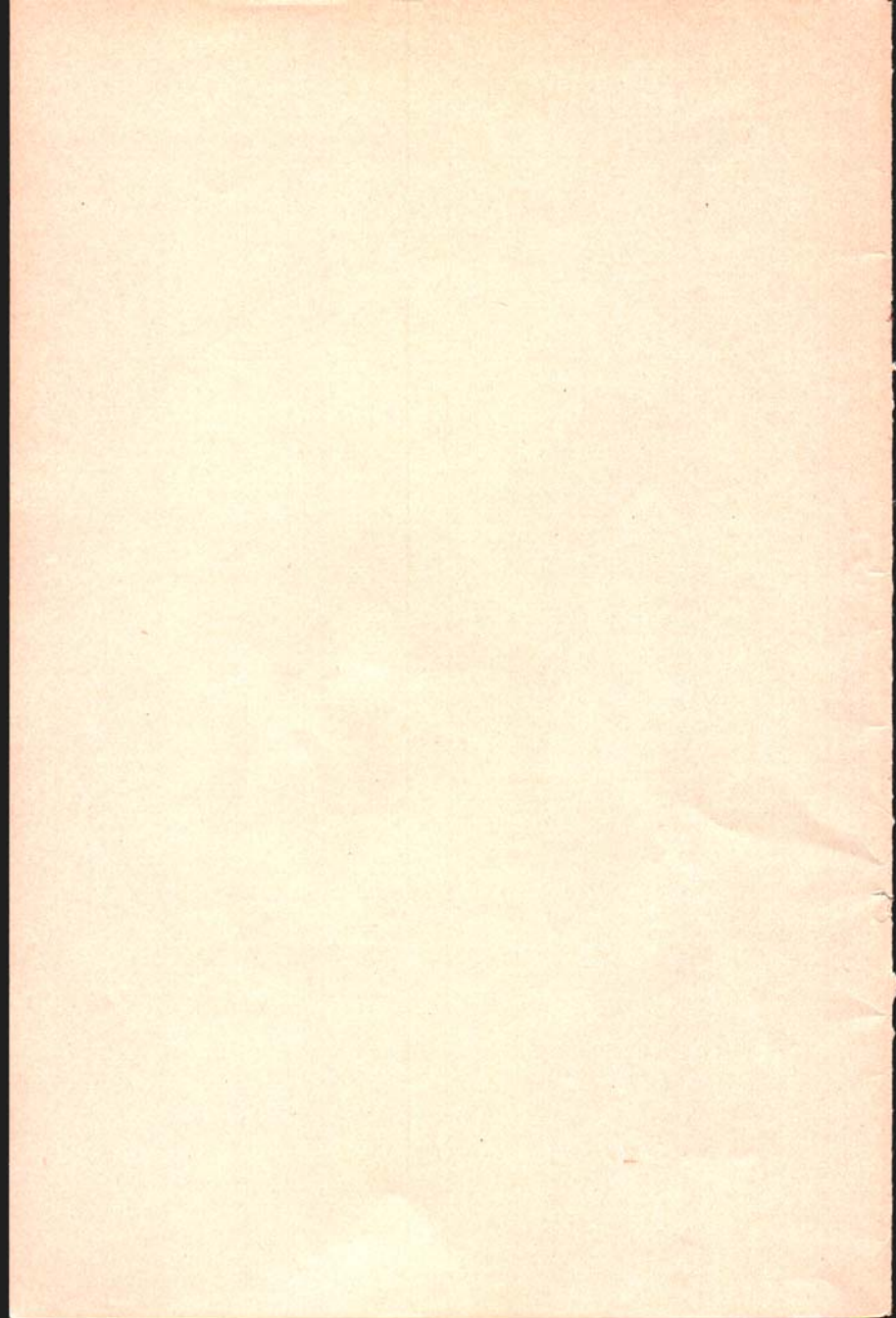


EXTENSION BULLETIN 330

# THE SOUND HORSE



Cooperative Extension Service  
**MICHIGAN STATE UNIVERSITY**  
OF AGRICULTURE AND APPLIED SCIENCE  
East Lansing



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# The Sound Horse

By H. F. MOXLEY<sup>1</sup> and B. H. GOOD<sup>2</sup>

The purpose of this bulletin, dealing primarily with the age and soundness of horses, is to present information useful in identifying the common unsoundnesses and vices of horses, means of identifying age, and the important points in evaluating a horse's structure.

Soundness effects the economy of the horse more than any other class of livestock since his efficiency in performing his task is dependent upon his ability to move.

This bulletin succeeds Extension Bulletin 197, *Guide For Horse Buyers* by R. S. Hudson, former head of the Farm and Horse Department, and Dr. J. P. Hutton, former head of the Department of Surgery and Medicine, both Professors Emeritus at Michigan State.

<sup>1</sup>Extension Specialist in Animal Husbandry.

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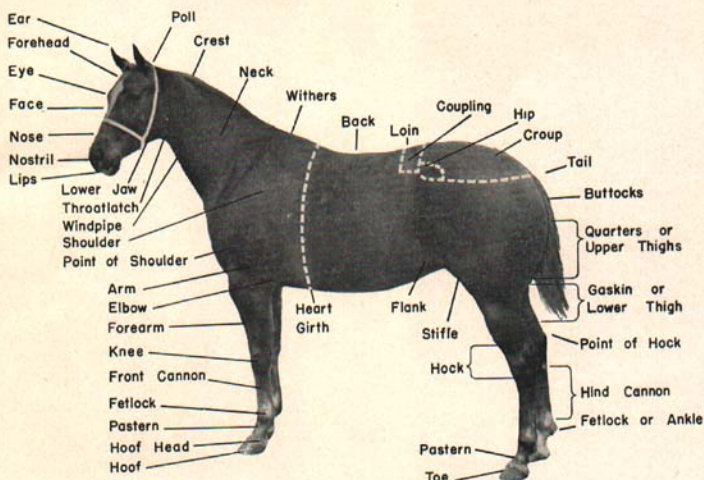
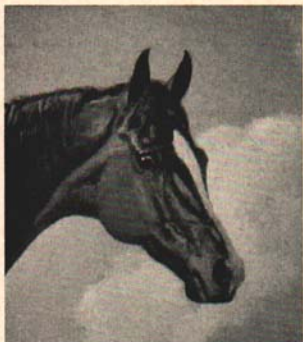


Fig. 1. Parts of the horse.



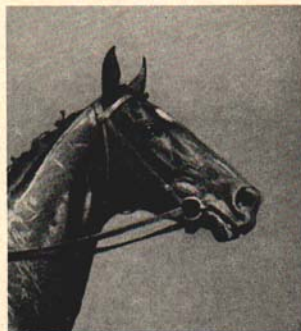
Man-O-War (Thoroughbred).



Wing Commander (American Saddlebred).



The Darley Arabian.



Greyhound 1:55 $\frac{1}{4}$   
(Standardbred).



(From George Ford Morris, "Portraits of Horses." Copyrighted; used with permission of author)

Fig. 2. Breed Head Studies.



## GENERAL APPEARANCE

The ideal horse should be truly representative of his breed as indicated by type, size, conformation, quality, substance, way of going, and breed character. Style, symmetry, and balance are premium requirements sought in horses of all breeds. Good horses, regardless of breed, have many fundamental characteristics in common.

The relation of form to function is extremely important in the horse make-up. The set and quality of underpinning has weighty influence on the efficiency of the horse in performing his work and remaining sound. Proper feeding and exercise also have a definite bearing on the soundness of the horse.

## THE HEAD AND NECK

The head should be clean-cut and proportionate to the body in size. Intelligence is indicated by a broad, full forehead with sufficient width



Fig. 3. "The Listening Mare of the Anazeh" by George Ford Morris.

between the eyes. A straight face is preferable to a concave (dish face) or a convex profile (roman nose). The jaw should be broad, deep, and strongly muscled. Large, open nostrils are desirable. The eye should be large, full, prominent, clear and bright. Small "pig" eyes that show a great deal of white may indicate a bad disposition. The ear should be set high on the head, be of medium size, pointed, and alertly carried.

