

• JUDGING •
FARM ANIMALS

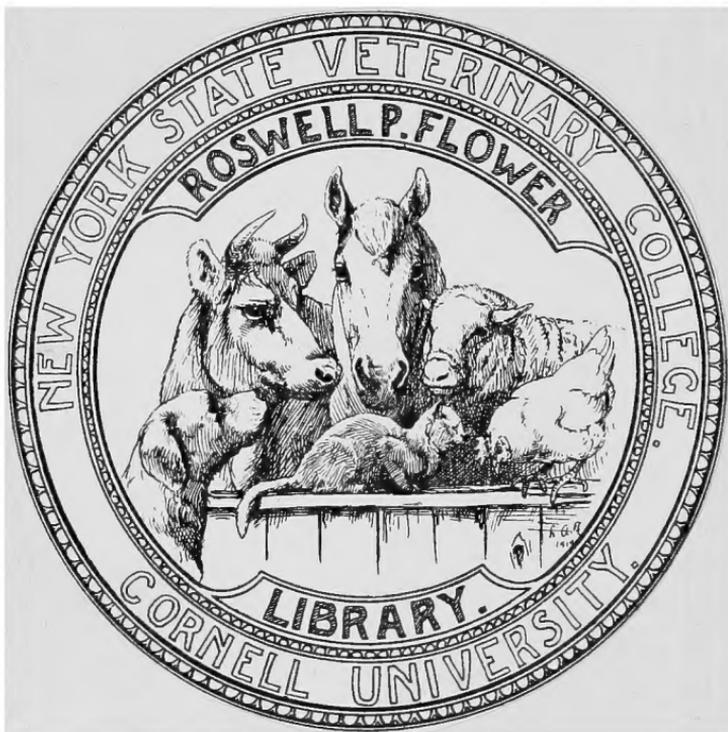
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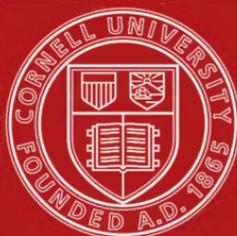
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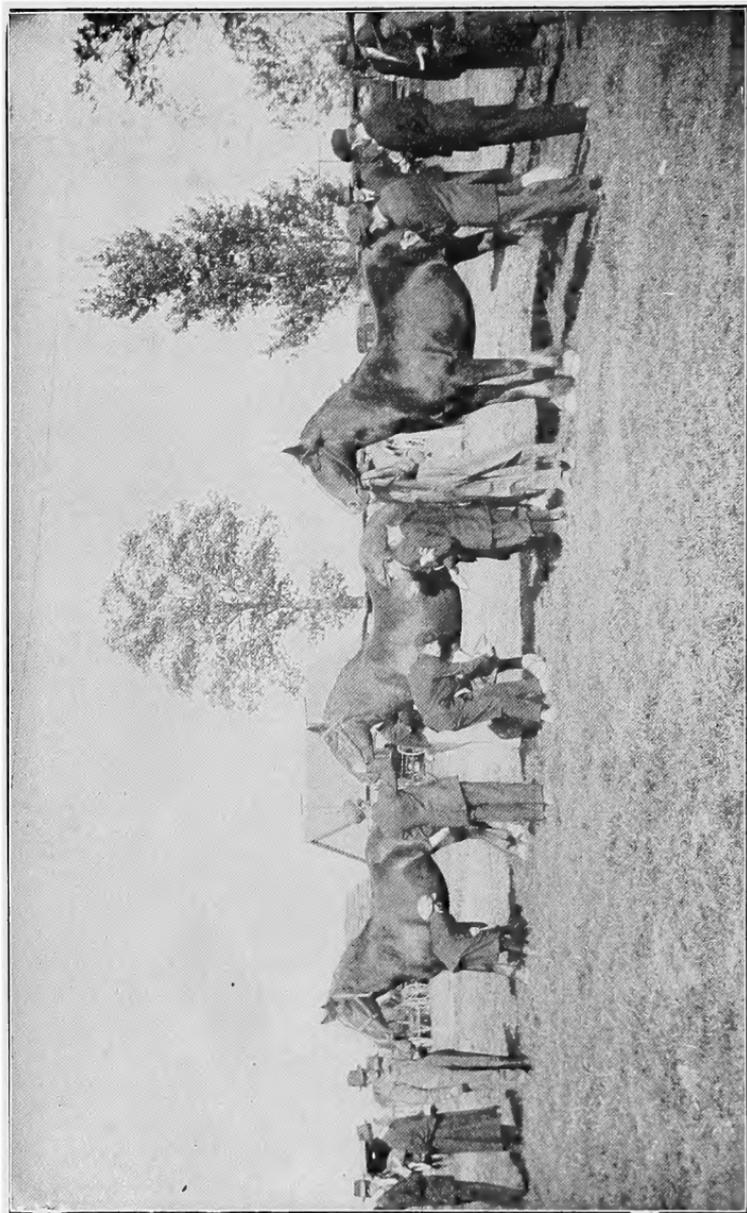


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A BOYS' JUDGING CONTEST AT A COUNTY FAIR.

(From photo by courtesy A. G. Ext.,
Dept., Ohio State University.)

JUDGING FARM ANIMALS

BY
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ILLUSTRATED

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FOREWORD

THE study of animal form becomes an instinctive process on the part of most persons who take a natural interest in farm live stock. The form and its suitability for specific purposes is sure to cause discussion and argument, if but two parties are interested. Thus do men think themselves critics and judges of animals, even though their knowledge is based on very limited experience. There are men, however, who have grown up among flocks and herds, who, during the years, have absorbed wisdom through experience, and have naturally become qualified to judge the merits or demerits of certain kinds of animals with which they are familiar.

Another class of men, lacking in experience, yet with the stockman's instincts, seek information that will enable them to judge animals intelligently, thereby better serving themselves and mankind. In the agricultural school or college, this latter class may secure systematic instruction relative to the principles and practices of judging, whereby they may become better qualified to pass on the comparative merits of farm animals. This volume is intended to serve the needs of the stockman, be he amateur or professional, but more especially the student, who appreciates his own limitations, and seeks for a more intelligent conception of the relationship of form to function.

The subject of judging farm animals is, at the present time, receiving much attention among animal husbandry students in our agricultural schools and colleges. The

use of animals in the class room or laboratory, and the practice of judging by students, is such a comparatively new phase of education, that it seems appropriate here to refer to its introduction. In 1891, the late John A. Craig assumed the professorship in animal husbandry, at Wisconsin University, and that year began giving classroom instruction in live stock judging, which was, so far as the writer is advised, the first attempt in this field. In 1894 Professor Craig wrote¹ that this line of teaching, though new, had been tried by him for three years, and the surprising feature of it was the ease and pleasure in imparting knowledge of this kind, with the animals before the students, to analyze their points, as compared with the old method, which deadened the mind and interest of the student. In 1892 a live stock judging contest was held in Wisconsin, when the students in the College of Agriculture competed for a gold medal, offered by Mr. R. B. Ogilvie, for the greatest proficiency in judging draft horses and mutton sheep. It was not long before the importance of this class of instruction became evident to agricultural educators, and courses in live stock judging were introduced in various colleges, and grew rapidly in popularity. In 1898 was held the first intercollegiate live stock judging contest, which took place at the Trans-Mississippi Exposition, at Omaha, Nebraska, where seventeen students from the agricultural colleges of Wisconsin, Michigan, Nebraska, Missouri, and Iowa participated. In January, 1901, appeared the first text on the subject of judging live stock, a most important contribution to live stock literature, the work of Professor Craig.

¹ "Breeders' Gazette," April 18, 1894.

At the present time departments of animal husbandry are features of all American agricultural colleges, and systematic courses in judging farm animals are given, in which laboratory practice is an important feature. Not only this, but thousands of young men have already received instruction in this subject in our colleges, many of whom are now actively engaged in farming, where animal husbandry is a factor, requiring a knowledge of form and function.

In the preparation of this volume, the author has had in view a purpose, rather distinctive in itself, of discussing, systematically and with reasonable completeness, each great class of animals as a separate part of an important whole. In each class, the study of the individual, as based on the scale of points, is followed by the comparative and group method of judging, so that the man who lacks the college opportunity, may find a text that will furnish under separate heads, a systematic and comprehensive discussion of the entire subject. If one is interested in but one class of stock, as for example swine, the subject will be found so arranged and discussed as to meet his special needs. Inasmuch as the arrangement of the text is consistent with the method of presentation now most in use in educational institutions, this book should serve the purpose of the student as well as the stockman afield.

The author has had occasion to quote from many authorities, for which credit is given in the appropriate place. It is hoped that the illustrations, largely from photographs by the author, may add to the usefulness and efficiency of the text.

CHARLES S. PLUMB.

Columbus, Ohio.

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JUDGING FARM ANIMALS.

PART I—FORM AND FUNCTION.

CHAPTER I.

THE STUDY OF FORM AND FUNCTION.

The relationship of form to use in the animal is quite apparent to the person of observant mind. Scientists universally recognize that wild animals are so constructed as to be best adapted to the special environment in which they are usually found. Our domestic animals are all descended from the wild forms, by a process of evolution that has taken place during many centuries. Each great class or group, such as horses or cattle, for example, subjected to domestication and the influences of man, has gradually passed through important changes in form, thereby better fitting the individual to the special uses of man. The animal body is to a degree plastic and subject to variation, and thus it is that largely through a process of artificial selection and environment, we have such highly developed examples of different types of farm animals. This tendency of domestic animals to vary somewhat from the parent type, has long been a subject of special study by men interested in evolution and improvement. In fact the constructive breeder has ever recognized that domestic animals are subject to variation and improvement, and so has sought, through successive generations, to produce results that should show the greatest perfection. Not only may the animal form as a whole be classified in type, but

the various parts of the body, have their special conformations¹ and values. The outline of an animal of the cattle group, for example, clearly indicates whether or not he belongs to the beef producing type. The separate members and parts of the body also have distinctive and special values of their own, as compared with similar parts in cattle of another type. If the hindquarter is thick and fleshy, producing meat to a marked degree; if the back is covered with a deep layer of flesh, these parts, viewed separately, are as an open book to the experienced judge, who knows the type of animal from whence they came. His knowledge of animal form and function is such as to impress clearly upon his mind that, in nature, there is always a rational co-relationship between the parts, whereby is produced a whole that is adapted to certain conditions and uses. Cuvier, the great comparative anatomist, claimed that² "all organized beings, in their structure, form a complete system, of which the parts mutually correspond and conduce to the same definite action by a reciprocal reaction. Each of these parts cannot be changed without the others changing also; and, by consequence, each of these taken separately indicates and gives all the rest." In the complete, naturally formed whole, we find harmony of relationship in all the parts to each other. The forms of our domestic animals, however, vary more or less, both in perfection and efficiency of purpose. Remarkable changes have taken place during the course of domestication, so that we find wide extremes between the wild, ancestral parent, and the most highly developed product of present day breeding. The contrast between the wild hog and modern Berkshire, or shaggy Highland cattle and the Holstein-Friesian of to-day, are striking illustrations of wide differences in type. Undoubtedly we have cases where the harmony of parts in the animal form seems lacking, yet often this is more apparent than real. Stu-

¹ Conformation is a word used to express the relationship of the various parts to the whole.

² On the Anatomy of Vertebrates. Richard Owen, 1866, Vol. I., p. 27.



Fig. 1.—“Striking illustrations of wide differences in type.”

dents of heredity accept this view. This tendency of domestic animals to vary somewhat from the parent type, has long been a subject of special study by the men interested in evolution and improvement. Occasionally some one comes forward with a criticism of accepted standards, with the argument that a certain animal not representative of the approved type, was a producer of large capacity, therefore the type should not be a guide. The importance of such criticism should not be overestimated. An odd case here and there should not weigh heavily against the cumulative experience and observation of the great mass of breeders. Each breed has reached its present status of importance and perfection, through the efforts of certain breeders who have persistently sought to develop a conformation that in their judgment indicated within reasonable bounds superior producing capacity. No man at all familiar with the Thoroughbred, a very distinctive race horse, would expect to find vital differences in the forms of many individuals of this breed. The variations that did exist would only affect in a minor degree the purpose for which this breed is produced, namely speed. As to whether a Thoroughbred, however, can run a mile in two minutes or three, is dependent on the proportion and adjustment of minor parts, which may combine to make the most perfect and rapid moving horsepower. Therefore the work of the student, is to study the adjustment of the parts to each other, and ascertain their relationship to the whole, and their combined powers of production.

Beauty and balance of form may be very generally regarded as associated with the most desirable sex character and capacity to produce. In the opinion of the qualified judge, a breeding male could not be beautiful, with a head showing lack of character and masculinity. While men differ somewhat in their measurements of beauty, whether applied to the fine arts or to living animals, there is no serious disagreement among them as to the main facts. In the public show ring, where competition of a worthy

character prevails, and where qualified judges preside, the most beautiful and perfectly balanced animals find their places in relative order of merit. In recent years the criticism has been made, that dairy cattle judges have often given preference to beauty rather than utility. This has been applied especially to judges of Ayrshire and Jersey cattle and in a limited degree to judges of Clydesdale horses. Refinement of form, beauty of head, and highly developed fore udder, have been sought for in the Island Jersey and the Scotch bred Ayrshire. The criticism has been made that the cows showing these characteristics in the greatest perfection, are less profitable than some of the plainer sort. This is perhaps true in a degree. However, there is no good reason why it should be so. The great improvement that has resulted from years of careful breeding, since the formative periods of the breeds, has undoubtedly given important recognition to the relationship of beauty to utility. This has been aptly brought out by Mr. James M. Codman, a well-known Guernsey breeder, who says:³ "The most perfect utility is distinct from beauty and is not synonymous with it. You may have the two at the same time, but no process can make them the same thing. Look at the early pictures of the scrawny, misshapen cows of the Channel Islands, and contrast them with the beauty developed to-day, and they have not lost productive capacity—probably gained in it. I think we are indebted to the Jersey breeders on that island for showing what could be done by the hand of man by selection in adding beauty to utility. Guernsey breeders have accomplished the same result, though with a different idea in view. Of course there are inferior animals still left; it is to be hoped that it is only a question of time for them to disappear."

Commenting editorially on a statement credited to Mr. C. L. Hill, a noted Wisconsin Guernsey breeder and judge, that he could see no reason why cows cannot be high-class

³ Guernsey Breeders' Sale List Bulletin, May, 1909.

producers and at the same time conform to the present day show standards, *Hoard's Dairyman* says:⁴ "One of the reasons why the cow cannot be a good producer and still conform to the show ring standard, is that there is no show ring standard. No two judges will judge alike. Animals that at one show ring receive first place, at another will receive second or third place. We hear much talk about



Fig. 2.—Dale, the Hereford. "It will not be a difficult task to bring forward the names of many great sires and dams that judges have repeatedly agreed upon as the best of their kind."

the 'beauty of form.' If judging were confined to that, there would be much greater uniformity of judgment, yet no two judges will agree upon what is really and truly handsome."

Among the noted show animals of the different breeds may be found, not only the world's greatest prize winners, but also the most beautiful specimens. It will not be a

⁴ December 13, 1912.

difficult task to bring forward the names of many great sires and dams that judges have repeatedly agreed upon as the best of their kind when exposed to the competition of the show ring. Brilliant the Percheron, Darnley the Clydesdale, Royal Danegelt the Hackney, Avondale the Shorthorn, Dale the Hereford, Lucy's Prince the Aberdeen-Angus, Pedro the Jersey, Sarcastic Lad the Holstein-Friesian, Island Champion the Guernsey, and Howie's Fizz-away the Ayrshire, each won the highest honors in the greatest shows, and were universally regarded as beautiful specimens of the breed. Not only that, but each is a famous sire. To be sure there are many examples of animals that have been shown, on which judges have disagreed in their estimates. These as a rule, however, have not been above justifiable criticism. However, most thinking men will agree that beauty of form and utility are closely associated, and the lower the measure of beauty the less as a rule may be anticipated in the producing capacity.

The efficient judge is a student of animal form and function. Efficiency increases with careful observation and study. However, no person can be really qualified for the responsibilities of the official judge unless gifted with the instinctive knowledge of the true stockman. That is to say, one must naturally and quickly grasp the real merits to be seen in the animal, irrespective of show ring preparation, or an attractive condition of flesh. Other things being equal, the man who has a love for dumb animals, is very much more likely to see the value in them, than the man who lacks sympathetic sense. The desire to keep in contact with the animal, to study its form and measure its usefulness,—these are characteristics of the judge, be he a college freshman, or a man crowned with years of experience as a breeder or judge. Among the boys who come as students to the college of agriculture, and who are found most frequently in and about the stables, taking every chance to study the stock and absorb ideas from contact with the herdsmen, will be found the most efficient judges

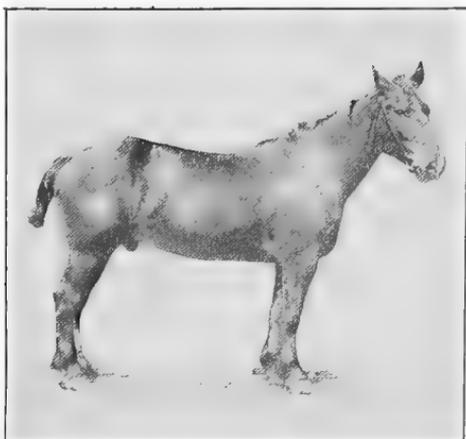


Fig. 3.—“One must naturally and quickly grasp the real merits to be seen in the animal.” (Courtesy Ohio Agr. Exp. Station.)

The well-informed judge will be familiar with changes in breed types or fashions. While all breeds have undergone distinct changes and improvements, during the course of time, in certain respects some of these changes have been matters of fashion rather than of economic importance. The decree of fashion was largely responsible for the short, dished head so much desired among Berkshire breeders; for the cap of wool over the head and face of the Shropshire sheep; for the high, short knee

of the future. Not only this, but a knowledge of the bony and muscular structures, and their relationship, of the limbs and the effect of position on production, these and other features of the animal body are reasonably well understood by the man who is qualified to pass in judgment on domestic animals.

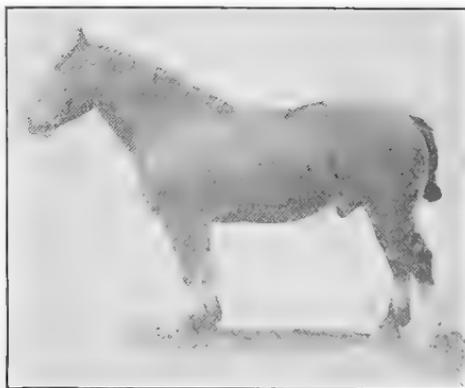


Fig. 4.—The same horse as Fig. 3, after being fattened. (Courtesy Ohio Agr. Exp. Station.)

action of the Hackney, and for the preponderance of large white markings in the coat of hair of the Ayrshire. Referring to this matter of style, Mr. W. J. Clarke, a prominent sheep authority, well says:⁵ "In these days of rapid progress, fashion asserts her sway, even on subjects pertaining to shepherding. The type of some of our leading mutton breeds of sheep has undergone



Fig. 5.—Holehouse White Bess, the Ayrshire. "The preponderance of large, white markings in the coat of hair." (Courtesy Branford Farms.)

a decidedly marked change and great improvement during the past ten years; therefore, it can easily be understood why, to become a really expert judge of a breed, it requires thought, observation, and the constant handling and studying of a breed to thoroughly understand the true type that fashion dictates as being the correct one of to-day. Whilst in fat stock contests the mut-

⁵Fitting Sheep for Show Ring and Market, 1900, p. 9.

ton conformation of the animal is the leading consideration, in breed contests the embellishments that must accompany true mutton form in the make-up of a typical show animal, must be given due consideration.”

Some animals have serious defects that should be seen. These may be natural or unnatural. One might regard a short, steep pastern on a saddle horse, or a very poor front udder on a cow, or a very long snout on a Berkshire boar, as defects, yet of a natural sort that could not be classed as a blemish. However, the horse afflicted with a bone spavin, or the cow with an udder having a milkless quarter, would certainly be charged with defects. These, in the opinion of the critics, would amount to positive blemishes, and seriously affect selling values. One of the problems which confront the judge, is that of weighing up and giving proper estimate of defective characteristics. While animals with blemishes may be quickly set aside as unworthy of consideration, the judge may find it necessary to give ratings to individuals with ill form or natural defects. Exhibitors who are not over scrupulous, often try to take advantage of an easygoing or superficial judge. The fact is, all animals with known defects of importance should be barred from the show ring. The methods in operation in certain horse shows, of compelling exhibitors to submit their horses to qualified veterinary inspection to pass on their soundness before allowing them to compete in the show ring, is a step in the right direction. The work of the English Hackney Horse Society in this respect, has been productive of great good.

Men become efficient judges by specializing rather than otherwise. As a rule one finds much to do in becoming proficient within a single type or breed. Those men who are recognized as the best qualified judges, and who are most in demand at the more important shows, either restrict themselves to one general type or to one breed. A man may be an expert judge of dairy cattle, but he is not likely to be equally good as a judge of beef type. Some exhibit-

ors believe that the breeds shown by them should be judged only by practical breeders of these respective breeds. Occasionally a breed association will urge fair or live stock show officials to appoint a certain man for judge, on account of his reputation as a breeder and judge of that breed. Some stockmen are very reluctant to show, where their exhibit is to be judged by one associated with another breed. For example: a Poland China breeder does not care to have his stock judged by a Berkshire man, neither does an exhibitor of Percherons wish his stock to be rated by a specialist in Clydesdales, and very few men showing Merino sheep would care to have a Cotswold breeder serve as judge on their fine wools. This represents a very common opinion among professional stockmen. During recent years, or since the animal husbandry departments of our colleges have been established, instructors in this field have in many cases been acceptable judges at live stock shows. These instructors are, as a rule, free from prejudice, and are often regarded as capable of passing fairly and intelligently on several different types and breeds. However, such a specialist as a rule has a reputation for proficiency in judging some one type or class, and does not willingly officiate otherwise, unless under unusual circumstances. If then the demand is for the judge in the special rather than the general field, it behooves the amateur judge to concentrate his efforts to become a proficient specialist. Contact with a breed on all possible occasions, and cultivating the acquaintance and friendship of breeders and herdsmen, will add greatly to a student's store of knowledge and render him more and more efficient. If one who is also gifted with a reasonably good judicial temperament, will persistently adhere to this plan, he should become in time a judge of signal ability and more than local reputation.

The decision of the judge should be reached after careful consideration, and should be final. He should be well fortified in his reasons, and being so, should not feel doubt-

ful about himself. Very naturally judges of live stock often differ in their point of view; but why should they not, as long as judges are but human and not infallible? It is no uncommon occurrence for one judge of points of law to reverse the decision of another judge. We maintain various grades of courts up to the United States Supreme Court, in order that a previous judgment may be reconsidered. Furthermore, it must be remembered that the decision of the judge at a live stock show is simply his own, and is so rendered. It would be a strange judge who thought his each and every decision was to be approved by all the critics. True, his work as a whole will meet with commendation, if his judgment is good, but with the general opportunity for difference of opinion in the show ring, a judge should not be mentally disturbed if others see some things from a different view-point. It may be desirable for the judge to give public expression of his reasons for his placings. In doing so, he has the opportunity to make it



Fig. 6.—“His work, as a whole, will meet with commendation if his judgment is good.”

clear to both exhibitor and spectator that he knows what he is about, and that his decisions are not based on guesswork. This method is educational in value, and is to be commended, and should be a feature of all shows wherever possible. The reasons for the judge's decisions are usually listened to with much interest by the exhibitors and visitors at the ring side. The only persons liable to take exception to this method, are exhibitors who do not feel satisfied with the decisions of the judge, and who do not enjoy having attention directed to the defects which may have been the cause of the subordinate position given their animals.

Competent live stock critics or judges in a community are an evidence of the presence of superior live stock thereabouts. Qualified critics usually seek for superior rather than inferior animals. One may be reasonably sure that in a locality where many good herds and flocks are to be found, will also be found a class of stockmen who discriminate wisely in their selections. This being so, then from an economic point of view, it is distinctly desirable to have educated men in the community who will understand the relationship of form to function, and who will know how to apply their knowledge in a practical way. This knowledge applied, will result in attractive herds, in a community reputation of an enviable sort, and in frequent visits of stockmen who will come to purchase and who will pay superior rather than inferior prices. Such a condition will surely cause prosperity, but it cannot be accomplished excepting on the principle that superior herds can only be produced by superior judges of animal form and production. Hence, the worth of the educated judge and his help to a community.

The demand for expert judges of live stock is very widespread. There are thousands of local fairs in America where animals are exhibited to be judged. There are also large state fairs and live stock expositions, where severe competitions commonly take place. The live stock in

each of these shows should be passed upon by judges who are well qualified to render intelligent and fair decisions. Each year fair and live stock officials seek the services of judges to do this work, and among the men employed will be many who have received inspiration and instruction while in the agricultural college. In recent years, breed associations have seen fit to nominate certain men for public service as judges, usually selecting those best known and most familiar with the breeds in question. Two of the most important associations holding live stock shows in America, the International Live Stock Exposition, and the National Dairy Show Association, appoint their judges on the basis of breed association recommendations. It is no doubt true, that each year sees increased care in the selection of judges, and a more efficient service rendered to our live stock interest in the work they do. To meet the requirements of this demand for qualified judges, should be the ambition of every man who desires to serve in the capacity of an expert judge.

CHAPTER II.

THE SCORE CARD AND ITS USE.

The scale of points is a systematic, logical, brief description of an ideal animal of a breed or type, in which the several parts described are given numerical values. A *standard of excellence* is another expression sometimes used to designate scale of points; although there are standards in which no points are made use of; they are in fact simply very brief official descriptions of certain breeds, in which no measurements of values are given. Some of the British breed associations use the standard of excellence, rather than a scale of points.

The score card is a card on which values are registered to the credit of an animal measured by the standard of a scale of points. This scale is the one vital factor of the score card. Therefore, when we speak of score card, we always associate with it a definite scale of excellence representing perfection, which is used for comparison with the animal judged.

The earliest use of the scale of points was probably applied to Jersey cattle. In 1833 an agricultural and horticultural society was organized on the Island of Jersey, one of the Channel Islands off the coast of France. One of the purposes of this organization was to improve the native breed of cattle on Jersey. In discussions regarding methods of improvement, the suggestion was made that it would be highly desirable if some standard of excellence or scale of points could be devised, that would serve as a guide for the breeders on the island. Accordingly a committee was appointed to draw up a standard. The method used was original and unique. It is said that the best two bulls and the best two cows on the island were selected to be used as models. One of each sex was regarded as

perfect in the barrel and front parts, and the other in the hindquarters. The best breeders and dealers on the island were freely consulted, and on January 18, 1834, a scale of points for bulls and another for cows, was adopted by the Society. In view of its historical importance, this scale of points as applied to one sex, is herewith reproduced. A comparison with the more recent scale of points is of interest.

ORIGINAL SCALE OF POINTS FOR JERSEY COWS AND HEIFERS

1. Breed on male and female sides reputed for producing rich and yellow butter	4
2. Head small, fine and tapering; eye full and lively; muzzle fine and encircled with white; horns polished and a little crumpled, tipped with black; ears small and of an orange color within	8
3. Back straight from the withers to the setting-on of the tail; chest deep, and nearly of line with the belly	4
4. Hide thin, movable, but not too loose, well covered with fine and soft hair of good color	2
5. Barrel hooped and deep, well ribbed home, having but little space between the ribs and hips; tail fine, hanging two inches below the hook	3
6. Forelegs straight and fine; thighs full and long, close together when viewed from behind; hind legs short and bones rather fine, hoofs small, hind legs not to cross in walking	2
7. Udder full, well up behind; teats large and squarely placed, being wide apart; milk veins large and swelling	4
<hr/>	
Perfection for cows	27

Two points shall be deducted from the number required for perfection in heifers, as their udder and milk veins cannot be fully developed. A heifer therefore will be considered perfect at 25 points.

The early scales of points, were found to be of much service to the people. When cattle were judged they were compared with the official scale of points. It is interesting to note that this standard contains in general the essential features of the Jersey scale of points of the present day. Naturally with use it was found that the standard of excellence first adopted might be improved. According-

ly we find that the scales of points were revised a number of different times. In 1875 the total number of points in the perfect animal was increased to 100, a standard for perfection in common use to-day with all breeds.

The systematic arrangement of the scale of points for the different types and breeds of animals, is considerably improved over the score card of 1834. Now it is customary, first to consider the general appearance of an animal, then follow with detailed study of the several important parts, each of which is in turn separately studied and measured. One hundred very generally represents the total number of points used in the scale measuring up the ideal or model animal. Thus a certain score card is divided into the following five great parts:

	Points
<i>A.</i> General appearance	30
<i>B.</i> Head and neck	8
<i>C.</i> Forequarters	12
<i>D.</i> Body	33
<i>E.</i> Hindquarters	17
	<hr/>
Total	100

Each of these parts is sub-divided for more detailed analysis. In the above, *D*, the body, is credited with 33 points, sub-divided as follows:

	Points
Chest , deep, wide, large girth	4
Sides , deep, full, smooth, medium length	8
Back , broad, strongly arched, thickly and evenly covered	9
Loin , wide, thick, strong	9
Belly , straight, smooth, firm	3
	<hr/>
Total	33

The above is merely given as illustrative of how the present day score card is constructed, irrespective of type or breed. This is a logical method, whereby the student or person using the scale of points, considers the animals by the most simple and comprehensive system. This ar-

rangement of the scale of points is the result of careful study and use, and meets with the general approval of present day students of animal form. If one will but compare the first scale of points, on page 16, with that of the dairy cow on page 275, the superior arrangement of the one over the other will be clearly seen.

Breed standards are usually expressed through the scale of points. Many breeds have standard official descriptions, although most of the breeds of horses and beef cattle have thus far adopted nothing of the kind. Such great breeds as the Percheron, Clydesdale and Shorthorn, have none. The breed score cards vary considerably in make-up and style of expression. Many of them begin with the head, and then in sequence, in more or less detail, specify the conformation and character of each part from front to rear. Especial emphasis is usually placed on that feature regarded as of much importance in the breed, as the udder and veins in Holstein-Friesian cattle, or wool with Merino sheep, or the back and loin of the Poland-China hog.

Conditions of disqualification of representatives of certain breeds, are specified in connection with the scale of points. These disqualifying clauses are especially introduced as features of the scales of points of most breeds of swine. For example, one of the Poland-China Associations has published disqualification definitions as applied to form, size, condition, score and pedigree. That for condition is as follows: "Excessive fatness; barrenness; deformed; seriously diseased; total blindness, caused by defective eyes, or by reason of fat or loose and wrinkled skin over the eyes." Disqualification should be applied to the representative of any breed, that does not conform to the established standard, or is defective in any particular.

The method of using the score card, whereby an animal is compared with the ideal set forth in the scale of points, should be the first lesson in a systematic study of judging. Perhaps one of the simplest, shortest examples of a scale



Fig. 7.—“Disqualification should be applied to the representative of any breed that does not conform to the established standard, or is defective in any particular.”

of points, is that of the Shetland Pony, as adopted by the American Shetland Pony Club, which is as follows:

SCALE OF POINTS FOR SHETLAND PONY.

POINTS SCORED	Perfect Score	Score of Animal Studied
1. Constitution—Constitution indicated by general healthy appearance, perfect respiration, brightness of eyes	10	....
2. Size—Ponies over four years old, 42 inches and under in height, two points to be deducted for every inch over 42 inches up to 46 inches, fractional portions to count as full inches	25	....
3. Head—Head symmetrical, rather small and fine, wide between eyes, ears short and erect	10	....
4. Body—Barrel well rounded, back short and level, deep chested, good breast, compact, “pony build”	10	....
5. Legs—Legs muscular, flat boned, hind legs not cow-hocked or too crooked	25	....
6. Mane and tail—Foretop, mane and tail heavy	10	....
7. Feet—Good	10	....
Total	100	....

Under "Points Scored" it will be seen that there are seven features of the animal to be considered, *viz.*: constitution, size, head, body, legs, mane and tail, and feet. Each of these features as found in the perfect animal is given numerical value which the stockman refers to as "points." The number 10 under the column "Perfect Score" is the number of points credit given a pony of perfect constitution. If the pony does not seem as healthy or as vigorous as might be expected, or if the eyes are lacking in brightness, then the animal cannot be given full credit in this particular. Hence one should give such a score as in his judgment would measure the constitution of the pony being judged. Perhaps seven points would fairly represent this, and so this figure should be placed in the column headed "Score of Animal," opposite the ten points for perfection. Thus one goes through the scale of points, carefully comparing the animal under consideration with the standard, giving a numerical measure of value to each part, in systematic order, and placing each figure in the column headed "Score of Animal." If in scoring a pony, one came to the conclusion that each part was perfect, and could not be improved, then he should give the full score in each case. This animal would then be credited with one hundred points, and be rated as perfect. But we have no perfect ponies. The live stock critic can always find some points for improvement. The ears may be a trifle long, the back not quite level enough, or the feet too flat. Thus the judge finds his reasons for less points than 100. After scoring, the column of figures which the judge has made is added and placed in the line marked "total," for comparison with the perfect total. A total of 90 would be a high score, for very few animals measure up to such a standard of excellence if given a careful, seasoned judgment.

The value of the score card lesson largely lies in teaching the beginner the location of the various parts and how to study them by a logical, well established system. Those

score cards which describe and measure the parts and characteristics of the types of animals, are as a rule more systematic and better balanced than those applied to most of the breeds. The scales of points of some breeds, as established by breed associations, are open to severe criticism. They lack in orderly arrangement, in clearness of description, and in logical measure of value. Therefore it will be a wise policy for young judges to begin score card work with the scales of points applied to the types, such as are in common use in agricultural schools and colleges, an example of which is to be found on page 62. Systematic judging is promoted by first considering the general appearance, which involves the animal as a whole, including height, weight, general form, quality, character and temperament. After this the different parts, in proper order, are carefully examined and rated. The detailed study of head, next the neck, then the breast, and so on, with their relations to each other, requires the measurements of the smaller details. This relationship of one part to another, must be considered, that one may get a fair idea of the strong and weak points in the conformation.

The relative values of the parts of the scale of points are somewhat variable. The standard of excellence for a breed has, in most cases, been drawn up by a committee of men appointed for that purpose, by a breeders' association, whose work has been endorsed and adopted by the members of the same. As a rule the scale of points represents the work of well-known breeders, who are quite familiar with the breed. Thus, through the scale, one should obtain the most intelligent and comprehensive analysis of the breed, in which the relative values of the parts are set forth. The score card in this case will show what parts are most highly valued, and which of least importance. If we are using a score card for mutton sheep, as applied to type rather than breed, such as is in common use in the classroom, it will be seen that experts have endeavored to give essentially correct

values to the different parts of the body. No matter what kind of score card we are using, in general, appropriate recognition will be given to the different parts, crediting each with a fair number of points. The various breeds of live stock of similar type and character place quite comparable values on similar more important parts. This may be illustrated in the case of the dairy breeds of cattle, in which the udder, milk veins and wells of the females are given many points, thus indicating their great importance. If, however, meat production is the primary consideration, then with either types or breeds of the more distinctive meat animals, greatest emphasis is placed on the development of back and hindquarters, where the largest amount of valuable meat is obtained. Further, in the composition of the score card, the minor parts from the commercial point of view, such as ear, nostril, tail or ankle, no matter how important these may be in comprising the whole, are measured up in small figures.

The use of figures in scoring animals is necessary to furnish a basis for comparison with the ideal or standard. Care should be used to grade on as simple and clear a basis as possible. Figures as small as 1 or 2 are used as measures of values in the standard but it is undesirable in scoring an animal to introduce numbers that show too fine a measurement. If 1 indicates a perfection then grades of .25 .50 or .75 might be used as measuring the value of the part being judged. Surely .25 of one per cent is a small enough estimate to express reasonably well a valuation of a part that cannot possibly score over 1 point. Some persons score as low as .1 of one per cent, but that is a very fine measurement to apply and one difficult to justify. In scoring, decimals are preferable, as common fractions do not stand out in clear contrast for study, and the person scoring should have his column of figures mathematically arranged, with the decimal points in line. Unless care is used in this respect, the judge may mix his columns in

adding, which will result in an error in the total score. After having scored an animal, the judge should always add his column of figures, and to check his work for accuracy, should add the column both up and down to see that his figures agree.

The expression "Points Cut," in scoring, is sometimes used. The official instruction to judges, working under the rules of the American Poultry Association, provides for marking down cuts when scoring. Some of the associations of expert judges of swine also use the cut system. The method of applying the cut system is simple. If a part in the standard or scale of points is credited with 10, and one thinks the animal worth only 7 in this respect, then 3 is recorded as so many points taken off, or cut. This is not right. The points cut should not be written down. The philosophy of recording 7 instead of 3, is that 7 is a basis of comparison with the standard, while 3 is a comparison with nothing. It may be easier to say "I'll cut three points," but the real purpose of the score card is one of comparison, and no comparison is implied when this form is used. Therefore it is highly important to place one's actual valuation for each part in proper place in the column, that comparison of both the part and the whole may be possible. In fact, unless we place figures representing value to the credit of an animal we do not give a proper score. If we give a cut, this in turn must be taken from the perfect score in order to give correct value.

The value of the score of an animal is relative and should not be regarded too highly. Men of experience in the use of the score card, very generally value it for its importance in the elementary stages of judging live stock. Through its use, the young judge is taught the location and the relative values of the different parts of the animal. The great criticism of the score card, is that a judge may be unable to grade a living animal exactly the same at different times. His figures cannot stand as final. To-day we may score an animal 80 and to-morrow 75. The horse

we scored yesterday may to-morrow come before us in better form, with more action and expression, and therefore measure up to a higher degree of excellence. We do not know how to express in satisfactory figures certain things we term character, expression, quality, etc. For many years past efforts have been made to introduce the score card as a medium for judging live stock at the shows, but without success. In no case, perhaps, has the scale of points been used in practical judging for an extended period of time. Even poultry judges, who have adhered to the score card more than any one else, are now quite generally discarding its use. It may not be out of place to state here, that some men who have been judges of acknowledged ability, when required to officiate by score card methods, have not done themselves or the animals they have passed on, justice. One good illustration of this occurred in 1893 at the World's Columbian Exposition. A great show of one breed was judged by the score card. Commenting on the work of the judge, who in his time was regarded as well qualified to pass on this breed, the following came from the pen of a noted live stock critic, and is well worth consideration in its relation to this much discussed subject.¹ "In this connection the temptation to discuss the score card as a show yard implement is strong. If it had been known that the judge intended to use the card, it is questionable if he would have been asked to do the work, for Chief Buchanan has little use for this well-nigh obsolete fad. We say well-nigh obsolete. So far as Western show yards are concerned, it has not made its appearance in the cattle ring for the past ten years. It is occasionally used in the East, and so far as our observation extends, it is the most potent cause of good men going wrong in awarding premiums. Swine breeders caught the score card fever some few years ago. They have recovered thoroughly from the attack. It is a non-recurrent disease. Readers of the *Gazette* need not have repeated to them the arguments which have driven

¹ Breeders' Gazette, Sept. 6, 1893, p. 163.

this system out of Western show yards. They need not again be assured of the folly of attempting to apply mathematics to the judging of life. They know that the tape and square can measure inert matter; they equally understand that animal form cannot be reckoned in figures as cord wood or pig iron."

In spite of the above criticism, we must not lose sight of the value of the scale of points as a standard, and what it may teach. A limited number of score card lessons, will usually suffice to introduce the subject of judging. It is also important that the judge should be familiar with the scale of points of any breed which he may be called to pass upon in the show ring. A judge would hardly be qualified to pass on a breed exhibit if he lacked knowledge of the standard of excellence of that breed.

PART II—THE HORSE.

CHAPTER III.

MAN AND THE HORSE.

The relationship of man to the horse has long been very intimate. The horse, since time immemorial, has occupied a favorite place in the esteem of man. For centuries he was the main source of transportation, both in peace and war. With the development of agriculture and the tilling of the soil, the horse entered into a new field of usefulness. In recent days the advent of the automobile and motor truck seem to indicate a retirement of this animal to a certain extent from the streets of our towns and cities. Yet in spite of changed conditions, there is not likely to be any material diminution in the necessity for the horse as a vital factor in the conduct of farm operations. His service in many ways is indispensable. Even in town it will be impossible for many to make use of other form of power in transporting loads. In a variety of ways man will continue to rely upon the horse, both for pleasure and profit. If this animal is to be criticised as lacking in efficiency, is it not highly important that those engaged in the production and selection of the horse understand his structure, purpose and adaptability? Such a comprehension must be based on a knowledge of the relationship of internal to external structure, and of form to function. A knowledge of this relationship of form to function, coupled with reasonably good judgment, will materially assist one in measuring the personality and comparative value of the horse under most conditions of examination. If "knowledge of the horse is an art," to quote

noted French authority,¹ "it is especially one which consists in observing, comparing and judging according to positive information. Besides, it is necessary, in order to reach perfection, to have observed much, to have put to practice that faculty which makes the clinician, the connoisseur, and the artist. It is when such an education is carried to a considerable extent that we succeed in seizing at once what good or defective qualifications the horse possesses, and that it is possible to form a just conclusion by appreciating to what degree the good qualities exceed the bad."

¹The Exterior of the Horse. Goubaux & Barriere, 1904, p. 3.

CHAPTER IV.

THE ANATOMY OF THE HORSE.

The anatomy of the horse has been a fertile subject of study by man, and a large amount of literature has been published dealing with the structural characteristics of this animal. In as much as it has been clearly demonstrated that a close relationship exists between the internal structure and external conformation, it will be appropriate in a study of form of the horse, first to direct attention to some of those features of anatomy that have a special bearing on his use and efficiency. The bony framework, the skeleton, supports and protects the softer body tissues, including the muscles, which give beauty of form and furnish power. Not only these, but intimately associated with them is a nervous system that is of vital importance, which indicates in no small degree the power to comprehend and perform.

The skeleton of the horse consists of 205 bones, which may be grouped in three classes. These are *long*, as the thigh; *flat*, as the shoulder blade; and *short* or irregular, as in the foot or vertebræ. Bone consists of cellular tissue, the cells of which have become more or less filled with calcareous substance. In its early stage of development the bone lacks mineral matter, consisting of fibrous tissue, which is a kind of cartilage. With growth and age, this cartilage becomes filled with lime and changes from a soft to a hard condition. The quality of the bone is largely influenced by the presence of mineral matter in it, obtained from food and water. Bony tissue is referred to as hard and compact or soft and spongy. Horses raised on dry uplands are said to have harder, better feet and bone than those from the lowlands. With the living animal, the bones

are of importance for the following purposes: (a) to support weight; (b) to act as levers; (c) to reduce concussion.

The skull of the horse consists of eleven bones, and is connected with the spinal column at the atlas joint. The breadth of the forehead is occupied by a pair of frontal bones, while just below, and extending to the nose are nasal bones. "Few things," writes Youatt,¹ "more clearly

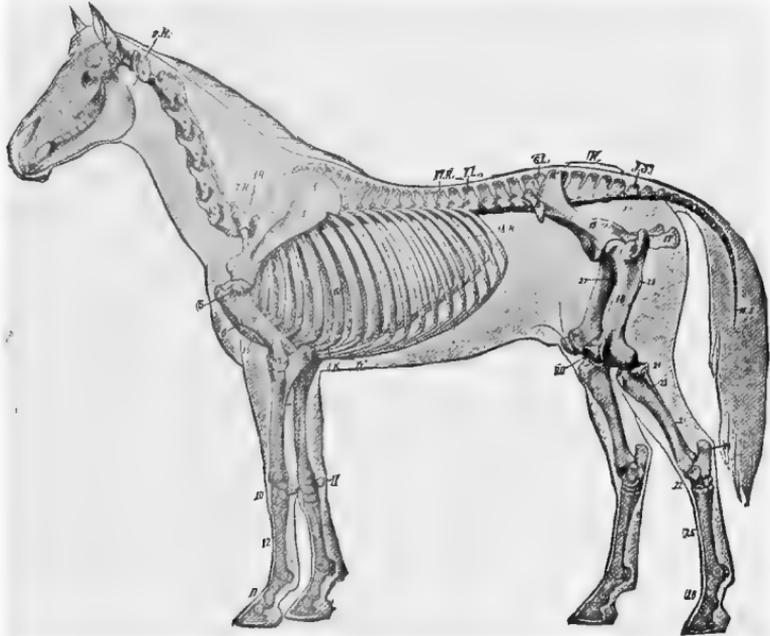


Fig. 8.—*The skeleton of the horse.* "It has been clearly demonstrated that a close relationship exists between the internal structure and external conformation." (Courtesy Dr. S. Slsson. From *Anatomy of the Domestic Animals.*)

indicate the breed or blood of the horse than the form of the frontal bones. Who has not remarked on the broad angular forehead of the blood horse, giving him a beautiful expression of intelligence and fire, the face gradually tapering from the forehead to muzzle, contrasting it with

¹ *The Horse*, 1843, p. 71.

the large face of the cart or dray horse, with the forehead scarcely wider than the face." Above the eye on each side are small so-called pits or depressions between the frontal bones. With old age and emaciation, these pits sometimes appear more depressed. The frontal bones consist of two layers, giving considerable thickness to the skull. Between these are cavities known as frontal sinuses, connecting with the nasal passages. The skull is characterized by great length beyond the eye, as compared with the portion back of it. Prof. H. F. Osborn calls attention² to this long-

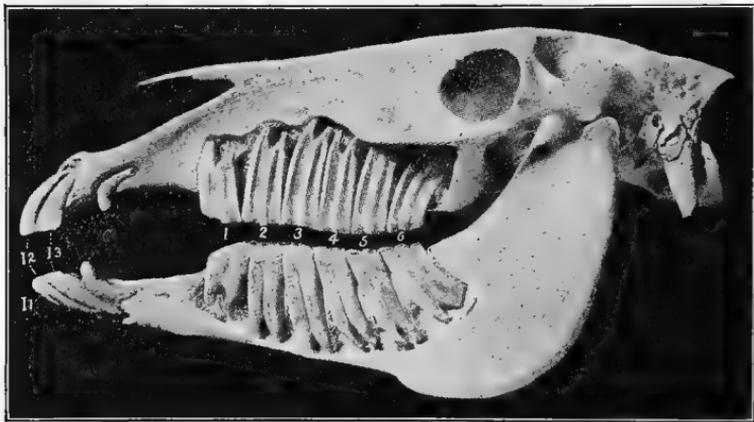


Fig. 9.—*The skull of the Horse.* "The skull is characterized by great length beyond the eye." Figs 1-6, molar teeth; Figs. 11, 12, 13, incisors; C, canines. The jaws are slightly separated for sake of clearness. The bone covering of the teeth is removed to show root extension. (Courtesy Dr. S. Sisson. From *Anatomy of the Domestic Animals*.)

headedness as a very ancient character, and which he states is for two purposes, first, to facilitate reaching the ground with the row of incisor or cropping teeth, and second, and no less important, to allow space in front of the eye sockets for the great row of elongate grinding teeth, the marvellous dental battery of the horse. The brain cavity is very small, considering the size of this animal, and the brain has an

² *The Age of Mammals*, 1910, p. 18.

average weight of only twenty-three ounces. This is an interesting contrast with the average weight of the brain of a white man which is about forty-nine ounces.

The age of the horse is usually estimated by an examination of the teeth. To inspect these most easily, grasp the upper jaw with one hand, the lower with the other, the thumbs being inserted just back of the front or incisor teeth. Pressure from the lower hand causes the horse to drop the under jaw, so that the teeth may be quite easily examined. It re-



Fig. 10.—Grasp the upper jaw with one hand and the lower with the other.

quires some experience in recognizing the age, which may be determined with reasonable accuracy in most cases, up to eight years. After that there is some uncertainty. The appearance of the teeth, and their age classification, is as follows:

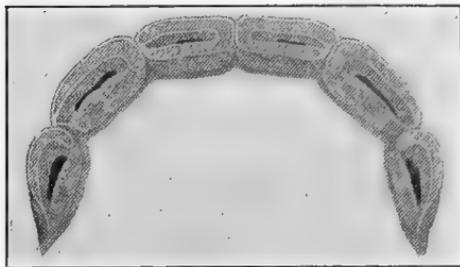


Fig. 11.—The colt teeth. "They are the milk teeth." Figs. 11-18 reproduced from "Beurtheilungslehre des Pferdes," 1859.

The colt teeth.—

Seven or eight days after birth two incisor teeth appear at the front and middle of both upper and lower jaws. In the course of five or six weeks, two more teeth appear in each jaw, one tooth coming on either

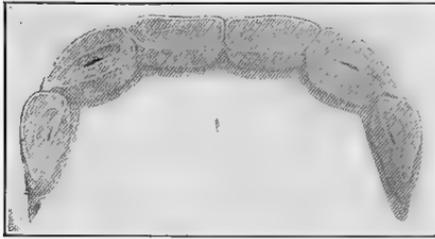


Fig. 12.—Two and one-half years of age.

side of the two already present. Some time between the sixth and ninth month, two more appear, one by the side of each outer tooth. These six pairs are called nippers. They are the milk teeth, and are only temporary. They are not all equally level with one another at first, but in the course of twelve months or so they become uniform on the surface. The outside of the tooth is very hard, white enamel. This covers a hard, ivory-like bone, at the center of which is a softer substance which more easily wears away, but is constantly renewed. The ends of the teeth have a ridged cutting surface, forming at the centers small depressions, or "cups," by which the age is determined. The cups in the central pair of nippers at first are wide and somewhat dark; in the second year, with use, they appear lighter in color, and become smaller than those of the other four. Similar changes follow in order in the other pairs.

At two and one-half to three years of age permanent incisors or nippers appear. These teeth are larger than the first ones, which were small but suited to the mouth of the colt. The first or central pair of temporary teeth is pushed out by the pair of larger permanent ones.

At three and one-half to four



Fig. 13.—Three and one-half years of age.

years of age, the second pair of nippers in each jaw of the colt gives way to two larger, permanent teeth, so that the four-year-old shows four pairs of permanent front teeth.

At four and one-half to five years of age the last pair of the front teeth of the colt, in each jaw, is supplanted by a pair of permanent ones. At this age what are called tusks appear in the mouth of the male; they also occur occasionally in the mare. These tusks have roundish points, and there are two in each jaw, one on a side, a short distance back of the front teeth. After the fifth year the age of the horse is determined by the appearance of the wearing surface of the

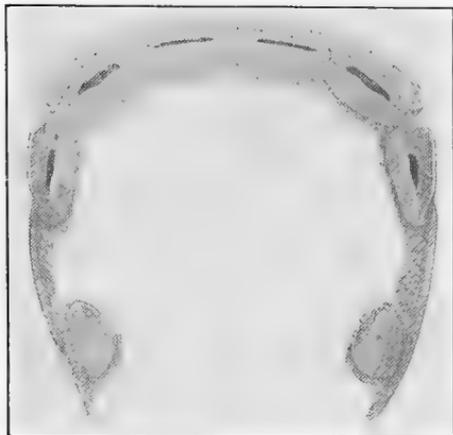


Fig. 14.—Four years of age.

teeth, each tooth when normal having its age surface.

At six years the cups of the two central teeth are worn off.

At seven years the second pair shows the worn surface.

At eight years all of the teeth have been worn about level, and the mouth-mark loses its value. The six permanent teeth in each jaw at first meet each other in vertical position, the ends butting squarely against each other. As age increases, however, the teeth gradually take a more inclined or slanting-out position in each jaw, so that they come together at a sharper angle. The older teeth are also more worn on the ends, and are longer than the younger teeth. In a horse from 12 to 16 years of age the ends of the teeth have become somewhat three-sided.

The spinal column of the horse consists of fifty-four bones, or vertebræ. Seven of these, the cervical, are in the neck; eighteen, the thoracic, are in the back; six, the

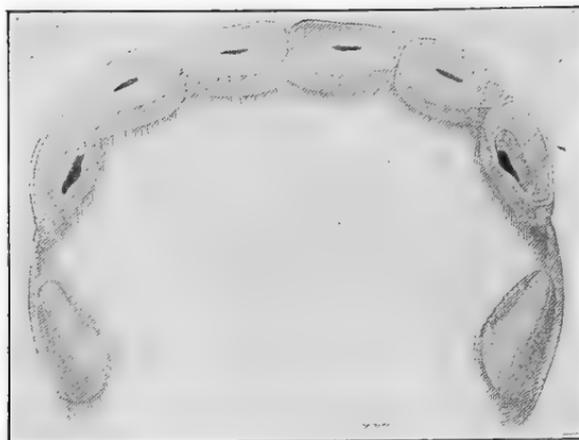


Fig. 15.—Five years of age.

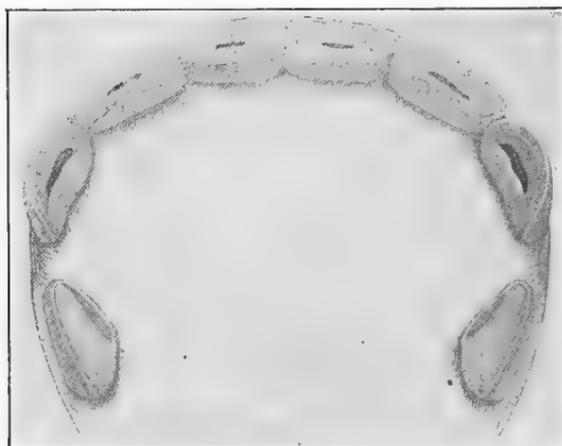


Fig. 16.—Six years of age.

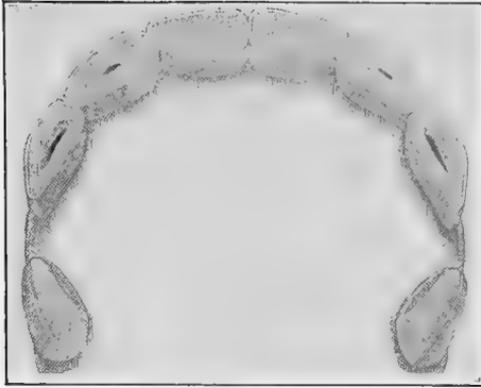


Fig. 17.—Seven years of age.

lumbar, are in the loins; five are fused into a single bone, the sacrum, located at the croup, and about eighteen comprise the coccyx or tail bones. The spinal cord passes through all these bones, excepting beyond the fourth or fifth vertebræ of the tail.

The thoracic vertebræ have long projections or spines, which reach the highest point at the top of the fourth and fifth vertebræ, forming the withers. The line of the tops of the spines, gives a curved outline to the backbone, which makes it impossible for a horse to have a flat back, there being a necessary depression from the withers to the back of the loin.

The ribs of the horse usually number eighteen on a side, though there are sometimes nineteen. Eight of these are true and ten are false. By means of cartilage at the lower end, each true rib is connected with the breast bone. The first false rib connects by cartilage with the end of the last true one, and each other false one is attached to the

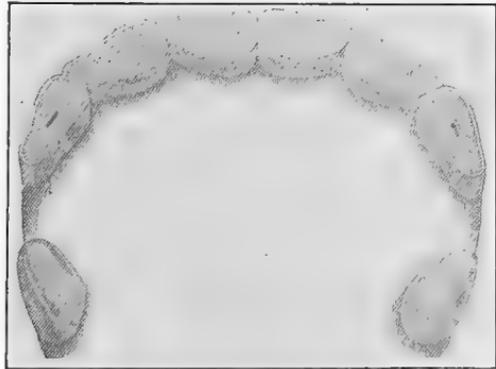


Fig. 18.—Eight years of age.

cartilage of the one before it, thus forming an indirect connection of false with true ribs. The ribs not only protect the vital organs from injury, but are agents in expanding and contracting the chest.

The sternum or breast bone of the horse suggests a canoe in shape, and is located between the ends of the cartilages of the true ribs. The sternum furnishes important attachment for muscles.

The shoulder blade of the horse is a long, broad, thin bone, flat on the inner side, but with a ridge on the outside that divides the muscles that act at the shoulder. The point of the shoulder is opposite the lower ends of the first and second ribs, and the blade extends back obliquely upward to the seventh rib.

The humerus is a large, heavy bone, that at its upper part fits into a socket at the point of the shoulder, extending obliquely backward about on a line with the depth of the belly. One long bone, *the radius*, joins the lower end of the humerus to form the "front" knee joint. A smaller bone, the *ulna*, lies just back of the radius, projecting decidedly above it to form the point of the elbow. At the lower end of the radius, at the knee, are two rows of small hard bones, back of which is another small bone, over which passes the tendons of the fore leg. Below the knee is the large metacarpal or cannon bone, about nine or ten inches long, one of the strongest bones in the skeleton. Back of this on each side are two small bones, known as splint bones; between is a groove, through which passes a ligament. At its lower end the cannon bone joins with the two sesamoids and the fetlock bone (long pastern), forming the fetlock joint. The pastern extends obliquely forward and downward, forming an angle of about 45 degrees. Below the fetlock bone is the pastern bone, and below this the coffin bone. Behind the latter is a small, rather thin bone, *the navicular*. The sesamoid and navicular bones act as pulleys for a tendon which passes over this part.

The Hoof, which encloses the foot bones, is an appendage

of the skin, comparable with the finger-nail. This consists of three parts, (1) the wall, or all of the exterior of the hoof to be seen when resting on the floor surface; (2) the sole, which arches over much of the under side of the hoof, excepting the space occupied by (3) the frog, which is a wedge-shaped form of soft horn, extending from the cleft at the back side of the hoof, to a point well beyond the center of the sole. This back side of the hoof is known as the heel, to which the frog is connected at its basal extremities. On each side of the frog, between this and the sole, is a slight ridge, the bar, which is a continuation of the hoof wall. The coronet is the top of the hoof where this part joins the pastern.

The pelvis of the horse occupies a sloping backward position in the upper part of the hindquarters, articulating with the sacrum. It appears as one bone, although really consisting of two similar halves. The outer projecting part of the pelvis on each side is known as the *point of the hip*, while the extreme rear end, the *ischium*, is commonly termed the *point of the buttock*. A very large, heavy thigh bone, the *femur*, has its upper end in a socket in the lower part of the pelvis. This thigh bone extends forward, end-

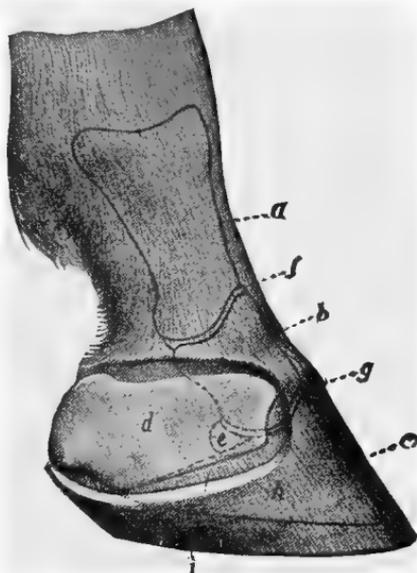


Fig. 19.—The digit of the horse, showing surface relationship of bones and joints: *a*, long pastern bone; *b*, short pastern; *c*, coffin bone; *d*, cartilage; *e*, navicular bone; *h*, cut-edge wall of hoof. (Courtesy Dr. S. Sisson. From *Anatomy of the Domestic Animals*.)

ing in the prominent knee or *stifle joint*. On the front of this joint is the *knee cap* or *patella*, on which are fastened muscles that operate the joint. At its lower end the thigh proper joins the lower thigh or *tibia*, back of which is a small bone, the *fibula*. The tibia extends obliquely back



Fig. 20.—Right forehoof, ground surface. 1, 2, the wall; 3, angle of wall; 4, bar; 5, sole; 6, junction wall and sole; 7, apex frog; 8, central sulcus of frog; 9, 9, sulci between frog and bars; 10, 10, bulbs of hoofs. (Courtesy Dr. S. Sisson. From Anatomy of the Domestic Animals.)

and downward, connecting by a groove-like arrangement with a small, odd shaped bone, the *astragalus*. Back of this is a bone, the *os calcis*, which projects upward and backward, the upper part of which forms the *point of the hock*. Below the hock are three small, flattish, irregular shaped bones, two in front and one behind. The bones of the hind leg, below the hock, are much like those below the knee in the front leg.

Resemblances between the bones of man and the

horse are set forth in an interesting manner by Captain M. H. Hayes.³ "The horse possesses no collar bone, consequently there is no bony connection between his fore extremity and trunk. The humerus, elbow, and forearm are the same in both, except that the ulna is complete in the horse only in very rare instances. The knee of the horse corresponds to the wrist of man. The five bones between our wrist and the first row of knuckles are represented in the horse by the cannon and splint bones. His fetlock is analogous to the first row of knuckles of our hand. The long pastern bone corresponds to the first bone of our middle finger; the short one, to the second bone; the pedal one to their

³ The Points of the Horse, London, 3d ed., 1904, p. 38.

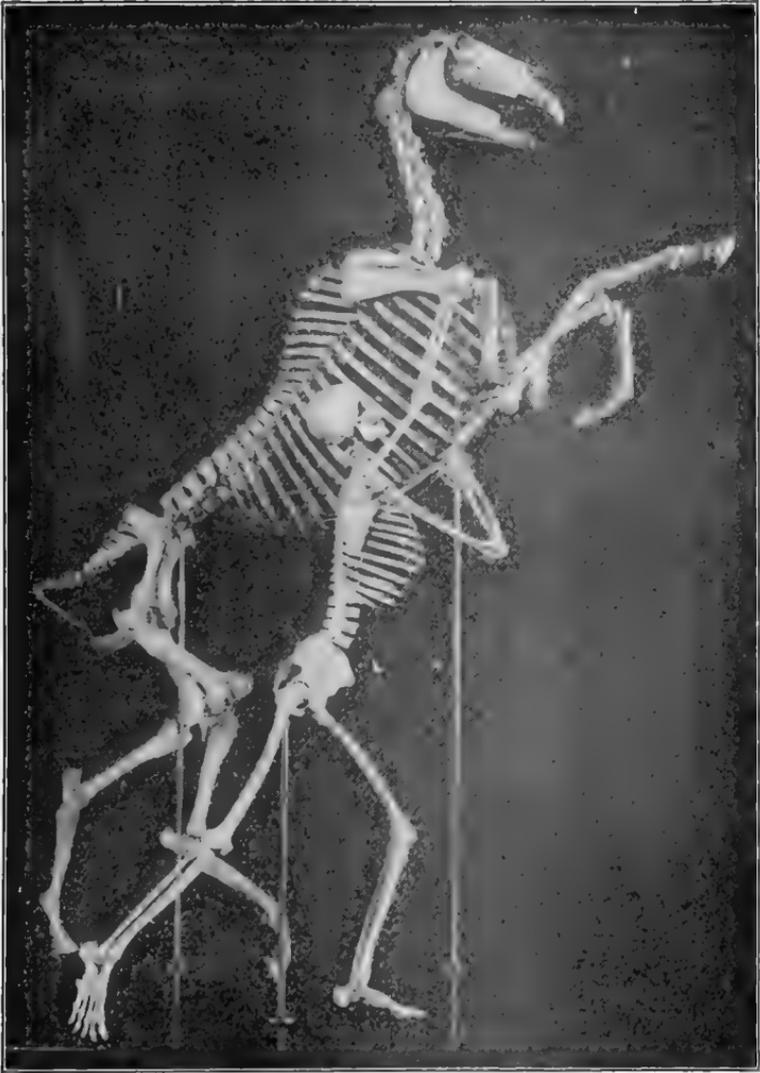


Fig. 21.—Resemblances between the bones of man and the horse. From photograph of skeletons prepared by Mr. S. H. Chubb. (Courtesy American Museum of Natural History.)

third bone, and the hoof to its nail. The navicular bone has no counterpart in our frame. In the hind limb, the stifle represents our knee; the tibia, the shin; the hock, the ankle; the point of the hock, the heel; and so on. In man, the fibula is a fully developed bone. We may thus see that the horse is an animal that moves on the tips of his fingers and toes; and that he has only one complete and functional toe to each leg.”

The relationship of speed in the horse to the structure of the skeleton is an important one. The prehistoric horse possessed five toes instead of one on each foot. During the process of evolution, the excess side toes disappeared, leaving only the central one and two more or less developed splints; the cannon bone also increased in length. According to Lydekker⁴ this development to a one-toe basis, with the accompanying splints, the elongation of the bones of the lower part of the limb, the simplification and the consolidation of the middle part, and the raising of the knee and hock far above the level of the ground, so as to cause the animal to walk on the tips of its single toes, are the important features wherein the horse, as compared with other animals, is adapted to high speed. At the present day the horse is the only animal having a single toed or monodactyle foot. A many toed, short boned limb, would be unequal to the strain of carrying the body of such a heavy animal at a high rate of speed over hard ground.

The muscles of the body consist of groups of fleshy fiber, that under the influence of the nerves, have the power to contract. Most of the muscles are attached to bone by means of tough, hard, whitish cords, known as *tendons*. Through direction from the brain, the nervous system stimulates the muscle which at once contracts and thus produces power. Muscles differ in length and strength, short, thick ones being capable of producing greater strength than long, slender ones. The tendons also differ in length and degree of attachment to the bone. A muscle can con-

⁴ The Horse and its Relatives, London, 1912, p. 17.



Fig. 22.—Superficial muscles of the horse. “Muscles differ in length and strength.” (Courtesy Dr. S. Sisson. Reproduced from *Anatomy of the Domestic Animals*.)

tract to about two thirds its ordinary length if conditions favor the same. The power of a muscle is in accordance with its thickness, while its action is dependent on its length. Comparatively the draft horse with a thick, short muscle, moves slowly and in short powerful strides, while the race horse, with long muscles possesses a longer stride and covers ground more rapidly. Muscles of the same size on different animals vary in strength, this being due to heredity, food, condition, nervous power, etc. “Massive muscles,” says Hayes,⁵ “compared to slight ones, have two disadvantages, namely,—they increase the weight which is carried, both in muscle and bone; and they necessitate the possession of large joints, which from increased friction, are not so easily bent and extended as smaller ones; besides, it has been proved that they do not respond as quickly to nervous stimulus.” Hayes makes the further interesting observation that we may often note that race horses which were very smart as two-year olds, lose their “form” after that age without any assignable reason, excepting that as

⁵ *Points of the Horse*. M. H. Hayes, London, 3d ed., 1904, p. 29.

they thickened they got slow. Muscles vary greatly in their activity in the body, and naturally each plays its special part. To illustrate, the muscle attached to the back of a leg joint, being constantly used to flex or close the joint, is active and tough, while the short, thick muscles in the loins, are relatively but little used, and consequently lack in toughness. Among the many muscles of the horse the following are of special interest. The head is bent by the muscles that extend from the lower jaw to the breast bone. Another muscle from the poll to the withers regulates the extension of the head. One heavy muscle, *the complexus*, in the upper part of the neck, gives much of the shape to this part. The most powerful muscle in the body extends from the neck along the back to the sacrum and beyond, and is closely attached to the backbone, pelvis and upper part of the ribs, forming in fact most of the fleshy outline of the back and loins. The shoulder blade is connected with the body by a strong, fan-shaped muscle on its under side, attached in front at the neck and behind at the ribs. The blade moves forward or backward, according to contraction of the muscle. Another muscle on the outside of the blade extends to the withers, head and neck, and assists in moving the shoulder. One long muscle, extending from the poll and neck to the humerus, moves the foreleg forward. The freest action of shoulder and forelimb is associated with a long neck and prominent withers. A number of important muscles and tendons assisting in regulating movements of the fore limb, are attached at the lower part of shoulder and the leg below. In the quarters we find powerful muscles for producing either force or speed. One of the most important, the large croup muscle, extends from the front of the pelvis around over the croup to the upper part of the thigh bone. The large muscles on the back of the thigh, lead from the under side of the pelvis to the upper part of the tibia. The gaskin, the smaller part of the thigh above the hock, has two important muscles on its rear side. These start from the lower end of the

upper thigh, one ending in a tendon at the point of the hock, the other extending from the hock as a tendon along down the back of the leg to the fetlock bone. There are many different muscles over the body that are intimately related to the locomotion of the horse, the material injury of any one of which would seriously affect the efficiency of various others.

The digestive system of the horse consists of the mouth, tongue, teeth, pharynx, œsophagus or gullet, stomach, large and small intestines, pancreas, liver and spleen. The food is taken into the mouth and with the aid of the tongue and teeth, is broken and mixed with saliva, a digestive fluid. The food is swallowed, and passes across the pharynx, a small sac, about six inches long, and enters the œsophagus, a tube 50 to 60 inches long, through which it moves into the stomach. In this latter organ the food is churned and mixed with water and digestive agents, especially gastric juice and hydrochloric acid, this latter being especially found in the stomach. From the stomach the food moves into the small intestine, to be further acted on by digestive agents, notably pancreatic juice secreted by the pancreas, and bile from the liver. *The stomach of the horse* is comparatively small, its capacity ranging from two to four gallons. According to Sisson⁶ the size, form and position of the stomach are subject to considerable variation. The small size of the stomach explains the necessity of giving light rations during working hours, with the heavier feeding just before the greatest period of rest, such as at night. *The small intestine* is about 70 feet long, and has a capacity of about twelve gallons. Here the most active and efficient work of digestion and assimilation takes place. *The large intestine* is about 25 feet long, and extends from the small intestine to the anus, from which point the solid excrement is passed from the body. The intestines occupy the rear part of the abdominal cavity, underneath and back of the ribs. *The liver* of the horse covers much of the right side

⁶ *Anatomy of the Domestic Animals.* S. Sisson, Philadelphia, 1914, p. 417.

of the abdominal cavity. It is the largest gland of the body, weighing ten to twelve pounds, and extending from within three or four inches of the floor of the abdominal cavity, just above the elbow, to a level with the right kidney, just below the loin.

The heart of the horse, located down in the left side of the chest, is a hollow muscle that under average conditions weighs about nine pounds, but may vary greatly in size. Dr. Sisson states⁷ that, "as might be expected, race horses have hearts which are larger than the average, both

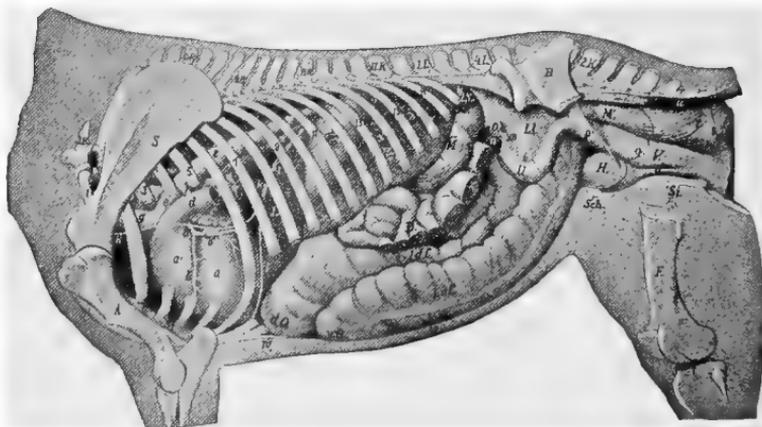


Fig. 23.—Viscera of mare: L, liver; Ma, stomach, the posterior contour being indicated by dotted line x; MI spleen; IX, left kidney; D, small intestine, partly removed; ldC and lvC, large intestine; H, bladder; aa, bb', heart; M', rectum; V, vagina. (Courtesy Dr. S. Sisson. From *Anatomy of the Domestic Animals*.)

absolutely and relatively." Small horses show more activity of heart action than large ones, with more rapid pulsation.

The lungs of the horse occupy much of the upper chest cavity, and average about seven and one-half pounds in weight. The right lung weighs about half as much as the left one. The size and capacity of the lungs are important. Of two horses of equal size, the one having the larger lungs

⁷ *Anatomy of the Domestic Animals*, 1914, p. 620.

will absorb the most oxygen into the body and cast off the most impurities into the atmosphere. Thus the combination of strong heart and capacious lungs is most important.

The nervous system of the horse is centered in the brain and spinal cord, from which it radiates throughout the entire body. The spinal cord is from 76 to 78 inches long and weighs eight and one-half to nine ounces, and is nearly cylindrical. The brain weighs about 23 ounces, and is divided into three parts, the medula oblongata, the cerebrum and cerebellum. The cerebrum is located just below the forehead and is the organ of thought or intelligence. The cerebellum is a very small part of the brain, directly back of the cerebrum, and as expressed by Hayes, "is the organ of muscular sense." The medulla oblongata is simply the connecting link between the brain proper and the spinal cord. The entire nervous system is made up of certain tissues that have the property of extreme irritability or sensitiveness, especially as applied to external conditions. It is the property of this system to act between these external influences and the inner ones of the body tissues. Thus the nerves convey to the muscles and other organs motor influences whereby movement of the animal body takes place through contraction of the muscular tissues. The amount of contraction which may take place will be in proportion to the amount of stimulation of the nerves. With some animals the nervous system is more sensitive than with others, even though apparently much alike otherwise. Light horses, such as Thoroughbreds, are very generally regarded as more nervous than the heavy draft, and respond more actively to muscular stimulation.

The temperament of the horse relates to his nervous and mental character, and may be regarded as of much importance, bearing on his usefulness to man. When naturally active and quick to move and think, the horse is said to have a nervous temperament. The light weight horse of the racing class possesses this temperament. When characteristically slow to move or act, the horse is said to

have a phlegmatic or lymphatic temperament. The large horses of draft class are usually regarded of this temperament. Horses vary much in temperament, but in their relationship to man, naturally incline to service. If willing to adjust himself to the work at hand, injecting sufficient animation to produce the best of results, his temperament

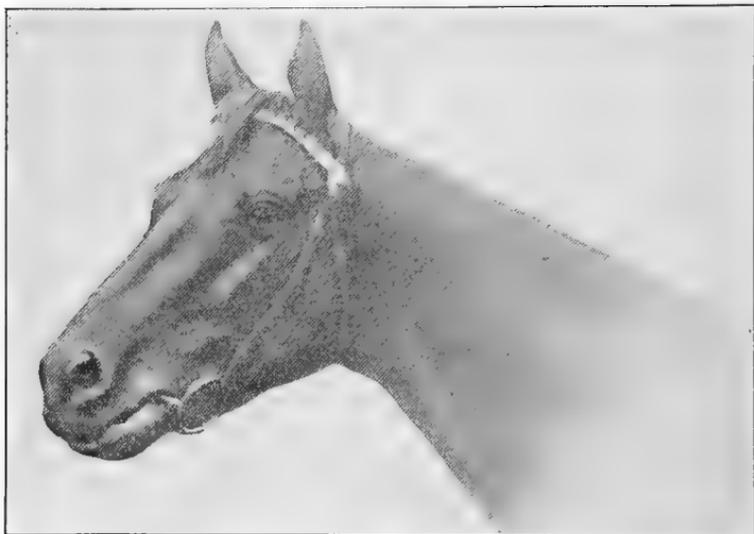


Fig. 24.—“The temperament is mainly indicated by the expression of the eye, the carriage of the head and neck, and the disposition to act.”

will be of the right kind. A nervous temperament, quick to act, yet well balanced, and associated with reasonable intelligence, best meets the requirements of the horseman. A phlegmatic temperament, slow to move, uncertain as to action, coupled with a dull mind, would find no advocate among horse lovers. The temperament is mainly indicated by the expression of the eye, the carriage of the head and neck, and the disposition to act, as seen under the direction of either voice or hand. A lively yet pleasant eye, a tendency to carry the ear erect or pointing forward, and

a willingness to move steadily, and without fear or nervousness when spoken to, are all features of good temperament.

