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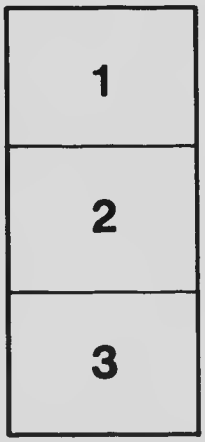

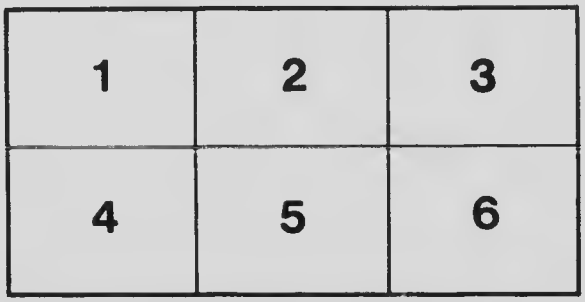

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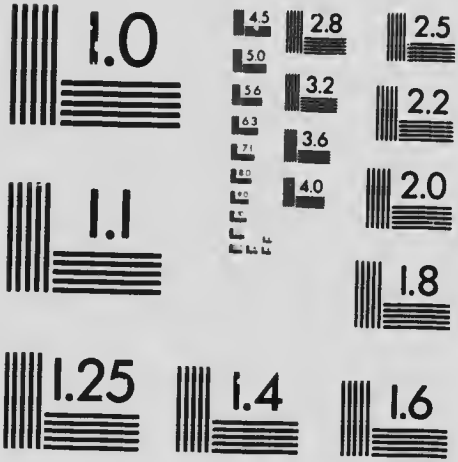

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HORSE-BREEDING IN CANADA

By JOHN D. DUCHENE, D. V. S.

QUEBEC, 1903 — *Press of* THE DAILY TELEGRAPH

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Fig. No. I.—The Horse.

HORSE-BREEDING

IN CANADA

HISTORICAL SUMMARY

The horse is a mammiferous animal belonging to the family Solipeda. "The horse," writes Gayot, "has been and will remain a potent factor of civilization. Man's indebtedness to this animal gives him an exalted rank in the animal hierarchy and

in the scale of usefulness. Without the horses' help how many undertakings could not possibly have been carried out.

Writers do not agree as to the early history of the horse, nor as to the nations who first conquered and utilized him, or as to the different successive epochs of his adoption as an auxiliary by the divers nations of antiquity. The most erroneous opinions are expressed every day on this subject. We can give space here to only the briefest summary of the information furnished by science of the horse's early history.

In prehistorical times, there already existed several natural breeds of horses living in absolute liberty. Paleontologists are continually finding traces of the early existence of the horse, and this in America as well as in Europe. Fossil remains are not scarce and seem to belong to various races of horses, to a variety of breeds, perhaps, which consequently were already inhabiting the old continent at the periods when the stratas in which their remains were found, have been formed. It is also known that horses were to be found in Europe when man made his appearance ; it is even demonstrated that in that portion of the world, the horse was a contemporary of the human beings of the tertiary period.

Before his domestication in Europe, the horse had for a long time been hunted, killed and used

as food by man, exactly as is now done with our deer.

Europe is, beyond doubt, thanks to progressive science, in a better condition to furnish data as to the origin of species ; but if it is desired to reconstruct the early history of the horse after domestication, it becomes necessary to glean information among the nations of the East.

The notions furnished by history demonstrate the following facts :—The Aryans, the Indus ancestors, have conquered and utilized a race of horses indigenous to Central Asia, and this, long anteriorly to the Christian Era. Under the rule or Yao, about the year 2,350 before Christ, horses were numerous in China.

The hippologists who believed the Arabian horse to be the most primitive, and a native of Arabia, were erring, for it is known that horses were brought to that portion of Asia only a long time after their domestication on the high lands of Central Asia. These are beautiful horses coming from Persia and Trak, all of which are descendants of horses from Central Asia, or at least very much impregnated with their blood, and which have furnished the admirable race of Arabian horses which steadily acquired all possible perfection under the protecting influences of Mahomet's precepts, and which has sent to all parts of the world its solid and brilliant qualities. I shall refer to them in a special chapter.

As to the race of Western Europe, we can safely admit that they also have a distinct and primitive origin, and the best proof is found in the anatomical differences with regard to the number of vertebrae and ribs, etc., etc., found by Lauzon to exist between the Eastern and Western horses.

The origin of the horses of North Africa is anterior to that of the Arabian horse; as, already during the quaternary period that country contained a race of wild horses characterized by the remarkable slenderness of their limbs, an indication of great speed.

In America, there exist inconstable paleontological traces of the early existence of horses, but their domestication is subsequent to the arrival of Europeans.

In the wild state, horses are much coarser than the domesticated ones, their heads are much larger, their ears long and the bony eminences are more prominent. They are generally found in herds, headed by a stallion who, as a spirited leader, is the first to face danger.

In certain portions of Asia, in North and South America and in Africa, numerous herds of wild horses are still to be found.

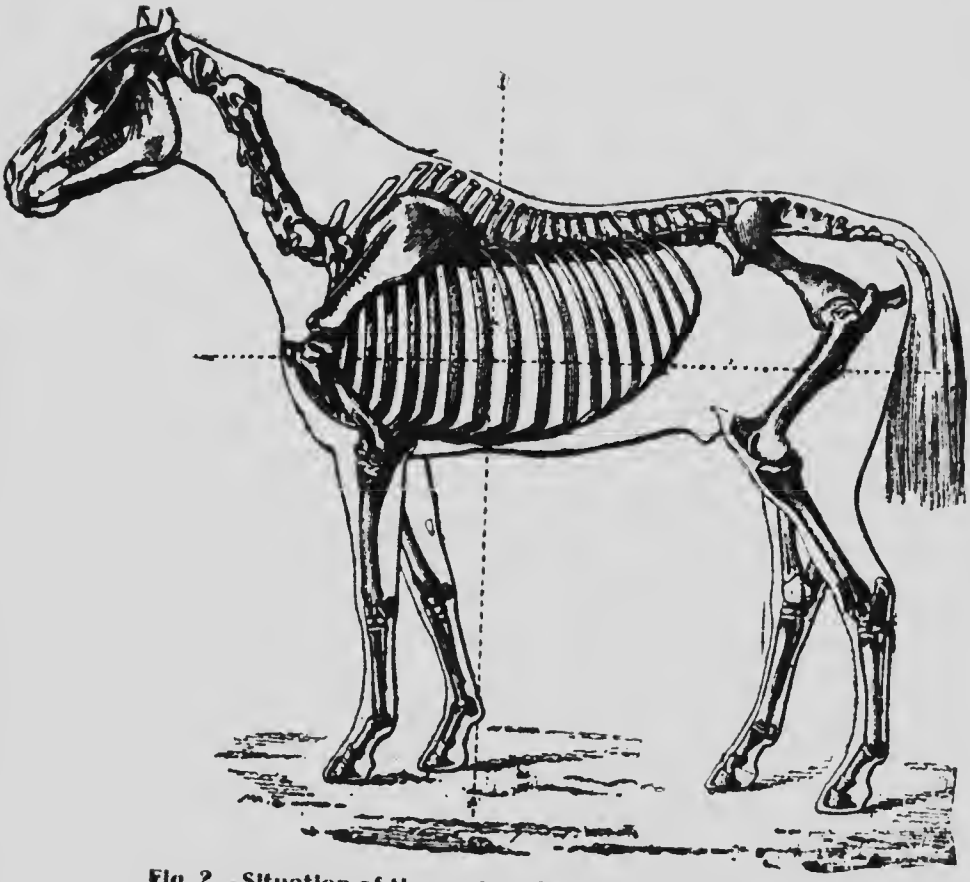


Fig. 2.—Situation of the centre of gravity in the horse.

ORGANIZATION OF THE HORSE

The body of the horse is composed of solids and of liquids.

The solid portions or tissues are found to be either hard or soft. They form the outlines of the animal structure and are the agents or means of motion.

The liquid portions facilitate the different movements by lubricating the points of friction,—or entertain life by carrying the nutritive fluids into

all parts of the animal system. These metamorphosis, or changes, are taking place continually and are so closely blended together that it would not be possible to exactly state their proportions. An unaccountable phenomena, called *Life*, directs their reciprocal action.

Life is of two kinds:

1. *Organic* or *Vegetative* :—This form of life is indispensable, its cessation is death.

2. *Relative* :—This form of life is only collateral.

The number of years of organic life attained by horses in their natural state, that is in the wild state, may be computed at six or seven times the length of time required for the animal's complete development. Thus the longevity of horses who take about six years to attain maturity, would be about forty years. Domestication, however, has reduced this rule by about half, bringing it to an average of twenty years.

The principal tissues are: the muscular, fibrous, oascular, nervous, bony, cartilaginous, serous, cellular or connective and the integument.

We call *muscular tissue*, those masses of fibres, ordinarily red, soft, capable of contraction and of relaxation, which form the muscles and constitute the meat that we place on our tables.

The *fibrous tissue* is found in the shape of lamina, under which form it goes to form sacks or solid protecting textures for certain organs, or to help their action. The fibrous tissue assumes also the form of ligaments for the purpose of connecting bones or to transmit to any portion of the body the

power of contraction or relaxation developed by the muscles. Under this last form, the fibrous tissue takes the appellation of tendons, vulgarly named *cords.*

The *vascular tissue* furnishes the arteries, whose task it is to carry the blood from the heart to the different portions of the animal system, from which it is brought back by the veins. These are also furnished by the vascular tissue.

The *nervous tissue* furnishes the nerves. These are found in the form of small white cords which, emanating from the brain and spinal marrow, send numberless ramifications in all the other tissues. They establish connections between the brain and each of the organs, to which its mandates are transmitted, or their various impressions reported.

The *integument* covers the whole body, and is ordinarily known under the name of *skin* and folding inwardly, covers the natural cavities and canals, such as the intestinal canal and the respiratory tract, etc., etc. This lining takes the name of mucuous membrane.

The *bony tissue* furnishes the bones. These are solidly connected together and form the basis of the animal construction.

The *cartilaginous tissue* which, whilst hard, is essentially elastic, takes the place of bony tissue wherever solidity allied to flexibility are required.

The *serous tissue* furnishes closed sacks, in the interior of which are secreted either gases or an oily liquid for the purpose of lubricating the articular surfaces of the bones, at the joints, or the gliding of the tendons within their sheaths, or again to facilitate the play of the lungs within the chest or of the bowels within the abdomen.

The *cellular tissue* serves to connect all the organs without in any way restricting their individual actions.

The natural physiological apparatuses are divided in according to the tasks assigned to each into fourteen principal classes, viz :

1. Locomotion ; 2. Digestion ; 3. Circulation ; 4. Respiration ; 5. Nutrition ; 6. Secretion ; 7. Absorption ; 8. Reproduction ; 9. Enervation ; 10. Feeling ; 11. Taste ; 12. Smell ; 13. Hearing ; 14. Sight.

TEMPERAMENTS-DISPOSITIONS

We will confine ourselves to the four principle classes of temperaments, whose well defined characteristics are easily recognized.

1. Sanguine ; 2. Nervous ; 3. Moderate ; 4. Lymphatic.

1. *Sanguine temperament.*—This form of temperament is due to the predominating influences of the circulatory and respiratory organs. Horses of a sanguineous disposition are generally found to possess medium bone-development but well developed muscles, rounded forms, shining coats, the apparent mucous membranes are highly colored, ample play of the lungs and a full and strong pulse. Their athletic power are disclosed by splendid proportions and display of energy. They usually render excellent service for long years.

The diseases attacking these horses are usually of the acute form, as a rule of a short duration, either to a prompt recovery or a fatal termination. The horse endowed with this type of temperament

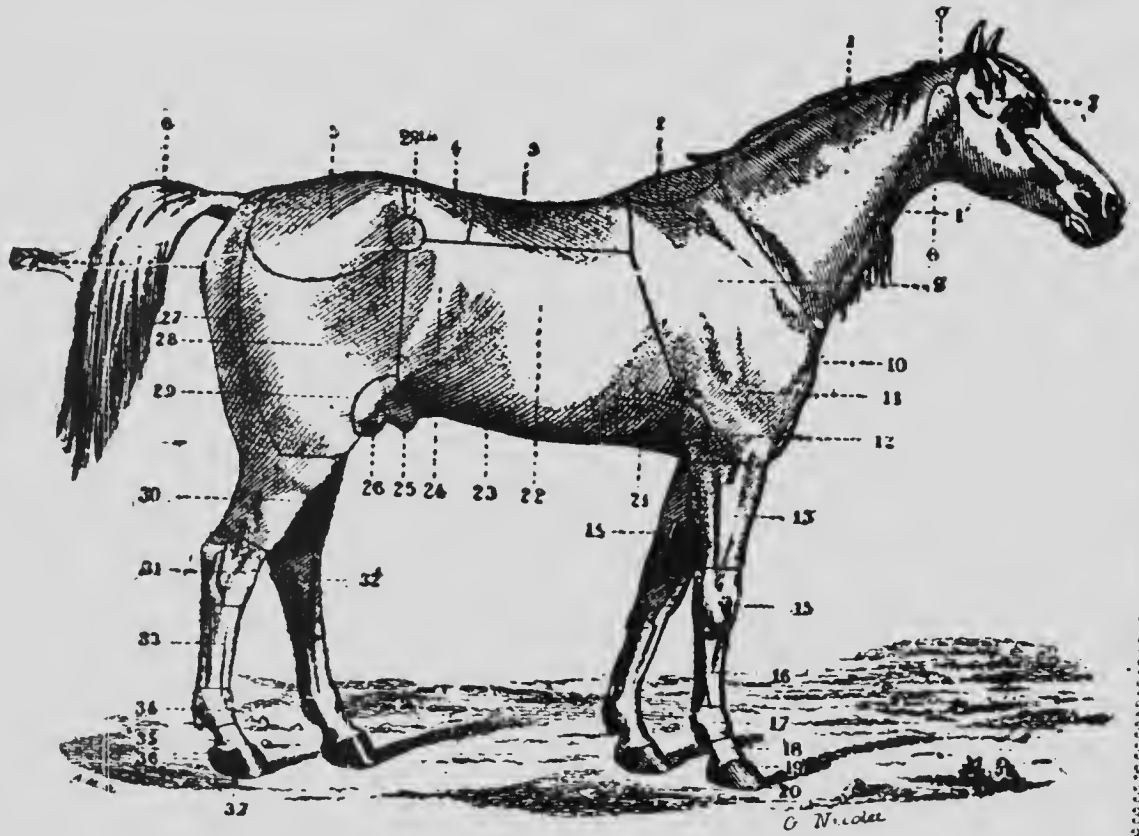


Fig. 3. Regions of the Horse seen in Profile.

0 Pole or Nape of the Neck
1 Neck
1' Jugular Gutter
2 Withers
3 Back
4 Loins
5 Croup
6 Tail
7 Parotid Region
8 Throat
9 Shoulder
10 Point of the Shoulder
11 Arm
12 Elbow
13 Forearm
14 Chestnut
15 Knee
16 Canon
17 Fetlock
18 Pastern
19 Coronet
20 Foot
21 Xiphoid Region
22 Ribs
23 Abdomen
24 Flank
25 Sheath
26 Testicles
27 Buttock
27b Angle of Buttock
28 Thigh
28b Haunch
29 Stifle
30 Leg
31 Hock
32 Chestnut
33 Canon
34 Fetlock
35 Pastern
36 Coronet
37 Foot

are the Arabian, the horses from Barbary and Navarre, English, and those from Brittany.

2. *Nervous Temperament.* – This is the result, or the consequence of the abnormal development and susceptibility of the nervous system. It is more particularly noticed on slender bodied animals, with long slim limbs. The respiration of this class of horses is usually hurried, their pulse quick and their appetite irregular and capricious. Attentive to the least noise, they seem for ever on the alert and uneasy, and ready to defend themselves, conveying the impression of having received habitual ill-treatment. Easily irritated and over excitable, these outbursts of temper are generally followed by reactive periods of dullness and general depression.

The diseases attacking the animals belonging to this class are usually of a serious nature. They are accompanied by nervous super-excitation. Well bred horses, such as the English thoroughbreds, are of that class of temperament, whereas these characteristics are seldom met with in commoner breeds.

3. *Moderate Temperament.* — This type, presenting the best equilibrium of the different organs is the nearest to perfection. It is derived from a normally developed nervous system, impressionable to such a proper extent that the exact amount of sensibility is present, but not exceeded for the correct working of the divers organs. This type is becoming scarcer among our horses, because they are becoming too far removed from their natural state, and that instead of looking among naturally perfect breeds for our regenerating types we search

the artificial sources, whose appearances are frequently misleading.

Horses endowed with this type of temperament are easily recognized by their graceful attitudes, development, and beauty of form, the elasticity of their movements, the kindness of their disposition, and the friendliness of their eye-glance. Their respiration is free and easy, pulse regular, their bones are small but of compact texture, the muscles are hard and well defined, the skin soft. Of sober disposition and apt to undertake the most fatiguing journeys, they are always ready to resume work as soon as their spent strength has been somewhat restored by a short rest and a little food. Seldom ill, they are attacked only by the regular diseases.

4. *Lymphatic temperament :* — This form of temperament is the unfortunate result of the inertia of the different organs. The horses coming under their type are easily recognized by the coarseness of their forms, the flabbiness of their muscles, the large size of their bones, their ill-defined parts. Their respiration is usually labored, the circulation slow, the apparent mucous membranes are pale, their coat long and lustreless. Their least exertions are listless and seem to fatigue them overmuch. They seem desirous to rest their weight on anything within their reach, as though they could hardly bear their own weight. Unsuited for any active work, they should be debarred from the cavalry service.

The lymphatic temperament is predisposing to glanders, farcy, and to all the chronic diseases. This forms of temperament is more commonly observed on prairie-bred horses than on stabled and grain fed stock.

Hygienic measures, may in some cases, through prolonged and intelligent care, modify to a great extent the natural disposition of this class of horses, and almost substitute a new form of temperament. In such a case, this new temperament is said to be acquired to distinguish it from the former.

Finally, the breeding of horses possessing this form of temperament is to be carefully avoided, more especially in the Northern climates, as these animals can but ill-resist the influence of cold. On the other hand they do very well in warm and dry climates.

THE SEXES

The differences existing in the organs of generation of the two sexes, exercise very distinctly a physical and moral influence on both.

The male has been endowed by nature with a greater development of the anterior portions of the body and with a more sanguineous temperament. His proud bearing, animated look and his impetuosity, which must at all times be quieted, denote an unnecessary expenditure of energy.

The mares have a wider rump, quieter habits, are more docile, and possess a more moderate temperament. They are kindlier and, whilst weaker than the male, seem to store up energy for emergencies. It is only exceptionally, such as are during the periods of heat, that a few temporarily become as fiery as the males themselves and this, through the natural and imperious need of joining with them.

AGES

The term *Ages* is employed to designate the several periods in horses lives, during which notable changes and modifications take place, and which extend from the birth till the end of life.

The ordinary life may thus be divided into three principal periods as follows, viz.: 1. The *Young Age* or period of growth : 2. The *Adult Age* or stationary period : 3. *Old Age* or period of decrease of powers.

The length of these periods or ages vary with individuals and is dependent to a great extent on the breed, temperament, the kind of labour to which subjected, and the care bestowed.

Whenever the horse has reached its full prime, i.e., the fullness of his powers, then his stationary or adult age has been reached. This epoch in life is not positively defined, and in some cases it is reached at five years of age, whereas with others, maturity is rached on the sixth, seventh or eighth year. It is regrettable that it cannot be more positively defined, as only when it is reached should we require the animals to perform the full amount of work for which they are intended.

The extreme difficulty of knowing when maturity is complete has been the cause that the fifth year has been generally adopted as the most suitable year for the beginning of ordinary work.

Old age is announced by stiffness of the limbs, diminution in the volume of the muscles, impairing of strength. The abdomen hangs, the back hollows, the head whitens, general weakness, etc.

STUDY OF THE AGE

The teeth are the only positive indications by which the age of horses can be determined. Nearly all horse fanciers pretend to be able to tell the age by this peculiarity or that; such as when the eye is sunken, or when the edge of the lower jaw-bone becomes thinner, or by the number of vertebrae in the tail. But all these alleged infallible ways of knowing the age are worthless: it may be that they might give an approximate idea of the age, but, as I have already said above, the only reliable means of determining the age of horses is by a thorough and practical study of the "incisor" teeth.

The following plates will give a general insight into how to determine the age of horses.

I

The lower jaw at two years and a half. The "pincers" are replaced.

The horse has 12 incisors, 6 in the upper and 6 in the lower jaws. They are subdivided into pincers, intermediates, and corners.

On colts the pincers make their appearance before or a few days after birth ; the intermediates from 4 to 6 weeks after birth ; the corners 6 to 9 months after bith.

II

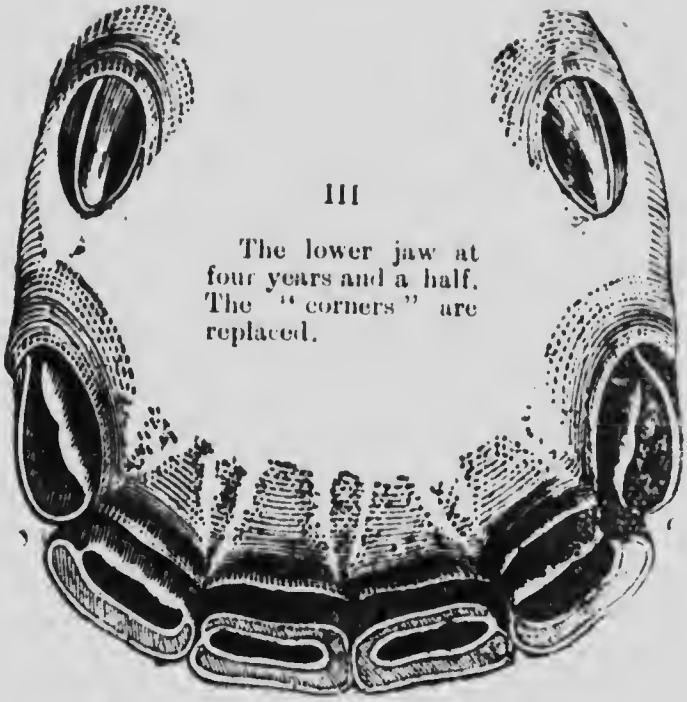
The lower jaw at three years and a half. The "intermediates" are replaced.

