a horse blend together well and the muscling is long and tapering, then the horse has smoothness. The head and the neck should be in proportion, and the neck should blend smoothly into the shoulder. The shoulder and forerib should fit smoothly together, and the coupling should be short and strong so that the top line is strong and the hips tie in smoothly. A horse with a thin neck and a sharp break at wide, prominent shoulders is not smooth. One with a weak coupling and jutting hips is not smooth, nor is a horse that is extremely "bunchy" in his muscling.

Head. Each of the light horse breeds requires slightly different characteristics about the head. In general, the head should be well proportioned to the rest of the body, refined and clean-cut, with a chiseled appearance. A broad forehead, with great width between the eyes is desired. The face should be straight as compared to convex (Roman nose) or concave (dished).

The eyes, set wide-apart, should be large and clear. The ears should be medium to small in size, set wide, and active. The muzzle should be small, and the nostrils large and sensitive. The upper and lower teeth should meet when biting. A contrast is the parrot mouth where the lower jaw is too short.

Neck. The head should join the neck at about a 45 degree angle with a distinct space between the jawbone and the neck. This is the throat latch. It should be clean-cut.

Depending on the breed, the neck should be medium in length to fairly long, the head carried either high or at a moderate level. The neck should be slightly arched, lean and muscular, and blend smoothly with the shoulder. A high-arched or heavy-crested neck is undesirable, as is ewe-necked (concave).

Shoulders. The shoulder is long and set at an angle of about 45 degrees from the withers down to the point of the shoulder. Shoulders should be smooth yet well-muscled. The withers should be well-defined, extend well-back beyond the top of the shoulder, and be as high as the hips. Low, flat withers do not hold a saddle well.

Chest and Forelegs. The chest is deep and fairly thick, with this depth and thickness extending back into the forerib and barrel. A deep heart girth and well-sprung foreribs give room for good respiratory and digestive capacity. The forelegs are wide-set and blend smoothly into the shoulder. The forearm muscle is large and tapers into the knee when viewed from the back or front. The knee joint should be clean and the pastern medium in length. The pastern and the hoofs are set at about a 45 degree angle to the ground.

Back, Loin, and Croup. The top-line should include a short, strong back and loin, a long, nicely-turned and heavily muscled croup, and a high well-set tail. The loin (coupling) must be short and very strongly muscled because it supports the weight of the saddle and rider and lifts the forequarters when the horse is in motion.

Rear Quarters. The rear quarters should be thick, deep, and well-muscled when viewed from the side or rear. This muscling shows in thickness through the thigh, stifle, and gaskin. The hind legs are muscled both inside and out, with the gaskin tied in low in the hock joint. The hocks are wide, deep and clean.

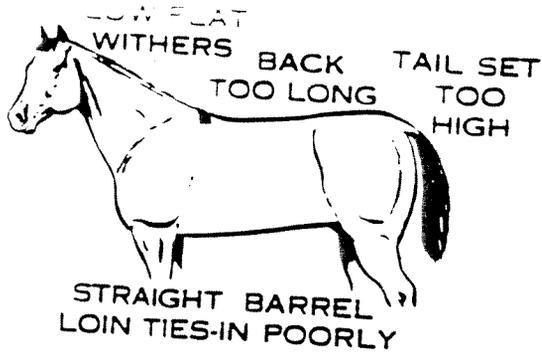
Bone, Legs. The cannon bones should be relatively short, flat, clean, and free from fleshiness and puffiness. The bone should be of adequate strength and substance to support the horse during strenuous performance.

The hock should be large, clean-cut, wide from front to back, and deep. Gaskin muscles should tie-in very strongly and low on the hock. The knee should be wide when viewed from the front, deep, and clean-cut. When viewed from the front or rear the knees and hocks should be bisected by an imaginary vertical line down the center of the legs. Tendons below the knees and hocks appear sharply separated from the cannons, giving the leg a flat appearance.

All four legs are set squarely under the body. From the front view, the forelegs are parallel with the feet pointing straight ahead. From the side view, a line drawn perpendicular to the ground should bisect the foreleg all the way from the shoulder to the rear of the hoof. From the rear view, the hocks should point straight back or turn in very slightly. The hind legs should set well under the horse and the feet point straight ahead. The hock should be set at the correct angle. Too much angle at the hock with the feet set too far under the body is called "sickle-hocked". Too little angle is called "post-legged".

Feet and Pasterns. The hoof should be well shaped, roomy and balanced in size with the horse. The heel should be deep, wide, and open. The hoof should appear tough and durable.

