

THE FRENCH-CANADIAN HORSE

BY

G. A. LANGELIER

SUPERINTENDENT DOMINION EXPERIMENTAL STATION,
CAP ROUGE, P.Q.

DOMINION EXPERIMENTAL FARMS

E. S. ARCHIBALD, DIRECTOR

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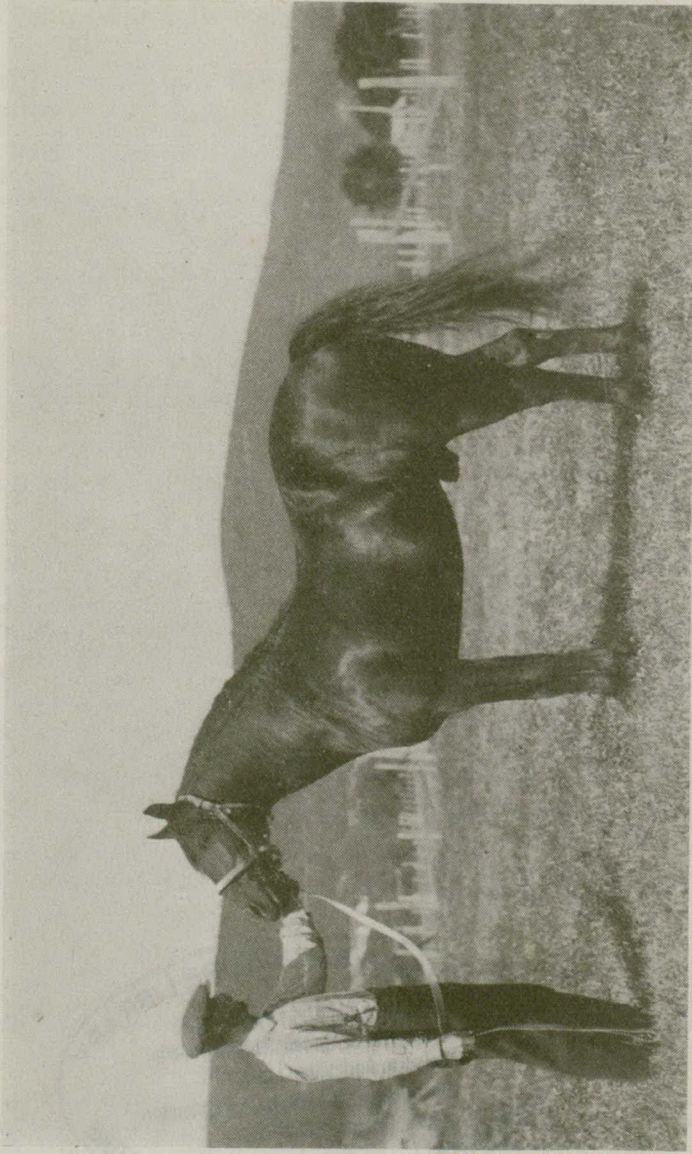
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French-Canadian Stallion "Albert de Cap Rouge". Easily the best of the breed.

THE FRENCH-CANADIAN HORSE

BY GUS. LANGELIER

THE PERMANENCY OF THE HORSE

When the steam plough was first used, when the electric tramways commenced to run, when the bicycle, the automobile, the tractor and the truck were put into service, many saw a horseless age not far distant. Cartoonists depicted a nag as a curiosity to be found only in museums within a very few years; men of good intentions wrote articles in the papers, and the feeling became widely spread that it was only a question of time for the horse completely to disappear. And still the official records show that despite the large exportations during the Great War, there were more horses in Canada and in the United States, in 1925, than there ever were in any year since the discovery of the New World.

That this should be so is, at first sight, remarkable, if one takes into consideration the fact that the horse has had practically no advertising agent to extol his merits whilst the very best talent has been employed to push the automotive industry. Small fortunes have been spent to show how horses could be replaced by automobiles, trucks and tractors, whilst little has been done to prove that different kinds of work performed by horses can never be accomplished by mechanical power.

But the gradual increase in the number of horses is not so extraordinary after all, and, in fact, is only what might have been expected when one thinks about the very congested city districts where trucks will never be profitable on short hauls; the long winter months, in most northern sections, during which automobiles and tractors will necessarily be idle, and the hilly or even very rolling farms where too much power is lost in propelling the machine itself.

It must be admitted that some of the ordinary work of horses can be done as well and sometimes more cheaply with machines. But this is also true of the labour of men, yet, though during the last three or four decades machines of every description have been invented and placed in factories still the manual labourer is in great demand.

Besides these considerations, the average farmer is not a mechanic any more than the average mechanic is a farmer. As long as his tractor is new, he gets along very well, but afterwards he commences to have trouble with it, and if the dealer or the service station mechanic is far away or busy, he may be stuck in the heaviest seasons of seeding, haying or harvesting. On the other hand, the care of horses has been known from generation to generation, and even if one animal is laid up, the whole work does not stop.

That the automotive industry is rendering a service to the country at the same time as it is piling up dividends is admitted: that it will in time crowd the horse away from farms is not believed by anybody who has given the question serious consideration.

THE GENERAL-PURPOSE HORSE

The automobile has no doubt largely replaced the horses which were bred as a luxury, such as carriage horses, coachers and saddlers, though the latter have probably suffered less than the first two. It has and will continue to replace the roadsters in many districts. Tractors and trucks have also replaced heavy draught horses to no small extent but the permanency of their replacement is not proven.

The farm chunk, in comparison with the draughter, hardly ever had anybody to say a good word in his favour, as there were no breeders sufficiently interested to boost him. The general-purpose horse has been despised because he was often a misfit, or the result of haphazard crossing. But if a breed existed which regularly furnished horses weighing from 1,100 to 1,300 pounds, that could be hitched to a carriage without looking out of place, and take their turn at farm work with a willing disposition, with a fast walk and lots of courage and endurance, it is probable that few people would scoff at them, for the good reason that thousands of farmers would be eager to get them and would be satisfied after they did get them.

Draughters have always been and will always be profitable to the farmer who produces them. But to pretend that draughters are the only class of profitable horse to raise is to go too far, just as it is not right to say that tractors or trucks are always the most economical form of transportation for the farm or the city.

Professor Davenport, of the University of Illinois, the state where draughters have probably been more boosted than anywhere else in America, has written as follows: "Besides the heavy draught, let us have a useful, intelligent horse of medium size, with a deep, thick chest, upstanding neck, full forehead and large, bright eye, an open nostril and erect ear, a short leg, heavily muscled, with a long, low stride that brings the foot lightly to the ground; then, with a short back and strong loin, we shall have a horse of good action, of great endurance, and one that will give good promise of rendering service for twenty years. For such a horse there is a strong and growing demand. Who will breed him and out of what blood lines will he be produced?"

No better description of the French-Canadian horse could have been made.