The neck should be fairly long, thin through the crest, slightly arched, lean, and muscular. The throatlatch should be clean and free from meatiness or thickness. The windpipe or trachea should appear large and perfectly cylindrical. The head of the stallion should be bold and masculine. The crest should be strong and well-arched.

Abnormalities of the mouth, such as "parrot mouth" where the upper incisors protrude past the lower incisors, or "monkey mouth", the opposite of the above, are serious faults since they depreciate appearance and feeding ability.

### THE FOREQUARTERS

The forequarters include the shoulders, arms, forearms, knees, canons, fetlocks, pasterns, and feet. The shoulders should be smooth, well-muscled, sloping, and blend smoothly with the withers. The arms should be short, wide and strongly-muscled. If the elbows lie too close to the body, the horse will toe-out. If they lie out too far the individual will toe-in. The forearms should be fairly long, broad and strongly-muscled, especially in the upper portion. The knees should be broad, deep, straight, clean-cut, strongly supported and free from soft fluctuating swellings. If the knees, when viewed from the side are bent forward, the condition is known as "knee-sprung," "buck knees," or "over at the knees" (Fig. 4A). The opposite condition is known as "calf knees" or "back at the knees" (Fig. 4B).

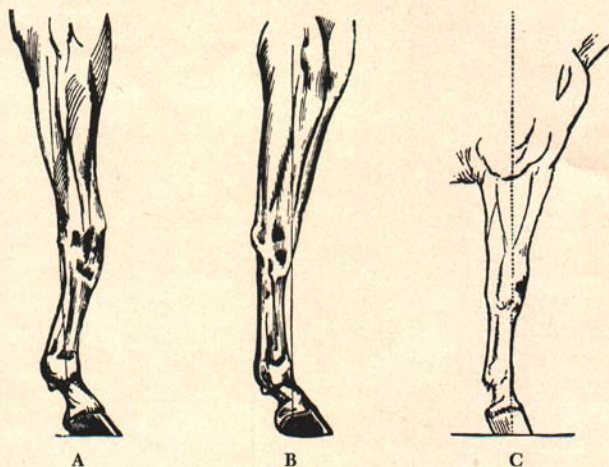


Fig. 4. Side views of the fore limb.

- A. *Knee sprung, buck knees, or over at the knees.*
- B. *Calf knees or back at the knees.*
- C. *Pastern too upright.*



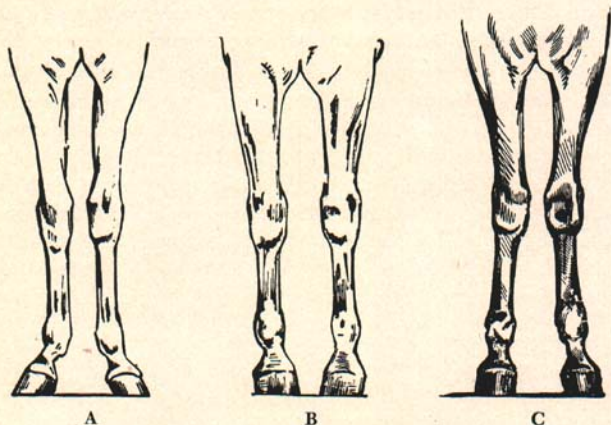


Fig. 5. Front views of the fore limbs.

- A. *Toe-wide, splay-footed, or toed out.*  
 B. *Toe-narrow, toed-in, or pigeon-toed.*  
 C. *Knock-kneed.*

The cannons should be short, wide, flat, and clean with large, sharply-defined cord-like tendons, and free from any indication of roughness or coarseness. The fetlocks should be wide, clean, and well-supported. Medium length, sloping, strong, clean pasterns are desirable. The degree of slope of the pasterns is closely associated with that of the shoulders. Oblique shoulders and pasterns diminish concussion, lessening the possibility of the development of an unsoundness. The ideal angle of the shoulders and pasterns is about 45 degrees.

When viewed from the front, a perpendicular line from the point of the shoulder should fall upon the center of the knee, cannon, pastern, and foot. From the side, a perpendicular line from the center of the elbow joint should fall upon the center of the knee and fetlock and strike the ground just back of the hoof.

Horses which toe-out, as in Fig. 5A, are very apt to interfere. In growing colts, the condition may be corrected by keeping the outside of the foot trimmed lower than the inside. Horses very commonly toe-in, as shown in Fig. 5B, giving them a tendency to "wing" or "paddle". This condition may be corrected by frequently trimming the feet as the colt grows, taking off more on the inside than on the

outside. Horses close at the knee (Fig. 5C) are likely to travel too close, and interfere. The same corrective measures should be used as for toeing-out.

Since the front feet maintain about 60 per cent of the horse's weight and are subject to greater concussion, they should always be observed very carefully. The ideal foot (Fig. 6) should be in keeping with the size of the horse. It should be round, uniform, and shapely, with dense, smooth waxy horn, concave sole, strong bars, wide heels, large, prominent, elastic frog, and clean soft hoofheads. Figure 7 shows how wear of the hoof affects the slope of pastern. If the toe is allowed to grow too long, the pastern is broken back (Fig. 7A). When the heels grow



Fig. 6 Ground surface of a normal front foot.

- |                           |  |
|---------------------------|--|
| 1. Ground border of wall. | 6. White line (junction of wall and sole).     |
| 2. Laminae of wall.       | 7. Point of frog.                              |
| 3. Heel.                  | 8. Cleft of frog.                              |
| 4. Bar.                   | 9-9. Collateral sulci (between frog and bars). |
| 5. Sole.                  | 10-10. Bulbs of the heels.                     |

(From Sisson's "Anatomy of the Domestic Animals")



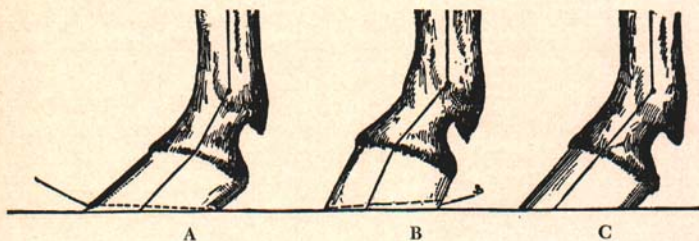


Fig. 7. Foot axes.

- A. Axis broken backward because the toe is too long.  
 B. Axis broken forward because the heel is too long.  
 C. The normal foot axis.

too long, the pastern becomes broken forward (Fig. 7B). Both conditions cause undue strain on the bones of the pastern, and may ultimately result in unsoundness.

### THE BODY

The withers should be moderately high, well-defined, muscular, and extend well into the back. A deep, wide chest and a large, full heart-girth indicate a strong constitution and staying qualities. Extreme width, however, may produce a rolling movement at the trot. Long, deep, well-sprung ribs give the chest its depth, width and capacity. A horse is said to be "closely-coupled" if the distance between the last rib and the hip is short. The back should be broad, short, heavily-muscled and strongly supported. A distinct arch over the loin is known as "roach back". A sagging condition is "sway back" or "easy in the back". Both of these conditions are undesirable.

The loin or coupling must be short, wide and heavily muscled. A long underline is desirable with low, deep, full flanks. High, shallow flanks make a horse "wasp-waisted," "tucked-up," or "cut up in the flank" and indicates poor feeding qualities.

### THE HINDQUARTERS

The hips should be level with each other, smooth and well-muscled. A long, heavily-muscled, evenly turned croup is preferable to a short, narrow, drooping one. The tail should be attached high and carried in a stylish manner.



The quarters consist of the upper thighs and lower thighs or gaskins. They should be deep, broad, thick, strong and heavily-muscled with prominent, clean, well-set stifles.