The disposition of the horse more specifically refers to his spirit of mind, whether good or bad, etc. A kicker or biter, or a balky horse, would be considered as having a bad disposition, a quality as likely to occur with one temperament as another. The disposition, as expressed in obedience, is of great importance, for the usefulness of the horse may quite depend on this quality of character. "Among the good mental qualities of the horse," says Count Cesaresco,⁸ "the most important is a good disposition, as by means of this the horse gives in to us immediately, resigns himself to obedience forthwith, and is controlled by the aid of this feeling of obedience. The body or mechanism of the horse renders us service if the horse's mind directs it to do so. It is impossible to obtain service from the body if the mind is unwilling to command it. A good will or a good disposition is the first quality required to obtain useful service from the horse, as in order to render this service, he must be allowed freedom; he cannot do it like a galley slave, with the hands, whilst his feet are fettered."

⁸ The Psychology and Training of the Horse, 1906, p. 64.

CHAPTER V.

THE HORSE IN MOTION.

The horse is used by man for various purposes that require movement as the prime factor. This ranges from the slow and powerful walk of the draft horse to the swift gallop of the light runner. In a horse standing at perfect rest, we observe a large, heavy body or trunk, suspended by the spine between four upright supports, the legs. When the body of the horse is at rest, it is in balance or equilibrium from a certain imaginary point within the body where is located *the center of gravity*. The position of center of gravity, according to Colin, a French authority,¹ is at a point in the body which corresponds to the intersection of two lines, one vertical and one horizontal, that meet slightly below the center of the chest cavity, on a line with the back edge of the eighth rib. "It is clear," says Colin, "that the position of the center of gravity and the distribution of the body upon the members (legs), must vary according to the conformation of animals, whose head, neck, abdomen, and croup, present such diverse proportion." When the horse is in motion, and extends his head and neck, he shifts his center of gravity forward. The important point in this connection is, that equilibrium be maintained while in motion. This will be secured in the greatest degree by a gravitation that does not reach the ground, yet which, through shortness of leg, provides a strong support and easy recovery of equilibrium. Locomotion is only secured by the moving forward of the leg, thus shifting what is known as the base of support below the center of gravity.

¹The Exterior of the Horse. Goubaux & Barriere, 2d Am. ed., 1904, p. 5.

The joints of the horse naturally are main factors in locomotion. These may be grouped in two classes, movable and immovable. The two ends of the bone are held together by strong, hard, fibrous tissues, known as ligaments. There are several kinds of ligaments, some being white and inelastic and others yellow and elastic. The normal purpose of the inelastic ligament is to keep the end of the bone within its socket. Some joints have considerable play, while others are quite immovable. The ordinary ball and socket joint, as seen in the shoulder or hip, is a striking example of the movable joint. The more shallow the socket, the more extensive the possible movement of the limb. Hinge joints which possess motion in but two directions, forward and backward, occur at various points, especially in the elbow and hock. The knee has three hinge joints, one of which, between the arm and cannon, allows much motion. When the knee is bent, or the leg folds on itself, we say it is *flexed*, and when straightened out, it is *extended*.

The movements of the limbs and joints are made possible through the actions of levers, which are formed by the bones and acted upon by the muscles, when stimulated by the nerves. A lever is a rigid bar, either straight or curved, which turns upon a fixed point, the fulcrum. At some point on the lever is a weight, which may be moved by the application of power at some other point. There are three classes of levers.

The lever of the first class is seen in using a long bar as a pry. One end is placed under the object to be moved, which is the weight, while the bar rests a short distance from the weight on a point, the fulcrum. If power is applied at the long end of the lever, by bearing down, the point beyond the fulcrum comes up with its weight. In the case of the horse, a lever of the first class is seen in the extension of the limbs, as for example when kicking back with the hind foot. In this case the muscle pulls back over the point of the hock, furnishing the power; the ful-

crum is the joint, and the weight is the foot which is being lifted.

The lever of the second class is commonly illustrated by the wheelbarrow. The fulcrum is where the wheel rests on the ground, the barrow is the weight, and the arms of the person lifting the handles provide the power. An example of the lever of the second class in the horse, is to be found in the hind leg, in moving the body forward. Here the power is conveyed through the short leg bone, the tibia; the fulcrum is the point of the foot at the ground, and the weight is at the hock joint.

The lever of the third class is seen in the man fishing with a rod. The fulcrum is the end of the handle next the body, the power is where the hand holds the rod and the weight is in the fish at the end of the line. The lower jaw of the horse illustrates this leverage. The fulcrum is at the point where the lower jaw is attached to the upper, the power is at the center of the jaw bone, and the weight at the front teeth. Referring to the relations between the power and weight in levers, Hayes says:² "The farther the power is from the fulcrum, the greater will be the mechanical advantage at which it will act; and *vice versa*. Thus, if one arm of a see-saw is longer than the other, a comparatively light weight at the end of the former will counterbalance a heavy one at the extremity of the latter. Also, the longer an oar is inboard, as in an outrigger, the greater will be the power which a rower will have. If we apply this principle to the horse, we shall see that the longer is the *os calcis*, the greater will be the mechanical advantage at which the muscles of the gaskin will act in kicking or propelling the body forward." Hayes further calls attention to the fact that the nearer a force is at right angles with its lever, the greater will be the mechanical advantage. Making a concrete application of this he says: "Acting on the principle just enunciated, the cart horse, with the view of obtaining the utmost mechanical ad-

² The Points of the Horse. M. H. Hayes, London, 3d Am. ed., 1904, p. 57.

vantage, when trying to draw a heavy load, will naturally endeavor to move the levers of his limbs (when straightening them out) with the power as nearly as possible at right angles to each respective lever. Hence he will obtain his results by only slight bending of the joints, and consequently his steps will be short. We may see this action of levers of the hind limbs well shown by the manner in which he will crouch down behind when he makes a strong effort with his hind legs, while exerting the forelegs but little, as may occur when the roadway is slippery. The galloper, on the contrary, will require the power of straightening out his limbs to their utmost extent, and will thus obtain speed at a lavish expenditure of muscular effort. This is especially well shown in the action of the fetlock joint; for if the pastern be long and sloping, the mechanical disadvantage will be great, but the gain in speed will be equally large. If the pastern be upright, the fetlock will work advantageously as far as the weight to be moved is concerned, but it will contribute little to the attainment of speed." The locomotion of the horse passes through various degrees of speed from a walk to a gallop. Every healthy horse must possess at least two classes of speed, as for example, a walk and trot. The horse, however, has the power of locomotion in a variety of forms that intimately relate to service and value. The following definitions and discussions relate to the horse in motion, and should be understood by one who expects to qualify as a judge of this animal.

The stride is the distance traversed from where the foot leaves the ground until it again rests upon it. It is the action of the individual leg, and therefore we may also refer to the stride as the distance passed over by the limb from the beginning of flexing when the foot is raised from the ground, to the greatest extension following this movement. In the stride, when the foot hits the ground, noise will result on a hard surface, which is known as the *beat*, a familiar sound in the concussion of horses' hoofs on hard

pavements. Each of the legs has its own stride, and locomotion results when the four limbs engage in their natural movement. *The sequence or order of stride* differs according to the *gait*, which may be defined as the style of going of the horse. Two strides may be taken at the same time, two feet hitting the ground and giving beats at the same moment, as in the case of the front and opposite hind foot in the trot. The familiar rack (single-foot) illustrates the strides occurring separately and rhythmically, one beat at a time. The kind of gait is indicated by the time shown in the beats, expressed in the separate strides taken to complete the movement. Thus the experienced saddle horse critic, hearing the beats of the hoofs of the horse under saddle on a dark night, may recognize the gait without seeing the horse. *The length of stride* differs greatly, being shortest in a walk, yet even then naturally varying according to conditions, such as size of horse, gait, length of leg, degree of speed, etc. Abnormal conditions, such as lameness, or character of shoe, also affect the length of stride. Different weights or forms of shoes may materially change the length of stride. *The elevation of the stride* is also quite variable, and is affected by the gait, weight of the hoof or shoe, the surface travelled over, etc. The height of stride will be affected by the natural growth of hoof, if superfluous weight is not removed within due season. *The trueness of stride* or gait is of great importance and is impossible if the legs and feet are not carried straight and true. Referring to a true, or what may be termed a "square gait," Jordan says,³ "A square gait means nothing more or less than an even and equal extension backward and forward for all the four moving legs of the horse, with two pairs of feet striking the ground at equal intervals of time and distance during a given trial." Interference at the ankle, crookedness of limb, as for example at the hock, will affect the squareness or trueness of gait. *The rapidity of*

³The Gait of the American Trotter and Pacer. Rudolph Jordan, Jr., New York, 1910, p. 2.

stride relates to the time used in passing through the entire movement of the limb. Speed or rapidity of stride is due to various conditions, among which emphasis might be placed on type and weight of horse, inheritance, energy, gait, size and weight of foot, character of shoe, etc. "There is an exact proportion between speed, length of toe and energy," says Jordan,⁴ "which might

well be expressed by saying that the longer the toe the greater the amount of energy necessary to acquire the same speed, and the easier the leverage at the toe, the less will be the energy required to maintain that speed. Rapidity of action or motion, it may be argued, requires as much and more of that energy than the long, sweeping stride."



Fig. 25.—"The walk is a slow, four-beat gait."
(Courtesy American Breeder.)

The gaits of the horse under natural conditions are, the walk, trot, pace and gallop. However, methods of training have produced variations from these that are recognized gaits. A full comprehension of the modified gaits, whereby one may recognize them readily, is not easily obtained, and can only be secured through careful study and observation.

The walk is a slow four-beat gait, in which the limbs move in sequence, one after the other. Usually a front foot is raised first. The walk varies in style and character, and Hayes has sub-divided it into five classes, as follows:⁵ *The*

⁴ *The Gait of the American Trotter and Pacer*, 1910, p. 89.

⁵ *The Points of the Horse*. M. H. Hayes, 3d ed., London, 1904.

short stepping walk, in which the points of the hind feet do not come as far forward as those of the forefeet of their respective sides; *the ordinary walk*, in which they more or less cover them; *the long striding walk*, in which they go clear in front of them; *the high stepping walk*, in which the feet are raised off the ground higher than usual; and *the walk in heavy draft*, in which the step is short as in heavy pulling, a fore and hind limb working better together as diagonals. The walk is not only a restful gait, but in general draft operation is the one of first importance. Therefore it should be active and strong, accomplishing a maximum of progress for this class of speed.

The trot is a fast, two-beat gait, in which the diagonally opposite limbs move together. The trotter is often referred to as a diagonally gaited horse. The trot may be divided into several sub-classes, dependent on the length and rapidity of strides. Hayes gives three kinds of trot: slow, ordi-



Fig. 26.—“The trot is a fast, two-beat gait, in which the diagonally opposite limbs move together.” (Courtesy Mr. S. L. Howe, British Columbia.)

nary and fast, according to the stride and speed. Gay also gives three kinds,⁶ the fast stepping, high stepping and saddle trot. These he defines as follows: "The fast stepping trot, characterized by the length of stride and rapidity with which the individual strides are taken and constituting the gait of the harness race horse; the high stepping trot, characterized by the height and elasticity of the stride, the horse placing himself, going collectedly and marking each step with extreme flexion, as represented in the harness show horse; and the saddle trot, characterized by a square, springy, collected and balanced stride, executed in perfect rhythm, and with the utmost precision in order to secure the comfort and security of the rider. The saddle trot is distinct from the long, swinging stride of the trotter, also the high, sometimes pounding, step of the actor, and should reveal none of the roll or side motion of the lateral gait into which saddle horses degenerate." This gait is less tiresome to the horse than are others involving speed beyond the walk, for the reason that the body is best kept in equilibrium in diagonal movement of the limbs. Of the rapid gaits, the trot is the most universal and useful.

The pace, also known as the amble, is a fast, two-beat gait, in which the legs on the same side move together in unison. The pacer is also often termed the "side wheeler." This gait, which may be either natural or acquired, shows wide variation in style of locomotion. Some horses pace so wide as to make their gait very conspicuous and unattractive, while others possess a comparatively smooth and level movement. The late Prof. John A. Craig, a great lover of the light harness horse, has referred to this gait in these interesting words:⁷ "Horses pace in many ways, some lurching, others shuffling and many more wobbling in an unsightly manner; but, however they may go, they are nearly all characterized by possessing speed. A level

⁶ The Principles and Practice of Live Stock Judging. Carl W. Gay, 1914, p. 99.

⁷ Judging Live Stock, 6th ed., 1904, p. 20.



Fig. 27.—“The pace is a fast, two-beat gait, in which the legs on the same side move together in unison.”

and true pacer displays a slightly gait. In pacing level and true the body remains steadier than in any other movement. The legs move in harmony with the directness of a machine. The nervy, machine-like pace peculiar to many of the fast pacing animals is a study in the degree to which the minimum of effort results in the maximum of speed. . . . As a rule, the pace from the standpoint of the spectator is an unsightly gait, but one that is usually thoroughly enjoyable from the point of view of the driver.” The pace and trot are interchangeable gaits, and we find light harness horses of note, that have racing records with each gait. Goubaux and Barriere state⁸ that certain colts, at first amblers (pacers) will at a later period learn to trot, and reversely, some horses primarily good trotters, amble towards the decline of life, through fatigue and usage. The camel, dromedary, and giraffe are natural amblers. Steepness of croup, and a bent condition of the hocks, has often seemed associated with the pacing gait, for in fact many of our

⁸ The Exterior of the Horse, 2d ed., Phil., 1904, p. 506.

most noted pacers have possessed this conformation. Great speed attends this gait, it being regarded as about one second faster on the race course than that of the trot.

The gallop is a fast, leaping three-beat gait. In this case, the combined beat of diagonal feet occurs between two successive beats of the other two feet. For a brief period between strides the body is in the air, the feet all being free from the ground. In this gait there is considerable

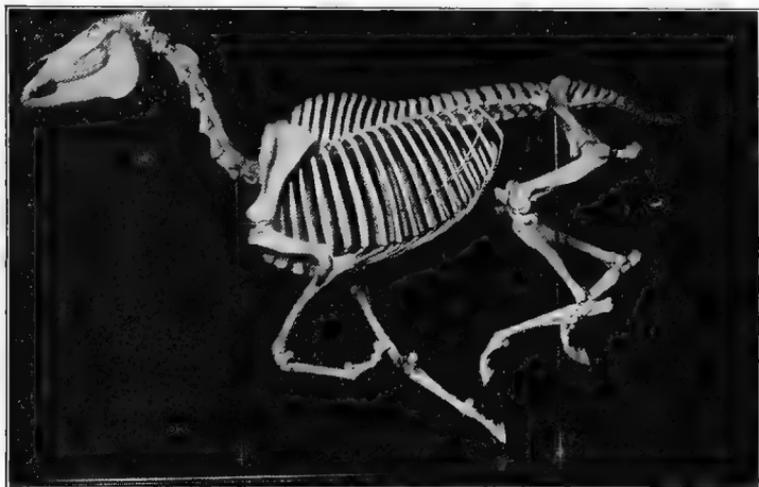


Fig. 28.—“The gallop is a fast, leaping, three-beat gait.” Skeleton of famous Thoroughbred Sysonby at full speed. Prepared and mounted by Mr. S. H. Chubb. (Courtesy American Museum of Natural History.)

wear on the fore foot which naturally leads, and the diagonal hind, which follows, consequently it is desirable to change the lead of the members so as to afford them relief. The gallop ranges from slow to fast, and in the latter case may develop into a four-beat movement. This is the natural gait of the horse when free from the restraints of man, and it is also the gait of the Thoroughbred, or running horse, the holder of the fastest records made by the horse.

The canter is a form of gallop, slow, deliberate, graceful

and easy, in which the weight is largely borne by the hind-quarters, with the front limbs carried somewhat high. "There is a vast difference, however," says G. G. Burton, in an address to Kansas horse breeders,⁹ "between the canter of a gaited saddler and the gallop of an unrestrained horse, or the lope of a broncho. Any horse will lope or gallop when pushed beyond his trotting or pacing speed, but the gaited saddler goes from a walk, or even from a standstill, into a graceful, enjoyable, hammock-like motion which we call a canter. The term is inadequate to the luxurious movement, but we must consider the thing and not the name. His legs are never so well under him as when in the canter and his neck is never so beautifully arched."

The rack is a four-beat gait, each foot striking the ground separately. This gait has been in times past popularly known in America as the "single-foot" gait, a term not now in favor and going out of use. This is not a natural gait, being an evolution from the pace or amble, for it is the result of special education, and is notably a feature of the five-gaited saddle horse. It is a hard gait but it is fascinating to the expert. Again quoting Mr. Burton, "he must go at a tension and rack against the bit, and he must get action from his hocks and shoulders as well as from his knees. If he goes in form, he will carry a high head and a high tail, arch his neck and hold a vertical face. He must be pulled together and remain collected from start to finish. If he goes in a pure, clear, bold rack, his feet make a four-beat music the rhythm of which cannot be mistaken for that of any other gait."

The running walk is, as the name implies, a gait which represents the horse just passing from a walk into a faster gait, closely resembling the rack. It is a slow, four-beat gait, that is faster and easier than a flat-footed walk. It is an easy locomotion, and when the horse is in full sympathy with his work, he keeps time with his step by nodding

⁹ Farmers' Review, Aug. 29, 1900.

his head and perhaps flopping his ears. This is a business gait, in which six or seven miles an hour is easily covered. The horse will journey from sixty to seventy-five miles a day at the running walk without severe fatigue to himself or his rider.

The fox trot is a slow, short trot, similar to the running walk, but characterized by the hind legs assuming a pacing movement. It is said to be a "loose-jointed" motion not found in other gaits. Some horses adjust themselves to this gait more easily than to the running walk, which it resembles in being an easy, all day business gait.

The jump, while a process of locomotion, is not a gait. This movement consists in the raising of the fore feet, and bringing the hind feet well under the body towards the center of gravity. This is followed by a powerful



Fig. 29.—"As the horse comes down, the front feet hit the ground first."
(Courtesy Rider and Driver.)

straightening out of the hind legs, in which the horse propels himself over the obstacle he seeks to hurdle. In this process the knees must be well bent, and the hind legs carried up close to the body in passing over the obstacle that the toes may not strike. As the horse comes down, the front feet hit the ground first, after which he rises to move on, the hind feet striking slightly in advance of the points of contact of the front feet. The jumper is a popular horse in Europe, especially in the military service, and among the gentry who indulge in steeple chasing, fox hunting, etc.

CHAPTER VI.

THE TYPES AND CLASSES OF HORSES.

SINCE the day of the primeval horse, this animal during the centuries has passed through a remarkable evolution. The influence of climate, soil and other features of environment, and the breeding operations of man, has resulted in the development of horses strikingly different in type, character and purpose. At the present time it is assumed that all horses may be classified into four distinct types or groups. Within each of these types will be found subtypes which combine the essential features of the type as a whole, yet differing in certain details of size, conformation and character. The four types in question, which will be considered in detail, are the following: (a) The draft or power type; (b) The light harness or speed type; (c) The heavy harness type; (d) The saddle type.

JUDGING THE DRAFT OR POWER TYPE OF HORSE BY SCALE OF POINTS.

The draft or power type of horse is more especially needed on the farm and in trade, and in spite of the development of the motor vehicle, this type of horse bids fair to increase in importance. For this reason it is assigned first consideration as a subject of study. Genuine draft horses of merit are quite likely in future to gain in favor on the farm and to be in active demand at remunerative prices. The motor will no doubt grow in importance, but on most farms and in short haul drayage work in the city, the draft horse will continue to be the main reliance.

The following score card gives a standard scale of points for a draft horse, and its character and application will be considered in detail:

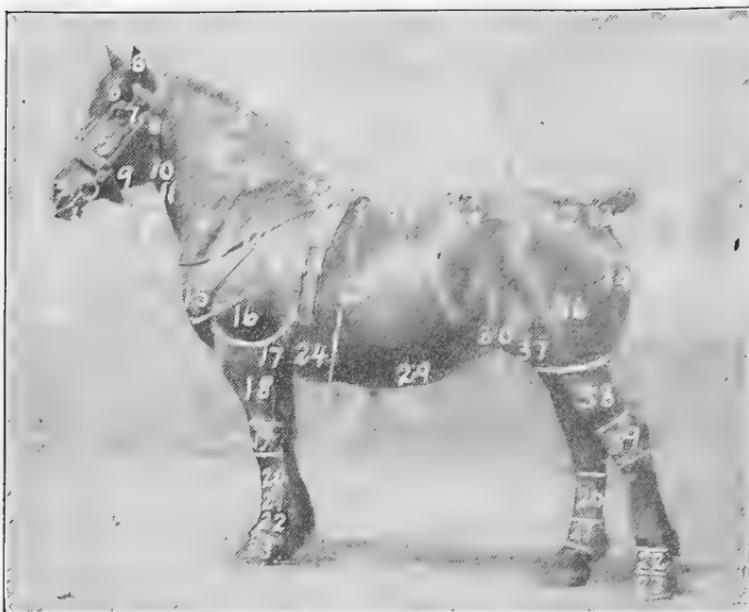


Fig. 30.—*The Points of the Draft Horse*: 1, chin; 2, nostril; 4, nose; 5, face; 6, forehead; 7, eye; 8, ear; 9, lower jaw; 10, throat-latch; 11, windpipe; 12, crest; 13, withers; 14, shoulder; 15, joint shoulder; 16, arm; 17, elbow; 18, forearm; 19, knee; 20, cannon; 21, fetlock joint; 22, pastern; 23, hoof; 24, foreflank; 25, heart girth; 26, back; 27, loin; 28, coupling; 29, belly; 30, hindflank; 31, hip; 32, croup; 33, tail; 34, buttocks; 35, quarters; 38, gaskin; 39, hock.

SCORE CARD FOR DRAFT HORSES.

SCALE OF POINTS		Standard of	Score of
		Perfect	Horse
		Score	Studied
Age —Indicate the age after examining the teeth	. . . . .	
A—GENERAL APPEARANCE, 18 Points:			
1. Height —Estimated hands	Actual hands . . . . .	. . . . .
2. Weight —2,000 lbs. a standard. Estimated weight	Actual weight	4	
3. Form , broad, deep, massive, low set, well proportioned		4	
4. Substance , abundance of bone, broad joints, right proportions		3	
5. Quality , bone clean and hard, tendons and joints well defined, skin and hair fine, features of head clearly defined		4	
6. Temperament , energetic; disposition good		8	

SCALE OF POINTS

Standard of	Score of
Perfect	Horse
Score	Studied

B—HEAD AND NECK, 7 Points:

7. Head, lean, in proportion to size, lower jaw wide-angled	1	....
8. Muzzle, fine; lips thin, even and trim; nostrils large	1	....
9. Eyes, prominent, large, bright, clear	1	....
10. Forehead, broad, full	1	....
11. Ears, medium size, pointed, set close	1	....
12. Neck, medium long, muscular, not thick, arched, throat-latch clean; windpipe large	2	....

C—FOREHAND, 25 Points:

13. Shoulders, sloping, smooth, extending well into back	2	....
14. Arms, short, muscular, extending forward, elbow in	1	....
15. Forearms, strongly muscled, wide, long	2	....
16. Knees, broad, deep, straight, strongly supported . .	2	....
17. Cannons, short, wide, lean, tendons large, defined, set well back	2	....
18. Fetlocks, wide, straight, strong, well supported . .	1	....
19. Pasterns oblique, about 45°, of moderate length, strongly carried	3	....
20. Feet, large, round, uniform, straight; bars strong; sole concave, frog large and elastic; slope of wall parallel to pastern; heel wide, one-third length of toe; horn dense, smooth	8	....
21. Leg position, viewed from in front, a perpendicular line dropped from the point of the shoulder should divide the leg and foot into two lateral halves; a perpendicular line dropped from the bony prominence on the shoulder blade should pass through the center of the elbow joint and meet the ground at the center of the foot	4	....

D—BODY, 10 Points:

22. Withers, well defined and muscular	1	....
23. Chest, deep, wide, low, large girth	2	....
24. Back, short, broad, strongly supported	2	....
25. Loin, short, wide, strongly coupled	2	....
26. Ribs, long, well sprung, close	2	....
27. Flanks, low and full, showing low underline	1	....

E—HINDQUARTERS, 30 Points:

28. Hips, wide, smooth, muscular	2	....
29. Croup, long, wide, not markedly drooping, muscular	4	....
30. Tail, attached high, well carried	1	....
31. Thighs, muscular and deep, thick in the quarters; stifles prominent, well set	2	....
32. Gaskins, wide, muscular	2	....
33. Hocks, straight, wide, deep, clean cut, point prominent, well supported	6	....
34. Cannons, short, wide, flat, tendons large, set well back	2	....
35. Fetlocks, wide, straight, strong	1	....

SCALE OF POINTS		Standard of Perfect Score	Score of Horse Studied
36. Pasterns, oblique, medium length, smooth, strongly carried		2	....
37. Feet, large, round, uniform, straight; bars strong; sole concave; frog large and elastic; slope of wall parallel to pastern; heel wide and one-third length toe; horn dense, smooth		4	....
38. Leg position, viewed from the rear, a perpendicular line dropped from the point of the buttock should divide the leg and foot into lateral halves; viewed from the side, this same line should touch the point of the hock and meet the foot surface a slight distance back of the heel. A perpendicular line dropped from the hip joint should meet the foot surface midway between heel and toe		4	....
F—ACTION, 10 Points:			
39. Walk, straight, strong, elastic		6	....
40. Trot, strong, regular, free, easy		4	....
Total		100	....



Fig. 31.—“The attendant will pose the horse at rest.”
(Courtesy American Agriculturist.)

The general appearance of the horse may best be measured up by inspecting him as he stands at rest, on a slight incline, with the front feet a trifle higher than the rear ones, or when he is in motion, either at walk or trot. Therefore the judge should stand a convenient distance away, and survey the animal as a whole from front, rear and side. The attendant will pose the horse at rest, or move him at walk or trot as desired. The judge should see that the horse is kept in a proper position, supporting himself equally well on each leg when at rest, otherwise some incorrect observations are likely to be made. In this examination for general appearance, the height, weight, form, substance and quality are to be considered simply as relating to the animal as a whole.

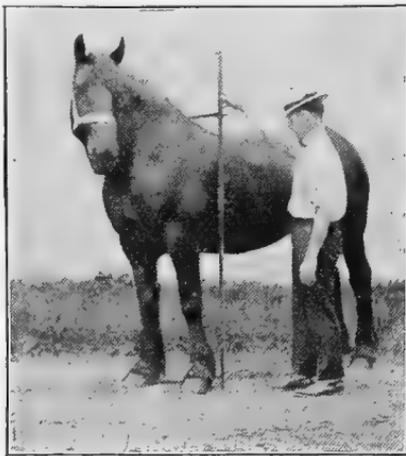


Fig. 32.—“The stick is placed in a vertical position just back of the front feet.”

The height of the draft horse.—The height of the horse is expressed in hands, four inches representing a hand, the width across the widest part of the palm. Special sticks with sliding projecting arms, and canes marked off in inches are often used for measuring the height. The hand itself is divided into four equal parts, and the height is usually given in hands and inches, as for example $17\frac{1}{2}$ or 17.5, the $\frac{1}{2}$ representing a half a hand, or two inches. To measure the height, the stick is placed in a vertical position just back of the front feet, so that the projecting right arm of the measuring stick will just touch the top of the withers. An experienced horseman, knowing the

height of his chin, stands against the shoulder, and estimates the difference in inches between the elevation of the withers and his chin, and so secures the desired information. The height of the draft horse may be said to range from 16 to 18 hands. The most desirable height will be within 16 or 17 hands. This height should be the result of depth of body, rather than length of leg. The height at the withers should be at least equal to that at the croup, though some authorities contend that from a draft point of view the latter should not be so high as the former.

The weight of the draft horse ranges upward from 1,600 pounds, with 2,000 the weight desirable with the ideal animal of this type in good condition. Yet a horse that weighs 1,700 or 1,800 pounds is of large size, and may represent a very beautiful draft horse. Draft horses are also divided into sub-classes, dependent on weight, a *light draft* weighing 1,600 to 1,700 pounds, *medium draft* 1,700 to 1,850, and *heavy draft* from 1,850 pounds up. The condition of the horse largely affects the weight, and by feeding one may easily increase the weight two or three hundred pounds. Consequently, we may consider that weight is usually related to height, the lighter weighing horses showing lower scale of elevation. One would hardly expect to find a ton horse standing as low as 16 hands. We should rather look for such a horse to carry his great weight at an elevation consistent with good form. Weight is a most important feature of the draft type. When a heavy draft horse moves his center of gravity forward, beyond his base of support or footing, he brings his great weight up against the collar with such power that the load is moved forward. In hauling a heavy load, he would be unable to keep his foothold and move forward, were it not for his body weight which gives him the necessary purchase to overcome the weight of his load. On a smooth roadway the horse of heaviest weight furnishes the maximum of power, for here conditions favor the least friction and effort. On a rough, uneven surface, a lighter, more active horse may accom-

plish the work with comparatively less effort than a heavy one, for the animal must raise his body at each step, resulting in much more labor than would be the case on a smooth surface. This logically explains why heavy draft horses are not so well suited to rough, hilly farming countries, as to those of more level character. In judging a horse of draft type, it is important that he should possess the necessary weight, and if not he should be scored accordingly. Other things being equal, the heavy draft horse brings a price on the market rather comparable with his weight. Craig has given an interesting example of this,¹ in which he shows that in 1893, from figures of sales of a Chicago firm, there is a constant increase in prices from the lighter to the heavier weights. In increasing from 1,400 to 1,800 pounds, the price increased about \$100, an average gain in value of 25 cents per pound. If the motor is to be used extensively on the farm, and land plowed and cultivated by its use, its greatest service will be on the more level, easily tilled areas. This will result in the draft horse being most in demand on small farms and in locations where the land is uneven or hilly, and not suited to motor cultivation. In such case it is quite probable that a lighter weight draft horse, weighing 1,500 to 1,600 pounds, active, and well suited to rolling or rough land, will be most in demand.

The form of the draft horse should be inspected from various points of view, both at rest and in motion. From the front or rear the body should appear broad or thick; viewed from one side it should show great depth. The depth of body through the chest, and the length of the leg, should be much the same, these proportions giving the animal what is termed a *low set* appearance, bringing his weight comparatively close to the ground, thereby enabling him to use it to the best advantage. A squareness of body-form from all points, with massive size, indicates the necessary weight through which power is secured. From a

¹Judging Live Stock. John A. Craig, 6th ed., 1904, p. 34.

distance the form should appear in good proportions, no one part being over or under developed. As the draft horse is bred for power, he should possess a marked development of short rather than long muscle, especially in the neck, over the back, loins and croup, and on the legs above knee and hock. If his frame is large enough, is well balanced, and strongly muscled, he will furnish the requirements necessary for a true draft horse. The term "blocky," as often applied to the draft horse, means that his form is compact, that is broad, deep and short, rather than too long, showing a comparatively square and heavy form from which great power might be expected.

Substance in the horse refers to the amount and character of the material of which the animal form is composed. This especially applies in this case to size or scale. If we compare two horses of the same type and general character in which one exhibits a more desirable weight and heaviness of outline than the other, with larger joints and bones in the legs, we say this stronger bodied animal shows the more substance of the two. It is quite common to refer to the substance as shown in the size of bone. A horse with too small a bone, as shown in the cannon, would be lacking in substance. Therefore it is highly important to possess substance without attaining any excess of development or coarseness. If it could be measured in units of the same class, that substance would be most desirable which indicated the greatest degree of strength. Substance should always be associated with quality, for substance without quality would indicate weakness rather than strength whether applied to muscle or bone. Therefore, in judging the draft horse we emphasize substance as of great importance.

Quality in the horse is manifested especially in the bone, tendons, skin and hair, as well as in the general conformation. Quality relates to the cellular structure of the bone, flesh and hair, as well as to the finish or perfection of the animal in part or whole. Quality is intended to

indicate a degree of superiority, though of course we have animals of poor as well as good quality. Quality is usually an evidence of superior breeding, animals of inferior quality as a rule inheriting the same from inferior ancestry. With the horse, the bone is regarded as of great importance. The composition and cellular structure of the bone varies much. What is desirable is a hard, dense bone with a strong, compact cellular structure, rather than a coarse, porous and weak one. Unduly large joints and bone show lack of quality and strength. The cannon bone is commonly used as a measure of quality of bone and this should be flat, deep and smooth. Horses with such bone and clean, well-defined joints manifest superior quality and are capable of



Fig. 33.—“The long hair or feather down the back of the cannon is highly valued as an evidence of quality.”

far more work than where these features are lacking. The tendons which lie back of the cannon bone, if clearly defined, indicate quality and strength of limb. The character of skin and hair is also an important indicator of quality. Minute glands in the skin give off oil which keeps the skin soft and elastic and furnishes the gloss to the hair. In case of sickness these glands may not work and then the skin is dry and harsh and the hair is lacking in lustre. On the draft horse the skin is thicker than on a race horse, but even then it is not nearly so thick as on beef cattle. It should be mellow and elastic to the touch and should be covered thickly with fine, lustrous hair. The horse that possesses such a coat of hair is sure to possess all the essentials of quality. The foretop, mane and tail should be well supplied with hair of both length and quality. On hairy legged horses, notably the Clydesdale and Shire, the long hair or "feather" down the back of the cannon is highly valued as an evidence of quality, and especially in its relationship to the bone. A feather long and fine in quality is much admired. Quality is also manifested in the clearly defined appearance of the head in particular. When the head shows a cleanly chiseled form, prominent, expressive eyes, neat and well set ears, thin lips and good sized nostrils, quality is very apparent. Quality plays a most important part in the market place and show ring. For this reason experienced horsemen give special attention to the skin and coat of hair, feeding and grooming to secure the best effect. The draft horse with quality will always command a much higher price than one otherwise equally good. No horse of inferior quality should be given high rating by a judge.

The temperament of the draft horse, as usually applied to domestic animals, refers to the relationship of the nerves to the body and functional activity, and is discussed elsewhere, on page 45. The temperament should be suited to the draft type, with a reasonable degree of activity and animation. Dullness, slowness and indifference are quite

undesirable temperamental features. The disposition should be good. Draft horses, as a rule, are of gentle disposition and not so prone to develop vicious habits as the light harness horse.

The head of the draft horse is large, and in length is in proportion to the length of body as 1:2½. Comparatively speaking, the draft horse head is larger than that on the smaller class animal. The head should be lean with little superfluous flesh, and in proper proportion to the size of the body. A fleshy head indicates a soft body. However, there is not the bony prominence of head one sees on the racing horse. Well developed muscles about the jaws, however, are regarded as a sign of strong constitution. The lower jaw should be well angled, allowing ample room for the larynx which lies between the separated bones of the jaw. The front of the head or face varies considerably in outline. Some horses have a straight profile, others a concave or dished face, and still others a convex or Roman face. Generally speaking the straight face is preferable, the nasal passages thus being unobstructed, and the contour generally most pleasing, though the Roman face is rather common among draft horses, the Suffolk being noted for this feature.

The muzzle of the draft horse should show a good quality in thin rather than heavy lips, which should come together evenly without one lip materially extending over the other. The muzzle should be wide, square at the corners, and deep enough to permit of easy feeding. A narrow, small, pinched mouth is characteristic of a poor feeder. The nostrils should be large, yet not dilated, unless following marked exertion. The nostril is naturally somewhat oval and apparently partially closed by a fold of skin on its upper side. A large orifice naturally presupposes connection with well developed nasal tubes and strong breathing capacity.

The eyes of the horse should be oval rather than round, prominent, reasonably large, set wide apart and have thin,

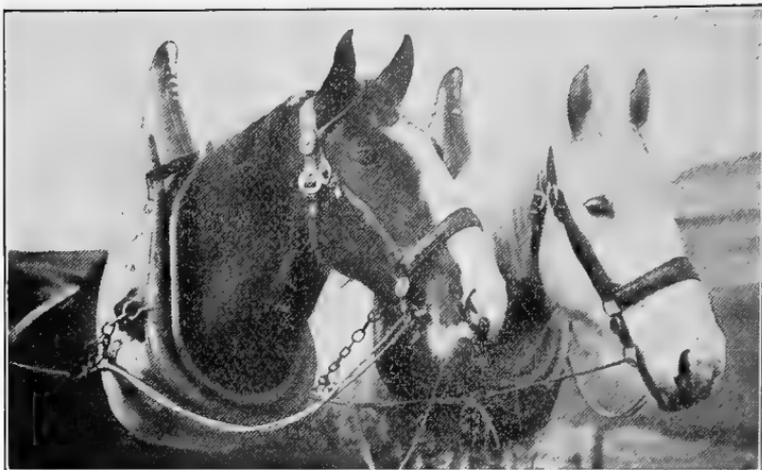


Fig. 34.—“The eye is generally regarded as an indicator of disposition.”

smooth eyelids. In general the eye is located at a point about one-third of the way between poll and muzzle. A small eye is thought to indicate a sulky or mean disposition, and lack of courage. A large, mild eye, not set obliquely, indicates a good temper. In fact the eye is generally regarded as an indicator of disposition as well as evidence of capacity to see. The color of the eye is due to the pigment in the iris, the portion which immediately surrounds the pupil. When the iris is colorless the eye appears to be white with the peculiar “wall eye” or “watch eye” as a result. The ordinary white of the eye is an outer coat, which is covered more or less by the eyelids. When this white is too conspicuous a bad disposition is indicated, in the opinion of many horsemen. The white shows most when the horse gives a rearward glance, and kickers especially exhibit most white when just about to kick.

The forehead of the horse, if broad and very slightly arched, indicates an intelligent and generous disposition. As has already been shown (page 30), the brain of the

horse is comparatively small, yet the shape and size of the forehead is universally regarded as an important indicator of intelligence and disposition. Hayes states² that "Col. John Anderson, late Inspecting Veterinary Surgeon, Bombay Army (than whom no better judge of a horse exists), remarked to me many years ago, that a prominent forehead, or rise between the eyes, is an indicator of a bad, or at least of a wayward temper in a horse, which is a theory I have seen verified in many instances." In further discussing the forehead, Hayes emphasizes a good width of forehead between the eyes because it "indicates, as a rule, free breathing power and strong muscles of mastication; for the bones of that part (*frontal bones*) form a portion of the roof of the chambers through which air passes on its way to the lungs, and gives attachment to a powerful muscle which aids in closing the jaws, and which is fixed in the large depression that is just above the eyes." If a tendency to fullness or prominence of forehead exists, it should be high up, and just below the forehead band of the bridle. Narrowness implies lack of intelligence, while a dished condition between the eyes suggests a similar mental quality.

The ears of the horse should be placed reasonably high up yet with the attachments a trifle below the poll. The ears should be pointed, of medium size, with much less distance between their roots than between the outer edges of the eye sockets. The ear is an important evidence of quality. It should have a neat attachment to the head, be thin of texture, and have a covering of fine hair on the general surface, with long, silky hairs on the edge of the outer orifice. There seems to be considerable difference of opinion among prominent authorities on what is desirable in size, form and position of the ear. Goubaux and Barriere state,³ that horses having short ears are usually energetic and courageous, and that "small ears diminish the apparent size of the head, render the physiognomy

² The Points of the Horse. M. II. Hayes, London, 3d ed., 1904, p. 194.

³ The Exterior of the Horse, 2d ed., 1904.



Fig. 35.—“The ear is an important evidence of quality.”

more pleasant and expressive, and brighten the eye.” Hayes quotes⁴ Carson, who states that “there can be no greater ornament than long, fine, active looking, upright, tolerably close-set ears, with the points a little inclined toward each other. I never saw a soft constitutioned horse with ears of this description.” Fearnley, writing of the ears, says,⁵ “they ought not to be too large, indeed they can hardly be too small.” The carriage of the ears indicates

ability of hearing and something of the disposition. Horses more or less deaf tend to keep the ears pointing forward or to one side, as though listening for sounds. Considerable play of the ears, or change of position, indicates an active disposition and interest in what is taking place about him. Ears rather constantly inclined to the rear are generally regarded as indicating a mean disposition. Lop ears denote a stolid or sluggish temperament, and not infrequently are a feature of old age.

The neck of the draft horse should be of moderate length, muscular, yet not too thick, slightly arched, and neatly attached to the head and shoulders. A moderate length, with a tendency to shortness, is desirable in the draft horse, for the muscles of the neck are called into use

⁴ *The Points of the Horse*, 3d ed., 1904, p. 210.

⁵ *Lessons in Horse Judging*. William Fearnley, London, 1879, p. 49.

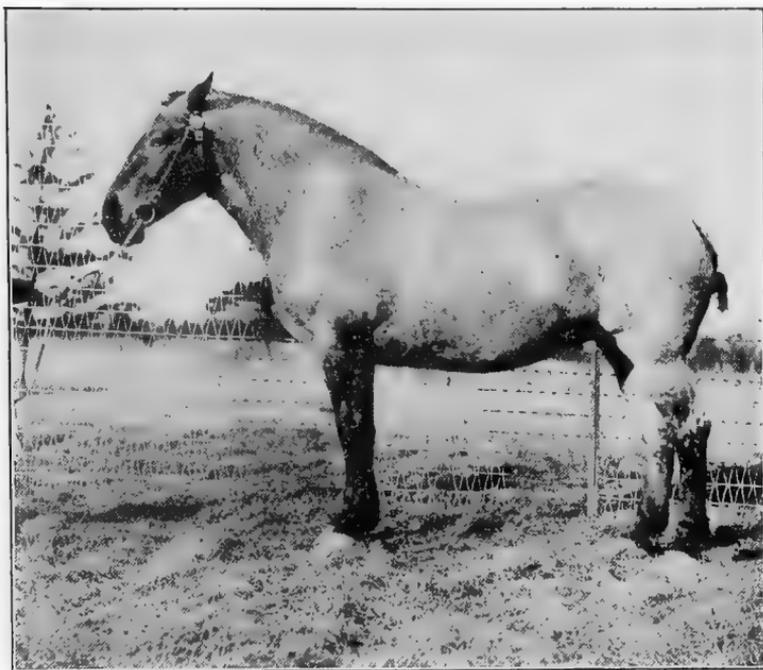


Fig. 36.—“The neck of the draft horse should be of moderate length, muscular, yet not too thick, slightly arched and neatly attached to head and shoulders.” (Courtesy Illinois University.)

in the hauling of loads, and therefore should be thicker and shorter than in the light harness or pleasure horse. Extreme length is a weak muscular conformation, while too short a neck does not allow sufficient freedom in use, nor ease in grazing. Thinness of neck is not consistent with strong muscling, yet a very thick neck suggests fat rather than muscle. A slight crest or arch of neck adds to the symmetry of outline, but when heavy indicates a development of undesirable fat. A ewe neck or slight downward curve from a straight top line, is not popular, and suggests a lack of muscular form. “The region of the neck,” ac-

ording to Goubaux and Barriere⁶ "should be examined as to its form, direction or carriage, volume, length, mode of attachment to the head, and its movements." The heavy, muscular neck of the draft horse is important as an aid in shifting the center of gravity forward and bringing as much power into the collar as possible. The throat-latch, that portion at the angle where the lower jaw and neck join, should be neat and trim, showing no unnatural fullness about the windpipe, suggestive of difficulty in respiration. One should have no difficulty in feeling the windpipe, which should be large and clearly defined. The neck should fit into the shoulders with some curve on each side and without any depression on top where joining the withers, thus providing a snug and smooth resting place for the collar. The carriage of the neck should be graceful and comparatively high, expressive of constitutional vigor and spirit, and accompanied by a free movement of the forelimbs. A mane of good length is desirable since in summer it provides important protection from flies.

The shoulders of the draft horse should slope fairly well into the back, though not to so great a degree as in the race horse. As a general principle, the more oblique the shoulder, the easier it is for a horse to raise and move forward his legs. In view of the fact, however, that the draft horse is to walk rather than trot, a moderate degree of obliqueness will afford sufficient ease of locomotion. Measurements of Goubaux and Barriere have shown⁷ an angle of 65 to 70 degrees to be most desirable for draft purposes. The stride accompanying the straight shoulder, however, it must be remembered, is harder and brings more concussion than in the case of the oblique shoulder. The heavy draft horse with straight shoulders used on city pavements has an inclination to foot trouble and especially side bones. The shoulders should be wide, with ample space for strong, muscular attachment, and the blade should be smoothly

⁶ *The Exterior of the Horse*, 2d ed., Philadelphia, 1904, p. 99.

⁷ *Ibid.*, p. 210.

covered. The top of the shoulder should be carried close into the back, thereby securing the strongest muscular connection. The position of the shoulder as relates to the use of the collar is especially important with the draft horse. It must not only have desirable slant, but also a sufficient ledge or front edge



Fig. 37.—“The more oblique the shoulder the easier it is for the horse to raise and move forward his legs.”

along the base of the neck, to furnish a smooth and well inclined surface on which the collar may rest. Any roughness of shoulder and lack of muscle covering will furnish conditions favorable to sore shoulders when the collar is worn.

The arm of the draft horse is the comparatively short, wide, muscular portion of the forehand through which lies in a backward, slanting position the short, strong humerus bone. This part of the forelimb should be a strong support for the shoulder, extending well back and close in to the body at its rear part. This places the leg sufficiently under the body to give desirable position and action. If the rear end of the arm lies out from the body the leg and foot will turn inward to some extent, while if placed too close to the body the leg and foot turn somewhat outward. Therefore the arm should be so placed as not to affect the true placing of the lower part of the leg.

The forearm of the horse is that portion of the leg between the arm and knee, the muscles being laid over the radius and ulna, the latter extending high behind, the top

being the point of the elbow. It is important that the forearm be long and strongly muscled. This portion of the front leg varies, however, less in length than in width and muscle covering. On the upper part the muscles should be comparatively thick and wide, suggestive of power. The forearm from a side view gradually narrows, the lower portion taking on a flat, hard, muscular appearance. Viewed from in front, the upper third of the forearm should appear thick and somewhat rounded out, tapering considerably just above the knee. Any narrowness and lack of muscling in the upper forearm is evidence of weak formation. The direction of the forearm should be straight, to assure trueness of stride, as suggested in the preceding paragraph.

The knee of the horse should be broad from a front

view and deep or wide as viewed from one side, and should show a straight direction. As viewed from in front the knee is very slightly drawn in in its lower half. From a side view the front of the knee is nearly flat when most perfectly developed, but as a whole narrows more or less in its lower part, often considerably so. The more the knee tapers in below, the less support will it have at this point, and the weaker will be the conformation. The tendon at the back part of the knee should contribute to give depth and strength. What is known as "*calf knee*" is a position in which the knee from



Fig. 38.—"Knee-sprung or over at the knees."

a side view inclines slightly inward, with the cannon below rather inclining forward, in which case the weight is supported by the back of the foot. Often one sees horses in which the knees incline forward, with the leg below inclining backward, giving a position known as "*knee-sprung*" or over at the knees, with the weight carried more toward the toe. The calf knee is due to a weakness of the tendons and ligaments of the knee, while the knee-sprung condition is usually due to a contraction of the back tendons associated with work and age. A knee-sprung horse tires and stumbles easily, therefore any narrow or tied-in appearance of the knee is indicative of weakness and inferior movement. Knees are sometimes swelled or enlarged but are not often fleshy. The judge should be exacting as to the clean, well-defined, healthy condition of knee.

The cannon of the horse should be short, wide, flat and lean, the tendons showing well behind. Emphasis is usually placed on a short cannon, for here shortness of leg is secured, and this is desirable, bringing the weight of the horse as close to the ground as is consistent with maximum power. The cannon should be wide so as to give a strong support to the knee above. If it is not wide but shows a narrow or tied-in appearance we have positive evidence of weakness. A long cannon, much tied-in, indicates an extremely weak, poor leg. Hayes states⁸ that "a thoroughly sound rule, which is borne out in practice as well as by theory, is to judge the wear-resisting power of a foreleg by the direction which the back tendons make with the cannon bone, and not by its measurement below the knee, which is worthless, unless the measurement round the fetlock is taken into consideration. It is important to note the difference between a leg which is light below the knee, and one which is tied-in below the knee. The latter is always objectionable; the former only when the body is too heavy for the forelegs." Referring to this tied-in condition,

⁸ *Points of the Horse*, 3d ed., 1904, p. 236.

Youatt says⁹ "every horseman recognizes it as a most serious defect. It is scarcely compatible with speed, and most assuredly not with continuance. Such a horse cannot be ridden far and fast without serious sprain of the back sinews. The reason is plain. The pressure of the ring (a



Fig. 39.—"The cannon should be flat and smooth."

ligament ring by which the tendons are held in place) will produce a degree of friction inconsistent with the free action of the tendons; more force must therefore be exerted in every act of progression; and although the muscles are powerful, and sufficiently so for every ordinary purpose, the repetition of this extra exertion will tire and strain them. . . . A more serious evil however, remains to be stated. When the back sinews, or tendons, are thus tied down, they are placed in an oblique direction, in which the power of the muscles is exerted with greater disadvantage." The cannon should be flat and smooth, for any roughness of bone also indicates a defective condition. Hardness of bone is especially sought here, for not only are the metacarpal bones of the cannon extremely hard and strong, but the hardness, smoothness and size of the cannon serves as an index of the general quality and condition of the entire skeleton. The tendons which lie back of the bone should be clearly defined and be strongly cord-like and should lie quite parallel with the bone in front. The two back tendons may be seen and felt without difficulty for they are hard and cord-like in character, and should appear more

⁹The Horse, 1843, New York edition, n.d., p. 269.

or less separated. However, they are less conspicuous on the draft horse than on the more refined racer. The so-called flatness of the cannon is due to these back tendons rather than to the presence of a flat bone. In fact the bone proper of the cannon is not flat at all, the main shaft being semi-cylindrical with a broad, round edge in front. Roughness of the cannon, especially on the inner side, is often to be noted, due to small bony ridges or points known as "splints." While a smooth bone is desirable, a small, hard elevation or two below the skin on the lower part of the cannon is not usually important, these being in fact remains of splint bones inherited from the prehistoric horse rather than evidences of diseased bone.

The fetlock of the horse is the joint connected with the lower end of the cannon. It is also often termed the pastern joint. The fetlock should be wide, thick, fine and well directed. Width is to be noted from a side view, and a wide fetlock gives evidence of a strong tendon and ligament attachment on the back side of this joint. Thickness is important to allow for plenty of space for tendon and ligament to pass over the joint. A thin skin over the fetlock shows quality and indicates a good condition of the joint. Any thick or puffy appearance is undesirable. Scratches and sores often occur on the fetlock, more especially when the skin is thick or fleshy. The fetlock of the draft horse, however, is covered with thicker skin and longer, heavier hair than that of the light horse. The hair in this case is an important index of quality of bone. The direction of the fetlock should be straight, with no twist or turn to either side, if it is to be associated with correct position.

The pastern of the horse, the connecting link between fetlock and foot, in the draft horse should be of moderate length, and strongly carried at an angle of about 45 degrees. The slope of the pastern is of special significance, for it relieves concussion in the course of action, and best distributes the force of the blow. When the foot hits the ground, as a rule the frog or center of the hoof and the back part is struck first, after which the front part of the

foot laps over to complete the contact. The long, springy pastern permits a greater extension of limb, and a placing of the foot with less concussion. The shorter and more upright pastern, gives a harder and more stilted gait and a greater tendency when in action, to contact the toe before the frog or heel. There is some difference of opinion among horsemen as to the length of pastern desirable in the draft horse. Generally speaking, one of medium length is re-



Fig. 40.—“The long, springy pastern permits a greater extension of limb.”

garded as most desirable for all conditions. The Scotch, however, prefer a long pastern. Dykes, in his introduction in the Clydesdale Stud Book of Scotland, says:¹⁰ “No doubt the upright pastern suits well the upright shoulder and slow action of the English draft horse, a conformation which can scarcely be called the best for any purpose; but it will not do in the Clydesdale, which requires a pastern to suit the formation of the shoulder, and to confer the necessary elasticity to counteract the concussion caused by his quick, firm step.

Short, upright pasterns always get worse with age and feeding, and the action in due course of time becomes impeded. A horse with an upright pastern has little or no command of his foot, and literally walks as on a crutch; and if he has no power of his foot, he cannot have much of his shoulder.” Mr. Alex. Galbraith, long intimately identified with the draft horse industry in

¹⁰ Vol. I., 2d ed., 1884, p. 51.

Scotland and America, and a recognized authority on the Clydesdale, says¹¹ that the pasterns of the Clydesdale are longer and much more oblique than in the other breeds, and that the statement "pasterns like a Clydesdale," is the most complimentary allusion that can be made to the underpinning of any other kind of horse. Hayes says,¹² that "we may accept as an axiom, the statement that the harder the ground and the faster the work, the more sloping should the pasterns be, in order to save the legs from injurious effects of concussion. If the horse be required to gallop over hard ground, the pasterns can hardly be too oblique (supposing of course, that this condition has not been brought about by injury); provided always that the pastern bones are strong." Without question the farm horse largely used on soft ground, does not require the sloping pastern of the draft horse on the city pavement, for reasons already given. The direction of the pastern is generally given at from 40 to 45 degrees, but Goubaux and Barriere state¹³ that 60 degrees is preferable for the front ones, 45 degrees constituting a marked "low jointedness." Foot diseases are generally more common on horses with upright pasterns than on those of greater slope. The pasterns should be straight in direction because ill-placed feet are, as a rule, due to the pasterns directing in or out. The pastern should be smooth, and covered with fine skin and hair as evidence of quality and good condition.

The feet of the horse are universally regarded as of prime importance, hence, the oft quoted saying, "no feet, no horse." In general, the front feet should be large, round, of uniform size and as viewed from in front should point straight forward. Small feet do not have the necessary base of support associated with draft weight. The front feet are usually larger than those behind. Roundness of outline of hoof is sought, although the curve is some-

¹¹ American Clydesdale Stud Book, Vol. X.

¹² The Points of the Horse, 3d ed., 1904, p. 291.

¹³ The Exterior of the Horse, 2d ed., 1904, p. 304.



Fig. 41.—“The front feet should be large, round, of uniform size, and as viewed from in front, should point straight forward.”

what more marked on the outside of the hoof, the inner side toward the rear having a trifle less curve. “This shape,” says Craig,¹⁴ “it will be easily seen, not only gives a strong hold on the ground, but it also decreases the possibility of the inner edge of the foot striking the opposite leg or interfering.” This roundness of form is to be seen by examining the feet from in front, or picking them up and noting the form from the under side. To raise the front foot, slide the thumb and forefinger of one hand down alongside the cannon, pressing tightly the tendons, at the same time giving a back and upward pull with the other hand, grasping the front of the fetlock. Usually the horse will raise the foot without resistance and it then may be held for inspection by supporting it in the hand. As viewed from one side the hoofs should present an angle of about 50 degrees from coronet to toe, having a slope quite comparable with the pastern and shoulder. Too upright a hoof gives a hard gait and tends to foot difficulties. If the hoof is too long the heel is thrown out of position, being closer to the ground, and is thus subjected to a strain that causes weakness or injury. From a side view, the length of heel should measure about one-third the length of the front of hoof. The exterior of the hoof should not flare out too widely, for the coronet or hoof head should be round and of good size in comparison with the bottom of the foot. Such a foot suffers less from foot trouble than one with a small

¹⁴Judging Live Stock, 6th ed., 1904, p. 40.

or constricted hoof head. When the foot is raised the under side should present a slight arch with a well developed frog, wide at its base, which just rests on the ground when the foot drops to the surface. A flat foot lacks the desired arch and is not easily trimmed by the smith; it also bears too much concussion at the low set heel. The frog consists of elastic, fibrous material and serves as an important buffer and protection against injury to sensitive tissues and nerves within the foot and especially just above the frog. A great weight rests on the bones and membranes within the hoof, and in a measure these are protected by a slight arch of sole and well developed frog. For this reason the blacksmith should never disturb the frog, ex-



Fig. 42.—“Usually the horse will raise the foot without resistance.”

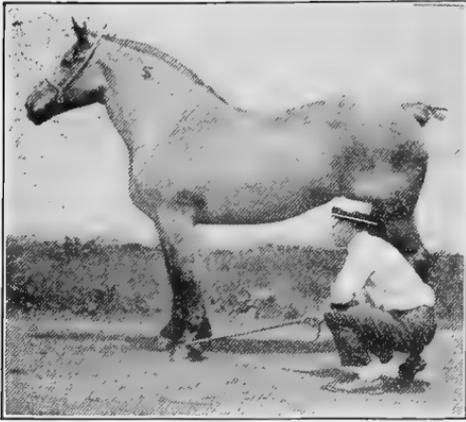


Fig. 43.—“As viewed from one side the hoofs should present an angle of about 50 degrees from coronet to toe.”

away, and had its proper contact with the pavement. The bars of the foot, which, brace-like, serve to keep the heel well spread, should extend from the corners of the heel, and lie parallel with the frog, in well developed ridges. The hoof that lacks bars often-times shows a narrow or contracted heel. The bars should never be cut away by the smith. The horn of which the hoof is composed, should be very hard and free from all seams or cracks. The hoof consists of a multitude of horny cells, closely packed together, and its character largely depends on local conditions of keep. Referring

cepting to trim away loose fibers and keep it in as natural condition as possible. In the days when the Paris Omnibus Company kept from 12,000 to 15,000 horses in their stables, the horses as a rule wore flat shoes and especial care was taken by the management to see that the frog was not pared



Fig. 44.—“A flat foot lacks the desired arch.”

to this, Hayes states¹⁵ that "the horn of the wall, sole and frog should be thick, hard and tough, so as to resist in an efficient manner the effect of wear. Moisture has a well marked softening and weakening influence on the horn, and consequently affects the form of the foot. We find that the drier the climate, the stronger is the horn of horses there reared, the more upright the hoofs, and the more concave are the soles. When the horn of the wall and sole is weak, it cannot efficiently support the weight thrown on the leg, and the foot will have a tendency to become flat. The feet of horses bred in Australia, for instance, are stronger than those produced in England, owing to the climate being drier. . . . The great trouble with heavy cart horses in England is the weakness of their hoofs, the horn of which, as a rule, is not nearly so strong as that of well bred horses; although the strain which falls on it is much greater than that which tries the tenacity of the horn of the feet of saddle horses. Considering the greater size of the muscles and bones of the draft animal, we might expect the horn of his hoofs would be proportionately stronger than that of the half bred. The fact that it is not stronger, is a proof that English cart horses are deficient in one of the most important points of usefulness. Veterinary surgeons in practice in England and Scotland tell us that the large majority (about nine-tenths) of cart horses which come to them for treatment, are foot cases." The horn of the hoof should be free from cracks and all roughness. A dark color is quite generally preferred, many believing a white hoof has less wearing resistance than a dark one. There is really little evidence on that point. Judges should examine the feet with great care, and discriminate without hesitation where pronounced defects occur.

The position of the front legs and feet should be such as to result in the least effort when in motion, to secure maximum results from a draft point of view. The subject

¹⁵ Points of the Horse, London, 3d ed., 1904, p. 299.

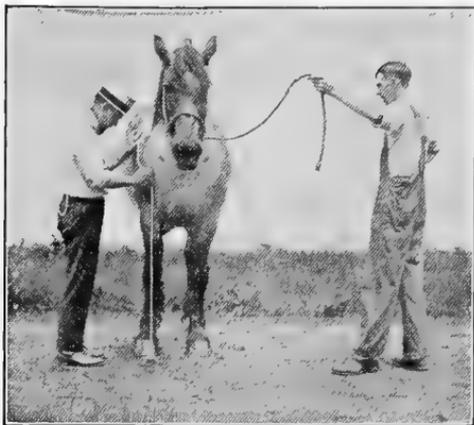


Fig. 45.—“A plumb line dropped from the point of the shoulder.”

of the attitudes of the limbs has received much study, and authorities seem quite agreed on what these should be. When standing at attention, in perfect pose, the profile of the face will be at right angles with the top of the neck, and the weight will be equally distributed on all four limbs. To ascertain if the limbs are in correct position from a front point of view, a plumb line dropped from the point of the shoulder should divide the leg through knee, cannon, pastern and foot into two lateral halves. As a rule, the forearms slope in very slightly while the canons stand parallel. From a side view, a line dropped from the bony projection on the shoulder blade should pass through the center of the elbow joint and meet the ground at the center of the foot. When the horse is viewed from in front, and the knees appear too



Fig. 46.—“A line dropped from the bony projection of the shoulder blade.”

close, the horse is "knocked kneed"; if too widely separated he is "bow legged" or "bow kneed"; if the toes turn out he is "toe wide" or "base narrow," or "splay footed," and if the toes turn in he is "toe narrow," or "base wide," or "pigeon-toed."

A crooked leg is evidence of weakness or defective gait. A splay footed horse interferes, and a pigeon-toed one "paddles" or "wings." The terms calf-kneed and knee-sprung have already been explained (page 78). These various deficiencies of leg position are easily noticed, and should not be ignored by the judge. It must be remembered, however, that the walk is the common gait of the draft horse, so that the same importance is not to be attached to the position of leg as in the case of the speed horse. There is much less likelihood of interference from a draft horse, with his slow movement, than from a trotter, even admitting the undesirability of the position of leg in either case. This the judge must take into consideration.

The body of the draft horse is a very important factor for we must largely look to this portion of the whole for the great weight desired. Therefore as he views the draft horse the judge must be impressed in suitable degree with his massive size as expressed in the body, otherwise the animal lacks in draft character. This massiveness is essential for the necessary weight to be thrown forward in the collar when work is to be done.

The withers of the draft horse should be well defined and muscular. As has already been explained, the withers



Fig. 47.—"If the toes turn in he is toe narrow, or base wide, or pigeon-toed."

are for the attachment of the muscles and suspensory ligaments connecting the head and neck. Other muscles also connect withers and shoulders and back. Withers of prominence, extending well into the back, therefore have a more powerful muscular connection than they would have otherwise. In the case of the draft horse it is important that the withers be thick and muscular rather than thin. If the shoulders are powerful and fittingly muscled, then the withers will be in keeping.

The chest of the draft horse is that portion of the body that lies between and immediately back of the shoulders, between the withers and lower line of body. *The breast* is that portion of the body which lies directly in front of the chest, and below the neck. The chest should be deep, wide, low and of large girth. Such a conformation indicates a strong constitution with ample space for the vital organs; it also is naturally associated with heavy weight. With the horse depth of chest is really more important than thickness, although these two features are associated. The depth through the chest should be somewhat greater than the distance from the under side of this part to the level of the feet. While thickness is desirable, horsemen do not wish too wide a horse, at least not like a fat steer, as fat horses usually have inferior action, going too wide, the legs being too far apart for the most powerful draft. Hayes believes¹⁶ there is no essential difference in the relative thickness of chest in horses of the same depth. He attributes the difference in thickness to the pectoral muscles which lie between the humerus and the chest, and states that "it is no rare occurrence to see horses that have been once broad chested, become narrow in front when old and worn out." He, however, agrees to the necessity of thickness of chest with the draft horse, on account of his requiring massive muscles. In discussing breast conformation, Goubaux and Barriere comment as follows:¹⁷ "Draft

¹⁶ *The Points of the Horse*, 3d ed., 1904, p. 244.

¹⁷ *The Exterior of the Horse*, 2d ed., 1904, p. 146.

horses can, without being defective, be very open in front. The lateral oscillations of the center of gravity, being only prejudicial to velocity, do not diminish the energy of his efforts. His power depends upon his mass, and he demands, therefore, firm and voluminous muscles. From this point of view we may regard a wide breast as a point of great merit, because it gives to the trunk the volume which is necessary in order to overcome easily, but slowly, heavy resistance." The prevailing opinion among American horsemen, however, is that the chest may be too thick, especially if the legs are attached wide on the corners of the body. Such conformation places the legs too wide apart and results in a weaker placement of the limbs than is consistent with maximum draft and the most uniform action. The depth of chest should be somewhat greater than the distance from its floor to the foot surface, for this means shortness of leg and the location of the center of gravity at the most desirable point. The breast should extend forward in distinctive degree, having some prominence and width between the shoulder points.

The back of the draft horse should be short, broad and strongly supported. A short back is associated with the closeness of the ribs that is related to strong muscular development. There can be no likelihood of the back being too broad. The back should be strongly supported, that is the muscles and ligaments along the spine should be thick, firm and strong, and hold the back well in place. The back of the horse naturally inclines upwards toward the croup, not being level. With age the ligaments and muscles often relax and the back sags materially, indicating weakness. A distinctive arching of the back at the loins goes by the name of "roach back," and is not a desirable development. In the case of the draft horse, when the back is in good condition and wide, a ridge of muscle may often be seen along each side of the backbone.

The loin of the draft horse should be short, wide and strongly muscled. This portion of the back, for that is

really what it is, should be as short and wide as possible, with a thick layer of firm muscle indicating great strength. The length of loin is measured from the side, or the distance



Fig. 48.—“This space being known as the coupling.”

from the front of the hip to the last rib, this space being known as *the coupling*. The loin naturally slopes off to some extent from each side of the back bone, but for the most powerful development, this part should be very broad and with slight slope. A sharp crest at the loins is a sign of

weakness. The kidneys lie beneath the loin, and horse-men often pinch the loin along the center, to note the effect on the horse. If the animal flinches slightly, it is assumed the physical condition here is good, but if the animal resists in a notable degree, it may indicate extreme nervousness, or some unhealthy condition. A well muscled loin is usually regarded as an evidence of soundness at this point. In the case of the draft horse in good condition, the ridge of muscle along each side of the spine is continued the length of the loin.

The ribs of the horse should be long, well sprung, and close together. Hayes discusses at some length the most desirable features in the ribbing¹⁸ and emphasizes three things, *viz.*: convexity (roundness) behind the shoulders, length, and inclination to the rear. In this discussion

¹⁸ *The Points of the Horse*, 3d ed., 1904, p. 228.

Hayes takes issue with Youatt, who published a fallacy¹⁹ concerning the conformation of the ribs that has been repeated by many English writers, namely, that the circular chest could not expand, but every change of form would be a diminution of capacity. Hayes states that "this statement seems to be based on the supposition that the chest expands and contracts by the ribs opening and closing in a direction at right angles to the length of the body. Instead of this being the case, the difference in capacity of the chest is due to the fact of the ribs, which are inclined to the rear, turning round towards the front on their upper and lower ends, as on pivots, when air is drawn into the lungs, and then revolving back again when the air is expelled from them. We may here note that the air is expelled from the lungs by the elastic recoil of the ribs, which takes place the moment the muscles which drew the ribs forward become relaxed. Youatt's statement is altogether incorrect; for the rounder the ribs are, other things being equal, the greater will be the difference between the chest capacity when the lungs are full, and its capacity when they are comparatively empty." The feature of good length applies rather to rotundity of fore rib, than to the distance between the respective ends, although the ribs far back should be as long and directed as much outward as possible, so as to afford a broad attachment to the diaphragm. "If the last rib be short, flat and but little inclined to the rear, the animal will be 'slack in the loins' and certainly will not have as good breathing power as he would if that rib was long, 'springing' well out from the side, and inclined so much to the rear that there would be space only for the ends of two or three fingers between it and the point of the hip." In the case of the draft horse, the greater the arch and length of rib, the more the space available for the development of muscles and weight so significant a feature of this type of animal. We get neither draft form nor weight in the horse with flat, short rib and wide coupling.

¹⁹ *The Horse*. By William Youatt, London, 1843, New York edition, p. 169.

The arch of rib is best noted from in front or behind, while its length and the coupling must be studied from the side.

The flanks of the horse should be low and full, showing a low underline. If the fore ribs are well sprung, and the back ones are long and well carried out, as set forth above, then the flanks will be full and the under line carried relatively low. The more nearly the line between front and hind flank parallels the foot surface, the greater will be the digestive capacity of the horse. Further, low, full development of flank with the draft horse usually accompanies the heavier weight. Hayes refers to the "hollow of the flank," which he includes between the loins, point of hip and the end of last back rib. This space, he states, should be as small as possible. If it is hollowed out it indicates bad health, weak constitution or being out of condition. When the hind flank is cut up high, such a horse is sometimes called "wasp waisted," or "tucked up," and is generally considered as lacking in endurance.

The hindquarters of the horse are the great source of driving power, for propulsion by the hind legs occurs through the hip joint and pelvis. Care should be taken in examining the hindquarters of strange horses, on account of the liability of kicking. It is desirable first to survey the hindquarters at a safe distance, such as ten feet from the side or rear. It will be necessary to inspect the limbs with care and this usually involves some handling. In this case, the horse should be approached from the head or front quarter. The word "whoa!" may be sharply spoken, after which the hand may be passed lightly along the back, and then over the croup and down the thigh and gaskin to the hock and below if desired.

The hips of the draft horse should be wide, but in harmony with general body proportions, and smooth and heavily muscled. The most power may be expected, other things being equal, from a horse that is heavily muscled over the hips. Rough or bare hips are evidences of weakness. Horses that show extreme width between the hips, with more or less roughness, "generally stand with their

feet close together," says Gonne,²⁰ while those that are wider through the barrel than between the hips, "generally stand with their feet wide apart," and are usually good goers. Inasmuch as great strength is the desired feature of the draft horse, then the heavily muscled, well placed hip is logically connected with powerful muscling below. Horses in thin flesh may show considerable prominence of hips that feeding might cover and change in a striking manner. Therefore the condition may be considered as an important factor in the smoothness and covering of hips.

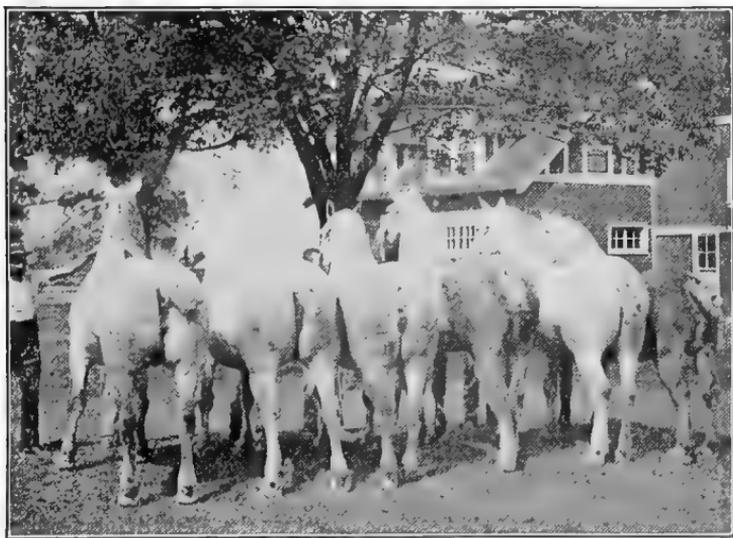


Fig. 49.—“We find much difference in the slope of the croup in draft horses.”

The croup of the draft horse represents a great and powerful combination of muscles, extending from the hips back to the end of the pelvis. To secure the most complete muscular development the croup must be long, as seen from one side, wide as viewed from behind and with attractive, strong, yet sloping arch from hips to setting on of tail. We

²⁰ Hints on the Horse. Capt. C. M. Gonne, London, 1906, p. 44.

find much difference in the slope of the croup in draft horses. A steep croup is very common, especially in those coming from continental Europe. This steepness, which is seen best from a side view, is not looked on with favor by the most discriminating horsemen. The horse with steep, short croup lacks not only beauty of outline, but has less length and thickness of muscle than does the horse with a neatly arched, long conformation. This feature the judge should emphasize, keeping in mind that the movement of the load is directly connected with the extension of the hip joint through the use of long, thick muscles at croup and thigh. In the opinion of some, a steep croup is often related to a weak coupling and crooked hind legs. Hayes notes²¹ that the upper line of the croup, from the loins to root of tail, should remain convex, a condition which is more or less regular, "caused by the prominence of the inner angle of the pelvis; by the action of the muscles which flex the back, and by the strength of the ligaments which preserve the stability of this arch. We may note how relaxation of these muscles will affect this state of convexity if we pinch the loins of a horse, so as to make him crouch, which he does by the contraction of the muscles that lie on the top of the loins. When he crouches in this manner, the upper line of the croup will tend to become straight. Hence we may accept the conclusion, which is freely borne out in practice, that undue straightness of the upper line of the croup indicates weakness of the part."

As viewed from the rear the croup should appear not only wide but with a level tendency, rather than falling sharply away on each side, as characterizes the narrow croup. When in high condition, draft horses show a well defined groove above the spine, which divides the croup into two equal parts. From a rear view the croup on each side of this groove should arch with a wide yet not high curve, showing a broad, strong conformation rather than a sharpness, that resembles the peaked roof of a house.

²¹ *The Points of the Horse*, 3d ed., 1904, p. 254.



Fig. 50.—“The hair of the tail should be reasonably fine, and the brush should be thick and long.”

The tail of the horse has its greatest use as a medium for brushing off flies. Consequently it should have good length to serve its purpose. Docking, which is more especially practiced in Europe, is the cutting off of a portion of the fleshy part or the dock. This is a cruel practice, and is prohibited by law in the United States. Without a well developed dock and brush, the horse has no means of protection from the bites of countless flies. The dock should be comparatively short and muscular, and attached fairly high, such an attachment usually being related to a long, well carried croup. A high setting of the tail indicates a comparatively level sacrum, a position associated with the freest locomotion. A high carriage of tail also shows the muscles of the dock to be active and strong. The hair of the tail should be reasonably fine, and the brush should be thick

and long. In passing judgment on the tail the most important feature is that it be attached high, as related to conformation of croup.

The thigh of the draft horse on its upper portion joins the side of the croup, and at its lower end terminates in front at the stifle joint. This portion of the hind leg is comparatively short, but should be heavily muscled, especially on the inner side known as the quarter. A rear view of the ideal draft horse thigh shows a very full, thick muscle, while the side view gives a strongly rounded curve from just below the tail setting to the lower thigh or gaskin. From the stifle joint in front which should be heavily muscled, to the extreme point of the curve of thigh, there should be good proportionate length. It is important that the stifle joint should turn somewhat outward, so as to allow free locomotion without rubbing the belly too close.

The gaskin of the draft horse, also known as the lower thigh, extends from the stifle to the point of the hock. This part for purposes of draft should be relatively shorter than



Fig. 51.—“Terminates in front at the stifle joint.”

for speed. From a side view the muscles should appear wide and prominent, while from the rear the outer part of the gaskin should show thick, well rounded curves. The inner part of the lower thigh curves slightly outward from the quarter above. If the upper thighs are thick in the quarters, then the lower ones will tend to curve outward, showing considerable arch between, a desirable condition if the lower parts are not too widely separated, otherwise ease of locomotion would be affected. Commenting on this part of the thigh, Youatt says:²² "In proportion to the length of the muscle is the degree of contraction of which it is capable; and also in proportion to the contraction of the muscle is the extent of motion in the limb; but it is still more necessary that this part of the thigh should have considerable muscle, in order that strength may be added to such extent or compass of motion. Much endurance would not be expected of a horse with a thin arm. A horse with thin and lanky thighs will not possess the strength which considerable exertion would sometimes require." Width of gaskin is highly important for either speed or strength, and this can only be secured by the *os calcis* or bone topping the hock having ample length.