THE FRENCH-CANADIAN HORSE

EARLY HISTORY

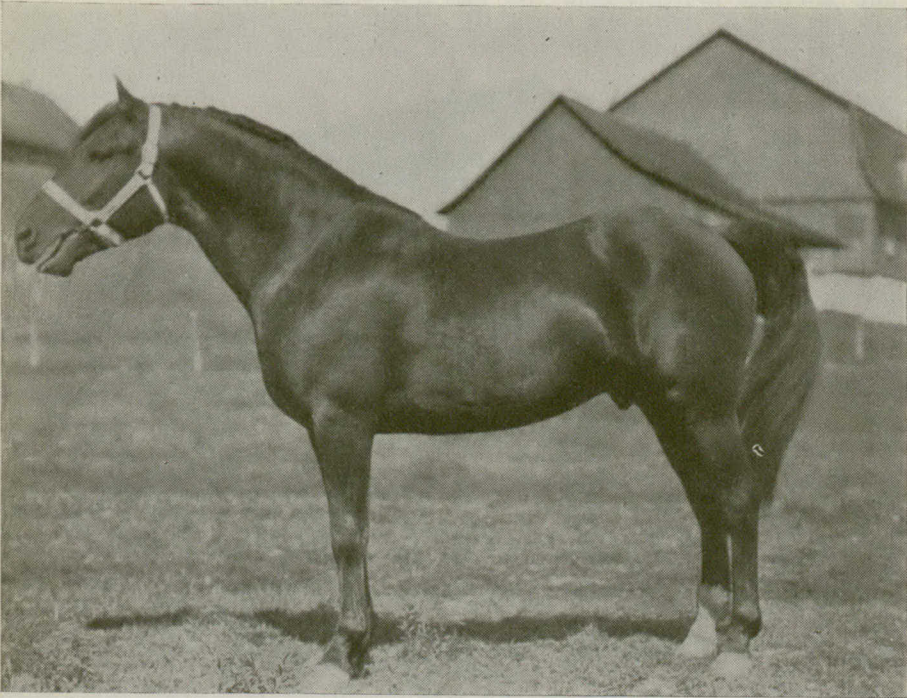
The old-time French-Canadian pony, as he was called, was admitted to be a little horse of iron. Though there are no records to prove it, he could probably develop and keep on developing more power per hundred pounds of his weight than any other member of the equine family. This is explained by the fact that the first animals of this breed were sent from France to Canada by Louis XIV, who liked to do things in great style and who had given instructions to his minister Colbert, the latter very much interested to see the new colony prosper, to pick out the best specimens in his country. These horses, which remained the property of the King for three years, were distributed amongst the gentlemen of Canada who had most helped colonization and farming.

Afterwards, there was the natural selection, by the survival of the fittest, which eliminated, through the cold climate and the deep winter roads, such as did not have enough vitality and endurance.

The qualities of the French-Canadian horse were so well known that he was used in forming certain families of the Morgan and of the Standard Bred. Thus his blood is flowing in the veins of some of the gamest and fleetest horses in America.

ENDURANCE

Mr. J. W. Ingham, of Bradford county, Pennsylvania, wrote as follows in the *Breeders Gazette* (Chicago) of March 19, 1914: "A lumberman bought a Canadian horse not weighing over 1,050 pounds and worked him beside a horse weighing 200 pounds more on an even whiffletree. The Canadian kept up his end at all times and never showed as much weariness as his larger mate. After they had worked together two years, the big horse died. When asked what was the matter, the driver said: 'The Canadian worked him to death.'



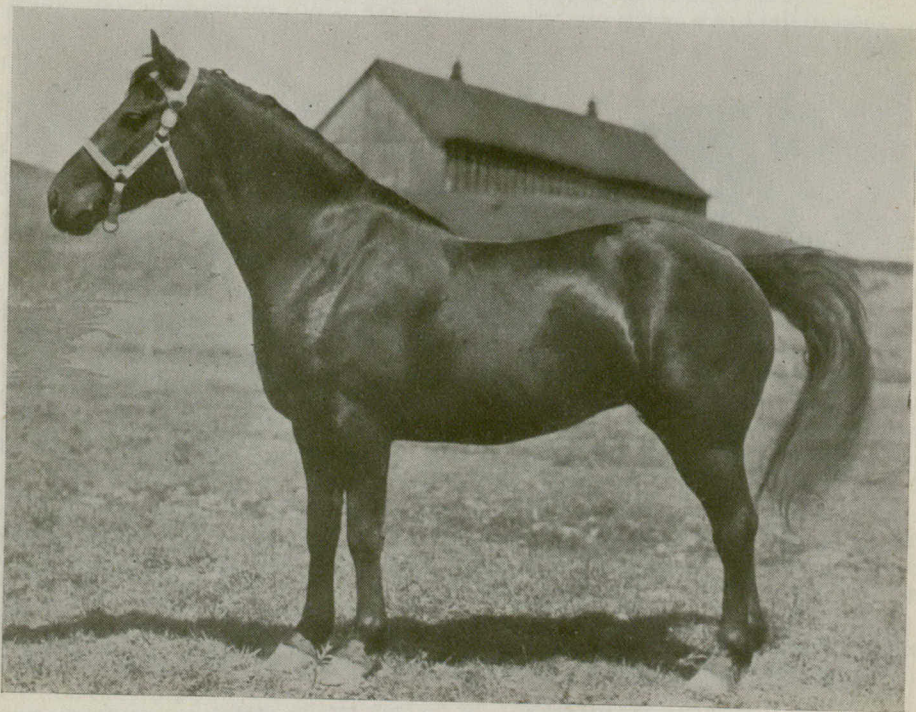
Three-year-old French-Canadian Stallion "Keller de Cap Rouge." Bred by and the property of the St. Joachim horse-breeding station. First-prize winner as a two-year-old, in 1925, at Three Rivers, Sherbrooke, and Quebec.

A large horse that was mated with him afterwards died within a year, leaving the Canadian still well and sound. The Canadians are undoubtedly descended from a large breed of horse brought over from France in the early settlement of the country. The colts, not being as well fed and warmly stabled as their ancestors, and exposed much of the time to a rigorous climate and hard work, degenerated in size, but improved in hardiness and endurance."

A GENERAL-PURPOSE ANIMAL

Mr. A. W. Smith, ex-M.P. for North Middlesex, Ont., spoke as follows, in 1909, before the Select Standing Committee on Agriculture and Colonization: "There are quite a number of these horses that I have had the pleasure of handling personally, and I know of the good qualities which they possess. I have in mind one particular team which was typical of the large number that I was conversant with. This team weighed 1,250 pounds each as nearly as possible. They were very well matched. They were black. They would travel up to

ten miles an hour and continue it for a couple of hours or more; I have seen them do it. On a ten-mile gait they would continue for three or four hours without any trouble whatever. Besides that, they would walk with a good ordinary-sized load at about four miles an hour. I think that is one of the best qualities you could have in a farm horse and the French-Canadian is an ideal farmer's horse. Besides that, I have seen the same team matched against other heavier horses that would weigh probably 1,600 to 1,700 pounds. The French-Canadian horses would draw a heavier load than heavier horses. That is one of the characteristics I have found in these French-Canadian horses and I fancy



Three-year-old French-Canadian filly "Kola de Cap Rouge." Bred by the horse-breeding station at St. Joachim, and first as a two-year-old at Sherbrooke and Quebec.

that we have not yet developed any breed, or mixture of breeds, that would come up to the French-Canadian as a general-purpose horse. It is perhaps the most valuable horse that the farmer could have either in Quebec, Ontario or in the West."

FOR MILITARY PURPOSES

Few men had a better general knowledge of horses than the late Dr. J. G. Rutherford, who was at one time chief of the Live Stock and Health of Animals Branches of the Dominion Department of Agriculture. Here is what he said: "There is no reason why this horse should not be bred, and extensively used, for cavalry purposes. They would also make good mounted-infantry ponies."