Since the hocks are subject to so many unsoundnesses (bone spavins, bog spavins, curbs, and thoroughpins), good conformation in that region is especially desirable. The hocks should be wide, deep, flat, clean, hard, strong, well-supported, and correctly-set. Large, round, thick, meaty, coarse, soft or puffy hocks are not only unsightly, but are subject to unsoundnesses.

A common malformation of the hocks is termed "crooked hocks," "sickle hocks," "saber hocks," or "set hocks," (Fig. 8B) a condition in which the angle of the hock is increased so that a line parallel to the back of the cannon would pass to the rear of the point of the buttock if extended upward.

The opposite condition, "straight hocks," or "post-legged," (Fig. 8A) is much less common. A horse that has hind legs that stand base wide, with the points of the hocks too close together, is said to be "cow-hocked," (Fig. 9A). The opposite condition is known as "bow-legged hocks" (Fig. 9B). Many horses show an undesirable tendency to become meaty, soft and coarse about the rear cannons as well as the hocks.

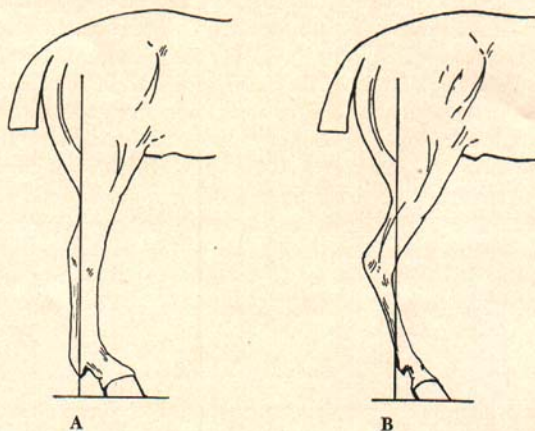


Fig. 8. Views of the hindquarters.

- A. Hock too straight, or "post-legged".  
 B. Crooked hock, set hock, sickle hock, or saber hock

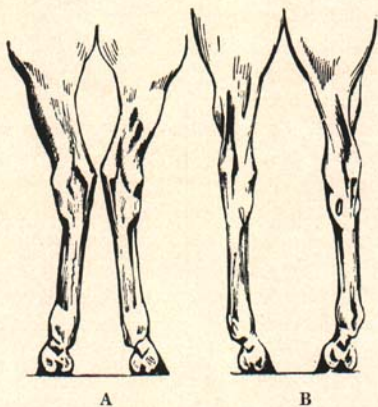


Fig. 9. Views of the hind limbs.

A. *Cow-hocked.*

B. *Bow-legged.*

The rear fetlocks and pasterns should be similar to the front ones, although the pasterns are less sloping, presenting an angle of about 50 degrees. The hind feet should be similar to the front ones in quality and texture of hoof but are usually smaller. If the hind legs have the correct conformation and are placed properly, a perpendicular line from the point of the buttock should fall upon the center of the hock, cannon, and foot when viewed from the rear. Viewed from the side, this perpendicular line should touch the point of the hock and run parallel with the back of the cannon.

### ACTION OF THE HORSE

Since action is largely dependent upon body conformation, placement of feet, shoeing, training and temperament, one can form a fair estimate of how a horse will move by observing him in the standing position. A horse that toes-in or stands "toe-narrow" or "pigeon-toed" in front usually will "paddle" or "wing" at the walk or trot. One that stands "toe-wide" or toes out can be expected to "interfere," that is, strike the supporting front foot with the moving foot as it passes.

Horses that stand with their hocks wide apart may "spraddle" or "go wide at the hocks" when moved. Medium length, sloping, pas-



terns provide greater ease and freedom of movement, while short upright pasterns and straight shoulders cause the horse to move with a short, stubby stride. Extreme width through the chest may cause a horse to "roll" when in motion. Extremely short-bodied horses may "forge," or strike the front supporting foot with the rear moving foot.

After one observes the horse in the standing position, he should be closely watched directly from behind, from in front, and from the side at the walk and trot. The walk should be free, straight, fast, and easy. Each foot should move straight forward in a long, smooth stride. The height of the stride should provide ample clearance to prevent stumbling. The feet should be set squarely each time they return to the ground. The most common faults of horse action are "padding" in front and "going wide" behind.

Action at the trot usually accentuates the faults or good points. Slight lameness and diseases of the respiratory organs are also more apparent at this gait.

The manner in which a horse is shod has a bearing on the way in which he will move.

### INFLUENCE OF CARE AND FEEDING UPON VALUE

A properly-groomed horse shows to advantage. If a horse has received excellent care for a considerable period but is still thin and rundown in condition, he may be either a very poor feeder and hard keeper, infested with parasites, suffering from a chronic disease, have bad teeth or possess faults or vices. On the other hand, many thin and poorly-cared-for individuals respond quickly to good care and feeding.

### TEMPERAMENT AND VICIES

The disposition of a horse must always be considered in determining his value. The ideal horse should be well-trained, quiet and docile, yet always alert and willing to do his work. A wide, full forehead, well-carried ear and large prominent eye indicate a good disposition.

*Many of the common vices and habits may be detected by a careful examination of the horse and his stall.*

**Cribbing and Wind Sucking:** This condition is indicated by freshly chewed mangers or feed boxes. The incisor teeth of the confirmed cribber are sometimes worn fairly short.



**Halter Pulling:** Halter pullers usually wear a very heavy halter or are tied with a heavy rope or chain around the neck.

**Kicking:** A kicker may be detected by examining the stall partitions for hoof or shoe marks. Heavy chains or bags of straw are sometimes suspended from the ceiling in an attempt to discourage this habit. Capped hocks or scarred hind legs indicate that the horse may be a kicker.

## LAMENESS

Lameness is any irregularity in gait which results from moving with pain or difficulty. Lameness may make a horse worthless; any lameness lowers his value.

Lameness may often be detected by examining the horse in the standing position. If the lameness is severe enough, he will refuse to place any weight whatsoever on the affected limb. "Pointing," or placing the limb in an unnatural position indicates that pain exists in that limb.

Lameness may be detected at the walk, although the symptoms are usually accentuated at the trot. Since the individual is forced to carry most or all of his weight on the sound limb, there is always a sinking or "nodding" of the hip or head as the sound limb strikes the ground. When the lameness is in the left fore leg, for example, the head will "nod" as the right foot is planted on the ground but will jerk up as the left or lame leg touches the ground. Lameness in the rear limbs may be detected in the same manner by observing the motion of the hips. The hip opposite the lame leg drops as the sound foot hits the ground. Always observe the horse carefully from in front, from behind and from the side.

Lameness in both front legs is indicated by stiff, stilted action and short stride, which often gives the impression of stiffness in the shoulders. The head is carried higher than usual without "nodding". The hind feet are lifted high while the front feet scarcely leave the ground as the horse moves. When at rest, the weight of the body is constantly shifted from one foot to the other and the hind feet may be cramped under the body in an attempt to relieve the pain in the front feet. Such symptoms are characteristic of navicular disease.

Symptoms of lameness in both hind limbs are short stride, awkward gait and lowered head. The front feet are raised higher than

usual as the horse walks. It is difficult or impossible to back a horse that is lame in both hind legs. When at rest the horse is uneasy and constantly shifts his weight from one leg to another.

A swinging leg lameness is a symptom of pain resulting from advancing the limb. This type of lameness usually results from inflammation occurring *above* the knee or hock. A supporting leg lameness is characterized by pain when weight is put upon the limb. The source of this lameness is usually located *below* the knee or hock.

Shoulder lameness occurs occasionally but is less frequent than most horsemen believe. As the affected limb is advanced, pain is produced, resulting in a short stride and dragging of the toe of that limb.

The exact location of the lameness is usually more difficult to determine. Many common unsoundnesses of the limbs may be observed by carefully comparing the general outline of the opposite legs. Swellings or bony growths can usually be detected in this manner. Inflammatory areas can usually be detected by pressing the region firmly with the fingers.