REPLACEMENT OF THE INCISORS

The pincers	at 2½	year.
The intermediates	at 3½	"
The corners	at 4½	"

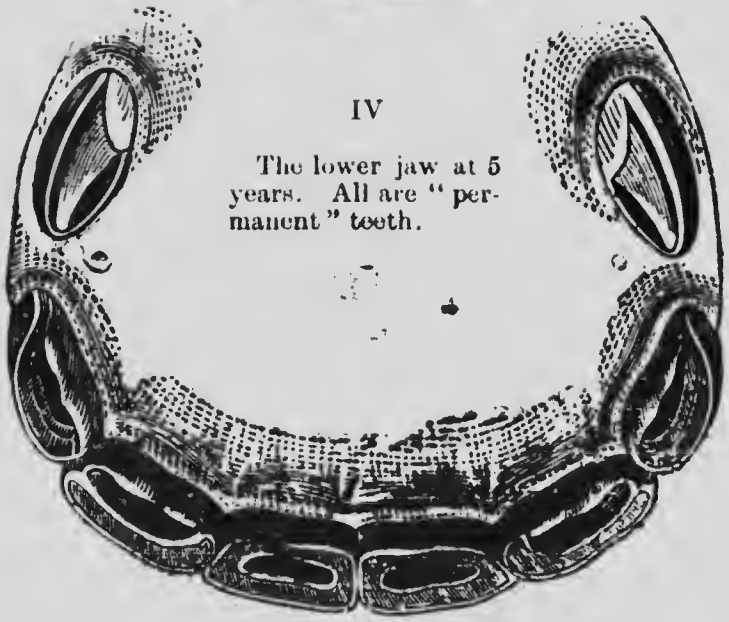
The pincers are levelled at 6 years ; the intermediates at 7 years ; the corners at 8 years.

After this age has been reached, the Veterinarian is the only competent authority who can determine the age.



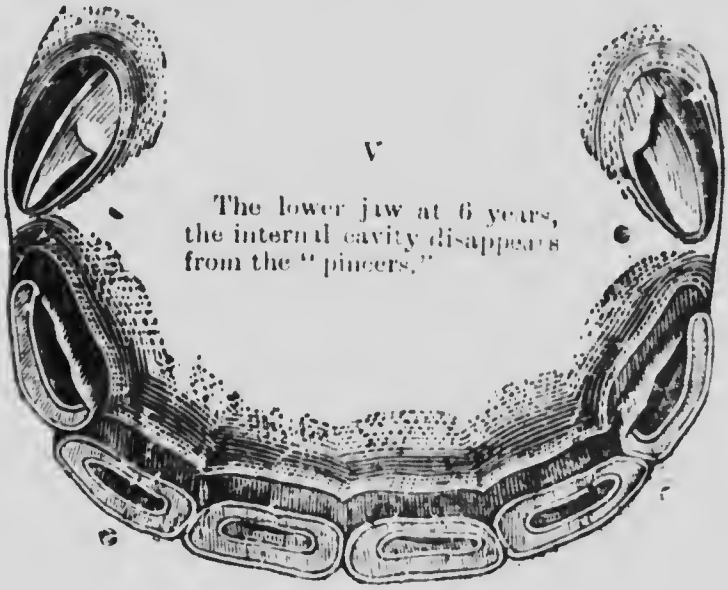
III

The lower jaw at four years and a half. The "corners" are replaced.



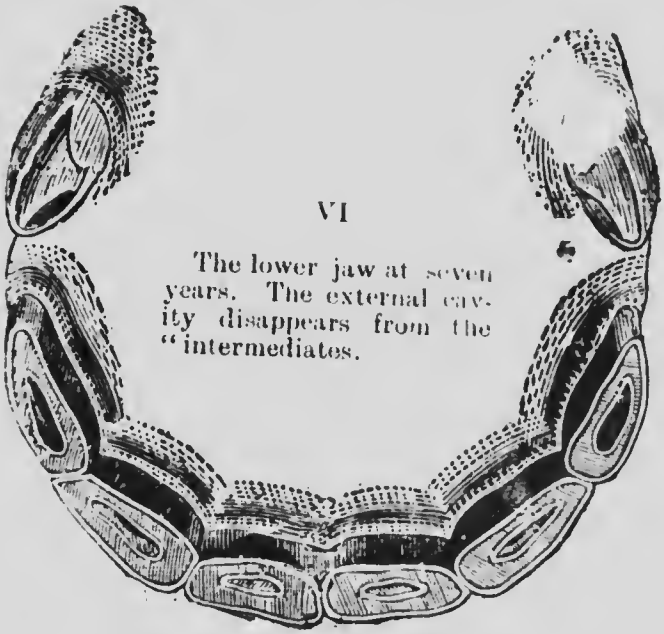
IV

The lower jaw at 5 years. All are "permanent" teeth.



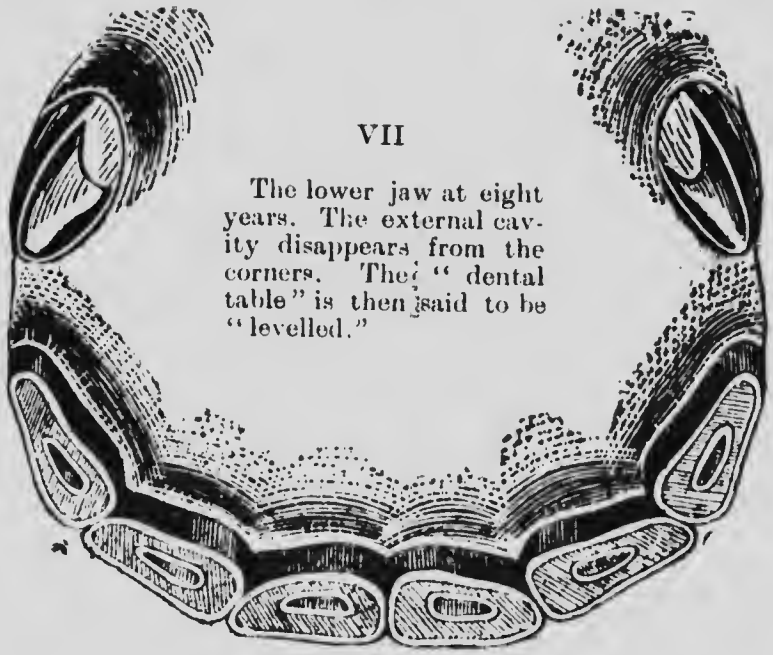
V

The lower jaw at 6 years, the internal cavity disappears from the "pincers."



VI

The lower jaw at seven years. The external cavity disappears from the "intermediates.



VII

The lower jaw at eight years. The external cavity disappears from the corners. The "dental table" is then said to be "levelled."

EXTERIOR

In hippology, by the word "exterior" is meant the study of all the external parts of the horse, under the three fold consideration of their correct and beautiful conformation, defects, and of the accidents and blemishes which may take place.

In order to become competent to judge of the value of a horse, after an ordinary examination, it is necessary to possess certain notions of anatomy and physiology. The study of these two subjects will be joined to the descriptions of the most important regions of the horse.

THE SKELETON

The skeleton is the assemblage of the passive apparatus of locomotion. It is divided into two very distinct portions, namely: the *trunk* and the

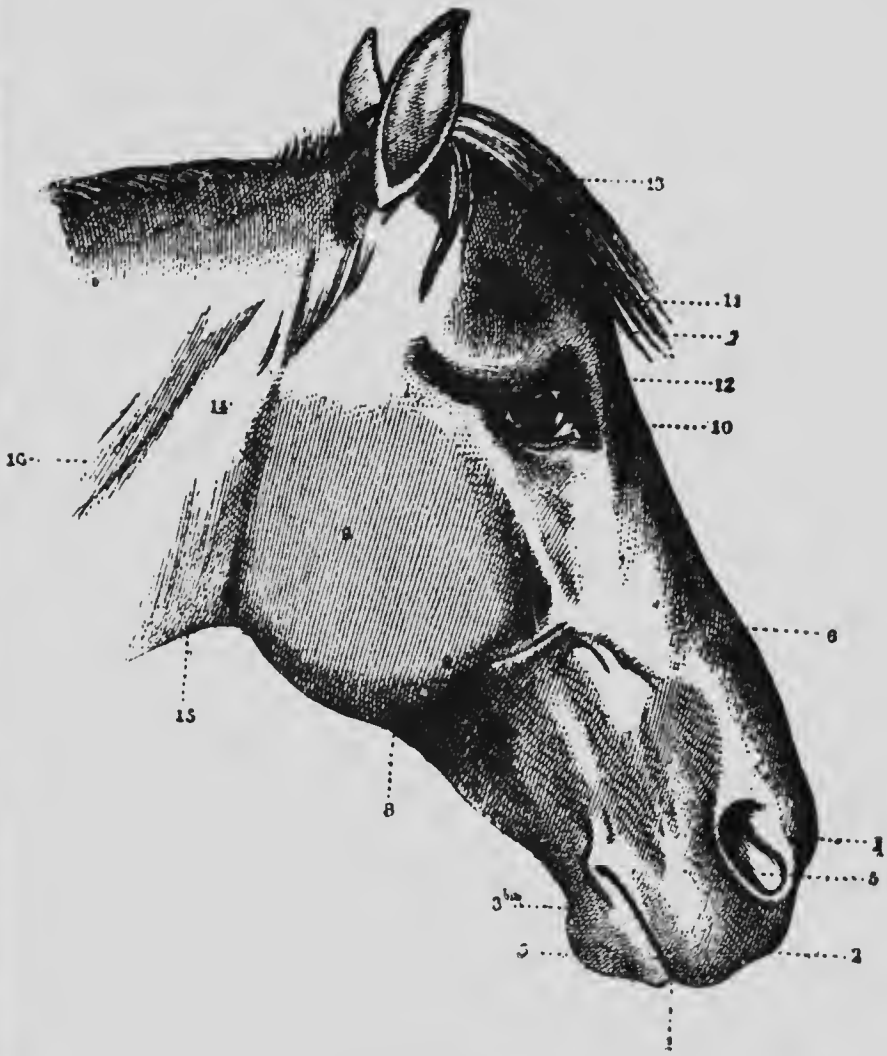


Fig. 4.—The Head.

1. Mouth
2. Superior lip.
3. Inferior lip.
3b. Chin
4. Extremity of the nose.
5. Nostrils.
6. Face
7. Forehead.
8. Inferior Maxilla.
9. Cheeks.
10. Eye.
11. Supra-orbit.
12. Temples.
13. Ear.
14. Parotide region.
15. Throat.
16. Neck.

members. The trunk contains and protects the various organs indispensable to the maintenance of life and is composed of the head, the vertebral column, the pelvis, the ribs and sternum. The members are exclusively intended for the support of the body and by their movements transport it from one place to another. They are veritable columns of support and levers of motion.

THE HEAD

The Head is situated at the anterior extremity of the trunk. It exercises a great influence on the general equilibrium. Representing a resistance placed at the extremity of the arm of a lever formed by the neck, it forms or constitutes a resistance whose relative situation, on account of the extensive movements which it executes has a great influence in changing the position of the centre of gravity and controlling the movements during locomotion.

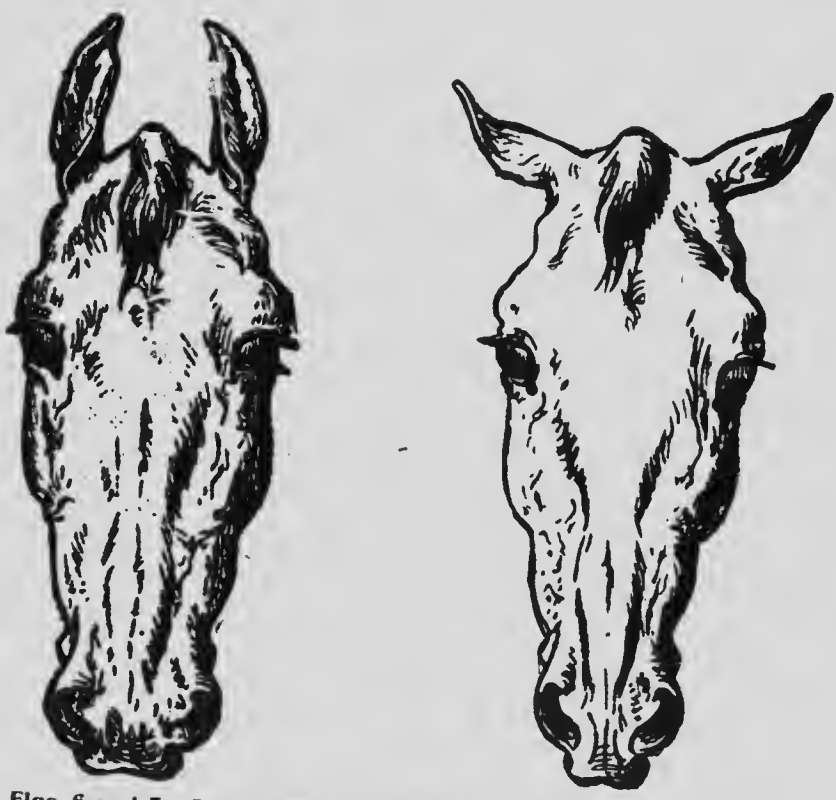
Fig. 5.—Correct conformation of head viewed in front.

The study of the ever varying expressions of the physiognomy furnishes us with an exact analysis of the qualities and defects in the character and conformation of individuals.

The head is divided on the median line in : 1. The Poll ; 2. Forelock ; 3. Forehead ; 4. Face ; 5. Extremity of the nose ; 6. Mouth hand secondary regions ; 7. Chin ; 8. Tuft of the chin ; 9. Intermaxillary space ; 10. Throat.

The lateral faces present: 1. The Ears; 2. Parotids; 3. Temples; 4. Supra-orbits; 5. Eyes and secondary regions; 6. Cheeks; 7. Inferior maxilla; 8. Nostrils;

In all animals the head is the seat of intelligence, without which it is impossible to have a good servant.



Figs. 6 and 7.—Defective conformations of head, viewed in front.

The head should be small, as the width of the forehead constitutes an absolute beauty. The height of the body measures from the withers to the ground, should be two and one-half-times the length of the head.

Well dilated nostrils, well situated eyes, ears well apart, a wide intermaxillary space are characteristics which generally coincide with a wide forehead, whereas, the narrowness of the forehead is usually accompanied by long ears, situated *too high*

Fig. 8.—Defective conformation of head, viewed in profile.

and *too closely* together, small eyes, small nostrils and narrow intermaxillary space.

The fineness and nobility of the ears and eyelids, amplitude of the nostrils, thinness of the lips, vivacity of the eye, and frank expression of the physiognomy are generally co-existent beauties.

THE EAR

The ear is situated at the superior extremity of the lateral face of the head to one side of the forehead. Diverse beauties are looked for and eagerly seeked in this region which are dependent upon its length, thickness, situation, direction and movements.

1. *Length.*—Some nations prefer a long ear, others a short one. We do not approve of an excess of length ; but rather that the ear should be proportionate to the head. But it is a fact worthy of remark, that horses in which they are short are usually energetic and courageous. In this respect the Arabian horse has much the advantage over the English horse.

2. The *thickness* of the ear denotes the nobleness of the race. When the skin of the concha is thick, and garnished on the inside with numerous long and coarse hairs, we have evidences that the subject is soft, lympathic and of common issue.

3. The *situation* of the ear merits consideration. Its distance to one side of the median line, allows us to appreciate, to a certain degree, the width of the cranial cavity. But is also dependent upon the muscular development of the region. If this separation gives more expression to the head and presages greater intelligence, it is nevertheless necessary to guard ourselves against according to this character more importance than it deserves. The same argument applies to ears situated too high ; they have an unpleasant effect on the eye and are often an index of a timid and sulky disposition.

4. It is considered a mark of *beauty* if a horse freely directs his ears to the front.

Ordinarily they are moved in various directions.

Animals in which the ears are motionless are sluggish and indolent or, what is more serious, suffer from deafness.

If the various movements and attitudes of the ears are closely studied, they will be found to furnish a reliable index to the animal's moral qualities, and give valuable clues as to whether the horse is skittish, irritable, or kind and trustworthy.

THE EYE

The eye constitutes a double region situated upon the lateral planes of the head, and on each side of the forehead.

Beauties of the Eye :—Whatever may be the service, the absolute beauty of the eye resides in the following phenomena :

1. Its separation from the median line, which coincides with a wide and well developed forehead.

2. Its degree of prominence over the surrounding regions, which indicates a fullness of the ocular cavity and the temporal fossa, the size and development of the muscular system, good general condition, and the amplitude of the field of vision.

3. Its perfect equality with that of the opposite side.

4. Its deep coloration.

5. Its freedom from blemishes of the conea and the transparency of the media

6. In the dark coloration of the pupil.

7. A rosy tint of the conjunctiva.

8. Finally, the vivacity, changeabliness, and frankness of the expression. Such are the beauties to be sought for in this region.

THE NECK

The neck is a single region, flattened from side to side, situated at the anterior extremity of the trunk and supporting the head.

This region is an important one to study, because it constitutes at the anterior part of the trunk the arm of a lever more or less long, whose

Fig. 9.—Good conformation of head, viewed in profile.

extremity gives attachment to the head, which is a kind of resistance that follows all its displacements and concurs with it to modify the situation of the centre of gravity during progressive movements.

The anterior extremity of the neck is limited by the head, the posterior extremity is limited superiorly by the withers, inferiorly by the breast and laterally by the shoulders.

The length should be proportional to the remainder of the body. However in saddle-horses the neck can never be too long unless it should be very slender.

The Arabs, who possess such a judicious instinct of the horses' absolute beauty, *say that a horse, without bending his anterior limbs, should be able to drink out of a brook running at the level of the ground.*

A short neck presents disadvantageous only for saddle-horses, from whom much suppleness and mobility is expected, especially in army service and manege work.

In draught horses, whose qualities reside in their immense power of traction and resistance a short neck cannot be considered a serious defect.

Driving horses should not have short necks, as this defect would greatly impair the animal's elegance, and the gracious carriage of the fore parts expected from him when under harness. In such cases the carriage of the head would not be in keeping with the remainder of the turn out, and the intended effect would be defeated.

It is readily seen that the neck is one of the regions exercising the most influence on general locomotion. Consequently its type should be selected in accordance with the kind of service to be expected from it. In all cases it should be slender, muscular, well defined ; then it will never appear heavy ; more especially if the conformation of the withers does not mar it.

THE WITHERS

This is a single region situated on the superior face of the trunk, behind the crest of the neck, in front of the back, and between the two shoulders.

The beauties of the withers are in the sharpness, elevation, extent, and freedom from blemishes thereof.

Fig. 10.—Correct conformation of fore part, viewed in profile.

The sharpness of this region indicates that its summit is formed only by the tissues which constitute its essential base. The superior border, however, should alone present the inert parts, as the bones and ligaments. At the base, on the contrary, the thickness denotes a large development of the muscles which separate it from the internal face of the scapular cartilages.

Thus should the withers have a fair elevation, but not excessive, be sharp and well defined instead of low and thick; and be well prolonged in an antero-posterior direction, that is, from the neck towards the region of the back. A horse possessing these characteristics will be in excellent condition for the production of speed.

The beauty of the withers, which is generally an indication of the nobleness and distinction of its possessor, seems to endow the animal with other important qualities. This region is somewhat analogous with that of the head, as in the case of the withers also a study of the region and knowledge of its correct conformation, may guide those knowing horses, in determining and appreciating the degree of nobleness of a horse as well as its value. It is seldom that beautiful withers are not accompanied by a beautiful shoulder, a deep chest, softness of the hair and coat, of a good foot, in short of all the characteristics which denote good breeding. Now, coarse and round withers are usually co-existent with the heavy and clumsy forms of massive and degenerate breeds. The exceptions to this rule are very few.

Consequently it will be wise to devote to the examination of this region all the care that it deserves, with a view of selecting its form in com-

Fig. 11.—Good conformation of rear part, viewed in profile.

pliance with the kind of service it is intended to obtain. In all cases it must be sharp, muscular at the base, well defined.

THE BACK

The back has no defined limits, it is limited auteriorly by the writers, posteriorly by the loins, and laterally by the ribs. The back is a single region situated on the superior part of the trunk.

To be of correct conformation, the back must be straight, short, wide and muscular.

The back is said to be *straight* when it describes almost a horizontal line from before to behind. It is the sign of great strength, for all the weight which the region supports is borne by the bones and tends to efface the rachidian arch. The saddle, pack and harness-saddle will, in this conformation, rest in a good position.

The horses who are *hollow-backed* or, as some prefer to say, *sway backed*, are not adapted to work which exacts much force and resistance of the back. They cannot be employed as hunters or runners, but should be reserved to draw light vehicles, four wheeled ones preferably.

Long Backs are much sought after by those riders anxious to secure pleasure saddle horses and who prefer easy reactions and rocking gaits accompanied by suppleness to great displays of strength and resistance.

Wide Backs are evidences of high development of the muscular system of the region. This characteristic marks that kind of back which is called *double*. It is a peculiarity observed in heavy and well muscled animals, whose chests are wide, the backs somewhat concave, and the withers low.

THE LOINS

This single region is situated behind the back and in front of the croup and the haunches, and limited on the sides by the flanks. The conditions denoting good loins are identical with those of the back and are easily explained.

The loins should be wide, short and muscular.

The width of the loins is directly proportional to the development of the costiform apophyses of the lumbar vertebrae; consequently a wide loin is to be regarded as a feature of absolute beauty.

Whatever may be the work the animal is destined to perform, the loins should be as short as possible, a condition of solidity.

As to the relation of the entire length of the dorso-lumbar region, the back should be *long* and the loins *short*, especially in saddle and pack animals. This point cannot be impressed too strongly.

As to their direction the loins should always be straight and become insensibly united to the croup and the back. When they are mal-attached, there exists in front of the former a depression of variable depth, which gives them such names as low, weak, false, and dipped.

The sensitiveness and suppleness of the loins, which it is well to test by pressure on the region to determine its flexibility, are often means of determining the state of health or sickness of the animal. Inflexible loins may characterize a more or less serious condition of disease, even a partial or complete ankylosis of the bones of this region. In cases where this condition is present it will be wise to seek the advice of some competent authority in the matter.

THE CROUP

The croup is a single region situated behind the loins, in front of the tail ; it is limited on each side by the thighs and the superior part of the buttock.

The croup can be considered as a lever facilitating locomotion and display of power, to a degree in relation to the length and angle of its arms, and the muscular development producing the motive force. The Arabs say: " As to the horse whose croup is as long as his back and loins united, you can safely choose him even with your eyes closed ; such a horse is a blessing."

For the production of speed, the croup, being considered as a lever, should be as long as possible ; it will then have the advantage of longer muscles, and consequently of a greater scope of contraction, which is a necessary condition in the production of speed. If a proportionate muscular development accompanies a long croup then this region will be endowed with the absolute beauty to be sought for, as in such a case the proper length and muscular development will be present.

The amateurs and self styled practitioners, who exercise but little judgment and powers, still less knowledge, are aware that a short croup is considered a defect. They cannot explain why, nor do they care much. We have repeatedly heard horse trainers and jockeys state that this horse or that could not possibly run or trot because the animal was not long enough. They were wrong ; the body of a horse is always sufficiently long when to a long croup there is joined a well developed and oblique shoulder.

Fig. 12.—Correct conformation of rear part, viewed from behind.

There has been much discussion over the directions of the croup, straight, horizontal, inclined. It is difficult to accord much preference to either type, and a choice is always difficult when otherwise the conformation is good. However, a croup of medium obliquity is the type which furnishes the best conditions for the production of resistance and speed.