The hock of the draft horse is one of the largest and most important joints in the body. As expressed by Goubaux and Barriere,²³ "functionally, it is, more than any other, a region of dispersion of concussion as well as of propulsion. It is upon this region that the efforts of the extensor muscles which propel the body are concentrated; it is on this point that the reactions of locomotion bear at the moment when the body, moving with great velocity, and projected forward, strikes the ground; finally, this is the region, on which, in the act of rearing, all the weight of the body presses down with such great force." As a general description we may say that the hock should be

²² The Horse. William Youatt, 1843, p. 283.

²³ The Exterior of the Horse. Translated by S. J. J. Harger, 2d ed., 1904, p. 253.



Fig. 52.—“The hock should be straight, wide, deep, clean-cut, its point being prominent.”

straight, wide, deep, clean-cut, its point being prominent, and the joint as a whole well supported by a wide cannon below. The hock is not absolutely straight, because in the leg of correct form, the hock faces out slightly; were this not so, the leg when in motion would not clear the abdomen. The leg is frequently cow-hocked, facing widely outward, with the point directed inward, thus giving an unattractive position, and frequently is an evidence with the draft horse of a thigh lacking in muscle. If the front of the hock faces inward the point directs out-

ward, giving a bow-legged, weak position, while the leg in its forward movement presses the belly enough to obstruct freedom of motion. Goubaux and Barriere, commenting on the bow-legged hock,²⁴ state that it is due, ordinarily, to the width of the thigh and the croup, as well as to the development of the muscles, and that there is nothing very unfortunate in this, especially as applied to heavy draft horses and colts. As a matter of action, the cow-hocked horse is the easiest mover. The hock sometimes extends too much forward in its lower part, the cannon also slanting more than it should in the same direction. This results in a slight curve to this part, to which the name “sickle hock” has been given. To note the straightness of hock and trueness of movement, the judge should stand directly behind and have the horse led off in as direct a line

²⁴ The Exterior of the Horse, 2d ed., 1904, p. 461.

as possible toward a given point. The hock should be wide, as viewed both from in front, and one side, and have plenty of depth. Such a conformation provides room for strong muscles and tendons to connect with this joint. The hock of the draft horse should be sharply defined in its various curves, free of all excess flesh or puffy condition. It is a common sight with horses in high condition and lacking exercise to have a fullness of hock, or what is often termed "meaty" hocks. A side view should show this joint hard and clean, notably hollow in its central face, without evidence of swelling. The point of the hock should be prominent, broad and firm, and neatly turned, indicating a strong connection of the back tendon in this most important joint. Occasionally the point of the hock will appear puffed and fleshy. This is due to blows, and is usually caused by the horse kicking some hard obstacle behind, after which the points of the hock swell, resulting in a "capped" condition. This should never appear upon an uninjured horse. The lower part of the hock, to be of maximum strength, should be wide, so that where merging with the cannon below, there will be no contraction in comparison with the cannon further down. The hocks of the draft horse are naturally larger and more fleshy than those of a smaller class, being a part of a massive animal. If the gaskin is wide, and the hock is not tied in below, the hock will be rela-



Fig. 53.—"A slight curve to this part, to which the name sickle hock has been given." A curb is also to be seen just below the point of the hock. (See page 202.)

tively large. The need of large size, perfect form and soundness of hock, cannot be over emphasized, for this joint, as already stated, is of vital importance in moving the load. The horse settles himself snugly into his collar, flexes the hind legs—that is, moves them forward—and then begins an extension or unfolding of the hock joint, that finally results in the extended, straightened hind leg from toe to stifle, and proportionate forward motion of horse and load. Therefore the necessity of great freedom of movement and power in this joint. Judges should examine the hock with much care from rear, side and front. A backward view between the forelegs will enable one to observe the face of the hock better than from any other position. But little handling of the hock is necessary, the eye detecting most of the defects though the hands may sometimes be used to advantage.

The hind cannons of the horse differ from those in front, in being notably flatter. The metatarsal bone has back of it the splint bones, which occupy the upper part of the cannon on each side. Back of the splints are the tendons, which stand out conspicuously on the hind leg, giving much depth. This part of the leg, aside from its flatness, should possess qualities similar to those desired in the front cannon. Hayes, in an interesting discussion²⁵ of the comparative length of cannon bone in the hind leg, states that the popular opinion that the length from hock to toe is less than from hock to stifle is probably based on an optical delusion. This he illustrates by showing pictures of two sets of legs, one apparently with short and one with long cannons. However, measurements by means of dividers, with the hock as the center, showed about the same length. He ascribes this optical delusion as due to the fact that the hock in one case is “straight,” giving the impression it is better “let down,” than in the other case, where the hock is “bent” for “as the eye runs down the limb, it will not be so abruptly arrested by the former, as

²⁵ The Points of the Horse, 3d ed., 1904, p. 318.

by the latter kind of conformation." Horsemen generally favor a short cannon on the hind leg as bearing evidence of having greater relative strength than a long one, and as a medium for bringing the weight of body closer to the foot surface. Goubaux and Barriere²⁶ regard the short cannon as less heavy, swinging more freely, unfolding itself more, "and not necessitating the same elevation of the member above the ground to reach the limit of its movements." It is important to note that the hind cannon of the draft horse is relatively shorter, usually, than that on the light class of horse. The position of the cannons should be straight, at least fairly so. French authorities emphasize the desirability of the hind cannons being perpendicular, but Hayes states that he has never seen a horse with vertical cannons. The horse as a rule carries his hind legs so that at best the cannons slope slightly forward, rather than have a perpendicular position. The judge will hardly be justified in discriminating against a cannon that has a slight slope forward, if of a uniform and desirable width throughout and free of blemishes.

The hind fetlock, as in the case of the front one, should be wide, straight and strong. Sometimes this joint projects forward to an unnatural degree, due to the bones in pastern and fetlock growing somewhat out of position thus producing knuckling or a "cocked" ankle. Horses with rather upright pasterns are most subject to this trouble.

The hind pastern of the draft horse usually closely resembles those of the front legs, the same characteristics being desired in each case. However, the hind pastern as a rule, is less oblique than the one in front. A slope of from 45 to 50 degrees is desirable, for reasons already given on page 83.

The hind feet of the horse are somewhat smaller than the front ones, and not so round. This is almost universally so. The hind foot also shows more slope of the hoof, and also arch of sole, than does the front hoof. A round hoof

²⁶ The Exterior of the Horse, 2d ed., 1904, p. 285.

of ample size with slope in harmony with that of the front foot and not too high in the sole or narrow at the heel is to be desired. A length of heel equal to about one-third the length of the front of hoof will usually be about right. It is noteworthy, however, that the hind foot suffers com-



Fig. 54.—“The hind feet of the horse are somewhat smaller than the front ones, and not so round.”

paratively little from disease, and gives the horseman far less concern than does the front foot. This is due to the fact that the hind feet suffer much less from concussion and hard work than the front ones. The scale of points, in recognition of this, credits the perfect front feet with more points than the hind. In the early days of the use of the score card in this country, the author drew up a scale of points for draft

horses, and submitted it for criticism to a friend whose business was buying and selling horses on a large scale, and who was a most capable judge. His view of the relative importance of front and hind feet was such that he insisted that 10 points should be credited to the front and two to the hind feet. This was the point of view of a practical horseman of large experience. He argued that essentially all the trouble with the feet was located in

front, yet a 10 to 2 relationship would, by many, be considered extreme. It is important that the bone of the hoof be smooth and dense, indicating tough material that will wear well.

The correct attitude of the hind leg of the horse at rest is to be seen when a plumb-line dropped from the point of the buttock divides the leg and foot into two lateral halves. Or, when viewed from the side, this same line touches

the point of the hock and meets the foot surface a short distance back of the heel. A perpendicular line dropped from the hip joint should meet the foot surface midway between heel and toe. Reference has already been made (page 100)



Fig. 56.—“Meets the foot surface a short distance back of the heel,”



Fig. 55.—“A plumb-line dropped from the point of the buttock.”

to the attitudes known as cow-hocked and bow-legged. When the horse carries his hind feet forward of the vertical line to a marked degree, he is said to be “under himself.” When this is the natural pose, it shortens the base of support, and re-

sults in undesirable fatigue of the muscles, tendons and ligaments. Slowness of gait and forging are also often associated with this attitude. If his legs extend behind as though stretching, he is said to have a "camped" or "stretched" position. This attitude gives a long base of support with which is associated a tendency to slip backward, bringing too much strain on the front limbs. Horses that naturally camp also tend to weakness of back and slow action. Grooms often stand their horses when on exhibition so that the front feet are on a slightly higher level than the hind ones, which are stretched back to such an extent as to detract from graceful and natural pose. One is not far wrong in stating that when the legs come directly down at each corner of the body without undue placement of the feet away from these points, the legs are not far out of correct position. Judges note with some care the position assumed by the hind legs, discriminating especially against bow-leggedness and cocked ankles. Any extreme position when at rest suggests inferior action when in motion, and the judge is justified in thus reasoning.

The action of the draft horse has a practical application related to hauling heavy loads and going through necessarily slow evolutions. Large frame and great weight will not admit of hasty action on the part of the draft horse.

The walk of the drafter is of prime importance because it is at this gait that most of his work is done. Therefore, the walk should include three essential features, straightness, power, and elasticity. When led directly away from the judge, the horse should continue in a straight line, his body inclining neither to right nor left, and the carriage of each pair of legs on the same side of the body in much the same vertical plane. Draft horses tend to "paddle" more or less, throwing the feet outward when in action. This is usually due to the horse being pigeon-toed, but may be caused by improper shoeing, or condition of hoof. "Wing-ing" is an extreme degree of paddling. Heavy horses also tend to cross their feet when in action, a movement known

as "winding," and very undesirable. An unusual side motion of the shoulders is known as "rolling" and is more especially found with draft horses with widely separated shoulders. A horse that snaps his feet outside of the line he naturally should, or knocks his ankles together, does so at the expense of action. The walk of the draft horse should show evidence of strength in the full sense. He should walk easily and true, and by his carriage of limbs and muscling give evidence of superior draft character. As the horse walks by the judge presenting a side view the step should be



Fig. 57.—"He should walk easily and true."

long and powerful of stride rather than short and uncertain in character. An elastic or snappy gait is of prime importance. The horse that steps off quickly and clears his feet well from the ground will do much more work than the one that moves slowly and drags his toes, frequently stumbling. This characteristic of activity of walk is not emphasized as much as it should be. The Scotch place a premium on this feature of the Clydesdale, which has resulted in unusual freedom of action with this breed. The horse that flexes his pasterns well at the walk, shows the bottoms

of his feet with much clearness to the judge standing behind. Further, as viewed from one side, the knee, hock and fetlocks flex strongly, the foot swinging to carry the toe well behind and slightly upward.

The draft horse at a trot should have a strong, regular, easy gait. The trot is distinctly secondary to the walk, yet



Fig. 58.—“The draft horse that trots well is usually a good walker.”

the draft horse that trots well is usually a good walker. The heavy horse moves off slowly as a rule though with power. He often drags his feet more than he should and shows evidence of awkwardness. High action should not be expected, but rather a strong, regular, easy stride, with the feet carried well off the ground. At the trot the joints flex more than at the walk, and the feet are carried somewhat higher. The judge should examine the horse, both at walk and trot, having him led toward him and away from him, thus enabling him best to study the truthness of action. From a side view one may best judge the

flexing of the limbs and carriage of body while in motion. If the action is true and snappy at the walk, then no unreasonable penalty should be placed against the horse that lacked somewhat in speed, though of course, other things being equal, the one that will trot most rapidly has the advantage. Age and training have much to do with the character of draft horse action. Young, green colts do not show to advantage.

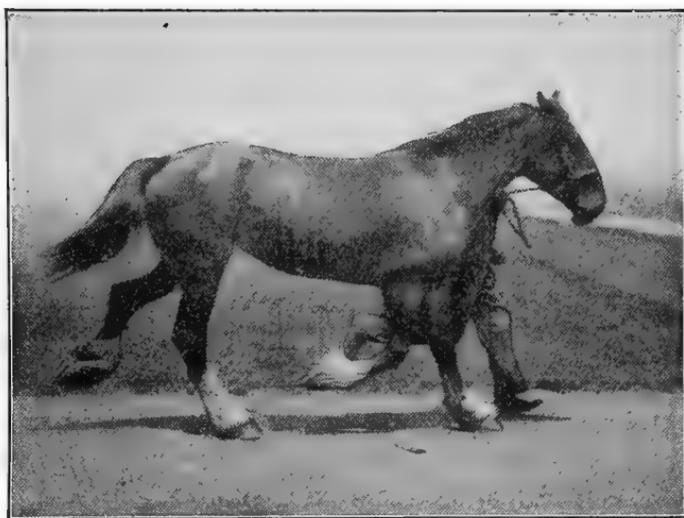


Fig. 59.—“From a side view one may best judge the flexing of the limbs and carriage of body while in motion.”

CHAPTER VII.

THE COMPARATIVE STUDY OF DRAFT HORSES.

It is assumed that the student, through the use of the score card, has become acquainted with the points and general conformation of the draft horse. With this instrument he has attempted to analyze and measure the value of the points of the individual. As a matter of progress in the study of animal form it is necessary that comparisons be drawn between individuals. If two horses of the same type stand side by side it is entirely natural to make at once a comparison between them. Two horses are never mated up for a team by a discerning horseman without comparing their relative merits, their adaptability



Fig. 60.—“It is important that animals of approximately the same age and class be grouped.”

to each other, which should be the near and which the off horse. In the show ring the comparative method, of necessity prevails, unless but one animal is shown in a class. In the classroom a group of four horses makes a convenient number for study. It is important that animals of approximately the same age and class be grouped. This admits of a fairer basis of comparison if the type or breed, height and general size and conformation are not materially different. Comparative judging is most unsatisfactory when horses of essentially different type meet in a ring in which uniformity of type is desired. It is true that, for comparative reasons, it may be desirable on occasion to use an animal of quite another sort for the purpose of contrasting types or breeds, but in general, groups become the most efficient mediums for judging work when uniform in character. Color is not a necessary factor unless breed study is under consideration. Draft type must be the prime feature, if this is the subject of comparison.

A first step in judging a group of draft horses would be to give them a general survey. It may be assumed that they are standing in a row, their heads in line, awaiting examination. The judge should slowly pass about the group at sufficient distance to comprehend the general character of the animals as a whole, noting uniformity of type and character. In this inspection he will be impressed by some individuals more than by others and will quickly take note of features of special merit or demerit. This general survey is then followed by individual inspection in which studied comparison is made between animals. The ideal animal of the type or breed is in the mind of the judge and as he inspects the different individuals he compares them not only with the ideal, but with each other. One of the group must measure up to a greater degree of merit than any of the others and this animal in due time is accorded first position. The horse placed second must be lacking in merit, compared with the first, although the difference between them may not be important. It is a

rare event for a judge to be unable to decide between two animals for first place. For reasons satisfactory to himself the judge places the horses in their relative order of merit. In judging draft horses size and weight, in the opinion of many, must be regarded as of first importance, after which come various factors measured up in comparative values as expressed by the score card. It is important in this consideration not to emphasize too heavily in themselves certain features, unless properly associated with other factors of conformation whereby balance and merit are secured. Notable defects, as, for example, a spavin, should as a rule drop an animal out of serious consideration unless perchance each animal in the ring was suffering from some physical blemish. But if one is to emphasize strength of loin, he should realize that it ought to be related to a strong back and coupling and naturally powerful conformation. Judges are usually critical of the feet of the horse and some men at once place an animal low in the ring if the feet do not measure up to a high standard. However, if the feet are sound, yet of undesirable size or shape, there may be enough good qualities in the horse to justify placing him comparatively high in the line. In comparative work the judge should make his placings consistent and if possible keep animals of the same type together. If there is much variation in type, then one should seek to secure as much balance and merit as possible high up in the line, with a gradual lessening amount of merit as we approach the foot of the line. It is pertinent here to quote from an important editorial¹ on the balanced horse: "Frequently it happens that some one or more characteristics about a horse are unduly magnified in importance while some serious faults are overlooked. Men are ever likely to ride a hobby to death. . . . There are many admirers of horses whose judgment is seriously warped, few who have a well-balanced conception of what constitutes merit. One notices this when several men examine the same horse at once. One

¹ "The Breeders' Gazette," Vol. C8, November 4, 1915.

may pay closest attention to the head, another to the feet, and hocks, back, chest, flanks, bone and weight may receive concern from others. It is true the horse of all-round balanced merit of build and finish is rare, and so is the man who can appreciate him when found. One can count on the fingers of one hand the men in America who have become famous for ability to pick out 'diamonds in the rough' among horses. Even those who can be counted on consistently to rate highly fitted horses in the show ring are so scarce as to exasperate show officials. . . . Evidently there is too little effort made to fix in mind an ideal, balanced pattern of horse, and then adhere to it."

The weak and strong features of horses under comparison, may be set forth in interesting and instructive form, by means of a comparative card, of which the following is a sample:

DRAFT HORSE COMPARISON CARD.

Name of Judge							Date Judged			
							1st	2d	3d	4th
POINTS TO JUDGE.							Place	Place	Place	Place
Weight	..	..	..	..	..	..	A	C	B	D
Height	..	..	..	..	..	..	B	A	C	D
Quality	..	..	..	..	..	..	A	C	B	D
Substance	..	..	..	..	..	..	C	A	D	B
Head and neck	..	..	..	..	..	..	A	C	B	D
Forehand	..	..	..	..	..	..	A	B	C	D
Chest	..	..	..	..	..	..	A	C	B	D
Back	..	..	..	..	..	..	A	C	D	B
Ribs	..	..	..	..	..	..	C	A	B	D
Flanks	..	..	..	..	..	..	A	C	B	D
Croup	..	..	..	..	..	..	A	C	D	B
Thighs	..	..	..	..	..	..	A	C	B	D
Feet	..	..	..	..	..	..	A	C	D	B
Action	..	..	..	..	..	..	A	C	B	D
							—	—	—	—
Placing	..	..	..	..	..	..	A	C	B	D

This is only suggestive, for the judge may make up a comparative card, and on it indicate such features as he thinks desirable. Each horse is given a number or letter, and then is given a grade in each feature. The placing of a group will depend very much on the number of times A was credited with first place, B with second, etc. It is necessary, however, that the judge give the same relative importance to the points considered that they are credited with in the scale of points. He need not do this numerically but in his final decision he must adjust his placings so as to be consistent. This comparative card is simply to place on record the judge's opinion of the relative merits of certain points he desires to study as separate groups. In a comparative study of a ring of horses they should be examined in various ways. At rest, standing side by side, the heads and necks, the forehands, the thickness of body and placing of legs and front feet may be seen to advantage from a front view. A rear view of the hind-quarters lined up for comparison, facilitates the study of thickness of body, muscling, leg position, etc. The horses placed in single file, directly back of each other, furnish excellent opportunity for important comparison, as for



Fig. 61.—“The groups as a whole may first be paraded about the ring.”

example, length and depth, balance and carriage. The action of the horse must also be carefully inspected. The groups as a whole may first be paraded about the ring following in single file, after which individuals may be taken one at a time and the action studied and compared. Each horse should be examined by the judge from the same points of view, that his comparisons may be uniform.

Reasons for positions assigned a ring of horses may be demanded from a judge at any time, and should be always willingly given. In fact, a more instructive service would be rendered at our shows if judges were to make a statement to the ringside why awards are made as they are. Modern methods of education in our schools and colleges require the student to give the instructor his reasons for making his decisions. In the various student judging contests, such as at the International Live Stock Exposition at Chicago, the National Dairy Show, and in state and county competitions, the student is usually graded for his placings and reasons for making the same. The students are given a limited amount of time for placing the ring, after which they are taken aside and allowed time for giving oral or written reasons. In the International Live Stock Show judging contests, eighteen minutes are allowed a contestant, "to make his observations, record his placings, and write such memoranda as he may desire." Each contestant is later called before the judges and allowed two minutes to give reasons for his placing of a ring. At the National Dairy Show, written reasons are required, the student being allowed fifteen minutes for writing his reasons for placing a group. An example of student method in giving written reasons, is herewith offered, as perhaps suggestive and helpful to some not entirely familiar with this work. This is an exact copy from classroom work, written by one who had no thought of its publication here. It is not perfect, but presents a method of expression in placing a ring of four Percheron mares:

“I placed D over A on type, conformation, quality and action. D more nearly represents the ideal Percheron mare type than A by virtue of her cleaner cut, breeder head; her stronger, better balanced top; her greater roominess of middle; her cleaner, denser bone, and larger, better shaped feet. D shows more quality than A in her general



Fig. 62.—Note the character of fronts on these horses and the positions of legs and feet.

make-up, and gets away with more snap and length and trueness of stride.

“I placed A over B on conformation and action. A shows more symmetry of form, has a more neatly turned shoulder, has more depth and width of chest, a stronger back and loin, a neater turn of croup, stands on heavier, flatter, cleaner bone, and larger, better shaped feet. She goes with a truer, more elastic stride.

“I placed B over C on conformation, quality and action.

B has a cleaner cut, breedier head; more strength of back and roominess of middle; a longer, wider croup; denser bone, and stands on larger feet of better quality. B has more length, strength and trueness of stride. C is plain about the head, lacks strength of back, is too steep of croup, has coarse bone, short, stubby pasterns, and lacks ability to move."

The reasons given would have been stronger if more comparative. Attention should have been directed to some of the inferior characteristics of the one given place over the other, emphasizing the point that even these were not of enough importance to reduce the animal to subordinate place. The student should show his ability to make comparative comment on weak as well as strong features.

CHAPTER VIII.

JUDGING BREEDING DRAFT HORSES.

THE judging of breeding horses requires consideration of sex characteristics, and those features of conformation essential in the animal used for reproduction. It requires the highest degree of intelligence on the part of the judge wisely to discriminate in selecting breeding animals. If one is qualified to do this, there can be no doubt about his ability to pass on geldings.

(A)—JUDGING THE STALLION.

The sex character of the stallion is one of his conspicuous features. His head is somewhat stronger and larger than that of the mare, and his neck much heavier and thicker, with some strength of arch. When the stallion is in superior physical vigor and spirits, he tends to carry head and neck high, and shows the self-assertion and dominant quality of the masculine sex. He should show marked strength of character in his head, for it expresses much, whether bold and toplofty, or meek and droopy. Some stallions have heads of an effeminate appearance, or resemble the gelding in sexless character. Such heads should be discriminated against by both judge and breeder. One could not expect the best breeding results from a feminine appearing sire. The neck should show some length, rather than be short and steer-like, and be well laid with powerful, long muscles. A strong development of hair at the foretop and top of the neck, is also a feature of the stallion, the hair tending to be coarse rather than fine. The stallion should manifest in his head and especially eyes, something of his character, not easy to define, yet expressing personality, temperament, disposition, and sex-

ual dominance. The sex character of the stallion is also shown in his powerful development of bone and muscle, and in his sexual organs. Even when of the same size as the mare, his bone tends to be heavier, his muscles more prominent and his frame more powerful. The sexual organs should be perfectly developed, and the judge should note that the scrotum consists of a double sac and prominent enough to bear evidence of being on a breeding animal. A stallion with a single testicle is known as a ridgling, and is at least open to criticism in the show ring, though he may not be a non-breeder.

The general body conformation of the stallion should show closeness of coupling and strength of back, but plenty of length of middle. Some persons favor much compactness of body, but if properly coupled and the back strongly sustained, then the body itself may have length to advantage. The shoulders of the stallion are also usually somewhat heavier and more prominent than on a gelding or mare, giving a thickness in front expressive of masculinity and power.

The size of the stallion usually exceeds that of the mare, though not to a notable extent in many cases. However, a draft stallion weighing 2,000 pounds, might be a satisfactory size, while the female of the breed at 1,700 would meet all requirements. It is not unreasonable to expect the male to weigh three or four hundred pounds more than the female. Most men desire comparatively large, rather stretchy types of stallions, and these weigh distinctly more than the low set, compact, chunky sort. This type of stallion stands higher than the mares, and is larger and coarser in every way.

The constitutional vigor of the stallion should also receive consideration. This is shown in the strength and character of the head, but is especially seen in the prominence of breast and the depth and fullness of chest. The degree of width of chest will depend upon the type, the draft stallion showing more than the lighter sort, but this

should not be extreme. It is important that the forerib be well arched, but even more desirable that it be long, and so account for a strong heart girth and full flank. Not only this, but a long forerib is sure to be associated with general depth of body, feeding capacity, and vitality. A horse with shallow body and long legs cannot stand up under work, and does not show the constitution that the deeper bodied, lower set one does. Constitutional vigor in the male, is regarded as of prime importance, and judges should give it due recognition.

The temperament of the stallion will be shown in a degree, according to his type, the heavy draft horse being somewhat quieter and more phlegmatic than the lighter type. In general however, when not overworked, the stallion shows an animated, aggressive character, with evidence of much reserve nervous force. If overworked, he loses much of his fire and ambition. In the city of Paris there are thousands of draft stallions stolidly pulling away at enormous loads, quiet and indifferent as to what is going on about them, giving little evidence of the naturally bold temperament of the sex. The stallion should be active

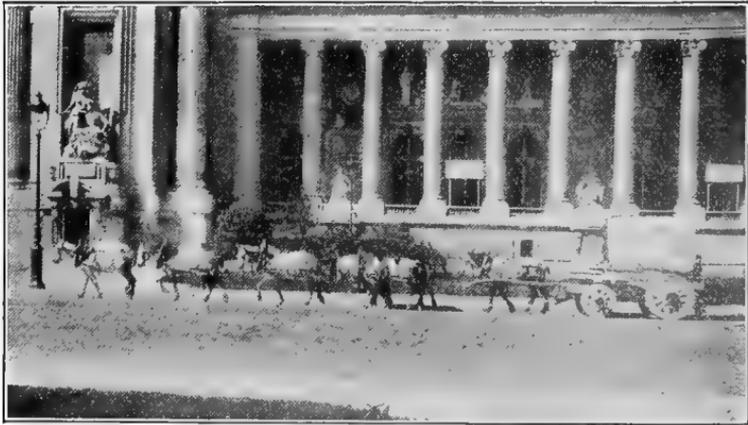


Fig. 63.—“In the city of Paris there are thousands of draft stallions stolidly pulling away at enormous loads.”

and alert, yet not nervous and irritable. His disposition is usually good, but he will bear watching for he may be unnecessarily playful with either teeth or feet.

(B)—JUDGING THE MARE.

The sex character of the mare is seen in a smaller and more refined head than has the stallion, and a more slender, less muscular neck. The beautiful, symmetrical propor-



Fig. 64.—“The beautiful, symmetrical proportion of head; the mild, quiet, inquiring eyes, and the delicate, attentive ears, give strong evidence of feminine and maternal qualities.”

tions of head; the mild, quiet, inquiring eyes; and the delicate attentive ears, give strong evidence of feminine and maternal qualities. If the stallion is bold and independent, the mare is both shy and friendly. The udder of the mare is small, consisting of a double gland and two teats. This is not conspicuous, excepting while nursing the foal. It is desirable that the judge note the size of the udder and teats. If nursing, the udders should be well extended between the thighs, and carry two good sized teats.

The conformation of the mare is narrower all through than in the stallion. The shoulders are comparatively light, the withers narrow, the breast and chest less thick than with the male, and the body long and deep. At maturity, the belly of the mare often shows considerable roundness and downward curve, features associated with reproduction. While her back should be well sustained, she should show a long line and great capacity between the front and hind flanks. The limbs of the mare often display delicacy of outline and refinement of bone.

The constitutional vigor of the mare as with the stallion, is shown in the active, alert character of head and eye, in the depth and prominence of breast, the width and strength of back, and the length, depth and capacity of body. There are really no essential differences, excepting in degree, in the various features which guide one in determining constitutional vigor, in either mare or stallion.

The temperament of the mare is less active as a rule than in case of the stallion. She is not self-assertive, but not necessarily lacking in interest in things about her. Her disposition may be quite variable, though she is not likely to be as aggressive as the stallion. The temperament in most cases is more notable from the standpoint of type than sex.

CHAPTER IX.

BREEDS OF DRAFT HORSES.

PURE bred draft horses are rapidly growing in favor in America. In fact, horses of true draft class very generally show pronounced breed character. This is naturally due to the use of pure bred sires of the draft breeds. Brief descriptions are herewith given of the more important characteristics of each important draft breed. No scales of points have thus far been adopted by any of the official associations registering pure bred draft horses.

The Percheron horse originated in northwestern France, in La Perche district. The Percheron is a medium sized draft breed, though many individuals attain great scale. Mature stallions weigh from 1,700 to 2,000 pounds, and mature mares from 1,500 to 1,800 pounds. The height commonly ranges from 16 to 17 hands. The color is usually gray of some shade, or black. In recent years black has grown greatly in popularity, both in France and America. Bay or brown colors occur but are quite uncommon, and are not regarded as distinguishing characteristics of the breed. Percherons possess certain distinctive and common features. The head is breedy in character, of prominent eye and open countenance, suggesting a dash of Oriental blood. The neck is long and powerful, and though the back is broad and well carried, the body quite often lacks depth in comparison with the Shire or Belgian. The croup, while wide and powerfully muscled, naturally tends to some steepness. The legs are strong of bone and should be quite free of long hair about the fetlocks. Percheron feet are usually of superior dark texture and of excellent size and



Fig. 65.—Percheron mare Hysope. Champlon International Live Stock Exposition, 1912. (From photograph by Hildebrand.)

form. This is one of the most active of draft breeds, yet withal quiet and steady under the collar. The readiness of the Percheron to respond to the driver, its capacity to endure work, its freedom from long hairs on the legs, and excellent feet, are factors that have largely contributed to the great popularity of this breed in America, where it far outnumbers all other draft breeds combined.

The Belgian horse originated in Belgium, where it has been bred for several centuries. This is a very compact, wide, deep, short-legged kind of draft horse. In Belgium one sees three types of this breed; the larger type, common in Flanders, shows more length and is more upstanding than the medium type of Brabant or the smaller sort of Ardenais. American importers have brought the larger or



Fig. 66.—A Belgian mare. (Courtesy American Agriculturist.)

medium type to this country. Weights of from 1,600 to 2,000 pounds, and even more for the larger stallions are acceptable, with a height of about 16 hands. Chestnut is the most popular color, though brown of various shades, and roans, are quite common. Compactness and muscularity are Belgian attributes, and so the neck appears short and thick; the body wide, deep and closely coupled; the croup often steep, and the legs commonly short. Belgians are frequently somewhat refined in bone for weight

of body, and are free from long hair. The feet tend to be small, and lacking in fulness at hoof-head and heel, though these deficiencies are being gradually reduced. The Belgian is notable among draft horses for its activity, and the ability to move freely at a trot. Horses of this breed have been raised in Belgium in close touch with the family and so are very docile and easily handled.

The Clydesdale horse is named after the Clyde district in southwestern Scotland, where this horse has been known since about 1715. The Clydesdale is a medium sized draft animal, the mature stallions weighing 1,800 to 2,000 pounds, the mares 1,600 to 1,700. A height of about 16½ hands meets with approval. The color is usually a bay or brown, with white on the face and on the legs below knee and hock.

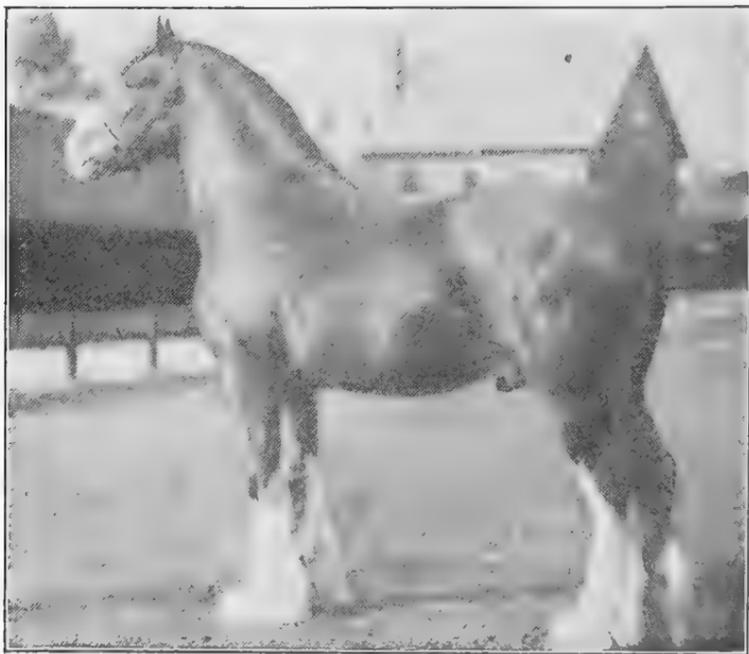


Fig. 67.—Clydesdale stallion "Bonnie Buchlyvie." (From a Scotch photograph.)



Fig. 68.—“The Shire is a larger and more massive breed than the Clydesdale.”

White, however, may occasionally extend beyond these points. Chestnut, black, and gray are colors that occur occasionally with this breed. There are certain features quite distinctive of this breed. Clydesdale men emphasize the long, sloping shoulder; the broad, long, comparatively level croup; the superior hair and bone, especially as seen in the legs, and the strong, superior movement of knee and hock. The Scotchman believes his horse has the best of feet and legs, and when either walking or trotting, his action is the best of any of the draft breeds. Large, round feet, often white, are characteristic, though there is a tendency to flat-footedness. Long, flowing hairs are set in the back of the legs below knee and hock. The body of the Clydesdale frequently lacks massiveness and depth,

and this horse therefore often appears light of middle or short of rib, and consequently somewhat upstanding. The criticism which this lack of massiveness has caused, is resulting in substantial breed improvement in this regard.

The Shire horse is an English breed of much the same general character as the Clydesdale. It has been bred for



Fig. 69.—“The round, full form of body gave this horse in its native home the name of Suffolk Punch.”

many years in England, and is as popular with the English as the Clydesdale is with the Scotch. The Shire has hairy legs like the Clyde. The color is usually bay or brown, with white markings, as with the Clydesdale. However, black, roan, chestnut or gray are not unusual colors. The Shire is a larger and more massive breed than the Clydesdale, with wider back and deeper, heavier body. In this breed we find our heaviest draft horse, with stallions weighing

1,800 to 2,200 pounds or more, and the mares 1,700 to 1,900 pounds. A height of 17 hands is acceptable. A large head, with a tendency to Roman nose, great scale and massive body are features of a superior Shire. The shoulders and pasterns tend to undesirable straightness; the bone is frequently heavy; and the feet large and inclined to be flat. Formerly the Shire was regarded as coarse, heavy and slow in movement, and lacking in good action. In recent years English breeders have done much to improve them, and the criticisms of slow movement and coarseness are not as generally true to-day as they once were.

The Suffolk horse is a breed that originated long ago in Suffolk county, on the east coast of England. Few horses of this breed are found in America. The color is chestnut, varying from light to dark. The size is medium, stallions commonly weighing 1,800 to 1,900 pounds, and standing 16 to 17 hands high. It is characterized by a distinctly Roman face; crested neck; a very wide, deep-ribbed, compact body; and short, clean legs. The round, full form of body gave this horse in its native home the name of Suffolk Punch, a term not so commonly used to-day. The hocks have been somewhat criticized as lacking in depth, and the feet have also been faulted for being too small and shelly. In their native Suffolk, one sees fine specimens of this breed, where they are regarded as very superior draft horses for farm work.

CHAPTER X.

JUDGING HORSES OF LIGHT HARNESS TYPE.

IN the discussion of the draft horse in the preceding pages, many things are considered in some detail, that have a general application to all types of horses, and need not be taken up again. Therefore, it is highly desirable that the reader first familiarize himself with the subject of judging draft horses. Emphasis will be placed in the following pages on those features that have special application to the type under consideration. In comparison the light harness horse is much smaller than the draft horse, and is narrower and less inclined to fleshiness. He is bred for speed and rapid gait, consequently he should not be encumbered with unnecessary weight. The light harness



Fig. 70.—“The light harness horse is much smaller than the draft horse, and is narrower and less inclined to fleshiness.” (Reproduced from photograph by Schreiber & Sons.)

type, however, as seen in the American roadster, trotter or pacer, varies greatly in size and conformation. This is due to the lack of systematic breeding within this class, and the mating of animals of widely different blood lines and conformation. The discussion following is meant to apply to a type of the light harness horse, bred for driving and speed, that is of medium size and meets the demands of American horsemen. What is known as the "Standard Bred" is another name for this same type.

JUDGING LIGHT HARNESS TYPE OF HORSE BY SCALE OF POINTS.

The height of the light harness horse usually ranges from 15 $\frac{1}{4}$ to 16 hands, though it may vary even more than this. A height from 15 $\frac{1}{4}$ to 15 $\frac{3}{4}$ may be considered most desirable.

The weight of the light harness horse varies even more than the height. In general 1,100 pounds may be regarded with favor. However, stallions outweigh mares as a rule and 1,100 to 1,250 pounds for the former, and 900 to 1,100 for the latter, are satisfying ranges of weight. In judging a class, most men would discriminate against undersize, though excessive weight and grossness would be equally bad.

SCORE CARD FOR LIGHT HARNESS HORSES.

SCALE OF POINTS		Standard of Perfect Score	Score of Horse Studied
A—GENERAL APPEARANCE, 12 Points:			
1.	Height estimated hands Actual hands . . . . .	. . . . .	. . . . .
2.	Weight, 1,200 lbs. for stallion, 1,000 lbs. for mare . . . . .	. . . . .	. . . . .
	Estimated weight . . . . .	. . . . .	. . . . .
	Actual weight . . . . .	. . . . .	. . . . .
3.	Form, long, deep, muscular; angular	4	. . . . .
4.	Quality, general refinement and finish shown in clearly defined features of head, bone, and joints, prominent tendons and fine skin and hair	4	. . . . .
5.	Temperament, active, docile, disposition good	4	. . . . .
B—HEAD AND NECK, 8 Points:			
6.	Head in good proportions, clear cut, straight face line, angle lower jaw wide	2	. . . . .
7.	Forehead, broad, full	1	. . . . .
8.	Eyes, prominent, large, clear, bright	1	. . . . .

SCALE OF POINTS		Standard of Perfect Score	Score of Horse Studied
9.	Muzzle, fine, lips thin and even, teeth sound, nostrils large	1	....
10.	Ears, medium size, fine, pointed, set close, carried alert	1	....
11.	Neck, long, lean, slightly arched, throat-latch fine, windpipe large	2	....
C—FOREHAND, 24 Points:			
12.	Shoulders, long, oblique, light, smooth	2	....
13.	Arms, short, muscular, carried well forward	1	....
14.	Forearms, long, wide, muscular	2	....
15.	Knees, straight, wide, deep, clean, strongly supported	2	....
16.	Cannons, short, wide, tendons prominent and well set back	2	....
17.	Fetlocks, wide, straight, tendons well back	2	....
18.	Pasterns, long, oblique (angle about 45°), smooth, strong	3	....
19.	Feet, medium size, even, round, straight; slope parallel to pastern; sole concave; bars strong; frog large, elastic; heel wide, full, 1-3 length of toe; horn dense, smooth	6	....
20.	Legs, properly placed, according to description in draft horse score card	4	....
D—BODY, 10 Points:			
21.	Withers, high, narrow, extending well back	1	....
22.	Chest, medium width, deep	2	....
23.	Ribs, long, moderately sprung, close	2	....
24.	Back, straight, short, broad, strong	2	....
25.	Loin, short, broad, strong	2	....
26.	Flanks, deep, full, long, low underline	1	....
E—HINDQUARTERS, 27 Points:			
27.	Hips, wide-spaced, smooth, level	2	....
28.	Croup, long, wide, smooth, level tendency	2	....
29.	Tail, attached high, well carried	1	....
30.	Thighs, long, muscular; stifles prominent, well set	2	....
31.	Gaskins, long, broad, muscular	2	....
32.	Hocks, straight, wide, deep, clean cut, point prominent, well supported	5	....
33.	Cannons, short, wide, flat, clean, tendons well defined, set well back	2	....
34.	Fetlocks, wide, straight, tendons well back	1	....
35.	Pasterns, long, not so oblique as in front (about 50°), strong	2	....
36.	Feet, medium size, even, round, straight; slope parallel to pastern; sole concave; bars strong; frog large, elastic; heel wide, full, 1-3 length of toe; horn dense	4	....
37.	Legs, properly placed, according to definition in draft horse score card	4	....
F—ACTION, 19 Points:			
38.	Walk, long, free stride	5	....
39.	Trot, long, straight, regular, rapid, easy stride	14	....
Total		100	....

The general form of the light harness horse should be comparatively long, narrow and deep, with a muscular appearance, and a tendency to angularity. The muscles and joints incline to prominence, and the ribs are more or

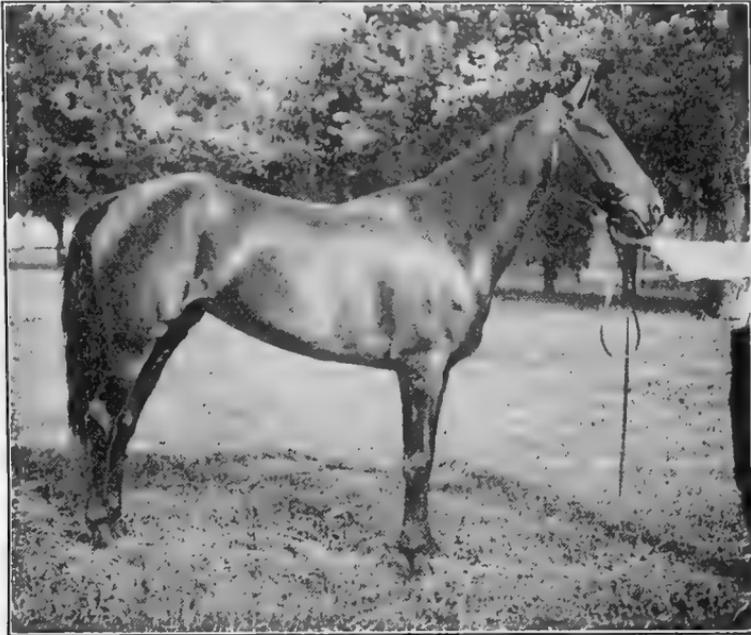


Fig. 71.—“A horse of this type, with thickness of form, could not be expected to produce the greatest speed.”

less noticeable. A horse of this type with thickness of form, could not be expected to produce the greatest speed.

The quality of the light harness horse is shown in the general refinement of parts, the head and limbs being small, and free from coarseness. The lines of the head are well defined, the ears small and thin, the skin is also thin, and the hair fine and silky. The bone is comparatively small, and the joints are quite lean. The leanness of leg enables one often to see the tendons very easily. The appearance

of veins on the surface of face, shoulders, lower part of body, and upper part of limbs, are expressive of quality and superior breeding. So also the prominent, delicate nostril is a sign of quality.

The temperament of the light harness horse is naturally nervous, indicating the desire for action. Of an active type, he is well fitted for speed and motion. If sleepy and dull, a vital quality of the type is lacking. Too lively temperament is undesirable, but the horse should manifest an interest in his surroundings, and express animation to a degree indicating both intelligence and potent muscular activity. In disposition, we find wide extremes among light harness horses, due to differences in inheritance. In general horses of this class are of good disposition and not given to biting, kicking or other meanness to any unusual

degree. The judge is justified in attaching importance to disposition as closely related to temperament, and as distinctive of the type.

The head of the light harness horse should be lean and shapely, the profile showing quite straight from ears to nose. Craig makes the observation¹ that in scanning the photographs of a great number of trotters, "nearly all stallions have slight Roman noses while most of the mares have slightly dished faces, a distinction which seems to be characteristic of the sexes." A very prominent Roman nose he regards as indicative



Fig. 72.—"The profile showing quite straight from ears to nose."

¹ Judging Live Stock, 6th ed., 1904, p. 21.

of a self-willed disposition. The more distinctive features of the head of this type of horse, is marked leanness, with veins often showing prominently under the skin. A coarse, meaty head is highly objectionable, and should be discriminated against by the judge. Sensitive, well-defined nostrils, and thin, even lips are found among the best examples of this type.

The neck of the light harness horse is essentially long, lean and muscular. Often the stallions show but little crest. The neck should be carried gracefully, and raised enough to support the head as becomes a horse of vigor. The speed horse naturally possesses a long neck, and as the type approaches draft rather than speed form, the neck shortens and thickens. The proper length of neck is assumed to be that which enables the horse to graze easily. Flexibility



Fig. 73.—“The long, flexible neck is a striking feature of conformation.”

of neck is essential in the speed horse, and to secure this, there must be ample length and muscularity without any undesirable thickness. Hayes states^{1a} that "when 'cleverness' is essential to a horse, he should have a flexible neck, and should be able to bend and extend it with utmost facility, so as to use his head and neck as balancing pole for preserving the equilibrium of his body." Patrons of the race track who are interested in the horse, are well aware that the long, flexible neck is a striking feature of conformation. It is desirable, for good conformation, to have a top line of neck with a very slight arch, but not enough to be conspicuous, excepting among stallions. Ewe necks are not uncommon among light harness horses, but this conformation is neither beautiful nor muscular. Hayes, in referring to this kind of neck² with light harness horses, states that it seems to be no detriment to speed, but that it might affect his handiness, by depriving his rider or driver, to some extent, of command of him, and by causing his head to be brought into a direction which might prevent him seeing clearly where he is going. According to Goubaux and Barriere,³ "The neck is called straight or pyramidal, when its borders are rectilinear, and its lateral faces nearly plane or but slightly rounded, according to the age, the sex, the volume of the muscles, etc., of the animal. The head is then well supported and well directed." Such a type of neck applies especially to the light harness horse.

The shoulders of the light harness horse should be long and especially oblique or sloping, for the reason that the horse with a long, oblique, light shoulder is able to raise his fore limb and advance it more easily than with a more upright or straight shoulder. Obliqueness in itself, however, is no guarantee of speed, for we know that deer and antelope, the shoulders of which incline to be upright, are very rapid travelers. However, in the artificial con-

^{1a} The Points of the Horse, 3d ed., 1904, p. 221.

² The Points of the Horse, 3d ed., 1904, p. 224.

³ The Exterior of the Horse, 2d ed., 1904, p. 99.

ditions of bearing burdens and the experience of training, the horse with the light, oblique blade has less concussion of fore limb and is able to stand long and severe effort better than the horse with upright blade. Thickness or fullness of shoulder in its upper part, especially about the withers, is very undesirable. A combination of lightness and obliqueness secures the most perfect action. Hayes states that he has seen many sprinters with upright shoulders, but he has never seen a genuine stayer, such as Ormonde, St. Gatien, or Robert the Devil, with that kind of conformation. There is no controversy among light horse critics as to the significance and value of the light, oblique shoulder. Among draft horsemen, however, there is more tolerance for the upright position. The light harness judge should emphasize this matter of desirable shoulder conformation.

The arms and forearms of the light harness horse should be reasonably muscular. The heavy muscularity of the draft horse is not looked for, but a wide, firm covering here is desirable. In producing great speed, it is necessary that the muscles back of the forearm be strongly developed, as they are brought into active play in raising the foreleg.

The knees of the light harness horse should possess the same desirable qualities to be found in the draft horse, though the conformation will be less gross and more sharply defined.

The cannons of the light harness horse are rarely fleshy, being simply the combination of bone, tendon, ligament and skin, with flesh or muscle reduced to a minimum. A short, clean, smooth cannon, with the tendons carried well back, and parallel with the bone, are prime features of the horse with rapid gait. Roughness of bone is easily noted in this type, and is an evidence of weakness. Long cannon bones are undesirable, for they lack the strength of the shorter ones. Further, as a rule, the horse of greatest speed-producing power has a short rather than long cannon. Horse critics often emphasize the point that the

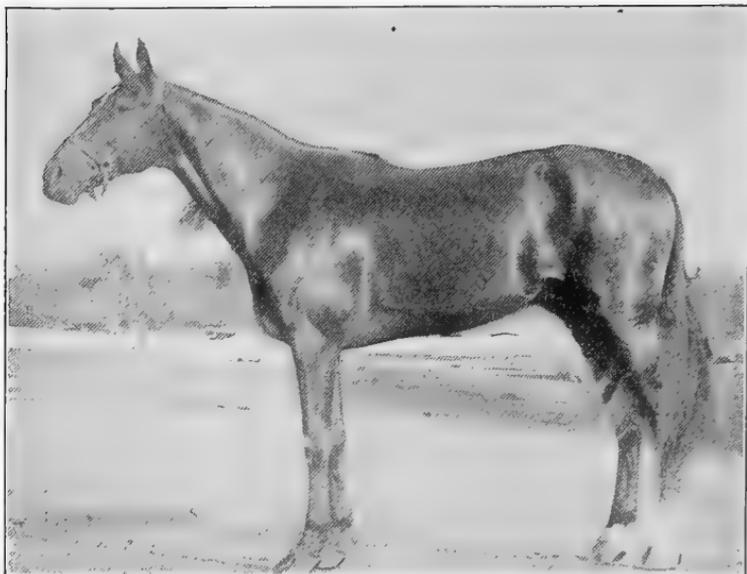


Fig. 74.—“On the light type of horse the bone and tendons are usually seen without difficulty.” The noted trotter *The Harvester*.

cannon bones should be hard and of superior substance. It is not easy to determine the quality of the bone excepting in a relative way, as for example, by smoothness and proportions of the part. The application of the hands should show the bone itself very clean and smooth, with the back tendons prominent and a complete freedom from puffiness, soft tissue or roughness. On the light type of horse the bone and tendon are usually seen without difficulty and handling is not necessary. Emphasis should be placed on the tendons being parallel with the bone, and the upper part of cannon presenting a strong depth from front to rear, entirely free from a tied-in appearance just below the knee.

The pasterns of the light harness horse should be long, smooth and strong, being carried at an angle of about 45

degrees. The shoulder and pastern have much work in common, and if the speed is great, or the work severe, the pastern will bear up under it best, if long, strong, and springy. Severe concussion will not be so likely to occur with such a pastern. If short and stubby, the gait will be hard and slow, and foot trouble may very likely result. It will be well to note here, however, that on soft ground conditions are more favorable for the short, less oblique pastern. On the hard American race track and ordinary highway, the long, oblique pastern results in a minimum concussion. The long pastern allows for greater movement of the fetlock joint, an essential if speed is desired. It is important that the pastern should not be too sloping, as occasionally occurs, with the fetlock extending back of the foot to a marked degree. This is a defect due to a weakening of the tendons and ligaments above.

The foot of the light harness horse does not differ from that of the draft horse, excepting in degree. Besides being smaller, it no doubt has a tougher hoof than that of the heavier horse, and consequently is less inclined to wear away and take on bad form. The feet should be of medium size, good mates in both size and shape; be wide at the heel and not too low set at this point, and have well developed frog, and strong bars. The length of heel should be about one-third the length of the front of the hoof. Such a foot withstands the severe concussion of heavy driving, and enables the horse to do his work without discomfort as far as the feet are concerned. The judge is not likely to overestimate the importance of the feet, and if he turns a horse down for defective under-pinning, his work will be commended by critics, rather than otherwise.

The position of the front legs of the light harness horse when at rest, is correctly described under the discussion of the draft horse, on page 88.

The body of the light harness horse differs from that of the draft horse, in being smaller and having a greater relative depth than breadth. As viewed from in front or



Fig. 75.—“As viewed from in front or behind, one is impressed with a degree of narrowness of body. Width is undesirable from a speed point of view.”

behind, one is impressed with a degree of narrowness of body. Width is undesirable from a speed point of view, and no great race horses have been notably wide. Hayes states that he is convinced that no race horse can be too narrow in front, for the width of frontage is essentially that of the body. Persons familiar with the trotter or pacer, recognize that while the body may show plenty of capacity for the various organs, this capacity is seen in depth rather than in width. The high elevation of the withers, and their lean, long appearance, add to the general effect of depth of body. So also a rib formation showing ample length, yet only moderate spring or arch, is in harmony with the desired conformation. The back of the race horse should be short and strong, for the longer it is, the weaker will be the muscular connection essential in speed production. So also should the loin be short, broad and thick, indicating strength.

The hindquarters of the light harness horse often stand at a slightly higher elevation than the forequarters at the withers, and have a lean and somewhat angular appearance. The hips should be less fleshed over than in the draft horse. The croup should be long and muscular, and tend to be level from between the hips to setting on of tail. Steepness of croup is quite common among light harness horses, especially pacers, a side view showing a marked slope. In the case of the trotter the croup is carried higher and in better form. Hayes states⁴ that, "to have the point of the buttock placed high and projecting well to the rear is a great beauty, which may be seen in some Thoroughbreds and in high-caste Arabs." *The gaskin* should be long, broad and muscular. Differing from the draft horse, length and strength of gaskin muscle are essential if speed is to be secured, for by these only can increase of motion be obtained up to the end of the stride. The stifle joint should be fairly high, and face outward enough to permit freedom of motion. The hock of the light

⁴ Points of the Horse, p. 311.

harness horse lacks the fleshy tendency of the draft horse, is leaner and more sharply defined. This joint, if superior speed is to be attained, must be right in conformation and position. The hock should be straight and open enough to allow the cannon bone to hold a vertical line. A leg of such conformation has maximum power of extension in producing high class speed. It is not an uncommon sight however, to see race horses possessing great speed, with curved hocks—especially pacers—that, when at rest, show the cannons placed slightly forward and beneath the



Fig. 76.—“The croup should be long and muscular, and tend to be level from between the hips to setting on of tail.”

body. Jay-eye-See was a good example of this sort. Nevertheless, such a hock does not admit extreme extension. This being so, the judge should emphasize the importance of the straight hock and properly placed cannon. The leg below the hock should be free of all fleshiness, and show superior quality. The hind pasterns, it is to be noted, are somewhat more upright than those in front, but not enough so usually, to cause injurious concussion or affect speed.

The hind feet, as explained elsewhere (page 103), are not so round as the front ones, while the sides are straighter, the heel higher, and the frog narrower.

The action of the light harness horse is one of its most important features, for without excellence in this regard he becomes distinctly inferior in importance. The walk should meet all the requirements of correct action already described. Further, the walk should be free and easy, the feet being picked up with snap and placed



Fig. 77.—“The action of the light harness horse is one of its most important features.” (Courtesy The Horse Review.)

back on the ground with decision, with no tendency to stumble or drag the toes. When standing behind the horse, the flexing of the joints should clearly show the glisten of the shoes as the horse walks away. The trot or pace, however, rather than the walk, is the especial feature valued in the light harness horse. High knee action is not sought, but rather the long stride, in which the forward and backward reaches are carried to maximum efficiency. In other words, extreme extension is associated with great speed. Therefore, as the judge stands at one side and watches the light harness horse pass by, the relationship of flexing to

extension should be noted and emphasis placed on the latter. The knee will be carried high, the hock will not show excess of motion, and the feet will move no higher above the ground than is necessary to secure freedom of motion. While similar extension may be expected in the pace, the peculiarities of gait make it unreasonable for the judge to expect such harmony of motion as is usually found in the trotter. One should not be too critical of swaying or lurching, if the necessary speed is attained. In commenting on



Fig. 78.—“The relationship of flexing to extension should be noted.”

the light harness horse, at either trot or pace, Jordan says,⁵ “the average or standard gait of either should result in the greatest symmetry of action, together with the greatest economy of energy and the greatest speed. It is true that there will always be horses that have their own way of going apparently, and this may be due to a peculiar development and conformation. Their defects are often entirely offset by muscular and structural compensations. In all such cases, however, the locomotion must be along lines of directness and symmetry, otherwise there would always

⁵The Gait of the American Trotter and Pacer. Rudolph Jordan, Jr., 1910, p. 86.

be a lack of balance and of speed." If the gait is in a measure rough, there must be sufficient balance to overcome all irregularities, if maximum speed is to be attained.

The Standard-bred horse is what is commonly known as the American trotter or pacer. There is lack of uniformity of breed character, such as is found in the Hackney, due to mating animals of different types and blood lines. Many people refuse to recognize the Standard bred as a breed,



Fig. 79.—The Harvester and Ed. Geers. ("The Standard Bred Horse.")

although under present conditions it is necessary to regard it as such. There is a wide variation in size and type, ranging from minimum horse height to 16 hands or more, and weighing up to 1,400 pounds. A height of $15\frac{3}{4}$ hands, and weight of 1,000 pounds for the mare, and 1,200 pounds for the stallion, are quite approved. The color varies greatly, with bay most common. Referring to the gait, Gay

states⁶ that, "the way of going is most characteristic. Whether at trot or pace, the gait is distinguished by the length and rapidity of the individual strides, and the level, true, frictionless manner in which they are executed. Furthermore, the instinct to trot is well marked." He further says that, "Undersized and ill-shaped individuals with ewe necks, goose-rumps, bent or rounded hocks and tied-in cannons are too common." As this is the typical harness horse it will be unnecessary to go into further descriptive details than those outlined in the preceding pages.

Trotting and pacing standards are established by the American Trotting Register Association. When an animal meets the requirements set forth below, it shall be accepted as a standard bred trotter or pacer as the case may be:

(A)—THE TROTTING STANDARD.

1—The progeny of a registered standard trotting horse and a registered standard trotting mare.

2—A stallion sired by a registered standard trotting horse, provided his dam and grandam were sired by registered standard trotting horses and he himself has a trotting record of 2:30 and is the sire of three trotters with records of 2:30, from different mares.

3—A mare whose sire is a registered standard trotting horse, and whose dam and grandam were sired by registered standard trotting horses, provided she herself has a trotting record of 2:30, or is the dam of one trotter with a record of 2:30.

4—A mare sired by a registered standard trotting horse, provided she is the dam of two trotters with records of 2:30.

5—A mare sired by a registered standard trotting horse, provided her first, second, and third dams are each sired by a registered standard trotting horse.

⁶ Principles and Practice of Judging Live Stock, 1914, p. 160.

(B)—THE PACING STANDARD.

1—The progeny of a registered standard pacing horse and a registered standard pacing mare.

2—A stallion sired by a registered standard pacing horse (provided his dam and grandam were sired by registered standard pacing horses, and he himself has a pacing record of 2:25), and is the sire of three pacers with records of 2:25, from different mares.

3—A mare whose sire is a registered standard pacing horse and whose dam and grandam were sired by registered standard pacing horses, provided she herself has a pacing record of 2:25, or is the dam of one pacer with a record of 2:25.

4—A mare sired by a registered standard pacing horse, provided she is the dam of two pacers with records of 2:25.

5—A mare sired by a registered standard pacing horse, provided her first, second and third dams are each sired by a registered standard pacing horse.

6—The progeny of a registered standard trotting horse out of a registered standard pacing mare, or of a registered standard pacing horse out of a registered standard trotting mare.

CHAPTER XI.

JUDGING HORSES OF HEAVY HARNESS TYPE.

THE heavy harness type of horse is also commonly referred to as the coach or carriage horse. This type is more particularly classified on the basis of size, conformation and action, rather than on breed lines. For example, we have certain breeds, such as the Hackney, French Coach, and German Coach, that are recognized as belonging to the heavy harness class. Nevertheless we find within these breeds types that may be classified otherwise. So also among horses of light harness breeding, fine examples of heavy harness type may be found. In fact some of the most beautiful examples of heavy harness horses have been



Fig. 80.—“A horse with most of the essentials of light harness type, but with more weight and smoothness of conformation, and more stately knee and hock action.” (Courtesy Mr. S. L. Howe, British Columbia.)

of trotting horse blood lines. Further, within what is regarded as the heavy harness group, may be found sub-classes, based largely on size, action and purpose. Thus we have the coach, park, cob and run-about sub-classes. The general discussion, as relates to the scale of points, will apply to the coach horse as best representing this type. In view of the fact that the heavy harness type has become of minor importance both in America and Europe, owing to its being largely supplanted by the automobile, but brief consideration will here be given this type. Further, if one will picture a horse with most of the essentials of light harness type, but with more weight and smoothness of conformation, and more stately knee and hock action, he will comprehend much of what is desired in the heavy harness type.

SCORE CARD FOR HEAVY HARNESS HORSE.

SCALE OF POINTS	Standard of Perfect Score	Score of Horse Studied
A—GENERAL APPEARANCE, 12 Points:		
1. Height, estimated hands Actual hands . . . . .	..	....
2. Weight, 1,350 lbs. for stallions, 1,200 lbs. for mares. Estimated weight Actual weight . . . . .	..	....
3. Form, close, full made, smooth, symmetrical, stylish	4	....
4. Quality, general refinement and finish shown in clearly defined features of head, bone and joints, prominent tendons, and fine skin and hair	4	....
5. Temperament, proud, stylish, mannerly, disposition good	4	....
B—HEAD AND NECK, 8 Points:		
6. Head, in good proportions, clean-cut, straight face line, angle lower jaw wide	2	....
7. Forehead, broad, full	1	....
8. Eyes, prominent, large, clear, bright	1	....
9. Muzzle, fine, lips thin and even, teeth sound, nostrils large	1	....
10. Ears, medium size, fine, pointed, set close, carried alert	1	....
11. Neck, long, lofty carriage, high crest, throat-latch fine, windpipe large	2	....

SCALE OF POINTS	Standard of Perfect Score	Score of Horse Studied
C—FOREHAND, 24 Points:		
12. Shoulders, long, oblique, smooth	2	....
13. Arms, short, muscular, carried well forward	1	....
14. Forearms, long, wide, muscular	2	....
15. Knees, straight, wide, deep, clean, strongly supported	2	....
16. Cannons, short, wide, tendons prominent, set well back	2	....
17. Fetlocks, wide, straight, tendons set well back	2	....
18. Pasterns, long, oblique (angle about 45°), smooth, strong	3	....
19. Feet, medium size, even, round, straight, slope parallel to pastern; sole concave; bars strong; frog large, elastic; heel wide and full, 1-3 length toe; horn dense and smooth	6	....
20. Legs, properly placed, according to description in draft horse score card	4	....
D—BODY, 10 Points:		
21. Withers, high, narrow, extending well back	1	....
22. Chest, deep, girth large	2	....
23. Ribs, long, well sprung, close	2	....
24. Back, straight, short, broad, strong	2	....
25. Loin, short, broad, strong	2	....
26. Flanks, deep, full, long low underline	1	....
E—HINDQUARTERS, 20 Points:		
27. Hips, wide spaced, smooth, round	2	....
28. Croup, long, wide, round, smooth, level tendency	2	....
29. Tail, attached high, well carried	2	....
30. Thighs, long, full, muscular; stifles prominent, well set	2	....
31. Gaskins, long, broad, muscular	2	....
32. Hocks, straight, wide, deep, clean-cut, point prominent, well supported	5	....
33. Cannons, short, wide, flat, clean tendons, well defined, set well back	2	....
34. Fetlocks, wide, straight, tendons well back	2	....
35. Pasterns, long, not so oblique as in front (about 50°), strong	3	....
36. Feet, medium size, even, round, straight; slope parallel to pastern; sole concave; bars strong; frog large, elastic; heel wide, full, 1-3 length toe; horn dense, smooth	4	....
37. Legs, properly placed, according to description in draft horse score card	4	....
F—ACTION, 16 Points:		
38. Walk, straight, snappy, balanced	6	....
39. Trot, in line, bold, flashy, strong flexion of knees and hocks, balanced, regular	10	....
Total	100	....

The general appearance of a heavy harness horse, when in good condition, shows smooth, graceful body lines, with a general fullness in all the parts. The height should be about 16 hands and the weight from 1,100 to 1,250 pounds for geldings or mares. Stallions will usually range from 1,250 to 1,550, according to breed. In quality the coacher should be superior, showing the best of feet, bone and hair. Action of the very best, high and strong at both knees and hock, is important, while graceful carriage is equally essential. In general appearance the best type of coach



Fig. 81.—“Showing much of symmetry and style.”

horse shows a long, arching neck, round full body, long level croup, high carriage of tail, and what is known as a “coachy” or “trappy” action. The coach horse is expected to travel about eight miles an hour at a trot. It is used mainly about large towns or cities, and attached to a brougham or ordinary coach. Coach horses are more commonly driven as pairs or fours. In dealing with the individual points, one will notice that the score cards of each type resemble one another in various particulars, both in description and values.

The form of the heavy harness horse should be rather compact, full and well smoothed over in all the parts, and showing much of symmetry and style. There should be just enough of condition to give a well turned effect.

Quality in the heavy harness horse is regarded as of much importance. General refinement and finish must be apparent, for coarseness is a serious defect in this kind of horse, and affects values in a marked degree. Therefore the features of the head should be clearly defined, and the joints, bones and tendons show quality.

The temperament of the heavy harness horse should appear active, yet well under control, as seen in an animated, proud carriage of head, associated with the best of manners, both at rest and in action. Such a temperament shows more restraint than in the case of the light harness horse, yet does not lack in nervous force.

The neck of the heavy harness horse should be long, of lofty carriage, with some arch, and merge smoothly with head and shoulders. A certain degree of fullness of neck, trim in outline, combined with length and arch, are quite characteristic of this type. A heavy harness horse, with such a neck, should need little assistance from the check, to present a bold and lofty front. A short, thick neck should meet with disfavor on the part of the judge.

The shoulders of the heavy harness type should be long, oblique and smoothly laid in. Such conformation not only plays its part in furnishing correct action, but also meets the demand of the critic for attractive lines. A rough, straight, prominent shoulder produces a hard gait and a most undesirable appearance.

The body of the heavy harness horse exhibits a roundness and fullness of outline much more marked than in the case of the light harness type. There is more thickness of body, with depressions filled in and points smoothed over, thus giving an appearance of condition and finish that is very attractive. The withers are carried high, and extend back well, but are somewhat thicker and more heavily

muscle than with the light trotter or pacer. The chest girth must be full and the flanks low and well filled out.

The hindquarters of the heavy harness horse have marked characteristics when of correct conformation. The hips are smooth and neatly placed; the croup long, wide and nearly level; the tail is attached high, and is often carried with a stylish arch which gives a jaunty effect.



Fig. 82.—“The knees flexed strongly and the movement one of balance and energy.” (Courtesy Mr. S. L. Howe, British Columbia.)

While the depressed croup with the light harness type is quite common, and is not always viewed with disfavor, a steep croup with the heavy harness type is generally regarded as highly undesirable. The thighs of the coach horse possess a certain degree of plumpness, in keeping with the general smoothness of body, while the gaskins are also relatively thick, in keeping with the character of thighs. Judges should emphasize especially the importance of the



Fig. 83.—“While this method of movement is most showy and stylish, it is not serviceable action for a road horse.” (Courtesy Mr. S. L. Howe, British Columbia.)

above features, as essentials in conformation of this type.

The action of the heavy harness horse is of prime importance. The walk should be perfectly straight, the feet carried in a direct line, the knees flexed strongly, and the movement one of balance and energy. At the trot the knees and hocks should be carried very high, giving a gait expressive of much motion. There is less extension of limbs than with trotter or pacer, the reach being shorter. In this high action of the front legs there is a gradual, well balanced movement, and as the limbs unfold, the feet follow as it were the arc of a circle. Such a horse is known as a high-stepper, and his action, as already mentioned, is often termed “trappy” or “coachy.” In discussing the high-stepper in action, the late Prof. John A. Craig well says,¹ “The peculiarity of this action consists in lifting the knees inordinately high and flexing the hocks so that they come close to the body and keep the legs well under it. From

¹ Judging Live Stock, 6th ed., 1904, p. 16.

the standpoint of action alone, the higher the knees and the hocks are lifted, the more valuable is the horse, provided the type and other features more common are equally satisfactory. The feet must be thrown forward without any dish-ing on either side, and the hocks must pass each other close and in line with the forward movement. It is easy to understand that while this method of movement is the most showy and stylish, it is not serviceable action for a road horse. The front legs soon succumb to the heavy concussion they would be called upon to stand under heavy driving. But this action is sought only in the horse that is used for drives about the city where style is paramount to speed and stamina. While it is recognized that the high-stepper should have as many as possible of the other qualities of excellence in addition to high action, yet all others are considered of minor value among horses of this class. 'All-around action only to be considered,' is the current phrase in the prize lists that provide classes for competition among the high-steppers, which means a combination of shoulder, knee and hock action." Judges should carefully study the action from the three points of vantage, front, rear and side, and place a proper premium on all these



Fig. 84.—“Such horses are now infrequent, though they are still to be seen at the horse shows.” (Courtesy The Pictorial News.)

phases. Prior to the introduction of the automobile, coach horses with action of the above type, arrayed in heavy harness, attached to a showy and heavy coach or carriage, was a common sight in and about every important city in Europe and America. Such horses are now infrequent, though they are still to be seen at the horse shows to some extent, exhibited by a limited clientage of interested horsemen.

The Park horse is a coach horse of the smaller class, in which is found typical heavy harness conformation and a very flashy style of action. This sub-class represents the finest of the smaller coach horses, weighing 1,000 to 1,150 pounds, and standing from 15 to $15\frac{3}{4}$ hands high. The action of the Park horse should be extremely high, with the best of balance, and the limbs moving in perfect rhythm. Such horses are uncommon, and in times past have been in strong demand. Park horses are commonly driven singly, or in pairs, and occasionally in fours. They are attached to light pleasure vehicles, such as phaetons, gigs, park drags and Victorias.

The Cob horse is a small, compact animal, a sub-class of heavy harness type, just a degree too large to be classed as a pony. His full, compact form has come to be known as "cobby," which term expresses his general conformation. He stands from $14\frac{1}{4}$ to $15\frac{1}{4}$ hands high, and weighs 900 to 1,100 pounds. The Cob has a very smart gait, with high action and a fair amount of reach. In England and Wales one sees many of these horses, especially Welch Cobs, that show great speed and endurance on country roads. They are commonly hitched singly to comparatively heavy carts, which they draw with apparent ease. They are also used on light broughams or phaetons.

The Runabout horse combines features of conformation of a small, heavy harness horse, with more of the action of the light harness horse. In fact he is classed by some authorities as a light harness horse, and by others as a heavy harness type. This horse stands from $14\frac{3}{4}$ to $15\frac{1}{2}$

hands high, and weighs 900 to 1,050 pounds. He is not quite so stocky as the Cob, and also lacks his trappy action. This is a handy small driver, adapted to a variety of conditions, easily handled, and valued on the market at a modest price.

The Hackney horse had its early development in eastern

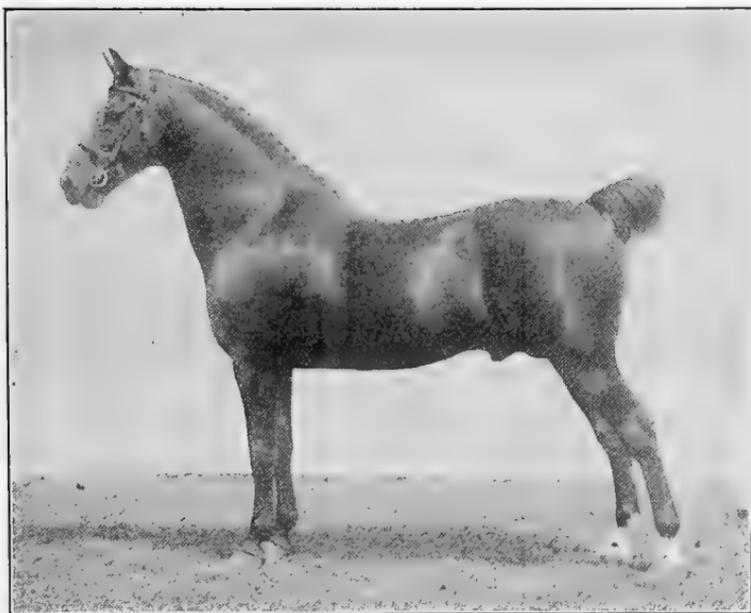


Fig. 85.—Hackney stallion, "Gentleman John," a famous champion. (Photo by Schreiber & Sons.)

England, especially the counties of Suffolk and Norfolk. Hackneys are to-day common in England, but hardly so in America. It is a breed that varies much in size, ranging from a pony to a good-sized carriage horse. Whether pony or full-sized horse, Hackney characteristics are very distinctive. The standard horse of the breed stands about $15\frac{1}{2}$ hands high. The color is commonly some shade of chestnut, with bays and browns not uncommon. A Hack-

ney of good type has a well proportioned, attractive head, of breedy character; a long, arching neck; a strong, short back and well turned rib; long, wide, level croup, and full, rounded thighs; short, clean-cut legs and good feet. The Hackney is famous for his high-stepping gait, which is often very pronounced, the flexing of knee and hock being carried to an extreme. The popularity of this heavy harness horse is due to its flash action. A high carriage of the knee, and short extension of the leg results in an abruptness of concussion that is anything but the poetry of motion, and punishes the feet in an undesirable degree.



Fig. 86.—French Coach stallion, "Decorateur." (Photo by E. H. Mickle.)

The French Coach horse originated in France, where it is known as the Demi-Sang (Half-Blood). French Coach horses have gone much out of favor in America, and but few are to be seen in this country. They are usually bay, brown or chestnut, although there are other colors. They

stand about 16 hands high and weigh from 1,200 to 1,400 pounds. These horses are much like other typical carriage horses in style and appearance, though their action is not so high and short as the Hackney.



Fig. 87.—German Coach Horse. (Courtesy American Agriculturist.)

The German Coach horse originated in northwestern Germany, in the Oldenburg and Hanover provinces. This is the largest of the heavy harness breeds, standing from 16 to 16½ hands, and the stallions frequently weighing about 1,500 pounds. Bay, brown, or black are the common colors, especially the two former. This is a breed of some grossness, being heavy of bone and joint, and lacking in action, as compared with the Hackney. Horses of this breed are not popular in America.

CHAPTER XII.

JUDGING THE SADDLE TYPE OF HORSE.

Type and character with the saddle horse varies considerably according to breeding. The Thoroughbred is the oldest pure bred saddle horse other than the Arab, and while comparatively little used to-day in America, it is very common in certain European countries, especially Great Britain. A class of horses, known as Hunters, quite variable in type and breeding, are also extensively used for the saddle in Europe. In fact light horses are commonly used for the saddle in various parts of the world, that vary greatly in ancestry, and more or less in type. So it may be assumed that there is not the uniformity of type with the saddle horse that some might think. In the United States a distinct breed, known as the American Saddle horse, with a strong foundation of Thoroughbred blood, has been developed and improved to a high standard of excellence. The widespread distribution of this breed in America, its pre-eminence for the saddle, and its well established type, justifies using it as the standard for special study of saddle horse conformation.

SCORE CARD FOR SADDLE HORSE OF AMERICAN TYPE.

SCALE OF POINTS	Standard of Perfect Score	Score of Horse Studied
A—GENERAL APPEARANCE, 12 Points:		
1. Height , Estimated hands Actual hands . . . . .	.. ..	....
2. Weight , 1,050 to 1,150 pounds . . . . .	.. ..	....
3. Form , close but not full made, deep but not broad, symmetrical	4	....
4. Quality , bone clean, dense, fine, yet indicating substance; tendons and joints sharply defined; hide and hair fine; general refinement, finish	4	....
5. Temperament , active, disposition good, intelligent	4	....