Unscrupulous persons sometimes resort to unethical methods of relieving symptoms of lameness. If the lameness is slight, the sound foot is sometimes made equally lame by cutting the hoof to the sensitive portion in order to make the gait appear normal. Drugs are sometimes injected to deaden the nerves of the foot in order to relieve the pain which causes the animal to limp. Holding the rein close to the head when leading may prevent "nodding".

### COMMON UNSOUNDNESSES

The following discussions give a definition, description, and the usual causes of the most common unsoundnesses. Figure 10 indicates where those are located on the animal's body, when present.

The subject of transmissible unsoundness is widely debated. Probably no disease is actually inherited, but the fact that individuals may inherit a predisposition to unsoundnesses through faulty conformation cannot be questioned. This predisposition to contract bone diseases is particularly marked; hence, breeding stock should be free from bone spavin, ringbone, sidebone, and similar unsoundnesses.



## LOCATION OF COMMON UNSOUNDNESSES AND BLEMISHES

### I. Head:

1. Defective eyes
2. Poll-evil

### II. Withers and Shoulders:

1. Fistula of the withers
2. Sweeney

### III. Front Limbs:

- |   |              |
|---|--------------|
| 1. Shoe boil or capped elbow                      |              |
| 2. Splint   |              |
| 3. Wind-gall, wind-puff or road-puff              |              |
| 4. Ringbone                                       |              |
| 5. Contracted tendons, cocked ankle or knuckling. |              |
| 6. Sidebone                                       | } front feet |
| 7. Quittor  |              |
| 8. Quarter-crack or sand-crack                    |              |
| 9. Navicular disease                              |              |
| 10. Founder or laminitis                          |              |
| 11. Thrush  |              |
| 12. Scratches or grease heel                      |              |

### IV. Rear Limbs:

- |  |             |
|--|-------------|
| 1. Stifled                                       |             |
| 2. Stringhalt                                    |             |
| 3. Wind-gall, wind-puff or road-puff             |             |
| 4. Ringbone                                      |             |
| 5. Contracted tendons, cocked ankle or knuckling |             |
| 6. Thoroughpin                                   | } hocks     |
| 7. Blood spavin                                  |             |
| 8. Bog spavin                                    |             |
| 9. Bone spavin or jack                           |             |
| 10. Capped hock                                  |             |
| 11. Curb   |             |
| 12. Quittor                                      | } hind feet |
| 13. Quarter-crack or sand-crack                  |             |
| 14. Founder or laminitis                         |             |
| 15. Thrush                                       |             |
| 16. Scratches or grease heel                     |             |

### V. General:

1. White horse tumors, black pigment tumors or melanomas
2. Hernia or rupture
3. Thick wind and roaring
4. Heaves, asthma or broken wind



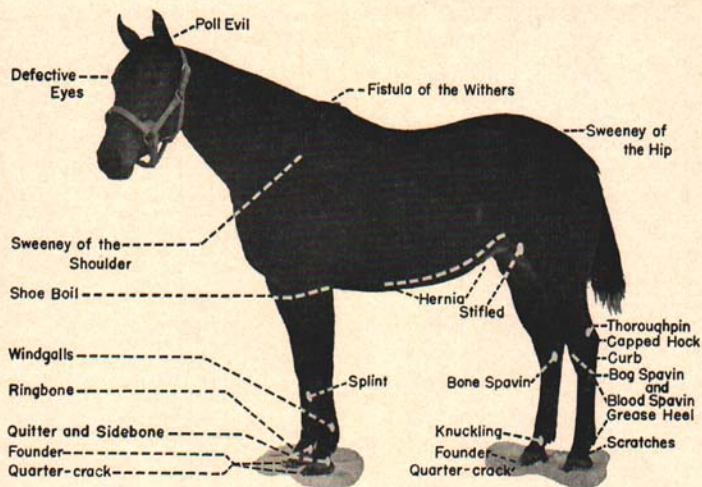


Fig. 10. Location of the common unsoundnesses.

### DEFECTIVE EYES

The eyes should be examined closely with a flashlight in a darkened stall, or by standing the horse in an open doorway. Cataracts and cloudiness of the cornea usually are easily detected. Other defects are not so easily observed, but the general expression of the head, with unnatural carriage of the ears, may indicate poor eyesight. The horse that is partially blind usually shies at objects, keeps his ears constantly moving, and stumbles frequently.

A pale blue or cloudy, watery eye is characteristic of periodic ophthalmia or "moon blindness". Since the eye may appear quite normal after recovery from the first few attacks, an examination of the interior of the eye by a veterinarian is necessary to determine if the horse is suffering from this disease. Repeated attacks of periodic ophthalmia usually produce permanent blindness in one or both eyes.

**WATCH EYE**, glass eye, and walleye are all terms applied to a horse's eye, the iris of which is white because it is devoid of pigment. Such an eye is just as functional as the normal hazel-colored eye. This condition is frequently observed where areas of white skin surround the eye and should not be confused with blindness.

### POLL-EVIL

Poll-evil (Fig. 11) is a fistula of the poll. It is similar to fistula of the withers except for location. Poll-evil usually follows a severe bruise of the poll or constant irritation produced by a tightly fitting halter or bridle. This condition must always be regarded as serious. Many cases of poll-evil can be cured; the treatment, however, in most cases must be continued for many weeks under the direction of a veterinarian. Permanent scars are sometimes left, and the horse may become "touchy" about the head and ears, making it difficult to halter or bridle him.

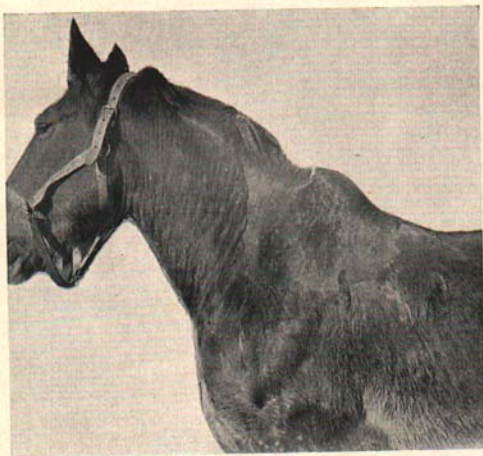


**Fig. 11. Poll-evil.**

*(Courtesy of Pitman-Moore Company)*

### FISTULA OF THE WITHERS

Fistula of the withers (Fig. 12) is apt to occur when that area is submitted to a severe bruise or irritation. It may result from a saddle bruise in the case of light horses or an ill-fitting collar in the case of heavy horses. The fistula first appears as a large, hot, painful, fluctuating swelling upon the withers, which finally ruptures, permitting pus to escape. Some fistulas heal, leaving a large, fibrous tumor, but most continue to discharge pus indefinitely and show no tendency to heal.



**Fig. 12. Fistula of the withers.**

A large percentage of these cases may be successfully



treated and cured by a veterinarian. The treatment, however, as in poll-evil, often has to be continued for many weeks. In cases where a surgical operation is necessary, permanent scars may be left.

### SWEENEY



*(Courtesy, Pitman-Moore Company)*

Fig. 13. Sweeney of the shoulder. (Note the depression in the region of the heavy shoulder muscles.)

Sweeney (Fig. 13) is an atrophy or decrease in size of a single muscle or a group of muscles. The term is commonly applied to the atrophy of the shoulder muscle. It is usually caused by a blow, ill-fitting collar, severe strain, or lameness. Sweeney of the hip may follow difficulty in foaling or an attack of azoturia. Some cases of sweeney recover after a few months' rest. Blisters and subcutaneous irritants applied under the direction of a veterinarian may hasten recovery.

### SHOE BOIL OR CAPPED ELBOW

Capped elbow or shoe boil is a swelling at the point of the elbow (Fig. 14). This condition is usually caused by constant irritation of the heel or shoe upon the point of the elbow when the horse lies with the front leg flexed underneath the body. Recovery usually follows proper treatment.



Fig. 14. Shoe boil.