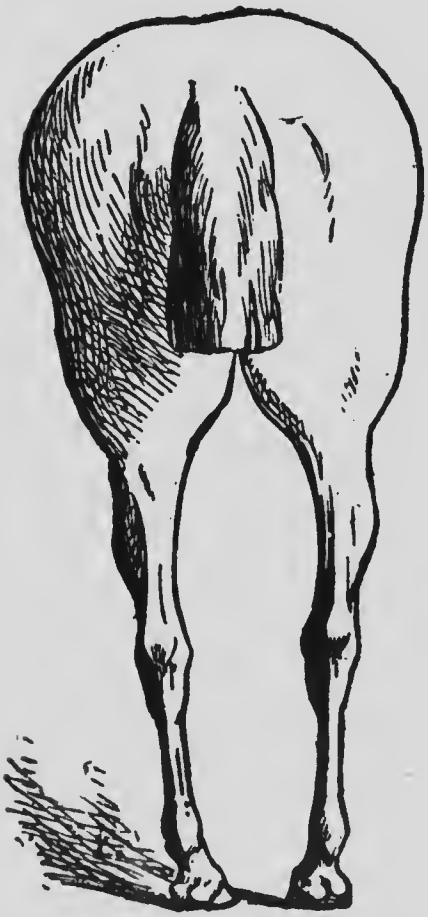


Fig. 13.—Defective Conformation.
Cross-footed and bow-begged

Fig. 14.—Defective Conformati
Cow-hocked or close hammed

THE BREAST

The breast is the symmetrical region situated at the anterior part of the trunk, and limited in front by the inferior border of the neck, behind by the axillae and the inter-axillary region, and on each side by the arm.

It is impossible to positively define what should be the dimensions of the breast; it should always be proportional to the general muscular development of the whole system.

In all cases the region should be well muscled and the width subordinate to the general development of the individuals.

Experienced practitioners will not err, as the breast is, of all the regions of the body, the easiest to judge, even for tyros.

The Arabs prefer a well developed and muscular breast and consequently a wide one. Narrow breasts and straight shoulders are characteristics of undesirable horses.

THE CHEST IN GENERAL

The chest is that part of the body which corresponds to the bony cage designated under the name of *thorax*. Bounded above by the *withers* and the *back*; in front by the *neck* and the *breast*; on each side by the *shoulder*, the *arm*, the *axilla*, and the *ribs*, below by the *inter-axilla*, the *xiphoid region*, the *abdomen* and *flanks*.

Although the chest wall is far from being observable over its whole extent from the outside, it is possible to judge of its capacity with much precision. This knowledge is of the greatest im-

portance, for it furnishes information upon the essential elements of the value of the horse.

The chest is called *beautiful* when it is *high*, *wide*, and *long*.

The development of the lungs is in relation with that of the cavity formed by the ribs. Let us examine what characteristics will denote the best conditions. If, on the horse, the first ribs are straight, tney will allow but little inter-space; they are about some six to eight centimetres apart and form the thin edge of the wedge shaped pectoral cage. Consequently this part of the chest offers but very little space to the lungs; and give room to the anterior lobes only, which are, as we know, but little developed, and also, to a portion of the tube conducting the air to the lungs. The development, in width, of this portion of the thorax is somewhat the same in all horses of the same size, the only difference being in the height of animals and in such cases the difference is due to the length of the ribs. Thus, what becomes of the generally accepted belief that a wide breast denotes a wide chest? Nothing can be more erroneous. Dissect two horses, one with a wide breast, the other with a narrow one. You will find exactly the same lateral space between the first ribs, or if there is a difference it will be very small. This width of breast which has erronously been accepted as indicating vast chest capacity, is only the consequence of the large development of the pectoral muscles; and has nothing to do with that of the lungs. The same argument can be utilized to combat another frequent error.

It is vulgarly believed that the height of the chest is an indication of lung development. This is

Fig. 15.—Correct conformation of fore-hand,
Viewed from in front

an error, as the height of the chest, as understood, is simply the result of the length of the first ribs and the height or elevation of the withers. However, these conditions may exist in presence of a very limited development of the thorax, and besides the anterior lobes of the lungs constitute only a small fraction of the total volume of these organs. The anterior portion of the thorax having but a very

Fig. 16.—Defective conformation.
Horse too open in front.

limited power of dilatation, it is a foregone conclusion that the capacity of the lungs cannot be accurately judged by the width of the breast.

The pulmonary mass resides in the posterior lobes which are lodged in the space formed by the posterior ribs, behind the shoulders and in front of the flanks. It is the base of the triangle formed by the chest, as well as that of the lungs, and upon

Fig. 17.—Defective Conformation.
Horse cross-footed in front

the amount of development and capacity of th region depends the volume of the important orga it contains. The capacity of this region is depen dent upon the degree of curvature of the ribs. T more accentuated the curve, the greater the inte estal space, and consequently the greater the che development. On the contrary the straighter t ribs, the narrower the intercostal space and as consequence we have a narrow and flat chest. Th we can observe wide breasts accompanied by hig chests containing small lungs, and, on the oth hand, ample chest capacity with limited height a narrow breast.

Finally, we should at all times seek a wi breast, high and prominent, more especially of gre height on horses intended for the saddle. Hors with low, narrow, and sunken breasts should rejected, as these characteristics are indications muscular weakness, and could not withstand acti work for any long period, and very often fail the masters when most needed.

THE ABDOMEN

In exterior this region corresponds to the i ferior surface of the abdominal cavity.

It would be superfluous to define the situati of this region, as it is well known to every one.

It is important to consider the region of t abdomen, for by its volume and its weight it great influences locomotion.

It should be proportional to the size and t type of the horse. It varies according to the bree being larger in some and smaller in other strain

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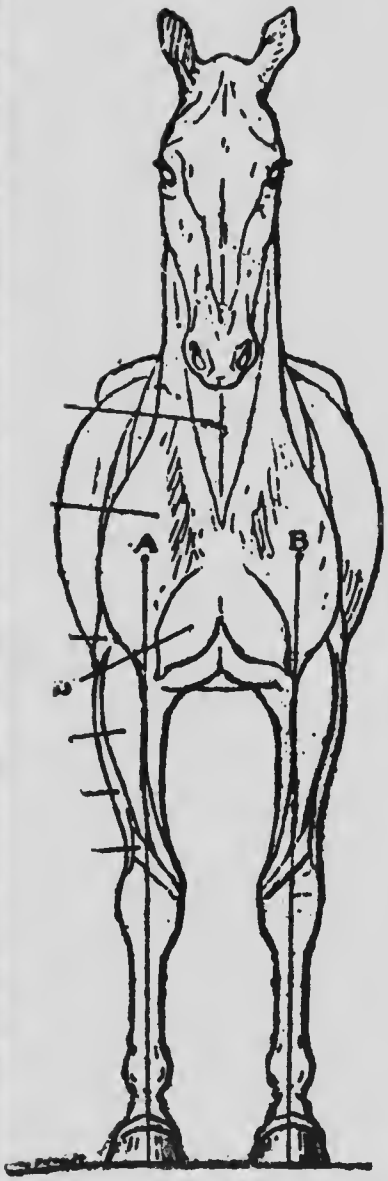


Fig. 18.—Correct conformation.
Viewed from in front.

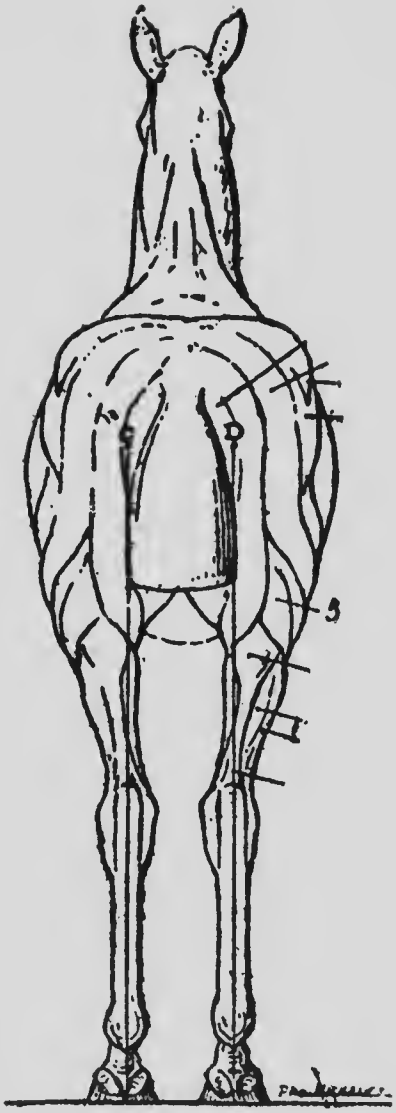


Fig. 19.—Correct Conformation.
Viewed from behind.

The volume of the abdomen can be considered correct whenever this region continues the exter form of the thorax, that when the latter becomes sensibly continuous with arch described by the r and the flank.

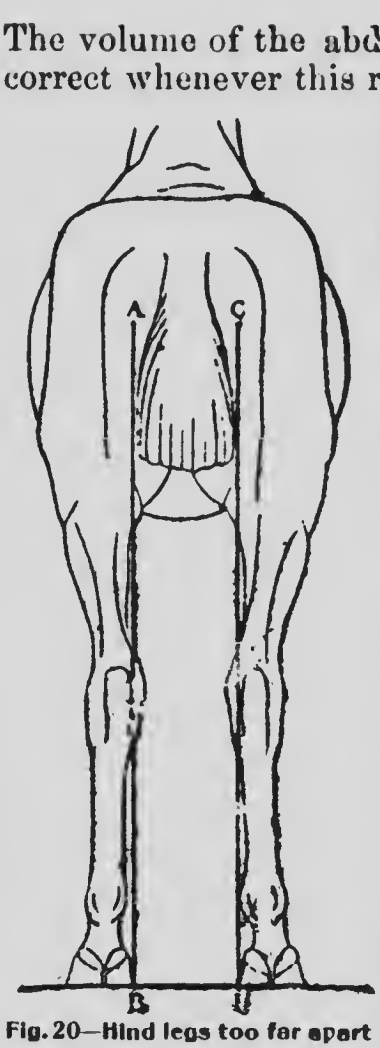


Fig. 20—Hind legs too far apart

When the abdomen defective through lack volume, it indicates an anir with impaired assimilati whose digestive functions irregular and incomplete.

A too voluminous ab men denotes an animal c careness appetite, of comm breeding, unsuited for ra paces, on account of the la intestinal mass, and co trained respiration caused the distension of the stoma and intestines which, pr sing against the poster face of the diaphragm, co presses the heart and che the lung expension.

THE MEMBERS

The *members*, *limbs*, or *legs* are the *suppo* and the *natural motors* of the trunk. They rep sent four articulated columns, segmented piece piece, situated upon the lateral faces of the bo in front and behind the centre of gravity, and c tinguished, for this reason, as *anterior* and *poster*

ANTERIOR MEMBERS

The Shoulder :—Situated between the *neck* and the *sides of the thorax*, the *withers*, and the arm, the shoulder occupies, without any precise demarcation ; the lateral and anterior region of the chest. The most important feature to be looked for in the construction of the shoulder is its length, or, in other words, its development from the summit of the withers to its point.

The length of the shoulder will naturally give us the extent of the muscular development reacting on the arm to either bend or extend it. Consequently, as the amount of power of extension of a muscle is dependent upon its length, it will be readily seen that the longer the muscles of the shoulder, the more extensive will the movements of the arm and the shoulder be.

Let us bear in mind this fundamental principle that the greater the length and obliquity of a shoulder, the greater the facility of the forward movement, as well as the production of speed and the safety of the rider, providing, of course, that the muscular development of the region be proportionate.

However, this type of beauty is not suitable to all kinds of work It may prove useless and even a defect in draught horses, of which only muscular strength, and not speed, are demanded.

For the more accentuated the obliquity of the shoulder, the further forward will its point be carried, offering but a very small surface to the pressure of the collar, exposing this region to wounds and galls, at the points of contact with the harness.

THE ARM

Slightly detached from the trunk, the ar situated between the shoulder, with which confounded, and the forearm, from which i separated by an oblique furrow behind and be

The arm should be as long as possible, rela ely; in order to give quarter length to its mus which attach on the forearm. But its length wo be defective if it became excessive.

While an exaggerated length of the arm stitutes a defect which is not always compensa its shortness also produces deficiencies of an inv order, and both are hinderances in that which cerns the rapid gaits. If it is short, the elevat of the members, when the animal is in mot becomes exaggerated, an elevation which is cuted at the expense of the length of the step. T is called having "high-action" which however termines a marked diminution in the total quant of speed.

The beauty and correct conformation of arm will consist in the degree of obliquity, wh will be an indication of the extent of its play.

THE FOREARM

The forearm, situated between the *arm* a the *knee*, is related, above and behind, to the elbo

Its beauty will consist in its length and m cular development, this in order to be in the m favorable corditions for the production of veloci Examine the forearm where it is bent on the a during the trot, and you will observe that its low extremity will be carried forward proportionately its length.

However, this consideration disappears when the pace is increased to a galop. In this case the whole limb is projected forward, with great force, during progression, and the results are not the same as at the trot.

Fig. 21.—Defective conformation. Hind legs too close.

The forearm should also be well muscled and possess strong and well developed tendons, sufficiently powerful to resist all the tractions and efforts to which they are continually exposed. I have freqnently seen otherwise admirably constructed and powerful horses, rendered unserviceable, useless, completely worn out in the anterior limbs only, and this condition brought about by the defective conformation of the forearms which were slender and thin and could not consequently withstand the fatigues of arduous labors.

About the middle of the internal face of the forearm is found a horny excrescence to which has been given the name of *Chestnut*. It is small in animals of fine breeding.

THE KNEE

The knee is limited above by the *forearm* below by the *canon*. It should be disposed in s a way as to produce a vertical direction of the *f arm* and the *canon*. All knees which deviate fi the perpendicular line are to be classed as defect The knee should be strong, wide, well develo and close to the ground. Whenever scars are served on the anterior face of the knee, the hors said to be *crowned*, this is a blemish, and den weakness of the fore limbs.

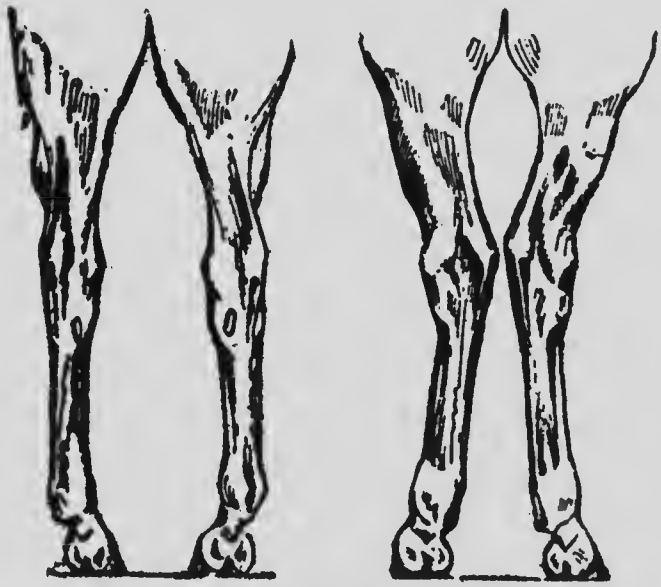


Fig. 22.—Two Defective Conformations-

THE CANON

The *canon* is the region of the members wh extends vertically from the knee or the hock the fetlock.

The canon, in order to be *beautiful*, must vertical, short, wide, thick, fine, and neat of

line; its posterior part, or the *tendon*, must also be fine, unblemished, firm, and well detached. It is defective in opposite condition.

We must guard against error with regard to the volume of the canon bone, as the finer it is the greater the indication of a noble ancestry. And in all other bony parts, the solidity of the region is due to the density of the bony texture rather than to its volume.

The tendinous cord (tendon) must be free from all deviations from the straight line, and free in its action. In order to exercise the greater amount of power, it should be kept well apart from the canon by the pulley formed by the fetlock; furthermore, it will be firm, and free from inflammatory enlargements. In opposite conditions, if it lies close to the canon, and presents enlargements and curves, if there is a lack of density and firmness, such a tendon will not stand much work, but will be predisposed

Fig. 23.—Correct attitude, a vertical line drawn down from the point of the shoulder, should divide all the articulations into equal parts.

to over-stretching and painful enlargements. Su
a horse, whatever may be his other qualities, a
the correctness of the remainder of his conform
tion, is to be considered as valueless, as he cann
be depended upon to perform suitable service.

THE FETLOCK

The fetlock is situated between the *canon* a
the pastern. It supports, at its posterior part,
horny production, the *ergot*, and a tuft of hair
which has been given the name of *footlock.*

As is the case with all the other articulatio
the fetlock, in order to be of a correct confor
ation, must be wide, thick, well directed, fine a
free from blemishes.

THE PASTERN

The *pastern* is situated between the *fetlock* a
the *coronet ;* it is the narrowest part of the leg
the horse, and owes without doubt to this char
teristic the name *wrist*, by which it is also design
ed in ordinary language.

The *pastern* must be wide, thick, of mediu
length, well directed, fine and free from blemish

It is impossible to assign an absolute leng
to the pastern. The experienced eye can, at a glan
judge the case, but it must be remembered tha
short-jointed horse will last a long time, and
limbs remain perfectly sound, whilst the long-joi
ed animal will be undermined or broken down.

Long jointed horses are usually selected
saddle purposes, as the elasticity of the region h
a tendency to lessen the reactions and the moti
of a long-jointed horse is always more easy on t
rider than that of a short jointed one.

THE CORONET

The *coronet*, a region rather difficult to delimitate, is situated between the pastern and the hoof.

The only points of this region are the width, the fineness, and the freedom from blemishes.

THE FOOT

The foot has always been considered as one of the most important regions to study. This will be the better appreciated when we learn the important part it plays in station and in locomotion, the influence of its beauties and defects upon the aptitude of the animal for diverse services, and finally, the gravity of its diseases.

Fig. 24. – Defective conformation, horse too open in front.

More than twenty-two centuries ago, Xenophon said that the limbs are the very first parts to be examined in the horse: "A house cannot serve any purpose, however perfect it may be in its superior parts, if it has not a good foundation; it is the same with a horse; he will be good for nothing if being perfect otherwise, he has bad legs, for he is unable to use whatever good points he may have."

"In the examination of the legs, look first at the foot." This is the same idea which is reproduced in our days, in the form of aphorisms in all treatises on the exterior.

"No foot, no horse!" said Lafosse.

"No foot, no horse!" repeat the English.

ANATOMICAL DESCRIPTION OF THE HO

The wall: This portion is the most extens
of the whole foot and forms the circumference
the hoof. It is divided into several important
gions bearing different names, viz: The *toe* whi
forms the anterior fifth of the circumference;
each side are the *mammæ*, the *quarter* and the *h*
The internal quarter is more upright, shorter a
thinner than the external.

The Sole: This is a large horny plate filli
the interval which exists between the inferior b
der of the wall and the bars. The horny substa
forming it is softer than that of the wall, and t
horny fibres, or tubes, have an oblique directi
downwards and outwardly. The sole offers
study the following sub-divisions, viz: An exter
and internal branch, a superior and an inferior fa
an external and an internal border.

The branches are triangular in form and fill t
space between the bars, the quarters and the hee

The Frog: The Frog is a wedge, or pyram
of soft horn, which covers the plantar cushi
whose form it reproduces. Lodged in the an
formed by the bars and the posterior border of t
sole, it is seen to be single in front and bifid behin
two faces and two extremities are thus assign
to it.

The color of the hoof is due to the presence
pigment in the horny tissue, and varies greatly

The hoot protects the soft tissues which it co
tains, from all outside influences, more especia
against undue pressure during normal locomotio
and against concussions during fast or long journe
over hard roads. Should the hoof be removed,

would then have the different portions forming the soft part of the foot. Exposed thus we would find the *coronary*, *navicular* and *pedal bones*, the *plantar cushion*, the *coronary band* or *cutidure*, the *podophyllous* or *laminated tissue*, and finally the *villous* or *velvety tissue*.

Fig. 25.—Defective Conformation, Knees are Arched Outward.

Fig. 26.—Defective Conformation, Horse Low Footed.

A great deal more information could be added to these few anatomical rules, but the limited scope of this work will not permit our doing so.

The study of the foot is of the utmost importance to the shoeing smith which, having once acquired a sufficient knowledge of the anatomy of the foot should next devote his attention to the study of equilibrium, and ascertain if the horse to be shod interferes, forges, or stumbles. He should also examine carefully the sole, the heels, and the

frog ; ascertain the condition of the hoof, and sh
also be able to detect any abnormal length of
hoof.

An examination of the old shoes will, a
rule, help the shoeing smith to detect any irre
arities of equilibrium. If the shoe is worn eve
then the equilibrium is normal, it being remembe
however, that the wear is always greater at the
If the outer branch of the shoe is worn the m
then the horse is pigeon-toed. If, on the contr
the inner branch is most worn, you have an outb
footed horse, or else, defective shoeing.

QUALITIES AND DEFECTS OF THE FOO

Now that we have studied the different p
which enter into the conformation of the foo
will be much easier to judge of its *beauties* and
its defects. The foot has no absolute proporti
Experience alone can enable one to judge of
proper size relative by the whole of the anim
But in all cases it should be round and pres
much more width at the bottom than at the to
smooth and shining surface, a convex sole but
to excess, a good size frog, and should continue
direction given by the pastern, a region which
already been studied.

The *defects* of the foot can be natural or a
dental. They depreciate the value of the ani
in proportion to their gravity. It is important t
we should be competent to detect them.

The principal natural defects are :

The *large foot* is one which is not proportion
to the remainder of the body, but presents an ex
of volume. This defect is simply unpleasant to

eye and does not present any serious inconvenience, more especially if of otherwise good conformation.

The *small foot* is one where the contrary of the conditions related above exist. This is a much more serious defect than the preceding one and generally become more accentuated after a few years stabling, and to such an extent, in some cases, as to produce lameness of a grave character.

We can rightly say "small fetlock, small foot, bad service."

Next to shoeing, the nature of the ground over which the animal lives and works exerts the greatest influence on the volume of the foot

Horses born and raised in mountainous regions have always smaller and harder hoofs than those born and raised in valleys.

The *flat foot* is the deplorable consequence of breeding in marshy regions. This conformation is due to an excess of obliquity of the wall and convexity of the sole, it complets the weight of the body to bear upon the heels, which, ordinarily weak and sensitive, are thus easily bruised and contused and predispose the foot to corns. There results besides, a more marked inclination of the pastern, which fatigues the tendons.

The *pumiced foot* is an exaggerated type of the *flat foot*. The sole instead of being concave as in the normal state, is convex and bulges beyond the inferior border of the wall. This condition generally becomes complicated with sprung-knees, corns, and founder, all of which place the animal in such a condition that he cannot perform good service.

The *brittle foot* is the foot whose wall is dry and easily broken. They offer the great incon-

venience of being difficult, and sometimes ten
arily impossible to shoe.

The *pincard* or *rampin foot* is characterize
the perpendicular direction of the wall and
exaggerated height of the heels. This form of
normal in asses, is rather more disagreable
harmful in horses.