Mr. Currie, ex-M.P. for North Simcoe, Ont., is also quoted: "I saw on one occasion several teams of French-Canadian horses that the Royal Canadian

Artillery had. I never saw such magnificent teams in my life. I understand that these horses went through all the South African war and came back home safe and sound."

DISPOSITION

The late Hon. Sydney Fisher, a former Minister of Agriculture, expressed himself as follows: "The French-Canadian horse, as a rule, is the most kindly, gentle, and docile animal I have ever had the opportunity of handling, and he is also one of the truest to his work. He never gives out, it does not matter what he is at. If it is on the road he travels along forever, and if he has a load behind him he will tug at it until he moves it. He never baulks, and children can handle him with the greatest safety. In every way he is docile and kindly."

SCALE OF POINTS

The following scale of points was prepared by Dr. J. A. Couture for many years secretary of the French-Canadian Horse Breeders Association. It is probable that Dr. Couture did more for the revival of the breed than any other man connected with the Association. The present secretary of the Association is Mr. Adrien Morin, Ste. Hyacinthe, P.Q.

First Group—Head

Shape and Carriage.—Square, that is rather short and with straight lines everywhere; lean; carried rather high and slanting.....	
Ears.—Not too close, thin, active, rather short.....	
Forehead and face.—Broad and flat.....	2
Eyes.—Wide apart; flush with the head; large; moderately convex; bright, and kind....	
Eyelids.—Thin, wide apart, clean and mobile.....	
Nostrils.—Large and wide apart.....	
Lips.—Thin, mobile, covered with delicate skin.....	1
Mouth.—Rather small	
Lower jaw.—Wide apart and rather broad at the angle.....	
Cavity between the jaws.—Wide spread, lean and well hollowed out.....	1
Cheeks.—Well developed, firm but not fat.....	
Total points for this group.....	4

Second Group—Neck and Throat

Throat; Wide across; throatlatch slightly depressed.....	1
Neck.—Rather straight than arched; broad at lower and thin at upper edge; sides slightly rounded and firmly muscled; gracefully attached to the head and well fastened to the shoulders	4
Total points for this group.....	5

Third Group—Body

Withers.—Lean, slightly raised and long.....	1
Back.—Strong, broad, straight, short.....	4
Loins.—Broad, short, strong, straight.....	4
Breast.—Broad, so that the horse's legs are wide apart; covered with well-developed and projecting muscles	1
Chest.—Broad and deep; ribs long, broad, well apart and well arched.....	7
Belly.—Somewhat large but not pendulous; gradually rounding in with the curve of the ribs and flanks.....	3
Total points for this group.....	20

Fourth Group—Fore-quarters

Shoulder.—Long, sloping and well muscled.....	5
Arm and elbow.—Long, thick, covered with hard and projecting muscles. Arm moderately inclined. Elbow long, parallel to the axis of body and at the same time apart from it	1
Fore-arm.—Descending as low as possible, broad, thick, perpendicular.....	2
Knee.—Lean, long, broad, thick, clean, perpendicular, not turned either in or out.....	5
Total points for this group.....	13

Fifth Group—Hind-quarters

Croup.—As long as possible, wide, slightly sloping; the point of the hip should project but little	3
Tail.—Large at the root, thick, attached rather high, with an abundance of fine and rather long hair	1
Buttock.—Descending as near the hock as possible, firm, thick, well muscled.....	5
Thigh.—Broad and thick	
Stifle.—Clean, close to belly, turned slightly outward.....	5
Leg.—Long, wide, the tendon well separated from the bone, large and hard.....	
Hock.—Clean, lean, wide, thick, parallel to the inclined plane of the body, not turned either in or out.....	5
Total points for this group.....	14

Sixth Group—Lower part of the leg

Cannon.—Short, broad, thick, clean, lean, perpendicular. Tendons lean, clean, firm, large and well detached.	
Fetlock.—Broad, thick, lean, clean, slightly slanting.	
Pastern.—Broad, thick average length moderately slanting; free from hair,—	
For fore leg.....	5
For hind leg.....	5
Total points for this group.....	10

Seventh Group—Feet

Front foot.—Large, strong, as broad as long, resting squarely on the ground face line slightly inclined; height of heels one-half that of front face; heels widely spread, even, resting squarely on the ground; sole hollow, thick; frog, strong and rather hard....	10
Hind foot.—Should possess all the qualities indicated for the fore foot except that it is more oval in shape and the heels are higher and more spread.....	5
Total points for this group.....	15

Eighth Group—Exterior

Skin.—Soft, pliant, mellow, loose; hair smooth.....	1
Colour.—Any colour is acceptable.	
Height.—Males not to exceed 5 feet 4 inches; females not to exceed 5 feet 3 inches; the height preferred is from 5 feet 1 inch to 5 feet 3 inches.....	1
Weight.—Males not to exceed 1,450 pounds; females not to exceed 1,300 pounds; the weights preferred are from 1,100 to 1,350 pounds for males and from 1,050 to 1,250 pounds for females.....	1
Action.—Lively, brisk, rather long than high; hock, knee, fetlock and pastern bending easily	7
Total points for this group.....	10

Temperament and Nervous System

The animal must be of a docile temperament but full of vigour and spirit without being nervous	4
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General Appearance

The animal must be graceful in carriage and demeanour as well as in symmetry and shape.	5
Grand total of points.....	100

BREEDING FOR IMPROVEMENT

ALBERT DE CAP ROUGE

During the autumn of 1912, a black mare of typical shape, but weighing less than eleven hundred pounds, was bought for the Cap Rouge Station. She had lots of grit, a good gait, and a conformation which gave her more strength than animals 200 pounds heavier. Many a time she spent the full ten hours on the corn-binder, with a mate weighing nearly 1,500 pounds, but never for a moment did her whiffletree get behind the other. Every teamster who worked with her said that she always looked as lively after a hard day as she did in the morning, even when only a couple of weeks before foaling.

This mare, Hélène—49—, had been served, before she was bought, by Wilfrid—1012—, a black stallion weighing less than 1200 pounds, but "all horse," to use a common expression. It was thought that the offspring would be small, though it seemed reasonable to expect that the descendants would be brimful of quality, endurance and courage.

May 31, 1913, was a red-letter day for the breed of French-Canadian horses, as on that date was born a black colt, Albert de Cap Rouge—1489—, from the union just mentioned. On June 2, he weighed 110 pounds, which was certainly not too much, but at one month, he tipped the scales at 190, at two months 290, and, as the mare was milking heavily, at three months 465 pounds. He was exhibited, out of competition, at Quebec and at Sherbrooke that autumn, and an offer was refused for him which would have nearly paid what his dam cost. But he was developing so well that it was decided to keep him, the intention then being to see what the old and time-honoured combination of "breed and feed" would make of him.

Weaned at five months, he was wintered in a single-boarded, open-front shed, and he was never seen to shiver once, although he spent practically all his time outside.