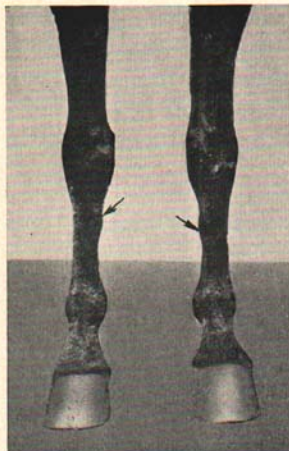
**SPLINT**

Fig. 15 Splints.

A splint (Fig. 15) is a bony enlargement usually found on the inside of the upper part of the front cannon bone of young horses. It may occasionally occur on the outside of the front cannon bone but is rarely seen on the rear cannon. Splints usually follow kicks, over-exertion or concussions produced by working on hard surfaces. The bony growth may result from irritation between the large cannon bone and small splint bone. Splints are easily seen if one stands directly in front of the horse and observes the outline of the cannon. Splints are common blemishes of draft horses.

A splint may be a serious defect in light-legged horses that are required to travel at high speeds. It is generally not of importance where heavy horses are concerned. Splints may occur in fast-growing colts, but will usually disappear as the animal grows older.

**WIND-GALL, ROAD-GALL, WIND-PUFF  
OR ROAD-PUFF**

Wind-galls (Fig. 16) are small, puffy swellings which usually occur on each side of the tendons just above the fetlock or knee. Wind-galls are much more common in the young, light-legged breeds of horses than in draft horses. They are formed by an excessive secretion of synovia which distends the sheaths surrounding the tendons. Severe strain, over-exertion or infectious disease may be predisposing factors. Wind-galls are not often considered serious since they usually disappear and cause no lameness unless pathological changes occur within them.



Fig. 16. Wind-galls.



## RINGBONE

Ringbone (Fig. 17) is a bony growth on either or both of the bones of the pastern which may involve the joints. The ringbone may appear as a hard, bony swelling on any part of the pastern. It may be so small that it escapes notice, or as large as a walnut or even larger. The outlines of right and left pasterns should always be compared in cases of doubt. Small ringbones may be felt by carefully passing the hand over the pastern.

Lameness usually develops gradually but may appear suddenly after severe strain. The lameness produced may not be proportionate to the size of the growth, since a small ringbone can produce a more serious lameness than a larger one. The location of the swelling is of most importance. Ringbone at the front or rear of the pastern usually produces severe lameness, because it interferes with free movement of the tendons. If on either side of the pastern it is usually less serious.

Severe chronic lameness always results if the joints become involved. There is no treatment known which will remove the bony enlargement, but firing or blistering may cause the bones of the diseased joints to grow together, thus relieving the pain. Nerving is occasionally performed as a last resort.

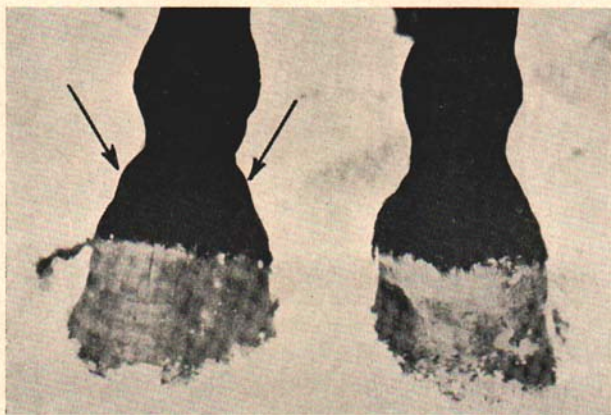


Fig. 17. Ringbone on the bones of the pastern.

(From "Veterinary Surgical Operations" by Dr. H. E. Bemis.  
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### CONTRACTED TENDONS, COCKED ANKLE OR KNUCKLING

Contracted tendons, cocked ankle, or knuckling (Fig. 18) is a partial dislocation of the fetlock or pastern joint, produced by the shortening of the tendons at the back part of the cannon. The tendons may contract as a result of overexertion, founder, or a local inflammation of the tendons. Knuckling must always be regarded as very serious, although some cases may be cured by expert veterinary surgery. Colts usually have a better chance for recovery than mature horses.



Fig. 18. Contracted tendons, cocked ankle or knuckling.

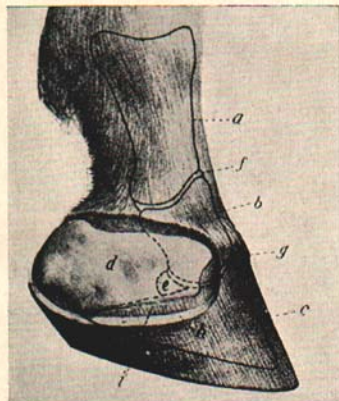


Fig. 19. A normal lateral cartilage.

- a. Long pastern bone
- b. Short pastern bone.
- c. Coffin bone.
- d. Lateral cartilage
- e. Navicular bone.
- f. Pastern joint.
- g. Coffin joint
- h. Cut edge of wall of hoof.
- i. Fleshy leaves.

(From Sisson & Grossman: "Anatomy of the Domestic Animals".)

### SIDEBONE

Sidebone (Fig. 20) is an ossification of the lateral cartilage of the foot. The lateral cartilages (Fig. 19) extend upward above the margin of the hoof so that they may easily be felt under the skin. These cartilages are normally firm and elastic but yield to the pressure of the fingers. Depositions of mineral salts in these cartilages change them to bone so that they become very hard and unyielding to pressure, producing the condition known as sidebone.

Sidebones usually occur on the front feet as a result of concussion or injury. They are common in horses more than two years old



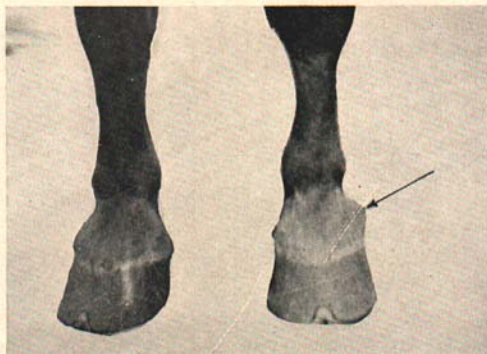


Fig. 20. A sidebone.

and vary greatly in size and severity. If lameness occurs, it is usually intermittent in character and rarely severe.

Although sidebones are considered serious in show and breeding stock, they rarely produce lameness. Sidebones cannot be removed. "Nerving" is sometimes performed if severe lameness persists.

### QUITTOR

Quittor is a decay of the lateral cartilage of the foot, characterized by a discharge of pus through a fistulous tract extending from the cartilage to the coronet or hoof head.

Quittor produces severe lameness and shows no tendency to heal. Quittor is more common in the front feet but may sometimes occur in the hind feet.



Fig. 21. Quittor.

The degree of severity of this unsoundness is dependent upon the structures of the foot which are involved, although all cases must be considered serious. Many cases may be cured by an operation, but several months of rest are required for complete healing.

### QUARTER-CRACK OR SAND-CRACK

Quarter-crack or sand-crack (Fig. 22), is a vertical split in the wall of the hoof which results from a dry or brittle hoof or improper shoeing. Proper treatment hastens recovery, but lameness sometimes remains severe until the new hoof has formed. About 12 months are required for the growth of a new toe, while the heels grow in less than half that time.



Fig. 22. Hoof showing sand-crack and the method of treatment.

Treatment involves the burning of a crescent through the hoof wall over the crack with a hot iron. The foot is shod so as to remove the pressure from the area of the crack.

### NAVICULAR DISEASE

Navicular disease is an inflammation of the small navicular bone and bursa (Fig. 19) inside the hoof just behind the coffin bone and small pastern bone of the front foot. The symptoms of this condition are "pointing" when at rest and a short, stubby, painful stride which may give the impression that the horse is lame in the shoulders. Navicular disease is incurable. In selected cases, veterinarians sometimes perform a nerving operation that will relieve the lameness and increase the usefulness of the horse for a time.