SCALE OF POINTS

Standard of	Score of
Perfect	Horse
Score	Studied

B—HEAD AND NECK, 8 Points:

6. Head, size and dimensions in proportion, clear-cut features, straight face line, wide angle in lower jaw	1	....
7. Forehead, broad, full	1	....
8. Eyes, prominent orbit, large, full, bright, clear, lid thin, even curvature	1	....
9. Muzzle, fine, nostrils large, lips thin, trim, even	1	....
10. Ears, medium size, pointed, set close, carried alert	1	....
11. Neck long, simple, well crested, not carried too high, throttle well cut out, head well set on	3	....

C—FOREHAND, 22 Points:

12. Shoulders, very long, sloping yet muscular	3	....
13. Arms, short, muscular, carried well forward	1	....
14. Forearms, long, broad, muscular	1	....
15. Knees, straight, wide, deep, strongly supported	2	....
16. Cannons, short, broad, flat; tendons sharply defined, set well back	2	....
17. Fetlocks wide; tendons well back, straight, well supported	2	....
18. Pasterns, long, oblique (45°), smooth, strong	2	....
19. Feet, large, round, uniform, straight, slope of wall parallel to slope of pastern; sole concave; bars strong; frog large, elastic; heels wide, full, 1-3 height length of toe; horn dense, smooth, dark color	5	....
20. Legs, properly placed, according to description in draft horse score card	4	....

D—BODY, 12 Points:

21. Withers, high, muscular, well finished at top, extending well into back	3	....
22. Chest, medium width, deep	2	....
23. Ribs, well sprung, long, close	2	....
24. Back, short, straight, strong, broad	2	....
25. Loin, short, broad, muscular, strongly coupled	2	....
26. Flanks, deep, full, long, low underline	1	....

E—HINDQUARTERS, 31 Points:

27. Hips, broad, round, smooth	2	....
28. Croup, long, level, round, smooth	2	....
29. Tail, set high, well carried	3	....
30. Thighs, full, muscular	2	....
31. Stifles, broad, full, muscular	2	....
32. Gaskins, broad, muscular	2	....
33. Hocks, straight, wide, point prominent, deep, clean-cut, smooth, well supported	5	....
34. Cannons, short, broad, flat, tendons sharply defined, set well back	2	....
35. Fetlocks, wide, tendons well back, straight, well supported	2	....
36. Pasterns, long, oblique (50°), smooth, strong	2	....

SCALE OF POINTS	Standard of	Score of
	Perfect	Horse
	Score	Studied
37. Feet, not quite so large as in front, not quite so round, otherwise comparable	4	....
38. Legs, properly placed, according to description in draft horse score card	4	....
F—ACTION, 15 Points:		
39. Walk, rapid, flat footed, in line	5	....
40. Trot, free, springy, square; going well off hocks; not extreme knee fold	5	....
41. Canter, slow, collected, either lead, no cross canter	5	....
Total	100	....



Fig. 88.—“Stylish carriage is also highly characteristic of this type.”
(From photograph by courtesy American Breeder.)

A study of the saddle horse scale of points,¹ shows a very close relationship to that for the light harness horse. The differences are slight, and are not entirely of conformation. In size and height there is no essential difference. In form the saddle horse is not so angular as the light harness horse, being smoother turned and more symmetrical. Quality is an important feature of the saddler, more emphasis being assigned to it than with other light types of horses. Stylish

¹ Adapted from Principles and Practices of Live Stock Judging. Carl W. Gay, 1914, p. 72.

carriage is also highly characteristic of this type. Shows of gaited saddlers in Kentucky and Missouri, where large classes come together, are exhibitions of quality, style and finish beyond compare.

The neck is a rather distinctive feature, being long, supple and slightly arched, and carried neither high nor low, yet with distinct grace. A sensitive relationship exists between the mouth, neck and reins. A long, supple neck between the rider's reins, furnishes in the process of guidance a more flexible connecting link between mouth and hand, than a short, stiff neck. Three points are given to the neck of the saddle horse as compared with two for the light harness horse.

The shoulders of the saddle horse should be long and sloping, yet muscular. The long, oblique shoulder is a necessity, to secure an easy gait, and saddle horse authorities emphasize its importance, and three points instead of two, as with the light harness type, are assigned this part in the scale of points.

The body of the saddle horse should be moderately short, deep and not too wide. It should be nicely turned, strongly carried, and free of sag of back and weakness of loins. There has been some tendency with the American saddle horse to a lower carriage of back than is altogether desirable. A neat yet not wide arch of rib is important in a good saddle back, but sag of back is quite undesirable inasmuch as this part of the horse must be able to sustain a weight of at least 160 pounds.

The croup of the saddle horse is one of its noteworthy features. As expressed in the scale of points, it should be long, level, round and smooth. The long, strong muscling of the hindquarters bespeaks a well supported back, and is related to a leg development behind that indicates powerful action, and the capacity to get over the ground with ease. A side view shows the croup carried out with slight downward curve, or having what is often termed a level carriage. From the rear the croup is neatly rounded over

the sides, being free of the squareness seen on draft horses. The judge should place a proper emphasis on the conformation of the croup.

The tail of the saddle horse is attached and carried high in the case of the American type, it being one of the attractive features of the breed. While the docked saddle horse in Europe

is a common sight, in the American saddle horse a full length of tail is regarded as an attraction rather than



Fig. 90.—“The gaited saddle horse . . . possesses five different gaits.” (Courtesy American Breeder.)



Fig. 89.—“In the American Saddle horse a full length of tail is regarded as an attraction.” (From photo by courtesy American Breeder.)

otherwise. Carried with a slight arch at its setting, it hangs behind in what is known as “flowing” form, an evidence of breeding, and an attractive part of a beautiful horse.

The action of the saddle horse is, in truth, its most important feature. The American saddle horse is also referred to sometimes

as the "gaited saddle horse," for the reason that it possesses five different gaits, namely: (a) walk; (b) running walk or fox trot, or slow pace; (c) trot; (d) canter; (e) rack. These several gaits have already been described on pages 48-60. There are some special features valued in this type of saddle horse. The action should be frank and easy, with a minimum of friction connected with it. A superior horse of this type that is well trained, will not mix his gaits, but will keep them properly separated. On signal from his rider he changes from one gait to another, otherwise remaining constant. A graceful, easy, sure movement of the limbs, with not too much knee or hock action is desired, with a



Fig. 91.—"Not too much knee or hock action is desired." (Courtesy American Breeder.)

certain springy character universally admired in this horse. Nevertheless, one sees saddlers that possess considerable action, that as combination horses under saddle or in harness make an attractive show. However, the high-stepping character of the Hackney is out of place here. The official definition² of the five-gaited horse, specifies that he "should go the running walk, fox trot or slow pace, smoothly and equal to six miles an hour; rack easily without being forced, with speed equal to twelve miles an hour, must stand quietly, back readily,

² Show Ring Classification. American Saddle Horse Breeders' Association, Adopted April, 1910.



Fig. 92.—“One sees saddlers that possess considerable action.” (Courtesy American Breeder.)

and canter. This horse lacks the uniformity of breeding of the five-gaited horse, for he may be of Thoroughbred, Hunter, or American saddle horse ancestry. He may closely resemble the five-gaited in type, or vary considerably from it. According to the American Saddle Horse Breeders' Association, the three-gaited horse should go plain

and lead with either foot in a canter from a halt.” Students of the saddle horse are also officially informed that “high rate of speed and racing is forbidden.”

The three-gaited saddle horse, also known as the “plain gaited horse,” possesses but three gaits, namely, walk, trot



Fig. 93.—American Saddle horse “Edna Mae,” a noted show mare. Mr. Matt S. Cohen up. (Courtesy American Agriculturist.)

walk, briskly and with speed equal to four miles an hour; canter reasonably high and gentle, trot steadily, straight and true; action enough to be attractive; well balanced and with speed equal to twelve miles an hour.”

The American Saddle Horse is a product resulting originally from the use of Thoroughbred stallions on the common mares of Virginia and Kentucky. From this early ancestry, dating back to the importation in 1832 of the Thoroughbred horse Hedgeford, has been evolved the American saddle horse breed. Hedgeford sired a stallion named Denmark, foaled in 1839, that is officially credited with being the foundation sire of this breed. The American saddle horse of standard character stands about 15½ hands high, and weighs from 950 to 1,050 pounds. His color is commonly bay, brown or chestnut. This horse has been bred to a degree that exhibits much style and finish. The head is refined in feature and shows much character; the neck is long and supple and beautifully arched; the body moderately long, round, and well turned; the croup long and level; the tail set high and proudly carried. The legs show superior bone and muscling, and the pasterns are long and springy. One finds in this horse at his best, a combination of symmetry and balance of form, and graceful, easy action of a very high degree.

The Thoroughbred horse originated in England. It is not only the oldest of British breeds, but the purest in ancestry. For these reasons the Thoroughbred reproduces with unusual uniformity. The more common colors are bay, brown and chestnut, but black, gray and roan also occur. The height is not remarkably variable, 15½ hands meeting with favor. While the weight is variable, between 900 and 1,050 pounds is a satisfactory range. In conformation we find the essential features of the light harness horse, but with certain characteristics distinctive of this breed. The head should be lean and fine, and very breedy in character; the neck is usually long and thin; the shoulders are

very long and slope well into the back; the croup is long and wide and more level than with the trotter or pacer. The foreleg should be muscular and strong in arm and long and wide in the forearm. The hindquarter of the Thoroughbred is long, level, strongly muscled and exhibits great driving power. The pasterns are long and springy, and the bone and feet of excellent texture. Compared with



Fig. 94.—A Thoroughbred horse, champion at Virginia State Fair.

the American trotter, the Thoroughbred is longer of neck, body and limbs, has a straighter carriage of hind legs, stands somewhat higher behind, and displays a greater uniformity of breed character and quality. Aside from a walk, his natural gait is a gallop, in which he excels all other horses. He also has great capacity for high jumping. In temperament the Thoroughbred is very nervous and

mettlesome, oftentimes being impetuous to a degree and hard to control. Among the more common deficiencies of the breed is too slack and rangy a form, and too great length of leg, resulting in what is known as a "weed" in Great Britain.

CHAPTER XIII.

PONY TYPES.

PONIES vary greatly in conformation, yet the fact that they are diminutive horses, classifies them as ponies, anything under $14\frac{1}{4}$ hands (57 inches) being usually regarded as such. There are many breeds of ponies, but of those known in America the Shetland is the only one at all common among the so-called improved breeds. This, in its best form, is a miniature heavy harness horse with a strong tendency to draft character. The Welch and Hackney ponies are of the heavy harness type, with very pronounced high action. The Arabian is a pony of the American saddle horse type, without its extreme characteristics.

The judging of the Shetland pony is usually based on the standard or scale of points of the American Shetland Pony Club, which is as follows:

SCALE OF POINTS FOR SHETLAND PONY.

	Points
Constitution indicated by general healthy appearance, perfect respiration, brightness of eyes.	10
Size —Ponies over four years old, 42 inches and under in height; two points to be deducted for every inch over 42 inches up to 46 inches, fractional portions to count as full inches	25
Head , symmetrical, rather small and fine, wide between eyes, ears short and erect	10
Body —Barrel well rounded, back short and level, deep chested, good breast, compact, "pony build"	10
Legs , muscular, flat boned, hind legs not cow-hocked or too crooked	25
Mane and tail —Foretop, mane and tail heavy	10
Feet , good	10
Total	100

This score card is not ideal and needs revising, but thus far it is the only official standard in use. It will be noted that emphasis is placed on size and legs, each of these features scoring twenty-five points. Size is certainly a very important factor, and as a rule the smaller sized pony meets with most approval. The legs of the pony should be muscular and assume positions to conform to the standard expressed in the scale of points of the draft horse. Judges should discriminate especially against crooked hocks. A neatly turned foot, of good size, wide and high at the heel is desirable. Quality should be emphasized by the Shetland pony judge, and an abundance of fine hair should cover the body. In cool weather this coat will be shaggy and rough in appearance, a characteristic of the Shetland. The thick, heavy coat of hair is a great protection to this pony during the wintry months.

The modern type of Shetland pony differs somewhat from that of years ago, when drafty conformation was carried to an extreme. Now more real grace of form, quality and action is demanded. Referring to the subject of type, a well-known British authority thus discusses the Shetland:¹ "At present, things are somewhat in a transition stage, which causes confusion in the minds of some people as to what is the correct type. When the show career of the sheltie first commenced, the best paying demand was undoubtedly for the pits, and the aim was to get the biggest possible bulk as near the ground as possible, while symmetry and true action had to take a secondary place. Fortunately for the breed, however, the advent of the foreign demand has created a higher standard. Beauty of shape and smart, well carried head counts for more than it used to, and true, close and springy action is deemed essential. Occasionally, however, when a judge full of the old traditions officiates, the prizes will go to ponies with huge bodies on abnormally short legs, suggestive of moles,

¹ Ponies and All About Them. Frank T. Barton, London, 1911, p. 218.



Fig. 95.—“The modern type of Shetland Pony differs somewhat from that of years ago, when drafty conformation was carried to an extreme.”

and no doubt most valuable to drag a hutch in the low galleries of a coal mine, but absolutely unsuited for a child's saddle pony. At the very next show, perhaps, the opposite type gets the preference, which naturally creates confusion in the minds of those who are not fully conversant with the show history of the breed.” Judges of Shetlands should take note of the fact that good form requires that they be shown in full growth of hair on body, mane and foretop, and with natural length of tail. The Shetland is used both under saddle, and in harness hitched to pony cart or appropriate four-wheeled vehicle.

The Welch pony type varies to a considerable degree. So much so that the Welch Pony and Cob Society, in order

to set at rest more or less controversy on this subject, classified these ponies into four groups or sections, A, B, C, D. In section A, part one, ponies must not exceed 12 hands; high, show Thoroughbred type and not be docked or have mane or foretop close cut, while in part two, they may range up to 12½ hands, and be more "cobby" of conformation, and be docked or hog-maned. In section B the rules allow heights from 12¼ hands to 13½ hands; in section C from 13¼ to 14½ hands, while in D there is no height limit. The larger animals of this breed standing 14½ hands or more, are known as cobs. Barton has attempted to emphasize some of the more essential features of a "typical Welsh pony," which are as follows: A small, clean-cut head, wide between the eyes, and muzzle tapering and free from bluntness. Small, well placed ears, thin in their cartilage, and carried close and erect, together with full eyes, constitute points of beauty in the region of the

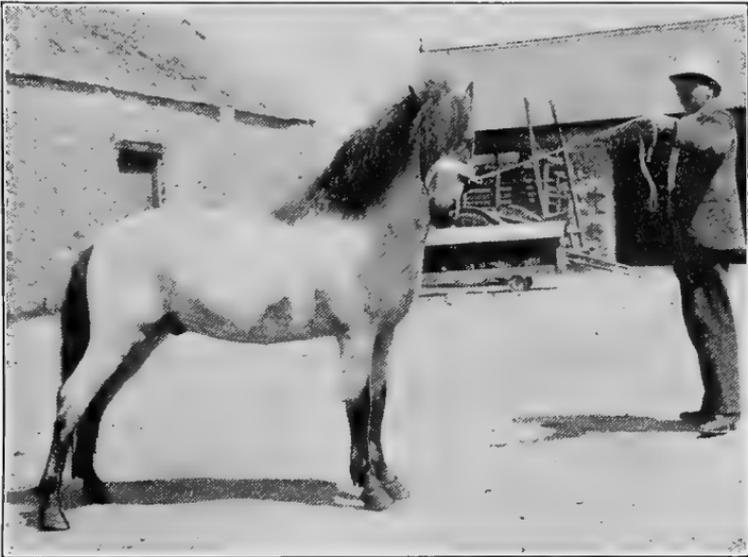


Fig. 96.—A Welsh pony.

head. The set-on and carriage of the head is equally important. The Thoroughbred type of neck is better than one too short or too thick. A short coupled, strong back and loins, with long, fine, compact quarters, a deep girth and fine shoulders, are requisite features. Particular attention should be paid to the limbs, and above all to the



Fig. 97.—“The Hackney pony type is distinctly a small, heavy harness horse.”

action. The latter should be quick, free and straight from the shoulder, the knees and hocks well flexed with straight and powerful leverage of the hocks well under the body. There should be such bending of the knees and hocks as will not sacrifice pace and power.

The Hackney pony type is distinctly a small heavy harness horse, of pure Hackney ancestry, but standing $14\frac{1}{2}$ or less hands high. The most exacting standards of heavy horse conformation are required of this pony, that has been termed an “equine bantam.” In the case of this type, style and action are given great prominence, surpassing that of all other ponies. The high, trappy gait is found here in the extreme, and judges should strongly emphasize its importance, both at walk and trot. The action should be true and rhythmical, the knees and hocks carried high, but the limbs extended in only moderate degree, without the long reach associated with the greatest speed. Good manners are an important qualification of the Hackney pony, and should be considered by the judge. Hackney ponies are universally shown docked.

CHAPTER XIV.

JUDGING JACKS AND JENNETS.

THE jack is the male of the ass, and the jennet is the female. It cannot be said that they are common in America, excepting in certain sections, where the jack rather than the jennet is especially valued. The jack is used for breeding to mares, the resulting progeny of which is the mule. There is no special object in mating jack to jennet in America, except it be with the final purpose of producing high class jacks to be used in producing mules. The use of the jack in this connection is rather widespread, but is more especially limited to the southern United States. Missouri, Kentucky and Tennessee have special distinction for the production of jacks, jennets and mules.

SCORE CARD FOR THE JACK, CATALONIAN OR AMERICAN TYPE.

SCALE OF POINTS	Standard of Perfect Score	Score of Jack Studied
A—GENERAL APPEARANCE, 18 Points;		
1. Height, at maturity, 15 to 16 hands	4	....
2. Weight, at maturity, 1,050 to 1,150 pounds	4	....
3. Form, broad, deep, symmetrical, smooth	4	....
4. Quality, bone large, clean, strong; hair fine, abundant	4	....
5. Temperament, active; disposition good	2	....
B—HEAD AND NECK, 11 Points:		
6. Head, well proportioned, strong of frame, nose slightly Roman	4	....
7. Forehead, broad, full	1	....
8. Eyes, of good size, prominent, clear	1	....
9. Muzzle, broad, yet fine and lips thin and even; nostrils large	1	....
10. Ears, long (33 inches or more between tips at maturity), pointed, not too wide set apart, alert	2	....
11. Neck, long, muscled, throat-latch defined, head well set on	2	....

SCALE OF POINTS		Standard of Perfect Scored	Score of Jack Studied
C—FOREHAND, 21 Points:			
12. Shoulders, oblique, smooth	2	....
13. Arms, short, wide, muscular, well set	2	....
14. Forearm, long, wide, heavily muscled	2	....
15. Knees, wide, deep, strong, well supported	2	....
16. Cannons, short, wide, clean; tendons defined	2	....
17. Fetlocks, wide, straight, clean	1	....
18. Pasterns, sloping (about 45°), strong, clean	2	....
19. Feet, large, round, uniform; slope of wall parallel to slope pastern; sole concave; bars strong; frog prominent, elastic; heel wide, high; horn dense	8	....
D—BODY, 13 Points:			
20. Withers, well defined, smooth, muscular	2	....
21. Chest, wide, deep, girth large	3	....
22. Ribs, well sprung, long, close	3	....
23. Back, short, well carried, muscular	2	....
24. Loin, short, wide, thickly muscled	2	....
25. Flanks, low, well filled out; underline long, low	1	....
E—HINDQUARTERS, 27 Points:			
26. Hips, smooth, well covered	2	....
27. Croup, long, wide, not steep, muscular	3	....
28. Thighs, thick, deep, muscular, not too close	3	....
29. Stifles, wide, well muscled, prominent, clean	2	....
30. Gaskins, long, wide, muscular	3	....
31. Hocks, straight, wide, large, strong, not meaty, clean cut, well set	3	....
32. Cannons, short, wide, clean; tendons well defined	2	....
33. Fetlocks, wide, straight, strong, clean	1	....
34. Pasterns, sloping (about 50°), straight, clean, showing no knuckling	2	....
35. Feet, medium size, uniform, straight, slope wall parallel to slope pastern; sole concave; bars strong; frog prominent, elastic; heel wide, high; horn dense, smooth	6	....
F—ACTION, 10 Points:			
36. Walk, straight, stride long, elastic	5	....
37. Trot, straight, long, free, regular, snappy	5	....
Total points	100	....

The general appearance of the jack largely depends upon the breed and ancestry. There are considerable variations in size, color and other characteristics that breeders value. There has been in the past much lack of uniformity in the jacks used by American breeders, and many inferior individuals have been in service. In general, the jack should have a conformation very closely related to that of the horse, excepting in certain details. The striking differ-

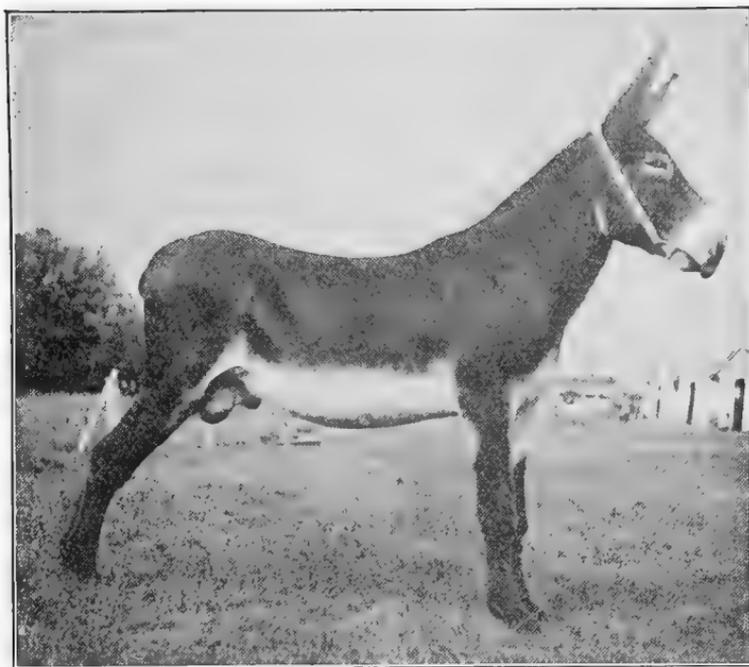


Fig. 98.—“In general the jack should have a conformation very closely related to that of the horse.” Show jack, Dr. Pettus, weighing 1,160 lbs. (Photo by courtesy Kentucky Agr. Exp. Station.)

ences are seen in the large head and prominent, long ears; in the mane and tail lacking in hair; in the narrow, short hindquarters, and in the long, coarse hair covering the body. To be considered more in detail, from the judges point of view, the following factors are to be kept in mind:

The height of the jack should range from 15 to 16 hands, with $15\frac{1}{2}$ hands a popular height. At one time there was greater demand for tall jacks than at present. The tall jack is too likely to sire a leggy mule.

The weight of the jack should range at maturity from 900 to 1,200 pounds, with 1,050 to 1,150 as nearest ideal. The above heights and weights combine to produce a size,

which if mated to draft mares will produce the most desirable type of draft mule. Referring to fashioning the American jack, Anderson of Kentucky calls attention¹ to the fact that the small mule is not demanded excepting to work in the mines. The trade demands mules of size, well formed, with good flesh and coat. The jacks capable of siring such are from 15 to 16 hands in height and weigh from 1,000 to 1,150 pounds.



Fig. 99.—“There is a general lack of smoothness and co-ordination of the parts.”

The form of the jack should be broad, deep, symmetrical and smooth. Commenting on the form as compared with that of the horse, Curtis of North Carolina,² states that “the shoulders are not as sloping, the ribs usually not as well sprung, the hindquarters not as well developed or muscled, and there is not as much definition, quality or refinement in the bones and joints. There is a general lack of smoothness and co-ordination of parts, although this is usually more apparent in the head, neck and hindquarters.” The judge should seek for as much balance of form

as possible, without wide variation from good conformation in any part.

Quality in the jack is of prime importance, and more and more stress is laid on the same. The bone should be large, but clean and strong. The hair covering should be abundant and fine. The French breeders of the Poitou jack make much of a long, thick, fine coat of hair, regarding

¹ “Breeders’ Gazette,” April 2, 1914. W. S. Anderson.

² Fundamentals of Live Stock Judging, 1915, p. 183.

it as a most important evidence of quality. The jack naturally carries a thick, long coat, and any lack in this respect is undesirable.

The temperament of the jack is phlegmatic and he is quiet to the extreme, in comparison with the horse. He moves about sedately and exhibits a most stable temperament. In disposition the jack is also mild and quiet, with few bad habits.

The head of the jack is notable for its comparatively, large size, lack of refinement and fine proportions, and long, large, rather coarse, hairy ears. The ears at maturity should show at least 33 inches between the extended tips. They should be pointed and carried erect in alert form. The head of the jack is rather deep from upper to under side, and the nose has a Roman curvature which adds to the heaviness of appearance.

The forehead of the jack inclines to be somewhat erect in the shoulder, the knee is large, the bone of the leg is heavy and strong, and the feet are comparatively smaller



Fig. 100.—“The ears at maturity should show at least 33 inches between the extended tips.”

than with the horse. Hooper and Anderson state³ that the cannon bone should be 8 to 9½ inches in circumference, and specify that a jack 15¾ hands high, weighing 1,150 pounds, should measure not less than 9 inches below the knee, and 9½ inches are better. The feet incline to be smaller and narrower than with the horse, the sole higher and more arched. A large, shapely foot is greatly to be desired. Probably the high arched sole contributes much to the surefootedness of this animal when on steep mountain pathways and roads.

The body of the jack is narrow, and lacks depth of rib. Therefore the judge should place a premium on ample width and depth of body, indicative of weight and draft form. Hooper and Anderson recommend girth measurement of from 68 to 72 inches about the chest and 66 to 70 inches about the loin and flank. Measurements given by them of a two-year old jack, weighing 1,000 pounds, show 66 inches front girth and 72 inches hind girth. This was an "extra high class" jack that sold for \$1,500. The hind flank naturally tends to be high, and it is important that this part be so carried that the underline will be long and low, indicative of feeding capacity and weight.

The hindquarters of the jack naturally tend to be short and steep at the croup, and much more defective in conformation than in the horse. It is important that the croup be long and wide, and carried as nearly level as possible, but at the best, this will not compare with the well-turned croup on a horse. The thighs also frequently lack in thickness of muscle, and pare off into the gaskins, to produce what is sometimes termed a cat-hammed effect, which is not at all ideal. The hocks are often crooked and there is a tendency for them to stand somewhat close together, with the feet so placed, that the toes point widely out. There is also an inclination for the ass to stand with the hind legs extending too far behind. The legs should come

³ Bulletin 176, Kentucky Agricultural Experiment Station, Nov. 30, 1913. I. Jack Stock of Kentucky.



Fig. 101.—“The hocks are often crooked and there is a tendency for them to stand somewhat close together.”

down true and be well carried. The hind legs appear heavy for the size of the animal and the joints frequently seem coarse. Hooper and Anderson state⁴ that “the hock should be from 18 to 21 inches in circumference, while the gaskin should measure close to 16 inches, and the measurement of rear cannon should approximate 10 inches in circumference.” The hind feet are smaller than the front ones, and somewhat steeper and narrower. The hind legs of the jack are not marked with “chestnuts,” as in the case of the horse.

The action of the jack is slow and not impressive.

No very great emphasis is placed on this feature by most jack breeders. The fact is that action is relatively as important with a jack as with a stallion, and he should be given reasonable consideration as to his trueness of stride and freedom of action. Therefore the judge should study the gait of the jack as he would that of the horse, though not emphasizing its importance in the same degree.

A description of a show jack is given⁵ by Mr. L. M. Monsees, a noted Missouri breeder, in answer to a correspondent desiring a description of such an animal. “A

⁴ Bulletin 176, Kentucky Ag. Ex. Station.

⁵ Breeders' Gazette, March 2, 1910, p. 548.

show jack should be black with white marking, 15.2 to 16 hands tall, standard measure, and weigh from 950 to 1,200 pounds. He should have good length of body, good straight back (or nearly so), well sprung rib, good underline and good heart and flank measure, which should be about equal. He should have a good set of legs and feet; the foreleg should be large in the arm and taper gradually to the foot, and the hind legs should be wide and strong in the stifle, also tapering to the foot, with wide flat hock and wide flat bone from hock to ankle. The jack should have a good long neck, well set in the shoulders and upward inclined so he can get his head up like a high-styled horse. The head should be long and bony with good eye bones and good heavy jaw. The head should be straight or a little Roman. The ears should be long, thin and keen, well set on the head, and should be held up with style and vim. The jack should have good action at the walk and trot, carrying his feet well under the body and carrying the head high. He should step along the same in the trot as in the walk." Hooper and Anderson give the measurements of a "splendid jack," which are in keeping with the above description. This is a six-year old, weighing 1,155 pounds, standing 15 hands 1½ inches, that has won many championships in Kentucky, and sold for \$1,800. He is slightly calf-kneed and crooked in the hocks.

	Inches		Inches
Tip to tip of ears	33	Girth at hind flank	72
Width between eyes	9	Girth of arm	16½
Length of face (poll to		Girth of knee	16
end of upper lip)	33	Girth of front cannon	9½
Girth of jaw and face	40	Girth of hind cannon	10½
Girth of neck	42	Girth of hock	19
Girth at fore flank	70	Total body length	84

The Catalonian jack is a breed from Catalonia, in north-eastern Spain. It is a black or brown breed, the former color predominating, with light points at muzzle, eyes and belly. The average height is about 15 hands, although a

range from 14 to 16 hands occurs. This is the principal breed used in America for mule breeding, being popular on account of its style, beauty and action. The head shows considerable refinement, the lines being well defined. The large ears are generally carried erect and with animation. The quality of the Catalonian is one of its striking fea-

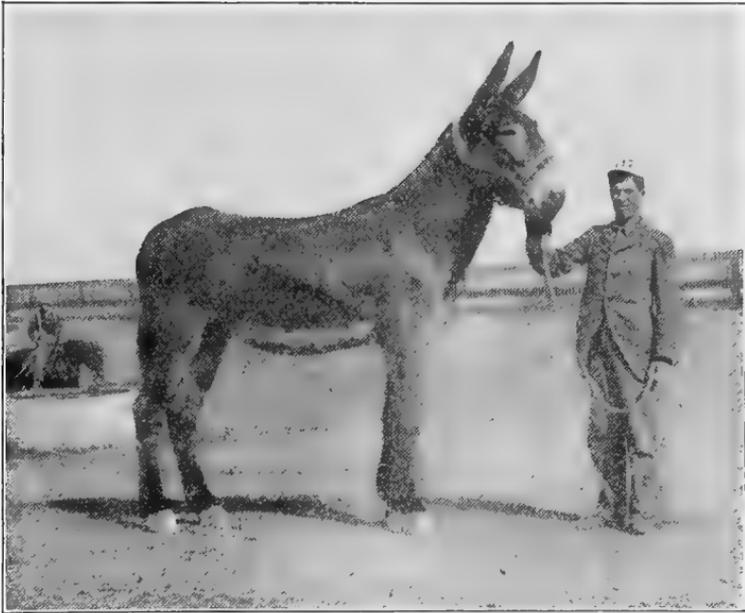


Fig. 102.—Catalonian jack, "Antar, Jr.," 217. First prize at World's Columbian Exposition, 1893.

tures, the hair being thick and short, and the bone somewhat refined but strong. It is a tough, wiry type, maturing early.

The Andalusian jack is a native of Andalusia, in southern Spain. The prevailing color is gray, with rare examples of black. Jacks stand from $14\frac{1}{2}$ to $15\frac{1}{2}$ hands, and sometimes higher. The head is of large size and yet not coarse. The quality and size of bone and general substance are excellent. In general, the Andalusian gives evidence of

style and quality. It has never been a popular breed in America, largely on account of its color, although many of these jacks have been imported to this country.

The Maltese jack comes from the island of Malta in the Mediterranean Sea. His color is either brown or black. In size it is one of the smaller breeds, rarely exceeding a

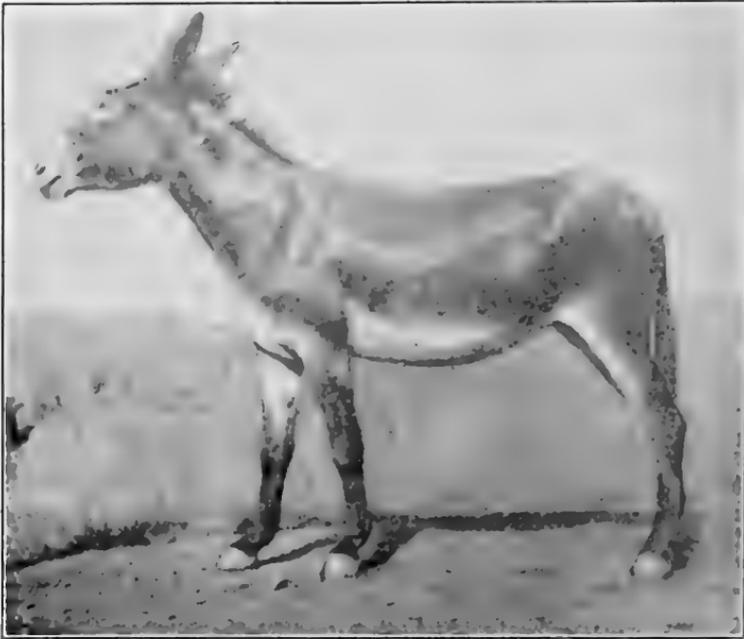


Fig. 103.—A prize-winning jennet at Virginia State Fair.

height of $14\frac{1}{2}$ hands. The head is well proportioned, with sharp, upright ears of good quality. The Maltese jack has a reputation for much life and vigor, but its small size and refinement has made it unpopular in America.

The Majorca jack is a native of an island of this name in the Mediterranean Sea off the coast of Spain. This is one of the largest breeds of asses, having a drafty form, stand-

ing about 15½ hands high with head and ears of conspicuous size, and possessing heavy bone. There is lack of style and a sluggishness of action that has made unpopular the introduction of the breed to America. These jacks are particularly valued in Spain for siring artillery mules.

The Poitou jack has been bred for centuries in western



Fig. 104.—A Poitou jack exhibited at Paris Horse Show. "The Poitou has a remarkable coat of hair."

France, near the Bay of Biscay. This is the largest and most powerful of the breeds of asses. The prevailing color is black with light points, though grays occasionally occur, but are not registered in France. While distinctly a draft type, the Poitou does not stand especially high, probably rarely exceeding 15 hands, but being rather low set, deep bodied and very heavy of bone. The head is unusually large, and the ears of great size. The neck is thick and

powerful, the chest broad, and the knee and hock joints large like a draft horse. The Poitou has a remarkable coat of hair, being fine, long, ragged and matted, the French breeder emphasizing the coat as evidence of quality and merit. But few jacks of this breed have been brought to America, but those that have been have met with a reasonable amount of favor.

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CHAPTER XV.

JUDGING THE MULE.

THE mule varies greatly in size and type owing to the wide difference in these features of the parents. Therefore on market, mules are classified according to size, character and use. The most highly valued mule is of draft mare parentage, and shows large size and fair quality. The present consideration will relate to the larger, more drafty



Fig. 105.—“The most highly valued mule is of draft mare parentage.”
(Photo by courtesy Illinois Agr. Exp. Station.)

type of this animal. The mule in the northern United States is regarded simply as a beast of burden, but many farmers in the South drive them to buggies or light vehicles, for pleasure or business, as occasion requires. The mule trots at a fair speed and in a day will travel a long distance.

SCORE CARD FOR THE MULE.

SCALE OF POINTS		Standard of Perfect Score	Score of Mule Studied
A—GENERAL APPEARANCE, 16 Points:			
1.	Height, Estimated hands Actual hands	4	....
2.	Weight. Score according to age and type	4	....
3.	Form, broad, deep, compact, smooth, symmetrical	4	....
4.	Quality, refined head and ears, fine hair, clean bone, tendons defined	4	....
5.	Temperament, active, disposition good	4	....
B—HEAD AND NECK, 7 Points:			
6.	Head, in good proportion, clear cut features, tendency to Roman nose	1	....
7.	Forehead, broad, full	1	....
8.	Eyes, full, bright, clear	1	....
9.	Muzzle, broad, yet fine, nostrils large, lips thin and even	1	....
10.	Ears, large, long, pointed, fine, well set, carried alert	1	....
11.	Neck, long, muscular, throat-latch defined, head well set on	2	....
C—FOREHAND, 24 Points:			
12.	Shoulders, long, sloping, smooth, muscular	2	....
13.	Arm, short, muscular, elbow in	2	....
14.	Forearm, long, wide, muscular	2	....
15.	Knees, straight, wide, deep, well supported	2	....
16.	Cannons, short, broad, flat, tendons well back, straight, well supported	2	....
17.	Fetlocks, wide, tendons well back, straight, well supported	2	....
18.	Pasterns, moderate length, oblique, smooth, strong	2	....
19.	Feet, medium size, uniform, straight, slope of wall parallel to slope of pastern; sole concave; bars strong; frog prominent, elastic; heels wide, high; horn dense, smooth	6	....
20.	Legs, properly placed, according to description in draft horse score card	4	....
D—BODY, 11 Points:			
21.	Withers, well defined, smooth and muscular	2	....
22.	Chest, deep, wide	2	....
23.	Ribs, long, well sprung, close	2	....
24.	Back, short, straight, broad, strong	2	....
25.	Loin, short, wide, heavily muscled	2	....
26.	Flanks, deep, full; long, low underline	1	....

SCALE OF POINTS		Standard of Perfect Score	Score of Mule Studied
E—HINDQUARTERS, 32 Points:			
27. Hips, wide, level, smooth, muscular		2	....
28. Croup, long, level, muscular		2	....
29. Tail, attached high, well carried		1	....
30. Thighs, thick, deep, muscular, not too close		2	....
31. Stifles, broad, thick, strong		2	....
32. Gaskins, long, wide, muscular		2	....
33. Hocks, straight, wide, point prominent, deep, clean cut, smooth, well supported		6	....
34. Cannons, short, broad, flat, tendons prominent and set well back		2	....
35. Fetlocks, wide, straight, tendons well back		2	....
36. Pasterns, medium length, oblique (about 55°), smooth, strong		3	....
37. Feet, medium size, uniform, straight, slope wall parallel to pastern; sole concave; bars strong; frog prominent, elastic; heel wide, high; horn dense		4	....
38. Legs, properly placed, according to description in draft horse score card		4	....
F—ACTION, 10 Points:			
39. Walk, straight, stride long, active		5	....
40. Trot, straight, long, free, regular, snappy stride		5	....
Total		100	....

The general conformation of the mule should closely resemble that of the horse, and judges will be influenced accordingly in their decisions. The peculiarities of the



Fig. 106.—“The general conformation of the mule should closely resemble that of the horse.”

mule are mainly shown in the disposition, voice, ears, tail and feet, otherwise this animal may not materially differ from the dam.

The height of the mule varies greatly, ranging from 12½ hands for those used in mines, up to 17 hands for big draft mules. A desirable range of height for the larger type is from 15½ to 16½ hands.

The weight of the mule of the larger sort ranges from 1,200 to 1,500 pounds, though much heavier weights than the latter are recorded, but are quite the exception.

The form of the mule should be broad, deep, compact,



Fig. 107.—“The mule is less square at the corners of the body than the horse, and is usually narrower all through.”

with a comparatively large chest, short back, and full flanks. The mule is less square at the corners of the body than the horse, and is usually narrower all through. Yet, as has been stated before, what is desired is a conformation approaching as nearly as possible draft horse form.

Quality in the mule has an important bearing on its value. Fine, hard bones; neat, strong joints; a lean, well made head; and fine, abundant hair are much desired. Too

heavy and coarse bone, and coarseness about the head, are features that frequently prevail with draft mules, and the judge should discriminate against them.

The temperament of the mule should be active and energetic. The natural tendency is to be quiet and dull. The patience for which this animal is famous is simply an expression of its quiet temperament and docile habits. The disposition of the mule has been much misrepresented, for, in fact, it is not naturally vicious, though often obstinate. Men used to handling both mules and horses regard the former as having the more steady and reliable disposition of the two.

The head of the mule should be of good size yet not coarse, free of fleshiness, clean-cut and giving evidence of quality. A Roman nose is a characteristic feature, though it should not be too pronounced. Such a nose indicates strength of character. The ears should be longer and larger than on the horse, pointed, and more nearly resembling those of the sire, the jack, than those of the mother, the mare. The ears should show refinement and not be set too wide apart at the corners of the head, thus giving a neat, shapely top. "The ears should be long, thin and tapering to the points," says Mr. J. W. Jones,¹ a well-known judge, "presenting a rather folding appearance about the middle, and should be set on the head erect."

The hindquarters of the mule frequently lack good conformation. The hips may be too low set, the croup steep, the thighs thin and the hocks crooked. A steep croup and crooked legs are familiar sights, and judges will find it necessary to discriminate sharply against this sort. The muscular thigh is a necessity if draft power is to be obtained, while the same argument obtains for the mule as for the horse, in a correct placing and carriage of the limbs. As bone is highly valued in the mule, the hind legs should show this in superior degree. The feet of the mule are peculiar in being relatively small, the hoofs tending

¹ American Jack Stock Stud Book, Vol. 5, 1906, p. 10.

to be long and high at the heel, with the frog set in a rather high cup. Large size of hoof is emphasized, but even then a draft mule will have a small foot compared with a draft horse, being longer and narrower. The hoof should be smooth and very dense. Oftentimes the hoofs are contracted, resulting in defective feet. Large, roomy feet are naturally free of this defect.

The action of the mule is not usually emphasized in the market, so long as no lameness is present. However, it is very important that not only the walk should be active and of the sort that gets over the ground quickly, but the trot also should be straight, free, regular and rapid. There is just as much argument in behalf of such action with a work mule as a work horse. Judges should give careful attention to the action, and note that the legs are used to give the very best results. In the North, where the mule is driven almost exclusively at the walk, this gait would naturally receive special attention, but in the South, where the mules are commonly used under the saddle or hitched to a carriage, the trot is of equal importance with the walk, and should be so considered. Knee action is not so pronounced with the mule as the horse, and much emphasis should not be attached to it.

The market classes of mules vary slightly, according to local conditions. St. Louis is the greatest mule market, though large numbers are handled in Chicago, Kansas City, Louisville, and New Orleans. Mr. R. C. Obrecht has given one classification,² comprising the following groups: mining, cotton, sugar, farm and draft. Mr. John Grant of the Kansas City yards, states³ that "the principal classes of mules known to the market are: cotton, lumber, railroad, sugar, farm, levee, city and miners'." The author has arranged the following classification, which will have a fairly general application. The mules in each class are graded with some elasticity from choice to inferior.

² Market Classes and Grades of Horses and Mules. Bull. 122, Ill. Ag. Exp. Station, 1908.

³ National Stockman and Farmer, Oct. 12, 1905.

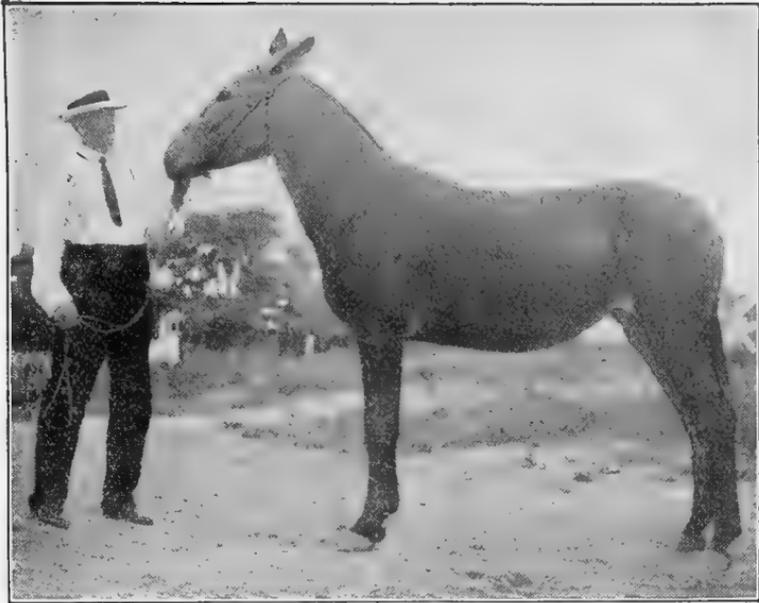


Fig. 108.—“Plantation mules represent a certain class suited to farm work.”

Plantation mules represent a certain class suited to farm work, especially in the South. They may be divided into two sub-classes, sugar and cotton mules. These are the larger, better class mules on the market. Sugar mules stand from 16 to 16½ hands high, and weigh from 1,100 to 1,400 pounds. These are breedy looking, show quality and finish, and have strong bone. They especially show refinement of head and neck. Cotton mules stand from 13½ to 15½ hands high and weigh 900 to 1,100 pounds. They are not of such uniformly high quality as sugar mules, ranging from light to medium in bone, though they must show smooth finish. They have small, neat heads, and attractive conformation. Cotton mules are very common in the Southwest. Curtis says⁴ “this type of mule is of still

⁴ The Fundamentals of Live Stock Judging and Selection. R. S. Curtis, Philadelphia, 1915, p. 210.

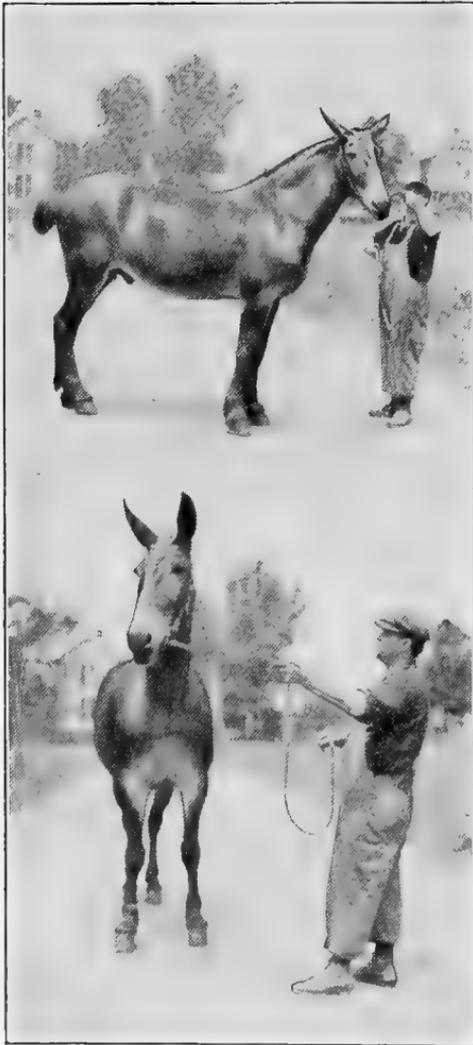


Fig. 109.—“Draft mules are large, heavy-boned mules that carry more weight than any other class.”

lighter build than the surface mining mule. The body is inclined to be somewhat rangy, the bone small, and the body upstanding. The quality should be uniform and of about the same standard as that possessed by the mining mule, the difference being in favor of the latter.”

Draft mules are large, heavy-boned mules, that carry more weight than any other class. They are often divided into two subclasses, *viz.*, lumber and railroad mules. Mules of draft class should be large, their bodies deep and closely coupled, the backs short and strong, the croup not too drooping, thighs and gaskins heavily muscled, bone heavy, and

the feet large. Mules for lumber camps should stand as high and weigh as heavy as this class calls for, but they do not show as much quality and style as do some others. Railroad mules are slightly lighter than lumber mules, but possess more quality and style.

Mine mules are of two kinds, known as pitters and surface mules, and range from 11 to 15½ hands high, and weigh from 650 to 1,225 pounds. They should have deep, compact bodies, heavy bone, short legs and large feet. The smaller ones are used in the mines, and the larger ones on the surface.

Farm mules represent a class lacking somewhat in uniformity that are used for agricultural purposes in the central states. Mules of this class represent inferior plantation or draft mules, that are plain looking and thin in flesh, though with good constitution, bone and feet.

CHAPTER XVI.

UN SOUNDNESS, DISEASES AND DEFECTS IN THE HORSE.

THE subject of unsoundness in the horse is regarded as of great importance. Many unsound horses are purchased by people who think them sound. Then when these purchasers attempt to sell they find great depreciation in value. Therefore, if one is to be a capable judge of a horse, he should have a fair ability to identify well-defined cases of some of the more common unsoundnesses. This identification is not always easy. Some forms of unsoundness are not clearly apparent until well established. If the respiration is not good, some form of work, such as trotting or hauling a load will bring out this fact. In the sale markets horses are hitched to wagons with brakes, against which they are caused to make a considerable exertion while moving along. Judges in the public show ring are not required to pass on the matter of unsoundness. That is the duty of an official veterinarian. The English Hackney Horse Society has for many years provided official veterinary examination of all horses of that breed entered at their annual London show. All horses showing well-defined unsoundness are barred from exhibition. This method of procedure, which might well be imitated at many of our American shows, has resulted in weeding out from competition many horses that were unsound, that should not come up for competition with sound individuals. In well defined cases of unsoundness the judge can hardly avoid discriminating against the animal affected. It is of vital importance, however, that there be no doubt about the unsoundness in question.

Lameness is due to various causes and is seen under a variety of conditions. No matter what the cause, lameness will stand as a defect, if not an evidence of unsoundness, and will seriously affect either selling value, or rating in a show ring. In fact it would not be good judgment to place a lame horse in the show ring, because the judge would be obliged to regard him as out of serious competition. It is important that a judge should be able to detect lameness and recognize the specific region of trouble, and the cause or causes. In an important discussion of lameness¹ as quoted in the following paragraphs, Dr. Frederick B. Hadley gives information that should be reasonably familiar to all qualified judges of horses: "Lameness has been defined as any irregularity in gait. It is the most serious impediment that may befall a horse because of its frequent occurrence. From a diagnostic point of view, it is necessary to distinguish between a 'swinging leg lameness' in which the pain emanates from the shoulder or the hip, and a 'supporting leg lameness,' in which the lesion is in the knee, hock or lower part of the leg.

"To detect lameness, the examiner ought to observe the animal at rest. In severe cases he may recognize that pain exists by the horse pointing, frequently raising the affected limb or placing the affected part in an unnatural position for relief. Next, the animal should be trotted past, away from, and toward the observer. The attendant must not take too short a hold on the halter shank, as it would interfere with free movements. The head and hips are to be closely watched at this time, as their movements are a reliable guide in locating the seat of lameness.

"If lame in the right foreleg, for example, the head will 'nod' or 'bob' when the left or sound foot is planted on the ground, while the head jerks up at the moment the right or lame foot touches the ground.

"When lameness exists in both forelegs the action is stiff and stilty, the natural stride is shortened, and the feet

¹ The Horse in Health and Disease, 1915, p. 192.

are raised but little from the ground. Almost always the hind legs are picked up higher than normally, the shoulders seem to be stiff, and the head is carried higher than usual.

“Lameness behind may be noted by a dropping of the



Fig. 110.—“To detect lameness, the examiner ought to observe the animal at rest. In severe cases he may recognize that pain exists by the horse pointing.” (Photo by courtesy College Veterinary Medicine, Ohio State University.)

hip opposite to the one in which soreness exists when the horse is trotted from the observer.

“Should there be lameness in both hind legs the stride is shortened and the gait awkward, the forelegs are not advanced in front of the body and are raised higher than usual, and the head is lowered. It is difficult or impossible to back a horse lame in both hind legs.

“Horses lame in both fore and hind legs show a waddling gait behind that may be mistaken for loin or croup lame-

ness. This peculiar motion is simply due to the fact that the hind legs are unduly advanced under the body for their own relief or that of the front legs.

“Shoulder lameness is shown at the time the leg is advanced, for then pain is felt. It is a typical swinging-leg lameness and the toe is dragged. Many horse owners believe that this form of lameness is very common, but it really is quite rare.

“In the majority of cases it is not very difficult to detect the limb in which lameness exists, but experience and keen insight are required to locate the exact seat of the trouble. Remember that the largest percentage of lamenesses are located below the knee and hock, and that the foot is involved much oftener than any other part. If the existence of a spavin is suspected, give the horse the ‘spavin test.’ Palpation (feeling) for the exact location of the soreness is a valuable aid in diagnosis, but care should be taken to distinguish between flinching due to nervousness and that due to inflammatory soreness. The presence of one or more of the cardinal symptoms of inflammation are reliable guides in the diagnosis of lameness. By placing the lame leg in a normal position and carefully comparing it with the sound leg for anatomic changes, a more accurate diagnosis can be made. . . .

“Unscrupulous dealers practice certain tricks to cover up lameness. Among the common ones are the use of a curb bit and a close hold on the leading rein to keep the head raised and to prevent ‘nodding.’ By paring down the sound foot to the ‘quick’ and replacing the shoe so as to make both feet tender, a horse slightly lame may be made to appear normal.”

Heaves is an unsoundness of the lungs, in which the thin air sacs break down and lose their normal contracting power. Heaves is often caused by dusty food, but any bulky or indigestible food that presses on the diaphragm may cause this trouble. At first a peculiar cough is developed. Later on, after the disease is well established, the

respiration becomes very difficult. The horse inhales naturally but has difficulty in exhaling. "This," writes Hadley,² "requires the patient to make a special effort to force out the air. As a result, there occurs a 'double pumping action' of the flanks with two expulsive efforts instead of one. This produces the so-called 'heave-line' seen along the flanks of affected horses. Disguised cases can be detected, or tests can be carried out by feeding all the dusty hay the horse will eat, then giving plenty of water and driving him briskly."

Roaring is a disease in which the horse breathes noisily. The larynx is affected, but not the lungs. This is a paralysis of the nerves and muscles of the parts, which results in a whistle-like noise or roar when inhaling. Roaring is manifested during exertion, yet a horse may be a roarer and be driven some distance without becoming especially noisy. The disease is hereditary, and animals suffering from it should be disqualified for breeding purposes. This malady may be cured in a large per cent of cases by surgical operation.



Fig. 111.—'Bone spavin is found on the inner side and front of the hock joint.' (Photo by courtesy College Veterinary Medicine, Ohio State University.)

Bone spavin, often referred to as spavin, is found on the inner side and front of the hock joint. The spavin usually occurs on the lower part of the joint, and when especially low down it is known as a "low or jack spavin." The joint surfaces may also become enlarged, forming a "blind spavin," showing no enlargement, but accompanied by severe lameness. Spavin is caused by a strain or injury and consists of accumulations of bony matter at the joint. This is usually shown

²The Horse in Health and Disease. F. B. Hadley, Philadelphia, 1915.

in a thickening of the part, as compared with the sound hock. The occurrence of the spavin is most easily seen by standing directly back of the horse; it may also be seen from the front by looking back between the forelegs. The gait of a badly spavined horse shows a pronounced lameness. The affected leg shows some hitch in action, and the weight is heavily thrown on the sound leg, resulting in some depression of the hip on that side. The occurrence of the bone spavin may be determined by the following method: Grasp the lower end of the cannon bone and flex the joint as much as possible, keeping the leg in this position a minute or two. Then



Fig. 112.—“Bog spavin is a puffy swelling on the front and inside of the hock joint.” This right leg also has a well-marked thoroughpin. (Photo by courtesy College Veterinary Medicine, Ohio State University.)

release the leg, and have the animal driven away at a trot, the examiner standing behind the line of movement. In case of spavin, the characteristic lameness of this disease will be apparent. Bone spavin is regarded as a serious unsoundness, and greatly damages the sale value of a horse. It is more prevalent with light rather than heavy horses.

Bog spavin is a puffy swelling on the front and inside of the hock joint. It is due to an inflammation of the synovial sac of the joint from which results the production of an abnormal amount of synovial fluid. When well developed this spavin is clearly seen, and feels soft to the pressure of the fingers. It does not usually cause lameness, though it may. The bog spavin is most common on

draft horses and especially those having fleshy or meaty hocks.

Thoroughpin is intimately associated with bog spavin, and is found in the thinnest part of the hock at its rear part. When the synovial sac is greatly enlarged, the fluid extends into this thin part of the hock, where we usually expect to find graceful outlines with marked depression. If a thoroughpin occurs, a swelling will be noticeable on each side of the hock at this point. Heavy draft horses often show puffy hocks, and this condition the dealers are inclined to regard as unimportant. However, the hocks of heavy horses should be carefully examined for this puffy condition, as bogs and thoroughpins are unsoundnesses. Lameness may not result, but the value of the horse is depreciated.

Curb is also an unsoundness of the hock, and is seen in a swelling or bulging out of the back side of the lower part of the joint. When sound, the back of the hock slightly below the point has rather a perpendicular or straight edge. If there is a curb, by standing on one side, one will notice an outward curve, instead of a straight line. Hocks that do not have pronounced curbs, yet that tend to round out at this point, are said to have a curby conformation. The curb is caused by strains or injury to the ligament, tendon or skin of this part of the hock. If ligament or tendon is seriously affected, lameness will result. The curb is regarded with disfavor by horsemen, and is the cause of much comment.

Sidebone is found on the rear part of the foot, especially the front one, on the wing of the coffin bone, at the crown or top of the hoof. It is due to hardening of the cartilages, whereby they take on a bony character, which when seriously developed causes lameness. In well-defined cases the sidebones appear as hard projections just beneath the skin, and can be plainly seen or felt. In the early stages sidebones are not easily discovered, and one may buy a horse appearing sound, that in a short time will show this

trouble. Draft horses, especially those with long feet and high heel are most predisposed to have this disease. According to Gay,³ "sidebones are most common on the outer quarters of wide-fronted draft horses, because such horses are inclined to be 'toe narrow,' which brings the outer quarter nearer to the center of weight bearing, thereby imposing weight and wear which should be borne by the other quarter." Horses driven on pavement or hard roads are much more given to sidebones than those working most of their time on the farm, or on soft ground. Lameness may not be evident, even where very pronounced cases of sidebones occur, yet this disease is classed as an unsoundness and seriously affects selling values. Horse dealers and judges have given much more emphasis to this subject since the beginning of the twentieth century, than prior to this period. It is difficult to find heavy draft horses, used on pavements, that are entirely free from this unsoundness.

Ringbone is a bony deposit which encircles the pastern bones, especially those of the front legs. On old horses this bony enlargement sometimes becomes quite prominent. Ringbone may be due to hard work, strains or bruises, and may cause serious lameness.

Splint is a bony projection or roughness usually found



Fig. 113.—"Sidebone is found on the rear part of the foot, especially the front one, on the wing of the coffin bone, at the crown or top of the hoof." (Photo by courtesy College Veterinary Medicine, Ohio State University.)

³ Productive Horse Husbandry, Philadelphia, 1914, p. 149.



Fig. 114.—“Ringbone is a bony deposit which encircles the pastern bones, especially those of the front legs.” (Photo by courtesy College Veterinary Medicine, Ohio State University.)

posterior surface of the metacarpus, and interferes with the play of the suspensory ligament. As a rule splints are not regarded as unsoundness, but simply as blemishes, and they are rarely the cause of lameness. Splints may often be easily seen by standing in front and looking at the inside of the legs. Neither the horse dealer or the judge as a rule emphasizes the importance of the splint.

on the inside of the foreleg below the knee and associated with the splint bone which lies close to the cannon. Hadley states⁴ that “the splint is found in about 70 per cent of all adult horses; in 93 per cent of these it is said to occur on the inner side.” Hadley also classifies splints as either single or double, and states that the so-called “pegged” splint, is a form in which the growth extends across the



Fig. 115.—“Splint is a bony projection or roughness usually found on the inside of the foreleg, below the knee.” (Photo by courtesy College Veterinary Medicine, Ohio State University.)

⁴The Horse in Health and Disease. Frederick B. Hadley, 1915, p. 207.

Quarter-crack or sand-crack is a splitting or cracking of the horny part of the hoof, usually of the front foot. This crack may be due to one of several things, such as dryness of hoof, brittle horn, improper shoeing, heavy shoes, etc. The crack begins at the crown of the hoof, and extends downward, and may occupy the length of the hoof. Sometimes it is necessary to put metal clamps over the cracks. This trouble may develop enough to break through the lower part of the foot and cause serious trouble and lameness. *Toe-crack* is similar to quarter-crack, and usually occurs on the hind foot, and in the front part.

Founder, or laminitis, is an unsoundness of the feet, due to congestion of blood between the delicate laminae or layers within the hoof. It is usually found in the front feet. It is caused by a variety of conditions, such as overfeeding, overwork, exposure, lack of exercise resulting in retarded circulation in the feet, etc. Intense pain results. The horse when standing, attempts to take as much weight from the front feet as possible. He tends to place the front feet somewhat forward, shoves the hind feet well under the body, thus endeavoring to relieve the front pressure. A horse thus affected moves with difficulty and will refuse to back. If well established, founder is incurable and causes the horse much lameness. The more perfect the foot, the less is the liability to founder. A very flat foot, or one with high hoof walls or a foot that is contracted, is liable to be affected with this disease.

Navicular disease is an inflammation of a chronic character that occurs in the foot, affecting the navicular bone and its related parts. It occurs most frequently with harness horses, and especially those with great knee action. Usually but one forefoot suffers from the disease, which is caused by concussion or shock to the affected parts. The early stages of the disease are not commonly noticed. Attention is first directed to the "pointing" of the foot, which is extended forward, the weight resting on the toe. As the disease progresses lameness is noticed, which increases with

the use of the horse. In the early stages the lameness may be intermittent, the horse having spells of going lame, then appearing sound for a time, again lame, etc. But as the disease develops, lameness finally becomes permanent. Few cases of this disease recover.

Cocked ankle or knuckling, is a partial dislocation of the pastern or fetlock joint, in which case the pastern becomes more perpendicular than usual, throwing the joint forward out of natural position. This is not always an unsoundness, but is a defect, in that it causes stumbling and clumsy action.

A Quittor is a running wound, comparable with the fistula, and is located at the hoof head. It is due to injury to the inner structure of the hoof, such as might come from a bruise, nail prick, injury to the frog, etc. There is swelling, heat and pain at the seat of the trouble, associated with pronounced lameness. Openings will occur at the hoof head, where pus may escape.

Thrush is due to the horn in and about the frog becoming soft and porous, permitting infection. If the horse stands in a damp stable, or under moist and unsanitary conditions, thrush may occur. Dark pus of an offensive character exudes about the frog. This is not an unsoundness, but is a diseased condition that is quite common, and easily cured in a sanitary stable where the affected parts are pared away and disinfectants applied.

Capped hock is a puffed-out condition at the point of the hock, and is usually due to a blow against this part. Horses that are shipped under close quarters often kick and so cause capped hocks. The point of the hock accumulates some fluid and, by treatment, this may in many cases be absorbed and the hock take on a normal character. Often, however, severe cases are incurable. A capped hock is a blemish, rather than an unsoundness.

Fistula is an abscess of more or less depth at the withers. Swelling of the part, accompanied by fever, and the exudation of pus occurs. Some cases of fistula are very deep-

seated, burrowing into the muscles of the shoulder and affecting the bone. It may usually be cured by long and patient treatment, but the disease is a decided unsoundness while it lasts.

Poll evil is a swelling at the top of the neck directly behind the ears, and is usually caused by a bruise. The swelling affects the region over the first vertebræ. This is an unsoundness that may be cured by expert veterinary service.

Defective eyesight

is not an uncommon affection with the horse, and is not always easily determined. However, if the lens or cornea become darkened and opaque so that sight is affected, this defect may be easily noticed.



Fig. 116.—“Capped hock is a puffed-out condition at the joint of the hock.” Note near hock. This horse also has a contracted tendon in same leg. (Photo by courtesy College Veterinary Medicine, Ohio State University.)

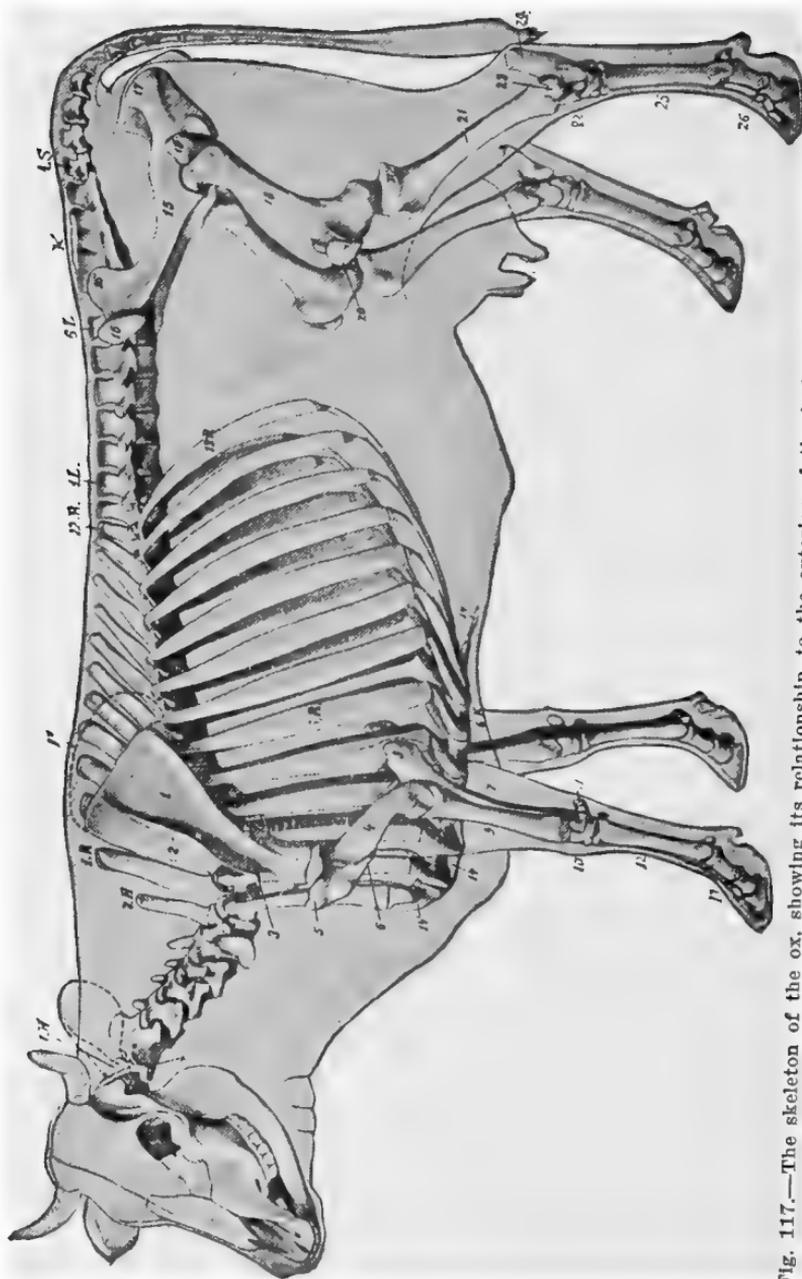


Fig. 117.—The skeleton of the ox, showing its relationship to the exterior of the body. (Courtesy Dr. S. Sisson, from *The Anatomy of the Domestic Animals*.)

PART III—JUDGING CATTLE.

CHAPTER XVII.

THE ANATOMY OF THE OX.

A study of the anatomy of the ox, even in quite an elementary degree, will add much to one's efficiency as a judge of cattle. The bony structure, the distribution of the muscles, the character and uses of the vital and digestive organs, have a most important bearing on the relationship of form to function.

The skeleton of the ox is lower set and somewhat longer than is that of the horse. *The skull* consists of eight bones, with the frontal one the largest and most important. This occupies the upper half of the skull, and the horns are extensions of what might be termed its corners. It is larger and stronger with the bull than the cow. *The spinal column* consists of about fifty bones, of which five are united in one piece, the sacrum, and 18 to 20 are in the coccyx or tail. An interesting feature of the spine is that its upper points rise to form a line along most of the back that is very nearly straight, which accounts for the level back to be seen on cattle. The deeper covering of flesh over the spine occurs along that portion of the back where the spinal processes are shortest. "The spinous processes of the anterior bones of the back constituting the withers," says Youatt,¹ "are stronger, but not so long as in the horse. While a very slight curve should mark the situation of the withers, the irregularity of the processes of the bones should never be visible. The less the curve the better, and no decided hollow behind should point out

¹ Cattle, 1860, p. 372.

the place where the withers terminate, and the more level surface of the back commences. This is a departure from good conformation for which nothing can compensate. It not only takes away so much substance from the spot on which good flesh and fat should be thickly laid, but it generally shows an indisposition to accumulate flesh and fat in the right places." *The ribs* on the ox number thirteen pairs, and according to Sisson,² they are in general longer, wider, flatter, less curved and less regular in form than in the horse. They have a more horizontal extension from the spine than do those of the horse, thus providing large chest capacity above as well as below. *The sternum* is wider, flatter and relatively longer than in the horse. *The shoulder blade* is in a degree triangular, with a prominent projection on its outer face, which furnishes strong muscular attachment. The long *leg bones* are shorter and heavier than with the horse. *The pelvis* has a somewhat level carriage, but with an upward curve of its rear part or ischium points, more commonly known as pin bones. The ox is a two-toed or cloven-hoofed animal. Lydekker states³ that two of the toes in each limb, corresponding in the forelimb to the third and fourth fingers of the human hand, and in the hind limb to the third and fourth toes of the human foot, form a symmetrical pair on either side of a vertical line drawn between them. In most cases these two toes or hoofs are flanked, as in the ox, by a smaller pair representing the human second and fourth fingers and toes. This division of the foot is extended through the pastern joint, to the point where the shank bone meets this joint. Such a division of the foot has its disadvantages, for it is a weaker formation, making strained feet much more possible than in the case of the single hoof of the horse. In the space between the toes, filth also accumulates, thus promoting lameness and disease, especially what is termed "foul foot."

² *The Anatomy of the Domestic Animals*, 1914, p. 130.

³ *The Ox and its Kindred*, 1912, p. 12.

The external muscular development of the ox is in harmony with what might be expected in economic meat production. The neck is made up of several long, strong muscles. One powerful muscle extends from back of the ears to the rib below the shoulder point, and as Youatt says,⁴ "however thin and deer-like we may wish the neck of a favorite ox to be at the setting on of the head, we look for plenty of muscle at the bottom of it, or we shall have neither strength nor substance in any part of the animal." The form of the upper part of the neck is due to the large muscle covering this part and extending back over the withers. The widest muscle of the back extends from the shoulder along the side and over the back. This muscle takes on considerable fat, especially behind the shoulders. A thick muscle lies beneath the lower part of the shoulder connecting the brisket and floor of the chest. Another large and fairly thick muscle covers the lower half of the rear part of the body, giving important support for the great weight of this region. On the hindquarter are several thick, meaty muscles. One of these lies about the hip and pelvis. The thigh is covered by a very thick muscle, which extends from the point of the hip and stifle over much of the upper leg, being overlapped at the rear of the hindquarter by a double muscle. On the thickness of the thigh muscles depends largely the type, whether beef or dairy, and whether the animal has been fattened or not. From a beef point of view, these thigh muscles cannot be either too thick or long.

The heart of the ox weighs about five and one-half pounds, and is slightly longer and less broad at its base than that of the horse. It is situated on the left side at the bottom of the chest cavity.

The lungs of the ox weigh about seven and one-half pounds, the right one weighing about half as much more than the left one. The lungs lie between the front ribs in the upper part of the chest.

⁴ Cattle, 1860, p. 339.

The liver of the ox weighs from ten to twelve pounds, and lies on the right side, being partly covered by the lung. The liver extends diagonally from near the lower end of the sixth rib, to and beyond the thirteenth rib just below the spinal column.

The kidneys of the ox weigh twenty to twenty-five ounces. These are located just below the vertebræ at the loin. Sisson states⁵ that "in the young calf the kidneys are symmetrically placed, but with the development of the stomach, when the rumen is full, it pushes the left kidney backward to a position on the right side, behind and at a

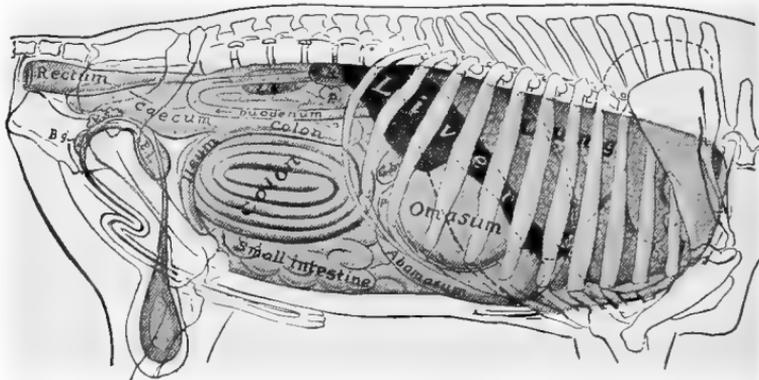


Fig. 118.—The viscera of the ox in position on the right side of the body. (By courtesy of Dr. S. Sisson, from *The Anatomy of the Domestic Animals*.)

lower level than the right kidney. The kidneys have about twenty lobes on the outer surface, and the space between these ordinarily fills with fat.

The stomach of the ox is composed of four parts, the rumen or paunch, the reticulum or honeycomb, the omasum or manyplies, and the abomasum or true stomach. This whole organ occupies nearly three-fourths of the abdominal cavity. The capacity depends on the size of the animal, but Sisson gives thirty to forty gallons as the capacity of

⁵ *Anatomy of Domestic Animals*, 1914, p. 565.

medium-sized animals, with a maximum of sixty for large ones. The rumen is the largest division of the stomach, making about 80 per cent of the whole, the reticulum 5 per cent, and the other divisions about 7 or 8 per cent each.

The intestines of the ox are of two classes, large and small. The small intestine connects with the true stomach, and is about 130 feet long. The large intestine is about thirty-five feet long, and is a continuation from the smaller intestine to the anus or vent. These organs occupy the rear part of the abdomen, the small intestine being situated below the large one.

An indication of the age of the ox is to be found in the number of rings about the base of the horn, or in the number and character of the front teeth. The horn, as has been stated, is an outgrowth from the frontal bone. When an ox reaches the age of three years, one ring is usually to be seen about the base of the horn. The fourth year a second ring appears, with one each year following, until the animal is six or seven years old. Thus, by adding two years to the number of rings visible, many have assumed they could state the age of an ox. This method, however, is hardly certain or satisfactory, for the rings are not always well defined, and at best this estimate can only be applied in case of the cow. The rings appear later on the bull, at either four or five years, and in view of the constant usage of the horns by the male, they are largely rubbed off. Youatt states⁶ also that, "if a heifer goes to a bull when she is a two-year old, or a little before that time, there is an immediate change in the horn, and the first ring appears, so that a real three-year old would

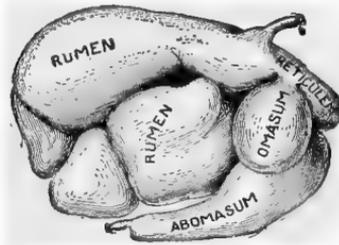


Fig. 119.—The stomach of the ox. (Courtesy Orange Judd Company.)