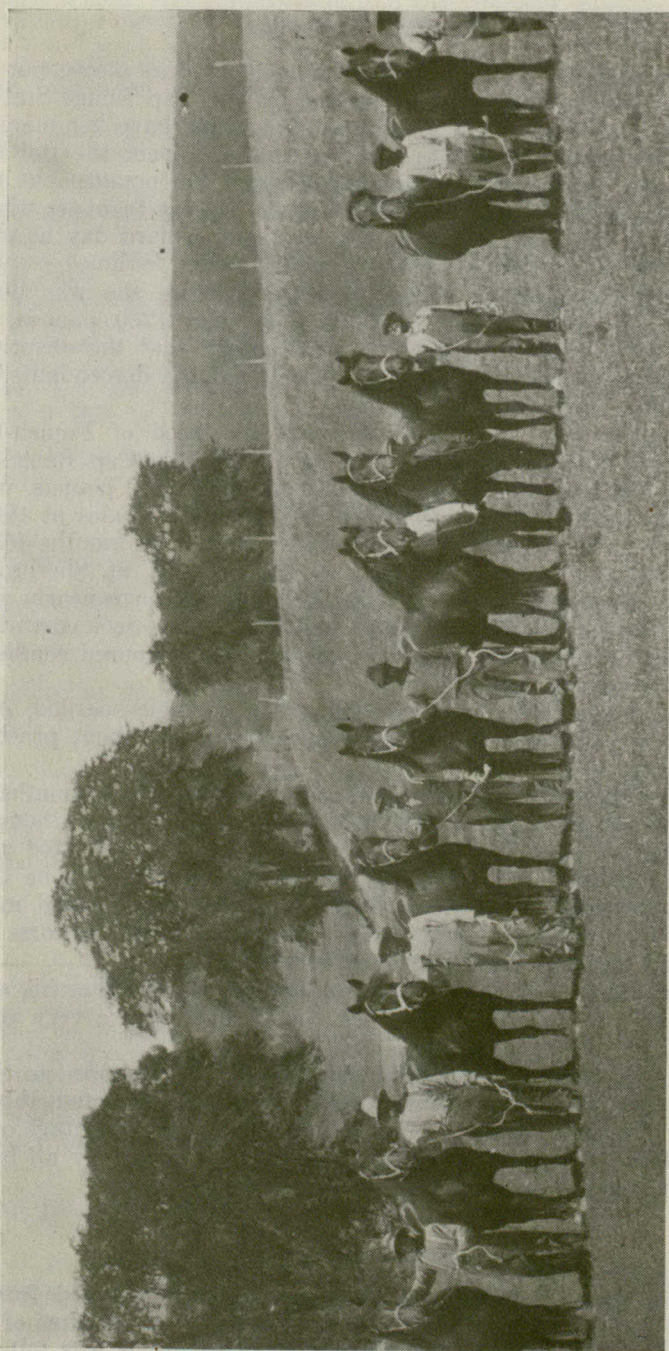
At twelve months, he weighed 750 pounds; at fourteen months, 850; at eighteen months, exactly 1,000; and at twenty-six months, 1,105, though he had been used for service when just about two years old and had fretted very much all through that season. When he was thirty-eight months old, he tipped the scales at 1,210 pounds, which was a little more than his sire and much more than his dam ever weighed. And finally, he matured into a horse of about 1,300, during the service season, and 1,350 outside of it.

After it was seen that Albert was over the weight of either his sire or his dam the fears that he might be too small, though otherwise a very good horse, were allayed.

More than one hundred foals have now (1925) been dropped to the service of Albert and they are a great deal more uniform than expected, though there is still room for improvement. Not one is baulky and the percentage of unsound animals is remarkably small. This stallion is now admitted by all breeders of French-Canadian horses to be the best in existence.

MARES SELECTED FOR BREED IMPROVEMENT

A small but select band of pure-bred mares were collected from various sources. Each and every one of them seemed very good at the time of purchase, but when the dozen or so were assembled at Cap Rouge, it was felt that they were not by any means as uniform as was desirable. In colour they ranged from a light bay to a pure black, with intermediate shades of dark bay, brown and brown-black. In weight they went from under 1,100 to over 1,400 pounds. With a couple of exceptions the conformation was such as denoted strength and made



French-Canadian mares at the St. Joachim horse-breeding station. All but one were bred at the station.

one feel that they would last; that they would be able to do lots of work for a long time.

There were a few important characteristics that every mare kept for breeding had: they were gritty, they would pull all day at a barn without baulking; they never looked tired or drawn up after a hard day's work, and they were hearty feeders. It was thought that this was certainly a good foundation to work upon, as it seemed less difficult to breed for size and conformation than for courage and endurance.

ST. JOACHIM HORSE-FARM

The work that has been carried out at the St. Joachim Horse-breeding Station has proved to be an important factor in the improvement of the French-Canadian breed. The Farm is under the direct supervision of the Superintendent of the Dominion Experimental Station at Cap Rouge, and the present stud is recognized as the best of the breed in existence to-day.

Work at St. Joachim was begun in 1920 through the co-operative efforts of the Dominion Department of Agriculture, the Quebec Department of Agriculture, and the French-Canadian Horse Breeders Association. The Farm is situated some 25 miles east of Quebec city at St. Joachim, and is easily reached by road or rail. On the Farm, of some 500 acres, a stud of over seventy French-Canadian horses is kept with which extensive breeding work is done towards breed improvement. Besides this major project, experiments in breeding methods, methods of wintering and raising horses, and cost studies are conducted.

SUMMARY OF BREEDING WORK AT CAP ROUGE AND ST. JOACHIM

The number of brood mares kept at St. Joachim runs from twenty-five to thirty-five and the total number of horses from sixty-five to sometimes a little over one hundred, all pure-bred French-Canadians. The object has been to breed a race of horses weighing around 1,200 pounds in ordinary condition, sound, hardy, full of energy but docile, fast walkers, good lookers, and "at home" as well on the plough as on the surrey. This work was commenced in 1913, and out of thirty-eight strains used at different times, only eight in 1926 had been found good enough to be kept. Many were discarded which had one or more of the desired qualifications in a high degree, but lacked in others. Some had won championships at exhibitions, but were not big enough and gave progeny which were too small. Others possessed size and conformation, but did not have that energy, that "pep," which is wanted as reserve power for a tight pinch. Others again had size and energy, but not the conformation of the breed.

Out of 162 foals dropped during fourteen years, eighty were males and eighty-two females. Out of 114 youngsters weighed at birth, fifty-five males averaged 125 pounds and fifty-nine females 124 pounds. At twelve months, the average weight of forty of these males was 735 pounds and of forty of the females 732 pounds. That there is some correlation between the weight at birth and that at one year is shown by the following figures, which refer to the eighty youngsters just mentioned: the twenty-one which tipped the scales between ninety and 110 pounds at birth averaged less than 700 pounds at twelve months; the forty-four which weighed between 115 and 135 pounds at birth averaged less than 800 pounds at twelve months; and the fifteen which went between 140 and 160 at birth averaged more than 800 pounds at twelve months.

Increase in size is one of the important points in breeding French-Canadian horses. From 1913 to 1919 the average weight at birth of thirty youngsters was 118 pounds. From 1922 to 1926 inclusively, the average weight at birth of

eighty-four youngsters was 126 pounds, and the fifty foals out of mares from the eight strains kept for breeding purposes averaged 129 pounds at birth, a gain of eleven pounds on the weights of earlier years. Size has been increased at the same time as conformation was improved, the latter point being clearly brought out at the large exhibitions of the province of Quebec where the St. Joachim French-Canadian horses now win practically all championships, diplomas, and first prizes. As great care is taken to discard all sluggish animals, whatever good qualities they may otherwise have, improvement cannot help but continue in the right direction.