## FOUNDER OR LAMINITIS

Founder or laminitis (Fig. 23) is an inflammation of the sensitive leaves which attach the hoof to the fleshy portion of the foot. It is usually the result of over-feeding, infectious disease, long shipment, or standing in a stall for long periods because of some other lameness. Founder may also follow foaling, as a result of infection and inflammation of the uterus. All the feet may be affected, but the front feet are more susceptible.

If laminitis is properly treated as soon as it occurs, most cases will completely recover in a few days.

If the disease is neglected, however, it will often become chronic, resulting in a dropping of the hoof soles and a turning-up of the toe walls (chronic deformities of the hoof that are incurable). A veterinarian should always be called immediately when founder or laminitis occurs.



Fig. 23. Foundered hoof.

## THRUSH

Thrush is caused by decomposition of stable manure and other filth that is allowed to collect in the cleft of the horn frog, between the frog and the bars. Old, severe cases of thrush occasionally produce lameness, but most cases respond to cleanliness and proper treatment.

## SCRATCHES OR GREASE HEEL

Scratches or grease heel is an inflammation of the posterior surfaces of the fetlocks, characterized by extensive scab formations. Highly-fitted horses seem most susceptible to this condition. Most cases respond to treatment.

## STIFLED

A horse is said to be stifled when the patella of the stifle joint is displaced (Fig. 24). If the patella is displaced toward the outside of the leg, the condition is serious and usually incurable. If the displacement is in an upward direction, the reaction to a sudden fright that causes the horse to jump may throw the patella back to its normal position. However, this condition is likely to recur quite frequently.



Fig. 24. Stiffled.

### STRINGHALT

Stringhalt is a nervous disorder characterized by a sudden, involuntary flexion of one or both hocks in which the foot is jerked up much higher than normal. The symptoms are noticed as the horse is backing from his stall, turning on the affected leg, or when suddenly frightened. The exact cause is unknown. Stringhalt may be so mild that jerking is noticed only occasionally, or so severe that the leg is jerked upward at each step. Some cases may be cured by surgery.

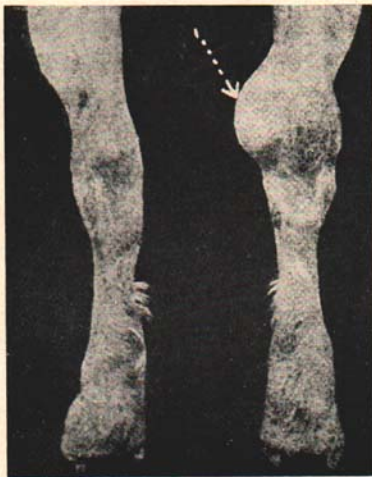


Fig. 25. Thoroughpin.

### THOROUGHPIN

Thoroughpin (Fig. 25) is a soft, puffy swelling which occurs on each side of the gaskin (Fig. 1) just above the hock in the region known as the "hollow". Pressure exerted on one side decreases the swelling on that side but increases the swelling on the opposite side.

Lameness does not usually occur, but the condition greatly decreases the sale value of a horse and renders him worthless as a show animal. Most thoroughpins are incurable.



### BOG SPAVIN

Bog spavin (Fig. 26) is a large, soft, fluctuating swelling which usually occurs on the front and inside of the hock. This condition is fairly common in highly-fitted horses with soft, meaty hocks. It results from an excess secretion of joint fluids which produces a distention of the joint capsule.

A bog spavin is easily seen and is much larger than a blood spavin. Although a bog spavin does not usually cause lameness, its presence indicates a lack of wearing qualities and is the object of unfavorable comment among judges and horsemen.



Fig. 26. Bog Spavin

### BLOOD SPAVIN

Blood spavin is a swelling over the front and inside of the hock caused by the dilation of the large vein which crosses that region. Since lameness never occurs, this condition may be regarded as a blemish of little significance.

### BONE SPAVIN OR JACK

Bone spavin (Fig. 27) is a bony growth which may occur on any of the bones which form the hock, although it is usually found on the inside and lower portions. It is caused by an inflammation of the periosteum such as may be produced by strain or over-exertion. Since a predisposition to the disease may be hereditary, affected animals should not be used for breeding purposes.

The spavin may be best observed by standing directly behind, or in front and a little to one side of the horse. In cases of doubt, lift the foot upward and forward in order to bend the hock as much as possible. After holding for two or three minutes, release the leg and start the horse at a brisk trot. A characteristic lameness will sometimes be noticed if the individual is affected.

Bone spavin is one of the most serious unsoundnesses of the horse. The lameness persists until the diseased bones of the hock grow together, preventing movement. Firing tends to make the bones unite and will often relieve lameness if only the flat bones of the hock are affected. If the spavin is extensive, the entire hock may become stiff, rendering the horse worthless.

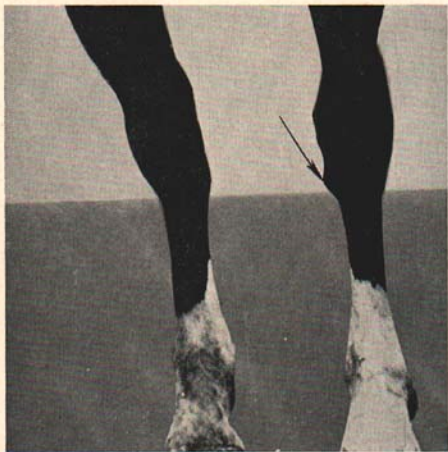


Fig. 27. Bone spavin.

(From "Veterinary Surgical Operations" by Dr. H. E. Bemis.  
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Fig. 28. Capped hock.

### CAPPED HOCK

Capped hock (Fig. 28) is a firm swelling which occurs on the point of the hock. This blemish may be as large as an apple or so small that it escapes notice.

Capped hock usually results from constant irritation, such as might be produced by rubbing or kicking the walls of the stable; hence it may be indicative of the horse's disposition. Since lameness rarely occurs, the condition is not considered serious.



### CURB

Curb (Fig. 29) is a hard, firm swelling on the back surface of the rear cannon, about a hand's breadth below the point of the hock. A large curb is easily seen by observing the hock and cannon directly from the side. A smaller one may be felt by passing the fingers over the region. Crooked or sickle hocks are most subject to this unsoundness since this faulty conformation throws a greater strain on the hock.

A curb usually follows strain or over-exertion, but may result from a kick or blow. The initial lameness may disappear after the formation of the curb, but the condition must still be considered an unsoundness because an affected hock is less likely to endure severe strain. Horsemen and judges look upon a curb with a great deal of criticism.



Fig. 29. Curb.

### WHITE HORSE TUMORS, BLACK PIGMENT TUMORS OR MELANOMAS

White horse tumors, black pigment tumors or melanomas are common in old, white horses but may occur in a horse of any color. They are usually found in the naturally black areas of the skin, especially around the anus. The tumor may remain small and harmless or become malignant and spread throughout the internal organs, producing death. There is no effective treatment.

### HERNIA OR RUPTURE

A hernia (Fig. 30) is the protrusion of any internal organ through the wall of the containing cavity. The term commonly means the passage of intestine or omentum through an opening in the abdominal muscles. This type of hernia is usually caused by severe blows, kicks, or over-exertion. Death will occur if the hernial opening swells around

the loop of intestine so that the circulation and passage of the intestinal contents is stopped. Umbilical, scrotal, and inguinal hernias are fairly common in young foals, but sometimes disappear with age.

Scrotal and inguinal hernias are often fatal in stallions if they become strangulated. *Mares suffering from any type of hernia should not be used for breeding purposes.* Many hernias may be cured by surgery. The operation, however, is usually a major one in which there is always an element of danger.



Fig. 30. Umbilical hernia.

### THICK WIND AND ROARING

"Thick wind" is difficult respiration due to any obstruction of the respiratory tract. The respiratory sound is usually made both on inspiration and expiration. "Thick wind" may be cured if it is possible to remove the obstruction in the respiratory tract.