⁶ Cattle, 1860, p. 280.

carry the mark of a four-year old. Sometimes the two horns on the same animal show different numbers of rings. Further, if the horn has been filed and rubbed down, as with show animals, some of the oldest rings may become so indistinct as to be difficult of observation. Therefore, it may be concluded that the horn is not a very accurate guide to determine the age of the ox.

The teeth as an indication of the age of the ox are a fairly accurate guide for perhaps the first six years of the animal's life. The mouth of the ox, with all the teeth in place, has eight incisors on the front of the lower jaw, and six molar or cheek teeth in the back of each upper and lower jaw, a total of thirty-two. As in the case of the sheep, the front upper jaw of the ox is supplied with a tough pad, against which the lower front teeth touch in slanting position. The front teeth serve for indicating the age. The calf at birth or a few days later, shows two teeth. Within two weeks two more teeth have appeared, one on each side of the first pair. Two more follow these, perhaps, the third week, and within a month or even less, eight temporary or milk teeth occupy the front of the lower jaw. These temporary teeth wear down gradually, beginning with the central pair. At three months the six central teeth will be worn off somewhat, and at four months the entire eight will show a reduced surface. From this time on, the teeth go through a process of reduction from the central pair outward, becoming smaller and more and more triangular with shorter crowns and increased space between each pair of teeth. At about one year of age there are four small triangular teeth in the center, with two ordinary milk teeth on each side of these. At eighteen months or thereabouts, all eight teeth are small, with triangular tops, and distinctly separated from each other. Finally, between eighteen months and two years, the first pair of milk teeth disappear, and a pair of larger and permanent ones take their place. During the period of two to two and one-half years, the pair of milk teeth next

the permanent pair disappear, and a permanent pair come in their places. About three years of age the third pair comes in, one on each side of the four, and finally at three and one-half to four years of age, the corner milk teeth are supplanted by permanent incisors. Thus it can be assumed that two of these new teeth indicate about a yearling, four a two-year old, six a three-year old and eight a three- to four-year old. Some consider six teeth as a sign of a four-year old and eight as a five-year old. There is some variation in the appearance of these permanent incisors, due to feeding and condition. Cattle mature earlier to-day than they did fifty years ago, and no doubt this characteristic also influences an earlier appearance of the teeth. At six years the teeth are in most perfect form, but a little flattened on top, and with the central pair showing dark lines in the center. From now on the age can only be guessed at. The teeth gradually wear down, and change to a more slanting position. Various conditions affect the teeth and their importance as indicating age. Those used the most for grazing will show the greatest wear. At seven years the dark lines in all the teeth are yet more visible, and at eight especially so in the central ones. At nine the middle two begin to show reduced size, and at ten the four central ones are smaller than the others. Thus the teeth wear off from central to outer pair, so that often one will see cows fifteen years old or older that have no teeth excepting small stumps, or no incisors at all.

CHAPTER XVIII.

THE CLASSIFICATION OF DOMESTIC CATTLE.

THE different kinds of domestic cattle, as a matter of convenience, may be classified into three distinct types, according to their conformation. We may find examples of each type within single breeds, or among a collection of animals of no special breeding. The fact that type and function are closely related, has naturally caused cattle breeders to endeavor to produce animals of definite type and character. Therefore, as a result of breeding, there has been produced a well recognized beef type, in which meat production is the important factor; also a dairy type, with milk production the essential; and a third type, the dual purpose, with both beef and milk regarded as perhaps equally important. In each breed of cattle, as a rule, we recognize but one type for its standard, although there are striking exceptions. A good example is the case of the Shorthorn breed, in which both beef and dual-purpose type animals receive special recognition. The fact is that one will find within any one breed examples of wide variation in type, some dairy animals being meaty and some beef animals lean and of dairy form. So it may be said, that it is not always easy to decide whether an animal should be classed as of one type or another. It is simple enough for a qualified judge to decide in which group to place good examples of type; the difficulty lies in classifying those animals that are not good examples, and so belong perhaps as much in one group as another. To illustrate, two judges were examining a cow which one regarded as a dual-purpose animal. The other insisted that, from his point of view, she was of the dairy type. The fact is, in a milking Shorthorn show, she would have passed as of dual-purpose type,

but undoubtedly she would not have been seriously criticized for type in a show of grade dairy animals. This is not unreasonable. It would not be difficult to find good examples of dual-purpose heifers, somewhat thick and smooth soon after calving, that after milking six months would clearly seem of dairy type. The condition in this case largely affected the classification of type. It is important to understand, however, that the three types above referred to are generally recognized, and that good examples of each are clearly distinct and different from each other in conformation.

Sub-types of cattle may be defined as minor variations within a type. In recent years stockmen have come to talk much about type, so that within a breed we hear comment on this or that type. This reference is largely due to a certain line of breeding, wherein quite distinctive differences have developed. Shorthorn breeders speak of the Scotch type or Bates type, one being more compact and blockier than the other, yet each within the one type. Jersey breeders refer to the American and the Island types, the former being plainer of head, rather larger framed, and with less symmetry of udder than the latter, yet each is of the dairy type. These are simple examples to demonstrate that the word type is often used to refer to one class within another. The more experienced the judge or breeder, the more attention he is likely to give to these minor distinctions, which he really classifies into sub-types. These characteristics do not interest the feeder or the man engaged in handling grade cattle, and are emphasized only by the breeder of pure-bred stock.

CHAPTER XIX.

THE BEEF CARCASS AND ITS CUTS.

The final purpose of the beef animal is to furnish meat for human consumption. This being so, it is important that the animal have a conformation that with suitable feeding will yield cuts of meat of a high degree of excellence. No matter what age or stage of development, if of the proper conformation, the live animal as a rule may be so fed as to produce a prime carcass of meat at slaughter.

The physical and chemical character of meat has an important relationship to animal production. Meat consists of a combination of muscular fibers, more or less associated with fat. If a piece of lean meat is boiled, it may easily be torn into stringy pieces of muscle fibers. These vary in length, according to the muscle or class of animal, and they also differ in strength or toughness, according to age and use. Age and work tend to make the meat fiber hard and dense. This explains why the meat of the back, where little used, is more tender than that of the thick leg muscle, which is much used. These fibers make up the lean meat of the body. However, they have more or less fine particles of fat distributed among them. When developed to a noticeable extent, these unite into little groups of fat distributed through lean meat, giving it what is called a "marbled" appearance, a condition found in well-fattened animals. Meat that has fat particles well distributed among the fibers, when cooked, should be superior in flavor and tenderness, due to the softening effect of the fat. When beef animals are well fattened, they also store layers of pure fat over much of the outer part of the body, just below the skin, especially over the breast,

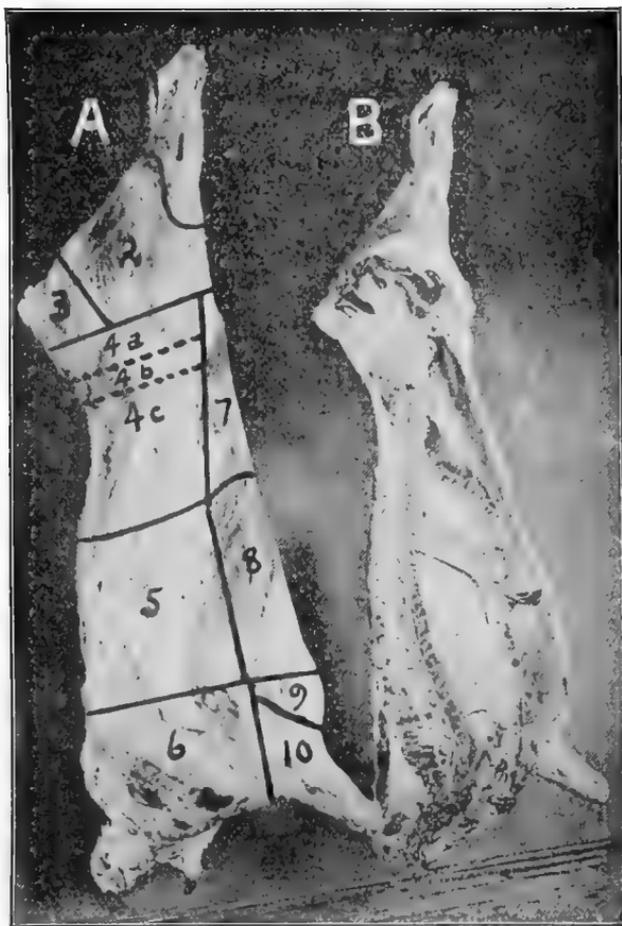


Fig. 120.—The two sides of a beef carcass. 1, shank; 2, round; 3, rump; 4a-4b, loin end; 4c, pin bone loin; 5, rib; 6, chuck; 7, flank; 8, plate; 9, brisket; 10, front shank. (Photo by courtesy Drs. Hobbs and Brumley, Ohio State University.)

ribs, back and hindquarters. Fat also commonly accumulates more or less between the groups of prominent muscles, and on the intestines, kidneys, etc. It is important that this layer-fat be smoothly and not too heavily laid over the different parts, in order that the carcass may be cut up with not too great a proportion of fat to lean, or in other words too much waste. Hall and Emmett give¹ the following amounts of lean, visible fat and bone in the hind and forequarters of beef:

PART OF CARCASS	Per cent. lean	Per cent. visible fat	Per cent. bone
Hindquarter	54.42	34.55	10.71
Forequarter	59.12	26.69	13.73

Experiments by Lawes and Gilbert on the composition of the body of the ox² show the half-fat animal to contain the following, expressed in per cents: water 51.5; dry matter 40.3; protein (lean meat) 16.6; fat 19.1, and ash 4.66.

The dressed carcass of beef, and the relationship of this to the live animal, should be understood by the judge. It is important to estimate reasonably well how an animal will dress out in killing, and what will be the nature and value of the meat cuts. The market pays its highest price for the carcass that will dress out at slaughter with the least waste, and that will cut up into the greatest percentage of parts which command the best prices.

The per cent of carcass to live weight in fat cattle varies from 55 to 70 per cent, though more extreme figures are occasionally recorded. Ordinarily, the fatter an animal, the less water the body will contain, and the greater the per cent of dressed meat. Young cattle usually dress out with more waste than do older ones. Numerous slaughter tests of beef cattle reported by Henry,³ quoted from British and American sources, show the per cent of dressed meat

¹ Bulletin 158, Illinois Agr. Experiment Station, 1912, p. 145.

² Journal Royal Agr. Society of England, 1898.

³ Feeds and Feeding, 1910, pp. 828, 829.

to live weight to vary from 63.9 to 69.38 per cent. A common grade of cattle would be very likely to show less than 60 per cent dressed meat under ordinary conditions of feeding, while a good grade, well fattened, should yield at least 65 per cent.

The influence of the breed on the carcass is shown in several ways. In a recognized beef breed, such as the Aberdeen Angus, the carcass is thicker in its structure, with the fat distributed among and over the muscles in the most desirable way. Cattle of other than the beef type yield a thinner kind of carcass, deficient in the distribution of fat about the muscles, but with an excess of fat about the intestines and kidneys. Such carcasses cut up into a maximum of low-priced parts. For this reason the butcher prefers to purchase examples of the beef breeds, because from them he will secure the greatest percentage of what the market demands, and will also suffer less loss in offal.

Carcass beef refers to that which is the direct product from the slaughter houses before being divided into the smaller wholesale parts. The entire carcass, split through the length of the spine, furnishes two sides of beef. Each side is divided, usually between the twelfth and thirteenth ribs, thus forming a fore and hindquarter. The forequarter weighs about 52 per cent and the hindquarter 48 per cent of the entire side. When a side of beef is thick enough fleshed to be cut up in the retail trade, and sold over the butcher's block, it is known as "block beef" or "side beef." If not thick enough in muscle and fat, the carcass is used in a class of trade where only a part of it is sold over the block, in which case it is termed a "cutter," and is cut up for the low-priced customers. The side of the carcass of beef is cut into important smaller parts. For the purpose of mental calculations as to the cutting value per pound of side-beef, says Hall,⁴ "a carcass is regarded as consisting of four parts which are approximately equal

⁴ Market Classes and Grades of Meat. Louis D. Hall, Bulletin 147, Ill. Agr. Exp. Station, 1910.

in weight, *viz.*, (1) loins and ribs, (2) rounds, (3) chucks, and (4) plates, flanks, shanks and suet. They are here arranged in their relative order of market value. The hindquarter is regarded as consisting of 50 per cent round, 35 loin, and 15 flank and suet; the forequarter 50 per cent chuck, 20 rib, and 30 plate and shank. These proportions and cuts especially apply to Chicago standards. Carcasses are cut in some eastern markets, and in Europe, so as to yield somewhat different results.

The loin includes from the end of the hindquarter, with



Fig. 121.—A piece from the loin—the porterhouse. (Photo by F. H. Haskett, Ohio State University.)

its one rib, to a line extending from the middle of the sacrum to a point an inch or two above the stifle joint. This piece includes what are recognized as the choicest cuts, the porterhouse and sirloin, which accounts for its having first rank as to price. The tenderloin muscle also lies on the underside of this cut. There are several grades of loins. The best, No. 1, Hall states, "must have a full, well-rounded shape, a complete covering of white fat, the thickness of which is in proper proportion to the lean and bright, firm, fine-grained, well-marbled flesh." A No. 1 loin weighs from 50 to 85 pounds.

The rib piece is cut from the forequarter so as to include ribs from six to twelve, or seven in all. This cut contains the choicest roasting pieces. Ribs differ in thickness and condition, and so are graded on much the same basis as the loin. The size and character of the "eye" of red meat, where the rib and backbone join, furnish evidence



Fig. 122.—"The rib piece is cut from the forequarter so as to include ribs from six to twelve." (Photo by Mr. F. H. Haskett, Ohio State University.)

of the value of this piece. No. 1 ribs should also have a covering of about one-half inch fat. An average-sized, full rib piece weighs from 30 to 50 pounds.

The round is the leg end of the hindquarter, after the loin is removed. This is the largest muscle in the carcass, and derives its name from its more or less round form in certain stages of cutting. This part contains a large per cent of lean meat, and is one of the tougher cuts, owing to the great use of this muscle. The meat from this part is of medium price, but owing to the small per cent of bone

and fat, it is one of the most economical pieces to purchase. About 20 per cent of the upper part of the round is the rump, which is used for roasts of grade inferior to ribs; 60 per cent is buttock, the round part, which is commonly sliced for steak; and 20 per cent at the lower or hock end is shank, and is used for boiling, Hamburger steak, etc. No. 1 rounds should be plump, well covered with smooth

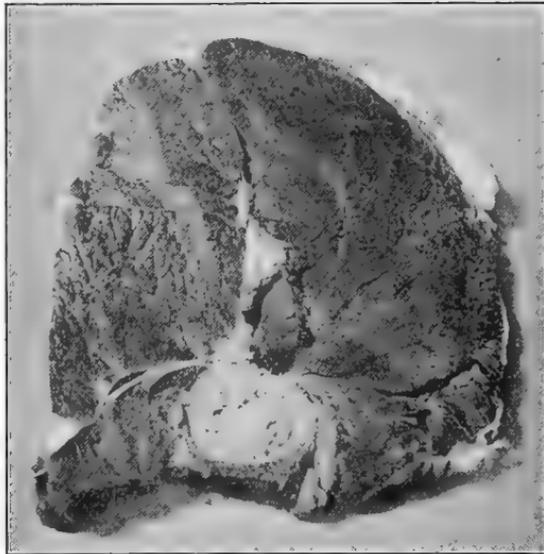


Fig. 123.—The round. "This is the largest muscle in the carcass, and derives its name from its more or less round form in certain stages of cutting." (Photo by F. H. Haskett, Ohio State University.)

white fat, and cut into bright, firm, fine-grained meat. An average first grade round will weigh 75 to 110 pounds.

The chuck piece includes the five front ribs, the shoulder and neck. When trimmed, the neck, the brisket and lower ends of ribs (from which the plate is obtained) are removed. The chuck, to be of first grade, must be thick, of full outline, and show good color and grain of flesh. Only a moderate amount of fat is looked for on this piece, and

it should be thickest at the rib end. Roast, steaks and boiling pieces come from this part. The thicker the chuck, the more available it becomes for roast cuts. The best grades of average size chucks weigh 75 to 110 pounds.

The plate piece is the lower part of the forequarter, including the ends of the ribs and the brisket. Thickness and a proper admixture of fat and lean, with not too heavy bone, is necessary for the best grades of plates. This cut is used for corned beef, stews, beef rolls, etc. No. 1 average weight plates range from 40 to 80 pounds.

The flank piece is a small strip, free of bone, weighing 15 to 20 pounds, that is, trimmed from the lower edge of the hindquarter, in narrow wedge-shaped form.

The shank piece is a short section of either front or hind leg, including the hindquarter at and just above the hock joint, and the leg part proper, of the forequarter. The shanks weigh from 10 to 20 pounds, and are used mostly for boiling pieces, and represent the cheapest cut in the carcass.

Grading the carcass of beef is an important feature of the meat trade. All carcasses may be classified into four groups, *viz.*, steers, heifers, cows, bulls and stags. The carcasses are graded within each class, based on the following essentials, *viz.*, form, thickness, finish, quality, soundness and weight. The important points connected with this grading, as relates to judging beef type are as follows:⁵

Form of beef carcass refers to the general outlines and proportions. Ideal conformation consists of compactness, *i.e.*, good width in proportion to length; short shanks and neck; and full rounds, loin and ribs. Form is associated more or less closely with a proper degree of thickness, and is also partially dependent upon the covering or finish of carcass.

Thickness of beef carcass refers to the amount of lean flesh it carries. Thick-meated loin and ribs, and full, compact rounds and chucks are essential. "Built like a cart

⁵ Bulletin 147, Illinois Agr. Experiment Station, July, 1910.

horse" describes the fleshing demanded in high-grade carcasses. There is a clear distinction between thickness due to fatness and that due to muscular flesh.

Finish of beef carcass refers to the amount and distribution of fat on the carcass, and to the quality of flesh so far as it depends upon the degree of fatness. This corresponds to condition in the live animal. Perfect finish involves a smooth covering of firm white fat over the entire carcass, with the greatest depth along the back, a covering of white brittle fat on medium-sized kidneys, and a lining of fat in flakes or rolls on the inner surface of ribs. The depth of fat along the back should range from one-fourth inch on 500-pound carcasses to three-fourths inch on those of 900 pounds. The condition of the rounds and shanks will show the last degree of finish. The fat must not be excessive at any point, especially over loin and ribs, as this indicates either an overdone condition or a tendency toward a thick, crusty covering, without good marbling.

Quality of beef carcass especially relates to size, color and softness of bone, smoothness and grain of flesh, color and general appearance of carcass, and freedom from coarseness. Quality depends chiefly on smoothness, grain and color. Rough, uneven flesh detracts from the appearance and usefulness of the beef. Coarse-grained, stringy, fibrous flesh is usually an indication of poor breeding, advanced age or improper nourishment. Grain and firmness are lacking in immature beef. That which is very young seldom has "substance" or marbling, and is high in per cent of water. The quality of bone is judged from the chine, breastbone and ribs. The bones should be as small as consistent with weight of carcass. They are also an important indication of age. The fat should have a clear white color, and the flesh a bright, rich red. A fiery red carcass indicates that the blood was poorly drained. Very yellow fat is an indication of Jersey or Guernsey blood.

CHAPTER XX.

JUDGING BEEF TYPE OF CATTLE BY SCALE OF POINTS.

Method in judging the beef animal is of prime importance, and the scale of points indicates the course of observation. In British shows it is quite customary to start the judging by walking the cattle about a ring, with the judge in the center to make observations as the animals pass by. In America we use this method but little, doing most of the examination with the cattle in standing posture. One can more fairly measure the merits of an animal if given critical examination both at rest and walking. Under the walk the harmony of proportions and adjustment of parts are more clearly seen than they would be otherwise. When at rest the animal should stand on all fours with equal ease, each leg being in good position, so that the back and top lines show to best advantage. The order of usual



Fig. 124.—“When at rest the animal should stand on all fours with equal ease, each leg being in good position.”

procedure is to make a general examination of the animals from a distance, slowly passing around and surveying them from various points of vantage. Next comes a careful inspection, beginning at the head, gradually working back to the hindquarters, considering each part in order, as detailed in the following scale of points for a fat steer.

SCORE CARD FOR BEEF CATTLE OR STEER.

SCALE OF POINTS		Standard of Perfect Score	Score of Cattle Studied
A—GENERAL APPEARANCE, 38 Points:			
Weight, score according to age. At 12 months 850 lbs., at 24 months 1,250 lbs., at 30 months 1,500 lbs.		8	....
Form, broad, deep, compact, low set, top and underline straight.		10	....
Quality, fine bone, mellow, elastic hide, soft and silky hair		10	....
Condition, deep, even covering of smooth, firm flesh, the cod and flank indicating finish		10	....
B—HEAD AND NECK, 7 Points:			
Muzzle, broad, mouth large, nostrils large		1	....
Eyes, large and bright, with placid expression		1	....
Face, short, wide, slightly dished; cheeks fleshy; jaw strong		1	....
Forehead, broad, full		1	....
Ears, medium size, not coarse, well set		1	....
Neck, thick, short, throat clean, blending well with shoulders.		2	....
C—FOREQUARTERS, 9 Points:			
Shoulder vein, full and smooth		2	....
Shoulders, well set, compact on top, smoothly covered with flesh.		3	....
Breast, wide and full, brisket extending forward, with little dewlap		2	....
Legs, straight, short; arm full; shank fine, smooth; toes pointing directly forward		2	....
D—BODY, 31 Points:			
Chest, deep, wide, girth large, crops full		5	....
Back, broad, level, thickly and smoothly fleshed.		8	....
Loin, broad, thick		8	....
Ribs, long, well arched, thickly and smoothly fleshed.		8	....
Flanks, deep, full, underline straight from front to rear		2	....
E—HINDQUARTERS, 15 Points:			
Hips, smoothly covered, not wide apart nor prominent		1	....
Bump, long, wide, level, free of patchiness, tail-head smooth		4	....
Thighs, thick, broad, deep, full		4	....
Twist, deep, full		4	....
Legs, well placed, short; hocks straight; shank fine and smooth, toes pointing straight ahead		2	....
Total		100	....

The general appearance of the beef animal includes its size, weight, form, quality and condition. These several features have a general application to the entire animal, and are given first consideration. It is natural and logical to thus take measurement of the animal as a whole, following this by a study of the parts in detail.

Size and weight are two features that naturally are closely associated. The demand, to-day, for meat-producing

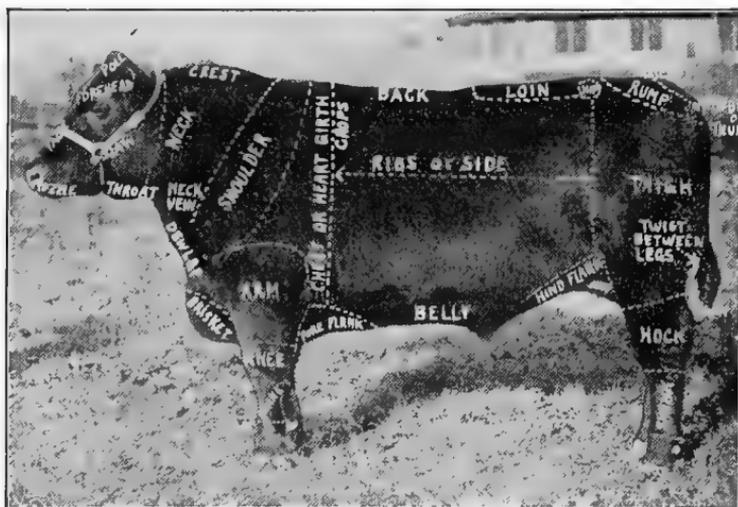


Fig. 125.—The Points of a Beef Animal.

animals, is for both size and weight. The practical breeder emphasizes size. He seeks a beef animal with enough scale or frame to have a certain weight at a given age. Therefore, it must be conceded that if an animal has enough weight for its age, it must have sufficient size. It is an interesting fact, however, that in Great Britain in times past, beef animals have not as a rule been weighed when sold on the market, as in America, but have been measured instead. In this case size was the prime factor, measurements of length and girth of body enabling one to figure

out weights on a fairly satisfactory basis. *The weight of beef cattle fitted for the butcher* will naturally depend on age and duration of feeding. Breed also has an influence here, for the larger beef breeds, like the Shorthorn, attain a given weight somewhat earlier than do smaller breeds. If well nourished from birth, weights of 850 pounds at 12 months, 1,250 pounds at 24 months, or 1,500 pounds at 30 months, might be regarded as standards. A large percentage of the animals on the market, however, do not attain these weights, being under, rather than over size. Judges generally discriminate against under-weight animals, and give special attention to this subject. All fat cattle exhibited at the International Live Stock Exposition are weighed the day prior to showing and these weights, and also the ages, are clearly indicated on large cards on the men holding the animals in the ring. Each experienced exhibitor desires to bring forward sufficient weight for age to satisfy the judge. Other things being equal, a steer weighing 1,000 pounds that should weigh 1,250, might well be scored off 50 per cent on this feature. The fact is, the 250 pounds shortage in weight expresses a more serious lack here than the score card indicates, because it represents an unnecessary cost in production.

The general form of the beef animal, as viewed from in front, side or rear, should be blocky or square in outline. Some of the old writers on beef cattle form, dating back over a century, have compared the body with the rectangle, as viewed from one side, or with the square, as seen from in front or the rear. Such comparison naturally applies only to the body proper, leaving head, neck and legs out of consideration. The modern standard of form is essentially the same, though more emphasis perhaps is placed on compactness. As one surveys the animal from a distance, he is impressed with the thickness of form all through, and a depth of body much in excess of length of leg, the entire frame being covered with a thick, firm, smooth covering of flesh. Long neck and legs cannot be part of

good beef conformation. The low set body is an absolutely necessary feature of correct beef form. In this study of general form, the opposite lines of back and belly should be fairly parallel, and a similar application may be made of the side lines as viewed from the ends or above.

Quality in the beef animal is indicated by fineness of bone, a mellow elastic hide, soft silky hair, and refined development of certain parts, such as head, ears and joints. Any unnecessary heaviness or weight of bone, means too much loss at slaughter as well as later loss in the retail meat trade. It is rarely that the bone is subject to criticism for being too fine, but rather the opposite. *The soft, mellow hide* is one of the most important indications of the profitable feeder. Through the hide are distributed the fine capillaries that convey the nutritive material of the food in the blood and deposit it where needed over the body. If the hide is hard and unyielding, the capillaries do not serve their purpose to best advantage. Grasped between thumb and fingers, the skin of desirable character feels mellow, somewhat thick and unctuous or fatty to the touch, and is elastic, pulling easily from the body, especially back of the shoulders and along the sides. Such a skin gives what the stockman terms a "sappy" look to the animal, indicating a thriving condition. If the hide holds tight to the body where it should be loose, if it is thick and hard, or thin and "dry and papery" as it is termed, then the qualities of the desirable feeder are lacking. The physical condition of the animal naturally affects the skin, and sickness may cause harshness and unyielding character. The hide is in greatest perfection under conditions of absolute health and when the body has felt the influence of good feeding. The beef animal should have a skin of moderate thickness, but not too heavy. Beef cattlemen prefer a hide that inclines to be thick, rather than thin, for the latter is not associated with the thickest laying on of flesh. Another important point in favor of the thicker type of hide is the protection it gives the

animal in winter under conditions of exposure. The Hereford, famous as a beef breed, has a notable quality and thickness of hide which, without doubt, has played an important part in the value of these cattle on the range. *The hair* is also an important indicator of quality. It should be fine and soft, and if the animal is in good condition, there will often be a lustre or sheen to the hair, indicating quality of a high degree. It is not unusual to see an animal in the show ring, where the coat of hair reflects light to such a striking extent as to make the individual conspicuous among his companions. In this case there is always a combination of mellow skin and fine, lustrous hair. While this desirable condition is af-



Fig. 126.—“Grasped between thumb and fingers, the skin of desirable character feels mellow.”

ected more or less by certain feeds, such as oil meal for example, it could not be produced without quality of marked degree, naturally occurring in both skin and hair. Fineness of hair is associated with thickness of coat also. The greater the number of hairs on a square inch of skin, the thicker and finer will be the coat. The naturally thick, fine covering of hair on the Hereford or Galloway breeds furnish much warmth and protection in winter, as has already been indicated. The length and coarseness of the hair differs according to location on the body. It is finest and shortest about the forequarters and over the sides, and is coarsest and longest on the upper part of head, along the

top of the neck and about the thighs. Among the beef breeds, notably Hereford and Galloway, one often sees two classes of hair on the body, a very thick, fine coat lying beneath a much longer and more open one. This thick "mossy undercoat," as it is often termed, being somewhat oily, easily turns the heaviest rains, and serves an important purpose in keeping the animal dry when exposed to winter



Fig. 127.—“One often sees two classes of hair on the body, a very thick, fine coat lying beneath a much longer and more open one.”

storms. The hair is also an indicator of health. If dry and harsh, curling back at its tips, forming what is known as a “staring coat,” it is evident that the animal is not doing well, or is not in healthy condition. Cattle suffering from tuberculosis, in advanced stage, show this staring, lustreless coat of hair. Therefore, the degree of thrift or health is easily seen by the qualified judge, as he glances



Fig. 128.—“With the fingers close together, the judge passes the hand over the parts where one should find a smooth, thick, firm covering of flesh.”

lack of quality. Big joints suggest heavy bone and too great a per cent of offal to dressed meat at slaughter. Large, heavy horns also indicate coarseness. Quality is one of the most important features in the animal, and it perhaps has more influence on the price paid for fat cattle, than any other one thing considered by the buyer. Therefore, the judge should attach much importance to quality, scoring down severely if coarseness predominates.

The term “**condition**,” as applied to fat animals, refers to the degree and character of fat or covering of flesh over the body. The judge determines the condi-

over the animal before him. The coat may be too fine, indicating lack of constitution, but this is not at all frequent. Quality is also manifested in the size of head and ear, and the coarseness of joints. The head that is large and heavy in comparison to size of body, indicates



Fig. 129.—“Cattle in high condition frequently have rolls of hard fat on the ribs.”

tion by observation, partly by means of the eye, and partly through the sense of touch, or by "handling," as it is termed. In the latter method, with the fingers close together, the judge passes the hand over the parts where one should find a smooth, thick, firm covering of flesh. The center of back along over the spine, the shoulders and rib-covering are lightly pressed upon with the tips of the fingers, by which means the depth of flesh, its firmness and uniformity of covering are easily determined. Often bare spots occur, with little flesh over the bone. An animal may be in good condition, ready for slaughter, yet bare on the shoulder. Or the back may be well covered its entire length, yet the lower part of the ribs be more or less bare. Cattle in high condition frequently have rolls of hard fat on the ribs, back and rump, especially at the end of the latter, on each side of the tail head, which in consequence takes on a "patchy," or lumpy appearance. A dimple or tie in the center of the back, due to a short ligament connecting skin and backbone, is frequently associated with high condition. This dimple, rolls of fat, and bareness of covering, all combine to produce a carcass that will not dress out to the greatest advantage. In the modern show ring, the condition demanded is a smooth, uniform distribution of deep, firm flesh, with no roughness at any point, and that will furnish cuts the exterior of which will be well laid with flesh. If an animal is in high condition and over-fat, then the flesh is soft and tallowy, and will show waste and too great a percentage of fat in the carcass. The degree of condition or finish is indicated by the thickness of the hind flank when grasped in the hand, by the amount of fat about the root of the tongue, as seen back of the jaw, and by the fullness or fatness of the cod¹ of the steer. The butcher often feels of the covering over the pin bones or ends of rump, for a co-relationship seems to exist between this covering and the general condition. In scoring condition, one might discount 20 per cent for an animal

¹ The scrotum or testicle of the male ox.

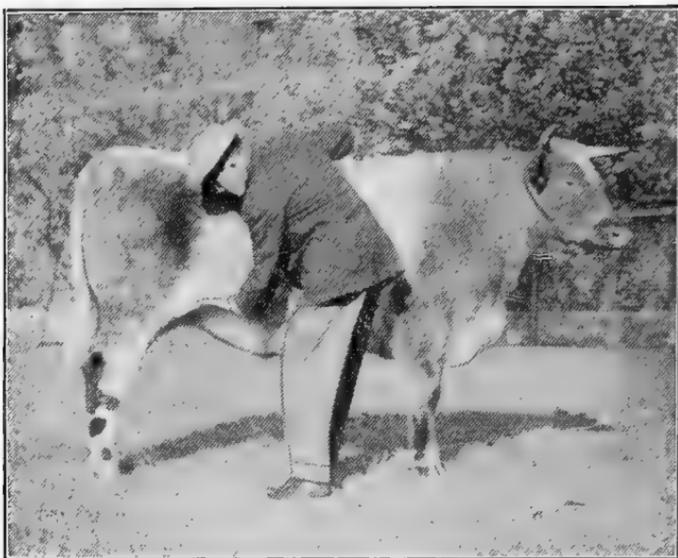


Fig. 130.—“The degree of condition or finish is indicated by the thickness of the hind flank when grasped in the hand.”

that is in too high flesh, or the same amount if there is a lack of condition. Inexperienced judges are quite liable to favor the heavier covering of flesh and approve where experience would say fleshing had been carried too far.

The subject of handling referred to in the preceding paragraphs on quality and condition, has long been considered an important feature of the work of the cattle judge. As long ago as 1767 the following advice on this subject, not out of place here, was given:² “When you see your beast, in the general shape and composure of his body, shew most fair and beautiful, each member being comely, and each bone covered so as a perfect shape requires, you may then judge the beast to be well fed; especially when you see his huckle bones round, and not sharp; his ribs smooth, and not rough; his flanks full, his nach

² The Complete Grazier, 2d ed., London, 1767, p. 29.

thick, and his cod round. When you perceive this, you may handle him, and feeling him upon the nethermost ribs, if you perceive the skin loose and soft under your hand, you may be assured that the beast is well fed outwardly, that is, upon the bones. You may then lay your hands upon his round huckle bones, and if they feel soft, round and plump, you may be assured that the beast is well fed both inwardly, and outwardly, that is, both in flesh and tallow. Then you may handle him at the setting-on of his tail, and if that feels big, thick, full and soft, it is a true sign that the beast is very well fed outwardly. Then handle his nach bones, which are on both sides the setting-on of his tail, and if they feel soft and loose, that is a sign also of his being well fed. Lastly, you may handle his cod, if it be an ox, and the navel, if it be a cow; and if they feel thick, round, soft, large and plump, it is a certain sign that the beast is well tallowed within. When any of these parts



Fig. 131.—“Then handle his nach bones, which are on both sides the setting-on of the tail,”

or members handle contrary to the rules above given, you may then make a contrary judgment." The use of the hands in examining animals being judged, is highly important, at least in determining the depth and condition of the flesh. However, from a modern view-point, judges often handle to an unnecessary degree, and the tendency now is to use the hands as little as possible consistent with arriving at sound judgment.

The head of the beef animal, in general, should appear comparatively short and broad, as this represents the head conformation of the good feeder. Such a head is correlated to the short neck, wide back, deep body and short legs. *The muzzle* should be broad and wide, with a mouth of good feeding capacity. The narrow, pinched mouth will be found among animals with narrow heads giving evidence of lack in constitution. The animal with wide, capacious muzzle and muscular lips, when on pasture grazes more easily, manipulates the tongue more freely, and secures food more readily than would be possible with a smaller, less expansive mouth. If the muzzle is broad, then the nostrils are more

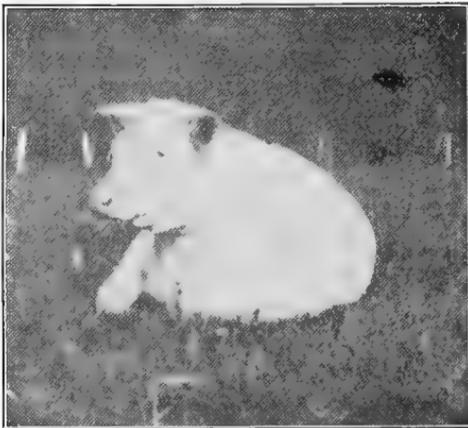


Fig. 132.—“The head of the beef animal, in general, should appear comparatively short and broad.”

likely to be large, an important point, as these are the gateways through which free and full admission of air to the lungs is secured. *The eyes* should be fairly prominent and placid of expression, indicating the quiet feeder. Many people prefer to see the whites of the eyes clear and as free as possible

of brown or yellow tints. A clear, placid eye indicates quiet temperament and a disposition to fatten easily. *The face* of the beef animal should be reasonably broad in proportion to its length. It is this part, lying between muzzle and eyes, where shortness of head is especially to be desired, for the length here largely influences the strength of jaw. If the face is long and narrow, two weaknesses will be apparent, first, the nasal tubes extending from the nostrils will be smaller, thus restricting freedom of respiration, and second, the jaw will be long and weak, a feature of many inferior feeders. A face that from a side view seems slightly depressed just below the eyes, or "dished" as cattlemen express it, has long been regarded with favor, especially if short and wide, for this is considered a strong conformation. *The cheeks* on each side of the face should be wide, smooth and fleshy, indicating a strong jaw. The underside of the lower jaw should be widely spread at its base, an evidence of strength, as well as supplying ample room for the tongue. *The forehead* should be broad and full, features associated with intelligence and pleasant disposition. The narrow forehead is likely to be found on a narrow, long head, a characteristic of the narrow, long-bodied animal. Width of forehead should be especially strong just over the eyes, with a very gradual narrowing from here to the horns, though in case of a polled beast, the forehead narrows quite rapidly to a well-defined point. The upper part of forehead or poll should have a thick covering of long, coarse hair. This is much more apparent on some breeds than others, and more conspicuous on the male than the female. *Ears* of medium size, well pointed and neatly attached to the head, meet with greatest favor. Large, heavy ears, coarse at the attachment to the head, indicate a general coarseness. Too small, delicate ears, on the contrary, denote over refinement. A thick covering of fine hair is desirable on the ear, with long, silky hairs adorning the edges and bordering the outer ear cavity. In the well-

balanced head, the ears will be placed so that when erect, their tips will hardly extend above the poll. It is not unusual for ears to be attached so high on the head as to injure the harmony of proportions. This is especially to be noticed with polled cattle. Cattle naturally carry the ears about half erect and pointing forward. If naturally carried in a depressed position, there is evidence of bad disposition or ill health. Occasionally the horns interfere with a natural carriage of ear. *Horns* are considered a disadvantage by many, and, in fact, under conditions of domestication, serve no special economic purpose. They, however, are an important indicator of breed character, and furnish some evidence as to age and quality. From a breed character standpoint, the horn is quite important. There is a very pronounced difference in the shape, curvature and color of the horns of the Hereford and Shorthorn. The exhibitor who brings into the show ring a dehorned animal of recognized breed, places himself at a disadvantage in thus presenting a head robbed of a part of its distinctive breed character.

The neck of the beef animal should be short and thick. The head should be neatly attached, with no excess of skin or fullness about the jaw. In its lower part, the neck should widen out and blend with much smoothness into the shoulder. In its carriage, the neck should have a top line that very slightly rises from withers to base of poll. Males should have necks with some crest and thickening of the top muscles, but even this need not interfere with a level carriage of neck. Some animals naturally elevate the neck more than others, and this is often referred to as a stylish carriage. Bulls have thick, strong necks that are more or less arched. Youatt states³ that "a little of the arched form of neck is no detriment either to his appearance or his actual value, although common consent seems to have determined that the line from the horns to the withers should scarcely deviate from the back. The

³ Cattle, 1860, p. 344,

neck of the beef animal being for meat production, it should be wide rather than narrow on top, for the thin neck is quite sure to be a feature of the narrow type of animal." In scoring the neck, excess of length is sufficiently objectionable to justify scoring down fairly well. A neck that is too thick and meaty is hardly a serious fault.

The forequarters of the beef animal should present a smoothly laid, flesh-covered shoulder and wide, full bosom. What is termed the *shoulder vein* by some people, and the *neck vein* by others, is the place where the shoulder and neck join, just in front of the point of the shoulder. In a good example of a fat animal, it is difficult to decide where the neck ends and the shoulder begins, so smooth and deep is the covering of flesh here and so slight is the curve of flesh from shoulder to neck. Usually, however, there is some depression just in front of the shoulder, the neck lacking naturally in thickness, so that even fattening may not produce the desired smoothness. *The shoulder* of the beef animal should incline well into the back. Along the length of the shoulder blade is a ridge which furnishes attachment for the muscles covering this great bone. The more erect the blade, and the more prominent this ridge, the less will be the covering of flesh possible over this part. When the shoulder is "well laid" as it is termed, one can feel little evidence of the bone below, when passing the hand over the shoulder of an animal in good condition. But if the shoulder is not well laid, then there will be prominence of shoulder top at what is termed the *withers*, with more or less roughness over the shoulder. It is also common to find animals in condition with a slight bareness at some place on the shoulder. It is not unusual for otherwise excellent show steers to lack in this particular respect. If the tops of the blades along the back line are widely separated, it may be taken for granted that the shoulders have too much prominence, and, therefore, will lack in covering. The character of the shoulder is a very important feature of beef cattle, and has been given careful attention by many



Fig. 133.—“When the shoulder is ‘well-laid,’ as it is termed, one can feel little evidence of the bone below.”

breeders. The Hereford breed of cattle is noted for its beautiful, smooth and well-laid shoulder, distinctly surpassing other beef breeds in this respect. In judging the shoulder, it will be well to keep in mind the importance of this part as a distinctive feature of beef conformation, and the great ne-

cessity of having it well laid and smoothly covered. *The breast* of the beef animal should be wide and full, with the brisket wide and of fair prominence. To see the breast well, one must stand in front so as to note the placing of neck between the shoulders, and the width of chest. If the neck is thick and blends into the shoulders right, then the breast will present both width and fullness. *The brisket* extends forward between the legs, merging with the lower juncture of the neck. This part should be wide, with a distinct groove on its lower side. The brisket occasionally, with mature animals in high condition, projects in front of the legs in a very prominent and undesirable style, and may be only 12 or 15 inches from the ground. A neatly rounded upward carriage of this part is preferable, giving evidence of flesh production, and to some extent, vigorous constitution. Youatt makes considerable and interesting comment on the brisket. He states⁴ that “it has been considered as a part of the anterior wall of the chest, and as a proof of depth and capacity. This is alto-

⁴ Cattle, 1860, p. 370.



Fig. 134.—“The brisket extends forward between the legs.”

gether erroneous. It is a mere appendix to the chest. It is a projection of substance, partly muscular, but more cellular and fatty, from the anterior and movable division or head of the sternum, extending sometimes 12 to 20 inches in front of it, and dipping downward nearly or quite as much. It is no proof of depth of chest. It is found in great size in all the improved cattle, varying in size in different breeds, and in different cattle of the same breed; and it was always looked for and valued in the better specimens of the old cattle. It is very probable that this may be carried too far. An enormously projecting brisket may evince a more than usual tendency to fatten; but not infrequently a tendency to accumulate that fat irregularly—to have it too much in patches, and not spread equally over the frame. The brisket should be prominent as well as deep; perhaps on one account more prominent than

deep, for it will then be more likely, either before or by the time it arrives at the posterior border of the elbow or forearm, to have subsided to the thickness of the fatty and other substance naturally covering the sternum. One defect, but not of half the consequence which it is generally supposed to be, would then be avoided—the apparent diminution of the chest at the girthing place, or immediately behind the elbows.” Along the lower side of the neck, often extending to the brisket, is a line of skin known as *the dewlap*. This varies greatly in prominence. It is sometimes seen on Herefords in a marked degree, adding greatly to the depth of neck, and most undesirably so. This characteristic is highly developed on certain breeds of cattle in southern Europe, that are coarse and far inferior to the British breeds. The dewlap is simply superfluous skin, and its presence is a distinct disadvantage, and when of excess development an indication of coarseness.

The front legs of the beef animal should be placed wide apart, and should be short and straight. A wide placing of the legs provides room for the full chest, indicative of strong constitution. Shortness of leg is desirable, as this part gives us the cheaper meat. A short leg is also associated with depth of body as a rule, an important requisite in a good feeder. The upper part of the leg above the knee, is known as the arm. This should be notably wide at its connection with the shoulder, and gradually taper to the knee, which should be strong and wide as viewed from the side. As this is the part of the leg furnishing the most meat, it should show as much width and muscular character as possible. The leg of cattle from knee to ankle is known as the shank. This is essentially bone and ligaments, covered with skin, having but small food value, hence the shank may well be much shorter than the arm above. In fact, the shortness of leg is usually dependent upon the shortness of the shank. Further, a fine, smooth bone, and medium-sized joints in the leg, furnish important evidence of quality, as already discussed on this subject. The feet

should be well placed, the toes being of medium length and pointing forward. The natural curves of the leg joints tend to direct the toes outward, but the wider the spread of the feet, the more the arm will be thrown in against the chest, thus crowding that part. Therefore, it may be considered that there is a direct relationship between the position of the feet and the width of chest. The hoofs should be of medium length, so as to give the animal level, true footing. If the hoofs grow too long the toe points will turn up and the heels will come down, and give a weak position to the legs. It seems strange that such should be the case, but it is true that occasionally one will see animals in the show ring with such abnormally long hoofs as to reflect on their care. Judges should discriminate against such animals.

The body of the beef animal, giving evidence as it does of constitution, digestive capacity and high-priced cuts, is credited with a maximum number of points on the score card. *The chest* should be deep and wide, thus providing ample room for the vital organs—the heart and lungs. The chest, as measured back of the shoulders, should show a strong heart girth. In a cross section of this part, a much greater curve is found on the lower side of the chest than over the top, but the latter should have as much width as possible. Just back of the shoulders, over the upper part of chest, but below the back line, are *the crops*. Here is usually to be found some depression, which is associated with thickness of chest and the capacity to carry flesh. The model beef animal will be full and strong of heart girth, show almost no perceptible falling away at the crops, and be covered here with a smooth, firm layer of flesh. This kind of conformation is much sought by intelligent cattlemen, who recognize that it is associated with the best feeders, and most vigorous animals, which, when fattened, are most in demand on the market. The judge will be justified in placing a premium on chest character. *The back* of the beef animal should be wide and level, and be

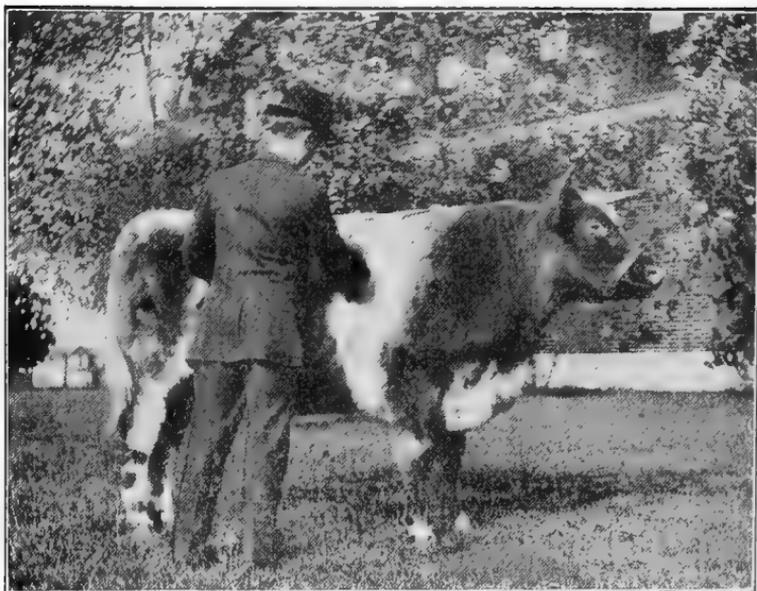


Fig. 135.—“Just back of the shoulders, over the upper part of the chest, but below the back line, are the crops.”

smoothly, uniformly and deeply covered with flesh. Width of back adds to its strength and capacity for carrying flesh. A level carriage of back is also regarded as evidence of strength, although cattle buyers care little whether the back is level or not, so long as it has plenty of width and a smooth covering of flesh. The back of young, immature animals should be well carried, and the judge should expect more from them in this regard, than from older cattle where sagging of the back may be due to age, pregnancy, or heaviness of belly. The first essential in any event, is a smooth, deep, uniform covering of flesh, indicated to the touch as the fingers gently press along down the spine and test for thickness and quality. The part most likely to be bare is over the shoulders at the withers. The longer, higher rising bones of the spine, located at this part of

the back, are not fleshed over so deeply or readily as over the remainder of the back. *The loin* is the muscular portion of the back that lies just in front of the hips. It should be broad and thick, and give evidence of ample strength. Any depression here is undesirable, indicating physical weakness, the kidneys being located



Fig. 136.—“The back of the beef animal should be wide and level.”

directly below the loin. A very slight arch across the loin, so that not the slightest depression will be possible just in front of a line between the hips, is highly desirable. The loin being the part of the back from which the highest priced meat is secured, should logically be as broad and heavy-fleshed as possible.

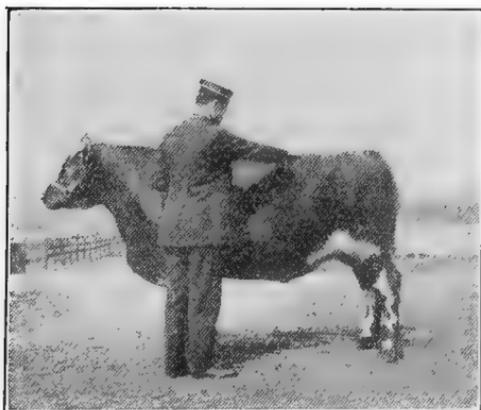


Fig. 137.—“The loin is the muscular portion of the back that lies just in front of the hips.”

The ribs should be long and widely arched. A combination of length and arch gives a capacious middle, with ample room for heart and lungs.

If the rib is not well arched, or "well sprung," as the stockman expresses it, then the back will be narrow, and lack the width necessary to secure the best of cuts. The spring of rib should come well out to the line of hips, which will insure a wide loin and back. Flatness of rib and depression behind the shoulders indicates, as a rule, lack of constitution. It is not necessarily always so, however. Some animals having long ribs as viewed from the side, show deep middles and large digestive capacity, but when viewed from front or rear, present a decided narrowness of back due to flatness of rib. When the rib is both short and flat, then we have a most undesirable conformation, the type that brings the low price for its class. It is highly essential that the ribs be smoothly and deeply covered with flesh. As previously stated, the lower part of the ribs may be bare, though the back be well covered. The judge should pass his hands over the ribs and feel the covering, noting its depth, firmness and smoothness, and the way it is packed in between the ribs. Beef cattle should be close-ribbed, that is, the spaces between them should be as close as possible, thereby



Fig. 138.—Note the difference in depth of body and digestive capacity of these two beef steers that are of exactly the same age.

giving the compact frame. In scoring the ribs, the judge should emphasize the necessity of length, but from a butcher's point of view a wide, well covered back is more important, for here he gets his valuable cuts, rather than lower down on the ribs. So in the show ring, the wide, well-covered back should receive more credit than the long rib without the desired arch. *The flanks* also are indicators of constitution, capacity and condition. The full front flank, without depression back of the arm, is associated with a wide, strong lower chest, and good constitution. The rear flank that is well let down, or deep, as it is sometimes called, goes with depth of body and feeding capacity. Shallow bodied, short ribbed animals are always high in the rear flank. From a side view, the lower line of body from front to rear flank should be quite low and straight. This, of course, is not possible always with old animals, that develop some paunchiness, even though well filled in the flanks. The hind flank of beef cattle thickens and takes on fat as feeding progresses and, as has already been observed, is an indicator of condition or finish. Fat cattle, when walking, show a bulging fullness in the hind flank, indicative of finish that is easily seen by the experienced stockman.

The hindquarters of the beef animal represent a very important meat-producing part of the body, for here we find the greatest percentage of meat to bone to be found in the carcass. Therefore, beef cattlemen usually take special interest in the conformation of this part. *The hips of the beef animal*, sometimes called "hooks" or "huckle" bones, should be of good size, though not too angular and prominent. Youatt states⁵ that "without being ragged (rough or angular), they should be large, round rather than wide, and presenting, when handled, plenty of muscle and fat." They should be well placed in the back, and on the line of a strong arch of ribs. The ideal condition is to have them smoothly covered with flesh. If they are too

⁵ Cattle, 1860, p. 12.

wide apart, and angular, this will be quite unlikely, and further, will give evidence of coarseness. *The rump* should be long, wide and level. We view the length by standing at one side, and from this view-point also note whether it extends in level form from hips to end of body. One of the common defects of the rump is to droop from the hips back, thereby reducing the flesh-carrying capacity of the



Fig. 139.—“The rump should be long, wide and level. We view the length by standing at one side.”

hindquarter. Many judges give scant consideration to droopy rumped animals, very correctly regarding this as bad conformation, and sadly marring true animal beauty. As one views the rump from the rear, it should taper but gradually from hips to point of rump, being of good width be-

tween the pin bones or points of the ischium. The natural tendency is for the rump to slope away on each side from the spine, but this should be only to a slight extent. The more sloping the rump in any respect, the less its meat-carrying capacity. In other words, the longer, wider and more level the rump, the greater the yield of meat on the pelvis. The covering of flesh over the rump should be smooth, without any roughness or patches of fat, a frequent defect of this part. Many fat cattle have heavy lumps on the ends of the rump, on each side of the pin bones. In fact, evidence of condition soon manifests itself here. Feeders of show stock often find their cattle accumulating such lumps of tallow on the rump as seriously to

affect their value for competition in these days when smoothness of fleshing is so much emphasized. The wise judge will discriminate against undue roughness of rump covering. *The tail head* or attachment of tail to body, should be on the general level line of back, and not too prominent nor rough. If the rump itself is level, the tail attachment will probably be satisfactory. Frequently a nick or dent is seen

in the spine on the rump, or where it may unite with the tail head. This does not add to the beauty of this part, but in itself is no serious defect, and should have little bearing on the decision of a judge, unless competition is close. *The thigh* of the beef animal should be broad, thick, deep and full. From a side view the breadth

is noted, while from the rear we note its thickness, its depth from top to bottom, and its general plump and meaty character. The outline of the thigh along its rear side should show quite a straight drop from the end of the rump downward, thus giving evidence of continuous breadth to the top of the lower thigh, which should be short but strongly muscular. The distance from the hip to the point where the thigh curves in to form the lower thigh should be comparatively long. A long, broad, thick upper thigh, in good condition, will yield a heavy weight of one of the more valuable parts of the carcass. These several



Fig. 140.—Note the difference in thickness and depth of thighs in these two steers of equal age.

factors should be carefully kept in mind by the judge, for, from the butcher's point of view, a well-covered back and heavy-fleshed hindquarter are of first importance in beef production. *The twist* is the part of the hindquarter where the upper and lower thighs blend together, forming a curve on the inside that should be very strongly defined. The



Fig. 141.—“The twist is the part of the hindquarter where the upper and lower thighs bend together, forming a curve on the inside.”

more pronounced the curve, the thicker fleshed will be the thigh just above this point. It is desirable to have the thighs as plump as possible from top to bottom, but we may find hindquarters narrower at the top, and thick and full below, yet with strong twists. It is not unusual to find Aberdeen Angus cattle of such conformation. On the contrary, the Hereford has a natural tendency for a full development high up on the thigh, with a paring away of the lower thigh, and lack of fullness of twist. It is equally important that the thigh be fully fleshed above and below.

The legs should be well placed and short, the same argument as to position of legs and feet applying to the hind as to front limbs. If the hocks are straight, and point directly back, with four or five inches of space between, the toes will point forward, in good form, and ample room for thickness of thigh will exist. When the hocks crowd close together, the toes point outward, and the thighs lack in thickness. Neither should the legs be carried too far beneath the body, as viewed from the side. The legs as a whole will assume a very true and satisfactory position, if a plumb line dropped from the point of the rump touches the point of hock and falls nearly parallel with the back side of the shank bone.

CHAPTER XXI.

THE COMPARATIVE STUDY OF BEEF CATTLE.

THE judging of cattle by means of the score card is especially applied to the single individual. As a rule the card is used in this way only, although occasionally two animals are scored in a comparative way, the judge examining the same features in order with each animal, and scoring the same. This, however, is a slow process and is neither satisfactory or practical in comparative judging. If not in the regular show yard, a ring of four animals makes a convenient group for comparative study. These should be of similar age and character, such as yearling steers, for example, and preferably of much the same breed type. The judge should examine them as they stand in line for inspection, but also as they pass before or about him at the walk. Following the plan of the scale of points, the cattle should first be examined as to their general appearance, in which case the *weight, form, quality* and *condition* are considered, and each animal is compared with the others. The judge receives certain impressions in this first general examination, that will influence him in his final placings. He stands some distance away, and compares the animals in a comprehensive way that is not possible at closer range. He walks about the group, surveying and comparing at different angles, for this is necessary if the work is to be carefully done. The question the judge asks himself all the time is, how near does each animal measure up to the ideal of the scale of points? Weight he recognizes as of distinct importance, considering age, but beauty of form is essential, for in it are included the most important features sought after by the butcher. If, then, the animals are compared as to general form, they can hardly be ranked in order until they are compared as to quality and condi-

tion and their readiness for the block. One animal might have a form of excellent balance, but be so thin in flesh, if fat animals are up for comparison, as not to be entitled to as high rank as others in better condition for killing. A detailed examination and comparison is necessary, following the more general one. It is desirable, in the case of cattle for slaughter, to go over each animal carefully, comparing those parts the butcher most emphasizes and values. Therefore, a study of the backs, as to width and depth of covering, and a comparison of hindquarters, as to flesh-carrying capacity and thickness and depth of conformation is essential. In the show ring where competition is severe, such as at the International Live Stock Exposition, it is impossible to win with a fat steer that is open to serious criticism of back or hindquarter. Plainness of head and shoulder might be overlooked to some extent, but not of the more essential parts from the butcher's standpoint. The covering of flesh as to smoothness, depth and firmness, will also receive much careful attention, and when the cattle are at last placed in their relative order of merit, it will be found that condition has had a very important part in the placing. No set rule can be applied as to which animal should be placed first. It may be comparatively easy to select out the one entitled to first rank, and perhaps no trouble at all to locate the most inferior individual, but second and third places are frequently difficult to decide. The second animal must be compared with the first, and for well-defined reasons given its place, but so also this second placing over the third must be satisfactorily made. Certainly, as one goes down the line, after making the placings, each individual in order of rank should show more actual merit and fewer defects than the one next below in the line. Interesting and profitable comparative study of certain parts may be made. For example, the heads and necks may be compared and ranked in order of merit. So, in the same way, other parts may be specially compared, as the bodies, hind-

quarters, condition or quality. An analysis of this sort goes farther than is usual in most comparative judging, but results in a more thorough comparison than is possible by usual methods, and is well worth doing when time and conditions justify. In the regular show ring, when herds are shown in competition, judges frequently re-group them. Each exhibitor's herd is placed in a single file, so that animals of the same sex and age may be easily compared. For

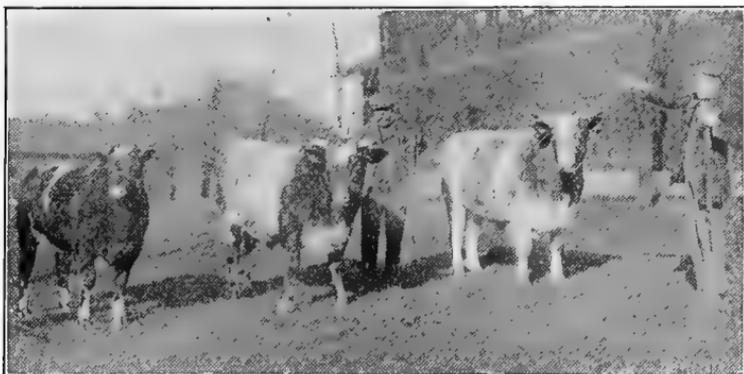


Fig. 142.—“Interesting and profitable comparative study of certain parts may be made. For example, the heads and necks may be compared and ranked in order of merit.”

example, if four herds, of five cattle each, consisting of bull, cow three years old or over, two-year heifer, yearling heifer, and heifer calf were brought in the ring, each herd should, as a rule, be arranged by itself, with the animals lined up side by side. The opportunity for examination may be greatly improved if the judge requires them to be arranged so that each bull will be side by side, and the same for the female of each class, thus permitting close comparison. In a herd contest of this sort, the judge must first take into consideration the general uniformity of the animals in a herd, and their closeness to the approved type. Some exhibitors have an impression that the winnings of an exhibitor in the classes should regulate the winnings of the

herds, but this is not necessarily so at all. A first prize animal in class might have had but little competition in one case, yet be distinctly inferior to a third prize animal of another class, that had secured this position in strong competition. Therefore, it really resolves itself into placing the herds so that they are arranged in order of merit as a whole, including uniformity and type as vital factors.

The reasons for placing beef cattle in the ring may be given orally or in writing. For some years, in the students' judging contests at the International Live Stock Exposition, written reasons were given, and later these were discarded for oral reasons. In either case it is highly important that the reasons be given briefly and to the point. The following may serve as an example of written reasons, as applied to a ring of four steers used in the classroom.

"I placed D first, because in general beef conformation he meets the requirements more fully than A, my second choice. D is wider and thicker over the loins than A, and also is longer, wider and more nearly square in the hind-quarters. D is hardly so attractive as A in head and shoulders, yet his firm, smooth, mellow fleshing and fine handling quality indicate him to be the most profitable killer in the ring. His entire make-up and covering of flesh is the sort the butcher wants. I placed A over C, because the former comes closer to correct type, being very compact and low set, and much neater in head, neck and shoulders than C. A is especially stronger and thicker fleshed over the loin, at which place C is somewhat deficient. While C surpasses A in the length, width and carriage of rump, he is inferior to the latter in his covering of lower ribs and thickness of quarters and development of twist. A is very neat in his middle piece, while C inclines somewhat to paunchiness, which promises too much waste in killing. I placed B last because he is not a good type of butcher's beast, being too long and upstanding, lacking condition, and showing too much coarseness all over."

CHAPTER XXII.

JUDGING STOCKER OR FEEDER CATTLE.

STOCKERS or feeders represent a class of cattle that are thin in flesh, yet possess the essential factors which, with time and feed, will produce the high-class beef animal. That which has thus far been described of beef cattle, relates to the finished condition, whether for butcher or show ring. It is highly essential that the cattleman or judge should be able to select thin animals that will feed out satisfactorily. In fact it requires far more discrimination to judge thin cattle than it does those that are finished. However, the same essential features are found in stockers and feeders that are found in the others, excepting for differences in size and in lack of condition. Stockers are young cattle, and are regarded as in the calf class, while feeders are more mature, and are the sort used in the feed lot for immediate feeding and fattening. Men rarely buy feeders that weigh under 800 pounds, although some fancy



Fig. 143.—“Feeders are more mature and are the sort used in the feed lot.” (Photo by courtesy Ohio Agr. Exp. Station.)

stuff is occasionally put on feed that weighs around 500 pounds, being turned off to the packer at about twelve months, weighing around 800 pounds. It is quite a common custom, however, to select feeders eighteen months old or older, and weighing from 900 to 1,000 pounds. In judging feeders, certain features should be emphasized, and for reasons already given. Breed character and quality are highly important. The best fat cattle of to-day on the market appear the equals of pure bred in external characteristics, and they are the leading prize-winners in the feeder contests at the shows. The general form should be of the blocky type, low set, wide on top, deep in the flanks and supported on short legs. The head should be short, with all the requisites of the good feeder, a most important point in this kind of cattle. Shortness of neck, thickness of chest with ample space between the forelegs, a deep body or long rib, a wide, long, level rump, and thick, deep thighs, are features to be sought for in the thin animal. Roughness of shoulder, depressed or saggy back, and prominent hips and tailhead are objectionable. Emphasize quality, as shown in the mellow, elastic, fairly thick hide, the heavy, fine coat of hair, and moderate size of bone. The general quality of the animal is seen in his breed character, while his handling quality is especially to be found in the hide and coat of hair. From either side or end point of view, one notes the desirable or undesirable characteristics, just as in the animal in condition. But it must be remembered in judging thin cattle, that a well-made frame is absolutely necessary, if a high-class, finished product is ultimately to come from it.

CHAPTER XXIII.

JUDGING BEEF CATTLE USED FOR BREEDING PURPOSES.

THE beef animal, for breeding purposes, should possess all the desirable features of conformation found in the non-breeding animal that is to yield a maximum of returns over the block. Comparison of a prime steer and a superior type of breeding bull, will show a close resemblance between them in form and quality. The breeding animal, however, must possess certain characteristics of importance. These are the distinctive features of sex, constitutional vigor, size, an inheritance of natural fleshing, and breed character. Judges will differ somewhat in their relative estimate of values of these characteristics. The following discussion, however, gives first consideration to sex.

(A)—JUDGING BEEF BULLS.

Sex character in the beef bull is manifested in the size and character of head, in the thickness of neck and frontal development, the sexual organs, and temperament. The head of the bull should meet all the requirements of the good feeder, but what is most important, it should be strong and dominant in expression, with full forehead, expressive eyes, strong but not coarse horns, and a thick covering of hair over the upper portion of head. Such a head, proudly carried, speaks for the dominant sire and constitutional vigor, most essential features of the male. The testimony of generations of great stockmen emphasizes the fundamental importance of the head as showing sex and indicating breeding capacity. We are told¹ that Thomas Bates was so im-

¹ Shorthorn Cattle. Alvin H. Sanders, 1900, p. 86.



Fig. 144.—“Such a head, proudly carried, speaks for the dominant sire and constitutional vigor.” (Photo by courtesy Mr. J. C. Allen, Purdue University.)

pressed by the head of Belvedere (1706), as seen by him when exposed through a stable window, that he determined to purchase him, which he did. Bates was one of the great breeders of history, and Belvedere was one of the great sires used in the herd at Kirklevington. What the intelligent breeder desires in the bull's head, the equally

wise judge must require in the show ring. Heads lacking masculinity, of steery character; or long and narrow, showing weak constitution; or coarse and heavy, too big for the body, should be discriminated against. The neck of the bull should be strong and masculine, distinctive of the sex, with a thickness and arch on top not possessed by the steer or cow. Breeders differ in their views as to degree of arch of neck, some preferring less than others. A thick, high arch is unnecessary; one of moderate degree suffices to denote masculinity, and yet furnishes no unnecessary amount of cheap meat. The entire front development of the neck, breast, shoulders and chest should show the massive and masculine in superior degree. So also should the hind-quarters appear strong and stocky. The scrotum or testicles—male sexual organs—should be well developed, and the presence of two glands of equal size should be apparent in this sac. The absence of one of these glands, while not necessarily indicating a non-breeder, is looked upon with

distinct disfavor, and should rule an animal from the show ring as defective. The temperament of the bull is also quite distinctive of sex character. Through it he shows the power of self-assertion, as the natural leader of the herd, and his carriage should be bold and masculine, rather than mild and sexless like the steer. *The constitutional vigor* of the bull, as has already been expressed, is shown in the head and neck. However, the arch and depth of forerib, and fullness of breast and chest, are regarded as of first importance in indicating constitution, for reasons already given. Stylish, erect carriage of head and neck, usually expresses strength of constitution, while a low, indifferent attitude of head and neck indicate lack of vigor or poor health. Sex character and constitution are essentially of equal importance, for a male lacking either of these would be considered inferior. *Size* in the bull, or weight at maturity, should be considerably in excess of that of the female. Very large size is not essential, and often means coarseness. Undersize is a serious objection, because the small bull, though meeting all other requirements but size, is liable to sire animals that will never reach standard weights. While the present day demands considerable size in breeding stock, most breeders prefer bulls of medium size, possessing much quality. A beef bull weighing 2,200 pounds at maturity, not in high condition, might be considered of satisfactory weight. The inheritance of natural flesh-carrying quality is of special importance. The bull in good breeding condition, that has a frame smoothly covered with a natural layer of mellow flesh, may be expected to transmit this quality to his offspring. Further, such a covering, consisting largely of smoothly laid-on muscle, readily takes on fat and reaches a high degree of condition. The tendency in the beef show ring is to bring in breeding cattle in high condition. This is unfortunate, as it is often at the expense of procreative power after the show season is over. The breeding bull should not carry the high condition of the steer, yet should show

enough fleshing to satisfy reasonable show ring requirements. *Breed characteristics* are an essential feature of the modern sire. There is no argument in behalf of the use of grade or cross-bred sires, therefore, the bull should possess all the important characteristics of the breed he represents. Each of the beef breeds, in its more perfect development, meets the requirements of superior meat production, but the presence of certain color markings of hair, and details of conformation, distinguishing features of the breed, and evidences of the right kind of ancestry are also demanded. The presence of these features in the bull will furnish important evidence of his possible power of transmitting these desirable qualities to his offspring.

(B)—JUDGING BEEF COWS.

The sex character of the beef cow is especially seen in the head, neck, form of body and udder. *The head* should be distinctly feminine, lacking the size and burly character of the bull. The face is more refined, the forehead not so broad, the eyes milder, and the horns smaller and more refined. In fact, refinement of head, with neatness of contour, are essential features. *The neck* should be short and of moderate thickness, showing plenty of beef character, yet lacking the heaviness of the bull and the thickness of the steer. The neck is an important indicator of feminine character, and judges look with disfavor upon a cow with this part heavy and masculine. The neck should blend nicely into well-laid shoulders, but the cow should not carry so much squareness or fullness of breast and shoulders as the bull. The space between the forelegs is less, the arms are not so broad and powerful, and the shoulders are of lighter build than with the bull. Great depth of chest and strong spring of forerib is sought after. *The udder of the beef cow* is not expected to produce as much milk as the dairy cow, but it should show both size and capacity. It should be nicely extended in front and behind, have a mel-

low, elastic consistency, and show four well-placed teats of sufficient size to be easily grasped in the hands. Small udders, showing a fleshy character, are distinctly undesirable. In passing on breeding cows of the beef type, judges do not place enough importance on the udder and the part it plays in the successful development of the herd. The best British Shorthorn breeders of to-day give special attention



Fig. 145.—“The beef cow should produce an ample supply of milk for nursing her offspring.” (Photo by courtesy Frank Adler.)

to the development of the udder, believing, like Thomas Bates, that the beef cow should produce an ample supply of milk for nursing her offspring. For further information on the udder and milk secretion see pages 298 to 300. *The sex character of the female* is shown in considerable length of body and depth of rib, this type of body having capacity for reproduction. The maternal is distinctly apparent in the head, neck and body of the breeding females, a feminine quality that is absolutely lacking in the male or unsexed animal. *The size* of the cow should tend to be

large rather than small. Breeders prefer large cows of quality, mated to medium-sized bulls. A weight of 1,600 pounds for a mature cow will satisfy most breeders and judges. The small or undersized female should be discriminated against, because scale and weight, with quality, are associated with the most satisfactory and profitable results of reproduction. The presence of breed type or character is important in the cow, though not so much so as in the case of the male. If the pure-bred female is under consideration, then the judge must attach great importance to breed characteristics. Prepotency, as fundamental in breed development, cannot be maintained unless breed characteristics are emphasized and promoted by the breeder, and the judge in the show ring. Therefore, as in the case of the bull the judge should give proper recognition to breed type and character when judging pure-bred females.

CHAPTER XXIV.

DESCRIPTIVE NOTES OF THE MORE IMPORTANT BEEF BREEDS.

The Shorthorn breed of cattle originated in northeastern England, in the counties of Durham and York. In general this is regarded as a beef breed, although certain tribes especially given to milk production are regarded as dual-purpose, and termed dairy or milking Shorthorns. The color is variable, being either red, white, or red and white in spots, or roan, the latter being a commingling of red and white hair without forming solid color. In size this is one of the large breeds, mature bulls weigh 1,800 to 2,200 pounds, and even more, with 2,000 a desirable standard. Cows at maturity should weigh in ordinary flesh 1,400 to 1,500 pounds. Assuming the Shorthorn to be a good representative of the beef type, it has certain long recognized characteristics. The horns are waxy yellow in color, comparatively small and short, curving in at the tips. The muzzle should be flesh-colored, though smutty or dark muzzles are not uncommon, but are objectionable. The shoulders tend to be somewhat prominent and bare, and frequently a deficiency back of the shoulders is to be seen. Yet in most cases the rib is widely sprung, and the body shows ample thickness and depth. The hindquarters are conspicuous for their thickness and fullness of rump and thigh. Shorthorns are easy keepers, fatten easily, and tend to get patchy about the sides and tail head. The females of this breed produce milk more abundantly than those of other beef breeds. In fact, the females of the so-called milking Shorthorn tribes often have large udders which yield heavily. It is not remarkable for a milking



Fig. 146.—Shorthorn bull, "Ringmaster," 307899. A great show bull and sire. (Photo by courtesy The Farmer.)

Shorthorn to produce 8,000 to 10,000 pounds of milk in a year. There is no official score card for this breed. Temperamentally, Shorthorns are very quiet and domestic.

The Polled Durham breed of cattle is a hornless Shorthorn. Originally coming from two sources of ancestry, yet in each case essentially of Shorthorn blood, the lines of Polled Durham breeding of to-day trace back to pure-bred, hornless Shorthorns. Therefore, the distinctive characteristics of the Polled Durham are those of a Shorthorn with polled head.

The Hereford breed of cattle originated in Herefordshire, England. It is a very old breed, and is essentially the only one kept in that English county. It is distinctively a beef breed. The main body color is red, ranging from light to dark shade, with white face. Solid white markings usually occur on the legs about the ankles, the lower part of belly, brisket and neck, top of neck, withers, and brush of

tail. Red hair often occurs about the eyes, especially with some families. This is one of the large beef breeds, comparable in size with the Shorthorn. Mature bulls often weigh 2,200 pounds, and females 1,500 pounds or more. Some very large bulls of this breed have been recorded. Typical Herefords are distinctly beefy in character and short of head, with waxy yellow horns, which come from the head at right angles, and curve forward and downward. Horns also frequently curve upward at the tips, especially with the females. The shoulder blade, as a rule, is well laid in, thus forming a beautiful, smooth, nicely fleshed shoulder, a distinctive characteristic of this breed. The hindquarters naturally tend to be somewhat peaked at the rump, and thin of thigh. During the past fifteen or twenty years, however, these deficiencies have been greatly improved, so that Herefords with wide rumps and thick thighs are becoming common. This breed fattens easily and rapidly, and tends to be more or less patchy, especially along the ribs and about the rump. Dimples not infrequently occur in the back. The coat of hair is usually very thick, with a distinct curly character in winter.



Fig. 147.—Hereford bull, "Diplomat" (Imp.).

In temperament the Hereford is naturally high-spirited and very active and better adapted to large pastures and the range than more restricted conditions. This breed has no equal for grazing on extensive ranges. In general, the Hereford is inferior in milk production and rarely shows an udder of superior form.

SCALE OF POINTS FOR HEREFORD CATTLE.

(Adopted by the American Hereford Cattle Breeders' Association.)