The most important accidental defect t
observed is the *contraction of the foot*, this,
the heels are very much narrowed, almost pa
one over the other. This defect, noticed mor
quently in the fore feet, is quite frequent in
lish-bred horses, who are, in a notable propo
rendered unserviceable by this cause.

Finally, in closing the study of the foot, l
remark that all the defects and deformities
more frequently met with in the fore than i
hind feet. And this as the result of the h
functions they have to perform.

SHOEING

It is evident that until now the questi
shoeing has been sorely neglected. Most u
pily, the capital importance, results, and be
that radical reforms, which might be work
the shoeing industry, would bring about, ar
yet clearly understood.

In fact, the majority of our shoeing smit
do not realize the grave consequences that
result from defective shoeing, more especially
young horses.

In order that a shoeing smith may be in
tion to pursue his trade with intelligence, it
cessary that he should possess at least, the el
tary anatomical notions which have been st
in the previous chapter.

CARE OF THE HOOF

The hoof should be oiled occasionally, say once or twice a week.

The following prescription is recommended :—

Pine Tar	1 Part
Turpentine	1 Part
Bees Wax	2 Parts
Lard	5 Parts

Melt over a slow fire until the whole is well mixed, then stir until cold. The hoofs should be washed before each application.

After a journey, or a day's work, when taking the horse to the stable, he should be allowed but very little water, but should be rubbed dry with either cloths or wisps of straw, after which the horse may be watered and fed.

RELATIVE PROPORTIONS OF DIFFERENT REGIONS ON THE HORSE

The breeding of horses, on the farm, is one of the most interesting parts of the work of agriculturists, and requires a wide scope of information.

In the foregoing chapter we have given sufficiently exhaustive notions of anatomy, physiology and normal physical conditions, on the horse, to permit all those interested in horse flesh, to become competent to judge as to the correct conformation of a horse as well as to correctly estimate the probable energy of the animal's character.

Still, it must not be forgotten that the relative proportion must necessarily vary according to the diffrent kinds of work to which the horses are intended.

In the study of the exterior of the horse, must be borne in mind that the problem student a purely mechanical one ; and that in mechanics well as in mathematics, the rules are non-elastic on the contrary they are positively absolute. I both cases, two and two makes four, and tw right angles are always equal.

Thus the horse is to be considered simply as machine, exception being made of his temperamen or disposition ; it being well established that how ever good the conformation of a horse, if he without " nerve or soul " such a horse wi always be an undesirable animal. Consequently, is necessary that taste be accompanied by *science*, taste alone, but resting upon a solid bases, w never produce satisfactory results.

Now that we know what difficulties are co prised in the study of proportions, it is importa to endeavor to establish the basis of these prop tions, the more safely to lead those desirous acquiring a knowledge of the horse.

A renowned veterinarian called Saint-B founder of the Veterinary School of Saint Pancr endeavored to propagate the principles of Bourge in England. He thought that Eclipse, that ext ordinary and always unconquerable horse, wou be for English scholars the best type of the co formation of the beautiful horse, and he prepa with great care the scale of proportions of t noble animal.

We will confine ourselves to this mention.

The length of the head is supposed to be divid into thirty-two equal parts, which are used as a co mon measure for all parts of the body.

1. Height of the poll to the ground, 3 heads and 13 parts. (a, b).

2. Height of the withers from the ground, 3 heads (c, n d).

3. Height of the croup from the ground, 3 heads (e, f).

4. Whole length of the body, from the point of the shoulder to that of the buttock, 3 heads and 3 parts (g, h).

5. Height of the body at the level of the centre of gravity, 3 heads and 8 parts (i, k).

6. Elevation of the chest above the ground, 2 heads and 7 parts.

7. Height of the perpendicular falling from the point of the shoulder upon the hoof, 2 heads and 5 parts (g, l.)

8. Height of the perpendicular from the point of the elbow to the ground, 1 head and 19 parts (m, n).

9. Distance from the summit of the withers to the stifle joint, 1 head and 19 parts (c, o).

10. Distance from the summit of the croup to the elbow, 1 head and 19 parts (e, m).

11. Length of the neck from the withers to the top of the head, 1 head and 11 parts (c, a).

12. Length of the neck from the top of the head to its insertion in the chest, 1 head and 11 parts (a, p)

13. Width of the neck at its union with the chest, 1 head (c, p).

14. Width of the neck in its narrowest part, 12 parts (g, r).

15. Width of the head taken above the eyes, 12 parts (s, t).

16. Thickness of the body between the middle

of the back and the middle of the abdomen, 1 h
and 4 parts (u, v).

17. Width of the body, 1 head and 4 parts

18. Distance from the top of the croup to
point of the buttock, 1 head and 4 parts (e, h).

19. Distance from the root of the tail to
stifle joint, 1 head and 4 parts (o, x).

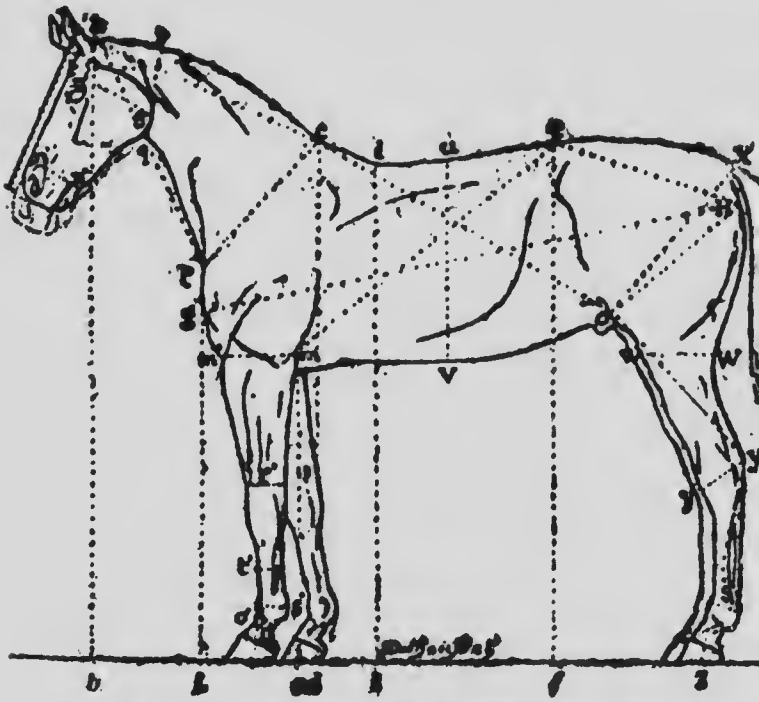


Fig. 27.—The proportions of Eclipse, after Saint-Bel.

20. Distance from the stifle joint to the poi
the hock, 1 head and 4 parts (o, y).

21. Distance from the point of the hock to
hoof, 1 head and 4 parts (y, z).

22. Distance from the point of the buttoc
the stifle-joint, 20 parts (o, h).

23. Width of the croup, 20 parts.

24. Width of the anterior members at the level of the elbow, 10 parts (m, m').

25. Width of the posterior members at the level of the fold of the buttock, 10 parts (w, w).

26. Width of the hock at the level of its fold, 8 parts (y, y).

27. Width of the head above the nostrils, 8 parts (n' n')

28. Distance from the internal angle of one eye to that of the other, 7 parts.

29. Separation of the anterior members, 7 parts.

30. Width of the anterior face of the knees, 5 parts.

31. Width of the anterior member above the knee, 5 parts (r').

32. Width of the hocks, (anterior face) 5 parts.

33. Width of the fettick, 4 parts (s).

34. Width of the anterior face of the coronet, 4 parts.

35. Same width, but a little lower, 4½ parts.

36. Width of the member in its narrowest part, 3 parts (t').

37. Width of the posterior pastern, (anterior face), 2¾ parts.

38. Width of the anterior pastern, 2¼ parts (o')

39. Width of the anterior canon, 2¾ parts.

40. Width of the anterior and posterior canons upon their anterior face, 1¾ parts.

Such are, as we understand them, the correct proportions in horses, and which are in harmony with the studies that have preceded this chapter; studies based upon the laws of physiology and mechanics.

The well proportioned horse should have short ears (many think the contrary) the bones slender

but dense, the cheeks thin, the nostrils wide
eyes beautiful, black, prominent, the neck
the breast well out, the withers of a good elev
and sharp at the top, the loins short and mus
the haunches powerful, the last ribs should be
the first ones long, the croup well rounded

Fig. 28.—Defective conformation, hollow, effaced, or sheep like knee.

Fig 29.—Defective conformation,—Arched Kneed.

Fig. 30.—Defe equilibrium,— Kneed.

testicles near the body, the upper portions of
limbs should be long and muscular, the artery
ing on the internal face of the hock should n
large and noticeable, the hoof uniformly black
hairs of the mane and tail should be fine and ab
ant, the flesh hard, the tail should be quite l
at the root, and slender at its extremity.

In short a horse should possess.

Four wide regions:	*Four long regions:*	*Four short regions:*
he Forehead.	The Neck.	The Loins.
" Breast.	" Upper part of limbs.	" Pasterns.
" Croup.	" Abdomen.	" Ears.
" Limbs.	" Hips.	" Tail.

All these qualities observed on a horse are vidences of good breeding.

THE COATS

The word *coat* is synonymous with *robe* and efers especially to the color of the hairs. It denotes he whole of the hair which cover the surface of he body.

The colors of the hair of the horse are: the *lack*, the *white*, the *red*, the *russet* or *reddish brown*, he *gray*, and the *yellow*. Their numerous shades nd diverse intermixing render the study of the oat somewhat complicated.

Thus in ordinary circumstances we say:

1. The *black coat*, which is the darkest of all oats, and of which there are two varieties, viz:

A. The *true* or *ordinary black*, dark, dull, uniform, and without any reflection.

B. The *rusty black*, dull, reddish in the sun, ith a gradation of tints.

2. The *sorrel-coat* consists of golden, fawn, and eddish brown hairs, and recalls, more or less, the olor of cinnamon bark.

A. The *light* or *fawn sorrel* has a yellowish tint hich is similar to the coat of the deer.

B. The *bovine* or *washed* sorrel.

C. The *dark* or *dull sorrel*, bordering up
brown.

D. The *cherry sorrel*, *burnt sorrel*, etc., etc.

COMPOSITE COATS

We call *composite coats* all those which
formed by two distinct kinds of hair, the one y
low, red or gray, for the body, the other alwa
black, for the mane, tail, and extremities.

They comprise the Isabella, the Bay, and
Mouse-color.

1. The *Isabella coat* is characterized by hai
two distinct colors. Those of the body are yellow
yellowish ; those of the extremities, from the k
and the hock down, as well as the mane and t
are black.

According to its shade, it is *light*, *ordinary*
dark.

2. The *Bay coat* differs from the Isabella o
in so far that the yellow hairs are replaced by
hairs.

3. The varieties of the bay are as follows :

A. The Light Bay.
B. " Ordinary Bay.
C. " Cherry Bay.
D. " Blood Bay.
E. " Mahogany Bay.
F. " Chesnut Bay.
G. " Maroon Bay.
H. " Dark Bay.
I. " Brown Bay.

4. The *mouse colored* coat is formed by an
semblage of two distinct colors ; the body is

ered with hair of an ashy gray analogous to those of the mouse ; as to the members they are black from the knee and hock down.

5. The *Louvet* or *fox color* coat is somewhat analogous to that of the wolf, it can be *light* or *dark*.

DERIVED COATS

They are four in number : the *gray*, the *white*, the *flea-bitten*, and the *roan*.

The *Gray coat* is excessively varied in its degrees ; it is a sort of chaos ; so many different shades of hair are there ; it borrows from all the colors.

1. The *very light gray*, which greatly resembles the white, and shows very few black or dark hairs.

2. The *Ordinary Gray*, which presents an almost equal mixture of white and dark or black hairs.

3. The gray, characterized by the predominence of dark or black hairs.

Relative to its particular *tint* or *color*, the gray is also called.

Iron Gray : Slate colored gray : Clayez gray : Isabella gray.

The *White Coat*, being so universally recognized, needs no definition.

The *Roan coat*, which is composed of three kinds of hair : red, white, and black.

A. The *light gray*, which contains a smaller number of dark hairs.

THE HORSE AT THE STABLE

STABLING, HYGIENE, HARNESSING, A GENERAL CARE

The question of stable architecture and s management is one of the highest importance, especially is this the case in rigorous climates su ours, when rapid changes of temperature are of frequent occurrence.

The stable walls should always be of d thickness, and of tongued and grooved lumbe windows of good size, to allow ample light doors to fit tightly into their sashes to avoid manent draughts. How many sound beasts rendered incapable of furnishing the quota of that can be expected of them, by the reason they are not given the comforts indispensab the maintenance of good health Often they quartered in low, damp, and dark stables, wit ventilation, and often over-crowded conseque I have thought this an opportune moment to i the attention of my readers, to this matter, wit however, going into a mass of details which w be out of place in a work like this.

The stable should be strictly *horizontal.* now it has become a universal custom to give a of from 3 to 5 inches to the floor of a stab about 9 or 10 feet. This custom is vicious, a

far from accomplishing the proposed result, which is of draining the floor of the urine, and this explained by the fact that the animal, in attempting to restore his equillbrium on the inclined plane, is constantly stamping and moving about. This soon wears the flooring and the depression thus caused facilitates the imbition of the urine and the soaking of the litter. At the same time the horse acquires a tendency to *stand under*, the ultimate consequences of which are spring knees. Besides, could the horse talk, he would, I am sure, most empathically deprecate the use of a floor which compels him to ever stand on a false equilibrium, certainly most prejudicial to both his comfort and conformation. I may add, that in the course of my professional career, I have often had occasion to treat and cure cases of lameness by simply altering the defectiveness of the floor.

INTERIOR ARRANGEMENTS

The width of the stalls should always be proportionate to the height of the horses, so as to allow them to lie with their limbs fully extended. Thus, if the height of a horse is 5 feet 3 inches, the width of his stall should also be 5 feet 3 inches.

The stable door should be wide, and, if possible, should consist of two halves. The height of the stable, inside, should be from 8 to 9 feet.

It is advisable that a box-stall be provided in every stable ; it will be found most useful in cases of sickness or of prolonged inaction ; these boxes allow the horses more freedom and comfort.

TEMPERATURE AND VENTILATI

The normal temperature of a stable sh
60° F.

Ventilators should be located behind a
in front of the horses. The simplest and mo
nomical ventilators are square wooden pip
end of which starts from the stable ceilin
goes up through the loft and out of the ro
like an ordinary chimney. The upper extre
to be covered by a cap.

Many agricultural economists recomme
use of more complicated and possibly more e
systems of ventilation, but, remembering th
rule when asking too much one runs the
obtaining nothing at all, I have deemed it ad
to mention only the simplest mode, which,
erally adopted, would certainly prove a co
able improvement to our rural constructions

HINTS CONCERNING STABLE MANA MENT

The halters should be of a double tick
leather, well sewn together and provided w
dinary buckles. The use of chains to tie
recommended. The use of ropes is not to be
aged, for whilst the advantage of being nois
claimed for them, this advantage is more
counterbalanced by the fact that they soon
are easily broken.

The method of fixing a weight at the
the chain, which weight keeps it taught, is
mended and will obviate the danger of the
becoming entangled in his chain.

In summer, the coverings should be of linen and in winter of wool.

To bed down the litters, the use of wooden instead of steel pitch forks is recommended and will tend to diminish the possibility of accidents.

With regard to the hay lofts, which are generally found over the stables, they should be kept in order as far as is possible with such places, one half of the space being reserved for the hay and the other half for straw. To avoid dampness, forage should not be in contact with the walls.

Oats and bran are preferably kept in a shed, in boxes of known capacity, and every time these are emptied, they should be thoroughly cleaned of all chaff gravel, dust, etc., which might have accumulated.

Every stable should be provided with an automatic measure which would measure the exact ration of each animal.

Another important detail, which is, however, seldom appreciated, is that of the cleanliness necessary to the welfare of the horse. This constitutes the elementary rules of hygiene and stable economy. All that which relates to the feeding of the horses must also be the object of the most scrupulous cleanliness.

THE HARNESS ROOM

The harness room should be kept in perfect order and placed under the charge of a person who takes an interest in that sort of work.

The walls of the harness room should be provided with harness racks, and supports, placed sufficiently high to avoid any portion of the harness touching the floor.

Wooden, or cast iron bridle and saddl
can be secured at low cost. Two suppo
required for each harness, one of which to acc
date the bridle and collar, and the other the
and accessories.

When dealing with double harness, th
to be placed one beside the other. The cros
are to be put through their rings, but not bu

When not in use the saddle should be c
with a piece of linen. The bits, curb chai
checks bits should be thoroughly dried after
been used.

The reins should be carefully coiled an
in drawers, as well as all the wraps.

The whips should not be allowed t
against the walls, which would soon bend
but they should be hung by their tips.

Every harness room should be provide
a stove, which should, however, be placed a
tain distance from where the harness hang
to avoid drying the leather.

If to these few rules we add the ne
working materials, such as a harness-horse,
cleaning board, a few hooks on which to
bridles during the cleaning process, etc., etc.,
combs, hoof picks, sponges, brushes, polish,
ing paste, a burnisher, chamois skins, old
and rags, the harness-room will then ha
necessary accessories to allow it being k
good shape.

THE COACH HOUSE

The coach house should be separate fr
stable, and this for the reason that the am
gases emanating from the stable would soo

the paint and varnish on the vehicles. All vehicles should be kept covered with large cotton sheets. In the case of two-wheeled vehicles the shafts should rest on racks provided for the purpose, in order to keep them in a horizontal position.

CARE OF THE HORSE

Upon his arrival at the stable, in the morning, the groom should, first of all, look at his horses and note if any departure from the normal condition of things has taken place during his absence. He must see to the blankets, the mangers, note if the feed of the previous meal has all been eaten, then attend to the complete change of air in the stable without, however, allowing any draughts. Should he notice any horse appearing dull, with a standing coat or assuming an abnormal position, he must at once inform his master of the facts.

The groom should then attend to the watering of the horses and this before allowing any food. The watering is followed by the allowance of hay and this by the ration of oats. Once a week, it is well to give a warm mash of bran or ground oats; this mash should always be given at night.

The litter being removed, it should be placed (unless too much soiled by urine) in a place where it can dry. Useless to add that each day the stable must be carefully swept.

GROOMING

Horses stained by contact with urine or manure are to be washed with soap and water.

To thoroughly groom a horse is not without difficulties, unless one is quite familiar with the

handling of the brush. The curry-comb is m
used to clean the brush, although it may be us
certain circumstances on some of the most mus
portions of the body, such as the neck and
upper portion of the legs.

The corn brush is useful to clean certain
tions of the head, such as the ears, the fore
etc., etc.

The rubber brush gives an excellent finis
the grooming of a horse ; it makes the coat s
and is an excellent substitute to the hay
which is also used for the same purpose.

INFLUENCE OF THE CLIMATE

Horses living in warm countries, generally
a good muscular development, their flesh is
their bones of dense texture, a well-bred appear
and much intelligence: such, for instance, ar
horses of Arabia, Persia and Africa, etc.

In our climates, during the summer se
when the atmosphere is moderately warm (2
25°), or 68° to 77 F, this temperature has
found the most favorable to all horses, and
especially to convalescents, weak, and lymp
subjects. Under the influence of such mildly
temperatures, the animals seem to have a
digestion and put on flesh easily. If, howeve
temperature raises above the indicated poi
becomes harmful, inconveniences the horses, an
even bring about disastrous results. A very
atmosphere is injurious to nervous and bilious
stitutions, and can occasion diseases.

The influence of very cold air is still more harmful; by cooling the skin, it temporarily checks its functions, and through this may bring about very serious consequences; under the inflence of cold the horse is chilled, becomes dull, then weak and insensible to its surroundings, the blood sent to the brain produces torpor, sleep, and finally death.

The horses which most successfully resist the influence of cold, are those endowed with a strong constitution, characterized by the predominence of the sanguine and nervous systems, the density of their muscles, and the energy of their movements. It was observed during the Russian campaign that horses coming from the warm sections could stand the influence of the cold much better than those coming from the northern and consequently colder regions. Identical results were noticed in the Crimea, where the Eastern horses were found to better resist the extreme cold than the horses coming from France, and these latter still better than the English bred mounts. In both campaigns was observed the fact that the adults were much less accessible to the influence of cold than the old or very young subjects.

Temperature:—In winter, the temperature of stables should not be too high, the consequence of having an habitually too warm stable being that it renders the horses too sensitive to the influence of cold, and predisposes them to those diseases which are generally caused by sudden exposures to the cold.

During the coldest portions of winter, a horse should receive up to 15 pounds of oats each day.

In certain cases, it is wise to avoid making use of cold water, or of snow-water, to quench the animals' thirst.

During exposure to extreme cold, the
should not be allowed to remain standing st
any long periods.

Gentle exercise prevents stagnation of th
culation, stimulates the production of heat, an
general functions of the organs.

Light :—Light has a powerful influence
organized beings.

On horses the action of light is more espe
centered on the blood, the nervons centre
skin, and the eyes.

Light is an energetic stimulant of the
system. It promotes the fulfilment of all the
tions, stimulates nutrition, regulates the de
ment and correct proportion of the form. Exp
to the rays of the sun is beneficial to all hors
gardless of age ; it hastens the growth of colt
increases their strength. It will be readily
stood, from the above, that a stable cannot po
admit of too much light.

On the contrary, darkness, singularly en
facilitates fattening, the development of lymp
a serious condition of the blood. Horses rai
foggy climates generally have soft and
muscles, and are generally of a lymphatic d
tion ; they are tall, heavily framed, but have
blood, and are predisposed to distemper,
and glanders.

ACCLIMATATION

The horse is endowed with the marv
faculty of being able to live in all climates
successfully resists excessive heat as well as th
rigorous cold of the northern countries ; but
he is changed from one region to another

arked difference of climate, then certain changes ke place, more or less promptly, after the change s been made, and this in proportion to the differces of external conditions, such as the air, the il, water and stabling, existing between the two calities.

These changes are what is generally known as *climatation* or *acclimatization*.

The influence of acclimatation is not felt to the me degree by all subjects; the age, the hygienic nditions surrounding the animals, the manner in hich they are reared, are as many causes modifying the effects.

The length and risks of the period of acclimazation vary greatly, and are to a great extent gulated by the conditions surrounding the raising f colts.

The period of acclimatation is invariably long nd is frequently accompanied by serious disorders n all horses born and raised in liberty, in marshy gions, or prairie land, such for instance as are und in the Canadian North-West, etc.

The less marked the difference of climate in hich the horse is born and raised, and the climate f the region to which he is brought, the shorter ill the period of acclimatation be, and the disrder accompanying it will be of a more benign haracter, and offer less dangers.

The length of time necessary for the complete climatation of a subject, is variable. In some ases the change is operated in three months with erceptible effects, whereas, in other cases, it is ompleted only after twelve and even fifteen months.

The diseases which are observed during the eriod of acclimatation are, according to importance

and gravity, the following, viz: those of th
atory organs, such as pneumonia, distemper,
Then the feet are the seat of abnormal co
bringing about circular rings, narrowing
heels, contracted feet, and corns.