Though it is not an essential point, it is thought advisable to get the breed more uniform as regards colour, and over 75 per cent of all the stock at St. Joachim is at present black. In the following matings the first-mentioned colour is that of the sire, and the last, that of the dam: black and black gave 51 blacks and 3 chestnuts; black and brown, 5 blacks, 2 brown-blacks, 3 browns; brown and black, 2 blacks and 1 bay; black and bay, 5 blacks, 1 brown, 1 dark bay, 4 bays, 1 chestnut; bay and black, 1 chestnut; black and grey, 1 black, 1 brown-black, 2 chestnuts. This gives the following proportions, which fairly represent the percentage of offspring of different colours: 76 per cent blacks, 4 per cent brown blacks, 5 per cent browns, 1 per cent dark bays, 6 per cent bays, 8 per cent chestnuts. The most persistent colour, and the one which it seems hardest to breed out, is chestnut. A mare, old Hélène—49—after dropping nine black foals, gave a chestnut when bred to her son, Albert, who is known as a progenitor of blacks.

IN-BREEDING, LINE-BREEDING, AND OUT-CROSSING

In reporting the results of this work in-breeding refers to a sire mated to his daughter, to a dam bred to her son, or to a mating of full brother and sister; the cases of line-breeding, when the sire was a half brother, an uncle, a grandson, or a grandfather of the dam; in out-crossing there is no relation between the sire and the dam. Only one mare could be used for each method of breeding and she gave very good offspring in some of the three instances, as is shown in the following table where each female is entered with which at least two kinds of breeding methods were tried.

COMPARISON OF OFFSPRING FROM DIFFERENT METHODS OF BREEDING

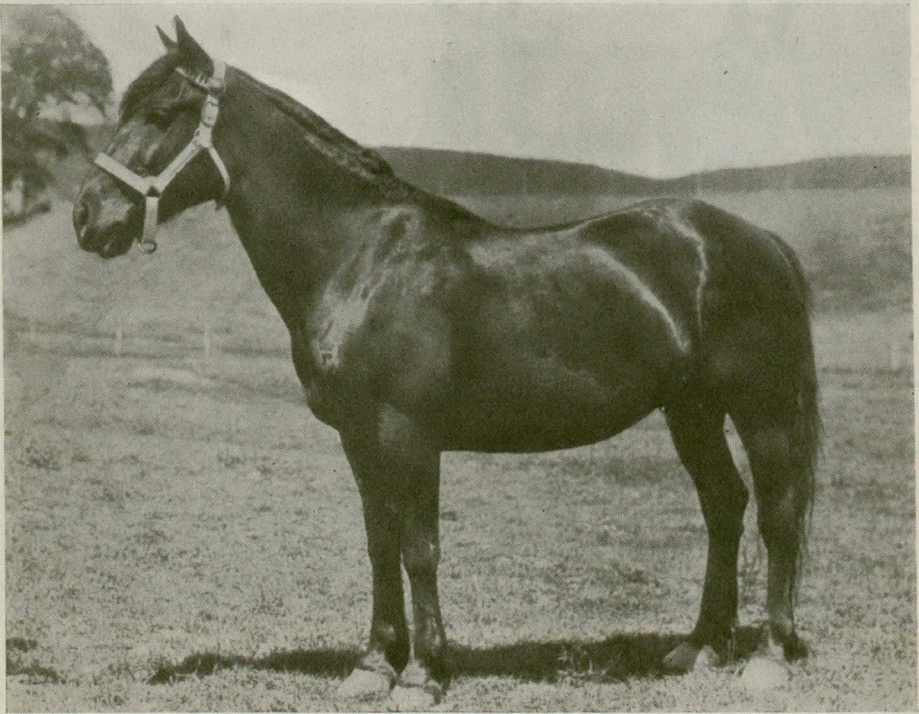
Name of mare	In-breeding				Line-breeding				Out-crossing			
	Very Good	Good	Medium	Cull	Very Good	Good	Medium	Cull	Very Good	Good	Medium	Cull
Black Princess.....	1								4			1
Delphine.....	1	1			1		1					
Dorothée.....		1		1		1	1					
Flore.....		1						1				
Gem.....		1				1						
Hélène.....	2				1	3			1			
Iolande.....			1				1					
Sébastienne.....		1								1	1	
Total.....	4	5	1	1	2	5	3	1	5	1	1	1
	36%	46%	9%	9%	18%	46%	27%	9%	61%	13%	13%	13%

Individual excellence, besides pedigree, must not be lost sight of, and there is no doubt that in-breeding especially, also line-breeding, call for very rigid selection, for if inferior animals are chosen, the descent will be as rapid as the ascent would have been with wise matings. Davenport has well summed up the question by writing that a pedigree is not a crutch on which incompetence can lean.

A good rule is to mate the best together, irrespective of relationship, if sire and dam possess no defect in common, and if they both have a very strong constitution. The latter point is decidedly important, as no headway can be made in any kind of breeding work, if vigour and stamina are not used as a solid foundation on which to start building.

SECURING GOOD STALLIONS

Excellent young stallions may be purchased from the Station at St. Joachim by individual breeders or horse-breeding clubs desiring to improve the French-Canadian. Only stallions of the desired type and sound in conformation



Ten-year-old French-Canadian mare "Dianora de Cap Rouge." Bred by and the property of the St. Joachim horse-breeding station. First-prize aged mare at Three Rivers and Quebec in 1922, 1924, 1925.

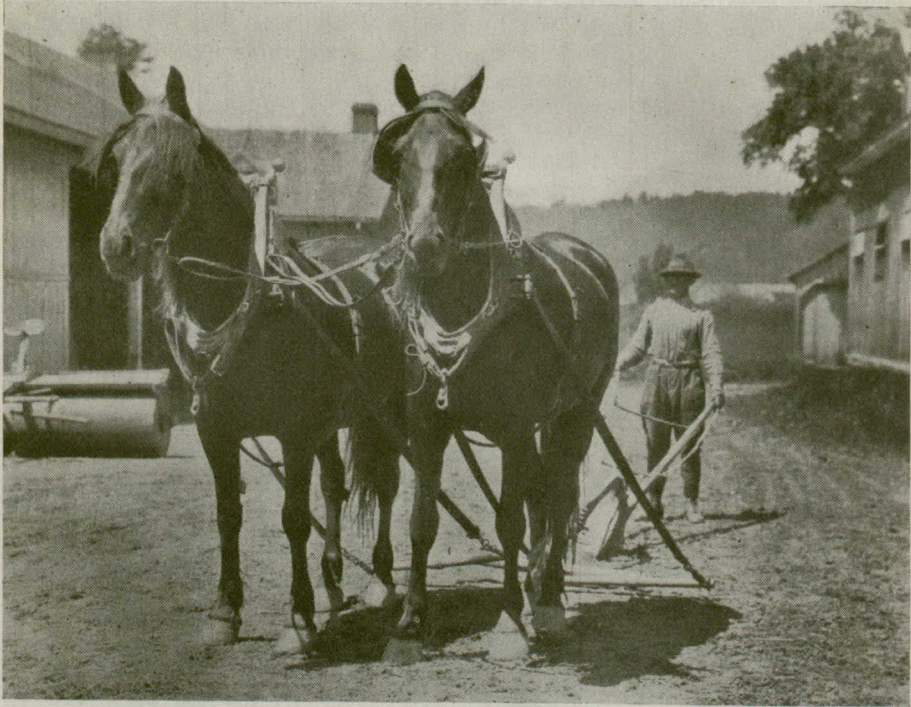
and blood lines are offered and the prices are invariably reasonable. As in the case of all pure-bred sires sold from the Dominion Experimental Farms throughout Canada, the sole object of these sales is breed improvement presenting as they do opportunity to the breeder of French-Canadian horses to profit from the years of careful breeding and selection at St. Joachim.