	Points
Color —Medium, deep, rich red, with white head, breast, belly, crest, switch and ankles	5
Objections: <i>White back of crop, high on flank, or too high on legs.</i>	
Head —Forehead broad and prominent; face short, slightly tapering toward nose; muzzle full; nostrils wide and open; eyes large and expressive; ears of medium size, well set and well covered with hair; horns of medium size, even color, coming from head at right angles, set on level with crops, back and tail head, curving forward and downward.	8
Throat —Clean, without any excessive development of loose flesh or fat underneath	2
Neck —Short, neat, spreading out to meet shoulders, with full neck vein, free from loose skin. (Males: neck muscular, with full crest according to age)	2
Shoulders —Straight, round, full, smooth and well covered; top of shoulder blades slightly below vertebra, good width on top.	6
Chest —Wide, deep, round and full just back of shoulders	6
Brisket —Deep and wide, moderately projecting, free from flabbiness	2
Ribs —Well sprung from backbone, close together, long and arched, carrying the full width of shoulders and deeply and smoothly covered	8
Back and Loin —Broad, straight and heavily covered from crops to hooks; hooks moderately wide and well covered	10
Rump —Long, wide, smooth and well covered, carrying width in proportion to width of back and hooks, joining smoothly into quarters	5
Quarters —Long, straight, muscular, full, deep, and thick.	4
Thigh and twist —Full and thick, carried well down to hocks	3
Tail —Tail head level with line of back, tail dropping at right angles to back line.	1
Underline —Straight, flanks deep and full	3
Legs —Short, straight and squarely placed, perpendicular both from side and end view; forearm muscular, bones strong and clean	6
Flesh —Deep, firm, smooth, uniformly covering all parts and free from patchiness	8
Skin —Of moderate thickness, mellow, pliable and loose, abundantly covered with long, thick, silky hair	6
General appearance —Vigorous, compact and symmetrical. Bulls masculine and possessing an abundance of quality and predominant breeding characteristics. Females matronly, roomy, smooth, showing quality and feminine appearance throughout	10
Weight —Age and condition to be considered	5
Total	100

The Aberdeen-Angus breed of cattle originated in north-eastern Scotland, especially in the counties of Aberdeen, Kincardine, and Forfar. It is a pure black, hornless breed of distinctly beef type. Occasionally a red specimen of Aberdeen-Angus occurs, but these are not used for breeding purposes. A slight amount of white on the under side back of the navel is allowable, especially with the females, though distinctly objected to with the bulls. The Aberdeen-



Fig. 148.—Aberdeen-Angus bull, champion at Highland and Agricultural Society of Scotland Show.

Angus, for size, is in the same class with Shorthorn and Hereford, though averaging slightly less in weight. Mature bulls in fair flesh, usually weigh around 2,000 pounds, and cows about 1,400 pounds. Good examples of the breed have short, wide heads, indicating good feeders, with polls coming to a neat point. These cattle are inclined to be prominent of shoulder and only moderately wide of back, the loin being narrower and more rounding than on Shorthorn or Hereford. The depth of rib is excellent, and the

body which tends to cylindrical form, as a rule shows large digestive capacity. The rump is frequently pared off on each side, and the tail head prominent, but the thighs are thick and heavily fleshed. The fleshing is very smooth and unsurpassed in character. The coat of hair is not so long and curly as with the Hereford, being ordinarily of a straight, smooth character. There are some excellent milkers in this breed, though there is much variation in



Fig. 149.—Galloway steer, breed champion at International Livestock Exposition.

this respect. The temperament as a rule is rather nervous, and not so domestic as the Shorthorn.

The Galloway breed of cattle originated in southwestern Scotland in Galloway. This is a black, polled breed, and quite comparable with the Aberdeen-Angus, but hardly so compact nor does it fatten so easily. The head is somewhat longer than that of the Aberdeen-Angus, the poll is not so sharp, and the ears are set a bit farther back than with other breeds, and point upward and forward. Gallo-

ways are frequently lacking in spring of rib, and incline to length and slackness of back and prominence of tail-head. They are also more leggy than the Aberdeen-Angus. This is a beef breed of medium size, bulls weighing usually 1,800 to 1,900 pounds, and mature cows 1,200 to 1,400 pounds. These cattle fatten slowly. In temperament the Galloway is inclined to be somewhat nervous and restless. The breed is especially adapted to range conditions. A striking feature of this breed is the coat of hair, which has two lengths, one thick and short, the other long and more curly. In winter these cattle present a very curly, shaggy appearance. Galloway hides are highly valued for rugs and overcoats.

CHAPTER XXV.

JUDGING THE DAIRY TYPE OF CATTLE BY SCALE OF POINTS.

The evolution of the dairy cow undoubtedly dates back many years. The breeding of cows for the dairy has been conducted for some centuries in Holland. Cows noted for milk production were taken to England from that country long ago. Early English writings in referring to cattle, have however made scant reference to the dairy cow, beef production being the main consideration. In one notable English agricultural book,¹ published in 1767, rules are given to be observed in buying cattle. "If cows for the pail," says the author, "let them also be young, high of stature, and long bodied, with large and round belly, large, fair, and smooth horns, a broad, smooth forehead, udders white, not fleshy, but large and lank, with four teats and no more."

The importance of dairy cattle type as associated with milk production, received special attention among Ayrshire breeders as early as 1811, when Aiton referred to details of conformation.² Later on William Harley, in 1829, in a work on a dairy system³ emphasized thin shoulders and large, broad hindquarters on the dairy cow. In 1834 the introduction on the Island of Jersey of the first scale of points, attracted serious attention to dairy cow conformation and its improvement. In 1853 a prize essay in Scotland⁴ dealing with the details of type, described the shoulders as thin on top, and the forequarters as thin in front

¹ The Complete Grazer, 2d edition.

² A Survey of Ayrshire, Glasgow, 1811.

³ The Harleian Dairy System.

⁴ Transactions Highland and Agricultural Society, 1866-7, p. 106.

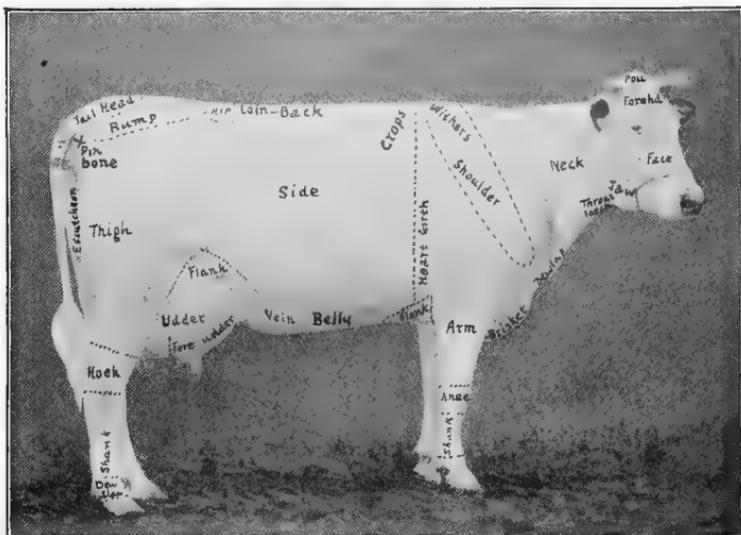


Fig. 150.—*The Points of a Dairy Cow*, as reproduced upon Ormsby Jane Segis Aaggie 150943, champion Holstein-Friesian cow. As a senior four-year old, she has a seven-day record of 44.4 lbs. butter. (Photo by courtesy American Agriculturist.)

and gradually increasing in depth and thickness backward. Later, in 1875, Sturtevant Bros. of Massachusetts, in discussing Ayrshire cattle form,⁵ stated that “in the dairy breeds, and in most animals particularly adapted to milk giving, there is a tendency toward accumulation of a larger part of the weight of the animal in the rearmost half. . . . As judged by a side view or from above, there is a certain wedge form. . . . This form becomes more strongly marked with age when the animal has been abundantly supplied with food. The yearling and two-years’ old may have parallel rather than diverging lines on the side view.” In 1875 the American Jersey Cattle Club adopted the scale of points, the first of its kind officially introduced to America. The introduction of the practice of livestock judging

⁵ *The Dairy Cow: A Monograph on the Ayrshire Breed of Cattle*, Boston, 1875.

in the agricultural colleges early in the nineties, put into systematic operation lessons in judging dairy cattle by the score card, emphasizing dairy cow type.

The function of the dairy cow is primarily to produce milk, which process is inseparably associated with reproduction. The cow that is a non-breeder soon dries off and has no further value excepting for meat. The production of milk as a first essential, is recognized as antagonistic to the development of flesh, and *vice versa*. It is true that examples may be found of cows that are beefy of type, that yield large milk flows, but these are the exception and not the rule. Long continued experience on the part of practical breeders and dairy cattle students, has conclusively demonstrated that milk is produced at the expense of flesh. Generations of breeding in certain lines of heredity have resulted in a great development of this function of milk secretion, so that to-day we find many thousands of cows producing remarkable annual yields of milk, that twenty-five years ago would have been considered impossible.

Method in judging the dairy cow follows the arrangement of the scale of points, taking into consideration general appearance first, following this by detailed examination in order from head to hindquarters. The judge views the dairy animal at rest and in motion, on the same general plan as with the beef animal, but does not handle excepting in a limited degree. The skin and udder are the only parts that require the attention of the hands, the rest of the examination being conducted by the eye. Some judges handle the spinal column and feel the width and spacing of the ribs. Dairy cattle judges, however, do not handle thin cattle as much as do those passing on beef cattle. In European shows of dairy cattle attended by the author, some of which were very large, the judges did not handle the udder at all. One well-known judge, who has passed on many important dairy cattle exhibits in America, scarcely touches the udder, while most judges in this coun-

SCORE CARD FOR A DAIRY COW.

SCALE OF POINTS	Standard of Perfect Score	Score of Cow Judged
A—GENERAL APPEARANCE, 19 Points:		
Weight, Estimated Actual . . . . .		....
Form, suggesting wedge shape from side, front or top	8	....
Quality, skin mellow and pliable, secretions abundant, yellow; hair fine, abundant; bone fine	8	....
Temperament, active, disposition gentle	3	....
B—HEAD AND NECK, 7 Points:		
Muzzle, broad, nostrils large	1	....
Eyes, large, mild, bright	1	....
Face, lean, of medium length, jaw strong	1	....
Forehead, broad, slightly dished	1	....
Ears, medium size, well set, of fine texture	1	....
Neck, long, lean, neatly attached to head and shoulders; light dewlap	2	....
C—FOREQUARTERS, 9 Points:		
Withers, thin and lean	3	....
Shoulders, light, oblique, not fleshy	4	....
Legs, short, straight, shank fine, feet well placed	2	....
D—BODY, 20 Points:		
Chest, deep, girth large, wide below, crops not deeply depressed	6	....
Back, lean, strong, vertebræ well defined	4	....
Loin, broad, level, strong	4	....
Ribs, long, well sprung below, giving large belly capacity	5	....
Flanks, thin and deep	1	....
E—HINDQUARTERS, 13 Points:		
Hips, wide apart, not lower than spine	1	....
Rump, long, wide, comparatively level, pin bones wide apart	5	....
Tail, long, fine, with good switch	1	....
Thighs, long, thin, widely separated	4	....
Legs, short, straight, shank fine, carried well apart	2	....
F—MAMMARY DEVELOPMENT, 32 Points:		
Udder: form, large, long, the rear part attached high, front part extended well forward, quarters uniform, not deeply grooved, level on bottom	10	....
Udder: quality, smooth and mellow to pressure, skin elastic and soft, hair silky	10	....
Teats, of convenient size, widely separated and evenly placed	4	....
Milk veins, large, long, tortuous, branching	6	....
Milk wells, large and easily located	2	....
Total points	100	....

try give it a critical inspection. The dairy cow, as a milking machine, requires a more detailed examination than does the animal engaged in beef production. The udder, milk veins and wells require careful investigation, as most important features of conformation.

The general appearance of the dairy cow includes her weight or size, the form as a whole, her quality and temperament. These features the judge may study as he examines the cattle at some distance, taking in the entire animal at rest and walk. As a dairy animal, she should impress one as lean of flesh, somewhat angular of frame, the front part of the body narrow, widening toward the rear into large, capacious hindquarters. This lean, angular form, heavier behind than in front, represents the wedge shape, which is in striking contrast to the blocky conformation of the beef-producing animal.

The weight or size of the dairy cow is quite dependent on her breeding. If she represents a pure line of ancestry, then her weight will depend on the breed. A weight of 900 pounds would meet all requirements in case of a Jersey, while in a Holstein-Friesian this would be entirely too light. With acceptable weights ranging from 600 pounds with the Dexter to 1,800 pounds with the Holstein-Friesian, it is not desirable to establish a fixed standard for a general score card. It is desirable, however, for the judge to estimate the weight of the animal scored, making record of this, and weighing later, if convenient. One agricultural college states on its score card that the dairy cow should not weigh less than 800 pounds, but in the case of the Dexter cow, some of the finest examples of the breed, with remarkable mammary development, have weighed much less than this. Other college score cards entirely ignore weight. Standard weights of Jersey cows range from 800 to 1,000 pounds; the Holstein-Friesian must weigh at least 1,000 pounds at full age, and score at least 75 points to enter the advanced registry; the Ayrshire must weigh not less than 1,000 pounds, while 1,050 has been used as a

Guernsey standard. These weights will be helpful guides to judges under certain show ring conditions.

The form or type of the dairy cow is one of her most distinguishing features, as has already been indicated. This form, for the use of a better term, is called wedge-shaped, and an ideal example of a dairy cow shows a triple wedge, namely, from side, front and top. This wedge is

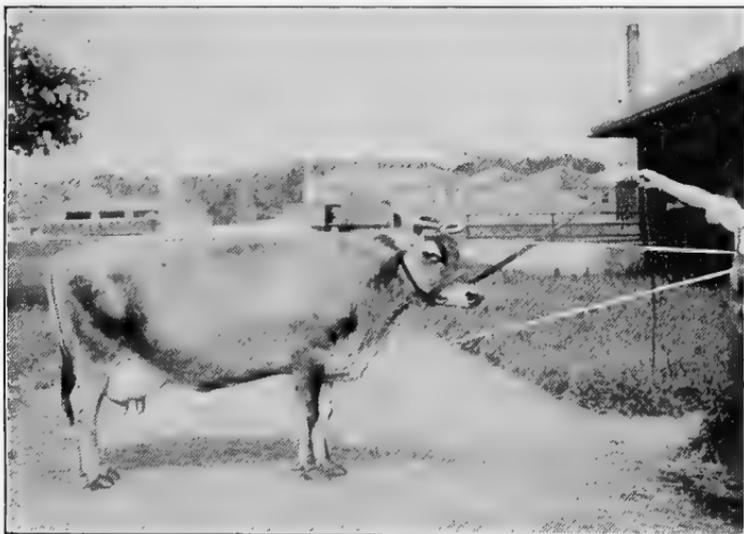


Fig. 151.—“It will be noted that in an assumed continuation of these lines a sufficient distance beyond the head, they would meet at a common point.”

thus explained: *first*, if the upper and under lines of the animal, including the udder, be viewed from one side, it will be noted that in an assumed continuation of these lines a sufficient distance beyond the head, they would meet at a common point. In other words, the body narrows, wedge-like, from rear to front. In fact, the dairy cow stands from half an inch to an inch and a half lower in front than she does at the hips. *Second*, when standing directly in front of the cow, it will be noted that, were the space between

the points of the shoulders and the withers above enclosed in straight lines, the outline would be of wedge-like form. Or, if one will stand close to the shoulder and look down, he will note this same wedge in the combination of withers and front ribs. *Third*, another wedge may be obtained by



Fig. 152.—“It will be noted that, were the space between the points of the shoulders and the withers above enclosed in straight lines, the outline would be of wedge-like form.”

standing behind the cow and viewing the top of the back. In this case the point of the wedge is at the withers, and its widest part the space between the points of the hips. The fact is, the entire body suggests a wedge in the widening from front to hindquarters. Gay has suggested⁶ a fourth wedge, with the rump for the base, and the light thighs, “concave from both side and rear view,” forming lines inclining downward and inward, wedge-like. These various suggested wedges, simply emphasize two features of the dairy cow, a lean, muscular condition, and an angular conformation. This wedge form is merely relative, having the beef form for comparison. The true dairy cow is lean and angular, therefore, she is wedge-shaped, a conformation associated with milk production. The true beef cow is fleshy and smooth of outline, therefore, her form approaches a

⁶ The Principles and Practice of Judging Live Stock, 1914, p. 204.

parallelogram, a conformation associated with beef production. Emphasis should be made here of the fact that, under certain conditions, such as immaturity or being in flesh while dry, dairy cattle do not always show the same type that they will later on. As stated by Sturtevant in 1875 (p. 273), the yearling and two-year olds may have parallel rather than diverging lines on the side view. While judges of dairy cattle in making their placings, usually give preference to young cattle of wedge form, this is not always so. Occasionally one sees a beautiful heifer, with most attractive mammary development, that is somewhat thick in front, and fleshy all over, simply because her calf fat has not been milked off. In three months such a heifer may possess a very typical wedge-shaped conformation. There is more or less discussion in the agricultural press and among dairy cattlemen, on the relationship of form to function, in which there naturally is diversity of opinion. However, the judge must keep in mind that without ideals and standards, it will be as utterly impossible to arrive anywhere in



Fig. 153.—“The point of the wedge is at the withers, and its widest part the space between the points of the hips.”

three months such a heifer may possess a very typical wedge-shaped conformation. There is more or less discussion in the agricultural press and among dairy cattlemen, on the relationship of form to function, in which there naturally is diversity of opinion. However, the judge must keep in mind that without ideals and standards, it will be as utterly impossible to arrive anywhere in

placing a ring of animals, as it would be to reach a harbor on a vessel without a steering gear. Type is merely an indicator, based on average results secured from a large number of individuals, but in itself is no guarantee of production.

Quality in the dairy cow is indicated by the skin, oily secretions, hair, bone, joints and ears. The skin should be thinner than with the beef cow, but equally mellow and perhaps more pliable. If grasped along the ribs, especially in front, it will often "handle like a mole-skin," filling the hand with a soft and pliable mass. *The secretions of the dairy animal* are shown in the oil or grease to be found within the ears, and in the skin, especially on the udder, the inner thighs and end of tail. This oil is usually yellow in color, and is a product of the sebaceous glands in the skin. Dairy cattlemen attach especial significance to this

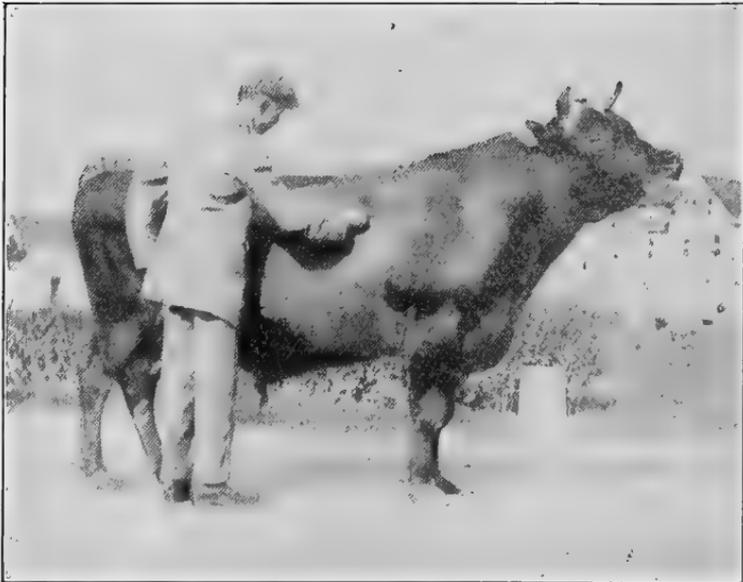


Fig. 154.—"If grasped along the ribs, especially in front, it will often 'handle like a mole-skin,' filling the hand with a soft and pliable mass."

oily secretion and to the color of the skin, horns and hoofs. A notably yellow tint is assumed to indicate that the milk and butter fat will be more yellow than where this color is lacking. In the scale of points adopted in 1899 by the American Guernsey Cattle Club,⁷ 15 points are allowed to indicate color of milk, as seen in "skin, deep yellow in ear, on end of bone of tail, at base of horns and body generally, hoofs amber-colored." This yellow color is unquestionably important evidence as to the color of the butter fat, especially with Channel Island cattle, though not so much so with the Dutch breeds. Oily secretion is also an indicator of condition of health, for when lacking, the skin will usually be dry and hold tight to the ribs, and the hair will be staring and lacking in lustre, evidences of ill health. Usually an examination of the inside of ears, the sides of the udder, the color of teats, and the skin about the vulva just beneath the tail at the end of the rump, will suffice to determine the matter of color. Handling the skin will give evidence as to the activity of the secretions, though this is not necessary with the experienced judge. *The hair* should be fine and abundant. Long, fine hairs usually occur along the edges of the ears, while the udder is covered with short, silky hair. The entire hair covering, excepting along the top of the neck and poll, and on the tail, should lie close to the skin, rather than be erect and staring. The hair should also have a sheen or glisten under favorable conditions of light, showing attractive evidence of quality and healthy condition. *The bone of the dairy animal* should be fine, indicative of quality, just as with beef animals, and for the added reason that coarseness of bone is generally associated with inferior milk production. Large joints and heaviness of shoulder are evidence of coarseness, as are also large, heavy ears set high on the head. Quality is one of the most important factors to be considered in judging dairy cattle, and should be so regarded.

⁷A committee of the club was appointed in 1915 to draw up a new scale of points, which had not appeared up to the going to press of these pages.

The temperament of the dairy cow has received much attention in the United States since about 1890. Ex-Gov. W. D. Hoard of Wisconsin, noted as a dairy authority, probably was the first person to direct attention to this subject.⁸ In 1886 he first discussed this subject in a lecture on "Nervous and dairy temperament in cattle." He termed it a "predisposing tendency in the animal to convert its food either into milk or flesh," and that temperament pertaining to dairy cattle was called "dairy temperament." He classed lean cattle of the dairy type as nervous, and cattle of the beef type as phlegmatic, and referring to the former said: "Here you see the open expression of the barrel, you have the lean, bony outline of the nervous temperament. Dairy breeders breed for the enlargement of the dairy temperament." This is defined as "a strong, powerful, nervous machinery and not excitation." Van Pelt states⁹ that "the term nervous temperament means the inherent propensity to work, to eat food, digest it and convert every available ounce of it not required for maintenance into milk products, and does not imply the cow is nervous in the generally accepted meaning of the term, nor does it mean that she is excitable." The dairy temperament, as has already been indicated, is especially seen in the lean conformation of body. It is also supposed to be expressed in the broad, full forehead, in the large, prominent backbone, and in the mild yet active eye. The brain is the center of nervous force. A narrow, small forehead is assumed to indicate a smaller brain than does a large one. The nervous force radiates throughout the body by means of the spinal cord passing from the brain through the backbone or spine. Prominence of spine would imply a good development of spinal cord and consequently much nervous force. The large, prominent, active eye gives evidence of an active, nervous temperament. These are the various reasons assigned for emphasizing temperament. From a scientific

⁸ The Dairy Temperament in Cows, Bull. No. 5, Wis. Farm. Inst., 1891, p. 83.

⁹ Cow Demonstration, Hugh G. Van Pelt, 1911, p. 35.



Fig. 155.—“Prominence of spine would imply a good development of spinal cord, and consequently much nervous force.”

point of view we have no evidence to demonstrate that either temperament or disposition among cattle is affected by much other than environment, and it may seriously be questioned if there be any essential difference in actual temperament, as based on type or conformation. Dairy cattle judges, however, generally emphasize the so-called temperament and will, no doubt, do so for some time to come. *Disposition*, as an independent feature, is intended to apply to certain mental qualities, such as quiet and kindly, or irritable and cross, or whether an animal is a kicker or hooker, etc. Therefore, in judging temperament, the conformation must largely be the guide, while disposition will be manifested, partly in the eye, and partly in the movements and attitudes of body.

The head and neck of the dairy cow show a much more lean make-up than occurs with the beef animal. The head should be lean as a whole, but while beef cattlemen gen-

erally prefer a short type of head, those breeding dairy cattle prefer one of medium length—in fact some, as in case of the Dutch, favor considerable length. *The muzzle* should be broad, and the mouth and nostrils of good size, for reasons already discussed under beef cattle type. *The eyes* should be large, mild, yet alert, and give evidence of a good disposition and an active temperament. The eye among some dairy cattle, notably some Jerseys, is too prominent and termed by many a “pop eye.” In this case the eye almost projects from its socket, and is far from attractive. Prominence up to a certain extent is highly desirable, but beyond that meets with distinct disfavor. *The face* should be lean and of medium length. One sees long faces among dairy cows, especially the Holstein-Friesian, but this is objectionable, for this conformation indicates a poorer feeder, and a weaker jaw, than does a more moderate length. The bridge of the nose and the upper part of the face should be straight. A Roman nose is not regarded with favor. Light veins on the face are regarded as desirable, and are features emphasized in both Ayrshire and Holstein Friesian scales of points. They have no special significance, unless indicating quality. The lower jaw should be strong and have ample width at its base, thereby indicating the good feeder. *The forehead* of the dairy cow should be broad and slightly depressed or dished between the eyes. This depression is considered to add to the graceful contour of the head. It is much more marked with some breeds than others, being especially noticeable in the Jersey. *The ears* should be of medium size, and somewhat thinner than with beef cattle. They are characterized by a general coat of thin hair over the body of the ear, with long, fine hairs along the edges of the openings. Fine veins are often seen on the ears of the highly bred dairy cow, while the skin on the inside of the ear shows more or less of a yellow, oily secretion. The shade of yellow varies from light to dark or orange, and offers evidence of the degree of richness in yellow color of the butter fat. The

ears should be placed so that the tips, when elevated, will not project above the top of the head. *Horns* are not necessarily a feature of the head of the dairy cow, excepting as a breed character. They differ greatly among the breeds of cattle as to length and size. The modern type of Ayrshire cow carries a long, and very strong horn at its base, while the Jersey cow usually has a short and comparatively small one. In itself the horn is assumed to indicate quality as shown in its size and texture, and in its color, as suggesting relationship to color of butter fat. Horns that are large and coarse at the head give evidence of general coarseness, and are looked upon with disfavor by most judges.

The neck of the

dairy cow should be lean and long as prime essentials of dairy conformation. Further, it should be neatly attached to both head and shoulders. The comparatively thin edge of the top of the neck should smoothly merge into the withers. The base of the neck should fit neatly at the shoulders. Frequently the neck joins the shoulders with a sharp corner on each side, giving not only a rough but a weak attachment. Extreme depth of neck and dewlap is undesirable, as indicating coarseness. Only a slight amount of dewlap should be seen, although some Brown Swiss cows carry this edge of skin to a marked degree.

The forequarters of the dairy cow as the narrow point of a wedge form, should be light of conformation. Here we



Fig. 156.—“The neck of the dairy cow should be lean and long.”

have one of the most striking features of dairy type, quite the opposite of that found in the beef animal. *The withers* should be sharp, though the degree will depend upon the breed influence and conditions. Judges very generally seek for thin, lean withers, though undoubtedly in times past too great emphasis has been placed on their sharpness. This part, however, should be quite free of flesh, as this is antagonistic to dairy development. *Shoulders* that are well



Fig. 157.—“Only a slight amount of dewlap should be seen.”

laid in, sloping smoothly into the back, and quite free of surplus flesh, are necessary to secure the wedge form and dairy type. Coarseness of the shoulder point is marked if this part of the body is rough and heavy. Sometimes the points of the shoulders are rather wide apart, appearing almost as a deformity. This seems to occur with old cows, usually those that are superior milkers, and is caused by a relaxation of the muscles and ligaments connecting the shoulders and front ribs. In passing on a condition of this kind, the judge should be more influenced by the age and general physical condition of the animal, than by the un-

usual spread between shoulder points and forelegs. In itself it is evidence of weakness and the judge would be justified in so ruling, but it need not be regarded as serious enough to cause severe discrimination. *The legs* should be short and carried comparatively straight, and wide enough apart to give evidence of good constitution. Too many dairy cows stand with their legs quite close together,



Fig. 158.—“The chest of the dairy cow should be deep, yet not as wide through, comparatively, as the beef cow.”

evidencing too narrow a chest. The positions of legs and feet of the dairy animal should be carried the same as the beef type, as described on page 245.

The body of the dairy cow is often referred to by stockmen as the barrel or middle piece. As a whole, it differs from the beef animal, in lacking flesh and possessing more length and perhaps wider spacing between the vertebræ and ribs. *The chest* of the dairy cow should be deep, yet not as

wide through, comparatively, as the beef cow. The floor of the chest should be well rounded out and somewhat strong in its thickness, yet with a lean, refined brisket extending slightly beyond the legs. A cross section of the chest, from the *chine* or backbone just back of the withers and shoulders, will show an outline comparable with that of an egg with the large end down. If the shoulders are neatly placed and the chest is not too flat of rib, the crops will be fairly filled. Ordinarily, weak crops and close spacing between shoulder points give evidence of poor chest capacity. Depth of chest is of great importance if vigorous constitution and good feeding capacity is sought. *The back* of the dairy cow should be lean, and strongly carried, with well-defined spines or vertebræ, furnishing important evidence relating to conformation. Guernsey breeders are taught¹⁰ to look for a "backbone rising well between shoulder blades; large, rugged spinal processes, indicating good development of the spinal cord." The points of the spine from between the shoulders almost to the beginning of the loin, are long, and unless too much covered with flesh, are easily felt. This prominence of backbone, and so-called openness of spine, are regarded as important accompaniments of dairy type, as well as nervous temperament. There is no evidence, however, to show that the spinal cord of the dairy cow is any different from that of the beef cow. The main factor is that lack of flesh is necessarily related to heavy milk production. The back should be strong and show little sag. Old dairy cows often have marked depression or weakness of back. Dairy cattle judges are not as critical as beef cattlemen in judging the way the back is supported, for the reason that it is impossible to get a perfectly level back on cattle, unless by the aid of flesh, which, of course, is undesirable with the dairy type. Young animals, however, that have not been milked should show a comparatively level and strongly supported back. *The loin*

¹⁰ Scale of points adopted by American Guernsey Cattle Club, December 13, 1899.

should be broad and not depressed in front of the hip. A width that does not show any sharp contraction just in front of the hips should be sought. Lack of flesh over the loin is often responsible for a falling away here. A firm, strong development of the muscle over the loin is not antagonistic to dairy conformation. The judge is justified in discriminating against a weak, depressed loin. *The ribs* should be long and well sprung below, thereby giving large capacity for feeding and reproduction. It will be noticed that, largely due to lack of flesh covering, the ribs of the dairy animal do not show so much level extension from the spine, before curving downward, as do the ribs of beef cattle. However, the ribs should have an increasing curve outward and downward, expressing the wedge conformation in front, yet associated with much depth and abdominal capacity all through. Length of body is a feature of the dairy cow, and this is associated with some openness of space between the ribs, especially those nearest the hind-quarter. The last two or three ribs are often separated so that one may easily insert the fingers between with a freedom not possible with beef cattle. *The flanks*, both in front and behind should be full and deep. There has been some difference of opinion among judges on the character of flank development, especially behind, and both high and low flanks have been advocated. A deep, full front flank is indicative of strong heart girth and outlines the curve of the lower part of chest. A deep hind flank will be associated with a capacious body and deep rib, and if thin in flesh, is most consistent with dairy type. On the contrary, the high flank is a feature of the shallow body and denotes a poor feeder. *The navel*, the point on the belly where the umbilicus or cord of the calf connected with the mother before birth, at one time was regarded as evidence of constitutional vigor. Ex.-Gov. W. D. Hoard of Wisconsin first advanced the argument that a large navel indicated a strong attachment of the calf to the dam before birth, resulting in vigorous offspring.



Fig. 159.—“A deep hind flank will be associated with a capacious body and deep rib.”

This theory was for some time advocated, and has been emphasized on some score cards. The Guernsey scale of points, in the formation of which Governor Hoard no doubt had much influence, states that “constitution is best indicated by a full development at the navel, and strong abdominal walls, showing that the animal when in a prenatal state was abundantly nourished by the mother through a well-developed umbilical cord.” This is an interesting theory, which apparently is made little use of to-day, and concerning the actual merits of which no exact information has been contributed to the public. Wing states¹¹ that careful observation has shown that the size of the umbilicus is more of a breed than an individual characteristic.

The hindquarters of the dairy cow have a special importance in the estimation of the dairyman, because the conformation of this part is a vital factor in milk production. A superior mammary development is not likely to

¹¹ The Dairy Herd. Henry H. Wing, Cornell Reading Course, Vol. 3, No. 54, 1913, p. 55.

occur unless the hindquarters are of superior shape and proportions. *The hips* of the cow should be wide apart and at least as high as the spine. Width between the hips indicates a wide pelvis, which is highly essential as relating to parturition. The narrow pelvis suggests serious difficulty in giving birth to the calf. Comparatively, the hips seem more prominent with dairy than beef cows, due no doubt to the lack of flesh covering. Width between the hips is naturally associated with the wedge type of the dairy cow. *The rump*, as in the case of the beef cow, should be long, wide and comparatively level, but should lack the heavy covering of flesh. A tendency to lay on flesh over the rump is looked upon with distinct disfavor by dairy cattle critics. One feature of the rump has been much discussed, and that is what is known as the *pelvic arch*. This is especially noticeable in the large size and prominence of the backbone beginning just back of the hips. Viewed from either the side or rear, a slight elevation of this part is noticeable. This arching is assumed to indicate a spacious opening

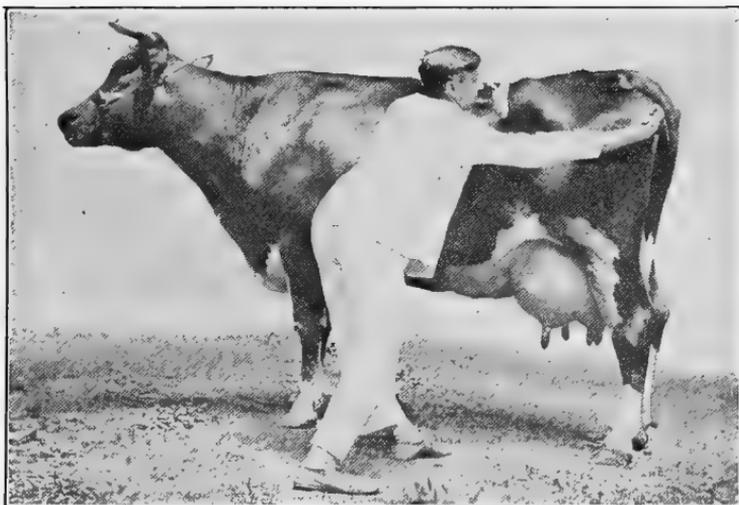


Fig. 160.—“The rump, as in the case of the beef cow, should be long.”

through the pelvis below, important when giving birth to young, while the prominence of backbone presupposes a "good development of the spinal cord," according to the Guernsey scale of points. These are both theories, not supported by any actual evidence, and too much emphasis should not be placed on their importance. Some years ago



Fig. 161.—“A wide rump, however, from hips to pin bones is very essential.”

the late Dr. Leonard Pearson, long Dean of University of Pennsylvania Veterinary College, in conversation with the writer relative to the pelvic arch, stated that as Pennsylvania State Veterinarian he had conducted many post mortem examinations on dairy cows. He was much interested in the pelvic arch theory, but found absolutely no evidence to support it, cows with high arches oftentimes having much smaller pelvic space below than did cows with

insignificant pelvic arches. A wide rump, however, from hips to pin bones is very essential. A wide spacing between the pin bones is especially important, otherwise, as cattlemen know, the calf may be delivered with great difficulty. A peaked rump, pin bones close together, with sharp sloping toward both the rear and sides, makes an extremely bad conformation, justifying severe action on the part of the judge. Such a rump is not only bad from a physiologi-

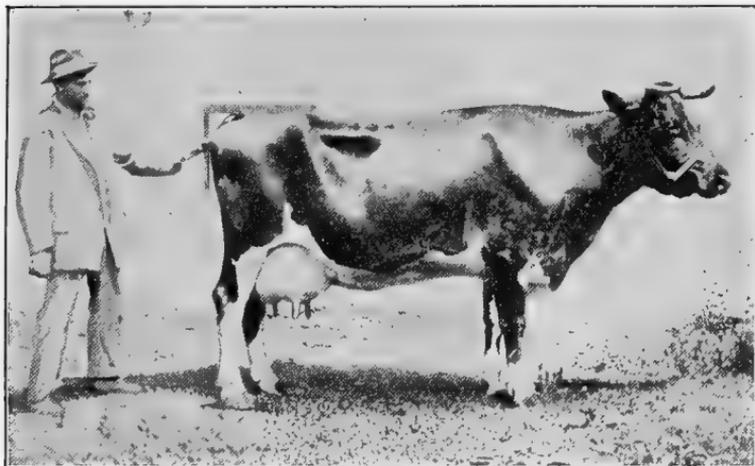


Fig. 162.—“The tail proper turning a square angle just above the pin bones.”

cal point of view, as affecting maternity, but is also associated with limited udder room below. *The tail* not only gives balance and proportion to the cow, but serves as a valuable aid in fighting flies. It also serves as an indicator of quality. The tail head should be neatly attached on a level with the end of the spine, the tail proper turning a square angle just above the pin bones, and reaching to the point of hocks. The brush should contain plenty of long hair and reach nearly to the level of the feet. Flies bite and irritate the thin-skinned dairy cow far more than the beef animal, hence the importance of a long tail as a

means of protection. The bone of the tail should also be fine, an indication of quality. *The thighs of the dairy cow* should be long, thin and widely separated,

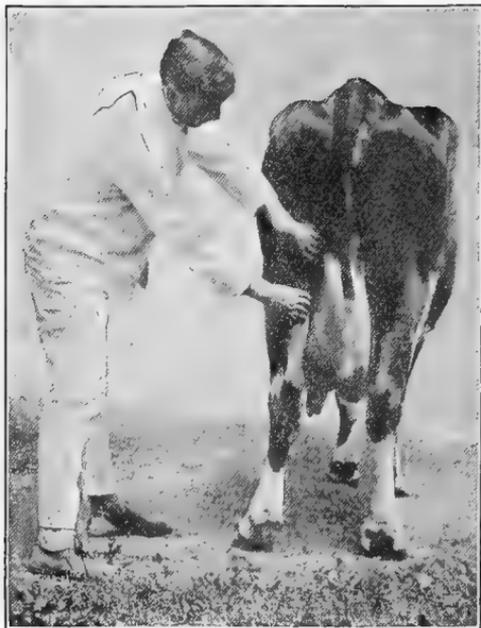


Fig. 163.—'From a rear view the thighs high up are separated with but little curve.'

quite in contrast with the thighs of the beef animal. As one views the thighs from one side they should make a pronounced sweep in toward the body and then turn out to end the curve at the point of hock. From a rear view the thighs high up are separated with but little curve, this being most marked on the lower thigh and reaching the hock. The thighs must not only be thin, but must be well separated, if space

for a capacious udder is to be had. A thick, fleshy thigh is inconsistent with dairy cow conformation, and the judge should keep this point in mind. *The hind legs* should be short, straight, and carried well apart. It is necessary for the legs to be carried well apart, to allow ample room for the udder. If the legs touch at the points of the hocks, the feet and toes point outward, and the thighs are carried closer together than they should be, thus crowding the udder. This is a very common defect of dairy cows. In this position the udder, if large, is naturally pushed for-

ward. This close carriage of the hocks and legs has given rise to the expression "cow-hocked," which is anything but a compliment. One rarely sees the thighs and hocks too widely separated. The correct position of the hind legs, from either side or rear view, is the same as that of the beef animal, excepting that space in one type is needed for beef, and in the other for the udder. When the cow or bull walks, the hind legs should be carried forward in direct line, without crossing or swaying, an objection referred to in the first Jersey scale of points.

The mammary development of the cow, when milk production is the principal object sought, becomes a subject of vital importance to the dairy cattleman. He realizes that, in capacity and actual value, there is a wide range of difference between the ordinary beef cow that simply nurses a calf, and the highly bred cow of dairy type that may produce twenty thousand or more pounds of milk in a year. Each animal has the same physical structure. Why does one produce so much more than the other? This is due to various factors, among others, ancestry along milk-producing lines, the nervous, digestive and circulatory systems, and the general conformation, or relationship of one part to another. Inasmuch as the judge must be a student of the relationship of form to function, a brief reference to some of the factors bearing on milk production will be appropriate at this point.

The process of digestion begins with the mouth, the food passing from this into the stomach and then on into the intestines. At various stages of the movement of the food, digestive fluids are mixed with it, so that it gradually becomes more and more reduced and ready for use in the body.

The blood as a factor in milk production is very important, for milk is produced from blood during its movement through the udder. Blood nourishes the body tissue, furnishes material for the secretions, and supplies life-giving oxygen. Blood is 81 per cent water and 19 per cent

solids. It is mainly composed of a sticky fluid called plasma, in which are distributed immense numbers of corpuscles, two-thirds of which are red, the remainder being white. The red color in blood is due to a substance known as hæmoglobin, which absorbs oxygen from the air in the

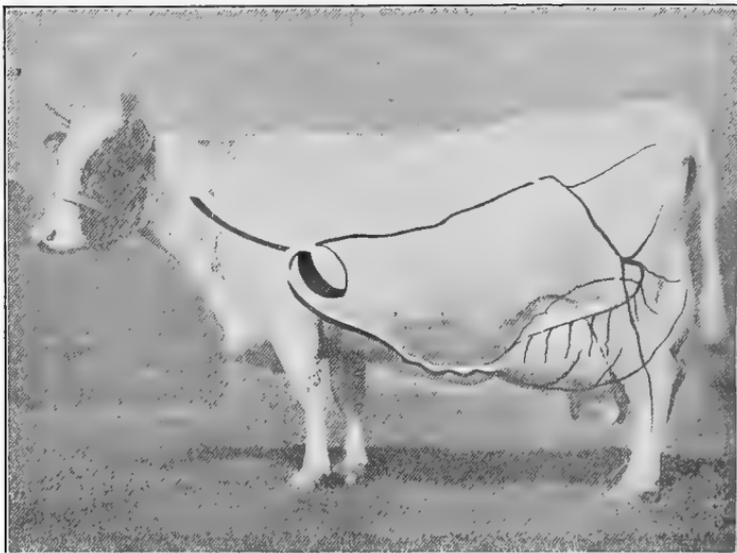


Fig. 164.—“The circulatory system of the animal consists of the heart and the arteries, capillaries and veins, through which the blood moves.” The arteries (white) conduct the blood from the heart to the udder. The veins (black) are channels by which the blood returns to the heart through the udder. This cow is Imp. Castlemain's Nancy 2d, a noted Ayrshire owned by Penshurst Farm.

lungs, using it in reducing the food so that it can be applied to the building up of the body tissue.

The circulatory system of the animal consists of the heart and the arteries, capillaries and veins through which the blood moves. There is also a much smaller system, the lymphatic, which contains a colorless fluid, the lymph. The heart, a hollow, muscular organ, acts both as a suction and force pump, keeping the blood circulating through the body.

The arteries conduct blood from the heart to the tissues. They arise from a common trunk, the aorta, which divides and subdivides like the branches of a tree. The arteries are very elastic, and contract and expand. The capillaries are extremely fine tubes in the body tissue, terminating in the arteries, which absorb part of the nutrients of the food into the blood. The veins are channels by which the blood returns to the heart. They are arranged like the arteries, but are usually of larger capacity. The nutrients of the food are taken up in the process of digestion, mainly in the intestines, the inner coatings of which are lined with minute finger-like projections of microscopic size, called *villi*. In the center of each of these villi is a vessel, the *lacteal*, which connects with the lymphatic system. Surrounding the lacteal is a network of capillaries which connect with the blood system. Here, in the villi, nutrients of the food are separated. The proteids, carbohydrates and salts, are taken up by the capillaries, while the fat of the food, emulsified, is taken up by the lacteals. The contents of the capillaries move on through the portal vein to the liver, and thence on to the right side of the heart, while the contents of the lacteals find their way into a long lymphatic tube beneath the backbone, which leads to what is known as the thoracic duct, a large lymphatic vessel, which opens into a big vein close to the first rib, which in turn leads into the heart. From here the blood is forced to the lungs to come in contact with air, and be oxydized, after which it passes into the left side of the heart, from which place it is distributed by means of the arteries to the tissues throughout the body. The large artery, the aorta, leads from the top of the heart along beneath the spine, subdividing just below the hips. From here the arteries extend on and down into the udder, one passing along by the thigh bone (femur) and another to the extreme rear, where, with considerable division and running together, they continue on into and through the udder tissue. The veins of the mammary glands converge at the base of the

udder. After leaving the udder the veins pass along on the surface of the belly until they disappear through openings known as "milk wells" in the belly wall, and connect with other veins leading to the heart.

The physical composition of the udder has an important relationship to form and production. It consists of two glands which lie horizontally side by side, separated by a layer of tissue which assists in supporting them. These



Fig. 165.—"Dissecting an udder we find that it is somewhat spongy of texture, pinkish-white in color, and full of many holes or canals, much like a sponge." (Courtesy Dr. S. Sisson. From *The Anatomy of the Domestic Animals*, 1914, p. 608.)

glands are distinctly separate from each other. This may be noted by examining the under side of the udder, where the groove separating them is to be seen. Each gland ordinarily has two teats. Through the medium of a teat milk is drawn from what is usually termed a "quarter" of the udder. As the glands are independent of each other, so also are the quarters. This Dr. Bitting clearly proved at Purdue University Experiment Station, when he injected different colored liquid tallow in adjoining quarters, showing that blue never passed over into red, or *vice versa*. A cross section of the two quarters always showed a clear mark of separation between them. This independence of the quarters is often demonstrated, in a practical way, by

the dairyman who, for some reasons, draws bloody milk from one quarter, while from the adjoining one of the same side apparently perfect milk is drawn. Cows also suffer from garget in one quarter, while the other three milk freely and appear perfectly healthy. This gland con-

sists of a fleshy framework, filled with secreting tissue. Dissecting an udder we find that it is somewhat spongy of texture, pinkish-white in color, and full of many holes or canals, much like a sponge. When cut more or less, milk escapes from the incision. Above each teat is a cavity known as the milk cistern or milk reservoir, from which the milk is drawn through the teats. At the lower end of each teat, a small muscle (the sphincter) encircles the outlet with enough force, ordinarily, to prevent the escape of milk unless the milking operation is on.

The process of milk secretion may be briefly described as follows: Each gland of the udder is composed of a quantity of structures known as lobes, lobules and alveoli. These may be compared to a bunch of grapes, the lobe representing the bunch, the lobule one grape and the alveoli smaller glands or ducts within the one fruit. The alveoli are exceedingly small and can be seen only under a microscope of high magnifying power. Two processes, says Smith,¹² from whom the author freely quotes, contribute to the formation of milk. In one, the cells lining the alveoli of the gland are shed bodily, and from the fat of the milk, while in the other water, protein, salts, etc., are formed from the lymph in the gland by the ordinary process of secretion. The gland of an animal that has never been pregnant contains much smaller and less numerous alveoli than a secreting gland. The alveoli of the non-pregnant animal are found to be packed with small, rounded cells of very slow growth. When the animal becomes pregnant the gland enlarges, the alveoli increase in number, but remain packed with the cells until parturition approaches or occurs. The solid masses of cells are now cast off, and leave behind them alveoli lined with a single layer of secretory epithelium, the function of which is to produce the milk. The shedding of the mass of cells which originally occupied the alveoli, supplies the colostrum or first milk. The cells in the active gland are loaded with material, much of it being

¹² A Manual of Veterinary Physiology, 4th ed., London, 1912, p. 726.

fat, and these cells break off, leaving behind them the parent cell, containing a nucleus from which another cell grows. Thus the formation of fat in milk is really a process of cell secretion. The proteins, sugar and salts in milk, are secreted in the ordinary way from the blood, or rather the lymph, circulating in the gland, the cells lining the alveoli being active in the matter. That these substances are really produced by the cell is supported by the fact that neither caseinogen nor milk sugar exist in any other tissue of the body. The secretion of the alveoli finds its way through outlets into the lobules, and from these into the lobes, and thence into the smaller orifices seen in the udder when cut open, from which it is conveyed into the milk cistern. It has been supposed that the secretion of milk is influenced by the nervous system, but there is no experimental evidence which places this beyond doubt. However, the action of the blood vessels is affected by the activity of the nerves. The greater the capacity of the arteries and veins of the udder, the larger the milk secretion will be. According to R. Meade Smith:¹³ "as far as we know, the mammary secretion is dependent upon the amount of blood passing through the glands. Changes in the general blood pressure, by modifying the blood supply of the mammary gland, also influence the amount of milk secreted."

The form of the udder requires consideration in detail. In the arrangements of some scales of points, the front and rear parts of the udder are separately described and assigned separate values. The udder should be large, according to the age and condition of the cow. In the mature animal, in full flow of milk, size is naturally, though not necessarily, associated with heavy milk yield. If the mammary development as a whole is good, then large size is a distinctly desirable feature. The udder should be long, extending high up behind between the thighs, and carried well forward along the belly, with the under side or "floor" as it is often termed, flat or level. Present day

¹³ *Physiology of Domestic Animals*, 1890, p. 631.



Fig. 166.—“The udder should be long, extending high up behind between the thighs, and carried well forward along the belly.”

judges prefer this long type of udder to the deeper or more pendant one. The long udder is strongly supported by its muscular attachment, while the pendant one is weaker of form, and shows the tendency to breaking down that goes with age. The horizontally long udder also furnishes a more convenient form for the milker to approach with his pail. While it does not follow that the long udder may produce more milk, or even as much, as the pendant form, evidence secured by the author years ago¹⁴ demonstrated that length of this gland is only secured through the development of the forequarter of the udder. The natural tendency is for the hindquarter to extend well up behind, and the higher the better. The forequarter is often short, showing little extension. Frequently the udder is what might be termed funnel-



Fig. 167.—“The pendant one is weaker of form and shows the tendency to breaking down that goes with age.”

¹⁴ The Udder of the Cow, Bulletin 62, October, 1896, Purdue Univ. Agr. Exp. Station.

shaped, the forequarter being short and tilting sharply upward. Often the forequarter appears distinctly elevated above the rear quarter. Experiments have shown that the hindquarters usually yield considerably more milk than the forequarters, and that the longer and more fully the latter are developed the more closely they approach the former in milk yield. In other words, the yielding capacity of the udder is increased by extending the forequarter. This has been, in a way, recognized by some scales of points. The



Fig. 168.—“The forequarter is often short.”

American Jersey Cattle Club, in its official scale of points, for example, credits ten points to the fore udder and six to the rear udder, thereby putting a premium on improving the part that most needs development. The judge obtains his idea of the length and form of udder by viewing it from the side, but he should carefully compare the sides and see that they are well balanced. It is not unusual to find an udder that is attractive on one side, and apparently



Fig. 169.—An udder with three teats—a very unusual condition.

tinctly thicker than those behind. This is also suggested by the distance between the opposite hind teats and the opposite front ones. The more closely the thighs are placed, the thinner will be the hindquarters. Not infrequently one sees an udder, low in its rear attachment, between thighs so close together that the udder as a whole is crowded forward with a considerable tilt of the lower side. The form of the

perfect, while the other side shows a quarter not in equally good form with its opposite, making a shorter and more unshapely gland. Uniformity in size and shape of quarters should be emphasized by the judge. The udder as a whole should be fairly thick, assuming that, other things being equal, the thick udder has more capacity than the thin one. The natural form of the udder is to be narrower behind than in front—another wedge—the forequarters being dis-

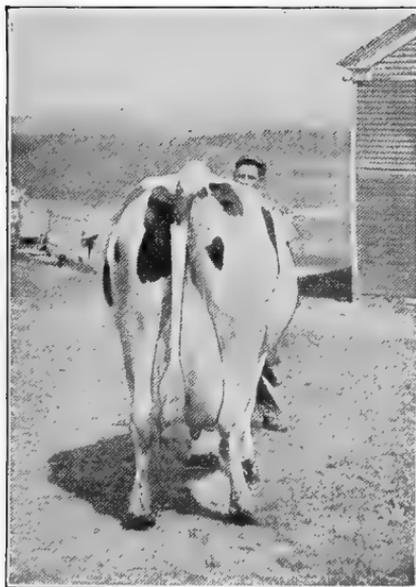


Fig. 170.—“The udder as a whole should be fairly thick.”

udder has involved more or less discussion, in which the show udder has been compared disadvantageously with the so-called commercial one. Many cows having large advanced registry records have possessed udders that were not of show ring form, which, in the opinion of some, demonstrates that show ring standards are impracticable. The fact remains, however, that we must have standards in conformation, and that as a rule, the cow of milk producing lines, with an ideal udder in form, will make the more creditable showing at the pail.

The quality of the udder is manifested in several ways. It should be smooth and mellow to the touch. Udders differ in their internal character and texture. The proper time to examine the quality is after the milk has been drawn. Then, when taken between the hands one feels something of the inner texture. The udder differs in mellowness very materially. If made up largely of fleshy framework, it is known as a fleshy or meaty udder, and



Fig. 171.—“When taken between the hands one feels something of the inner texture.”

lacks more than it should in secreting tissue. Such an udder does not secrete as freely as it should, and when milked out its form may be but slightly changed. When secreting tissue is very abundant, the udder is more mellow and elastic, and when the milk is drawn, the gland shrinks greatly, sometimes appearing as a thin, skin-enclosed sac. Fleshy udders yield a much smaller flow than elastic ones, but usually test higher in butter fat. They are not, as a rule, regarded with favor. The udder that, after milking, "shrinks away to nothing" shows the best quality and largest production. Removal of the milk also leaves the

gland in condition to inspect it for "knots" or small tumors. It is not remarkable to feel lumps of this sort located among the gland tissue, that will not be detected unless the empty udder is handled. The skin enclosing the udder should be very elastic, and covered with short, fine, silky hair. The elasticity of the skin and udder are distinct evidences of quality. The more elastic the skin, the greater the expanding capacity of the milk-filled udder. A judge is always justified in requiring the milking out of an udder that is full, that he may give it thorough examin-



Fig. 172.—"The skin enclosing the udder should be very elastic."

ation. The character of the competition, however, will affect the requirements of the judge in this regard. It is customary to milk out in the older cow classes, when competition is close.

The teats are simply the medium for drawing off the milk. They should be perfect, having good openings, through which no leakage will occur. They should be of convenient size to grasp in the hands three to four inches



Fig. 173.—“They should be of convenient size to grasp in the hands.”

long, should hang perpendicularly, and be located far enough apart to grasp, without the hands interfering with each other. The front teats are naturally somewhat larger than the back ones. The Ayrshire scale of points specifies as follows, and more in detail regarding the teats than does that for any other breed:¹⁵ “Evenly placed, distance apart from side to side equal to half the breadth of udder, from back to front equal to one-third the length; length $2\frac{1}{2}$ to

¹⁵ Uniform scale of points adopted by the United States and Canadian Ayrshire Breeders' Associations, 1906.

3½ inches, thickness in keeping with length, hanging perpendicular and not tapering." The teats of the cow vary greatly in form and position. They range from short, small ones, very hard to grasp, rather often seen on Ayrshire and Jersey, to long, big ones, especially seen on Holstein and Red Polled cattle, that more than fill the largest hand. Such teats are undesirable enough for hand milking, but the growing use of the milking machine adds to the necessity of having cylindrical teats of medium size, well suited either to hands or the cups of the machine. Another undesirable feature of the teat is enlargement of its upper part, caused by a weakening of the wall of the udder above. Judges should give more attention to the character and usefulness of the teats, discriminating especially against those that are short or defective. The presence of extra teats that are small and unproductive sometimes occurs. These have been assumed to indicate superior mammary development, but we have no evidence to that effect. Some breeders remove these extra teats, cutting them off during calf age before they assume too great a size. Cows with sore teats that cannot be handled by the judge, should not be shown. On several occasions the author has seen cows in the show ring, the teats and udders of which were affected with cow pox. Such cases should be barred from the show grounds.

The milk veins, as has previously been stated, convey the blood from the udder along the belly toward the heart. Not much is actually known regarding the relationship of these veins to milk production. Some years ago Dr. King, of Maine, stated that the size of the vein was not a true indication of its blood-carrying capacity, some veins having thicker walls than others, and the blood flow being more rapid in some cows than others. More recently, Prof. R. R. Graves, of the Oregon Experiment Station, has been conducting experiments on the relation of the vein to milk flow. In a letter to the author, of June 2, 1916, he states that he tied the veins of a Holstein cow producing about 45 pounds



Fig. 174.—“The milk veins convey the blood from the udder along the belly toward the heart.” (From photo Castlemain's Nancy 4th, an Ayrshire owned by Penshurst Farms.)

of milk a day. “Excepting for a slight shock at the first this cow has apparently suffered no ill effects, and is in good condition, and is producing well at the present time,” after having the veins tied for three months. It has been generally assumed by dairy cattle critics, that the larger the longer and more tortuous (twisted or crooked) the veins the greater the producing capacity of the cow. In other words, the heaviest milkers may be expected to have the greatest vein development. Van Pelt, well known as a dairy cattle judge, writes:¹⁶ “I have never seen an extremely good cow whose system of mammary veins and wells was not extremely well developed, and I have never seen a really poor cow with a great mammary system. It has been my pleasure to examine such cows as Colanthe 4th's Johanna, Jacoba Irene, Dairymaid of Pinehurst and Financial Countess, and without exception their veining is

¹⁶ Cow Demonstration. Hugh G. Van Pelt, 1911, p. 51.

tremendous." The udder secreting a great amount of milk has been assumed to have a strong passage of blood through it, and the large veins have been supposed to be associated with such a flow. This, perhaps, is not entirely true, and the information secured by Professor Graves justifies us in suspending judgment on this little-understood subject. The veins of young animals, however, are smaller than those of old ones, and are less conspicuous. Two veins are commonly seen along the belly, one on each side and one longer than the other. Often a third and shorter vein occurs between these. In uncommon cases other veins branch off, or a large number of small ones cover the intervening space on the belly between the udder and navel, sometimes causing a varicose effect. It is not unusual also to see small veins on the outside of the udder, a condition seemingly associated with heavy milking. The length and size of the veins vary considerably. Ordinarily the longest vein extends about half way the length of the belly, but in rare cases may occupy the entire distance and disappear at the

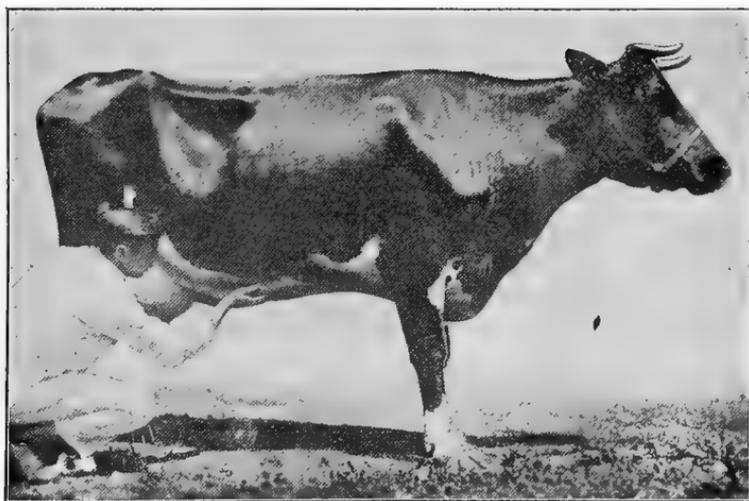


Fig. 175.—“The length and size of the veins vary considerably.”

front flank or under the shoulder blade. The diameter of the main milk veins approximates a half inch, occasionally reaching one inch and showing prominently along the belly. To examine the milk veins well, it is necessary for the judge to lower his head to a point where he can easily see the entire belly. In the opinion of most judges, the producing capacity of the cow will usually be consid-



Fig. 176.—“Sometimes these wells are big enough to receive the end of a good-sized finger.”

erably influenced by the vein development, even though the judge may lack the facts to support his theory.

The milk wells are the orifices or holes in the belly wall through which the larger veins disappear. Sometimes these wells are big enough to receive the end of a good-sized finger. Large wells usually accompany large veins. We know nothing of the true significance of the relationship of size of well to production, though large wells are assumed to be evidence of heavy milking capacity, being associated

with strong blood circulation. It is usually easy to locate the wells at the ends of the two more important veins, but the minor ones are not so easily found. Most of the present day scales of points applied to dairy cows include reference to the size of the milk well.

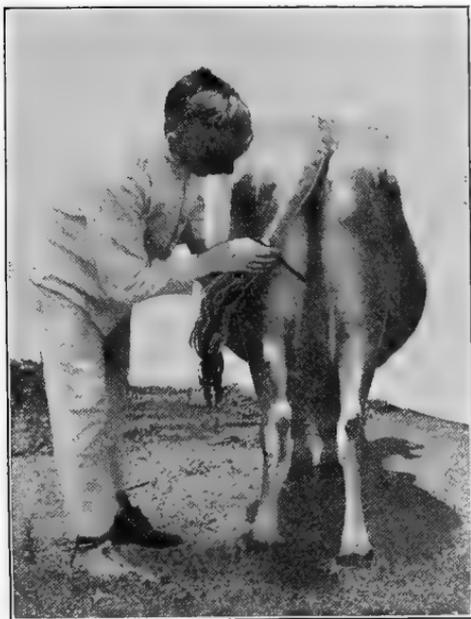


Fig. 177.—“The surface of the escutcheon is distinguished by its upward growing hair.”

The escutcheon theory, according to the official French report,¹⁷ “is founded on the arrangement or disposition of the hair, in a space commencing at the upper extremity of the vulva, and descending to the roots of the teats, winding as it descends, covering the inner and hind parts of the thigh. It is from the arrangement of the hair in this space that the deductions

are made as to the quantity, duration and quality of the milk.” This theory was originated by a Frenchman named Guenon who, in 1828, requested the Academy of Bordeaux to investigate his theory, which was done, but not until 1837. Guenon divided all cows into ten classes or families, and each of these into three sizes, large, medium, small. The cows in each class, depending on size, were grouped into six orders, according to the

¹⁷ A Treatise on Milch Cows, by M. Francis Guenon, translated by N. P. Trist, New York, 1856, p. 5

escutcheon. The author of this theory thus describes it:¹⁸ "The surface of the escutcheon is distinguished by its upward growing hair, which takes a direction opposite to that which covers the other parts of the skin. The hair of the escutcheon is also distinguished by its tint, which is duller than that of the other hair. The escutcheon starts from the middle of the four teats, a part of its hair extending forward under the belly, in the direction of the navel, while the other part, beginning a little above the hocks, spreads as far as the middle of the hinder surface of the thighs, ascending on the udder and in some classes running up as high as the top of the vulva. The form or pattern of the escutcheon indicates the class to which the animal belongs, while the extent of surface covered by it denotes the milk-giving capacity. This extent, varying in decreasing proportion, gives rise to several orders, in which I range the members of each class. The fineness of the hair of the escutcheon, and the color of the skin, indicate the quantity and quality of the milk. . . . In all the classes and orders, the escutcheon is the sole indicator of the internal capacity of the udder, so that if the escutcheon is large, we can pronounce without hesitation that the internal reservoir is large, and the yield of milk will be abundant, while, if the escutcheon be small, the reservoir is small, and the yield of milk will be small." Guenon also describes a special growth of the hair which he termed "feathers," of which there are two kinds, ascending and descending. These he classifies into seven groups, five of which occur on the escutcheon and two outside of it. This system includes an escutcheon classification for bulls. This theory, which was so widely discussed and advocated many years ago, is practically discarded to-day, notwithstanding the fact that the Ayrshire, Guernsey and Holstein-Friesian scales of points each recognize the escutcheon. It will be difficult to assign value to this theory so long as high-class producing cows show escutcheons of low order.

¹⁸ Guenon on Milch Cows, translated by T. J. Hand, New York, 1883, p. 28.

CHAPTER XXVI.

THE COMPARATIVE STUDY OF DAIRY CATTLE.

FOLLOWING the use of the score card, as applied to the individual, comes a study of two or more animals in comparison. As has already been indicated, in reference to horses and beef cattle, the score card may be used for this purpose in a very limited way. The scoring method is then



Fig. 178.—“An interesting and instructive study may result.”

succeeded by the less tedious and more common plan of comparing the animals in a group. In the case of dairy cattle, emphasis is naturally placed on the features for which this class of stock is bred and valued. Animals of the same general age and period of lactation are compared. A similar method of inspection is applied as with beef cattle. An interesting and instructive study may result by comparing certain features or characteristics as found in each animal of the group, in which the strong and weak points of each will be graded into either first, second, third or fourth place. The following comparison card is suggested, each animal to be identified by a letter of the alphabet.

DAIRY CATTLE COMPARISON CARD

Name of Judge..... Date Judged.....
 Class of Cattle.....

	First Place	Second Place	Third Place	Fourth Place
--	----------------	-----------------	----------------	-----------------

FEATURES TO JUDGE

Form or type .. .. .	.....	.....	.....	.....
Quality .. .. .	.....	.....	.....	.....
Temperament .. .. .	.....	.....	.....	.....
Head and neck .. .. .	.....	.....	.....	.....
Forequarters .. .. .	.....	.....	.....	.....
Constitution .. .. .	.....	.....	.....	.....
Body .. .. .	.....	.....	.....	.....
Rump .. .. .	.....	.....	.....	.....
Thighs .. .. .	.....	.....	.....	.....
Udder .. .. .	.....	.....	.....	.....
Teats .. .. .	.....	.....	.....	.....
Veins .. .. .	.....	.....	.....	.....
Breed character .. .. .	.....	.....	.....	.....
Placing .. .. .	.....	.....	.....	.....

The placing of a group of animals will largely depend on the number of times A was credited with first place, B with second, etc. However, the judge must attach the same relative importance to the features in this comparison card that they receive on the regular score card, excepting that of breed character, for which special provision must be made. If cow A were given first place under form, head and neck, body, rump, thighs and udder, she would certainly have an advantage over any one of the others, for

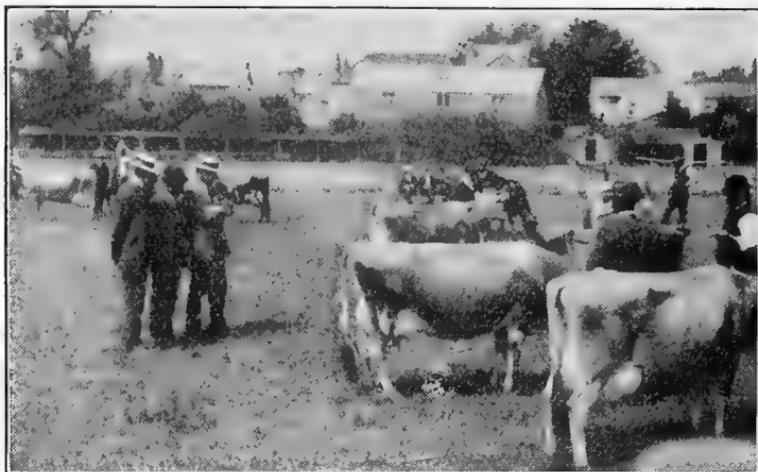


Fig. 179.—“His work as judge should show consistency in his placings.”

these are first essentials in a dairy cow, involving two-thirds of the scale of points. Thus the placing of each cow will depend materially upon what she might score. The final rank of each animal is placed at the bottom of the card, after the credits assigned are decided upon. Under usual conditions of the show ring, the animals are examined and placed in their order of merit. When the judge makes his placings, he must have clearly in mind the merits and demerits of each animal. His work as judge should show consistency in his placings, in his adherence to type

and to the apparent efficiency of the animal as a producer. Without desired type, however, and some other important features, strong mammary development will often place an animal high up in the competition, and with the endorsement of the critics. That is a recognition of the business end of the cow that requires most careful judgment, otherwise animals with serious weaknesses that should never receive a high placing, may stand above others possessing qualities and characteristics of greater importance.

CHAPTER XXVII.

JUDGING DAIRY TYPE BULLS AND YOUNG CATTLE.

(A)—DAIRY TYPE BULLS.

Sex character in the dairy bull, as in the beef type, is especially noticeable in head, neck and shoulders, and in the temperament. The lack of flesh, however, gives a leaner, sharper definition of the head, and less thick, though perhaps a longer neck; and a more or less bare and prominent shoulder. The neck of the mature bull should show considerable crest and muscular development, the dairy bull often carrying his masculine character to an extreme. The shoulders should not show the refinement of the cow, but should be heavier, with wider withers and more smoothness over the top. Roughness of shoulder is often seen in dairy bulls, which is emphasized by the lack of flesh. *The temperament* is also an evidence of sex character, as seen in the activity of disposition, with a tendency to nervousness and self-assertion far more marked than with beef bulls. The disposition is often ugly after reaching maturity, so that great care needs to be taken in handling males. *The rudimentary teats* are special sex characters of the bull. These are located, two on a side, just in front of the scrotum. These teats vary much in length and position, and when well developed a slight amount of milky fluid may be squeezed from them. They may be an inch in length, or scarcely more than fleshy scars. Years ago long rudimentaries were regarded as indicating that a bull would sire daughters that should have good-sized teats, associated with strong milk-giving properties. That theory seems to have been generally exploded, and, for want of a better one, it has been



Fig. 180.—“The sex character of the dairy bull is especially noticeable in head, neck and shoulders.” Jersey bull, Julia's Majesty.

assumed that the location of the rudimentaries will indicate the transmission of the placing of teats on the daughters. Bulls vary greatly in the placing of these rudimentary teats, some being attached on the same level and widely separated, while with others they are close together, with the fore teat high above the rear one. No information other than popular opinion justifies drawing any conclusions on the significance of the rudimentaries. However, the American Guernsey Cattle Club gives the following special distinction¹ to these features of male anatomy: “We consider that a well-balanced and well-shaped udder in the cow is largely due to the way the rudimentary teats are placed on the sire. If they are crowded close together, the result is likely to be narrow-pointed udders. If they are placed well apart, of good size, and well forward of the scrotum, the effect, we think, will be to influence

¹ Scale of points adopted in 1899.

largely the production of well-shaped udders in the resulting heifers, and counteract the tendency to ill-shaped udders inherited from dams deficient in this respect." *The veins* of the bull are also evidences of sex character. These are small, are usually two in number, and extend along on the belly, covering much the same relative location as on the cow, and disappear through openings in the belly wall. Judges usually examine the veins and wells on the bull, and regard them as giving evidence of dairy character. Such veins are also to be seen on bulls of the beef type. *Constitutional vigor* in the dairy bull should have special emphasis. This will be indicated by the depth of chest, rather than thickness, with the foreribs well arched below. The squareness and fullness of front of the beef bull should not occur with the dairy type. However, a close placing of the front legs, with the knees nearly together, indicates undesirable narrowness of the floor of the chest. If the front flank is deep and full, the legs will stand wide enough apart. An active, alert carriage of head and neck, prominent eye, a strong muzzle, a widely developed forehead, a capacious middle, and mellow, elastic skin, are other important evidences of constitutional vigor the judges should emphasize.

Size with the dairy bull varies considerably with the breed. Medium size meets with most favor. Size or weight should not be secured by a fleshy condition, which is distinctly objectionable. In judging, large size, when free from coarseness, should meet with favor as compared with small size, even though characterized by good form and quality.

The general form of the dairy bull is shown in length, depth and angularity, rather than in a short, thick, smooth form. As one views him from one side, he appears comparatively long of outline, especially in neck and body, with appreciable depth of rib. From in front the withers and chine or top of front ribs appear narrow. From the rear the hips should not appear too wide apart, though with a

fair degree of prominence, while the hindquarter should be lean and muscular, with very little twist, and the thighs divided nearly if not quite to the vulva. A fleshy rump and thigh is distinctively objectionable. Angularity of form, or freedom from a tendency to lay on flesh is most important. Classes of mature dairy bulls vary more in type than occurs with any other farm animals, so that with some breeds, notably the Guernsey and Holstein-Friesian,



Fig. 181.—“The general form of the dairy bull is shown in length, depth and angularity.” (From photo Holstein Friesian bull, Sir Beets Cornucopia Netherland 38460, owned by W. S. Moscript.)

judges find individuals varying widely from accepted standards. Such mixtures furnish difficult work for the judge, and unless he has a well-defined standard of type in mind, he will be likely to render unsatisfactory decisions, both to himself and to all others. In view of the fact that the world over, among intelligent breeders, there is a recognized relationship of form to function, then both breeders and judges, of necessity, must place a premium on this relationship, if breed improvement is to continue.

(B)—JUDGING YOUNG DAIRY CATTLE.

Undeveloped animals of the dairy type differ in appearance, previous to lactation, according to the way they have been fed. Often they carry their calf fat and appear smooth-fleshed and much thicker over the shoulders and about the hindquarters than they will with maturity. For that reason too much emphasis should not be placed on the fineness of withers, or the carrying of more flesh than might be thought desirable. Certain things, however,



Fig. 182.—“Heifers should show udders with much pliability of skin.”

should be as important in the young as in the mature animal, especially the general form—indicating as it does constitution, digestive capacity, and quality—the head, and the hindquarters. Long, level, wide rumps and comparatively thin thighs should be insisted on. Constitution, as shown in heart girth and forerib development; digestive capacity, as evidenced by a deep middle piece; and quality as emphasized in sappy, mellow hide, and fine hair, are essentials. No calf lacking in any one of these three features should

be placed high in competition. Heifers should show udders with much pliability of skin, having teats of good size, placed well apart and on the same level. Udders that hang tight to the belly, with teats close together, and the front pair elevated materially above the rear two, promise a restricted or unshapely development. In judging heifer calves, the mammary development should receive critical inspection. One of the most attractive features of a young heifer, occasionally seen, is a maternal character in the expression of face and the general bearing of head and neck, suggestive of the mature cow. In a comparable way, young bulls sometimes show a combination of sex character and style suggestive of the mature male. Young bulls, however, vary much in the development of sex character, as shown in head and neck. The head should possess the desirable qualities of conformation and expression. Crest and thickness of neck come with maturity. The scrotum of the male should be perfectly developed, showing two glands of uniform size. Until further definite information becomes available, the character of the rudimentaries on the calf should not seriously influence the judge in his placings, though one might favor having them placed well apart and in front of the scrotum.

CHAPTER XXVIII.

DESCRIPTIVE NOTES ON THE MORE IMPORTANT DAIRY BREEDS.