"Roaring" is a whistling sound *made only on inspiration* of air. It is caused by a paralysis of the nerve which passes to the muscles of the larynx. As a result, the laryngeal muscles atrophy and allow the vocal cords to relax and vibrate as air is inhaled. A large percentage of "roarers" are cured or improved by the roaring operation.

*All horses should be given fast exercise immediately before examining their wind.*

### HEAVES, ASTHMA OR BROKEN WIND

Heaves, asthma, or broken wind is an incurable condition of the lungs, characterized by difficult expiration, characteristic movement of



the abdomen and flanks, and a peculiar cough which is often accompanied by the expulsion of gas from the bowels. The condition is common in horses more than seven years of age.

Improperly cured or dusty hay will greatly aggravate this condition and should be avoided in all horse rations.

Contrary to popular opinion, the onset of the disease is usually gradual, although the symptoms may appear suddenly after very strenuous work or over-heating. Hence the term "broken wind" is often used. It is possible to "fix" heavy horses temporarily so that the symptoms are not apparent. However, the symptoms will usually reappear if the horse is given all the water he will drink and trotted briskly. Heaves is incurable, although a veterinarian may prescribe treatment which will restore the usefulness of the horse for a time.

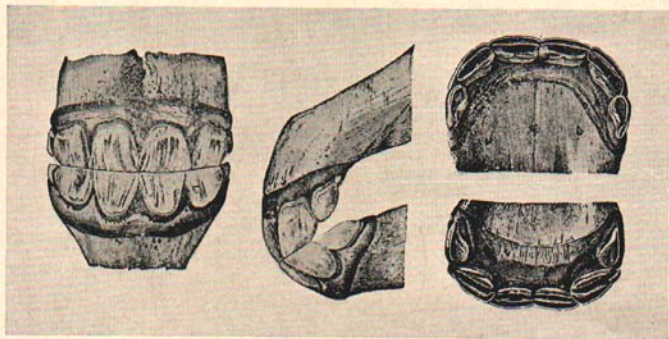


Fig. 31. Teeth of the yearling colt.<sup>o</sup>  
The milk teeth are all present, although the corner teeth  
are not yet in full wear.

### AGE OF THE HORSE

The age of a horse is an important factor in determining his value. Age may be determined accurately up to five years by noting the number of permanent and milk teeth present (Figs. 31 to 35). The number of cups or indentations in the incisor teeth are used to determine the age of horses from six to twelve years (Figs. 36 to 40). The age of older horses may be estimated by studying the cross-section and slant of the incisor teeth (Figs. 41 and 42).

<sup>o</sup>Figures 43 to 54, inclusive, are reproduced from "Productive Horse Husbandry" by special permission of the author, Dr. Carl W. Gay, and the publishers, J. B. Lippincott company, through the courtesy of Miss Mary Hinman.

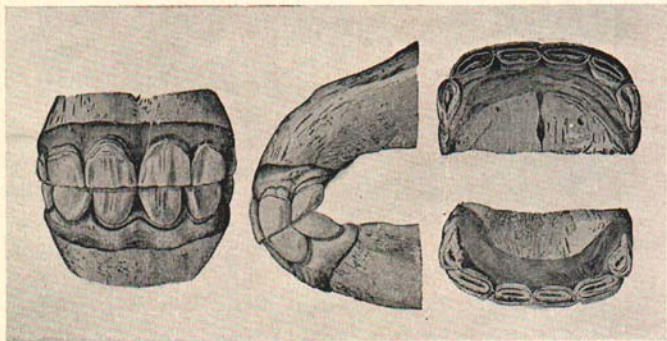


Fig. 32. Teeth of the two-year-old colt.

*The corner teeth are in full wear.*

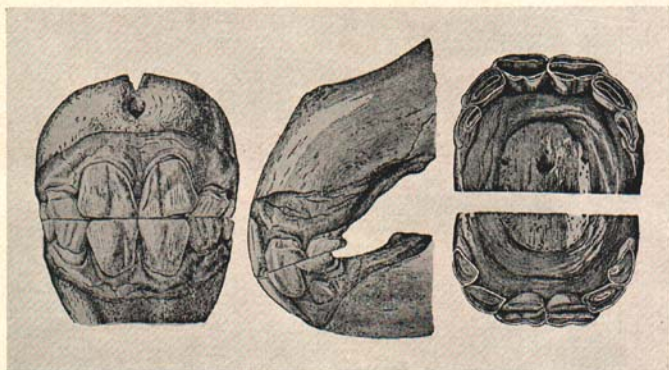


Fig. 33. Teeth of the three-year-old colt.

*The permanent central incisors have emerged and are just coming into full wear.*



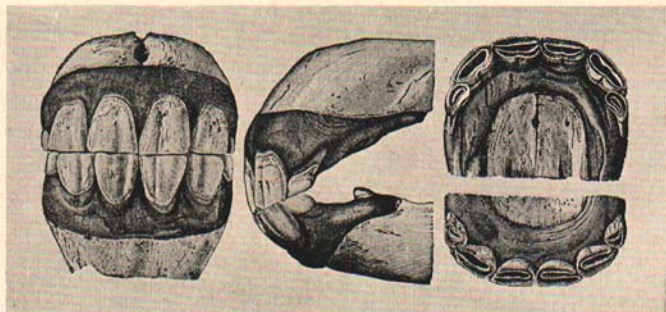


Fig. 34. Teeth of the four-year-old horse.

*Both the permanent central and intermediate incisors are in full wear.*

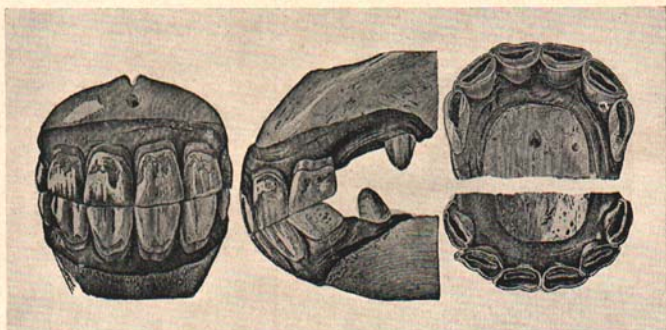


Fig. 35. Teeth of the five-year-old horse.

*Since all of the permanent incisors are in wear, the horse is said to have a "full mouth." The canine teeth are usually present in the stallion and gelding but are rarely seen in the mare.*

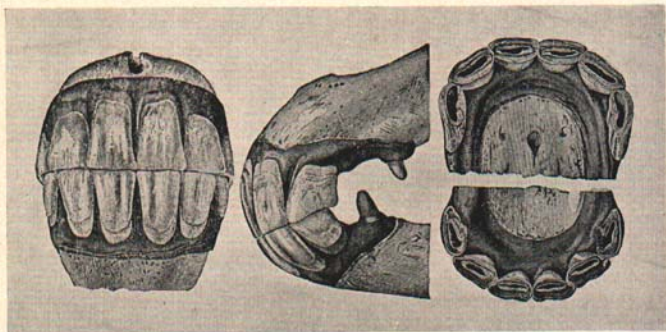


Fig. 36. Teeth of the six-year old horse.

*The cups or indentations of the lower central incisors are almost completely obliterated.*

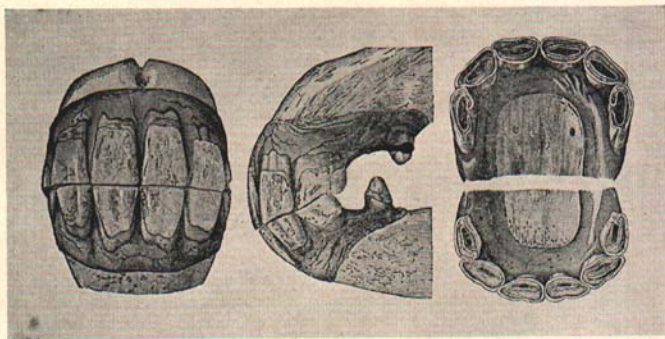


Fig. 37. Teeth of the seven-year-old horse.