To those interested in the bonus system as applying to horse-breeding clubs, reference should be made to the Live Stock Branch of the Department of Agriculture at Ottawa, or to the Provincial Department of Agriculture at Quebec.

FEEDING, HOUSING, MANAGEMENT

FEEDING

WHAT TO FEED.—The question of feeding stuffs is a large one as it takes in roughages—hay from the grasses, clovers, or corn stover; concentrates—grains and mill by-products; succulent feeds—roots and silage; molasses, and pastures. Most investigators claim that in preparing rations for horses, the main thing is to see that the desirable nutrients are present and with these supplied it matters little what feed or combination of feeds is given. No doubt the horse adapts itself to a wide range of variation as to food, thriving at certain places



French-Canadian mares at the St. Joachim horse-breeding station. They are fast walkers—and this counts in farm work.

with timothy, or alfalfa, or corn fodder as the single roughage; and doing well in the east of the United States with oats; in the Middle West with corn; and on the Pacific Coast with barley as the one concentrate.

But until more light is thrown on the subject, it is best to use as roughage, in Eastern Canada at least, timothy for animals which work, and clover—but this should be of first-class quality and not fed in too large quantities—for horses at rest and young stuff; whilst the safest concentrates are oats and bran.

HOW MUCH TO FEED.—This depends upon the weight and class of stock, stallion, brood mare, work horse, idle animal, or young growing stuff. For instance, it has been found at Cap Rouge that a horse doing nothing during winter can be kept in good shape on 1 pound of carrots or swedes—with a preference for the first—1 pound of oat straw, and 1 pound of common hay per 100 pounds live weight, per day, taking a couple of weeks in the autumn and as long in the spring in which gradually to change the ration. On the other

hand, it required about $1\frac{1}{3}$ pounds of timothy hay and $1\frac{1}{3}$ pounds of a 5 to 1 mixture of oats and bran per 100 pounds live weight, per day, to feed horses working 2,130 hours during a year.

Generally, a horse requires from 1 to $1\frac{1}{2}$ pounds of good hay and from 1 to $1\frac{1}{2}$ pounds of a 3 to 1 mixture, by weight, of oats and bran per 100 pounds of his weight, per day, according to the work he is doing.

METHOD OF FEEDING.—The feed may be given cooked or raw, soaked or dry, long or cut, whole or ground. But the general practice is neither to cook nor soak anything, and to feed the coarse fodder uncut and the grain whole. Exception is made only for very old or convalescent animals.

HOUSING

Special horse-barns are required for a regular breeding-plant and these generally contain boxes, standing-stalls, carriage- and harness-rooms, medicine-chests, grain-bins, also hay- and straw-storage above.

The average farmer can keep his horses at one end of the cattle-barn, which should be partitioned off for this purpose. The same principles of construction, however, apply in both cases.

At the Cap Rouge Experimental Station, only animals which work are kept in the horse-barn, as all others, either stallions, brood mares, or young stock, are wintered in open-front, single-boarded sheds.

Ventilation is a hard problem to solve in a horse-barn. Whatever system is put in, one must ever be on the lookout and open or shut inlets or outlets according to the weather, the direction of the wind, and the number of animals inside.

Light should come in through windows which are easily opened and placed at a sufficient height to prevent the animals which are tied having the glare directly in their faces, and those which are loose from breaking the glass. It is well to remember that sunshine is by far the best and cheapest known destroyer of germs and microbes.

Floors may be of concrete as it is more sanitary than wood and cheaper in the end. The alleys should be roughened so that animals will not slip. In boxes, lots of bedding can be used or blue clay put in to a depth of about three inches, well tamped, and replaced once a year. For the standing stalls, concrete alone will do for horses that are worked regularly, when sufficient litter is available; otherwise blue clay can be used as in the boxes, or, better, movable false floors of 2- by 4-inch hardwood spaced $\frac{1}{2}$ inch apart and placed lengthways on cross-pieces.

Mangers are generally two feet wide with sheet iron on projecting parts to prevent horses from gnawing them. High racks are not suitable for horses. If feeding could be done without waste, the best thing would be to give the hay on the floor and the grain in portable boxes.

Partitions should be of 2-inch strong lumber with all sharp edges rounded off, as horses are more restless than other stock.

Individual bowls are hard to keep clean. Have a trough where horses can drink going in or out of the stable or to which they can be brought.

A certain number of plans of standard horse-barns may be secured from the Central Experimental Farm, Ottawa.

INEXPENSIVE HOUSING OF HORSES.—Since 1913, a total of 308 winters have been spent by horses, from weanlings to seventeen-year-olds, at the Cap Rouge and at the St. Joachim Stations, under single-boarded sheds with doors facing south that are kept open all the time. The very few animals which had to be brought in had been accidentally hurt. The stud of French-Canadian horses at St. Joachim is known to be composed of rugged, sound animals, and it is probable

that living out-of-doors in summer and winter has contributed to their good health. Other advantages from the shed housing are that there is a great saving of stable room, and that the young stock may be highly fed without fear of legs going wrong. It is contended by some that much more feed must be required to supply heat under this system, but this is not certain; digestion and assimilation of food may be better out-of-doors than in stables where ventilation is oftentimes poor. The main points to remember when housing in open sheds are: that weanlings should have been dropped before June 15 to be wintered in these sheds; that no weak or sickly horse of any age is to be thus kept; that stock must not be turned out and brought in after cold weather commences; and, which is very important, that the sheds face south, to take advantage of all the sun's rays, and that there be no cracks in the sides or back of these structures through which drafts may cause trouble.

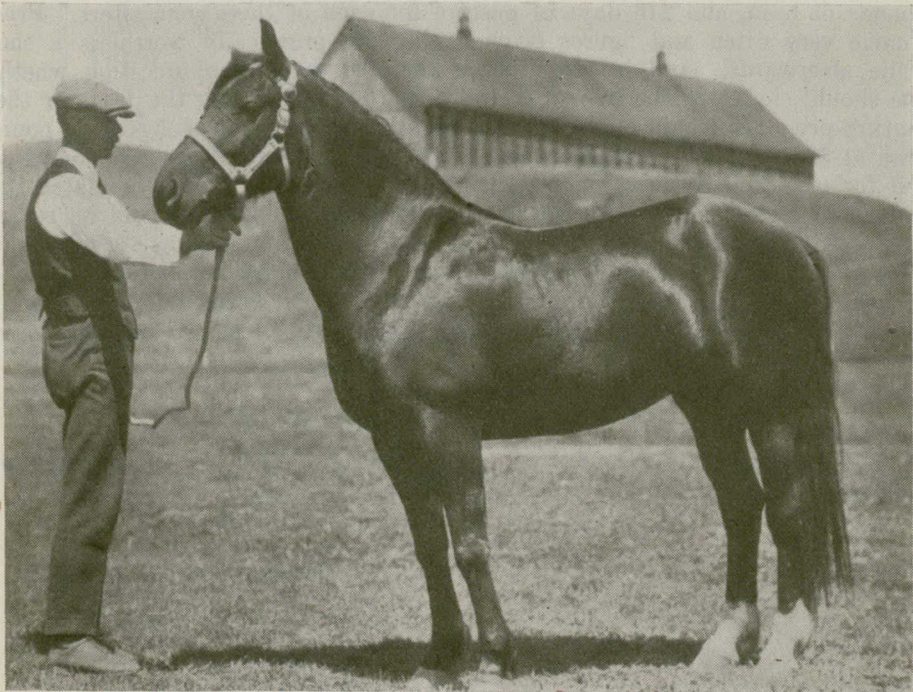
CARE AND MANAGEMENT

THE STALLION.—He should be worked reasonably, if possible. Where he would be liable to cause trouble or delay in the farm operations, a large paddock adjoining a box stall, or a small pasture with an open-front, single-boarded shed will do very well. Hay, oats and bran are practically all the feeds which are required, in quantities to suit the size of the animal and the duties he has to perform in the collar or in the stud. Condition powders and other stimulants will never give to a stallion the vitality necessary to sire strong foals.