The pasterns should be medium in length and set at approximately 45 degrees to the ground. The hoof should have the same angle as the pastern. If the pastern is too straight, it does not cushion the shock of the foot striking the ground and can lead to serious damage as well as a rough ride.

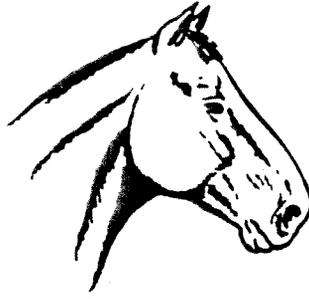


ALL THESE HORSES HAVE UNDESIRABLE CHARACTERISTICS

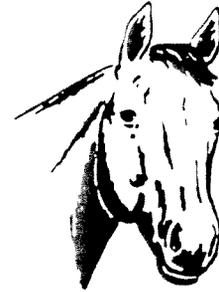
GOOSE RUMP



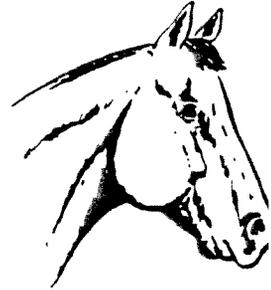
TAIL SET TOO LOW



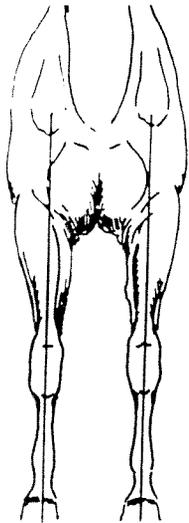
ROMAN NOSE



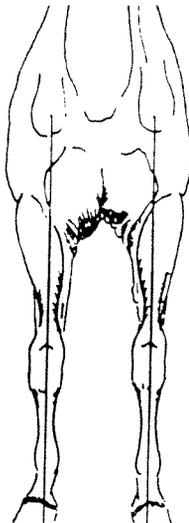
PIG-EYED



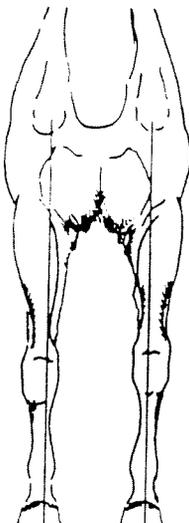
PARROT MOUTH



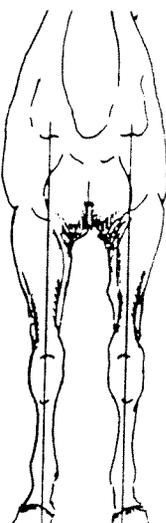
Ideal Position



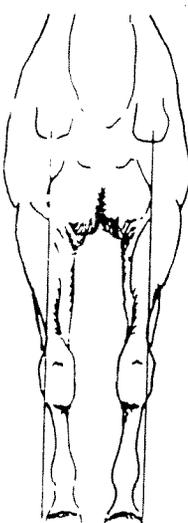
Toes Out



Bow Legged



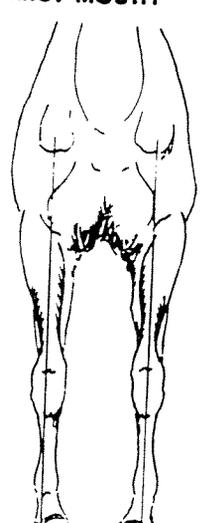
Narrow Chested
Toes Out



Base Narrow
Stands Close



Knock Kneed



Pigeon Toed

Vertical line from point of shoulder should fall in center of knee, cannon, pastern, and foot



Ideal Position



Camped Under



Camped Out



Knee Sprung



Calf Kneed



Ideal Position



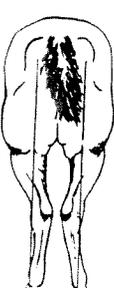
Stands Wide



Stands Close



Bow Legged



Cow Hocked

Vertical line from point of buttock should fall in center of hock, cannon, pastern and foot.