Horses whilst undergoing the process of
atation must be subjected to a carefully
regimen. They must be quartered in s
well ventilated stables, where care is take
allow the temperature to become too high,
them walking exercise twice daily, and, u
turning to the stable they should be well
and blanketed, should the temperature
and damp.

The feeding will consist of hay an
mixed and a great deal of soft mash (bran o
oats), this to be continued for some fo
weeks, then the method of feeding can b
ally changed so as to begin giving oats, an
ration of grain is increased, that of mash is
ed proportionately.

ALIMENTATION

Hay.—Hay is the grass of natural or
meadows, which has been cut and dried, s
may be put away for future use.

Hay is classified as *good*, *medium* a
according to the conditions of its harvest.

Good hay: The colour of good hay is
uliar green, more or less dark, and lustro
odour is pleasant, aromatic, but not pro
It is slighthly sweet to the taste, the stems
flexible, hard to break, and quite heavy;
still furnished with their leaves and top.
moved about hay of good quality produces

tle noise, which is an indication that it was cut the proper time and correctly cured. When ook it parts easily and leaves no waste.

As described above, hay constitutes an excel- t food for the horse. The amount of nutritive wers it possesses is about midway between that oats and straw.

To horses who do not perform much hard work y is sufficient to keep them in good flesh and ndition, but horses fed on hay only are not able resist fatiguing labors. Hay has a tendency to rease the volume of the abdomen and to lessen activity of the animal.

Hay should not be harvested too early. It is ferable to allow its full growth and to await the mation of the seeds. Then will the hay possess all nutritive properties.

Unmatured hay is recognized by its slender ms, it is colorless, odorless and without taste; en shook it produces a hardly perceptible noise, is not easily untangled.

Early harvesting of hay presents the serious wback of undermining the power of the soil by oving the crops too easily; as when the hay is before the seeds are ripe or even formed the nts cannot possibly be reproduced. The conse- nce of this is, that after a few years the adows are divested of their best plants.

Over ripe hay also offers inconveniences, as it es a proportion of its nutritive virtues, such as contained in the leaves and summit and which ome centered in the seeds.

Straw:—Straw is the dried stems of grain pro- ing plants, cultivated especially for their seeds. eat straw is the most nutritive; compared to

that of hay, it is found to be in the proport
280 : 100.

Wheat straw is not sufficient for the no
ment of the working horse, and its exclusiv
brings about a considerable increase in the v
of the abdominal organs, and extreme thi
But joined to other alimentary substances, in r
able proportions, and more especially to oa
barley, it acts as ballast, distends the dig
organs and prevents their contraction whi
grains furnish the nutritive elements.

Oats :— Oats belong to the family of gram
plants, of which many species are known.

The odour of *good oats* is pleasant, it
farinaceous bordering on that of almonds, its
are heavy, polished, whole, and slipping
through the fingers holding a handful of
outside surface is smooth, shining, and adh
the kernel that it contains ; the weight of oa
from 36 to 40 pounds the bushel.

In temperate climate, oats are the fo
exeellence for the horse. They contain a pro
of the elements necessary to the physiologic
nomena of nutrition and the production of
heat. At the same time they contain the d
salts needed by the animal organism.

In addition to the above, oats contain
" pericarp " an aromatic principle, found to
logous to that of the essence of vanilla. Th
ciple is the element which gives to oats the
tional stimulating properties they are endowe
and making 60 pounds of oats the equivalen
pounds of hay, in nutrition power.

Oats as a food, are suitable to horse of
They hasten the growth of colts, gives them

ength, increases their vigor, gives firmness to scles, increases the density of the bone texture, inishes the amount of cellular or connective ue, and gives a shining coat. Young horses who e been given fair rations of oats are generally condition to begin steady work at 4 years of age. thout this food, horses are unable in our climate resist the climatic influences, the variations of nperature and furnish a fair amount of work. ts can be considered as one of the most effective ans of bringing about the improvement of our eds of horses.

According to the English proverb "To make horse, three things are necessary : a stallion, a re and oats."

HOW TO FEED THE COLT

The future qualities and worth of a horse de- d to a great extent on the care received during first years of its life.

In order to produce a good horse, it is essential t the colt should possess a good bony frame and d joints. Like any other animal issue, the bones w and develop as a result of the assimilation of d food, and should the food taken not contain tain elements essential to the formation and wth of bone tissue, it is evident that portion of animal's organism will remain deficient.

The mother's milk contains a large proportion hese substances, such as phosphates and carbo- e of lime, which are the most necessary to the velopment of bone. As the colt grows older, the ount of these substances needed is increased and animal, in order to obtain the necessary

amount, is often seen to lick and sometin
actually eat the soil.

The farmers have within their reach all t
necessary to the production of bone, and
substances are oats and bran. Let it be re
bered that colts should not be under fed of
substances. As soon as a colt can eat and pr
masticate oats, there can be no danger in
him daily a pint of oats mixed with an equal
tity of bran. Naturally this ration is to be in
ed in proportion to the growth of the co
added to this ration of oats, the colt is gi
adequate quantity of good hay, (which is
containing a large amount of proteine, whi
substance essential to the formation of bone
muscles, ligaments and tendons) we have a
necessary ingredients to help the productio
good colt. Nature will attend to the remain

AMOUNTS OF VARIOUS RATIONS: HAY AND STRAW

Oats : In London, cab horses are allow
pounds of oats for every 8 hours' work.

I have made numerous experiments
what should be the proper amount of oats
working horse, and I find that in winter the
of oats, for a 15 hands to 15 hands and 3
horse, should be from 10 to 15 pounds of o
day. During the summer season, half that qu
added to a liberal amount of green forage, i
sufficient.

The ration of a race horse varies from 24
pounds of oats, divided into four or five meal
ration of hay is divided into two portions
to 6 pounds each.

Hay: The ration of hay varies in proportion to the size of the horse, and the work he has to perform: from 18 to 20 pounds of hay per day is considered a liberal ration.

Straw: Horses can do very well indeed without any straw at all, as this latter contains only about 3 per cent of nutritive elements, whereas hay contains 8 per cent. Consequently straw is to be considered more as a ballast for the stomach. From a nutritive point of view it is about useless. Accordingly straw should be set aside for hay, and used only to *litter* for bedding down.

Hours of Meals:—If at all possible feed four times a day, at any rate, not less than three times a day.

First thing in the morning attend to the watering, allowing every horse to drink all the water he wishes; half an hour after watering give the oats, then the forage.

Noon:—Same as in the morning.

In winter the evening meal should be at 6 P. M. In summer at 8. P. M.

It is necessary that the digestion of forages be slow and undisturbed.

The evening ration should be the most liberal, keeping in mind the adage that "The morning oats pass into the droppings, the evening oats into the croups."

Watering:—As to the amount of water a horse requires, it varies from 15 to 30 pounds per day. It should be given freely, but always before meals.

If the horse is very tired, or has been very warm it is recommended to take the *chill off the water*. It is also wise to lift the horse's head from

the water at every few mouthfuls, so as to p
his drinking too rapidly and gorging himsel

Horses should never be watered imme
before resuming work. If, however, you a
pelled to use a horse immediately after wa
then start him slowly, preferably at a walk
rule applies to horses who have just made a
meal. Horses in such a condition should
put to any very hard work, as it wonld in
with the process of digestion, it being reme
that oats take about two hours to digest. a
at least three hours.

Various Mashes:—If you are desirous
proving the condition of a horse, or to com
inflammation of the bowels, you will find
lowing directions most useful :

Here is the most popular and generally
composition for a mash :

1. Oats ¾ parts; linseed meal ¼ part;
part; salt small handful.

Place in a bucket and pour in boilin
but not to excess, then cover tightly with
blanket and allow to stand three or four h
fore using. Other grains, besides oats,
much recommended for the feeding of
Carrots are found to be refreshing and a ton
can be given to the amount of two to three
a day, but they must never be used as a su
for oats.

BREEDS

In hippology, by the word *breed* is m
the horses born under a same climate, or
the same surrounding conditions. There r
a consequence, the presence of striking c

stics inherited from their ancestors and transmitted o their descendants. These characteristics, gradually impressed by climatic influences, or particular egimen, are the more positively set, and more asily transmitted, in proportion to the remoteness f their origin.

The mixing of several breeds gives us the advantage of rapidly producing new breeds, and this nswers to the needs and whims of the times. I ntentionally use the term *whim*, as I am convinced hat, with few exceptions, only a very limited number of farmers possess correct notions concerning he breeding of horses. We are compelled to dmit that here, within the limits of the Province f Quebec, the knowledge necessary for the intelligent breeding of stock, and more especially of the orse, still remains to be acquired. We trust that hose holding the reins of authority and power, will dopt adequate measures to teach the class of reeders, that man possesses an almost unlimited ower in the matter of regulating the products of he breeding establishments; and that they have roduced, unmade and made over again all the ifferent breeds of horses; and that they have so opelessly mixed the whole matter as to render the orking out of the problem almost an impossibility.

However, it is as difficult as it is costly to terfere with nature's set laws, and the breeder, otwithstanding his knowledge and means, must ways more or less compromise with her. He must dopt his mode of procedure to the atmospheric nditions surrounding him. From this spring the arious breeds produced and maintained by climatic fluences and the care of the breeder. We admit at in giving the name of *breed* or *race* to these

animals we somewhat stretch a point, as there a
pure breeds known outside of those of the Ea
jealously guarded by the Arabs, the Turks, and
Persians, than the breed recorded in "*Stud b*
(if it is trustworthy, and this is doubtful) as
cending, without any mixture, from Arabian
lions and Barb mares, which were imported
England some two centuries ago. All other br
are but a confusing mass or rather mixture, of h
from all parts of the world.

There exists an underlying principle w
controls all the classifications of breeds; tha
aptitude, fitness.

The equine family is divided into three
distinct classes which makes it so that the h
is adapted to such or such special work: these t
classes may be resumed as follows, viz: 1,
Saddle horse; 2, the *carriage horse;* 3, the *dra*
horse.

The Saddle horse.—The correct type of sa
horse can be found in individuals differing wi
in the matter of size and weight. They can
found among the tallest as well as the sma
breeds.

There are actually large numbers of ho
being purchased daily within the limits of the P
ince. These horses are intended as remounts
South African service and we find that the m
mum height required is 15 hands and 2 inc
This type of horse is the most suitable for,
best adapted to, the arduous duties devolving u
mounted infantry in South Africa, and this is
actly the type of horses that we have in the P
ince of Quebec.

The saddle horse should have a small and light head, a long neck, well *cut out* at its attachment to the head ; the hairs of the mane should be fine and silky.

The elevation of the withers, as we have already had occasion to state, is an absolute and more positively necessary beauty in the saddle horse than in any other kind.

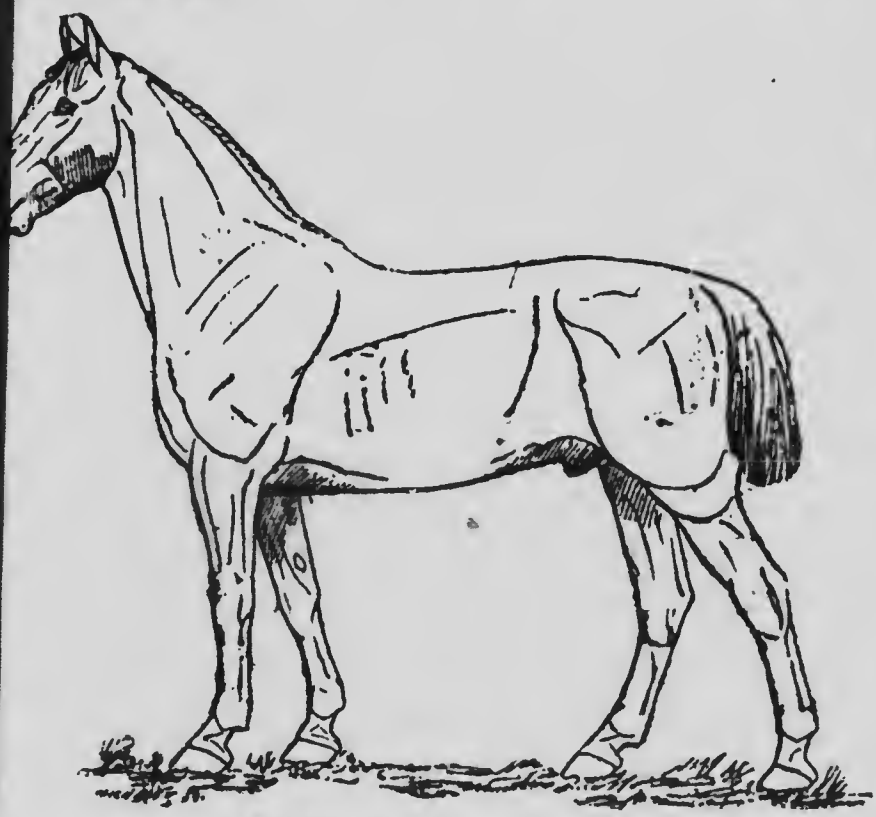


Fig. 31.—Large Coach-Horse

The Coach Horse : — The large coach horse should have a height of at least 16 hands, and even more. His coat is nearly always dark bay. The horses of this class must be strong, with lots of

endurance, have a great width of breast, bac
haunches, and should possess solid limb. Th
should be as brilliant as possible, including
action. Horses possessing these qualities are
steppers. The market price of such horses
reach very high figures in both London and

The coach-horse correspon to the
cavalry horse.

Those of greater height are still more e
sought after, more especially when added to h
there is proportional strength, distinction a
graceful roundness of form.

The *draught-horse.*—This is an altogeth
ferent type from the preceding.

In this case it is not a question of fine
long slender necks, silken hairs, tails carried
finally of all the charateristics denoting breedi

With regard to conformation, preference
a body that is massive, low set ; a short, thick
muscular neck, wide breast, wide loins with
developed muscles ; solid, large and broad l
good feet. To these physical perfections mu
added obedience, energy and intelligence.

Wild Horses.—In the plains of Tartary a
some parts of South America, herds of wild h
are still to be found. In neither case can their o
be traced.

Travellers who have wandered from the s
of La Plata to Patagonia have met herds of
wild horses numbering as high as 10,000 in a s
herd. These herds are under the guidance
chief selected for his nobleness, bravery and stre
and to whom is accorded the most implicit
dience. Their natural instinct teaches them th
union there is the strength necessary to resist

ttacks of lions and leopards, which were ever their irest enemies. In these combats, the chief is lways foremost and the first to offer himself to angers, and when prudence suggest retreat, it is is duty to give the signal. The herds of wild

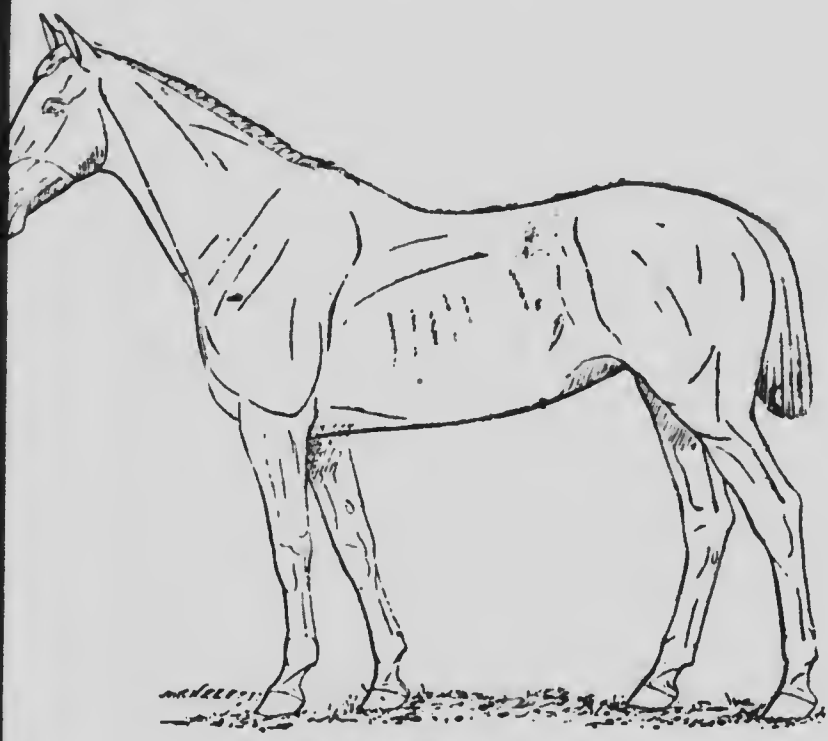
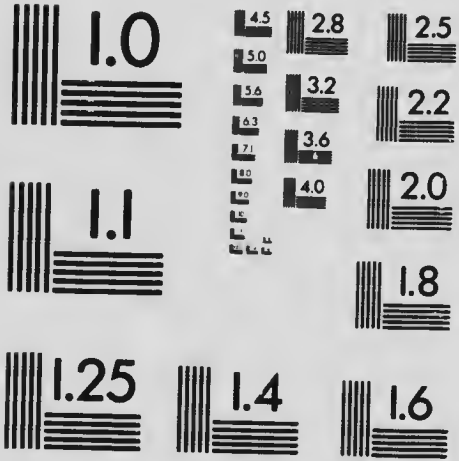


Fig. 32.—Small Coach-Horse.

horses which are still to be found in Central Africa, he Island of St. Domingo, as well as in the Arabian deserts and elsewhere, are far from being the equals of our domesticed horses in the matter of strength, conformation and speed.

MICROCOPY RESOLUTION TEST CHART

(ANSI and ISO TEST CHART No. 2)



THE BARB HORSE

The Barb horse is a native of the Eas
especially of Morocco, and is frequently confo
with the Arabian horse. This horse is lowe
the Arabian ; his height rarely exceeding 14
and 1 inch ; his shoulders are flattened, hi
well rounded, the joints are long, and as a g
rule he has a beautiful head.

From the point of view of external form
the Barb horse is decidedly superior to the A
but he does not possess the latter's intelli
speed, nor physiognomy. The Barb horse h
tributed a large share in the improvement
Spanish horse and also those of Great Britain
very best racers of this latter country are de
ants of Godolphin Arabian, a Barb horse.

THE ARABIAN HORSE

This breed belongs to the East. As a
quence of continuous importations it is to-
closely mixed with all of our improved native b
that we are compelled to admit that the A
race of horses has been the improving medi
nearly all of the European breeds and that fu
more it has taken root, in all its purity, fa
the sunny East, under the foggy skies of the U
Kingdom

The Arabian type of horse, considered
its purity, and free from any union with
breeds, is the most perfect.

The gray color predominates in the me
of the Algerian family, whereas in Syria
Egypt other colors are also found.

The most perfect types are found in Egy

Fig. 33.—Arabian racer, remarked for elegance, strength, speeds, and his attachment to his master.

Syria, those of the latter country developing a greater ampleness of form.

The Arabian horse has a most intelligent head a wide and flat forehead; large and prominent eyes; the ears are small; the face straight and wide; the nostrils well dilated; and the physiognomy, whilst expressing gentleness, conveys also the impression of high spirit and ardour.

THE THOROUGHBRED HORSE

The English horse, usually called *thoroughbred* owes his origin to the eastern horse. Of this theory however, many historians are dubious, basing their suspicions on the fact that nowhere can any record be found of mares having been imported to British soil.

If the race has not been implanted in England by the importation of males and females intended for breeding, then how did it originate? On this point no doubt is possible; as it is more than evident that its origin is due to the breeding of the best native mares to stallions of noble blood. For lowing this first cross-breeding, it is likely that recourse was again had to the paternal stock, which it was the intention of appropriating; and that was only later that *in and in* breeding was indulged in, i.e., the union of members of the new family. If such is the case, the theory of the origin of new breeds, by cross breeding, and still more by the fixidness of half-breeds, would receive additional importance.

The most striking characteristics of the English bred race horses are: The height is above the average; the head is square, with a wide forehead

and well dilated nostrils; the neck is straight, long, and slender; there is a good elevation of the withers and obliquity of the shoulders; the limbs are slender, the fore limbs being frequently *sprung*; the canons straight; the abdomen well drawn up; the haunches are prominent, the skin is soft and thin; the hairs of the mane and tail are scarce; the coat is nearly always bay.

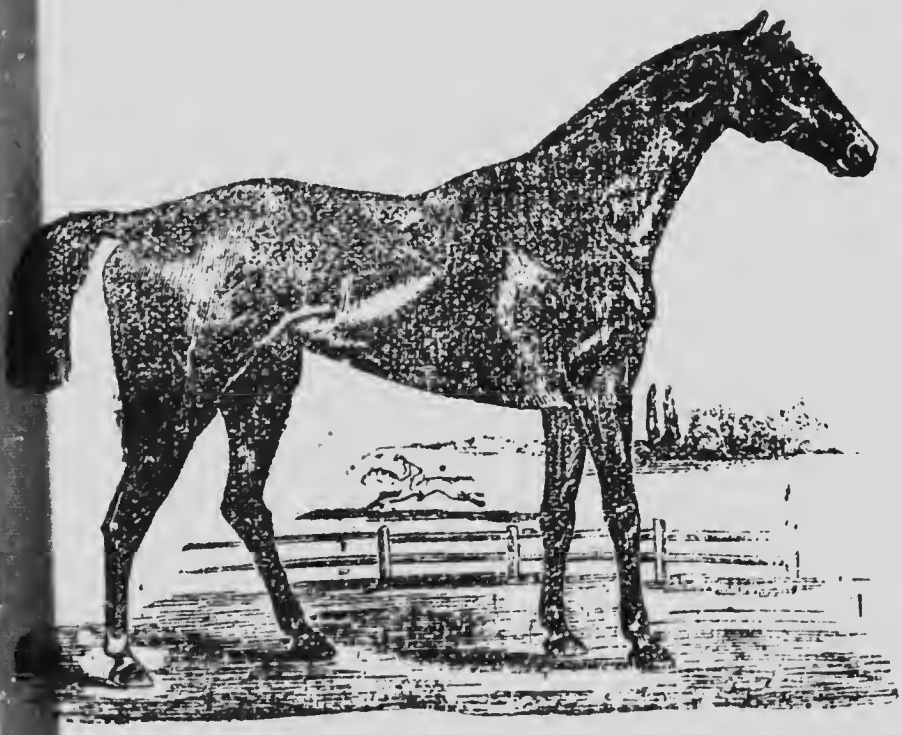


Fig. 34.—English Thoroughbred Horse.

Notwithstanding the great interest that the history of the thoroughbred race horse offers, it is necessary to shorten it. This horse is not the most desirable type with which to cross our Canadian mares.

But if I seem, in some sort, to repudiate t
English race horse, on the other hand I attach t
greatest importance to the English *hunter*, which
certainly the most perfect and suitable type
horse with which to breed our Canadian mares.

This horse, descended from Arabian hor
bred to English native mares, possess more sta
ina, compactness of conformation, more bone, a
strength in his limbs than the former. His v
conformation denotes less speed perhaps, but
great deal more staying power and real vigor.

This is the only horse which should righ
be called *English* and this term should be syno
mous with all that is perfect in relation to ho
flesh. Judicious breeding of this horse, with
best of our Canadian mares, would give us a c
of horse similar, and perhaps superior, in end
ing qualities, to the famous "Morgan" bre
which is not likely to ever have any equal in
whole of the United S ates.