THE MARE.—Hay, oats and bran should be the principal feeds, but roots and a little oilcake are good to keep the bowels loose, which is a most important point. After the wax forms on the teats, it is well to keep a watchful eye on her, as the foal is generally born within two or three days. Since 1920, fifty-three pregnant mares have been wintered in the stable and given light work as often as possible, while sixty-six have been kept outside, with single-boarded open-front sheds as a shelter. As no difference could be seen in the vitality of the foals, it is thought that, though exercise is no doubt necessary, the mode of exercising is not important. This seems to have been conclusively shown by the French-Canadian mare Black Princess who gave six strong foals, by the same stallion, and was exercised in three different ways. In two winters she was kept outside under a single-boarded open-front shed free to take such exercise as she desired; two other winters she was stabled and worked quietly until foaling; and two other winters again she was in a box-stall and turned out often for exercise, when weather permitted. A farmer who has not the time necessary to carefully work an in-foal mare, need not worry if he but turn her out often or keep her under a tight-walled shed open to the south.

There are certain advantages in having foals come in the autumn. Since 1915, at Cap Rouge and St. Joachim, eight mares dropped in the autumn, from September 20 to November 11, twelve foals sired by four different stallions. It is found that, contrary to expectations, mares were "settled" more easily in the autumn than in the spring. For instance, Sébastienne was served twice in spring, was not in foal, but got in foal to the first service of the same stallion in the autumn. The same thing happened with Chicane, and with Gem. Brunette Coulombe was served once in spring, was not in foal, but got in foal to the first service, by the same stallion, in the autumn. The same thing happened with Helene, and with Gipsy. Another point which was noticed is that the same mare, Dorothee, got in foal two consecutive autumns with only one service each time. The weights of the fall colts, at six months, were more than those of full brothers or sisters at the same age but dropped in the spring, which shows that however good may be grass as a producer of milk and as a source of

vitamines, it is not absolutely necessary during the first half year of the youngster's life. Out of the twelve fall colts mentioned, one died when young, one developed a bad hock, and the other ten were good, which is certainly satisfactory. The main advantage in having foals come in the fall is that mares can be worked during practically all the cropping season. Two matters, however, to be careful about are that the mare be not overfed with very nutritious rations, as the foal may get top heavy and go wrong in the legs, and that the hoofs of the weanlings be pared occasionally, because they grow fast on moist bedding.



Three-year-old French-Canadian filly "Kate de Cap Rouge." Bred by and the property of the St. Joachim horse-breeding station. First at Quebec, in 1924, as a yearling.

THE FOAL.—An attendant should be at hand, though not seen by the mare, when the foal is dropped, as there is a membrane which might choke him if not quickly taken away from his nostrils. In case of malpresentation, unless it be a very easy one to remedy, the best thing is to call a veterinarian. If the youngster is as strong as he should be, he will be sucking within an hour, and it is as well to give that length of time for his awkward legs to straighten a bit. The main troubles to guard against are navel-ill and constipation. For the first, tincture of iodine should be applied as soon as possible after birth on the navel and this treatment continued until that part is completely healed up. On several of the Dominion Experimental Farms the use of potassium iodide has apparently coincided with disappearance of navel-ill trouble. With spring- or summer-bred mares, starting in November, give one small level teaspoonful of potassium iodide crystals twice monthly in the drinking water. Dissolve the crystals in a small quantity of warm water, then pour into the drinking water. Continue this until foaling. To guard against constipation the hard faeces should be taken out with an oiled finger and an injection of soapy water given.

COSTS OF REARING AND MAINTAINING HORSES

(Experiments at Cap Rouge and St. Joachim)

COST OF REARING HORSES

All feed was weighed which was given to fifteen French-Canadian colts and fillies from the time they were weaned until they were ready to work at an average age of 32 months and 26 days, at which time they weighed an average of 1,240 pounds. It took 9,992 pounds of hay, 4,632 pounds of oats, 4,178 pounds of bran, and 216 days of pasture for each of these youngsters. Prices change very often and figures given to-day are practically worthless a short while afterwards. And in using prices there is the eternal question whether one should charge to the live stock the actual cost of raising the feeds or their market price. But if hay is calculated at \$15 per ton, oats at 2 cents a pound, bran at \$35 per ton, and pasture at \$2 per month, the total cost is \$254.94 per colt for feed from weaning time until ready to work. It should be stated that instead of trying to see with how little feed these youngsters could be reared, they were fed practically to the limit, to get them as large and as strong as possible to tackle the average ten year's work which a horse has before him when broken. These cost figures show that farmers should breed only the best, as there is no escaping the fact that it costs a good deal of money to raise horses.

COST OF MAINTAINING WORK HORSES

An experiment was conducted to find out how much it cost for feed per hour's horse labour and the following table gives details:

From the figures, it is seen that, on an average, a horse weighing 1,253 pounds has eaten, during 233 days, 3,744 pounds of hay and 3,664 pounds of concentrates, or 1.28 pound hay and 1.26 pound concentrates per 100 pounds live weight of horse per day. This may not all have been eaten, as there are unavoidable losses, especially of hay, but in practice the whole quantity must be taken into account.

It should be noted that, at current prices of the summer of 1925, it cost a little over $7\frac{1}{2}$ cents per hour's work, for feed alone, when horses averaged 5.12 hours of work per day. To this should be added the cost of bedding, care, shoeing, veterinary expenses, harnessing, blanketing, stable supplies, also interest and depreciation on horses, stable-room, harness, blankets, and other equipment.

This means that not more horses should be kept than absolutely necessary, also that the work stock must be employed profitably as many hours as possible during the year.

WINTERING IDLE WORK HORSES

Help is scarce, high-priced and oftentimes unreliable, so that larger implements and more working stock have to be employed. It is not always possible to buy a good team at a reasonable price in the spring, whilst it is often hard to get a fair figure for the same animals in the autumn. It would thus seem advisable, when the ground freezes, to house and feed all horses which are not absolutely required as cheaply as possible without impairing their future usefulness.

To gather data upon this subject, an experiment was started at the Cap Rouge Station in 1911 and was continued during five consecutive winters with mares and geldings, some of nervous temperament, others quiet, of ages from five to eighteen years. It has been found that they fared well on a daily ration of 1 pound mixed hay, 1 pound oat straw, and 1 pound carrots or swedes for each 100 pounds of their weight. Not only did these horses gain an average of 28.2 pounds during the five months of the test, but they showed, the following season, that they had lost neither vitality nor energy. Details are given in an accompanying table.