Ideal Position



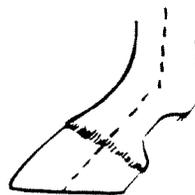
Stands Under



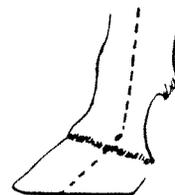
Camped Out



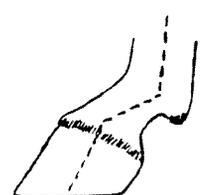
Low Toes



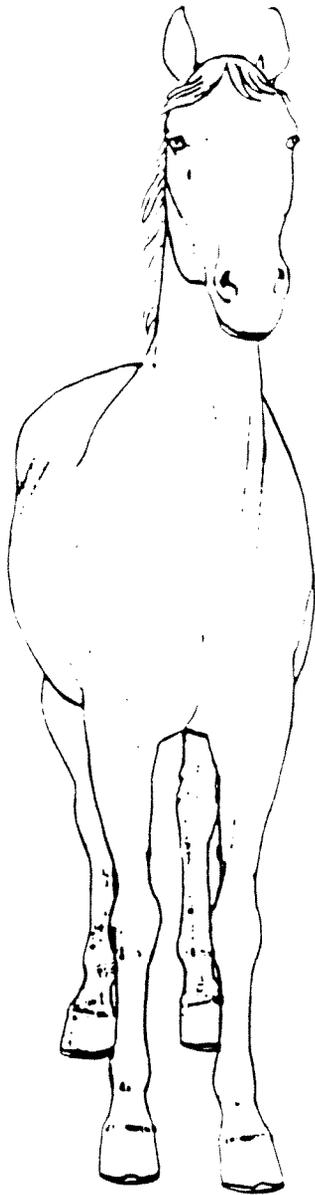
CORRECT



STEEP



WEAK



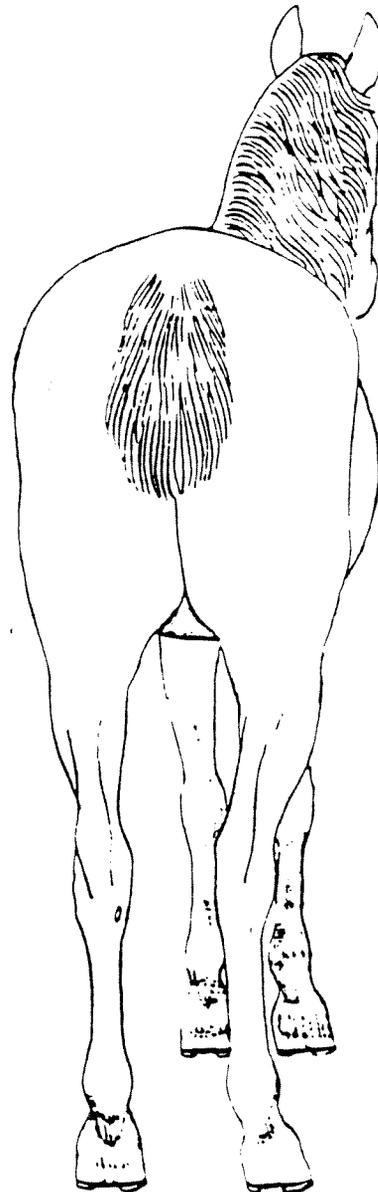
As you view the horses from the front, compare:

- Muscling (thigh, stifle, gaskins)
- Straightness of rear feet and legs
- Quality and smoothness
- Width

As you view the horses from the rear, compare:

- Muscling
- Straightness of front feet and legs
- Breed character
- Quality and smoothness
- Depth and width of chest

You will be given a chance to check the action



of each horse at the walk and trot as they are individually moved toward and away from you. Check for:

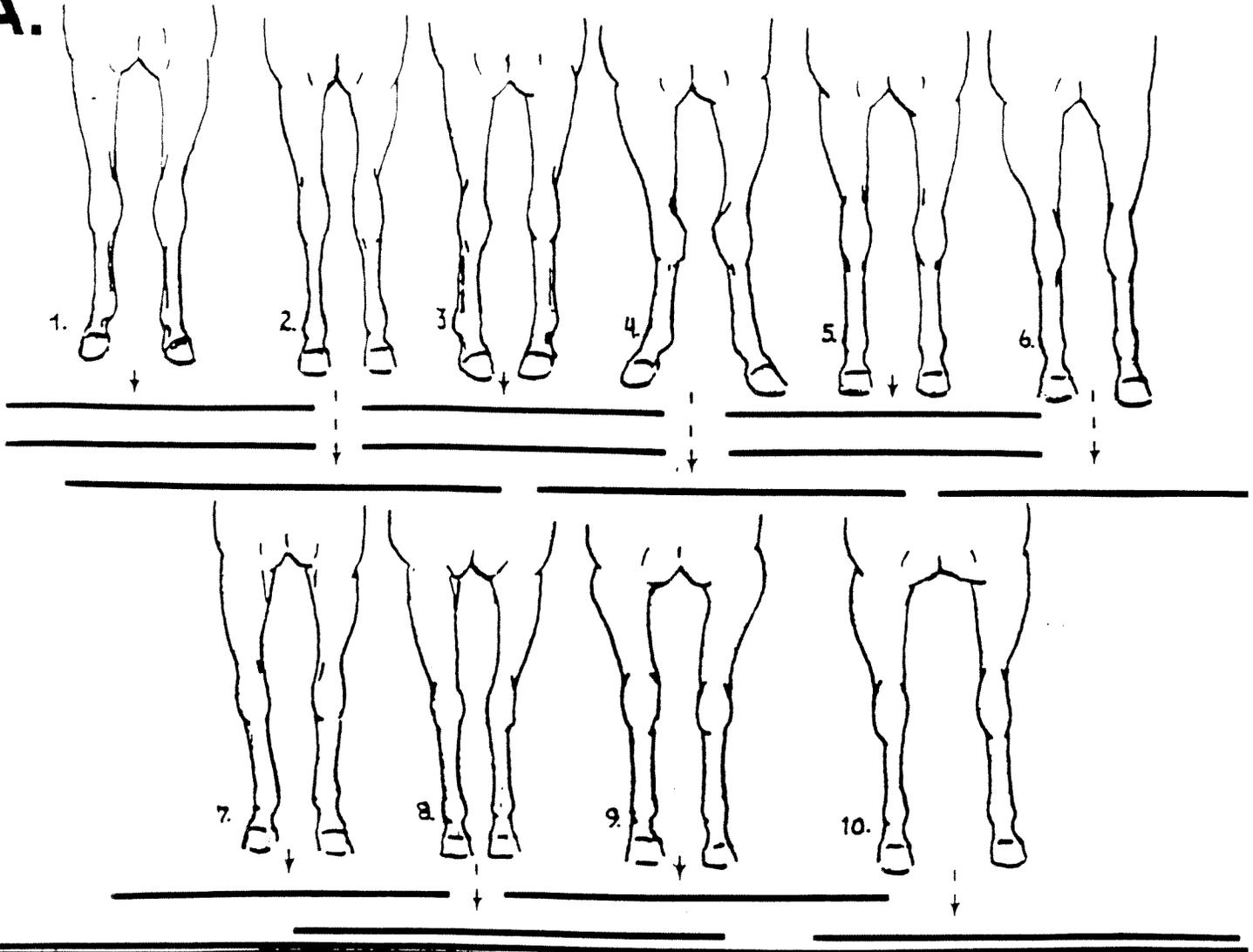
- Straightness of action
- Ease and smoothness of action
- Lameness

You will be given a chance to move in around the horses for close inspection. Check for:

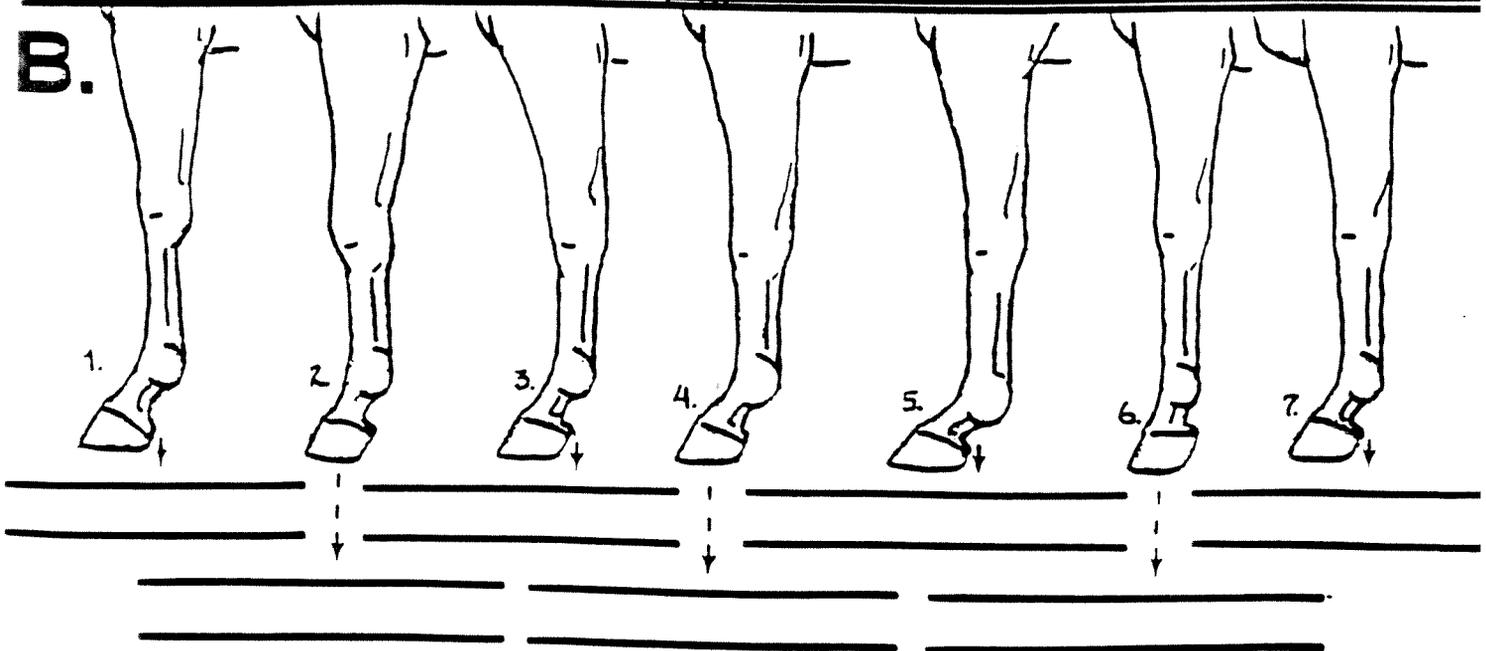
- Unsoundness
- Muscling
- Quality of feet and legs
- Withers

One drawing in each of the following sets is most nearly correct. Identify these four. For the remaining drawings, give any major conformation fault(s) apparent in each.

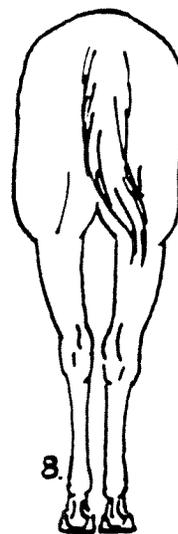
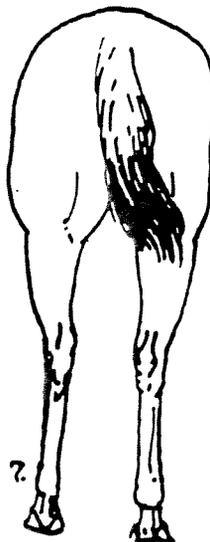
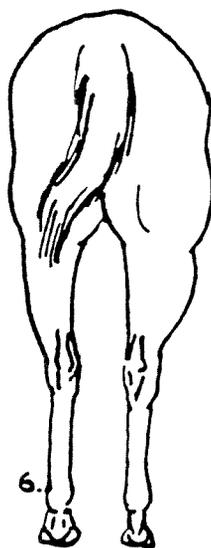
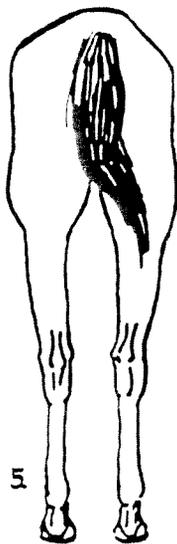
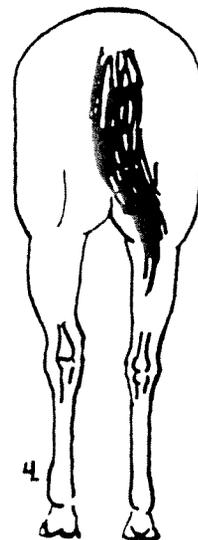
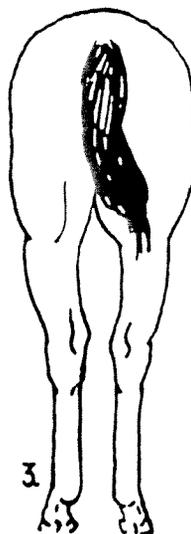
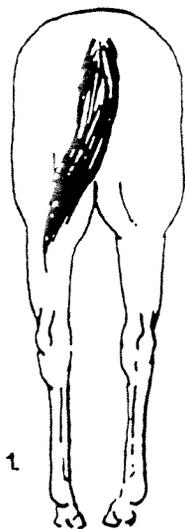
A.



B.



C.



D.