The Jersey breed of cattle originated on the Island of Jersey in the English Channel, near the coast of France. These cattle are commonly referred to as fawn-colored, as they resemble the grayish-brown color characteristic of the



Fig. 183.—“White markings on Jerseys are not rare.” (From photo of Successful Queen 278743, having record of 13,088 lbs. milk and 803 lbs. butter in a year. Owned by Hood Farm. Photo by Hildebrand.)

common deer. Various shades of fawn, however, are recognized, such as yellow, red, brown, mulberry, silver, etc. White markings on Jerseys are not rare, although not popular with many breeders. The hair about the muzzle, along over the backbone, and inside the legs, is often a creamy or grayish white color. The Jersey is distinctly a dairy breed, and in its most approved form is of ideal



Fig. 184.—Jersey bull. Raleigh's Fairy Boy, a well-known champion of Island breeding, owned by C. I. Hudson.

dairy type. Popular weights at maturity are 1,250 to 1,400 pounds for the bulls, and 850 to 900 for the cows. American families tend to be somewhat larger and coarser than those of Island breeding. The head should be moderately short and dished, the horns of a waxy or amber-yellow color, and crumpled, turning by graceful curve until the points are directed somewhat inward. The horns are dark at the tips. The withers are often quite refined, the shoulders somewhat prominent, the thighs thin, and the limbs neat and showing much refinement of bone. The ideal udder

is carried well forward, as well as high up behind. The teats are frequently somewhat small and short. Many American bred cows have udders with more or less abbreviated fronts. The skin is commonly thin, mellow and elastic, and shows a rich yellow secretion, especially in the ears, and on vulva, udder and thigh. The most striking features in the appearance of the Jersey are the color, the wedge form, the short, dished face, the prominent, beautiful eye, the fine bone, and the deer-like character of the



Fig. 185.—Sophie 19th of Hood Farm on the right, and Lass 38th of Hood Farm on left.

young calves. Jerseys are not large milkers, though yielding well for their size. Up to February 29, 1916, the 5,244 Jerseys in the register of merit averaged 7,792 pounds of milk. Many cows of the breed have produced 10,000 pounds each within a year. The largest milk record for this period, up to January 1, 1916, was that of 19,695 pounds made by the cow Passport 219742. Jersey milk usually contains $4\frac{1}{2}$ to 5 per cent fat, and from it the choicest grade of butter is made. Sophie 19th of Hood Farm 189748, has to her credit the largest yield of milk fat in a year, *viz.*, 999.14 pounds. The males are naturally of a nervous disposition, while the females are quiet and domestic.

SCALE OF POINTS FOR JERSEY BULL.

(Adopted by the American Jersey Cattle Club, May 7, 1913.)

HEAD, 10 Points:	Counts
A—Broad, medium length; face dished; narrow between horns; horns medium in size and incurving.	5
B—Muzzle, broad; nostrils open; eyes full and bold; entire expression one of vigor, resolution and masculinity.	5
NECK, 7 Points:	
Medium length, with full crest at maturity; clean at throat	7
BODY, 57 Points:	
A—Shoulders full and strong, good distance through from point to point, with well-defined withers; chest deep and full between and just back of forelegs	15
B—Barrel, long, of good depth and breadth, with strong, rounded, well-sprung ribs	15
C—Back, straight and strong	5
D—Rump, of good length and proportion to size of body, and level from hip-bones to rump-bones	7
E—Loins, broad and strong; hips rounded, and of medium width compared with female	7
F—Thighs, rather flat, well cut up behind, high arched flank	3
G—Legs, proportionate to size and of fine quality, well apart, with good feet, and not to weave or cross in walking	5
RUDIMENTARY TEATS, 2 Points:	
Well placed	2
HIDE, 2 Points:	
Loose and mellow	2
TAIL, 2 Points:	
Thin, long, reaching the hock, with good switch, not coarse or high at setting-on	2
SIZE, 5 Points:	
Mature bulls, 1,200 to 1,500 pounds	5
GENERAL APPEARANCE, 15 Points:	
Thoroughly masculine in character, with a harmonious blending of the parts to each other; thoroughly robust, and such an animal as in a herd of wild cattle would likely become master of the herd by the law of natural selection and survival of the fittest	15
Total	100

FOR JERSEY COW.

(Adopted by the American Jersey Cattle Club, May 7, 1913.)

DAIRY TEMPERAMENT AND CONSTITUTION.

HEAD, 7 Points:	Counts
A—Medium size, lean; face dished; broad between eyes; horns medium size, incurving	3
B—Eyes full and placid; ears medium size, fine, carried alert; muzzle broad, with wide-open nostrils and muscular lips; jaw strong	4
NECK, 4 Points:	
Thin, rather long, with clean throat, neatly joined to head and shoulders	4
BODY, 37 Points:	
A—Shoulders light, good distance through from point to point, but thin at withers; chest deep and full between and just back of forelegs	5
B—Ribs amply sprung and wide apart, giving wedge shape, with deep, large abdomen, firmly held up, with strong muscular development	10
C—Back straight and strong, with prominent spinal processes; loins broad and strong	5
D—Rump long to tail-setting, and level from hip-bones to rump-bones	6
E—Hip-bones high and wide apart	3
F—Thighs flat and wide apart, giving ample room for udder	3
G—Legs proportionate to size and of fine quality, well apart, with good feet, and not to weave or cross in walking	2
H—Hide loose and mellow	2
I—Tail thin, long, with good switch, not coarse at setting-on	1

MAMMARY DEVELOPMENT.

UDDER, 26 Points:	
A—Large size, flexible and not fleshy	6
B—Broad, level or spherical, not deeply cut between teats	4
C—Fore udder full and well rounded, running well forward of front teats	10
D—Rear udder well rounded, and well out and up behind	6

TEATS, 8 Points:	
Of good and uniform length and size, regularly and squarely placed	8

MILK-VEINS, 4 Points:	
Large, long, tortuous and elastic, entering large and numerous orifices	4

SIZE, 4 Points:	
Mature cows, 800 to 1,000 pounds	4

GENERAL APPEARANCE, 10 Points:	
A symmetrical balancing of all the parts, and a proportion of parts to each other, depending on size of animal, with the general appearance of a high-class animal, with capacity for food and productiveness at pail	10

Total	100
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The Holstein-Friesian breed of cattle originated in Holland, where it has been bred for centuries. The characteristic color of this breed is black and white, in solid spots of each color. A popular combination consists of slightly more white than black. Occasionally one will see cattle of this breed that are nearly all white. Red and white calves are dropped in American herds at rare intervals, but in Holland there are a few herds of this color combina-



Fig. 186.—Holstein-Friesian bull, Rag Apple Korndyke Sth, sold for \$25,000. Owned by Oliver Cabana, Jr. (Photo by courtesy American Agriculturist.)

tion. This is a large breed, and mature bulls weigh usually 1,800 to 2,000 pounds, and cows 1,250 to 1,400 pounds. There is considerable variation in type of this breed, ranging from true dairy to that of real beef conformation. This variation is pronounced among both bulls and cows. A ring of aged Holstein-Friesian bulls shows marked difference in character. One may easily find here three types, dairy, beef and dual-purpose, though the beef type is not

abundant. The more popular style is the dairy type, but with somewhat more thickness of thighs and smoothness of fleshing. The most striking features of this breed are the large size, black-and-white spotted color and big udder. The heads incline to be somewhat long and narrow, and the



Fig. 187.—Holstein-Friesian female, Lady Pontiac Johanna. Has a three-year-old record of 41.81 lbs. butter in seven days. (Photo by courtesy American Agriculturist.)

horns seem small for so large a body, the rump is long and frequently steep, and the thighs are large and in many cases tend to be thick and beefy. The udder is a notable feature, on some cows attaining great size and capacity. In conformation it is pendant, instead of being long and close to the belly. This breed is notable for its milk-producing capacity. The records of 2,387 cows with official yearly

tests up to January 1, 1916, showed an average of 14,493.9 pounds of milk. The largest official yearly milk yield for a cow of the breed is that of Tilly Alcartra, producing 30,451.4 pounds. Holstein-Friesian milk tests 3 to 3½ per cent fat. The average number of pounds of fat produced in one year by the 2,387 cows referred to above was 495.91, the greatest official yield of fat by any one cow of the breed in a year being 1,205 pounds, by Duchess Skylark Ormsby 124514. The disposition of the males inclines to nervousness and irritability, but the cows are very quiet and placid.

SCALE OF POINTS FOR HOLSTEIN-FRIESIAN BULL.

(Adopted by Holstein-Friesian Association of America.)

The ratings in parenthesis relate entirely to the method of application agreed upon by the Inspectors, in order to secure uniformity of work. The abbreviations are as follows: vs, very slight; s, slight; m, marked; vm, very marked; e, extreme.

PARTS	DESCRIPTION	Possible Score
Head —Showing full vigor; elegant in contour. (Discredit, vs ½, s ¼, m ½, vm ¾, e 1.)		2
Forehead —Broad between the eyes; dishing. (Discredit, vs ½, s ¼, m ½, vm ¾, e 1.)		2
Face —Of medium length; clean and trim, especially under the eyes; the bridge of the nose straight. (Discredit, s ½, m ¼, e ½.)		2
Muzzle —Broad with strong lips. (Discredit, s ½, m ¼, e ½.)		1
Ears —Of medium size; of fine texture; the hair plentiful and soft; the secretions oily and abundant. (Discredit, m ½, e ¼.)		1
Eyes —Large, full, mild, bright. (Discredit, s ½, m ¼, e ½.)		2
Horns —Short; of medium size at base, gradually diminishing toward tips; oval; inclining forward, moderately curved inward; of fine texture, in appearance waxy. (Discredit, m ½, e ¼.)		1
Neck —Long; finely crested (if the animal is mature); fine and clean at juncture with the head; nearly free from dewlap; strongly and smoothly joined to shoulders. (Discredit, vs ½, s ¼, m ½, vm ¾, e 1.)		5
Shoulders —Of medium height; of medium thickness, and smoothly rounded at tops; broad and full at sides; smooth over front. (Discredit, vs ½, s ¼, m ½, vm ¾, e 1.)		4

PARTS	DESCRIPTION	Possible Score
Chest	—Deep and low; well filled and smooth in the brisket; broad between the forearms; full in the foreflanks [or through at the heart.] (Discredit, vs $\frac{1}{4}$, s $\frac{1}{2}$, m 1, vm $1\frac{1}{2}$, e 2.)	7
Crops	—Comparatively full; nearly level with the shoulders. (Discredit, vs $\frac{1}{4}$, s $\frac{1}{2}$, m 1, vm $1\frac{1}{2}$, e 2.)	4
Chine	—Strong; straight, broadly developed, with open vertebrae. (Discredit, vs $\frac{1}{8}$, s $\frac{1}{4}$, m $\frac{1}{2}$, vm $\frac{3}{4}$, e 1.)	6
Barrel	—Long; well rounded; with large abdomen; strongly and trimly held up. (Discredit, vs $\frac{1}{4}$, s $\frac{1}{2}$, m 1, vm $1\frac{1}{2}$, e 2.)	7
Loin and Hips	—Broad; level or nearly level between hook-bones; level and strong laterally; spreading out from the chine broadly and nearly level; the hook-bones fairly prominent. (Discredit, vs $\frac{1}{8}$, s $\frac{1}{4}$, m $\frac{1}{2}$, vm $\frac{3}{4}$, e 1.)	7
Rump	—Long; broad; high; nearly level laterally; comparatively full above the thurl; carried out straight to dropping of tail. (Discredit, vs $\frac{1}{8}$, s $\frac{1}{4}$, m $\frac{1}{2}$, vm $\frac{3}{4}$, e 1.)	7
Thurl	—High; broad. (Discredit, vs $\frac{1}{4}$, s $\frac{1}{2}$, m 1, vm $1\frac{1}{2}$, e 2.)	4
Quarters	—Deep; broad; straight behind; wide and full at sides; open in the twist. (Discredit, vs $\frac{1}{8}$, s $\frac{1}{4}$, m $\frac{1}{2}$, vm $\frac{3}{4}$, e 1.)	5
Flanks	—Deep; full. (Discredit, vs $\frac{1}{8}$, s $\frac{1}{4}$, m $\frac{1}{2}$, vm $\frac{3}{4}$, e 1.)	2
Legs	—Comparatively short; clean and nearly straight; wide apart; firmly and squarely set under the body; arms wide, strong and tapering; feet of medium size, round, solid and deep. (Discredit, vs $\frac{1}{8}$, s $\frac{1}{4}$, m $\frac{1}{2}$, vm $\frac{3}{4}$, e 1.)	5
Tail	—Large at base, the setting well back; tapering finely to switch; the end of bone reaching to hocks or below; the switch full. (Discredit, s $\frac{1}{8}$, m $\frac{1}{4}$, e $\frac{1}{2}$.)	2
Hair and Handling	—Hair healthful in appearance; fine, soft and furry; skin of medium thickness and loose; mellow under the hand; the secretions oily, abundant and of a rich brown or yellow color. (Discredit, vs $\frac{1}{4}$, s $\frac{1}{2}$, m 1, vm $1\frac{1}{2}$, e 2.)	10
Mammary Veins	—Large; full; entering large orifices; double extension; with special development, such as forks, branches, connections, etc. (Discredit, vs $\frac{1}{4}$, s $\frac{1}{2}$, m 1, vm $1\frac{1}{2}$, e 2.)	10
Rudimentary Teats	—Large; well placed. (Discredit, vs $\frac{1}{8}$, s $\frac{1}{4}$, m $\frac{1}{2}$, vm $\frac{3}{4}$, e 1.)	2
Escutcheon	—Largest; finest. (Discredit, vs $\frac{1}{2}$, s 1, m 2, vm 3, e 4.)	2
*General Vigor	—For deficiency Inspectors shall discredit from the total received not to exceed eight points. (Discredit, vs 1, s 2, m 3, vm 5, e 8.)	..
*General Symmetry and Fineness	—For deficiency Inspectors shall discredit from the total received not to exceed eight points. (Discredit, vs 1, s 2, m 3, vm 5, e 8.)	..
*General Style and Bearing	—For deficiency Inspectors shall discredit from the total received not to exceed eight points. (Discredit, vs 1, s 2, m 3, vm 5, e 8.)	..

PARTS	DESCRIPTION	Possible Score
*Credits for Offspring—A bull shall be credited one point in excess of what he is otherwise entitled to, for each and every animal of which he is sire actually entered in the Advanced Register, not to exceed ten in number.		
	* In scaling for the Advanced Register, defects caused solely by age, or by accident, or by disease not hereditary, shall not be considered. But in scaling for the show ring, such defects shall be considered and duly discredited. . . . .	..
	* A bull that in the judgment of the Inspector will not reach, at full age and in good flesh, 1,800 lbs., live weight, shall be disqualified for entry in the Advanced Register. . . . .	..
	* No bull shall be received to the Advanced Register, that with all credits due him will not scale, in the judgment of the Inspector, at east 80 points. (See amendment to Rule IV., an exception to these requirements.) . . . . .	..
	Perfection.	100
	Total discredit. . . . .	..
	Net score. . . . .	..

* Not now in use by Advanced Register, but of great value as an aid in judging cattle.

SCALE OF POINTS FOR HOLSTEIN-FRIESIAN COW.

(Adopted by Holstein-Friesian Association of America.)

The ratings in parenthesis relate entirely to the method of application agreed upon by the Inspectors, in order to secure uniformity of work. The abbreviations are as follows: vs, very slight; s, slight; m, marked; vm, very marked; e, extreme.

PARTS	DESCRIPTION	Possible Score
Head	Decidedly feminine in appearance; fine in contour. (Discredit, vs $\frac{1}{8}$, s $\frac{1}{4}$, m $\frac{1}{2}$, vm $\frac{3}{4}$, e 1.)	2
Forehead	Broad between the eyes; dishing. (Discredit, vs $\frac{1}{8}$, s $\frac{1}{4}$, m $\frac{1}{2}$, vm $\frac{3}{4}$, e 1)	2
Face	Of medium length; clean and trim especially under the eyes, showing facial veins; the bridge of the nose straight. (Discredit, s $\frac{1}{8}$, m $\frac{1}{4}$, e $\frac{1}{2}$.)	2
Muzzle	Broad with strong lips (Discredit, s $\frac{1}{8}$, m $\frac{1}{4}$, e $\frac{1}{2}$.)	1
Ears	Of medium size; of fine texture; the hair plentiful and soft; the secretions oily and abundant. (Discredit, m $\frac{1}{8}$, e $\frac{1}{4}$.)	1
Eyes	Large; full; mild; bright. (Discredit, s $\frac{1}{8}$, m $\frac{1}{4}$, e $\frac{1}{2}$.)	2
Horns	Small; tapering finely toward the tips; set moderately narrow at base; oval; inclining forward; well bent inward; of fine texture; in appearance waxy. (Discredit, m $\frac{1}{8}$, e $\frac{1}{4}$.)	1

PARTS	DESCRIPTION	Possible Score
Neck —Long; fine and clean at juncture with the head; free from dewlap; evenly and smoothly joined to shoulders. (Discredit, vs $\frac{1}{8}$, s $\frac{1}{4}$, m $\frac{1}{2}$, vm $\frac{3}{4}$, e 1.)		4
Shoulders —Slightly lower than the hips; fine and even over tops; moderately broad and full at sides. (Discredit, vs $\frac{1}{8}$, s $\frac{1}{4}$, m $\frac{1}{2}$, vm $\frac{3}{4}$, e 1.)		3
Chest —Of moderate depth and lowness; smooth and moderately full in the brisket; full in the foreflanks (or through the heart). (Discredit, vs $\frac{1}{4}$, s $\frac{1}{2}$, m 1, vm $1\frac{1}{2}$, e 2.)		6
Crops —Moderately full. (Discredit, vs $\frac{1}{4}$, s $\frac{1}{2}$, m $\frac{3}{4}$, vm $1\frac{1}{2}$, e 2.)		2
Chine —Straight; strong; broadly developed, with open vertebræ. (Discredit, vs $\frac{1}{8}$, s $\frac{1}{4}$, m $\frac{1}{2}$, vm $\frac{3}{4}$, e 1.)		6
Barrel —Long; of wedge shape; well rounded; with a large abdomen, trimly held up (in judging the last item age must be considered). (Discredit, vs $\frac{1}{8}$, s $\frac{1}{4}$, m $\frac{1}{2}$, vm $\frac{3}{4}$, e 1.)		7
Loin and Hips —Broad; level or nearly level between the hook-bones; level and strong laterally; spreading from chine broadly and nearly level; hook-bones fairly prominent. (Discredit, vs $\frac{1}{8}$, s $\frac{1}{4}$, m $\frac{1}{2}$, vm $\frac{3}{4}$, e 1.)		6
Rump —Long; high; broad with roomy pelvis; nearly level laterally; comparatively full above the thurl; carried out straight to dropping of tail. (Discredit, vs $\frac{1}{8}$, s $\frac{1}{4}$, m $\frac{1}{2}$, vm $\frac{3}{4}$, e 1.)		6
Thurl —High; broad. (Discredit, vs $\frac{1}{4}$, s $\frac{1}{2}$, m 1, vm $1\frac{1}{2}$, e 2.)		3
Quarters —Deep; straight behind; twist filled with development of udder; wide and moderately full at the sides. (Discredit, vs $\frac{1}{8}$, s $\frac{1}{4}$, m $\frac{1}{2}$, vm $\frac{3}{4}$, e 1.)		4
Flanks —Deep; comparatively full. (Discredit, vs $\frac{1}{8}$, s $\frac{1}{4}$, m $\frac{1}{2}$, vm $\frac{3}{4}$, e 1.)		2
Legs —Comparatively short; clean and nearly straight; wide apart; firmly and squarely set under the body; feet of medium size, round, solid and deep. (Discredit, vs $\frac{1}{8}$, s $\frac{1}{4}$, m $\frac{1}{2}$, vm $\frac{3}{4}$, e 1.)		4
Tail —Large at base, the setting well back; tapering finely to switch; the end of the bone reaching to hocks or below; the switch full. (Discredit, s $\frac{1}{8}$, m $\frac{1}{4}$, e $\frac{1}{2}$.)		2
Hair and Handling —Hair healthful in appearance; fine, soft and furry; the skin of medium thickness and loose; mellow under the hand; the secretions oily, abundant and of a rich brown or yellow color. (Discredit, vs $\frac{1}{4}$, s $\frac{1}{2}$, m 1, vm $1\frac{1}{2}$, e 2.)		8
Mammary Veins —Very large; very crooked (age must be taken into consideration in judging of size and crookedness); entering very large or numerous orifices; double extension; with special developments, such as branches, connections, etc. (Discredit, vs $\frac{1}{4}$, s $\frac{1}{2}$, m 1, vm $1\frac{1}{2}$, e 2.)		10
Udder —Very capacious; very flexible; quarters even; nearly filling the space in the rear below the twist, extending well forward in the front; broad and well held up. (Discredit, vs $\frac{1}{4}$, s $\frac{1}{2}$, m 1, vm $1\frac{1}{2}$, e 2.)		12

PARTS	DESCRIPTION	Possible Score
Teats —Well formed, wide apart, plumb and of convenient size. (Discredit, vs $\frac{1}{4}$, s $\frac{1}{2}$, m 1, vm $1\frac{1}{2}$, e 2.)	..	2
Escutcheon —Largest; finest. (Discredit, vs $\frac{1}{2}$, s 1, m 2, vm 3, e 4.)	2
*General Vigor —For deficiency Inspectors shall discredit from the total received not to exceed eight points. (Discredit, vs 1, s 2, m 3, vm 5, e 8.)
*General Symmetry and Fineness —For deficiency Inspectors shall discredit from the total received not to exceed eight points. (Discredit, vs 1, s $\frac{1}{2}$, m 3, vm 5, e 8.)
*General Style and Bearing —For deficiency, Inspectors shall discredit from the total received not to exceed eight points. (Discredit, vs 1, s $\frac{1}{2}$, m 3, vm 5, e 8.)

***Credits for Excess of Requirement in Production.**

A cow shall be credited one point in excess of what she is otherwise entitled to, for each and every 8 per cent that her milk or butter record exceeds the minimum requirement.

*In scaling for the Advanced Register, defects caused solely by age, or by accident, or by disease not hereditary, shall not be considered. But in scaling for the show ring, such defects shall be considered and duly discredited

*A cow that, in the judgment of the Inspector, will not reach at full age, in milking condition and ordinary flesh, 1,000 lbs., live weight, shall be disqualified for entry in the Advanced Register.

*No cow shall be received to the Advanced Register that, with all credits due her, will not scale, in the judgment of the Inspector, at least 75 points. (See in last paragraph of Rule VI an exception to these requirements.)

Perfection	.. .. .	100
Total discredit	.. .. .	..
Net score..	.. .. .	..

* Not now in use by Advanced Register, but of great value as an aid in judging cattle.

The Guernsey breed of cattle originated on the Island of Guernsey off the coast of France, nearby Jersey. Like the latter, it is an old breed. Guernsey cattle resemble Jerseys, but are usually yellowish or reddish fawn in color. White spots are very common. They are somewhat larger than the Jerseys, mature bulls weighing about 1,500 pounds and

cows 1,050 pounds or so. Guernseys are often rather plain of head and rough of shoulder and appear coarser than the Jersey. The aged males vary in type fully as much as do the Holstein-Friesian males, and often incline to a thick, fleshy conformation not admired by students of dairy form. The skin is noted for its soft, mellow, elastic quality, and yellow color, especially in the ear and about the vulva, thighs and udder. The horns also show much yellow coloring. Of 4,719 cows in the advanced register up to April 30, 1916, the average yield was 8,806 pounds. The largest



Fig. 188.—Guernsey bull, "Galaxy's Sequel, noted as a sire of advanced registry cows."

official milk yield for a Guernsey cow in a year, was 24,008 pounds by Murne Cowan 19597. Guernsey milk tests rich in fat, often exceeding 5 per cent, and the fat globules carry so high a yellow tint as not to require butter coloring at any time. The average yield of fat produced by the 4,719 cows noted above was 437.45 pounds, the largest record of 1,098.18 pounds being by Murne Cowan 19597. Guernsey butter ranks as of the best class. In temperament the Guernsey male is perhaps somewhat quieter than its Jersey cousin, though the cows do not materially differ.

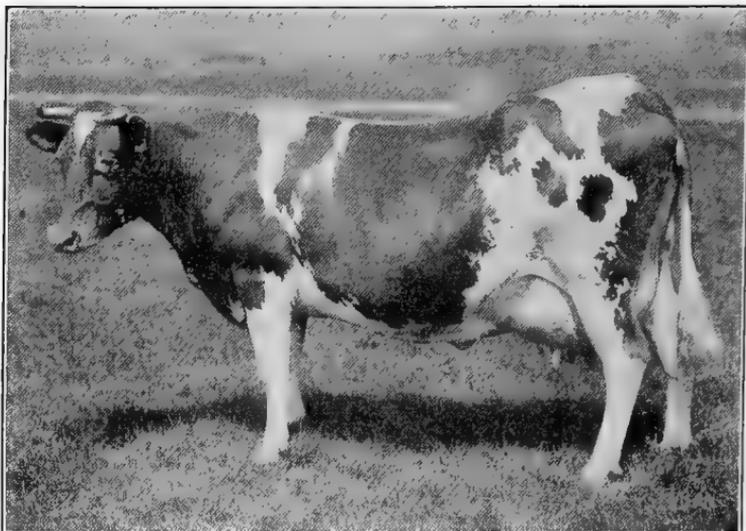


Fig. 189.—Guernsey cow, "May Rilma 22761, with record of 1,073 lbs. butter fat in one year." (Photo by courtesy American Agriculturist.)

SCALE OF POINTS FOR GUERNSEY BULL.

(Adopted by the American Guernsey Cattle Club, December 13, 1899.)

SCALE OF POINTS	Points
DAIRY TEMPERAMENT, CONSTITUTION, 38 Points:	
Clean cut, lean face; strong sinewy jaw; wide muzzle with wide-open nostrils; full, bright eye with quiet and gentle expression; forehead long and broad.	5
Long masculine neck with strong juncture to head; clean throat. Backbone rising well between shoulder blades; large rugged spinal processes, indicating good development of the spinal cord	5
Pelvis arching and wide; rump long; wide, strong structure of spine at setting of tail. Long, thin tail with good switch. Thin, incurving thighs	5
Ribs amply and fully sprung and wide apart, giving an open relaxed conformation; thin, arching flank.	5
Abdomen large and deep, with strong muscular and navel development, indicative of capacity and vitality	15
Hide firm yet loose, with an oily feeling and texture, but not thick	3
DAIRY PREPOTENCY, 15 Points:	
As shown by having a great deal of vigor, style, alertness, and resolute appearance	15

SCALE OF POINTS	Points
RUDIMENTARIES AND MILK VEINS, 10 Points:	
Rudimentaries of good size, squarely and broadly placed in front of and free from scrotum. Milk veins prominent.	10
INDICATING COLOR OF MILK IN OFFSPRING, 15 Points:	
Skin deep yellow in ear, on end of bone of tail, at base of horns and body generally; hoofs amber colored. . .	15
SYMMETRY AND SIZE, 22 Points:	
Color of hair, a shade of fawn with white markings. Cream-colored nose. Horns amber-colored, curving and not coarse	8
Size for the Breed:—Mature bulls four years old or over, about 1,500 lbs.	4
General appearance as indicative of the power to beget animals of strong dairy qualities	10
Total	100

FOR GUERNSEY COW.

DAIRY TEMPERAMENT, CONSTITUTION, 38 Points:	
Clean cut, lean face, strong, sinewy jaw; wide muzzle with wide-open nostrils; full, bright eye with quiet and gentle expression; forehead long and broad. . .	5
Long, thin neck with strong juncture to head; clean throat. Backbone rising well between shoulder blades; large rugged spinal processes, indicating good development of the spinal cord	5
Pelvis, arching and wide; rump long, wide; strong structure of spine at setting-on of tail. Long thin tail with good switch. Thin incurving thighs	5
Ribs amply and fully sprung and wide apart, giving an open, relaxed conformation; thin arching flanks . .	5
Abdomen large and deep, with strong muscular and navel development, indicative of capacity and vitality	15
Hide firm yet loose, with an oily feeling and texture, but not thick	3
MILKING MARKS DENOTING QUANTITY OF FLOW, 10 Points:	
Escutcheon wide on thighs; high and broad, with thigh ovals	2
Milk veins long, crooked, branching and prominent, with large or deep wells	8
UDDER FORMATION, 26 Points:	
Udder full in front	8
Udder full and well up behind	8
Udder of large size and capacity	4
Teats well apart, squarely placed, and of good and even size	6
INDICATING COLOR OF MILK, 15 Points:	
Skin deep yellow in ear, on end of bone of tail, at base of horns, on udder, teats and body generally. Hoof, amber colored.	15

SCALE OF POINTS	Points
MILKING MARKS DENOTING QUALITY OF FLOW,	
6 Points:	
Udder showing plenty of substance, but not too meaty	6
SYMMETRY AND SIZE, 5 Points:	
Color of hair a shade of fawn, with white markings.	
Cream colored nose. Horns amber colored, small, curved, and not coarse	3
Size for the Breed—Mature cows, four years old or over, about 1,050 lbs.	2
Total..	100

The Ayrshire breed of cattle has its native home in south-western Scotland, with the county of Ayr as a center. The color is a combination of red, brown and white markings, with white predominating as a color fad. The size of the Ayrshire is about medium and at maturity standard weights will approximate 1,500 pounds for the bull and 1,100 for the cows. This is recognized as a distinct dairy type breed, but the inclination is to be a trifle smooth-fleshed rather than angular like the Jersey. The very striking

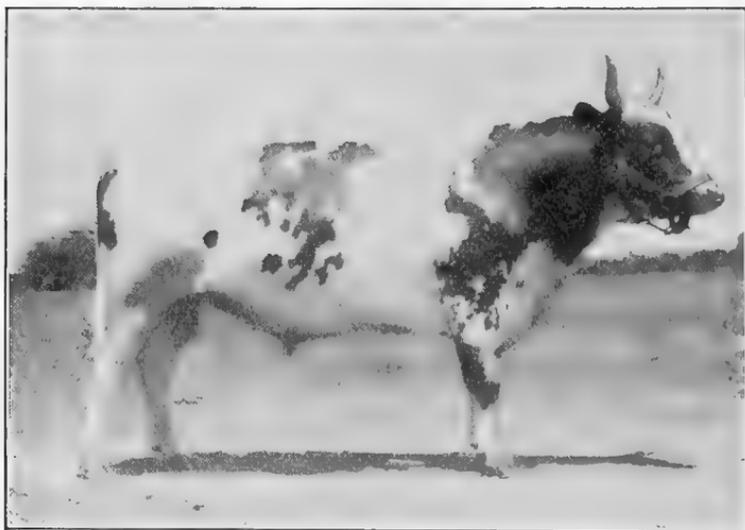


Fig. 190.—Ayrshire bull, "Bargnoch Bonnie Scotland, a famous bull of the breed."



Fig. 191.—Ayrshire cow, "Midland Nellie IV.," a prize-winner at the Highland and Agricultural Society Show of Scotland.

features of the breed are the head, with its rather long, large and erect horns, the color of hair, the capacious body and beautiful, shapely udder. From a show point of view the Ayrshire udder is more uniformly developed than that of any other breed, but in Scotland there is considerable criticism that beauty of form and small teats have supplanted a less shapely but more valuable udder, from the standpoint of production. The skin of the Ayrshire inclines to be somewhat thick and lacking in mellowness in comparison with some other breeds. Cows of this breed produce very good yields of milk. For the year ending December 31, 1915, there was produced an average of 9,406 pounds of milk by 1,938 cows in advanced registry tests; the largest official year's record being 25,329 pounds by Garelaugh May Mischief 27944. The milk is just average in fat content, testing about $3\frac{1}{2}$ to $3\frac{3}{4}$ per cent. Lily of Willowmoor 22269, the most famous cow of the breed, produced 955.56 pounds of fat in a year. She also has a five-

years' record of 84,991 pounds of milk and 3,362.35 pounds of fat. Ayrshires are fairly quiet of temperament, especially the cows, but the bulls incline to show considerable nervous character.

SCALE OF POINTS FOR AYRSHIRE BULL.

(Adopted by United States and Canadian Ayrshire Breeders' Associations, 1906.)

SCALE OF POINTS	Standard of Perfect Score
HEAD, 16 Points:	
Forehead, broad and clearly defined	2
Horns, strong at base, set wide apart, inclining upward	1
Face, of medium length, clean cut, showing facial veins	2
Muzzle, broad and strong, without coarseness	1
Nostrils, large and open	2
Jaws, wide at the base and strong	1
Eyes, moderately large, full and bright	3
Ears of medium size and fine, carried alert	1
Expression, full of vigor, resolution and masculinity	3
NECK, 10 Points:	
Of medium length, somewhat arched, large and strong in the muscles on top, inclined to flatness on sides, enlarging symmetrically toward the shoulders, throat clean and free from loose skin	10
FOREQUARTERS, 15 Points:	
Shoulders, strong, smoothly blending into body with good distance through from point to point and fine on top	3
Chest, low, deep and full between back and forelegs	8
Brisket, deep, not too prominent and with very little dewlap	2
Legs and feet: legs well apart, straight and short, shanks fine and smooth, joints firm; feet of medium size, round, solid and deep	2
BODY, 18 Points:	
Back, short and straight, chine strongly developed and open jointed	5
Loin, broad, strong and level	4
Ribs, long, broad, strong, well sprung and wide apart	4
Abdomen, large and deep, trimly held up with muscular development	4
Flank, thin and arching	1

SCALE OF POINTS	Standard of Perfect Score
HINDQUARTERS, 16 Points:	
Rump, level, long from hooks to pin bones	5
Hooks, medium distance apart, proportionately narrower than in female, not rising above the level of the back	2
Pin bones, high, wide apart	2
Thighs, thin, long and wide apart	4
Tail, fine, long and set on level with back	1
Legs and feet: legs straight, set well apart, shanks fine and smooth; feet medium size, round, solid and deep, not to cross in walking	2
SCROTUM, 3 Points:	
Well developed and strongly carried	3
RUDIMENTARIES, VEINS, ETC., 4 Points:	
Teats, of uniform size, squarely placed, wide apart and free from scrotum; veins long, large, tortuous, with extensions entering large orifices; escutcheon pronounced and covering a large surface	4
Color, 3 Points:	
Red of any shade, brown, or these with white; mahogany and white; each color distinctly defined	3
COVERING, 6 Points:	
Skin, medium thickness, mellow and elastic	3
Hair, soft and fine	2
Secretions, oily, of rich brown or yellow color . .	1
STYLE, 5 Points:	
Active, vigorous, showing strong masculine character, temperament inclined to nervousness, but not irritable or vicious	5
WEIGHT: 4 Points:	
At maturity not less than 1,500 pounds	4
Total	100

FOR AYRSHIRE COW.

SCALE OF POINTS	Standard of Perfect Score
HEAD, 10 Points:	
Forehead, broad and clearly defined	1
Horns, wide set on and inclining upward	1
Face, of medium length, slightly dishd, clean cut, showing veins	2
Muzzle, broad and strong without coarseness, nostrils large	1
Jaws, wide at the base and strong	1
Eyes, full and bright with placid expression	3
Ears, of medium size and fine, carried alert	1
NECK, 3 Points:	
Fine throughout, throat clean, neatly joined to head and shoulders, of good length, moderately thin, nearly free from loose skin, elegant in bearing . .	3

SCALE OF POINTS		Standard of Perfect Score
FOREQUARTERS, 10 Points:		
Shoulders, light, good distance through from point to point, but sharp at withers, smoothly blending into body		2
Chest, low, deep and full between and back of fore-legs		6
Brisket, light		1
Legs and feet: legs straight and short, well apart, shanks fine and smooth, joints firm; feet medium size, round, solid and deep		1
BODY, 13 Points:		
Back, strong and straight, chine lean, sharp and open-jointed		4
Loin, broad, strong and level		2
Ribs, long, broad, wide apart and well sprung		3
Abdomen, capacious, deep, firmly held up with strong muscular development		3
Flank, thin and arching		1
HINDQUARTERS, 11 Points:		
Rump, wide, level and long from hooks to pin bones, a reasonable pelvic arch allowed		3
Hooks, wide apart and not projecting above back nor unduly overlaid with fat		2
Pin bones, high and wide apart		1
Thighs, thin, long and wide apart		2
Tail, long, fine, set on a level with the back		1
Legs and feet: legs strong, short, straight when viewed from behind and set well apart; shanks fine and smooth, joints firm; feet medium size, round, solid and deep		2
UDDER, 22 Points:		
Long, wide, deep, but not pendulous, nor fleshy; firmly attached to the body, extending well up behind and far forward; quarters even; sole nearly level and not indented between teats, udder veins well developed and plainly visible		22
TEATS, 8 Points:		
Evenly placed, distance apart from side to side equal to half the breadth of udder, from back to front equal to one-third the length; length $2\frac{1}{2}$ to $3\frac{1}{2}$ inches, thickness in keeping with length, hanging perpendicular and not tapering		8
MAMMARY VEINS, 5 Points:		
Large, long, tortuous, branching and entering large orifices		5
ESCUTCHEON, 2 Points:		
Distinctly defined, spreading over thighs and extending well upward		2
COLOR, 2 Points:		
Red of any shade, brown, or these with white; mahogany and white, or white; each color distinctly defined. (Brindle markings allowed but not desirable.)		2

SCALE OF POINTS	Standard of Perfect Score
COVERING, 6 Points:	
Skin, of medium thickness, mellow and elastic ..	3
Hair, soft and fine	2
Secretions, oily, of rich brown or yellow color ..	1
STYLE, 4 Points:	
Alert, vigorous, showing strong character; tempera- ment inclined to nervousness, but still docile ..	4
WEIGHT AT MATURITY, not less than 1,000 lbs.	4
Total points	100

The Dutch Belted breed of cattle originated in Holland, and is of very old ancestry. It is a dairy type of cattle, and especially noted for its black color, marked off by white stripe or blanket of varying width which encircles the body between the hips and shoulders. This color marking gives the breed a very striking appearance when a number of



Fig. 192.—Dutch Belted cow, champion at New York State Fair. (Photo by courtesy American Agriculturist.)

animals are grouped on a pasture. In size, the Dutch Belted is comparable with the Ayrshire rather than the Holstein-Friesian, mature males weighing around 1,500 pounds, and cows 1,100 to 1,200 pounds. The horns tend to be small, the withers refined, and the thighs spare. The udder is rarely impressive in size and form, and the cows of the breed thus far have made few records of importance.

SCALE OF POINTS FOR DUTCH BELTED CATTLE.

(Adopted by American Dutch Belted Cattle Association.)

	Points
Body —Color black, with a clearly defined continuous white belt. The belt to be of medium width beginning behind the shoulders and extending nearly to the hips	8
Head —Comparatively long and somewhat dishing; broad between the eyes; poll prominent; muzzle fine; dark tongue	6
Eyes —Black, full, mild. Horns long compared with their diameter . .	4
Neck —Fine, and moderately thin, and should harmonize in symmetry with the head and shoulders.	6
Shoulders —Fine at the top, becoming deep and broad as they extend backward and downward, with a low chest	4
Barrel —Large and deep with well-developed abdomen; ribs well-rounded and free from fat	10
Hips —Broad, and chine level with full loin	10
Rump —High, long, broad	6
Hindquarters —Long and deep, rear line incurving. Tail long, slim, tapering to a full switch	8
Legs —Short, clean, standing well apart	3
Udder —Large, well developed front and rear. Teats of convenient size and wide apart; mammary veins large, long and crooked, entering large orifices	20
Escutcheon	2
Hair —Fine and soft; skin of moderate thickness, of a rich dark or yellow color.	3
Disposition —Quiet, free from excessive fat	4
General condition and apparent constitution	6
Perfection.	100

Scale of Points for Bulls.

The scale of points for males shall be the same as those given for females, except that the udder shall be omitted and the bull credited 10 points for size and widespread placing of rudimentary teats, and 10 additional points for perfection of belt.

The Kerry breed of cattle has its native home in southwest Ireland, where it has been known for a long period of time. It is a distinctly black dairy breed, and should have no white markings, unless about the udder and underline, and then only in a small way. Bulls should not have any

white hairs on the body. The size is comparable with a small Jersey, as bulls should not exceed 1,000 pounds in weight and the cows 900 pounds; the latter frequently weighing 750 to 800 pounds. The distinctive characteristics of these cattle are the color, size and head character, the latter being plain of face, with somewhat long, upward-turning horns, which often spread out and back at the tips.



Fig. 193.—A Kerry cow, prominent as a prize-winner in England. (Photo by courtesy Lady Greenall of Walton Hall, England.)

The udder is plain in front, but is usually mellow and has medium-sized teats. These cattle have not been officially tested, but in various herds show records around 5,000 to 6,000 pounds for the better cows. The milk tests about 4 per cent fat. In temperament these cattle are somewhat nervous and active. They are also very hardy. Their skin is thick and heavily coated with hair.

SCALE OF POINTS FOR KERRY CATTLE.

(Adopted by the English Kerry and Dexter Cattle Society.)

Bull		Points
General formation and character	.. .. .	25
Head, horns and hair	.. .. .	25
Quality and touch	.. .. .	20
Color	.. .. .	30
Total		100

Cow		Points
General formation and character, head, horns, hair	..	30
Udder: Size, shape, situation of teats, milk veins, es- cutcheon, etc.	.. .. .	40
Quality and touch	.. .. .	10
Color	.. .. .	20
Total		100

The Dexter breed of cattle is of Irish origin, perhaps an offshoot from the Kerry. This is the smallest breed of British origin, the bulls at maturity often weighing 600 to 700 pounds, and the cows about 500 pounds. Extreme

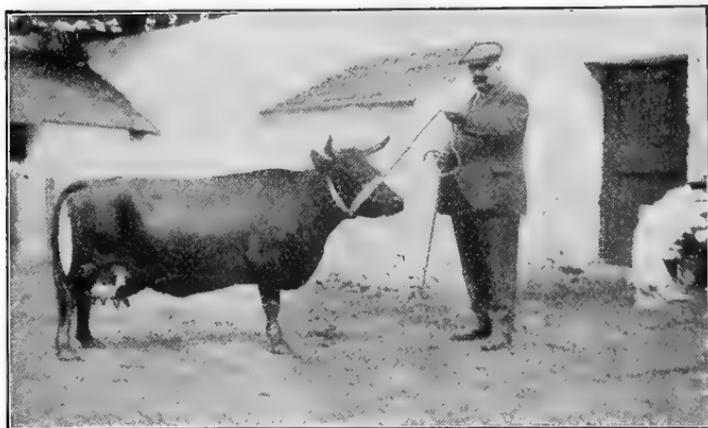


Fig. 194.—Dexter cow, "Harley Coy," a noted prize-winner in Ireland and England.

size is 900 pounds for the males and 800 for the females. The color should be black or red, with no white unless a slight amount upon the udder, scrotum, or brush of tail. In conformation this is a dual-purpose breed as produced in Europe, and a special class is provided at British shows for fat steers of this small size, where very choice little carcasses are exhibited. The tendency is to shortness, thickness, and depth of body. The type of head is short, and crowned with a heavy horn of upstanding form. The cows often have large udders and produce excellent yields of about 4 per cent milk. A record of 5,000 pounds of milk is not remarkable, and one English Dexter is reported as producing about 12,000 pounds of milk in a year.

SCALE OF POINTS FOR DEXTER CATTLE.

(Adopted by the English Kerry and Dexter Cattle Society.)

Bull		Points
General formation and character	25	25
Head, horns and hair	25	25
Quality and touch	20	20
Color	30	30
Total		100

Cow		Points
Head, neck and horns	15	15
Body, top line, underline, ribs, setting-on of tail, shortness of leg, etc.	25	25
Udder	40	40
Quality and touch	10	10
Color	10	10
Total		100

The French Canadian breed of cattle has been produced in Quebec, Canada, for perhaps 200 years. It is a distinctly dairy type breed. The color is black or black-fawn, with light markings about the muzzle and along over the spine. This is one of the small breeds, comparable with the small type Jersey. The form is quite angular and notably



Fig. 195.—A French-Canadian cow. First prize at Virginia State Fair.

spare of condition. The head is rather plain, with moderate-sized, incurving horns. The milk-producing capacity of the cows is rated at about 5,000 pounds as a standard. The milk tests slightly above 4 per cent fat. The skin is mellow and is notable for its rich yellow color.

The Brown Swiss breed of cattle originated in Switzerland. It has been officially declared a dairy type by the American Brown Swiss Cattle Association, but the Swiss breeders give it the recognition customarily accorded dual-purpose cattle. The color is usually a dark brown, with mealy or creamy coloring of hair about the muzzle, the udder, inside the legs, and sometimes along over the backbone. The horns have very dark tips, and the hoofs are black. The tongue and flesh at nose should be very dark, approaching black. This is a large breed, and mature bulls weigh 1,800 to 2,000 pounds, and cows 1,300 to 1,400 pounds. The conformation is essentially that of the dual-purpose

type, the body being thick all through, the withers and back somewhat wide, and the thighs fleshy. Aside from color, some of the more characteristic features of the breed are, a somewhat heavy head, a deep neck with an unusual prominence of dewlap, heavy shoulders, sloping rump, thick thighs, and heavy joints and bone. As might be expected with cattle of this type the udder, which often lacks front extension, is of but moderate size. In milk production, Brown Swiss cattle make a fair showing, and 5,000 to 6,000 pounds a year are regarded as standard yields. The average of 134 cows in official yearly tests in the United States is 10,606½ pounds, with the largest yield, 19,461 pounds by College Bravura 2d. Brown Swiss milk is of standard quality, testing about 3.5 per cent fat. The average annual butter fat production of the 134 cows noted above was 425 pounds. Temperamentally, cattle of this breed are quiet and easily handled. They are of secondary rank in beef production.



Fig. 196.—Brown Swiss cow, "Kronkdale," first in class at Lucerne, Switzerland, 1911.

CHAPTER XXIX.

JUDGING DUAL-PURPOSE CATTLE.

The term dual-purpose cattle is to-day understood to represent a type that will yield well of both beef and milk. It is a comparatively recent application as a substitute for the common expression long in use of "general purpose." There are to-day several breeds of cattle that represent the dual-purpose type, of which the Red Polled and Devon are best known in America. There are also what are known as milking or dairy Shorthorns, that are commonly regarded as dual-purpose cattle. The fact is, cattle of beef-producing character, that are also valued for dairy purposes, are quite common in Europe. The Shorthorn has a long history as a milk producer in England, while on the continent of Europe, the cattle are essentially dual-purpose, though not always known as such. Dual-purpose classification and promotion is a comparatively recent one in America, notwithstanding the fact that a century ago Devon cattle were highly regarded in New England for the several purposes of beef, milk and labor.

The dual-purpose idea is not equally clear in the minds of all its advocates. One of the most noted breeders of milking Shorthorns in England informed the writer that he desired as beefy a cow as possible, yet with highly developed udder and large milking capacity. In the eastern United States the milking side of the animal is emphasized, at the expense of flesh, while in the west the reverse is the case. At the Pan-American Exposition at Buffalo in 1901, when eastern and western Devon herds met, this difference in type was very marked. This variation has been seen repeatedly in the case of Red Polled cattle in American show rings, in which wide extremes have prevailed, ranging

from animals of decidedly beefy type with inferior mammary development, to those of essentially moderate beef type, with strong mammary development. From a scientific point of view, based on the law of correlation, it may be argued with reason that flesh is produced at the expense of milk, or *vice versa*. Therefore, to be a true dual-purpose



Fig. 197.—“Lou Waterloo,” a choice example of a milking Shorthorn.

cow, there should be a production of both flesh and milk up to at least a certain point, the beef development in keeping with beef type, and the udder conformation and milk secretion, comparable with that in a reasonably good cow of dairy type. Gay states¹ that “it is perfectly reasonable to expect from one individual the production of milk to the extent of one-half the normal in dairy cows, and the production of a carcass of beef at least 50 per cent as valuable and one-half as economically produced as in the

¹ Principles and Practice of Judging Live Stock, 1914, p. 214.

case of a typical beef steer. This is all that should be attempted and apparently all that can be accomplished in the perfection of the dual-purpose cow." Special advocates of this type of cattle, however, would no doubt take issue with the proposition that only half as much milk should be produced as is normal in dairy cows. In their 1907 sale catalog, Innis and May, breeders of milking Shorthorns, state that "the whole herd of mature cows, six years old or over, have made average yearly milk records of 9,170.5 pounds." One year at Tring Park, England, 54 milking Shorthorns averaged 6,658 pounds of milk, and 44 Red Polled cows averaged 6,174 pounds, yields considerably in excess of 50 per cent normal production in dairy cows. Dual-purpose advocates also emphasize the value of the calf for veal as compared with progeny from dairy cows. Without question, superior examples of dual-purpose animals in type and ancestry, will return yields, either in beef or milk, on better than a 50 per cent basis, but just how much better is not known. The natural tendency of this type is for a comparatively short period of lactation, this being followed by a disposition to lay on flesh.

The dual-purpose type, as generally recognized, represents an animal of modified beef form. This modification is especially seen in somewhat more length and thinness of neck, narrowness of withers, extreme length of body from shoulders to hips, and lack of thickness in the thighs. Either males or females seem to be more upstanding and have more length or stretch, than in case of the true beef type. The cow should carry an udder fairly representative of that of the dairy type. The judge must keep these features in mind, in passing on dual-purpose cattle, but he will make no mistake in giving preference to cows of distinct beef conformation, provided they show commendable udder development. In 1914, at the show of the Royal Agricultural Society of England at Shrewsbury, in the milking Shorthorn class, consisting of 40 cows, first and second places were awarded to animals that were more of beef type than otherwise, but

having beautiful large udders. These same cows would not have looked out of place in a standard Shorthorn cow class, yet the two judges regarded them as the best dual-purpose animals in the ring, and their judgment met very general approval. At the International Live Stock Exposition at Chicago, in the milking Shorthorn classes, the most successful winning cows have shown considerable size and beefy character, and yet have had large udders. The judge must not be misled to favor the so-called dual-purpose type, where dairy conformation and lack of flesh prevail. The frame should be smoothly covered with flesh, yet not fat, exemplifying beef type and its possibilities. The tendency of dual-purpose bulls is to be too short and compact. Some of the finest examples of this type of bulls, that were notable sires, showed great length, were only medium thick of withers and thighs, and had somewhat too much length of leg.

Scales of points for dual-purpose type cattle may be found in those for bulls and cows adopted in 1907 by the Red Polled Cattle Club of America. From these the following quotations are made, in order to set forth certain features of the official standards relative to this type:

Cow.		Points
Head , of medium length, etc		6
Neck , of medium length, clean cut and straight from head to top of shoulder, with inclination to arch when fattened, and often showing folds of loose skin underneath when in milking form		3
Shoulder , of medium thickness and smoothly laid		6
Chest , broad and deep, brisket prominent		10
Back and ribs : back medium long, moderately wide, spring of ribs starting from backbone giving a rounding appearance, with ribs flat and fairly wide apart		14
Hips , wide, well covered		3
Quarters , of good length, thighs wide, roomy, not too meaty		6
Legs , short, straight		3
Fore udder , full and flexible, reaching well forward, extending down level with hind udder		10
Hind udder , full and well up behind		10
Teats , well placed, wide apart, and of reasonably good size		4
Milk veins , of medium size, full, flexible, extending well forward, milk wells of medium size		6
General description —Medium wedge form, low set, top and bottom lines straight except at flank, weight 1,300 to 1,500 lbs. when mature.		

Bull.

	Points
Head , wide, strong and masculine, relatively short, etc.	12
Neck , of medium length, full crest, of good thickness	5
Shoulder , of medium thickness and smoothly laid	8
Chest , broad and deep, brisket prominent	12
Back and ribs : back, medium long, with spring of ribs from backbone giving rounding appearance, with ribs flat and fairly wide apart . .	14
Hips , wide, well covered	3
Quarters of good length, thighs wide and moderately full, deep	6
Legs , short, straight	3
Rudimentaries , large, wide apart and placed well forward	12
Position of rudimentaries	6
General Description —Strong, impressive, low set and of good carriage, weight 1,800 to 2,000 lbs., when mature and finished.	

Special features of these scales of points that apply to the dual-purpose type, are the emphasis on the word "medium" as applied to length and thickness of various parts, the character of back and ribs, and the large number of points credited to mammary development. The judge should note especially that the scale of points for the cow contains nearly as many points credited to the udder, etc., as is recognized in some of the official dairy cattle score cards—a rather striking evidence of recognition of milk production in this type.

In judging cattle of the dual-purpose type, it is highly important to keep the essentials of conformation well in mind, and assign animals to their places according to the way they measure up to the more or less elastic standards of this class.

CHAPTER XXX.

DESCRIPTIVE NOTES ON DUAL-PURPOSE BREEDS OF CATTLE.

The **Red Polled breed of cattle** comes from the counties of Norfolk and Suffolk in eastern England. It is a true dual-purpose type, and is advocated as such by its breeders. However, we find great extremes within the breed, ranging from those of dairy to a distinct beef type. This condition applies equally in England and America. The color is a pure red, varying from light to dark, a medium shade being most common. The size of mature Red Polled cattle is about medium, bulls ranging from 1,800 to 2,000 pounds, and cows from 1,250 to 1,300 pounds. The general conformation is dual-purpose, as described under that type. Red Polled cattle are frequently somewhat upstanding.



Fig. 198.—Red Polled cow, "Jean DuLuth Pear," the first cow of the breed to produce over 600 lbs. of fat in a year. (Photo by courtesy Jean DuLuth Farm.)

The head inclines to some straightness of face, and is polled. The shoulders tend to be prominent, the withers are only moderately broad, and the udder is often very poor in front development, with large teats. In milk production, cows of this breed have made excellent records, 5,000 to 6,000 pounds being a fair standard. The best record made by a cow of this breed is that of Jean DuLuth Beauty 31725, that for the year ending January 11, 1916 produced 20,280.6 pounds of milk. The quality of Red Polled milk is about standard, testing about 3.75 per cent fat. Jean DuLuth Beauty produced 891.58 pounds of fat in her 365-day test. Cattle of this breed are somewhat more nervous of temperament than are Shorthorns or our more common breeds.

SCALE OF POINTS FOR RED POLLED CATTLE.

(Adopted by the Red Polled Cattle Club of America.)

Cow.

	Points
Disqualifications —Scurs, or any evidence whatever of a horny growth on the head. Any white spots on body above lower line or brush of tail.	
Color —Any shade of red. The switch of tail and udder may be white with some white running forward to the naval. Nose of a clear flesh color. Interior of ears should be of a yellowish, waxy color	2
Objections: <i>An extreme dark or an extreme light red is not desirable. A cloudy nose or one with dark spots.</i>	
Head —Of medium length, wide between the eyes, sloping gradually from above eyes to poll. The poll well defined and prominent, with a sharp dip behind it in center of head. Ears of medium size and well carried. Eyes prominent; face well dished between the eyes. Muzzle wide, with large nostrils	6
Objections: <i>A roundness or flat appearance of the poll. Head too long and narrow.</i>	
Neck —Of medium length, clean cut, and straight from head to top of shoulder, with inclination to arch when fattened, and may show folds of loose skin underneath when in milking form	3
Shoulder —Of medium thickness and smoothly laid, coming up level with line of back	6
Objections: <i>Shoulder too prominent, giving the appearance of weakness in heart girth, shoulder protruding above line of back.</i>	
Chest —Broad and deep, insuring constitution. Brisket prominent and coming well forward	10
Back and ribs —Back medium long, straight and level from withers to setting-on of tail, moderately wide, with spring of ribs starting from the backbone, giving a rounding appearance, with ribs flat and fairly wide apart	14
Objections: <i>Front ribs too straight, causing depression back of shoulders. Drop in back or loin below the top line.</i>	

	Points
Hips —Wide, rounding over the hooks, and well covered	3
Quarters —Of good length, full, rounding and level; thighs wide, roomy and not too meaty	6
Objections: <i>Prominent hooks and sunken quarters.</i>	
Tail —Tail head strong and setting well forward, long and tapering to a full switch	2
Legs —Short, straight, squarely placed, medium bone	3
Objections: <i>Hocks crooked; legs placed too close together.</i>	
Fore udder —Full, flexible, reaching well forward, extending down level with hind udder	10
Hind udder —Full and well up behind	10
Teats —Well placed, wide apart and of reasonably good size	4
Objections: <i>Lack of development, especially in forward udder. Udder too deep, "bottle-shaped," and teats too close together. Teats unevenly placed and either too large or too small.</i>	
Milk veins —Of medium size, full, flexible, extending well forward, well retained within the body; milk wells of medium size	6
Hide —Loose, mellow, flexible, inclined to thickness, with a good full coat of soft hair	5
Objections: <i>Thin, papery skin or wiry hair.</i>	
Condition —Healthy, moderate to liberal flesh, evenly laid on; glossy coat; animal presented in full bloom	10
Total	100

Bull.

Note—In the standard for the bull, the description applied to color, chest, back and ribs, hips, tail, legs, hide and condition, and disqualifications, are the same as those for the cow, and the same points are accorded in each case, excepting the chest, where 12 are given the bull instead of 10. All other descriptions differ from those applied to the cow, and so are herewith specified.

	Points
Head —Wide, strong and masculine, relatively short. Poll stronger and less prominent than in a cow. Ears of medium size and well carried; eyes prominent; muzzle wide with large nostrils	12
Objections: <i>Long, narrow or lacking in masculine character.</i>	
Neck —Of medium length, full crest, of good thickness, strong, of masculine appearance	5
Shoulder —Of medium thickness and smoothly laid, coming up level with line of back	8
Objections: <i>Shoulder too prominent, giving the appearance of weakness in heart girth, shoulder protruding above line of back.</i>	
Quarters —Of good length, full rounding and level; thighs wide and moderately full, deep	6
Objections: <i>Prominent hocks and sunken quarters.</i>	
Rudimentaries —Large, wide apart and placed well forward	12
Position of rudimentaries	
Objections: <i>Rudimentaries placed back on scrotum, or placed too close together, indicating tendency to transmit badly formed udders.</i>	
General Description —Strong, impressive, low set, and of good carriage. Weight 1,800 pounds to 2,000 pounds when mature and finished.	

The Devon breed of cattle originated in Devonshire, in southwest England, and is a very ancient one. There are

two types, those of North Devon, favoring beef form, and those of south Devon, with greater tendency to milk production. This breed, at one time prominent in America, has nearly disappeared, being rarely seen or heard from. The color is red, ranging from light to dark. The size may be regarded as medium, though in America the opinion has prevailed that Devons lack in size. Standard weights



Fig. 199.—Devon cow, "Nettle Top," grand champion at Lewis and Clark Exposition.

are 1,500 to 2,000 pounds for mature males, and 1,200 to 1,300 for cows. The very distinctive features of the Devon are a lean, shapely head, crowned with a slender, rather long, graceful, upturned horn of waxy color, and dark tipped. The body is of blocky form, and the limbs are usually slender and show much quality. In milk production, cows of dairy or dual-purpose type produce fair yields,

but those of beef type make poor records. The milk tests about 4½ per cent fat, and is rated of excellent quality. This is a very active breed, and has been highly regarded in times past in the eastern United States for oxen.

SCALE OF POINTS FOR DEVON CATTLE.

(Adopted by the American Devon Cattle Club.)

Bull.

	Points
Head —Masculine, full and broad, tapering toward the nose, which should be flesh colored; nostrils high and open, muzzle broad; eyes full and placid and surrounded with flesh-colored ring; ears of medium size and thickness; horns medium size, growing at right angles from the head, or slightly elevated, waxy at the base, tipped with a darker shade	10
Checks —Full and broad at root of tongue; throat clean	2
Neck —Of medium length and muscular, widening from the head to the shoulders and strongly set on	4
Shoulders —Fine, flat, sloping, and well fleshed; arms strong, with firm joints	6
Chest —Deep, broad, and somewhat circular	10
Ribs —Well sprung from the backbone, nicely arched, deep, with flanks fully developed.	10
Back —Straight and level from the withers to the setting on of the tail; loin broad and full; hips and rump of medium width and on a level with the back	20
Hindquarters —Deep, thick and square	12
Tail —Well set on at a right angle with the back, tapering, with a switch of white or roan hair and reaching the hocks	2
Legs —Short, straight and squarely placed when viewed from behind, not to cross or sweep in walking; hoof well formed	4
Skin —Moderately thick and mellow, covered with an abundant coat of rich hair of red color; no white spot admissible, unless around the purse	8
Size —Minimum weight at three years of age 1,400 pounds	4
General Appearance —As indicated by stylish and quick movement, form, constitution, and vigor, and the underline as nearly as possible parallel with the line of the back	8
Total	100

Cow.

Head —Moderately long, with a broad indented forehead, tapering considerably toward the nostrils; the nose of a flesh color, nostrils high and open; the jaws clean; the eyes bright, lively and prominent and surrounded by a flesh-colored ring; throat clean; ears thin; the expression gentle and intelligent; horns matching, spreading, and gracefully turned up, of a waxy color, tipped with a darker shade	8
Neck —Upper line short, fine at head, widening and deep at withers and strongly set to the shoulders	4
Shoulder —Fine, flat and sloping, with strong arms and firm joints	4
Chest —Deep, broad, and somewhat circular in character	8

	Points
Ribs —Well sprung from the back bone, nicely arched, deep, with flanks fully developed	8
Back —Straight and level from the withers to the setting on of the tail; loin broad and full; hips and rump of medium width, and on a level with the back	16
Hindquarters —Deep, thick and square	8
Udder —Not fleshy, coming well forward in line with the belly and well up behind; teats moderately large, and squarely placed	20
Tail —Well set on at right angle with back, tapering, with a switch of white or roan hair, and reaching the hocks	2
Legs —Straight, squarely placed when viewed from behind, not to cross or sweep in walking; hoof well formed	4
Skin —Moderately thick and mellow, covered with an abundant coat of rich hair of red color; no white spot admissible, except the udder	8
Size —Minimum weight at three years of age 1,000 pounds	2
General appearance —As indicated by stylish and quick movement, form, constitution and vigor, and the underline as nearly as possible parallel with the line of the back	8
Total	100

PART IV—JUDGING SHEEP.

CHAPTER XXXI.

THE ANATOMY OF THE SHEEP.

A study of the anatomy of the sheep, and that of the ox, shows a close resemblance between them. In the size and skin covering are the most marked differences, otherwise these two great classes of animals have much in common. Lydekker states¹ that the features by which sheep are distinguished from oxen or cattle are as follows: "In the first place, sheep as a whole are smaller animals than oxen, although the largest sheep, such as the Central Asian Argali, is considerably bigger than the anoa or dwarf buffalo of Celebes, the smallest member of the ox group. Then, again, they usually carry their heads higher, and considerably elevated above the line of the back. In place, too, of the broad, naked, moist, undivided muzzle of the oxen, sheep have a vertically cleft, narrow snout completely covered with short hair, except on the margins of the nostrils and lips. Very generally there is a small sub-orbital face gland, situated in a shallow depression in the lachrymal bone of the skull, and frequently known as the tear-gland or larmier. Sheep also differ from living oxen in that when horns are developed in the females, as is usually the case among the wild species, they are very much smaller than those of the males, from which they generally also differ considerably in shape."

The skeleton of the sheep, notwithstanding its resemblance to that of the ox, has certain interesting features. Considerable variation exists in the number of bones in the

¹ The Sheep and Its Cousins, 1912, p. 12.

spines of different races of sheep. According to Sisson² there are commonly seven cervical vertebræ, thirteen thoracic and six lumbar vertebræ. The sacrum usually consists of four parts, and the bones in the coccyx, at the end of the spinal column, vary from three, in short-tailed sheep, to twenty-four or more. There are usually thirteen pairs of ribs, but fourteen are not uncommon. The ribs are narrower, and the front ones are more strongly curved, than is the case with the ox. The skulls of sheep and ox are quite similar, but the former is more pointed at each end, with the frontal bones at the eye rather prominent. It is this small size of the end of the skull, at the muzzle, that enables the sheep to graze so close to the ground. Lydekker states³ that, "the skulls of tame sheep differ from those of their wild relatives—when specimens with the same approximate basal length are compared—by the smaller diameter of the socket of the eye, the abortion of the auditory bulla⁴ at the base of the skull, and the much smaller capacity of the brain chamber. It has been shown, for instance, that whereas in the wild mouflon the brain capacity ranges from 130 to 170 cubic centimeters, with a mean of 140 cubic centimeters, in domesticated sheep, having skulls of the same average size, the mean brain capacity is only from 110 to 120 cubic centimeters. These differences are due, of course, to the more or less protected conditions under which domesticated sheep pass their existence, thereby reducing the need of acuteness in the senses of hearing, sight and smell." The humerus or large bone of the arm is relatively longer and more slender than it is with the ox, and the same applies to the bones of the forearm. The ischium, or what is often called the pin bone, at the end of the pelvis on each side of the tail, according to Sisson,⁵ slopes downward and backward, and forms a much larger angle than in the case of the ox. This may account in part

² The Anatomy of the Domestic Animals, 1914, p. 156.

³ Sheep and Its Cousins, p. 21.

⁴ A prominence below the opening of the ear in the skull of many animal

⁵ *Ibid.*, p. 160.

for the droopy rump so often seen in Merino sheep. The floor of the pelvic cavity is wider and shallower in comparison with the ox. The long bones of the hind legs, as in the case of the front legs, are relatively slender for their length.

The teeth of the sheep are found in the back part of the upper and lower jaws, and in the front part of the lower jaw. The front part of the upper jaw consists of a tough fibrous pad, against which the lower front teeth, the incisors, press, when the sheep is grazing. When the lamb is born, usually there is a pair of small teeth in the center of the front of the lower jaw. Very shortly two more appear, in two weeks after birth two more come in, and by the time the lamb is three or four weeks old there are eight small milk or deciduous teeth in position. Twelve small molar teeth also appear. When a sheep has come into maturity, at two years, it has thirty-two permanent teeth, consisting of twenty-four molars, 12 in each jaw, and eight incisors.

The age of a sheep may be determined up to a certain extent, by means of the number and character of the teeth. It is an easy matter to examine the teeth of the sheep, requiring skill and quiet patience, rather than force. The method is as follows: One hand should be placed over the back of the head, thereby holding and steadying it, while the end of the jaw of the sheep should rest in the upturned palm of the other hand. Then the lips may be gently parted with the thumb and forefinger, showing the incisor teeth. If this is done quietly the sheep will struggle but little, but if much force is exercised by finger and thumb, the sheep will be likely to resist stoutly. When the lamb is about twelve months old, two teeth appear in the front jaw and force out the central pair of milk teeth. These are large, prominent incisors, with broad crowns, and are known as yearling teeth. The appearance of the permanent teeth is influenced more or less by breed inheritance and by the conditions under which the animals have been kept as lambs. When lambs are fed for show, and are kept in high condition, the

permanent teeth are hastened in development. To the contrary, neglect or starvation, retards development. One well-known handler of sheep, Mr. Frank Kleinheinz, states⁶ that he has seen rare cases where sheep did not change the first pair of teeth until they were eighteen and in one case nineteen months old. In this instance, shortly after the



Fig. 200.—“Then the lips may be gently parted with the thumb and forefinger, showing the incisor teeth.”

first change occurred, the second took place, yet long before the sheep was two years old. When the sheep is about twenty-four months old, two more large incisors appear, one on each side of the yearling teeth, pushing out the two milk teeth in the way. The presence of four large incisors and four small ones, indicates that the sheep is a two-year old. At about thirty-six months of age, two more large incisors appear, one on each side of the second permanent pair, indicating the animal to be a three-year old. Finally, at about forty-eight months of age, the last pair appears, all the milk teeth have been shed, and eight strong incisors indicate the sheep to be four years of age. The central teeth are always somewhat the largest, and as they are the oldest,

first change occurred, the second took place, yet long before the sheep was two years old. When the sheep is about twenty-four months old, two more large incisors appear, one on each side of the yearling teeth, pushing out the two milk teeth in the way. The presence of four large incisors and four small ones, indicates that the sheep is a two-year old. At about thirty-six months of age, two more large incisors appear, one

⁶ Sheep Management, 1911, p. 29.

we find that it is at this point that the crowns wear down with age and first break away. It is impossible to determine the age of a sheep with certainty after it has obtained a full mouth of teeth. Two things, however, serve as a guide, one the wearing away of the incisors from the center toward the outside pair, and the other the grinding down and wearing off the crowns of the teeth, until with some old sheep one finds only short stumps left in the lower jaw. With increase of years, the front teeth also gradually incline, losing much of their original erect position. Experienced buyers of sheep, whenever necessary "mouth," that is examine the teeth of animals purchased, to be sure that the teeth are in good order, instead of broken or missing.

The digestive organs of the sheep, excepting for size and capacity, are essentially like those of the ox. The stomach is compound, consisting of four parts, the rumen or paunch, the reticulum or honeycomb, the manyplies and the abomasum. The four stomachs of the sheep will hold about thirty-one quarts, of which the paunch holds about twenty-five, while the manyplies holds the least, or only about one quart. The small intestines are about eighty-six feet long, and the large ones about twenty-one feet long, and hold respectively nine and one-half quarts and six quarts each. In connection with the digestive operations of the sheep, it is important to note that this animal completely reduces all seeds and other food to a common mass of solid excrement. No other domestic animal so thoroughly disintegrates the food. Seed may pass through the digestive tract of cattle, and germinate afterward, but not so with seeds passing through sheep; they are completely destroyed. This explains in part why sheep are so valuable in ridding land of weeds.

The organs of reproduction of the sheep are similar to those of cattle, but on a comparatively smaller scale. The ram as he attains yearling form, should show a strong scrotum or sac containing two equal-sized, clearly defined glands. The scrotum should not be either small and held

close to the body, or long and heavy, nearly touching the ground, as sometimes occurs, but should be of medium size, lean and well defined. The udder of the female lies closely in front of the thighs, and consists of two glands, and two teats. It is important that the udder be well supported from above, the glands of equal size, and the teats not too large and in perfect condition. The female sheep, the ewe, usually bears one young, frequently she has twins, and cases are on record of ewes having five lambs at one birth. This feature of reproduction largely depends upon breed and race, some breeds being much more fecund than others.

The skin of the domestic sheep is ordinarily covered with wool, and is not to be seen excepting about the nose, ears, armpits and udder. Below the surface of wool it is more or less pink and delicate. The skin, however, differs somewhat in color, ranging from bright pink to a light bluish shade, with various tints between. Small oil secreting glands occur in the skin, assisting in keeping it in healthy condition, and also supplying oil for the wool. This oil differs from other animal fats, in containing a large percentage of potash, which makes it easily dissolvable in water. Thus it was in early days that the shepherd washed his sheep in the running water of the brook, the mixture of oil and dirt being more or less washed off, according to the thoroughness of the washing.

The fleece or wool of the sheep consists of fibers that are closely related to hair in structure. Each of these grows in the skin from a tubular cavity called a hair bulb. The wool fiber consists of a hollow or cored center, surrounded by a hard cellular wall, on the exterior of which are a great number of little scales, which overlap each other like shingles on the roof of a house, forming the outside of the fiber. These scales have enough prominence at their ends, to catch and interlock with those on adjoining fibers, thus forming a felting process, which gives the great value to wool in cloth making. The scales on hair, however, are so small and so closely attached to the surface of the fiber, that felting is

difficult. Cotted wool, where the fibers of the fleece on the sheep are closely fastened together so that they can be separated only with great difficulty, is an example of natural felting or interlocking of scales, usually due to sickness and a lack of oil in the fleece. The fleece of sheep on certain limestone lands, especially the Highlands of England and Scotland, is frequently cotted. The scales vary some in size and shape, the Merino having the smallest and the long woolled breeds the largest. The scales are easily seen under a microscope, and especially so if the fiber is treated two or three minutes with a weak solution of caustic potash. The scales in more or less degree reflect light when exposed, giving a special lustre, that on the large breeds, such as the Cotswold, is highly valued. Scales that have a high lustre, give very choice results from the most delicate dyeing operations. In the tropics wool is least developed on the sheep, while in temperate or cold regions, the body is most completely covered by the wool. Naturally, under conditions of domestication, wool production has reached a high degree of development, sheep of the Merino family producing it to the extreme. Cases are on record of Merino fleeces weighing one-third of the total body weight, and single fleeces weighing over 40 pounds for a year's growth have been removed. There is much difference in the wool fiber, ranging from that which is comparatively coarse and straight, to that which is very fine and considerably crimped or serrated. As a rule, the thicker the wool fibers over a given skin surface, the finer it will be in quality. Sheep ordinarily are free of wool about the face, ears, armpits, udder and legs. Exception to this, however, occurs in the case of certain breeds, as for example the Merino and Shropshire, where the face, ears and legs are more or less woolled.

The foot glands of the sheep are a feature peculiar to this class of domestic animals. A small opening or hole, at the point in front of the foot, where the toes begin to separate, leads into a narrow duct, which expands into a gland. This gland occupies space between the bones just above the heel,

and secretes a clear semi-fluid substance. R. I. Pocock states⁷ that secretion with Asiatic wild sheep is pleasant of scent, like taffy, slightly infused with acetic acid. Lydekker assumes⁸ that the secretion of these foot glands, by scenting the ground or herbage over which the sheep have passed, aids, doubtless, in enabling the members of a scattered flock to ascertain the whereabouts of their fellows. The unpleasant smell of domesticated sheep, so different from the sweet aroma of cattle and many kinds of antelopes, may be in part due to the secretion of these glands.

⁷ Proc. Zool. Soc. London, 1910, p. 859.

⁸ The Sheep and Its Cousins, 1912, p. 19.

CHAPTER XXXII.

HOW TO HANDLE AND EXAMINE SHEEP.

IN view of the fact that the sheep has a covering of wool over its body most of the time, it is necessary that this animal be examined by a different method from that used with other farm stock. Furthermore, because the sheep is naturally rather timid, it must be held and handled in a way that will cause as little fear and resistance on its part as possible.

To catch and hold a sheep properly for examination, approach it as quietly as possible, so as to cause no fright, and grasp the right hind leg with the hand high up near the flank. Then move quickly along the left side of the sheep, holding the right hand so as to be able to press the animal against you, at the same time slipping the left hand beneath the jaw or neck, with the fingers extended to furnish a close hold at one of these parts. With the sheep at rest, in position for examination, one should hold the lower jaw or neck with the left hand, and control the rear part by the use of the right hand laid quietly at some point near the right side, far back, near hip or rump. Thus one may hold a sheep with least exertion and under best control. Ordinarily, also, one may simply hold the sheep at the head, placing the left hand under the jaw and the right hand on the back of the head. The hand should never grasp the wool, for nothing causes a sheep to struggle more than pulling the wool. It is not an uncommon thing to see men seize the wool at the back or neck and begin to struggle with the sheep, a method that succeeds admirably in frightening the animal and causing unnecessary trouble. Sheep that have never been handled will resist much more than those that

are used to handling. Sheep of some breeds also, especially of the mountain sorts, naturally resist handling more than do the larger, more phlegmatic lowland breeds. It may also be noted here that some men are naturally much better adapted to hold and handle sheep than are others. With them the sheep seem quiet and unfrightened. It is through



Fig. 201.—“One may simply hold the sheep at the head, placing the left hand under the jaw and the right hand on the back of the head.”

gentleness and quiet manners that such men succeed so well. The writer has been interested to note that, in both Europe and America, shepherds of experience are most quiet and gentle in dealing with their sheep, and have little difficulty in doing with them as they wish. Persons holding sheep for examination, should make themselves as in-

conspicuous as possible. For that reason, if the time occupied is not too great, it is desirable for the person holding the sheep to kneel on one knee, so as to come down more on a level with the animal he is showing, and with the purpose of letting the judge see as much of the sheep and as little of the man as possible.