*The cups of the lower centrals are usually completely obliterated, and are very shallow in the laterals.*





Fig. 38. Teeth of the eight-year-old horse.

*The cups have completely disappeared from centrals and laterals, and are partly gone from the corners. A small swallowtail, or hook is often apparent on the upper corner at seven and eight years.*

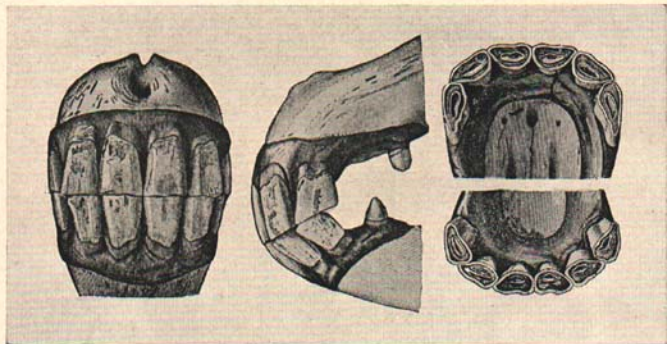


Fig. 39. Teeth of the nine-year-old horse.

*The lower incisors are "smooth". The cups are beginning to disappear from the upper incisors, particularly from the upper central incisors.*

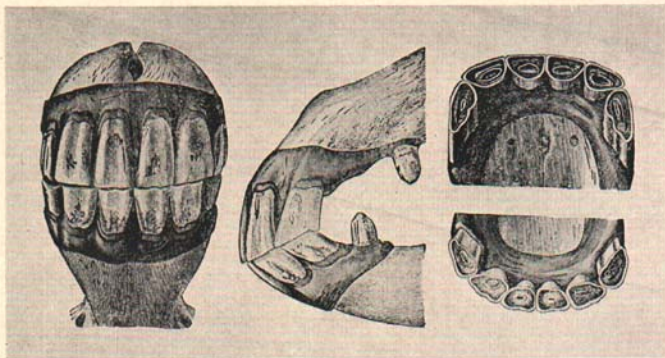


Fig. 40. Teeth of the twelve-year-old horse.

*The twelve-year-old has a "smooth mouth" because the cups are entirely obliterated from both the upper and lower incisors.*

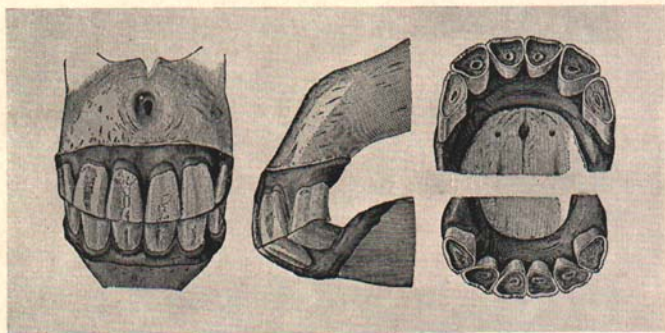


Fig. 41. Teeth of the fifteen-year-old horse.

*The teeth appear slanting when viewed from the side. When the mouth is opened, the wearing surfaces of the incisors appear more triangular than the teeth of the younger horse.*



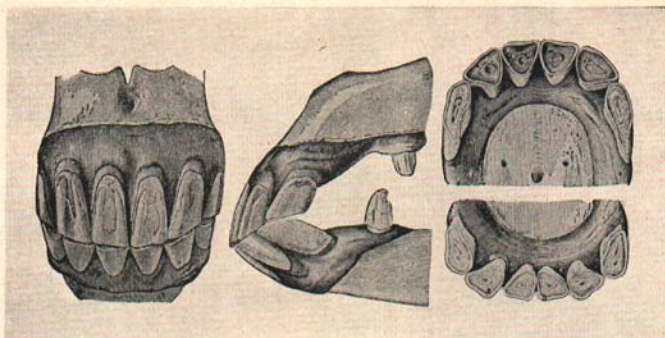


Fig. 42. Teeth of the twenty-one-year-old horse  
When viewed from the side, the teeth appear very slanting and oblique.

### ERUPTION OF THE TEETH

#### TEETH

#### TIME OF ERUPTION

#### A. Milk Teeth:

First or central incisors.....	At birth or one week
Second or intermediate inci- sors .....	Four to six weeks
Third or corner incisors.....	Six to nine months

#### B. Permanent Teeth:

First or central incisors.....	Two and one-half years (Fig. 33)
Second or intermediate inci- sors .....	Three and one-half years (Fig. 34)
Third or corner incisors .....	Four and one-half years (Fig. 35)
Canines (usually absent in the mare) .....	Four to five years (Fig. 35)

## DISAPPEARANCE OF THE CUPS OR INDENTATIONS

AGE	CONDITION OF TEETH
5 years .....	Cups in all incisors (Fig. 35)
6 years .....	Cups worn out of lower central incisors (Fig. 36)
7 years .....	Cups worn out of lower central incisors and lower intermediate incisors (Fig. 37)
8 years .....	Cups worn out of all lower incisors (Fig. 38)
9 years .....	Cups worn out of all lower incisors and upper central incisors (Fig. 39)
10 years .....	Cups present in upper corner incisors only
11 years .....	Cups worn out of all incisors
12 years .....	No cups. "Smooth mouthed." (Fig. 40)

Figure 43 is a longitudinal section of a horse's mouth, showing the table surfaces of the tooth at various stages of wear.

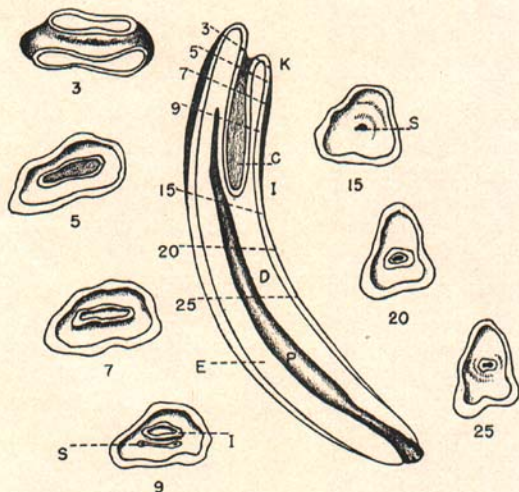


Fig. 43. Age of horses as indicated by teeth.

*Longitudinal section of left central lower incisor, and cross section of same tooth, showing table surfaces as they appear at the ages of 3, 5, 7, 9, 15, 20, and 25 years. C, cement; D, dentine; E, enamel; I infundibulum; K, cup; P, pulp cavity; S, star.*



## CONTROL OF STRONGYLE PARASITES

These internal parasites may become a serious problem in horses. Phenothiazine is a good control but should be given under the direction of a veterinarian. The treatment consists of feeding daily doses of 2 grams of phenothiazine for the first 21 days of each month.

## TREATMENT FOR BOTS

Carbon disulfide has proved the best treatment for Bots. Caution is needed in administering carbon disulfide as it causes a local inflammation where it comes in contact with the mucous membranes. This drug should only be administered by a veterinarian. Treat after the first freezing temperatures occur in the fall for a period of 24 hours duration. In special cases the veterinarian can decide the time and number of treatments.

## ROUNDWORMS

The treatment for Bots will also aid in controlling roundworms.

## LICE

The well-fed and managed horse seldom has lice. The best method for control when lice do occur, is to clip the horse and treat with an insecticide powder as recommended by a veterinarian. Oil base insecticides should never be used. Keep the horse blanketed after clipping if it is cold.

## MANGE OR SCABIES

This condition is caused by a microscopic mite that inhabits the skin. The usual treatment is to dip the animal, but this should only be done under the supervision of a veterinarian.