THE FRENCH HORSE

The Bolognese Breed :—This type is most
tainly the handsomest and most powerful rac
draught horses. Their characteristics are : hei
above average, square head, heavy lower jaw,
short, the eyes appear small as they are parti
hidden by long eye lashes, neck massive, man
coarse, breast very wide and muscular, the wit
are usually low ; the back is straight, and the l
short ; the croup is rounded and double ; tail
attached ; the limbs powerful ; good feet, the
is usually gray or chesnut-roan.

This horse possesses a sanguine temperam
and is to be found in the Departments of the No

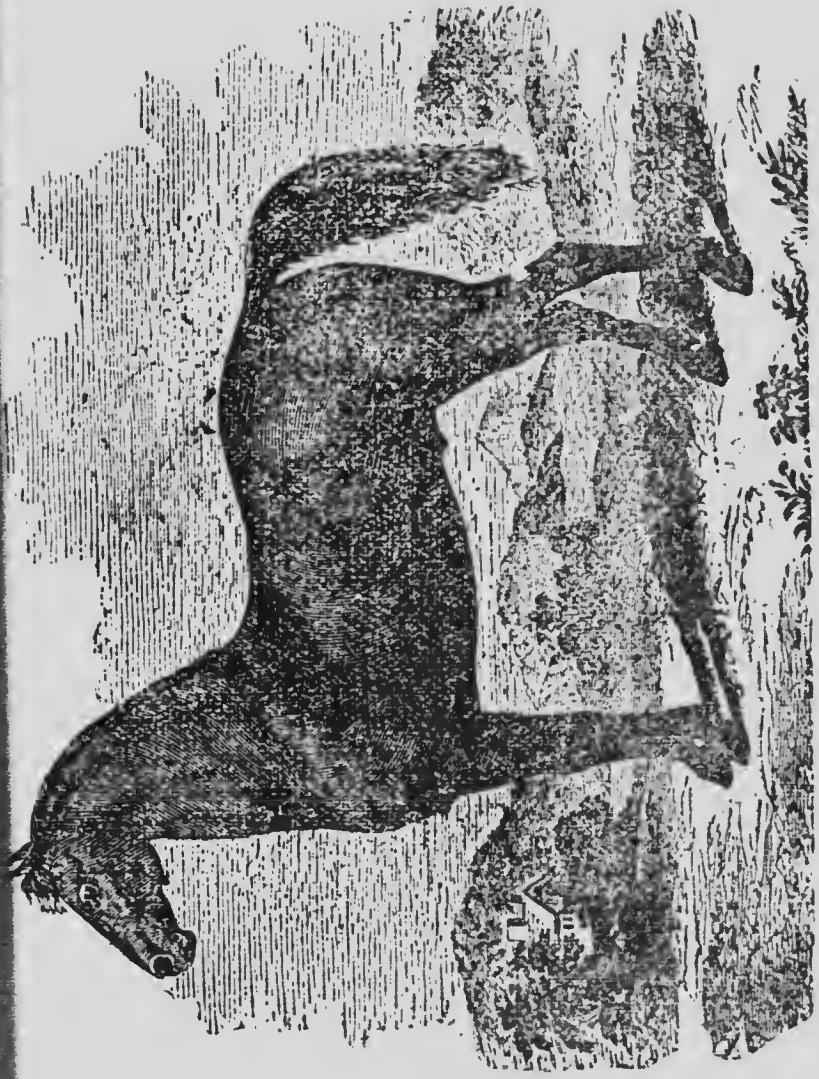


Fig. 35. Justin Morgan, celebrated stallion which gave birth to the famous race bearing his name

the Straits of Dover, the Somme, the Oise, a
Seine Inferior. Those breeds in the departments
the Oise and Seine Superior are less massive a
make excellent horses.

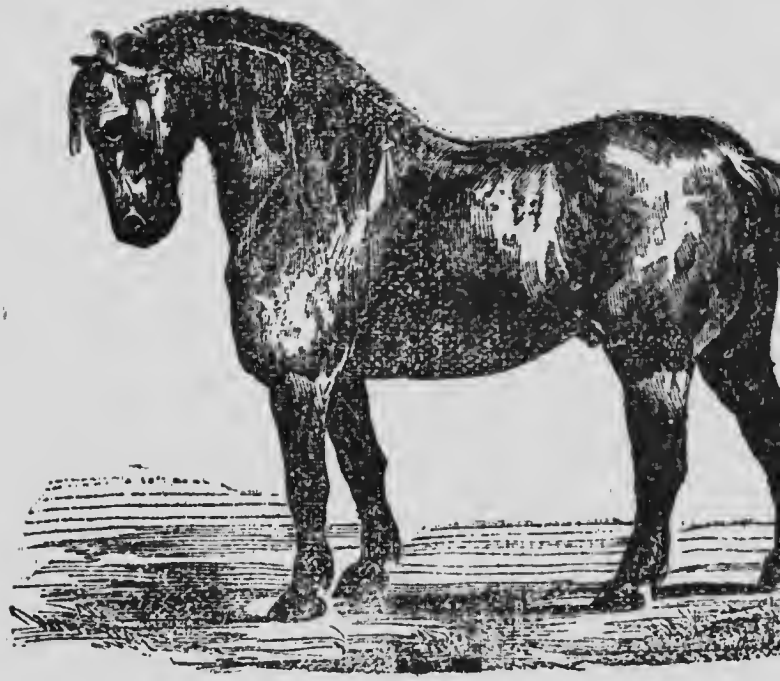


Fig. 36.—The Bolognese Horse. Heavy Draught.

They mature early, which fact permits t
utilization the second year; the fifth year they h
reached their full development and there rem
nothing for them to gain either in size or stren

As a powerful motor, this is the type "pa
cellence" among all the breeds of draught ho
It is also a magnificent artillery horse. His co
gray or roan.

THE PERCHERON

The Percheron horse is one of the best in the world, for medium draught, and omnibus work; and is the best type known for light draught; his head is long, with wide, and slightly busked cranium; the forehead is slightly convex; the neck is

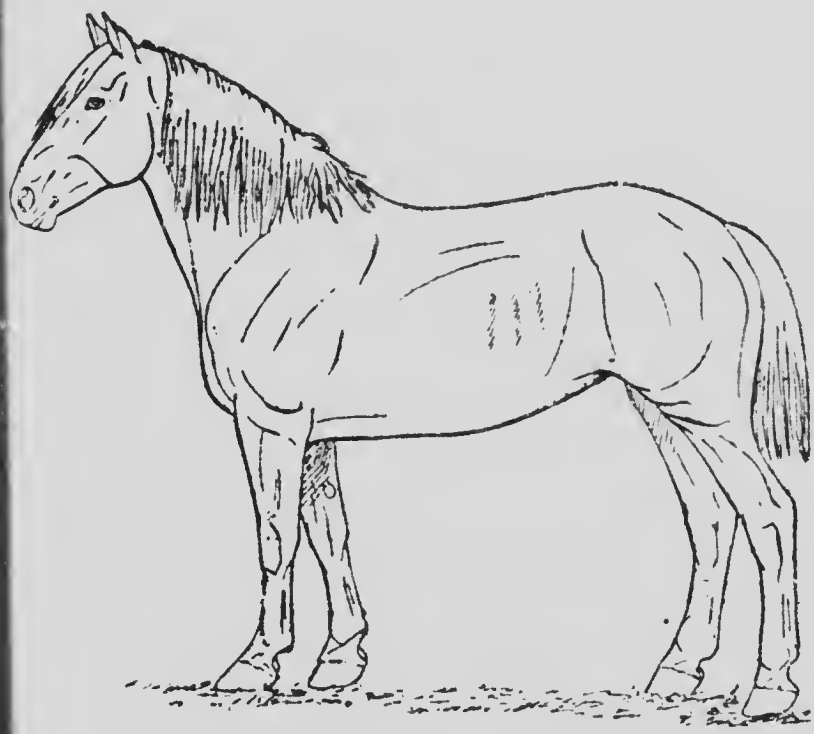


Fig. 37.—The Percheron Horse.

heavy and high, but without excess; the ears long and fine; the eyes quick and expressive; the nostrils are wide and movable; the lips are thick; the mouth large; the shoulder long and oblique; the mane fine and silky; the chest is deep and muscular; the breast wide; the haunches are promin-

ent; the croup is horizontal; the thigh muscu
the tail well attached; the canons are a little l
but the joints are strong; and the feet excel
The coat of the percheron horse is gray, freque
white. His character is gentle, obedient, a
puller, and endowed with great muscular stren
and stamina. His gaits are as rapid as can f
be expected from a draught-horse.

The light weight percheron is to be f
more especially in the Norman regions, in the
trict of Mortague, the neighborhood of Courto
and particularly in the parishes of Messuire, et

THE NORMAN HORSE.

The origin of the Norman horse is not kn
I mean to say that nowhere can traces of a No
race of horses be found, nevertheless the
exists. Born spontaneously on the shores o
British Channel, it is worthy of remark tha
writers on the Norman horse, have always r
sented him as a degenerate animal. The No
horse, regardless of what may be said, pre
many defects and weaknesses; the head is too
the shoulders too round; the withers too n
and pinched; the loins soft; the haunches v
the hocks full and vacillating, frequently blem
and working defectively; the chest is but
developed, allowing but little space to the
and lungs. Still, the fact must not be overlo
that this breed has now been improved to su
extent as to be completely transformed, and i
this condition that it is found to-day in
parts of Europe.

The modern type of the Norman horse is
to possess a compact body, a rounded form

shoulders showing a better obliquity than formerly. The disposition of the limbs is more proportionate. And, as the State has, during the past half century, given numerous inducements and encouragements in every way towards the improvement of breeds, I

Fig. 88.—Anglo-Norman Horse.

am sure that to-day, we can find in Normandy, the most improved types of horses, answering well to the needs of the times.

The crossing of Norman and English hunting stock has given very satisfactory results.

THE LIMOSIN HORSE

The origin of this breed is traced to the sojou of Arabian cavalry in Southern France. It h been for a long time celebrated in virtue of t qualities it inherited from its ancestors.

The height of the Limosin horse is medium,l head is fine, perhaps a little long, slightly buske his neck is gracefully curved, supple; the withe well defined; the shoulder oblique; his body c rectly formed; the limbs perfect, and he is su footed.

This small horse possessed at one time a m astonishing vigor, accompanied by much rustic and a rare longevity. To-day this breed has deg erated, this condition of things having been broug about by breeding to stallions of disproportion size and weight, and this with the end in view increasing the size. This practice has proved fa to the Limosin horse. We have committed t same error with regard to our Canadian hors However, such as he is to-day, the Limosin ho can still be considered as suitable and adapted light cavalry service.

THE BRITANY HORSE

This breed of horses is to be found in Departments of the Morbihan, the northern co of Finisterre, and of Illes-et-Vilaine. It is on the most valuable breeds in France.

The Britany horse is of medium size; ha square head, with a wide forehead and heavy chee the eyes are large; the neck short, massive, with an abundant mane; the withers are low, shoulder muscular; the body thick set, the l

are muscular; the croup is double, the tail is busky, the limbs vigorous, the pasterns are short, the feet slightly flattened; the coat is trout gray or wine roan.

No other region in France could possibly produce a better class of horses than those coming from Britany.

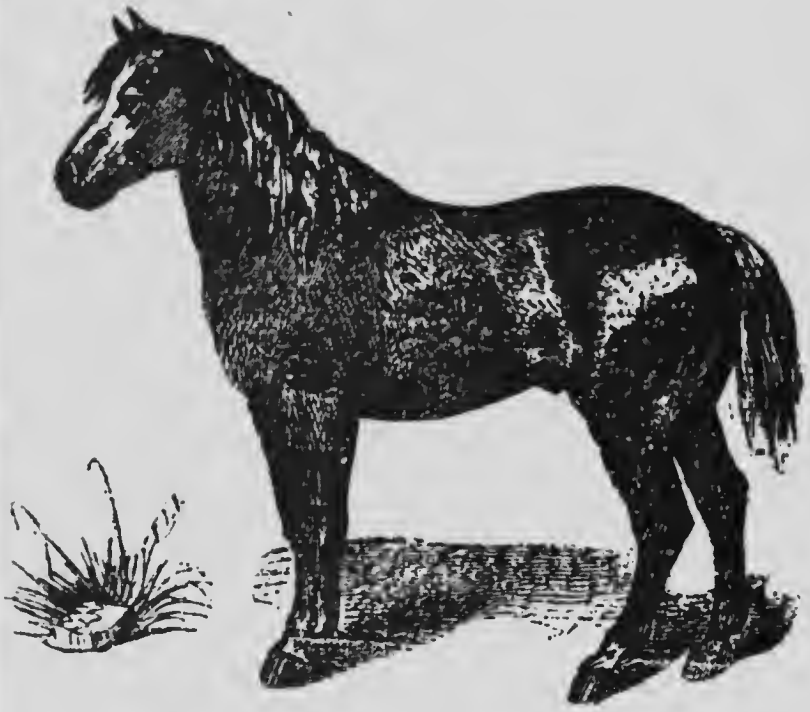


Fig. 39. The Horse from Britany.

Different degrees of English bred horses, and the Arabian horses are utilized for the improvement of this race. Whenever judicious breeding is accompanied by intelligent care, more especially in the centre of Britany, excellent saddle-horses of medium size and of pleasing conformation make their appearance.

THE CANADIAN HORSE

I do not intend to give here the history of th Canadian horse, and this, for the very excelle reason, that there exists no written history of th race of horses. Whether the Canadian can tra his origin to Britany or Normandy is of very litt importance, from our point of view, and the pu pose of this work. However, I wish to rema casually, that I very strongly disbelieve the theori advanced by many, that the Canadian horse is descendant from Percheron ancestors.

With the gracious permission of its auth Mr. Ernest Gagnon, I thought it opportune insert here extracts of his very interesting stu bearing on this subject,and publised in 1892, in t *Journal of Agriculture* :

" The first horse to canter on Canadian s was landed in Quebec, June 25th, 1647. The *Co pagnie des Habitants* had imported this animal as gift for the Chevalier de Montmagny, the th governor, and it proved a novel sight, for the s tlement of Quebec, (whose newly laid streets w still unnamed), to see their worthy governor ridi over the pathways like Gustav Nadaud's *G darmes.*

" The *habitants* of those early days were p sessed of the same high-spirit as those of to-da and justly considered that, to be a chevalier wi out having a horse, was devoid of common se

" M. de Montmagny left Quebec the ensu year. What became of his horse ? It is har probable that he was made to re-cross the oce Nevertheless, it is also about settled that this ho was gone from Quebec, in 1650, as the Hur

which came to that locality that same year, for the purpose of taking up their abode in the neighborhood, seemed to have never seen any animal of that kind when, fifteen years later, the first horses sent by the King of France, were landed in that region.

" The 16th July, 1665, twelve horses sent by the King of France, were landed at Quebec. On board the boat, carrying these animals, was also a poor little devil, who afterwards had a most advantageous career as a filibusterer. This man's name was " Jean Doublet " and the memoirs that he left behind him were published a few years ago (in 1883). According to his diary, the King of France had sent twenty horses to Canada, but as only twelve reached their destination, eight must consequently have perished during the voyage. These first horses—taken from the royal stables—crossed the ocean with a brilliant company. Doublet expresses himself thus :

" We found this ship extremely crowded by 18 mares and 2 stallions, from the King's stables, and the forage intended for their nourishment filled the whole space. Between decks were lodged eighty maids of honor, who were to be married on arrival at Quebec. In addition there was a crew of seventy, the whole forming a suitable Noah's Ark. The voyage was accomplished under auspicious circumstances, and was of three months and ten days duration.

" These animals multiplied with an astonishing rapidity.

" In the year 1667, the " Mère de l'Incarnation " wrote : " His Majesty has sent out more horses and has given us, as our share, two beauti-

ful mares and one male, intended for the ploug
and cartage.

"These horses were quick, hardy, not to
heavy, and could easily go from the plough to th
light vehicle, cross snow-drifts without sinking to
deeply, face drifting snow, successfully, effect
meeting with another vehicle on a narrow winte
road, and accomplish all this with much agility an
without any apparent exertion.

"In 1670, Louis the XIV caused still mo
horses to be sent to the colony. These were distr
buted amongst those noblemen of the country wh
had most encouraged and pushed the clearing an
cultivation of the soil. Two mares and one stallio
were given to M. de Chambly; two mares to M. d
Lachesnaye; one to M. de Sorel; one to M. d
Contrecœur; one to M. de St. Ours; one to M. d
Varennes; one to M. LeBer; one to M. de Latouch
one to M. de Repentigny; one to the intenda
Talon; in all thirteen animals.

"The King held in particular esteem tho
who tilled the soil. In the patents of nobility grant
by this monarch to a certain number of colonis
who had been most zealous in the settlement of t
country, he gives as the motive for the bestowi
of these exceptional favors, "the earnestness th
had shown for the cultivation of the soil."

"Relatively to the distribution of the hor
sent here in 1670, the Abbot Taillon writes: "Th
are the conditions at which the King made th
gifts to individuals. They were to feed them (t
horses) for three years, and if, during that peri
through any neglect of theirs, any of these anim
died, the person to whom the animal had be
given, had to pay the sum of two hundred *livres*

the King's receiver. On the other hand, after three years, the animals and such increase as there might be, could be sold, providing a yearling for each horse thus sold be handed in to the King's receiver, or else the sum of one hundred *livres*.

"It was also stipulated that when the colts which were being fed and raised at the King's expense, had reached their third year, they were to be in turn distributed to other individuals and on the same conditions. It will be readily seen that these stipulations were most advantageous to individuals, and to the country in general.

"Therefore, Colbert, who was so heartily anxious to see the colony in a most flourishing condition, wrote M. Talon, on the 12th February, 1671, as follows:

"I will see to it that mares and she-asses be sent to Canada, in order to have these animals, so necessary to the colonists, multiply." Of all the domesticated animals sent to New France by the King, the multiplication of the horse was the most rapid of any, notwithstanding the fact that the increase of the others was also astonishing with the exception of asses

"These useful animals have never been firmly implanted in Canada.

"It is very unfortunate.

"In his memoirs, M. de Gaspé speaks of a certain ass, 'a curious beast,' which he had in his youth and accompanied by a few comrades, gone to Cap Blanc to see. As the young wag that he was, he had, on that occasion, gravely asked the animal: 'How do you feel of your sojourn in Quebec?' The ass raised one ear and lowered the other. 'I quite understand you,' retorted the witty child; 'your

raised ear means that 'Canada is a beautiful cou
and your lowered ear means 'that being the
one of your specie you are terribly lonely.' 'Co
yourself,' added the future author of *A*
Canadiens, 'soon you will be able to discover
asses are more numerous than we think o
shores.'

"I do not quote ; I narrate from memory

"The Swedish scholar, Peter Kalm, who
a trip to Canada during the summer and f
1749, wrote the following on the 25th of Aug
the same year :

"All the Canadian horses are strong, a
of good conformation, as large as our ca
horses, and descendants from horses imported
France. The inhabitants have adopted the cu
of docking their tails, which is a downright cr
as they are thus deprived of their only mea
defence against the horse-flies, and gnats.
custom may, however, be due to the fact th
Canadians harness their horses tandem fas
and to prevent the leader from injuring the e
the shaft horse, when switching his tail, they
adopted the method of cutting the tails of all
horses.

"The Governor-General and a few of the
prominent citizens (of the town of Quebec)
coaches, the remainder of the population ha
course to cabs. There is a general complain
the country people are now raising such a
number of horses that the harvest of forage
sufficient to winter them.

The 27th September, 1749, Kalm, writing
Montreal, says : A horse of medium height
worth forty francs, and even more. A be

horse is worth one hundred francs. The value of a cow is fifty francs.... The actual price of a sheep is five francs; whereas last year, when everything was high-priced, the value of a sheep was from eight to ten francs. A year old pig, weighing from 150 to 200 pounds, can be purchased for fifteen francs.... A chicken is worth from ten to twelve *sous*, a turkey-gobbler twenty *sous*. A bushel of wheat, which last year sold for three francs, can now be purchased for forty *sous*.... A bushel of oats occasionally reaches the value of from fifteen to twenty *sous*. The market value of peas is always the same as that of wheat. Butter is ordinarily worth eight to ten *sous* per pound. Eggs are generally to be had for three *sous* per dozen; however, they are actually worth five *sous* (end of September). There is no cheese manufactured in Montreal. To have any it is necessary to obtain it from elsewhere.

"I was still very young when I heard, for the first time, the praise of the Canadian horses. In those days there were no railways, no telegraphic communications, but there were English officers stationed in Sorel and Three Rivers, and almost impassable roads everywhere.

"One of the officers of the Sorel garrison,—a captain at least,—was telling, one day, that, having left Berthier one morning, in January, to go to Three Rivers, he had been compelled to stop, on the way, by a terrible storm, and had to leave his thoroughbreds at Maskinongé, replacing them by "*marche-donc!*" (sic) Canadian horses, the only horses, said he, who could possibly follow the roads, in such a storm and in such roads.

The Canadian farmer was formerly so proud of his horse that, in order to exhibit his qualities, he

took chances to run over people. An ordina
published by the Intendant Michel Bégon, a
dated February 29th, 1716, reads as follows :

"Owing to the reports which have been m
to us that, on the main roads and more especi
after church service, a part of the farmers race
horses harnessed to their sleighs, or those they
riding, and this at such increased speed that it o
happens that, losing the control of their anim
they upset the vehicles that they happen to m
in their way, and even the folks to whom they
not give the time to get to one side of the r
From this custom have resulted many griev
accidents, which, it being necessary to avoid,
strictly forbid all persons, either those who
driving sleighs or those who are riding their hor
to cause their animals to trot or canter when leav
the vicinity of the church, and not before a dista
of ten acres from it has been reached; after wh
the may allow their horses to travel at whate
gaits they may wish, providing, however, that th
is no one before them on the road, with eit
carts or drag sleighs; we further order t
whenever they find anyone on foot, on the r
that they must stop and even pull to one side
order to allow those on foot time to get out of
way, the whole, under penalty of twenty *livres*,
each infraction of this ordinance, these penaltie
be applicable in the parishes where such infract
of the law has been made.

"A similar ordinance, for the City of Que
was published on the 28th December, 1749, by
Intendant François Bigot.

Vanity, that vice common to all count
was, without any doubt, the cause of the exces

preference shown, by the farmers, to their horses, at the expense of their cows, nevertheless as useful and excellent. To-day, the Canadian farmer understands his own interests much better and bestows the same careful attention upon all his animals,—which does not mean, however, that vanity has vanished from the earth.

" A few figures to close :

In 1665	Canada possessed	12	horses
1679	"	145	"
1688	"	218	"
1692	"	400	"
1695	"	580	"
1698	"	684	"
1706	"	1,872	"
1719	"	4,024	"
1720	"	5,270	"
1721	"	5,603	"
1734	"	5,056	"

In these statistics no account is taken of Acadia, where horses were sent from France as early as the year 1612.

General Murray's report, dated 1765, says that there were then in Canada 12,757 horses.

In 1784, there were 9,166 horses in the Quebec district ; 3,155 in the Three Rivers district, and 17,825 in the Montreal district—in all 30,146 horses.