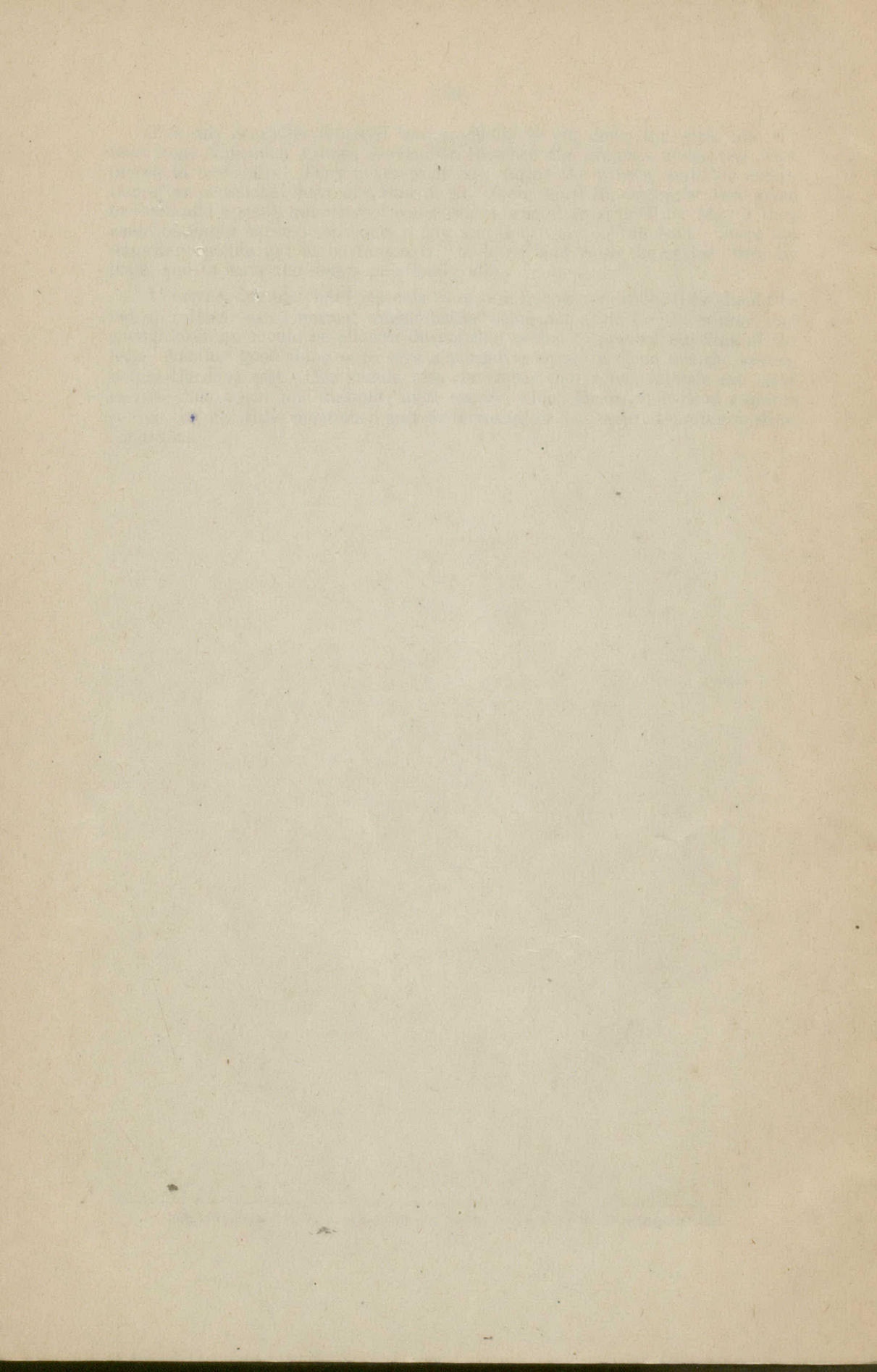
WINTERING IDLE WORK HORSES

Name of horse	Class	Age	Temperament	Length of experiment	Weight		Experiment		Gain or loss
					Start	Finish	Started	Ended	
				Days	lb.	lb.			lb.
Jack.....	Clyde gelding.....	15	Phlegmatic.....	152	1,375	1,895	Nov. 1, 1911...	March 31, 1912.....	+20
Mina.....	Clyde mare.....	15	Nervous.....	151	1,350	1,440	" 1912.....	" 1913.....	+90
Sebastienne.....	F. C. mare.....	6	Phlegmatic.....	151	1,150	1,135	" 1913.....	" 1914.....	-15
Hélène.....	F. C. mare.....	11	Nervous.....	151	1,055	1,100	" 1914.....	" 1915.....	+45
Jack.....	Clyde gelding.....	19	Phlegmatic.....	152	1,365	1,370	" 1915.....	" 1916.....	+5
Mina.....	Clyde mare.....	18	Nervous.....	152	1,385	1,410	" 1915.....	" 1916.....	+25
Average for 6 horses.....					151.5	1,308.2	.....	.....	+28.2

Name of horse	Quantities and arbitrary values of feed eaten											Total cost	Cost per day			
	Hay		Straw		Swedes		Carrots		Oats		Bran			Molasses		
	Pounds eaten	at \$15 per ton	Pounds eaten	at \$5 per ton	Pounds eaten	at \$1.80 per ton	Pounds eaten	at \$1.80 per ton	Pounds eaten	at \$1.75 per cwt.	Pounds eaten	at \$29 per ton		Pounds eaten	at \$2.70 per cwt.	
Jack.....	2,128	15 96	2,128	5 32	2,128	1 91	.....	.....	100	1 75	91	1 32	.....	.....	26 26	0.172
Mina.....	2,114	15 85	2,114	5 28	2,114	1 90	.....	.....	130	2 27	125	1 81	.....	.....	27 11	0.179
Sebastienne.....	1,725	12 94	1,612	4 03	.....	1,725	1 55	.....	213	3 73	12	0 17	.....	.....	18 52	0.122
Hélène.....	1,530	11 47	1,332	3 33	654	0 59	336	0 30	80	1 40	40	0 58	66	1 78	21 37	0.141
Jack.....	1,860	14 70	1,597	3 99	1,503	1 35	.....	.....	80	1 40	40	0 58	.....	.....	22 02	0.144
Mina.....	1,960	14 70	2,018	5 04	2,014	1 81	.....	.....	80	1 40	40	0 58	.....	.....	23 53	0.154
Average for 6 horses	1,902.8	14 27	1,800.1	4 50	1,402.2	1 26	3,435	0 31	100.5	1 76	51.3	0 74	11	0 30	23 14	0.152

The rule generally followed was gradually to cut down the work also the feed from November 1 until November 15 when the animals under test were placed in box-stalls. They never went out, during the winter, with the exception of an occasional drive of a mile or so. From April 15, easy jobs were given to them and a small quantity of concentrates was allowed until by May 1 they could be under harness ten hours a day and they were on full feed. These are important points not to be forgotten: to lower and raise the ration little by little, and to leave the horses practically idle.

If horses, due to a hard season's work, are in low condition, they should be fed up to their usual normal weight before being put aside for the winter, and enough exercise should be allowed during that period to prevent stocking of the legs. Another good thing is to give a purgative so as to clean out the system before the long rest. One should also remember that some animals are more restless than others and dissipate more energy, which means more food required so that the quantities mentioned may be increased or decreased according to these conditions.



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