In 1881 there were 225,000 horses in the Province of Quebec.

At the last census (1891) there were 344,290 horses of all ages in the Province of Quebec, and 1,470,575 in all the provinces forming the Canadian Confederation.

The uniformity of the Canadian bred horses, existing in Kalm's time, that is, about the middle

of the eighteenth century, is no more. The im
tations of foreign horses, various crossings, the
portation of a considerable amount of Cana
horses to the United States, have altered
nature and decimated the primitive race ; so
to-day the "*marche-donc !*" without alloy, consti
a small minority in the midst of the large nun
of horses of this section of the country. Fortuna
minorities lead happy lives, and are surroun
with all attention in the Province of Quebec.

The old Canadian horse possessed a short
square head ; a very much developed lower j
the withers were low and thick; the croup
powerful, wide and oblique; the chest was
developed ; loins short and strong ; legs
very hairy ; the main and tail very heavy,
and bushy. Such was, in a few words, our
Canadian horse, now vanished for over forty ye
To-day, it is but seldom that we meet with ty
possessing a faint but sufficient resemblance
the former Canadian horse, to make us realize t
a memory only, remains of the spirited little ani
who so willingly travelled his twenty leagues a
and this over almost impracticable roads,
mountains and through snow drifts, in which t
sank to the ears. Noble animals, who knew how
keep on the road, regardless of blinding storms,
were so sure-footed, and whose sense of smell
never deceived. But since they had to disap
as a result of numberless crossings, either with
mans, percherons, clydes, thoroughbreds, or An
ican trotting horses.

Now we can ask ourselves if, in spite of
degeneracy of the former Canadian horse, we
entertain the hope of regaining that which

have lost, if we can, in a word, regenerate our Canadian horse. I believe, in my humble opinion, that we can; and here are my arguments: We have in our Province some magnificent mares, possessing all the qualities required to regenerate our breed, if we know how to proceed judiciously.

What we have most need of, in our Province, are pure bred stallions, but we must guard against the errors committed in the past, and which was the selection of stallions of disproportionate size, this, with the intention of rapidly increasing the size of our horses. Such a procedure was not practical, as such a result cannot be attained without allowing sufficient time, by a judicious selection of stallions, and only after three, four, or even ten generations. Let us suppose, for instance, that you wish to produce a horse of say thirteen hundred to fifteen hun ired pounds or even eighteen hundred pounds, by breeding a Canadian mare of 900 to 1,000 lbs. to a clyde stallion. You will not by these means attain the desired result. On the contrary, after two or three cross-breedings, the results would be most disastrous, through the desire of wishing to hasten things, and you will only have succeeded in producing an animal with an enormous head, a slender neck, a slim body, badly put together, lacking stamina, and hardly worth anything.

To regenerate our Canadian horse, which is of vital interest, this is the way that, in my humble opinion, we should proceed.

IMPROVEMENT OF OUR BREED

The Mare :—As I have already stated above, we have in our province matchless types of mares, for breeding purposes. The first thing that should

be done, should be to make them undergo a
examination, by an official government veterin
Then the manner of proceeding should be m
dical ; for instance, if it be resolved, in a cou
a district, to raise horses for a special marke
that of remounts for mounted infantry, we
guard against attempting to raise simultane
horses intended for heavy artillery or draught
us keep in mind that whilst the horses raised in
a county would be especially adopted for mo
infantry, they could also be utilized for ligh
pleasure driving, farm work, and hunting, etc
on the other hand, the intention was to pr
artillery and cavalry horses, then it would be
to confine our efforts to that type, which woul
answer for carriage or light draught, and
work, and also, let me add, be quite suitab
saddle work.

In regions where small horses are rais
should never be attempted to breed the
alternately to large and small stallions. This
of procedure is most vicious and destroys in a
time the judicious work of many years. Su
the case in breeding very large and very small
together. This practice should be studiously avo

As I have already said above, it is of t
most importance that mares intended for bre
be carefully examined. Such an examination
cessfully passed, would entitle them to registr
under the name of *breeders*, and to a boun
production.

Mares brought before the veterinarian, fo
amination, would be considered as filling the
sary conditions to be registered as *breeders*
found free of bony tumours, if they possessed

ngs ; no defects of conformation ; a medium or all head ; a wide forehead ; prominent eyes : ears ort, but not to excess ; the neck long, but quite roportionate to the remainder of the body, and ell attached to the breast and shoulders ; withers irly high ; the hips wide ; a long shoulder ; a good ony frame ; good feet, and not too much day-ght between the abdomen and the ground. The ost preferred colors for the coats are the bay and hesnut-sorrel.

Five year old mares, exhibiting all of these alities, would prove to be ideal subjects for reeding purposes.

The Stallion : – First of all, the stallion should masculine in his whole ; he should be kind, edient ; should have sound lungs, and be free om all redhibitory vices, should have a perfect nformation, and should be proportionate, as to ze and weight, to the mares to which it is in-nded to breed him.

The acquisition of suitable stallions is so fficult a problem to solve, by the majority of eople, that it is always wise, when contemplating ch a purchase, to seek the advice of a veterin-ian. He only will be a competent judge as to the rrectness of the horse's conformation.

The study of the exterior of the horse is a ost difficult one. and I dare to say that it is only ter having made a special study of it that one ecomes a sufficiently competent judge to pass on e merits of stallions intended for reproduction.

Stallions intended for the remount depots, ould not be less than four years past, and in the se of imported stallions, they should not be ilized for at least four months after arriving in

the country. As to the number of mares th
serve each season, it should never go
seventy, if due regard is to be held of his
and the quantity of his progeny.

THE RACES

Both trotting and running races, hav
warm partisans, and numerous determined e

Nevertheless, racing contributes largely t
the enhancing of the value of horses. Eve
must admit that the turf has been a powerf
to England, in producing that wonderful b
racing stock, of which that country is so
proud, and of which all the other nations
envious. Now, the racing track is the best
of obtaining due appreciation of those horse
which a great display of energy and much s
expected and obtained. These encounters,
and earnest trials, of the value of the horse
are subjected to them, are as a test-stone by
their qualities are gauged, in proportion
amount of alterations to the general conform
brought on by these ordeals. They open
way to the just and correct appreciation of th
and good organization of horses ; and enabl
correctly select those constituting the élit
those which must be excluded from the stud.

Great speed in colts, is a sure indicatio
noble birth, and of the extent of their faculties.
but those who have shown good speed shou
retained as stallions.

The successes obtained on the track ar
tive indications of a strong organization and
temperament ; they imply width of chest, soli
the limbs, and powerful muscles.

Racing has done much towards promoting interest in, and love for, horses, and to sustain a sharp rivalry among those engaged in it. It has been the principal motive for the introduction of the Arabian thoroughbred, and to a great extent for the very creation of the English thoroughbred.

Horse racing is held responsible as the cause of many serious accidents. It is true that horses are frequently sure to fall on the tracks, and even to fracture their heads, or again to have rupture of the heart and blood vessels, also to fracture a limb, etc. It is quite true that horse racing deserves most of the reproaches directed against it. But, on the the other hand, it can also prove most useful, and contribute largely towards securing good remount horses, and the improvement of our horses generally, more especially so if the distances be increased and also the weights carried, and finally if only adult horses were allowed to enter the co[illegible]ts.

We will draw attention to th[illegible]t that running races are the best to determine the amount of energy and vigor of full blooded horses; whereas in the case of half bred horses, the trotting races are the best adapted for the same purpose.

HYGIENE OF STALLIONS DURING TIME OF SERVING

The leap should take place in the morning, after an exercise of some twenty or thirty minutes duration. Daily exercise is imperiously necessary during the season. The diet should be highly nutritive and be composed mostly of good oats and good hay. The oats should be divided into four equal rations, of at least two pounds each; and not less than twelve pounds of hay should be [illegible]wed

each day; in addition to the above, mashes
posed of bran and crushed oats, should be gi
the evening, two or three times a week; an occa
meal of green forage will be most beneficial to
keeping the bowels in good condition.

The stallion should be kept in a loose bo
provided with an abundant litter. Great care
be exercised that the feet, especially the hi
kept scrupulously clean, as a long sojourn on
litter is generally accompanied by thrush,
constitutes a serious defect and materially
ciates the value of the animal.

INFLUENCE OF THE SIRE AND DA
THE PRODUCTS OF FECUNDATIO

HEREDITY

Heredity is the power with which th
genitors are endowed and which permits th
transmit to their descendants, by means of
ation, the characteristics which they possess.

The influence of heredity is exercised o
conformation, the size, the inmost structur
qualities and defects, the diseases, etc., and ex
a great influence on the individual constitutio

The types of external form are transm
from progenitors to products. Hereditary co
ation may be general and reach on every p
else partial, and limit itself to such or such re
In fact, we frequently see colts bearing st
resemblances to either their father or m
There are mares and stallions who transmit
characteristics to their offspring to such a d
that any person, who is at all versed in the ru
hippology, can at the first glance, by exam

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be given i
an occasiona
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PEDIGREE

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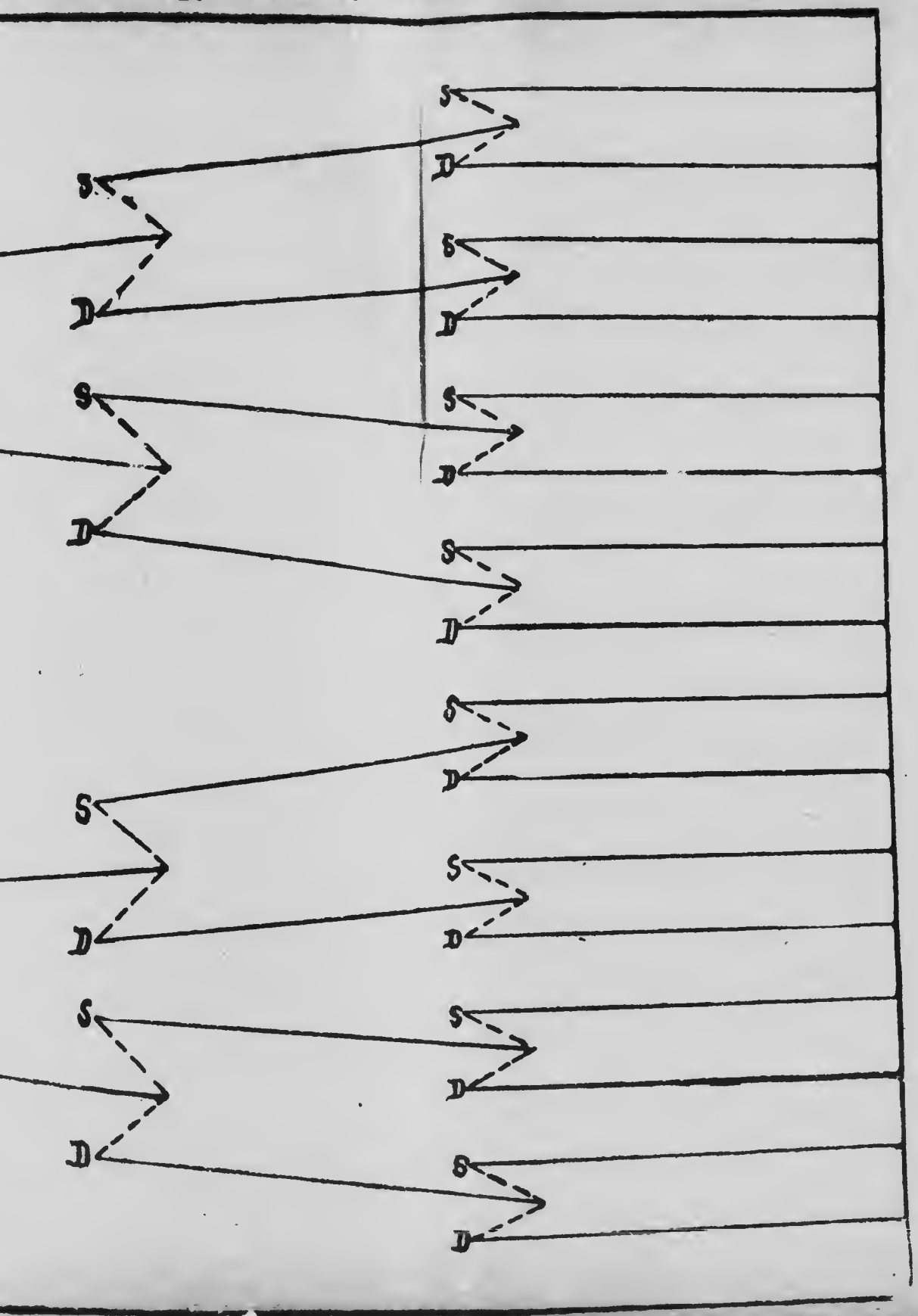
e Genealogy Book by the Farmer.



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the external conformation of horses, detect the characteristics derived from their father or mother. Other progenitors transmit only one region to their descendants, and their products resemble their ancestors in this region only. The conformation of the head is the most frequently transmitted from ascendants to descendants. One of the most striking instances of the influence found is the introduction into Canada of thoroughbreds, whose square heads and wide foreheads are to be frequently found even in the most out-of-the-way sections of the country. And it is a source of wonder, how, after so many cross breedings, this type of head still retains its distinctive characteristics.

The conformation of the croup is also readily transmitted. The same thing might be said of the hock and of several other regions. The height also is transmitted by fathers and mothers by the way of heredity.

The temperament and disposition of progenitors are also transmitted to their products by means of heredity. The effects of education as well as the defects and qualities of character are transmissible by heredity. The kindness and obedience of the parents are generally to be traced in their offsprings.

The Arabian horse, so kind, so affectionate, so obedient, transmits his qualities to all his descendants. For the same reason, restiveness, wickedness, the vices of kicking and biting, etc., are also hereditary.

Certain diseases, certain blemishes are hereditary.

Amongst them are: Broken-wind, roaring, periodical ophthalmia, short-sightedness, cribbing, diseases of the bowels, the bladder, and of the liver,

the bony tumors of the limbs such as ring-bones, curbs, spavins, splints and constitutional contraction of the feet.

In the manifestations of the phenomena of heredity, the influence proceeds sometimes from the father and sometimes from the mother ; but occasionally further removed ancestors intervene.

Another fact worthy of remark is that in the transmission of hereditary diseases, one generation may be left unscathed.

What are the parts played by the father and mother in the fa t of generation ?

If we couple together two individuals of a same specie, but of different breeds, we obtain a product which holds his general conformation, such as the head, limbs and his character from his father, whereas, the size, height, and volume of body are inherited from the mother.

The characteristics of the parents intervene in the product and at times the influence of the sire predominates, whereas in others, that of the dam predominates. Finally in other cases the products can hold from neither ancestors, or, from both simultaneously.

The circumstances causing the predomination of one sex over the other, are dependent upon the relative energy of the organization, the age, the condition of health, and of activity and exaltation of the individuals, etc. For instance, if we couple two individuals, one of which is strong and vigorous, and the other weak and extenuated by hard work, or privations, the product always bears a closer resemblance to the former of the progenitors.

If one of the two factors is an adult, and the

other either very old or very young, the descendant generally inherits from the first factor not only his external conformation, but his very sex.

The conditions of the health of parents has a strong influence on the offspring and this latter generally holds from the healthiest ancestor.

In coupling two individuals of a same breed, but one of which is a thoroughbred and the other a half-breed, the product generally resembles more closely the full-blooded factor.

If two full-blooded individuals are coupled together, the offspring will bear a closer resemblance to the side whose ancestry dates further back, and whose stamp is transmitted to the product. This is the reason why the Arabian horse, which belongs to the purest of all races, always bestows on his descendants his character and conformation. Another peculiarity frequently observed is the striking resemblance of male offspring to their mothers, whereas the female offspring bear a closer resemblance to their fathers. Another most interesting phenomena belonging to heredity, is the influence exercised by the first stallion to cover a mare, over the subsequent gestations.

All of the above enumerated rules are applicable equally to wild and domesticated animals.

CHOICE OF PROGENITORS

That which we have just said on heredity as well as the roles of the respective progenitors should be sufficient to emphasize the importance of a correct and judicious selection of the animals intended for reproduction.

CHOICE OF THE STALLION

The stallion should be the very ideal of perfection; consequently, the greatest care must be exercised in his selection. He should possess three orders of conditions: Proportion and symmetry of forms; that he should belong to an ancient and noble race; and he must have repeatedly given proofs of stamina and speed. The first condition that a stallion must be able to fill is that he must possess excellent health, and be absolutely free from all the hereditary vices and diseases enumerated above.

He must possess correct equilibrium. his size to be proportionate to that of the mare it is intended to couple him with, and this will also vary conformably to climate and diet. The introduction of large and heavy stallions in mountainous regions, where only small horses are to be found, would expose the breeder to disappointment, as he will likely obtain, from such cross-breeding, only wretched and ill-made products.

The most suitable age, for reproduction, is from the fifth to the fifteenth year. If horses are used for that purpose whilst still too young, they are likely to exhaust themselves, and yield only product with little vigor or energy, and of a lymphatic disposition. However, old stallions frequently yield excellent products.

We should reject from amongst progenitors, all those animals whose coat is very light. On excess of white about the head is not to be recommended, as these white patches have a tendency to increase from ascendants to descendants.

Horses possessing a sanguineous temperament are the best. Those of nervous temperament are

too irritable, and those of lymphatic temperament are too soft.

The animal should be neither too fat nor too thin. The stallion should possess a solidly built bony frame ; wide joints ; the bony prominences well defined ; a well developed muscular system, well defined in relief under the skin, firm to the touch and terminated by strong and well defined tendons.

Never use, for breeding purposes, vicious, wild, untameable horses ; whereas, frugality, rusticity, resistance to fatigue, are qualities to be eagerly sought for in, and should be possessed by all the horses intended for the breeding farm.

So much for the general conformation ; let us now study the details :

The head should be light and as much as possible resemble the type presented as the correct one. (See figure 18).

The conformation of the neck should be in relation to the kind of work the horse is intended for. A swan like neck is best adapted to manege horses ; a straight neck to race horses and a curved neck for the horses intended for the army.

The chest should be ample in all its diameters ; the withers should have a good elevation and extend well backwards ; the back and loins to be short, wi le, straight and well attached ; the croup should be long, muscular and endowed with an ample scope of movement ; the forearm to be long and muscular ; the knee wide ; the canon short ; the tendons strong and well defined ; the pastern short and wide laterally and free from ring-bone ; the foot should be of good proportion, and free from diseases or defective conformation ; the hoof to be

neither too soft nor too brittle ; the leg well brought down and above all muscular ; the hock should possess not only strength and solidity, but also be absolutely free from all bony tumours such as spavins, curbs, etc., diseases which I have already described in my "Manual of Veterinary Medicine."

In selecting progenitors, great account must be taken of their pedigrees. The more ancient and pure the breed of a horse, the more likely he is to transmit, to his descendants, his qualities or defects ; and consequently the greater the prospect of obtaining offsprings resembling him.

A symmetrical conformation and a noble birth, are not sufficient to determine the selection of a stallion. In addition to these qualifications he must have given proof of a stamina and speed.

The Arabs prize their horses in proportion to the services rendered ; and the manner in which fatiguing journeys, during their long and difficult expeditions, are supported ; also from their docility and degree of education.

These people have succeeded in creating their valuable breed of thoroughbreds, by employing for breeding purposes, only horses of good extraction, and who exhibited the necessary requirements to fill the prescribed conditions.

SELECTION OF THE MARES

All that has been said, while speaking of stallions, relative to diseases, qualities, size and weight, disposition, equilibrium proportions of the bony and muscular systems, the coats, the conditions of health, is also applicable to the mares, consequently there remains only to treat of the characteristics peculiar to these latter.

A light neck, withers slightly low, loins a trifle too long if well attached, are not to be regarded as sufficiently serious defects, to cause the mares, on which they are observed, to be rejected as breeders.

The rear part must offer a greater development and more elevation than on the stallion; the croup must give all the indications of an ample pelvis, to allow the fœtus ample room for development and comfort. When the mare's pelvis is narrow and short the fœtus is crowded, and its growth is irregular; in such cases, the hard portions only are normally developed, whereas the soft portions and natural cavities, being unable to overcome the pression caused by the mare's viscera linger and remain narrow.

A bre ler, whose croup is narrow, suffers more during the eriod of gestation than the mare whose pelvis is spacious; for the fœtus, working forward, impedes the play of the lungs and the normal movements of the heart. In addition to this the parturition is always more laborious.

The lower portion of the mare's limbs never present the same development as on the stallion, it being characteristic of the mares that the lower portions of their limbs and feet are slender and smaller than is the case with the males.

In order to be a good mother, during the gestation as well as during the period of suckling, the mare must be endowed with excellent digestive organs. A mare whose digestion is impaired, furnishes but a small quantity of blood to the fœtus and a small quantity of milk to the new-born.

As is the case wit' stallions, absolute perfection of the genital organs is to be required on the mares,

it is well to guard against nymphomania, as the animals suffering from this disorder are generally always barren.

DIVERS MODES OF REPRODUCTION

Pairing :—This is the coupling of a male and a female of the same breed, but selected in such a way that the defects of one are corrected by the qualities of the other. This pairing must, however, be carried out out according to certain laid down rules, of which these are the principal.

There must be, as much as possible, uniformity of height and weight, and the same amplitude of form on both progenitors. In effect, if a small mare is coupled with a much larger stallion, the consequences will be that the fœtus will have an abnormal and defective devolment, the bones and limbs will develop and increase in volume at the expense of the soft portions of the system and of the natural cavities. On the other hand, where the mare is lager than the stallion, the fœtus has an ample space to develop in, but also remains undersized. Consequently it is of the utmost importance that the size and weight of the father and mother, be about equal.

When it is desired to increase the size of a breed, it is better to have recourse to the mode of nurture than to the progenitors. Indeed the aliments only give increased size and stamina to animals. These it would be vain to expect from progenitors. Furthermore, these results can be attained only gradually, with occasional halts, as the volume of horses cannot, in certain localities, develop beyond a certain volume. The tendency is to the establishment of a relation with the climate

and the fertility of the soil, and this because the evolution of the organs is dependent, more especially, on the nutritive principles which furnish them their nourishment.

Whenever the same defect is observed on two animals, they should never be coupled together.

It is by the coupling of opposite defects that existing defects are corrected ; for instance, a too long loin is corrected by one too short; a very large and heavy head by a small and light one, etc.

It may be kept in mind that nature does not accomplish its work by bounds. The desired results can be attained only progressively and slowly.

It is also to be recommended that horses of about the same age be coupled together. For instance, an old stallion should not be coupled with a young mare or vice versa.

CROSS BREEDING

Cross-breeding is the coupling of a male and a female of a same specie, but of differents breeds, with a view to the creation of a new breed possessing the qualities and conformation of the superior breed. We call *crossed breed*, the breed it is intended to improve, and *crossing breed*, the breed utilized to effect the desired improvement.

Cross-breeding is a mode of reproduction frequently employed to effect the improvement of breeds and whose results are generally more speedily apparent than is the case with ordinary pairing. By this mode of breeding the qualities of horses are enhanced and new ones are added.

By continuing this cross-breeding during a varying number of generations, the essential characteristics of the cross breed can be altered to such

an extent that eventually no material differences remain between the improved and the improving breeds. It is well to bear in mind, however, that if cross-breeding be set completely aside, and there is no occasional recourse to the original improving strain, then the crossed breed will insensibly degenerate and finally fall back into its primitive state of inferiority.

Cross-breeding is equally useful to increase the height ; but in this case it is to be utilized more as an auxiliary to judicious nourishment than otherwise, it being a well recognized fact that size and the development of external forms is in direct relation with the quantity and quality of the food.

Let us recognize the fact, however, that if the judicious crossing of breeds is usually followed by satisfactory results, on the other hand ill-advised crossing is also generally followed by disastrous results.

The work of improving a breed must always be accomplished by the introduction of stallions of the improving breed.

The average yearly yield from one stallion is from forty to fifty colts. To obtain this result some sixty to seventy mares would be necessary.

Now remains the question to be settled, as to which breed is the best adapted for the improvement of our Canadian horses ? The English thoroughbred is by far the best in localities where an abundant nurture can be easily obtained, and the already existing breeds possess some resemblance to the English horses. In all other regions the full-blooded Arabian is to be preferred.

The French, Belgian and Irish horses are also to be much recommended.

A well established rule to be closely adhered to, in cross-breeding, is to carefully exclude from reproduction all the half-bred males, for the reason that they possess only a portion of the qualities belonging to the improving breed, or else, to couple them only with common mares, care being taken that the females of each generation be coupled only with pure bred stallions.

HALF-BREEDING

Half-breeding is the coupling of two individuals of different breeds, with a view to obtaining either a new breed, or an intermediary product, possessing characteristics, attitude, or utility, belonging especially to neither of the generating breeds.

Cross-breeding may be successfully effected between two individuals, one of which may be indigenous and the other foreign In all cases this mode of reproduction is subjected to all the laid rules of cross-breeding. Half-breeding is a most advantageous mode of reproduction when it is desired to create new breeds. At the same time it presents difficulties and requires much nicety of execution, as, if the operations are carried on injudiciously, the consequences will usually prove most disappointing.

MATCHING

This is the union of two pure bred individuals, one male and one female, possessing to the highest degree the qualities that it is desired to introduce into a breed.

CONSANGUINITY

Consanguinity or "in breeding" is the union of males and females closely related; it is the coup-

ling of father and daughter, mother and son, brother and sister ; In-breeding is a mode of reproduction from which the English breeders have obtained, in certain cases, most advantageous results. By this means have been created splendid breeds of cattle and of sheep, which are now the admiration of the whole of Europe. It is by means of this mode of reproduction that Backwell has succeeded in creating the English breed of black horses, a breed most remarkable by the great development of its bony frame and muscular system.

However, if this mode of reproduction, judiciously employed, may give excellent results, an ill-timed use or an abuse of it is generally followed by disastrous consequences. It is the shortest and mo t direct road to the obtainment of exaggeration of defects, the loss of qualities, and rapid degeneracy of the breed. Consequently it must be employed with much caution and circumspection.

PERIODS OF HEAT

We call *heat* the temporary and periodical manifestations of sexual desires observed on horses.

The duration of these periods varies with individuals. On some they last 24, 36, 48 hours, on others from eight to fifteen days ; they then disappear to return after a lapse of from twenty to twenty-five days.

The spring time is the most suitable for coupling ; say from the first of March to the beginning of September. The number of days that should elapse from parturition to the first leap should be from seven to nine.

GESTATION, PREGNANCY

We call *gestation* the period of time during which the impregnated germ remains in the womb.

The amount of food, allowed a mare, is to be increased as soon as she becomes pregnant, the amount of work required of her is to be slightly diminished, avoid all sudden shocks, the amount of stable room is to be materially increased, and for a month or two before parturition no work should be required.

It is well to avoid giving large amounts of cold water at one draught, more especially in the morning on an empty stomach

The duration of the period of gestation is not the same in all cases. The average length is of 335 days (eleven months), and the minimum duration being of 419 days (13 months and 29 days), and the minimum of 2[illegible]7 days ([illegible] months and 17 days).

The mare, whose parturition is close at hand, should be quartered alone, with an abundant litter, in a large stable containing absolutely no objects against which she may injure herself.

Her diet should be in relation to her condition and state of health. If the animal is weakened, and the season is bad, then the diet should be tonic. If, on the contrary, the animal is in good condition and excellent health, then the rations may be decreased, and the diet be of a cooling nature. During the last days of pregnancy the animal should be closely watched, both day and night.

A short time after birth, the normally born, and well conformed colt, rises and directs his tottering steps towards his mother's udder. It is adviseable, however, to help and guide him in his first attempt. It is necessary that the colt should get

the first of the mother's milk as it contains laxative properties which readily remove from the intestines the fecal matters they contain.

After parturition, about an hour's time should be allowed the mother, during which to fondle and dry her offspring, then she should be well rubbed down and given a thin mash.

ABORTION

Abortion is the premature expulsion of the fœtus, before it has attained the stage of viability.

This accident may be due to numerous causes: the cold, the rain, high winds, fogs, superabundance of nurture, unhealty stables, blows, shocks, falls, indigestions, cold drinks, fright, the injudicious use of purgatives, and of bleeding. All these causes may produce abortion.

NURSING, SUCKLING.

Nursing is the act of nourishing an animal with milk.

Natural Suckling: We say that the nursing is *natural* when the young animal itself takes the milk from its mother's udder. The average duration of this period is usually six months; during its continuance both the colt and its mother should receive especial attention, viz: For the twelve days following birth, the colt should be confined to the stable; as it is during that period that he is most liable to intestinal disorders, or that hernias makes their appearance, etc.

Should the colt be constipated, warm water and soap injections should be given, or else a draught of from 45 to 60 grammes of sweet oil, or

30 grammes of soda sulphate should be administered. On the other hand, should diarrhœa be present, then the use of soothing injections is recommended, a warm woollen band is to be put around the abdomen, and great care must be taken to avoid any exposure to cold.

When the colt is two months old, the mother's milk alone ceases to be sufficient nourishment for it. In addition to the milk it is well to add other foods; such as oats or barley for instance; but preferably oats. A colt receiving a daily ration of oats soon gains in strength, has a rapid growth and development and inspires most promising hopes.

Should it be observed that whole oats are not well digested, it will be well to replace them by crushed or ground oats.

The ration of oats for a colt should be as follows: At two months of age give one pound per day; at three months of age give two pounds per day. Then increase gradually the ration on the basis of one pound a day per month, until a ration of six pounds a day is reached. This amount of oats must be fed in such a way that several small meals are made out of it each day. As soon as the colt is sufficiently strong to follow its mother to pasture, he should be taken there, providing the weather is suitable. It must be remembered that absolute freedom and open air life are most beneficial to colts.

It is well to begin the education of the colt during the period of suckling. He should first be taught to stand to be curried and brushed, to have his eyes, nostrils, anus, and genital organs sponged and cleaned, his feet should be raised and light blows struck on the soles.

About the fourth month it is well to put on a light leather halter. and the colt should be tied to the manger whilst eating his ration of oats, some one remaining near him all this time to prevent his pulling-back. He should also be blanketed, etc.

Two months before weaning, the colt should be taught to lead. Should he try to escape, it is unwise to oppose force to his efforts, but rather to take him kindly and to patiently endeavor to teach him what is wanted. As soon as he yields obedience he should be recompensed by giving him something to eat, that which he may be most fond of, such as sugar, apples, etc., etc.

The first condition necessary for the successful education of a colt is patient and gentle handling. By these means, the colt is soon made to understand what is wanted of him. Once he has understood he obeys without any difficulty and his progress is rapid. If at the beginning the colt is handled roughly, he soon loses his head, and his education is delayed in proportion.

HYGIENE OF THE MARE AFTER PARTURITION

The newly foaled mare requires to be kept in the stable for at least twelve days, in order to completely recover from the fatigues of parturition. After that she may resume work or return to pasture. The diet of nursing mares should be composed of those articles of food most adapted to increase the quantity and quality of milk. A meal of green forage, or of carrots, or again, a good mash, in addition to the ordinary ration of dried food, will be found most suitable. As to the quantity of each ration, it, of course, varies with

the size and condition of the mare, and is also influenced by the immediate surrounding circumstances.

ARTIFICIAL NURSING AND ADOPTIVE SUCKLING

Whenever a colt has lost its mother or that this latter does not furnish a sufficient amount of milk, it is necessary to find an adoptive mother, or resort to artificial nursing.

The greater draw-back to adoptive suckling is to accustom the mare to be suckled by a strange colt. Once this objection is overcome, the suckling goes on as in ordinary circumstances.

When it is impossible to find an adoptive mother, then the colt must be taught to drink milk in a vessel. To accustom him to this mode of feeding, it is well to begin with the use of a bottle loosely stopped with a piece of rag. From this the colt is insensibly brought to take his food from a vessel with a wide opening. Should the young animal persist in refusing to take food by the above indicated methods, then he must be compelled to drink milk poured into his mouth with a bottle.

Of course, mare's milk is the most suitable for the nourishment of colts ; but as it is at times extremely difficult to secure any, it can then be replaced by cow's milk. When the latter proves insufficient to the colt's requirements, then wheat or barley flour may be added to it, or a decoction of four parts of wheat or barley flour, to one part of linseed meal, may be used with benefit. Artificial nursing is far from possessing the advantages of natural suckling. Colts raised artificially never

have the vigor, size, and the strength of those who have had the advantages of normal and natural nursing.

WEANING

At six months of age the colt may be weaned. This can be accomplished without experiencing much trouble, from either the mare or colt, if care be taken to separate them in such a way that they cannot see each other, or hear their neighing. They should also be given new companions.

In order to dry up the secretion of milk, it is advisable to milk the mare say twice the first day, once the second day, and once the fourth day. The rations may be diminished and the work increased. In certain cases it is commendable to administer a purgative, such as seven drachms of aloes for instance, or else powders composed of nitrate of potash and potassium brofmide of each one drachm, this dose to be repeated twice daily for five days. The most convenient way of administering these latter is to mix them well in a warm bran mash.

REARING

The rearing of the young animals is one of the most important parts of the horse-breeding industry ; because, to produce good horses, it is not all sufficient to carefully select the progenitors, and have them well matched, but it is also imperiously necessary that judicious care be taken of their products. Indeed, a colt may spring from well formed and well bred parents, and be endowed at his birth with the most favorable dispositions, and still prove a disappointment to his owner, if judicious care and feeding does not come to nature's assistance and

prevent him from losing his natural endowments. On the other hand, a colt springing from very ordinary parents, himself very ordinary at birth, may develop into a very good horse if properly reared.

BRINGING UP, FROM SIX MONTHS TO ONE YEAR

After weaning them, the colts should be placed in pairs in the same stable or enclosure.

At this epoch of their lives it is wise to separate the sexes. The diet of recently weaned colts should be varied, abundant, and of good quality. The English breeders allow colts from six to twelve months of age, as much as 16 pounds of oats per day. We willingly admit that this seems a very large ration, but we also think that a colt during his first year, can, without any inconvenience, consume per day four meals of oats, each of one and a half to two pounds. To the rations of oats, hay and straw should be added green forages or carrots. All food stuffs should be given in small quantities and often.

The feet should be closely watched, as they are apt to grow unevenly. In such cases it is necessary to have them trimmed and paired by some competent men, as it is well established that many colts are lamed by ring-bones, themselves the consequence of allowing the hoofs to grow to an exaggerated length.

BRINGING UP, FROM ONE TO TWO YEARS

The routine to be followed during the second year differs but very little from that which has just been described, but let it not be forgotten, however,

that colts cannot be fed only on hay, carrots, or beets, etc., but that they must also receive an adequate ration of oats.

BRINGING UP, FROM TWO TO THREE YEARS

It is at this age that castration of the males should take place. And it is also the epoch in the horse's life when work begins on the farms. The work required from a colt should not be too arduous but rather proportionate to his strength and development. At this age the bones have not yet acquired all their strength and density ; the muscles are not sufficiently strong nor the joints sufficiently solid to permit the animal to perform very laborious tasks.

BRINGING UP, FROM THREE TO FOUR YEARS

The care and hygienic conditions required are about the same as those of the preceding year. The diet should be similar, but more copious.

At this epoch, the training, or education of the young horse, should particularly occupy the breeder's attention. The colt must be prepared to receive the bridle and saddle, to be mounted, and to carry the weight of the rider, and also to be harnessed to both summer and winter vehicles. As I have already said, great patience must be exercised in the breaking and training of a colt, as with kindness you will succeed in making your colt do anything you may wish, whereas harshness will only spoil him.

APPENDIX

ENCOURAGEMENT GIVEN TO THE HORSE-BREEDING INDUSTRY

It affords me much pleasure to be enabled to state, that there is a noticeable movement taking place, amongst the farming class, towards adopting adequate means to effect a radical improvement in our Canadian horses. The purchase, in America, of large numbers of remounts for the English army has convinced our farmers that the breeding of good horses would prove a remunerative industry; and, as Lord Strathcona, High Commissioner in London, has so justly remarked in his report dated May, 1901: "There is no country in the world as favored as is Canada with relation to the successful conduct of the breeding of horses, and more especially so in the Province of Quebec." But it must not be forgotten that, unless adequate means are adopted whereby the external conformation of our horses is improved, their bony structures altered, and more particularly unless we reject as breeding stock all mares unsound from spavins or other hereditary diseases, that we will never succeed in producing good horses, for it is not the quantity of horses which is lacking, but the quality.

BREEDING ESTABLISHMENTS

These establishments include the *haras*, *stallion depots*, *approved stallions*, *authorized stallions*, *ambulant stallions*.

The means of encouragement are furnished through the agency of *races*, *prizes*, and *bounties*.

HARAS

These are establishments in which stallions and mares are kept for reproducing purposes, and also their offsprings.

In these establishments, when the horses are continually under the supervision of men, the haras are called *domestic;* when without any superintendence they are called *wild* or *semi*-wild.

Wild Haras:—These are establishments in which the stallions, the mares, and the colts are living promiscuously, in immense tracts of land, in which they remain constantly exposed to the atmospheric influences, and without either receiving food or attention from their owners. The most extensive *wild haras* are to be found in America. None now exist in Europe, with the exception, perhaps, of amongst some of the Northern nations.

The wild horses are frugal, hardy, and support with ease the greatest fatigues and hardships; on the other hand, they are frequently intractable, difficult to break and train, and often are of a vicious disposition and treacherous character. These most annoying characteristics would be avoided by a judicious pairing and selecting of progenitors.

Semi-Wild Haras:—In these establishments, the horses live in complete liberty only a certain portion of each year. All the males which are not

proper for reproduction are set aside. This concourse of circumstances results in the fact that the horses produced in this class of establishments are vastly superior to those furnished by the *wild haras.*

These horses also are difficult to break and train, being usually skittish and timid; but once trained and acclimitized they are most remarkable by their frugality, resistance to fatigue, and hardiness.

Domestic haras :—In these establishments the horses are continually under the supervision of men, not only at the stable but also whilst at pasture. The stallions are kept and fed in stables. During fine weather the mares and colts spend a portion of each day in the pasture.

This class of breeding establishments are much superior to the preceding, and, with many nations it would be utterly impossible to have any other, considering the actual demands of agriculture and the division of the land.

The purpose of these haras is the production of horses suitable for all classes of work ; also to engage in the improvement of breeds ; or to solve certain complex problems relating to reproduction.

There are several private haras here which are proving most beneficial to the agricultural classes.

DEPOTS OF STALLIONS

These are establishments in which stallions are kept by the state, for the purpose of breeding to mares belonging to private individuals. The purpose of these depots is to furnish choice stallions to

breeders. As I have already had occasion of remarking, there should be just such a depot attached to the Compton Government farm, which could furnish suitable stallions to such counties as might apply for them. Of course the kind of stallions furnished would have to vary in accordance to the kind of mares they would be expected to be coupled with.

The selection of stallions intended for different counties, should be made with great caution and be based upon a thorough knowledge, not only of the class of mares, but also of the climate, the nature of the soil, the agricultural resources of the region, the methods of breeding employed, and the established customs of the breeders of the county or district. It must be kept in mind that if a judiciously selected stallion can improve the horses of a whole district, an unsuitable stallion can also bring about disastrous consequences and bring trouble and degeneracy in the horses of a whole county. Stallions should not be kept in the same localities more than three or four consecutive years; after that, it is wise to make a change in order to avoid the ill-effects of consanguinity. It is useless to add that the organization of such establishments should be conducted by highly competent men and under the direct supervision of the government.

APPROVED STALLIONS

We call *approved stallions* those animals which are deemed to possess fitness for reproduction. These horses belong to private individuals who, by keeping them for breeding purposes, receive an annual bounty, which will be explained later on.

AUTHORIZED STALLIONS

The *authorized stallions* are those which the departemental veterinarian has examined and found fit for reproduction. The very fact that these animals have been received by the authorities places them in great demand amongst breeders, consequently, the inspecting veterinarian can never be too strict in his choice, and must always bear in mind that the introduction of an undesirable stallion, in a province, may lead to the most regrettable consequences.

STROLLING STALLIONS

These are stallions which travel from village to village to cover mares; this method cannot be recommended, as these animals are frequently covered with blemishes which are transmitted to their products. It would be in the interest of the improvement of our horses that this class of progenitors be strictly prohibited.

ENCOURAGEMENTS CONFERRED ON THE HORSE-BREEDING INDUSTRY

We have much pleasure in stating that the Provincial Government is seriously considering the adoption of adequate means to help the farmers to improve our breeds of horses : We reproduce here, from amongst others, a self explanatory circular letter published February 1st, 1901 :

DEPARTMENT OF AGRICULTURE,

Quebec, February 1st, 1901.

Sir :

I take the liberty of inviting your especial attention to a resolution passed by the Council of

Agriculture, tending to facilitate to the Agricultural Associations the means of effecting the improvement of the different breeds of animals in this Province, and which has been adopted by the Council at its sittings of the 23rd and 24th of January last.

" In future, the Agricultural Associations will have the right, whenever they may deem it preferable not to hold any exhibition, to appropriate the Government grant to either the purchase of reproducing animals, or to the payment of conservation bounties to proprietors of such animals, and, in such cases, the directors of such Associations have the authority of reimbursing the members to the full amount of their subscription, by the issue of seeds or chemical fertilizers. The Agricultural Associations will thus be allowed all possible latitude for the recruiting of subscribers.

" The Council of Agriculture in thus widening the sphere of action of our Agricultural Associations, has done so in response to the wishes so frequently expressed, and to the urgent needs that the whole agricultural class was unanimous in wishing to see fully satisfied.

" The great importance of the movement of animal races, is admitted by all, and if there still exists conflicting opinions as to the most proper means to be employed to accomplish it, there is no more argument as to the merits of the problem to be solved.

" The breeding of horses, in particular, should be the subject of much attention on the part of Agricultural Associations. England has lately made large purchases of horses, but, unfortunately, whilst we were enabled to sell to it large cargos of hay, meats, and boxed fruits, we were unable to furnish

beyond a very limited number, horses filling the required conditions. We have barely furnished three per cent. of the horses purchased, and this notwithstanding the fact that Canada is recognized as a country very well adapted to the breeding of horses.

" We have thus lost an excellent opportunity of realizing large profits, and this, not because we had not horses, but because the horses we had were not deemed adapted and fit for the service for which they were intended.

" Consequently there is in the breeding of horses, suitable as army remounts, as also for general commerce, prospects of handsome revenue for the agricultural classes.

" If I have deemed it my duty to thus especially invite your attention to this decision of the Council of Agriculture, it is because I am fully convinced that it can, judiciously employed, render most important services to farmers, and, that yourselves will see your way clear to joining your efforts to those of your fellow citizens, who are interested in the welfare and progress of agriculture, which is the very basis of our national future.

" The new council regulations relative to conservation bounties and the purchase of progenitors will be forwarded to you shortly."

I have the honour to be,
Your devoted servant,

F.-G. MIVILLE DÉCHÈNE,
Commissioner of Agriculture.

As can be readily seen by this letter, the Department of Agriculture of the Province of Quebec is very favorably disposed towards the

farmers and will, we feel assured, make large sacrifices, if necessary, to insure the success of this, one of the most renumerative branches of commerce of our country, providing we promote the improvement of our horses and render them better adapted as army remounts or for the general commerce.

It is not without difficulties that we have succeeded in determining what bounties could be allowed as conservation bounties. We beg to submit the following gradation :

Whenever an Agricultural Association takes advantage of the privilege granted by the Department of Agriculture, it is in a condition to allow :

For a thoroughbred stallion approved.....	from	$250 to $350
For a half bred.....	"	200 to 300
For a draught	"	2 0 to 250

However, in the case of stallions of exceptional value and merit it would be possible to allow as follows :

For a thoroughbred stallion.....	from	$350 to	$500
" half-bred "	"	300 "	450
" draught "	"	300 "	400

The average of bounties, for stallions, would thus be of $250.00 which sum is, I believe, a sufficient encouragement.

BOUNTIES ON BREEDING MARES

The conservation bounties could be divided as follows :

For thoroughbred mare, with pedigree, 1st class, approved, from..... $100 to $150

For half-bred mares, without pedigree, but who would successfully undergo an examination and be rated as 1st class..... $75 to $100

For any other mares passing a satisfactory examination, from..... $75 to $100

For draught mares, from..... $75 to $100

The average of bounties on mares would thus be of..... $100

EPITOME of what is being done by the Department of Agriculture of Ireland, relative to the Improvement of Breeds

In Ireland the Department of Agriculture is making strenuous efforts towards the improvement of horses and cattle. It has recently published in the *Farmer's Gazette*, the regulations adopted for the year 1902. These regulations are fully endorsed by the paper named, which is fully convinced that they will tend to bring about the happiest results.

The Department gives out that during the year 1902, no appropriations will be paid direct to exhibiting associations, but that it offers prizes and bounties for those classes of animals mentioned in the regulations. The local Agricultural Associations have the privilege of indicating, for their own districts, the breeds of stallions and bulls, to receive the bounties, also, the selection of the class of animals, the breeding of which should be encouraged by the giving of prizes at fairs. The Department reserves for itself the control of the carrying out of these schemes.

It grants yearly bounties to stallions and bulls, subject to such restrictions as it may see fit to impose. No bounty can be awarded to any progenator unless it has been previously examined

and approved of by a Veterinarian selected by the Department.

Bounties are also granted for the best mares, with the condition that the farmers who own them, keep them for reproducing purposes for a year or more.

The methods of the Irish Department of Agriculture are differing widely from that adopted by the Province of Quebec. Which are the best? If we take into consideration the very injudicious manner in which some of the Agricultural Association spend the appropiations granted them, we are led to believe that the methods in vogue in Ireland are vastly superior to ours.

The Council of Agriculture of Quebec has the authority to rule how one-half of the appropiations should be spent, and should insist more upon asserting its rights. Its action is much more free than are the Agricultural Associations from the influence of clans.

As in Ireland, the Associations could decide as to which breeds are best adapted to their respective districts, but the Department should retain the privilege of determining the values of bounties to be granted, and control their payment. The Agricultural class would gain by this arrangement.

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