The use of the hands in judging a sheep is made necessary in a very special way. The body of the animal is covered with wool, perhaps four inches thick in places. It is important, not only that the wool be examined, but also that the conformation below the layer of wool be determined. This latter can be ascertained only by the aid of

the hands. The fingers are extended, but kept close together, and then the hand is pressed down upon the part to be felt. The object in keeping the fingers close together, is twofold. First, one does not make numerous holes in the fleece, as he would in sticking separate fingers into the wool, thereby making openings in which chaff and dirt may lodge. Further, by pressing down on the wool, with the fingers united to form one big finger as it were, the judge may easily feel the outline of the form below. By holding the ends of the fingers together, one is able to feel over a section of the body, as with a sensitive instrument, thus determining, as would not be possible otherwise, the character of covering of fleece and flesh,



Fig. 202.—“The fingers are extended, but kept close together, and then the hand is pressed down upon the part to be felt.”

and the curves and outlines of the body. Sometimes one hand is used, sometimes two, but the man who knows his business never musses the fleece, and when he is done, it is in as good form as before.

The covering of fleece on the sheep varies greatly, even on the same animal, in length, thickness, quality, etc. One cannot judge with any certainty as to the character of either fleece or body, without a systematic examination by hand and eye. Under ordinary field conditions a sheep will appear quite different from one under show ring conditions, with the fleece trimmed by the shears, and blocked out. As one passes among the fitted sheep on the show

grounds, he is likely to see many animals, especially in the large exhibits, that appear models of perfection. However, the judge passing over them finds beneath the beautiful surface of fleece, various conditions that the shepherd, by the use of his shears, has carefully hidden from the superficial observer. Where the back droops or there is slackness behind the shoulder, he has left sufficient length of wool to give fullness of outline, and if there is peakedness



Fig. 203.—“Under show ring conditions, with the fleece trimmed by the shears and blocked out.” (Photo by courtesy American Agriculturist.)

behind, the shears square up the wool so as to make the hindquarters appear thick and full. Thus defects, sometimes serious, are covered, and unfortunately, oftentimes at the expense of the inexperienced. Hence the use of the hands, as a necessity in finding out how things lie beneath the surface. This special use of the shears is limited to the mutton breeds. The exhibitors of the fine

wooled sheep give a first consideration to fleece, and pay nominal attention to the mutton form, excepting those of the dual purpose class. However, there are many very beautiful and highly developed sheep, the result of the breeders art, and without doubt a large per cent of the animals shown are trimmed and fitted with the purpose of simply showing them in their greatest perfection.

CHAPTER XXXIII.

THE CLASSIFICATION OF DOMESTIC SHEEP.

Sheep may be classified in two different ways, one according to conformation, and the other based on the character of the fleece borne by the animal. It is quite customary to classify sheep in two types, the mutton and Merino, but this in itself is not enough. It will be more correct to have three types, comparable in conformation with the grouping of cattle, *viz.*:

- (a) **Mutton type, comparable with the beef type.**
- (b) **Merino, of class A type, comparable with dairy type.**
- (c) **Delaine Merino, or dual purpose type.**

The classification, according to fleece, may be made as follows:

(a) **The fine wool**, sometimes termed *the short wool*, including all the Merino families, and such as produce a wool fiber of the finest and best quality.

(b) **The middle wool** including all recognized mutton breeds, producing a fleece usually three to four inches long, of medium fineness and quality.

(c) **The long wool**, produced by the larger breeds as a rule, having coarse, open fleeces, often seven or eight inches long.

In view of the great growth in interest in sheep as sources of meat, rather than wool, the first classification given above will be considered as the more important and common one.

CHAPTER XXXIV.

THE MUTTON CARCASS AND ITS CUTS.

THE mutton sheep, though a producer of wool, is primarily bred and fed with meat as the main object in view. The fleece, of course, is important, and its value is carefully considered by the flock master, but mutton is the first consideration. This being so, then those characteristics necessary in a good mutton sheep must be found in the young lambs beside their dams; in the feeder sheep in the market ready for fattening; in these same feeder sheep fed and finished for the block; and in the breeding ram and ewe from which our supply of mutton is to be obtained. The feeder when purchasing his sheep, considers quality of fleece much less than quantity. His purpose is to secure stock for feeding that will come back to market either as prime lambs or fat sheep. The price brought in the market is largely influenced by the carcass outcome.

If one is to be a qualified judge of a mutton sheep, it is necessary that he understand the carcass conformation, and the common method of cutting it up for consumption. It is also of importance to know the relative values of the several parts.

The method of cutting up the carcass of mutton applies with little variation in different communities. The entire dressed carcass lacks the head, and may or may not have the feet up to the ankle joints. The first step in cutting is to divide the carcass into two halves, either by splitting through the length of backbone with a cleaver, or dividing with the saw. In some markets, where roasting pieces from

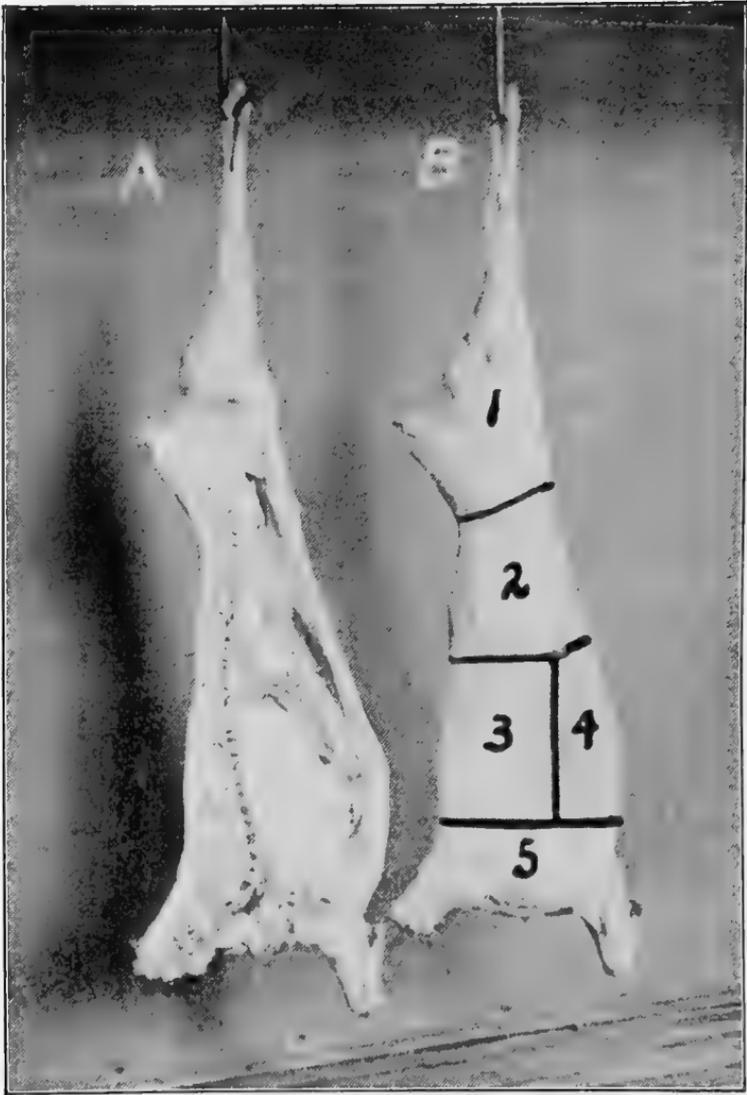


Fig. 204.—“The first step in cutting is to divide the carcass into two halves.” 1, leg of mutton; 2, loin; 3, ribs; 4, plate; 5, shoulder and breast. (Photo by courtesy College of Veterinary Medicine, Ohio State University.)

the width of the back are desired, the carcass is not cut through lengthwise as described. Instead, the carcass is cut into two parts, by dividing between the twelfth and thirteenth ribs. The part next to the hind leg is known as the saddle, while the other part, the front portion, is termed the rack. Many country butchers divide the carcass into

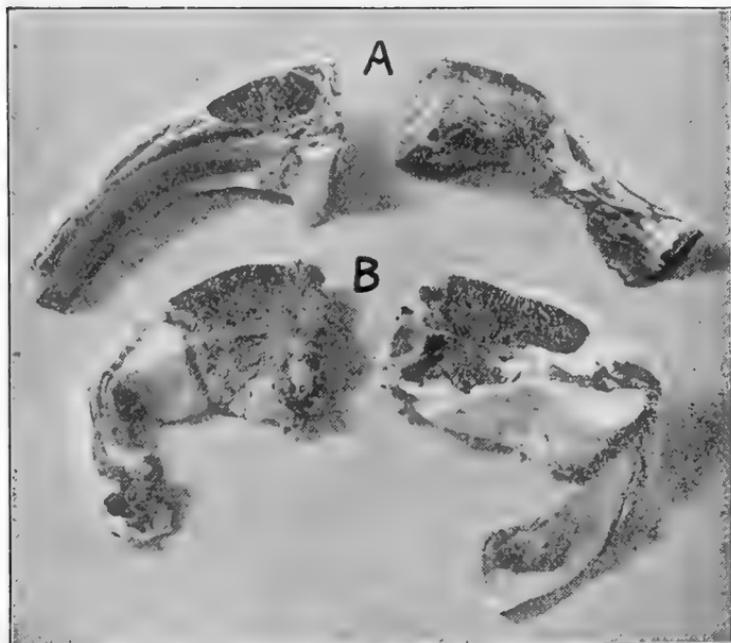


Fig. 205.—Mutton chops. A, ribs; B, loin.

two parts, as first described, and then either cut the part between hindquarter and shoulder into chops, or into roast pieces, as the trade may demand.

The saddle of mutton, strictly speaking, consists of the loin portion of the back, from the point of the hip, up to and including the thirteenth, and sometimes the twelfth rib. This section weighs about 48 per cent of the entire carcass,

the forepart or rack weighing about 52 per cent of the whole. This is not a saddle, unless consisting of the entire piece on both sides of the backbone, from which in a measure it takes its name from its resemblance to a saddle. This is one of the choicest parts of the carcass, and should be broad, thick fleshed and smooth. In America, as a rule, the saddle part is divided into halves, and used as a roasting piece, or made into chops. The loin chops carry a great deal of fat, but are very tender and palatable.

The leg of mutton usually consists of the entire leg up to a point just above the tail. This is one of the highest-priced parts, because of the fact that here one secures the largest per cent of high class meat. Consequently, it is important that the leg be thick and meaty, full in all its outlines, that the cuts may be as thick as possible. A short, thick leg is most to be desired. The lower part of the leg is chopped off just above the hock.

The rack is comparable with the forequarter of beef. The butcher either cuts this part into rib chops up to the shoulder, or divides it into roasting pieces. Usually the shoulder is cut off between the third and fourth ribs, and the neck is then taken off where it joins the shoulder. The lower part of the rack consists of breast and a thin strip at the ends of the ribs, which is used for stewing. If the rack piece includes ten ribs, it is called the short rack. This piece may command the highest price in the carcass, even exceeding the leg, though the logic of the situation is not obvious. This part should be broad and smooth over the top, and well covered with flesh, and showing no coarseness or waste. The shoulder does not rank high in value, but if thickly covered with flesh, makes a good roasting piece, with the blade removed.

The relative values of the mutton and lamb carcass cuts are clearly set forth in the following table, as given by Prof. H. E. Allen of Purdue University.¹

¹ Live Stock Judging for Beginners, Circular 29, Purdue University, Agricultural Experiment Station, 1911, p. 98.

WHOLESALE MUTTON AND LAMB CUTS.

CUTS	NAMES OF WHOLESALE CUTS	Per cent weight carcass	Wholesale price per pound	Per cent value carcass
Saddle	Legs	30.36	13 $\frac{1}{4}$ cts.	43.16
	Loin	21.43	8 $\frac{1}{4}$ "	18.97
Rack	Hotel or short rack . .	11.28	12 $\frac{1}{4}$ "	18.76
	Stew (chuck and breast)	33.93	5 $\frac{1}{4}$ "	19.11

These figures are based on Chicago standards, with prices of 1911. While these percentages of parts of carcass will not be exactly the same in all markets, and prices will vary according to supply and demand, the figures bring out in fair degree the relative importance and values of the cuts.

CHAPTER XXXV.

JUDGING THE MUTTON TYPE OF SHEEP BY THE SCALE OF POINTS.

The systematic examination of a sheep to be scored requires following the plan of the score card. It is customary to determine first the age by examining the mouth, as has already been described. The sheep is then given a general examination, both with eye and hand. Following this comes the more detailed inspection, working from the head to the hindquarters. One should use the hands with



Fig. 206.—The Points of the Sheep.



Fig. 207.—“To comprehend properly the animal as a whole, first inspect from a distance.”

care and patience, so as to determine as accurately as possible the conformation of body and covering of flesh below the layer of wool. This may be quite easy in spring after shearing, but much more difficult with ten months of thick fleece over the body. The score card on the next page is suitable for scoring a fat sheep.

The general appearance of the fat wether will show much the same conformation as that of the fat steer. The characteristic features will be the blocky form, well covered with flesh, with the neck, belly and legs developed no more than necessary to maintain appropriate balance of parts, and suggesting minimum waste in killing. To comprehend

SCORE CARD FOR FAT SHEEP OR WETHER.

SCALE OF POINTS		Standard of Perfect Score	Score of Sheep Studied
Age	How many permanent incisors . . . . .	.. ..	....
A—GENERAL APPEARANCE, 34 Points:			
Weight, score according to age		6	....
Form, low set, medium long, broad, deep, symmetrical		10	....
Quality, hair and wool fine, bone neat, skin healthy, features refined		8	....
Condition, deep, even covering of firm flesh in valuable parts. Note condition of dock, purse and flank, as showing ripeness		10	....
B—HEAD AND NECK, 7 Points:			
Muzzle, fine, lips thin, mouth and nostrils of good size		1	....
Eyes, large, bright, placid		1	....
Face, short, features well defined		1	....
Forehead, broad and full		1	....
Ears, fine, carried alert		1	....
Neck, thick, short, smooth, blending nicely at shoulder		2	....
C—FOREQUARTERS, 7 Points:			
Shoulders, smooth, compact on top, nicely covered with flesh		4	....
Brisket, thick and prominent, extending in front of legs		2	....
Legs, straight, short, strong, wide apart, shank fine, feet well placed		1	....
D—BODY, 27 Points:			
Chest, wide, deep, comparatively large girth		5	....
Back, level, medium long, wide, smoothly fleshed		8	....
Lo'in, broad, long, thick fleshed		9	....
Ribs, well sprung, long, close together, smoothly covered		3	....
Flanks, low, thick, furnishing straight underlines		2	....
E—HINDQUARTERS, 16 Points:			
Hips, smooth, level, medium wide apart		2	....
Bump, long, level, wide to tail-head, smoothly fleshed		5	....
Thighs, thickly and fully fleshed		5	....
Twist, plump, deep, wide angled		3	....
Legs, straight, short, strong, shank fine		1	....
F—WOOL, 9 Points:			
Quality, fine, soft, uniform over body		3	....
Quantity, dense, even, of fair length for age		3	....
Condition, bright, clean, sound, moderate amount oil		3	....
Total points		100	....



Fig. 208.—“The judge comes to the front of the sheep, by the left shoulder, and grasps the neck in his right hand and feels its thickness.”

properly the animal as a whole, first inspect from a distance, as for example ten or twelve feet away. Begin the examination from in front, facing the head, and then slowly walk about the animal, noting the matter of proportion, closeness to ground, quality and general character.

The weight of the fat sheep is a matter of importance. The large, heavy mutton is not popular, and the American market prefers the more handy weights approximating 80 pounds for a lamb and 140 pounds for yearling wethers. Heavy sheep at one time were popular when large joints were in favor, but the present day market seeks early maturity, not too much fat, and small cuts. However, the English still use the large joints of mutton, but even in



Fig. 209.—“The left hand may be lowered to the brisket, where the width here may be determined.”

Great Britain the lighter weight is getting to be more and more favored. In scoring weight, one should not discriminate severely against fat mutton of the larger mutton breeds, unless over-fat and unnecessarily large. If in prime condition, though weighing 175 pounds or more, a wether might



Fig. 210.—“In this position one may judge the depth of body through the heart.”

be scored off 20 per cent, while if over-fat and undesirable as a killer, he might be scored off 50 per cent. Weight of 130 to 140 pounds should score perfect.

The form of the mutton sheep has already been looked over at a distance, before determining the matter of weight. It now requires a closer inspection. The judge comes to



Fig. 211.—“Feel with the right hand along the center of the back, from over the shoulders to root of tail.”

erred to the brisket, where the width here may be determined. While the left hand is here, the right may be placed over the shoulders, so that in this position one may judge the depth of body through the heart. Changing one's position, with the back toward the hindquarters, the hands may be pressed on each side the body, beginning just back of the shoulders, near the top, feeling gradually on each side down to

the front of the sheep, by the left shoulder, and grasps the neck in his right hand, and feels its thickness and attachment to body and head. Then with both hands he presses down on each side of the neck, using his finger-tips to feel the union of the neck with the shoulders. Having done this, the left hand may be low-



Fig. 212.—“With the hands along each side at the shoulders.”



Fig. 213.—“The space between the hands here indicates the width of back.”

the front flank, thus estimating the fullness behind the shoulder and in flank. Next feel with the right hand along the center of the back, from over the shoulders to the root of tail, thereby ascertaining the carriage and covering of back. Then move forward again, commencing this time with the

hands along each side, at the shoulders, gradually moving backward, examining for the spring of rib, and thickness and covering of body, until the end of the rump is reached. The hands move along the back toward the rump until the loin is reached. The space between the hands here indicates the width of back. After feeling the width of loin, the hands naturally drop back to the hips, and beyond to the tail-head, to determine the width between these and their covering. One may also stand back of the sheep and press with the hands at different points on the thighs, to get an idea of the width and general thickness at this point. The length and level carriage of the rump is seen by standing opposite this part, and measuring with the hands the distance between the hip and end of rump. The depth from the end of rump to the point below where the quarters join may be determined by pressing these two parts between the hands. The general width of the hind end may be observed by pressing against the outsides of the thighs with the flattened hands. Finally, the leg of mutton receives consideration, including the hind flank. The leg

in its thickest part is grasped by the two hands, and its general outlines determined. By this method of examination with the hands, the judge is enabled to get a fair idea of the general proportions and covering of flesh. No effort at deception in trimming and fixing up the fleece can have much value, where the form is carefully examined with the hands. Such an examination shows whether or not symmetry prevails, an important feature of correct form. An animal with long neck, narrow chest, short ribs and peaked hind end, would show neither symmetry of form, nor a body that would meet the butcher's requirements for a high-class carcass.

Quality in the mutton sheep, is especially indicated by fineness of bone, hair and wool. From the killing point of view, perhaps the bone offers the most important evidence, for if it is small and strong, it serves every purpose, yet



Fig. 214—"The hands naturally drop back to the hips, and beyond to the tail-head, to determine the width between these and their covering."



Fig. 215.—“Measuring with the hands the distance between the hip and end of rump.”

examples of mountain breeds of sheep have rough hair on the thighs, a feature breeders are endeavoring to eradicate. An important evidence of quality, and easily seen, when present, is strong breed character, as shown in the head. No choice example of a breed is likely to show coarseness. Some score cards emphasize the color and character of

causes as little waste as possible in the carcass. Large, coarse bone, to the contrary, furnishes too great a waste in killing. The hair on the face and legs, when fine, also indicates superior quality. Coarseness of either hair or wool should be discriminated against. A heavy, wrinkly skin is evidence of coarseness. Some



Fig. 216.—“The depth from the end of the rump to the point below where the quarters join may be determined.”



Fig. 217.—“The leg in its thickest part is grasped by the two hands.”

the skin, but as a rule, no satisfactory examination of the skin can be made, excepting for color, when a heavy fleece is carried. Further, it is doubtful if the color of the skin, when healthy, is an indication of quality. Some breeds, such as the Cheviot and Merino, are noted for their pink skins, while some other breeds incline to a bluish or mottled blue-pink, which invites criticism from the skin critic. Yet these bluish colored skins are as common as pink ones on good feeders. Large, heavy ears are indicators of coarseness, especially if carried in a dull, sluggish style. Perhaps in the stockyards, among buyers, quality is regarded as most important. Other things being equal, the sheep with the most quality will dress out with the least waste, which means the most profit to the buyer.

Condition in the mutton sheep, refers to the degree of fatness of the animal. No other farm animal carries in its carcass so great a percentage of fat as does the sheep in high condition, even surpassing the hog in this respect. Lawes and Gilbert, in their studies of the composition of animal bodies,¹ showed that 45.8 per cent of an extra-fat sheep was fat, while even a half-fat old sheep carried 23.5 per cent fat. This for the entire animal. Their figures showed 55.1 per cent fat in the carcass of an extra-fat sheep, as compared with 49.5 per cent in a fat pig. The present day demand is for a firm-fleshed carcass, with only a moderate amount of condition. As one handles the sheep, and feels for condition, the response to the touch should be firm and smooth, with evidence to show that the flesh is evenly distributed over the frame. Craig states² that the fattening process seems to extend from the inside of the sheep, and becomes first manifest at the tail, after which it appears along the back, then over the shoulder to the neck, from which it seems to extend down the sides and over the breast in front. There are six especial points where the judge carefully examines for condition, about the tail-head or dock, along the middle of the back, the neck, flank, breast and purse. In these places he feels with care, looking for plumpness yet firmness of condition. When in too high a condition, or as we say overdone, sometimes the fat slips down from along the top of the front ribs, producing a flattish bevel at the top, and giving a roundness at the lower sides of the chest which is not natural. In well-defined cases of this sort, one may place the hand below the layer of slipped fat at the flanks and shake it like jelly. Yet all cases of shaky sides do not represent "slipping," and the inexperienced judge, feeling about the front flanks, sometimes thinks he has a case of slipped fat, when it is simply high condition in its natural position. Smoothness and uniformity of condition, are most important factors in the opinion

¹ Journal Royal Agricultural Society of England, 1898.

² Judging Live Stock. John A. Craig, Sixth Edition, 1904, p. 112.

of the discriminating judge. He passes his hands along over the backbone, to note whether it is smoothly and evenly covered, or whether there are bare spots. It is quite liable to be bare over the shoulders and a dimple or tie is often found in the middle of the back. The sheep in right condition will often show a shallow groove over the spine, from tail to withers, with no hard, bare spots along this line. It is not at all uncommon for animals in high condition to have rolls of fat on the sides or back, or patches of fat about the end of the rump. Sheep thus affected are discriminated against by buyers, and judges pass them by in the ring for the smooth sort that show the least waste in killing. The fact is, no animal shows so much waste as the over-conditioned sheep, with a very restricted demand for the excess fat. The important thing in judging, is to note the fleshing and the way it covers the frame. It is rarely that the animal is equally well covered, some parts being bare and hard to the touch, while others are nicely laid in under a cover of flesh. As a first principle, the judge should place a premium on the covering being firm, smooth and thick over the more valuable cuts, such as the back and leg of mutton. There may be some bareness about the shoulder without much affecting values, but on the top and rear end, the condition should bespeak desirable, high-priced cuts. In judging, emphasize two things, first, uniform smoothness of the covering of flesh, and second, its firmness to the touch. It is better to have a sheep not fat enough, rather than too fat, and the scoring by the judge should be guided accordingly. Further, if there is some bareness in front, but with the back and legs behind nicely covered, do not grade too low; a good carcass is probably in hand.

The head and neck of the mutton sheep should each be short, as characteristic of meat-producing animals. These two parts in harmonious relation to each other, always favorably impress the intelligent feeder or butcher. The head as a whole should not only be short, but also broad

through the eyes, and with graceful outlines with the parts clearly defined.

The muzzle, which includes mouth and nostrils, should be of good size, with capacity for feeding well. Thin, yet strong lips are important, for the sheep uses them constantly to assist in drawing in herbage while grazing or feeding on the light roughage best suited to it. Comparatively large nostrils, as associated with the organs of respiration, give evidence of full breathing capacity.

The eyes of the sheep in some cases are bold and prominent, while with others they are hidden by wool to such a degree that sight is interfered with. A large, placid, yet bright eye, placed attractively in reasonably prominent sockets will give evidence of alert character. The whites of the eye should be easily seen. Some shepherds prefer eyes with clear whites, with little dark coloring or veining, believing such eyes go with the best feeders. A bloodshot eye may indicate a poor physical condition, and is objectionable in any great degree.

The face of the sheep, as has already been indicated, should be short. This gives a strong jaw, a feature of the best feeder. Well defined features of the face give evidence of quality and good breeding. The face below the eyes should be broad, furnishing ample room for the respiratory canals in the lower part of the skull.

The forehead of the sheep should be broad and well rounded out. The broad forehead gives evidence of intelligence. It is also necessarily a feature of the short, wide head of the best feeders. A narrow forehead, lacking prominence, would rather indicate a lower degree of intelligence, and perhaps undesirable disposition.

The ears of the sheep vary considerably in size and shape, according to breed or blood lines. Some breeds have short and rather small ears, as for example the Southdown, while in other breeds they are long and prominent. A first necessity in the ear is quality, the attachment to the head being neat and well placed, and the texture of the ear relatively



Fig. 218.—“The ears of sheep vary considerably in size and shape.”

thin and with no evidence of coarseness. Further, the ear should be an index of disposition and interest in things, and where not interfered with by wool or horn, should be carried rather erect most of the time. A droopy, heavy ear indicates something of a dull temperament, and perhaps a poor feeder. One likes to see an animated carriage of the ear on the sheep, just as much as on the horse, and for the same reason.

The neck of the mutton sheep, as has been said, should be short and thick, this conformation combining meat production and strength. To examine the neck, grasp it with one hand where it joins the head, and feel for thickness at this point. Then standing against the side of the sheep, facing the front, press with each hand against the neck in its lower part, and note its character and the way it joins the body at the shoulders. The neck should be full here, and neatly blend into the shoulders at the point just in front, which is called the shoulder vein or neck vein. Depression

in front of the shoulders, or thinness of the neck, indicates an unevenly fleshed and thin-conditioned beast.

The forequarters of the sheep consist of the shoulders, brisket and legs. In the mutton type a roundness and fullness in this part, above the legs proper, is highly essential for good conformation. The character of the forequarter to some degree determines in what type or class a sheep may be placed.

The shoulder of the mutton sheep, while not a high-priced cut, is regarded with favor by many. When well laid in and covered with a thick layer of flesh, it furnishes a fairly good, cheap roasting piece, especially if the blade is taken out. In examining the shoulders with each hand, feel for a smooth compact covering on top, with the points of the blades fairly close together. The shoulder itself should be neatly covered in all its parts, and especially over the points, which frequently are somewhat prominent. A heavy shoulder point is inconsistent with the best mutton conformation. Four points are credited to this part under ideal condition, but a large per cent of the animals will probably score three or less.

The brisket of the mutton sheep should project somewhat in front of the legs, and have a width that will indicate a large chest capacity. The brisket is an important indicator of constitution. Note in judging, while standing facing the front quarters, that the brisket is wide, with a well-rounded, plump outline, slightly grooved on its underside. The best examples of mutton sheep show much fullness of breast and withers, excellent indicators of mutton character and vigor. Some judges prefer to examine the brisket by placing the sheep on its rump with the brisket facing upward, whereby its rear part may be seen to advantage.

The front legs of the mutton sheep should be straight, short, and carried strong and well apart. Many sheep from a front view, show prominent curves inward at the knee joints. This is a bad conformation, because it is associated with a narrow or wedge-shaped chest. The legs

should come down as straight as possible on each side, and if this is the case, then they will stand wide apart, and allow ample chest room between. Long legs are decidedly objectionable because they indicate unnecessary waste in killing. Further, they frequently accompany poor constitution. Short legs furnish a minimum waste, and are characteristic features associated with strong constitution. The bone of the leg should be fine and lack all roughness, giving evidence of little waste at slaughter. Attention should be directed to the feet, to see that the toes are well carried, and point directly forward. From the butcher's point of view this is not so important, but if we consider the shipper or producer, correct conformation with the ability to walk well, insuring delivery to market in good shape, is of unquestionable importance. While only one point is given to the legs in the scale of points, if they are of distinctly defective carriage, they should be scored off from 25 to 50 per cent according to conditions.



Fig. 219.—“Long legs are decidedly objectionable because they indicate unnecessary waste in killing. Further, they frequently accompany poor constitution.”

The body of the mutton sheep, furnishing as it does the highest-priced meat, is given a maximum credit of twenty-seven points in the ideal animal. Expert judges usually give very critical inspection to this section of the body, for a sheep would not be a creditable example of mutton type if lacking in the middle piece, where the high-priced cuts are found. The body may be best examined by standing directly back of the animal, so that the hands may be freely used on the back, sides and flank.

The chest of the sheep represents the entire section of the body as measured just back of the shoulders. The girth here should be comparatively large, with wide rather than narrow curves at top and bottom of the chest. As the vital organs, the heart and lungs are located within the chest, it is at once apparent that a wide, deep chest capacity should be associated with large, strong vital organs. A narrow, shallow, flat-ribbed chest, is always regarded as evidence of weak constitution. Emphasis should be placed on the front ribs having sufficient arch to allow great fullness in heart girth, rather than having a depression back of the shoulders, for in this lies the difference between a good chest and a poor one. A narrow-chested animal also rarely carries the wealth of flesh to be found in the one with full chest. Score the narrow chest severely.

The back of the mutton sheep should first of all be wide and of medium length. A long back usually is loose jointed and does not carry its weight well. The back should preferably be level, as characteristic of vigor and constitution, though the butcher cares little about this, if there is wide, thick covering of firm flesh. The backbone should be so covered with flesh that no amount of handling will reveal to the touch the ends of the spines or a hard, bare back. A shallow groove along over the spine, once before referred to, indicates the easy feeder and desirable butcher beast. If the back is unevenly fleshed, score more severely than if lacking in thickness of uniform covering. If over-fat and soft of flesh, the score should be low. Here in the back is where

one usually finds the most striking evidence of the too-fat animal, and where excess fat is most objectionable on account of the high percentage of waste in the cuts of this part. A rib roast or chop from here, at best, shows a large per cent of bone and fat to lean tissue. Many people value this part on account of the superior quality of the meat, but others object to buying it, on account of the waste. Hence the necessity of this part having no superfluous fleshing.

The loin of the mutton sheep should combine breadth, length and thickness. With this conformation we secure a strong constitution, the thick muscles protecting the kidneys below, and at the same time we secure the desirable thickness of loin chop or roast. While not commanding quite as high a price as the rib part, the fact is the loin furnishes the very choicest of cut, with much less waste than in the ribs. In judging this part, seek for some rounding up and fullness here, and regard any depression as evidence of weak conformation, with not enough thickness of loin covering. Nine points are credited to the perfect loin, as reference to the scale of points will show, thus emphasizing the importance of this part.

The ribs of the mutton sheep, in correct conformation, show a wide arch on top, with an associated length such as provides a body of depth and great digestive capacity. Arch and length of rib are absolutely necessary in the sheep that is to be a good feeder. The ribs should be smoothly and thickly covered with flesh, and this desirable covering can be best secured on the kind of ribs described. When the body is not paunchy, that is, having no excess of belly, then if of sufficient thickness and depth, we get the greatest possible weight, a very essential point. If arch of rib is lacking, then the high-priced cuts are narrower and consequently less valuable.

The flanks of the mutton sheep serve as a measure of the digestive capacity and condition of the animal. If the flank is low, furnishing a straight underline, then usually the body is deep, which fact can easily be noted by standing

away a few feet, and taking a side view. Thus we have an indication of digestive capacity. The flank, as has already been stated, furnishes evidence of condition. By grasping the flank in the hand, one may note whether it is thick and full, indicating a degree of fatness, or whether it is thin, evidencing the animal to be in lean flesh. When walking, the sheep in high condition often shows something of a bulge or roll at the hind flanks, though this is not always so apparent with sheep, as they have considerable amount of wool at this place. A thin, high flank in a fat sheep may justly be scored off 25 to 50 per cent.

The hindquarters of the mutton sheep have always been rated as of high value, and in the British trade probably this part has been given a first consideration. Certain it is that the British flockmaster has emphasized a thick, meaty hindquarter to a far greater degree than has been the case in America, in recognition of the fact that the thickest and meatiest cuts come from this part. The fact is, about 45 per cent of the carcass, as is shown on page 377, is found in the hindquarter.

The hips of the mutton sheep in good flesh should be smoothly covered with flesh, and have a fair width between. The hips of wethers are somewhat closer together than are those of ewes, but the more important thing is that they be well covered.

The rump of the mutton sheep, if we are to have a maximum amount of flesh, must be long, level and wide. As one stands at some distance on the side, and surveys the rump, it should appear in much the same level from hips to tail-head. A common defect is for the rump to be steep or "droopy," as it is often termed. The more droopy the rump, the shorter will be the leg of mutton in its most valuable part. When viewed from behind, the rump should appear comparatively level and wide on each side of the backbone, with its outer boundary quite in line with the points of the hips. Sloping rumps are far too common. When the rump is both steep and narrow, we have the

“peaked” rump, a very objectionable conformation, with the minimum amount of flesh at the top of the leg. But if the rump combines length, levelness and width, then there will be a maximum amount of flesh at this part. The judge should carefully examine the rump, and see that its shape is of the desirable sort, and not due to the shears of the shepherd. It is a simple matter to make the examination with the hands, as one stands directly back of the animal. Demand not only a correct conformation, but also a smooth, firm, thick fleshing over this part.

The thighs of the mutton sheep should be thickly fleshed as may be shown by firmly grasping the leg between the thumb and fingers in each hand, placing one hand in front of the thick part of the thigh, high up, and the other on the hind part. The general thickness and covering of muscle may thus be easily determined. The fleshing should come down low toward the hock, so as to yield as much meat as possible, both on inside and outside of the thigh. Mutton conformation demands the fullest measure of flesh at this place.

The twist is the point where the thick, fleshy part of the upper thigh curves sharply to blend with the narrower part of the thigh below on its inner side. One grasps the thigh at the twist with either right or left hand, and feels up into the muscle, when examining the leg of mutton. A rear view of a good example of a newly shorn mutton sheep, will show a wide curve on the inside of each thigh, with a low down fleshing filling in the space at the top of the curves. The thinner and more slender the leg, the less evident the twist, and the higher up the attachment between. A very marked twist guarantees a wide, thick-fleshed sheep in its rear end.

The hind legs of the mutton sheep should be straight, short and strong, for the same reasons given regarding the front legs. However, the hind legs have the hock joint, and the sheep has quite a tendency to bring the points of the hocks together. When this occurs, the space between the

legs of mutton is reduced, from which we may expect a narrower hind end than it would be if the legs were widely carried. If the sheep hocks in, then the toes will point out. A space of three to five inches between the hocks, under natural conditions, will give a satisfactory position for the legs from a rear point of view. From a side view, the legs from hock to ankle should stand quite vertical, with the



Fig. 220.—“One grasps the thigh at the twist with either right or left hand, and feels up into the muscle, when examining the leg of mutton.”

point of the hock just in line with the point of the rump. The legs are frequently carried too much beneath the body, while some sheep carry the legs too far back, with the hocks noticeably beyond the rump. Either of these positions is to be criticized as lacking in strength. The bone of the leg should be free of all coarseness, giving evidence of dressing out with little waste. The toes should point directly for-

ward, being level and true on the hoof, and supporting a pastern that is neither too long nor too sloping.

Wool on the mutton sheep, as has already been stated, is usually of secondary importance to flesh production. The score card gives a total of nine points to the wool. If a mutton sheep is being judged as a butcher's beast at a great fat stock show, the judge gives comparatively little attention to the amount and covering of wool, but if the animal is to be judged as a breeding sheep, then more consideration is given to this point. Very brief reference will, therefore, be given to the wool at this time, this subject being discussed in detail under Merino type, to which the reader is referred on page 426. Three factors of importance must be considered in this connection, namely, quality, quantity and condition.

The quality of the wool on the mutton sheep is an indication of the quality of the sheep as a whole. A fine, soft fleece, uniform in character over much of the body, is desirable. Yet this fineness is only comparative. The long-wooled sheep of the mutton type, naturally carry a coarser fiber than the smaller, medium-wooled sheep. In each case, refinement of wool fiber is desired rather than coarseness, for generally speaking, we may assume that the finer woolled animal



Fig. 221.—“To study the quality, part the wool at several points, especially on the neck, shoulder, middle of side and thigh.”



Fig. 222.—“He easily sees the length when he parts the fleece.”

will dress out with less waste. Another evidence of quality is a crimped condition of the wool, with fine, wavy or serrated lines like the teeth of a saw. Crimp gives elasticity to the wool, which is a valuable quality. In the fleeces of the large, long-wooled sheep, the crimp is in long waves rather

than serrations, while with the smaller sheep of the middle wool type, there is a short, fine crimp. The fineness of the fiber is more or less affected by the thickness of the wool over the body, the thicker it is, the finer it will be. To study the quality part the wool at several points, especially on the neck, shoulder, middle of side and thigh, and note comparative fineness, crimp and softness, the latter feature being determined by pressure under the fingers.

The quantity of wool produced by the mutton sheep impresses the sheep buyer, especially the butcher, more than the quality. Then he seeks for two things especially, length and density. He easily sees the length when he parts the fleece, and the density he judges by grasping the wool, and determining if it covers the body thickly, indicating a heavy fleece. What the buyer wishes is a heavy weighing fleece, and this cannot be secured unless it has length and is dense or thickly placed over the body. These features should obtain over the sheep in general, and so it is necessary to critically inspect the length and density of covering on different parts of the body. Bareness of belly and legs indicates light weight fleece. Also a fleece that easily parts in

its locks, opening gaps toward the skin in which chaff and dirt readily catch, gives evidence of lack of density and weighing lighter than would be the case otherwise. A dense fleece is more easily kept clean than one that is open, a matter of importance.

The condition of the wool of the mutton sheep relates to its color, lustre, freedom from foreign matter, and amount and character of oil, or what the shepherd terms grease or yolk. When the wool is parted, and is examined from the exterior of the fleece, down to the skin, it should show a bright, clean, soft appearance. Some fleeces, especially the long wools, show a glisten or lustre, that adds to its value in certain markets. In a good quality of fleece we also find more or less oil, which gives brightness and life to the fiber, making it stronger and more elastic than it would be if harsh and dry. A heavy secretion of oil, however, is objectionable, owing to the resulting shrinkage in scouring. Usually excessive oil is indicated by the presence of greasy dirt on the exterior of the fleece, manifest to the eye in color, or by the extent the hands become oily. A dirty fleece, with more or less chaff and foreign matter, is undesirable. In scoring the fleece of the mutton sheep, it is not necessary to cut down the points severely. A 20 to 30 per cent pruning from the standard, is a fair amount, though the lack of weight or presence of dirt might justify even more severity.

CHAPTER XXXVI.

THE COMPARATIVE STUDY OF MUTTON SHEEP.

AFTER the score card has been used a number of times on individual sheep, to familiarize one in this work, then the next step should be to compare two or more sheep of the same class. The use of the score card may be made in this comparison, by placing two sheep side by side, going over the same parts of each animal in regular order, filling out the score in the process. Thus a numerical score may be made, with each part up for comparison in its turn. The method of judging involved in this case, is simply that of score card work, but where more than one animal is involved, it is also comparative. The greater the number of animals to be scored in comparative judging, the more tedious the process, due to the amount of time necessary to estimate and record values on the cards. Following this, considerable time will be necessary to figure up the different scores, and then perhaps make some readjustments in satisfying oneself for a final judgment.

Comparative judging of mutton sheep in pens of three to five individuals, without the use of the score card, offers the most satisfactory method of studying these animals. It is customary for each animal to be held, so that the sheep shall stand in line, side by side. There should be space enough between the animals to permit free movement on the part of the judge. He should first walk about and view the group from a distance that will permit satisfactory general comparison. One should walk in front of the sheep, to compare heads, shoulders, breasts and legs, and then pass to the rear to compare the backs, rumps, thighs and positions of legs. The sheep may at this time be placed in

single file, one behind another, so that a comparative side view will be available, showing the animals in profile. This view gives one a nice comparison of length of neck, back line, length and depth of body, length and carriage of rump, and length and placing of legs. This is a preliminary study of general appearance up to this point. The judge should now begin a careful examination of each individual in the



Fig. 223.—“One should walk in front of the sheep, to compare heads, shoulders, breasts and legs.”

group, beginning at the head, and systematically going over it as directed in the process of scoring. In making this examination, the hands should assist the eye, so that any possible use of the shears will not affect one's accuracy of judgment. The strong and weak points of each sheep should be manifest to the judge, so that he may be enabled to come to a decision as to how they shall be placed in regular order of merit. These sheep being of the mutton type, emphasis must be placed on weight, condition, quality,

compactness of form, breadth of back, thickness of hind-quarter, depth of body, shortness of neck and legs, and character of fleece. If examined as fat sheep, then condition, necessarily, is of prime importance. Each animal must be studied and a mental comparison made with one that scores 100 per cent. As the butcher's block is the measure of



Fig. 224.—“One must be careful not to give high placings to animals that seriously lack balance.”

value in the case of the fat sheep, it is important that the judge should not allow points of secondary value to affect his judgment on essentials. The judge in the show ring, after sufficient examination, in case of considerable competition, often draws from the line those that he regards of merit, not occupying his attention with the remainder. The few drawn out are then lined up as a separate group, and the

judge begins to place them somewhat in order of merit. Where competition is severe, various comparisons and shifts of place may be made, before the judge completes his task. One must be careful not to give high placing to animals that seriously lack balance, because such decisions may involve a serious criticism of judgment. It is a good plan to compare in detail the more important points seriously affecting a decision. Compare the backs and their covering, as a special study, then compare rumps and legs of mutton, in like way, and thus critically weigh up those parts of greatest value, that they may have their true rating. Such comparative study of the parts is very helpful in aiding one to a sound decision, if there is any doubt in making the placings.

One may make up a comparative score card, after the following manner, in order to give a rating to comparable parts on different animals.

FAT SHEEP COMPARISON CARD.

Name of Judge.....							Date Judged.....			
	POINTS TO JUDGE						First	Second	Third	Fourth
						Place	Place	Place	Place	
Size	..	..	..	..	..	.....	.....	.....	.....
Condition	..	..	..	..	..	.....	.....	.....	.....
Quality	..	..	..	..	..	.....	.....	.....	.....
Head and neck	..	..	..	..	..	.....	.....	.....	.....
Breast	..	..	..	..	..	.....	.....	.....	.....
Shoulder	..	..	..	..	..	.....	.....	.....	.....
Chest	..	..	..	..	..	.....	.....	.....	.....
Back	..	..	..	..	..	.....	.....	.....	.....
Rib	..	..	..	..	..	.....	.....	.....	.....
Loin	..	..	..	..	..	.....	.....	.....	.....
Rump	..	..	..	..	..	.....	.....	.....	.....
Leg of mutton	..	..	..	..	..	.....	.....	.....	.....
Legs	..	..	..	..	..	.....	.....	.....	.....
Fleece	..	..	..	..	..	.....	.....	.....	.....
						_____	_____	_____	_____	
Placing	..	..	..	..	..	.....	.....	.....	.....

Each animal is given a number or letter, and the judge gives to the features of each kind compared, ratings in one, two, three order. For example, in comparing condition, he might give C first place, A second, D third and B fourth. In this manner he would systematically make certain comparisons. He would not necessarily give first place to the animal having the most first placings, unless the more vital factors, such as condition, quality, back, and leg of mutton, would justify such a placing. This method of comparison is extremely interesting, and while not usually suited to the work of the professional judge, whose time is limited, it is especially instructive in the case of students.

Reasons for making comparative placings of mutton sheep. Professional judges give reasons or not as they desire, in connection with their placings. Students, however, judging under instructors, are expected to give logical reasons for their placings. If one is to give written reasons, usually fifteen or twenty minutes is allowed for this purpose, while only about three minutes are allowed for oral reasons. In either case the student is to state briefly in a systematic way the main reasons influencing his decision. As illustrative of student judging, the following is given as an example of written reasons by a well-known animal husbandry teacher, who submitted them in class work to the author when competing for a place on the students' International Live Stock Judging Team. Four Southdown ewes were judged, and this paper furnishes a good example of reasons in written form.

“Reasons for placing No. 797 first are that she is the lowest set, broadest, deepest and blockiest ewe in the ring. She is especially commendable for her superior breadth throughout and also for her depth of twist and plump leg of mutton. Her loin is the widest in the lot. She nearest approaches the meaty type desired in the Southdown. and with it all she possesses as much quality as any in the ring. Her flesh is the most uniformly carried of any of the four. She is open to some criticism for a slight lack of strength of back

and for a fleece that lacks density. She might show a little more style also, but this is a small deficiency. In view of her greater excellence of form, type, evenness of covering, symmetry and smoothness throughout—and in spite of the minor defects noted above—she rightly deserves first position.

“Reasons for placing No. 803 second, are, that she is the nearest approach to 797 of the remaining three. She is not so low set, so deep bodied, nor so broad of body nor of loin, as is No. 797. She possesses more style and a stronger back than the ewe placed first, and also a darker colored face, No. 797 being too light in the face. Her deficiencies in form keep her in second place, also her flesh is less evenly carried.

“Reasons for placing No. 798 third are that although easily superior to No. 810, she is too rough, lacks compactness, is narrow of loin, has an uneven covering of flesh, and lacks plumpness at shoulder vein to get above the third position.

“Reasons for placing No. 810 last. She is upstanding, lacks depth and breadth, has a pinched hind end, is cut up badly in the twist, is deficient in leg of mutton, is slack in the chest and does not show Southdown type, having a coarse head, wooled like a Shropshire.”

A criticism may be made of these reasons, in some lack of system, and for directing too much attention to the deficiencies of the second, third and fourth placings, rather than emphasizing the advantage the second placing has over the third, and the third over the fourth. However, for a statement to be prepared without notes in fifteen minutes, it conveys substantial reasons for placings, and is a good example of student work.

CHAPTER XXXVII.

JUDGING FEEDER SHEEP.

FEEDER sheep are those that are purchased in thin flesh, to be fed and finished as fat mutton. When classed as prime feeders, they furnish fine examples of mutton sheep. However, nearly all of the feeder sheep in the large markets are from the western ranges, and they contain considerable blood that is not representative of what has been described as mutton type. Therefore, when one is purchasing feeder sheep, he should bear in mind that he is selecting what is to be finished off, when fat, into a high class mutton type. The feeder sheep should possess certain essentials if the desired finish is to be secured.

The conformation of the feeder sheep should show a wide, short head and neck; full chest; strong, wide back and loin; long, level rump; wide leg of mutton, and comparatively short legs. At time of purchase this sheep will have a strong frame, full in its points, but lean of flesh. A deep middle, showing digestive capacity, is highly important. This frame is finally to be smoothed over and rounded out with flesh, presenting quite a different appearance from that seen in the same sheep four months before. In selecting this feeder, one must not lose sight of the essentials required in a fat animal. In judging this class, place a premium on size with quality, consistent with market demands. Look for a low-set type of lamb, broad and deep, of medium length, and showing strong constitution. The lamb of medium length promises more in the way of early maturity than either the long or abnormally short-bodied one. The former often feeds somewhat slowly, while the latter has a conformation that lacks the stretch that goes with the more responsive, profitable feeder. It

is desirable to keep condition in mind, but the important thing is to secure feeders that are not too thin, and will respond to feed readily. Uniformity in the character of feeder sheep is important, for it should show the influence of improved blood as expressed in quality and conformation. Sheep of uniform type and character fetch a higher price when finished than does a mixed lot showing variation in character and breeding. The wool on feeder sheep should meet the necessary requirements as to quality, but the quantity and condition will naturally be affected by feeding.

CHAPTER XXXVIII.

JUDGING THE MERINO OF THE AMERICAN OR CLASS A TYPE.

CLASSIFICATION OF MERINO SHEEP.

A classification of Merino sheep according to type, was first made public in 1893 at the World's Columbian Exposition. This classification was based on the form of body, the prevalence of folds in the skin, and the character of fleece. Class A is a muscular type, tending to be narrow of body, with heavy wrinkles or folds at neck, breast, hind flank, hip and tail-head, and oftentimes minor folds on the side and extending well up on the back. Class B is a stronger, larger sheep, with more mutton form, and carrying folds about the neck and breast, and to a slight extent about the hindquarters. Class C, in its ideal form, is a smooth-bodied mutton type, with no folds. However, one frequently sees Class C sheep at the shows, with one or two folds at the neck. The fleece is shortest in Class A and



Fig. 225.—The three classes of Merino sheep: A on right, B in center, and C on left.

longest in Class C, while the densest, heaviest fleeces have been produced by Class A sheep. Classes A and B so closely approach each other in appearance, when we consider variation within the class, that at the more important shows, where these Merino classes are recognized, examples



Fig. 226.—A Type Merino ram, "Don's Champion," owned by the late J. P. Ray of New York. (Photo by courtesy American Agriculturist.)

of each may be in the same ring. In a similar manner, sheep of B and C classes sometimes are found in the same ring. If a judge knows his business, he sees that the sheep out of their class are sent back to their pens.

The Merino of Class A type, very generally called the American Merino, is not common to-day in America. For fully three-fourths of a century wrinkly Merinos were the rule and not the exception in this country. However, mut-

ton character has been steadily growing in favor, with a constantly increasing prejudice against the lean, muscular sheep, covered with folds, so difficult to shear. Consequently at the present day, Merinos of the A type are rarely seen, and are in very limited demand. For this reason but brief consideration is given this type.

A scale of points for the American Merino, generally satisfactory in character, does not seem to exist. A number of Merino sheep associations have published scales of points for sheep of this type, but they have not been logically arranged and made no satisfactory measure of values. Therefore, the author has drawn up the scale of points on page 415 as applicable to the American or Class A Merino. This, as here presented, has been submitted to some of the best-known and most intelligent breeders of this type of sheep in America.

The distinctive characteristics of the American Merino include a number of features limited to this type. The body is lean and muscular, sharp over the withers, narrow of back from a mutton standpoint, ribs lacking in arch, and hindquarters long, but tending to be narrow and droopy, with long, lean thighs. The legs tend to come close together at knee and hock, with the toes pointing out. The body is densely covered with the finest grade of wool, excepting on the lower part of the face and muzzle, and parts of legs, where a fine, silky, white hair occurs. Folds or wrinkles in the skin of nose, neck, brisket, shoulders, flanks, sides, rump and thighs, give this type of Merino a very striking appearance, either with or without the fleece. Expert judges of American Merinoes rarely examine the form other than by use of the eye. The hand is used only to feel of the fleece, to part the locks and to note the various conditions associated with the wool. In judging, no attention is paid to mutton condition, excepting as indicating vigorous condition of health, which the judge notes in the healthy, pink condition of skin as he examines the fleece. The weight of the ram rarely attains 150 pounds at maturity, but this

SCORE CARD FOR AMERICAN MERINO.

SCALE OF POINTS		Standard of Perfect Score	Score of Sheep Studied
Age	Number of permanent incisors . . . . .	..	....
A—GENERAL APPEARANCE, 16 Points:			
Weight, score according to age, mature males 150 lbs., females 100 lbs.		2	....
Form, low set, deep bodied, symmetrical, with folds on neck, shoulders, flanks, rump, thighs		6	....
Quality, bone and wool fine, skin pink		8	....
B—HEAD AND NECK, 7 Points:			
Muzzle, broad, wrinkled, lips thin, mouth and nostrils good size		1	....
Eyes, large, bright, placid, not enclosed by folds		1	....
Face, short, features well defined		1	....
Forehead, broad and full		1	....
Ears, small, fine, covered with fine white hair		1	....
Neck, short above, long below, strong, with prominent folds		2	....
C—FOREQUARTERS, 9 Points:			
Shoulders, sloping well into back, not rough, broad, with folds		2	....
Breast, of medium width, deep, showing plenty constitution		3	....
Brisket, carried well forward, with strong fold or apron		2	....
Legs and feet: straight legs, well carried, toes short and of good shape with level soles		2	....
D—BODY, 20 Points:			
Chest, deep, medium wide, comparatively large girth		5	....
Back, level, long, medium wide		3	....
Loin, broad, long and not sagged		3	....
Ribs, arched only moderately deep, close together		3	....
Flanks, low, giving low, level underline		1	....
E—HINDQUARTERS, 10 Points:			
Hips, smooth, not too widely separated		1	....
Rump, long, level, wide, carrying light folds		4	....
Thighs, long, muscular, with horizontal folds		3	....
Legs and feet: legs carried straight, hocks not close, shanks vertical, toes short, and of good shape, with level soles		2	....
F—FLEECE, 43 Points:			
Folds or wrinkles, very manifest on neck, brisket, shoulders, flanks, lower sides, rump, thighs		10	....
Quality, fiber very fine and crimped, uniform in diameter, free of hair or gare on folds, belly or legs		10	....
Density, close covering all over body, armpits, belly and legs well woolled, the fleece compact to the hand		10	....
Length, uniform over body, 2½ inches for twelve months' growth		7	....
Oil, grease or yolk, abundant, light colored, evenly distributed, and not gathered in spots		4	....
Condition, clean, soft, free of foreign matter		2	....
Total points		100	....

standard is desirable. The larger type of rams, with quality and constitution meet with most favor. The form should be low set, with a depth of body indicating ample feeding capacity, and symmetrical in proportions. The head should

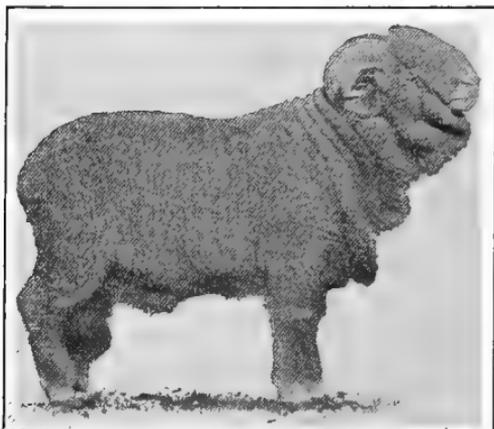


Fig. 227.—“The head should be quite covered with a heavy cap of wool.”

be quite covered with a heavy cap of wool, excepting for a space half-way up from nostrils to eye, which is covered with fine, silky hair. The head covering should be compact and uniform in character of wool. Most Merino rams have heavy horns, which twist around about one and one-half times in cork-

screw form, with the tips pointing forward. The ewes are free of horns, while polled rams are not rare. The Merino head crowned with a fine pair of well-set, widely turned horns, rooted in a heavy cap of wool, the muzzle broad and slightly arched, and covered with silky hair raised in slight wrinkles, presents a strong and dignified appearance. The eyes are often quite hidden by the fleece, and frequently small folds of skin so encroach on the eyes that it is necessary to cut them away that the sight be not obstructed. The ears should be small and covered with “furry hair,” and should be rather widely separated. The back of the American Merino often appears narrow and lacking in level carriage. Narrow, peaked rumps are also very common with this type, these seeming to be associated with crooked hind legs that touch at the hocks and turn out widely at the toes.

The folds on the American Merino are most highly developed on the lamb, and with age some of these are more or less outgrown. A lamb that appears to be of the A type, at maturity, may belong in the B class. According to an expert breeder¹ the prevailing fashion is to have from three to five heavy folds on the neck, not large on the upper, but large on the under side; two or three short folds on and immediately back of each elbow or arm; fine, thick



Fig. 228.—“The folds on the American Merino are most highly developed.”

wrinkles running down the sides, but not extending over the back. Wrinkles occur across the hips, sometimes from the tail in the direction of the stifle, and sometimes at right angles with them. Folds occur around the tail to give it a wide appearance, and also across the thigh, adding to the depth of flank. These large folds are indications of heavy fleeces. The modern tendency is away from the heavy folds of twenty years ago, yet in spite of that, the best

¹ Special report on the History and Present Condition of the Sheep Industry in the United States, 1892, p. 315.

examples of American Merinoes show the folds in striking degree.

The Merino of the B type class, as has already been explained, carries folds at the neck and breast, and to some extent at the hindquarters. B type sheep are larger than those of the A type, are thicker and show more mutton form, and have a longer and somewhat coarser wool staple.



Fig. 229.—“These large folds are indications of heavy fleeces.”

In this type the value of mutton form is given some consideration. Further, in order to secure a heavy-weighing fleece of desirable length on a Merino with mutton tendency, it is recognized that more or less folds are essential. The perfectly smooth C type sheep, that naturally has a somewhat open fleece, will not meet this requirement. Rams of the B type are the ones most commonly used in Merino flocks of to-day, and mated with the ewes of smooth body and

mutton form, they play an important part in improving the wool-producing value of the flock, without necessarily reducing the mutton value. As the folds are evidence of compactness of fleece, so we must recognize the necessity of at least some folds in the stud flock if the average Merino fleece is to be maintained on a high standard. Therefore, in the B type sheep, we must possess a combination of the most valuable fleece features of the A type with the size and mutton qualities of the C type.

CHAPTER XXXIX.

JUDGING THE MUTTON MERINO OR CLASS C TYPE.

The modern trend in breeding Merino sheep, is to produce the smooth-bodied type, free of folds, excepting in slight degree on the neck. Years ago Merino breeders, especially in eastern Ohio and western Pennsylvania, recognized that they must produce a type of sheep that would have mutton as well as wool values. In consequence of this feeling, breeders began to select breeding stock that was rather free of folds, with a tendency to carry considerable flesh. This resulted in establishing what is generally known as the Delaine Merino. It is the common type of smooth-bodied Merino seen in America, and, while producing a fine or Merino wool, also makes a most excellent carcass. While not technically a Delaine, the Rambouillet is to all intents and purposes of this class. In fact, on one occasion at the Ohio State Fair, several Rambouillet ewes of German breeding were exhibited in a Delaine class by one of the best-known American Rambouillet breeders. This was not entirely satisfactory to all concerned, but that such a thing were possible shows that the Rambouillet breeder expected his sheep to be judged on a Delaine basis. A world movement toward the smooth-bodied, Delaine type of fine-wooled sheep is now taking place, for two very distinct reasons, one being the greatly increased demand for mutton as well as fleece, the other the difficulty in shearing sheep of the A type with heavy folds. Even in Australia, long the home of the wrinkly Merino of extreme development, the class C sheep is coming into great popularity.

A scale of points for the Delaine Merino, or Class C type, applies to what might be termed the dual-purpose sheep. In conformation the Class C type lacks the extreme thickness and heavy fleshing of the mutton type, but we find a fleece much superior in quality to that of the mutton breeds. In discussing the following scale of points, in view of the detailed consideration of conformation given the mutton type, only the essentials of dual-purpose form will be referred to here. The subject of fleece, however, justifies discussion in some detail.

SCORE CARD FOR DELAINE OR C TYPE MERINO.

SCALE OF POINTS		Standard of Perfect Score	Score of Sheep Studied
Age	Number of permanent incisors. . . . .	.. ..	....
A—GENERAL APPEARANCE, 24 Points:			
Weight, score according to age. Mature rams 150 lbs., ewes 125 lbs.		3	....
Form, low, compact, symmetrical, uniformly covered with flesh		7	....
Quality, bone and wool fine, skin pink and healthy		7	....
Condition, even covering of firm flesh, of moderate thickness		7	....
B—HEAD AND NECK, 7 Points:			
Muzzle, broad; mouth and nostrils good size; lips thin		1	....
Eyes, bright, of good size, placid		1	....
Face, short, broad between eyes		1	....
Forehead, broad.		1	....
Ears, medium to small, set wide apart, covered with silky hair		1	....
Neck, short on top, long below, smoothly attached		2	....
C—FOREQUARTERS, 12 Points:			
Shoulders, well placed		2	....
Breast, deep and medium thick		5	....
Brisket, carried well forward, with some breadth and fold or apron		2	....
Legs, straight, short, strong, well set, arm full, shank smooth, feet of good horn, and pointing straight forward		3	....
D—BODY, 15 Points:			
Chest, broad, deep, full behind shoulders		5	....
Back, straight and medium wide		3	....
Loin, strong and muscular.		3	....
Ribs, well sprung and deep		3	....
Flanks, low, making straight underline		1	....

SCALE OF POINTS		Standard of Perfect Score	Score of Sheep Studied
E—HINDQUARTERS, 13 Points:			
Hips, smooth, not too wide apart..		2	....
Rump, long, level, moderately wide..		5	....
Thighs, muscular to plumpness		3	....
Legs, straight, short, strong, stifle full; feet of good horn, and pointing straight forward		3	....
F—WOOL, 29 Points:			
Quality, staple fine, with close and uniform crimp, free of weak fiber, hair or gare		10	....
Density, compact all over body		7	....
Length of staple uniform, at least 2½ inches for twelve months		7	....
Condition, rich and soft in handling, with moderate amount of well distributed oil; free of foreign matter..		5	....
Total points..		100	....

The general appearance of the Class C Merino is that of a sheep lacking the thickness of mutton type, slightly longer of leg and neck, with a compact fleece free of folds, excepting in slight degree about the neck. The tendency is to endeavor to secure as thick and low set a form as possible, and some sheep of this class have been shown that closely resembled Southdown or Shropshire in general form. The judges as a rule look with much favor on such conformation. The condition, when prime, should show a moderate and uniform thickness of firm flesh, not carried to an extreme. The popularity of the C type as a killer, is due to the more moderate amount of external fat with less waste of this material than prevails with mutton sheep. The judge, however, should emphasize smoothness, firmness and uniformity of fleshing.

The head and neck of the Class C Merino present less thickness and shortness as a rule than are shown by the mutton type. The head should show the same characteristics, however, desired in the mutton sheep, but the neck may not be so short and thick. Judges will naturally favor the short and muscular neck that is smoothly blended at the shoulders. The one or two folds often seen on the



Fig. 230.—“Some sheep of the Class (C) have been shown that closely resemble Southdown or Shropshire in general form.”

neck make this part appear longer than it really is. Two folds are objectionable in the wether, but in the breeding ram these furnish evidence of possible transmission of the heavy fleece, and so should not be discriminated against.

The forequarters of the Class C Merino frequently show prominence of shoulder, narrowness of breast and too much length of leg. The shoulders should be well placed, sloping nicely to the back and being smoothly covered with a moderate thickness of flesh. A reasonable fullness or thickness of breast and brisket, with some prominence to each, should be sought. A large fold or apron covers the brisket and gives it prominence. Excess of fold here is not associated with strong mutton conformation. The legs should be fairly wide apart and straight, the toes pointing directly forward.

Often the knees come quite close together, with the feet widely separated and pointing out, a very weak position.

The body of the Class C Merino presents more roundness or curve on the upper part of rib than the mutton sheep, with corresponding lack of width of back. This conformation is essentially a dual-purpose feature. If the rib carries sufficient spring and depth, the chest will show the



Fig. 231.—“A large fold or apron covers the brisket and gives it prominence.”

requisite fullness, and the body as a whole will exhibit ample digestive capacity. A fullness at front and hind flank should be sought and is highly desirable, as evidence both of capacity and of constitution. The fleshing over the frame will be less than on the true mutton form and, as a rule, will not present the depth of covering that is found in the thicker fleshed sort.

The hindquarters of the Class C Merino lack the squareness most characteristic of mutton form. The rump should be long, moderately wide and level. The thighs usually

are muscular rather than thick and fleshy, and with a medium depth or fullness of twist. While the leg of mutton produced here is quite acceptable in the trade, it does not furnish the depth of cut that is found in the ideal mutton type, the bone being less heavily fleshed on every side. This being characteristic of the type, it is not rea-



Fig. 232.—“The hindquarters of the Class C Merino (on the left) lack the squareness most characteristic of the mutton form.”

sonable for the judge to expect the thickest mutton conformation in this regard. The conformation of the hind legs of the C type is not so frequently bad as with A type, but Merino-like, they naturally tend to hock in and toe out. The judge should emphasize a proper placing of legs and feet, either from rear or side view, as essential in mutton conformation. The closer the hocks come together, the thinner the thighs as a rule, and the less developed the twist.

CHAPTER XL.

THE FLEECE AND ITS EXAMINATION.

The quality of wool fiber is shown in its degree of fineness, in its crimp, its uniformity through the fleece, and its freedom from kemp or gare. Wool differs greatly in its fineness, of which Hawkesworth gives twelve different degrees.¹ The finest grades are produced by the Merino, and measurements have been made by various persons showing a diameter of fiber of over one two-thousandths ($\frac{1}{2000}$) of an inch. However, a diameter of one-thousandth of an inch is fine. The fiber of the long wool such as Cotswold, that measures a diameter of one four-hundredth of an inch,



Fig. 233.—“The finest wool is found over the shoulder and side.”

¹ Australian Sheep and Wool, 1906, p. 218.

represents the coarsest grade. The wool on the same sheep varies in degree of fineness. The finest wool is found over the shoulder and side, and the coarsest over the hindquarter, especially the thigh, and on the belly.

The fleece refers to the entire covering of wool on the sheep and this consists of locks or groups of fibers

that naturally separate by breaks in the fleece. To examine the degree of fineness, one should begin at the side of the neck, and inspect the fleece, separating to the skin the locks at various points, so that the fiber can be easily compared and studied. The judge should look for a fleece uniform in quality with as little variation as possible in fineness, with no great difference between the front and hind-quarter wool. Softness is a valued feature. A wool is said to be soft when it has a smooth and yielding touch to the hand. This is a characteristic of the fleece as a whole, rather than of a single fiber.



Fig. 234.—“The coarsest over the hindquarter, especially the thigh and belly.”

When the climate is both moist and bracing, wools have a better, softer touch, than where produced in a dry and trying climate.

The crimp of wool is the name applied to the serration of the fiber. Perhaps the common saw-tooth shape illustrates this. The crimp, however, varies from the close, sharp wave in the Merino, to the long, wavy one seen in the long wool breeds. Hawkesworth states² that “in superior Merino wool there are 24 to 30 crimps to the inch, and sometimes more. In the English breeds, the Southdown, which is the finest, contains 14 to 18 crimps per inch; medium wool from 11 to 14, while the long, coarse Lincoln staple has but two or three serrations to the inch.” Crimp is an especially striking feature of Merino wool, and is a true

² Australian Sheep and Wool, 1906, p. 219.

indication of quality. Crimp is also associated with great elasticity. Therefore, in judging the Merino, one should give due recognition to the presence of crimp as an important feature of quality. Oftentimes crimp is so pronounced that it is manifest on the exterior of the fleece, although it is always seen best by parting the locks.

Kemp or gare are animal fibers found in wool that are distinctly objectionable to the woolen cloth trade. Kemp is a hard, coarse hair that is found much more in some sheep than others, and more on one part of the body than another. Being a hard hair, kemp will not take dyes as will wool, so that when in the cloth, it lacks the color and character necessary for uniform coloring of fabric. Kemp is most often found about the head or thighs, and may be either white or black in color. A kempy fleece is very objectionable. The term gare has been used more or less by American sheep men, but no doubt many have had kemp in mind as the same thing. Hawkesworth defines³ kemp as a hard, very brittle, opaque hair, resembling a piece of common cotton thread, while gare possesses a glossy, straight surface, and is devoid of softness, elasticity and crimpiness.

The density of fleece relates to the abundance of the wool over the body. There is much difference in density of fleece in sheep of the different breeds, and also among individuals. From a breed point of view the Merino has much the densest fleece, with the long wools the least dense. On a square inch of Merino skin may be found 60,000 wool fibers, which indicates a very dense fleece. The density is manifested by the closeness with which the locks are packed together, and the compact feeling to the touch when the hand grasps the fleece. A dense fleece does not allow foreign matter to gather easily between the locks, a distinct argument in favor of density. The most important argument in behalf of this characteristic, however, is its relationship to heavy yield of wool, for the greater the density,

³ Australian Sheep and Wool, 1906, p. 237.

other things being equal, the heavier the yield. If the wool opens freely, it shows lack of density. One quickly notices differences in density by the grasp of the hand of the fleece of different sheep, and, even by the eye, one may



Fig. 235.—“One quickly notices the differences in density by the grasp of the hand of the fleece of different sheep.”

note the much greater prevalence of open locks in the tops of some sheep than in others.

Length of fleece or staple varies according to type or breed of sheep, and also as to the portion of the body on which it is produced. The Merino has a short fleece, and two and one-half inches is quite a standard length for a year's growth. Sheep of the medium wool class, such as the Shropshire, easily produce a length of three or four

inches, while the fleece of the long wool breeds often ex-



Fig. 236.—“The fleece of the long wool breeds often exceeds six inches in twelve months' growth.”

ceeds six inches in twelve months' growth. It is quite important that the staple be uniform in length, although in the vicinity of the shoulder the wool is quite the longest of the entire fleece.

The oil or yolk.

Associated with the root of the wool fiber are minute oil glands. From these the oil passes to

the base of the fiber, and then works up along over the scales until it reaches the end, lubricating and softening the wool. Some sheep, such as the American Merino, produce a great deal of oil, which accumulates on the outside of the fleece, where, when mixed with dust and dirt, it appears almost as a dirty, black, gummy blanket. There is considerable difference in the amount and character of this oil. It should be rather colorless, but is frequently of creamy or greenish tint. However, the relationship of color to value is at present unknown. It is more abundant on the fine wool breeds, which may scour off 60 per cent or more oil and dirt, than on those with more open and coarse fleece, which may shrink only 25 per cent in scouring. It is also found more on the front than on the hind part of the body. If the fibers are uniformly oiled, there is no danger of their becoming entangled or cotted. Sometimes oil gathers in flakes within the fleece, which is undesirable, as indicating uneven strength of fiber. The oil in the fleece is important, as imparting durability, softness

and brilliancy. A considerable amount of oil is highly desirable in fine-wooled fleeces, and the point has been made⁴ that profitable fleece cannot be raised without a large amount of oil, that it promotes the growth of the wool, and that those who have tried to dispense with it or materially reduce it in their flocks, have met with serious loss of wool and a deterioration of strength, fineness and evenness of fleece. A deficiency of oil causes the staple to be dry, harsh and weak, and the tendency will be to thinness and coarseness of fiber. In view of these facts, it is important to emphasize an abundance of oil, especially with the fine wool classes. Even with the mutton type the judge should seek for an abundant and uniform distribution of oil through the fleece.

The condition of the wool refers to the amount, character and distribution of the oil in the fleece, and the way the wool responds when taken in the hand. Condition also relates to the presence of foreign matter, such as chaff, seeds, etc., and also kemp or gare. Some have used the term "purity" as expressing the general condition and character of fleece.

An examination of the fleece should be made systematically. Commencing at the head, and gradually working toward the hindquarters, the judge should part the fleece on the neck, shoulder, side, thigh, and note its quality, length, density, presence of oil and condition. This is easily done by standing at one side of the animal and examining the fleece along the opposite side. In case of breeding sheep having wool over the forehead, then this part should be examined to note the character of head covering. At this point very coarse wool, or even hair, is often found, especially at the more central point. The back wool may be examined, but this should be done with much care, as it is quite desirable to keep this covering closed as much as possible, to avoid establishing openings for chaff, etc. Care-

⁴ Special Report on the History and Present Condition of the Sheep Industry of the United States, 1892, p. 314.

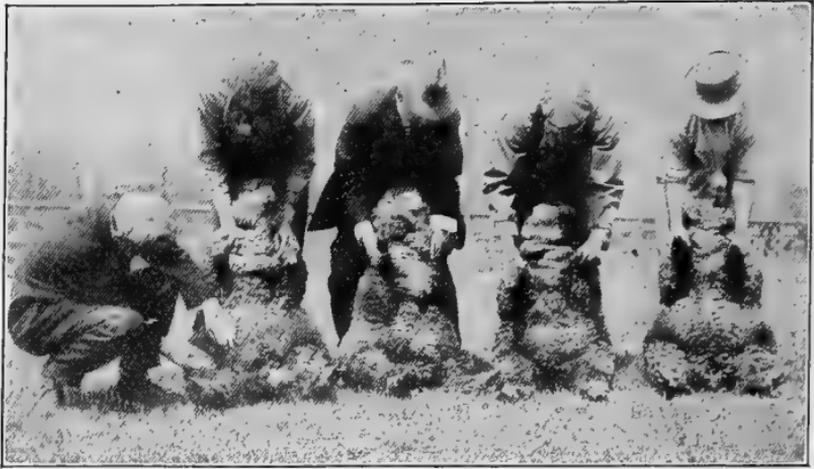


Fig. 237.—“Careful inspection should be made over the belly and about the armpits, and along the inside of the legs.”

ful inspection should be made over the belly and about the armpits, and along the inside of the legs, especially to note the extent and quality of covering. Merino breeders attach more importance to this underside inspection than do owners of mutton sheep. During the entire process of examination, break the fleece apart to the skin only between natural locks, using little force. There is no good excuse for breaking apart an individual lock. It is a matter of importance to examine the fleece without crushing or flattening it out any more than is necessary for thorough inspection.

CHAPTER XLI.

JUDGING BREEDING SHEEP.

IN the consideration of the form and function of the sheep, up to this point but little reference has been made to breeding animals. Within a certain breed or class, there are many things in common among non-breeding and breeding stock. However, the latter possess certain sexual characteristics and features that are peculiar to breeding animals, and which breeders universally recognize as of vital importance. Therefore, while judging breeding stock, it is necessary to have these things in mind. Judges may differ somewhat in their estimates of relative values, but all will agree on the necessity of recognition of certain features as requiring special emphasis in selecting or judging breeding animals. Each sex must receive special consideration, for males and females cannot be consistently judged in the same class.

(A)—JUDGING THE RAM.

The sex character of the ram is of the first importance. This is especially seen in the head, neck, withers, sexual organs, fleece and general conformation. The head should be comparatively large, short, strong and wide over the nose, broad and full at the forehead, and in case of the horned breeds, with large, strong horns of excellent quality. One of the most distinctive features of the male is the thickness of nose, with a slightly arched or Roman character. Frequently slight wrinkles are found here; in fact this is a requisite character of the Merino male. This is not so marked in the young males, becoming more and more apparent with maturity. The ears of the males are also larger and thicker than on females or non-breeding sheep. The ram should carry his head in bold, upstanding fashion,

as becoming a herd leader, with his sex plainly manifested. A ram lacking in this respect should be severely discriminated against by the judge. Too much coarseness of head is to be avoided, as suggesting a coarse type of sire. The neck should be strong and muscular, with some thickness on top. A grasp of the neck, where joining head and shoulders, will reveal to the hand the sexual character there. A strong neck should join bold and somewhat prom-



Fig. 238.—“The head should be comparatively large, short, strong and wide over the nose, broad and full at the forehead.”

inent withers, these two indicating strength of constitution. More prominence of withers is expected with rams of Merino breeding than the mutton class, but even here this character should be somewhat prominent, though when in condition, smoothly covered. The testicles of the ram should consist of a pair of glands uniformly developed and strongly held within what is commonly known as the purse or sac. It is important that the purse have some contraction of skin above the glands, and that it be well defined,

with a minimum of condition. A thick, fat neck of the testicles is usually associated with fatty degeneration. A fat purse also suggests sterility, and is a common characteristic of non-breeding rams. The fleece of the ram should be somewhat coarse or "strong," as expressed by the wool man. A relatively fine fleece on the ram may indicate deficiency of constitution or femininity. The general conformation of the ram shows fullness and boldness in front as a whole, with masculinity the predominating feature. The sex character is also very manifest in the temperament, many rams being combative and given to a free use of the head in the attempt to master other males in the flock. Merino rams are especially given to butting, and frequently require special treatment to keep them under control, such as blindfolding or placing in separate pens.

The breeding capacity of the ram is of great importance. He should possess the various necessary qualities of sex, but, more, should have a strength of back and depth of body that will be transmitted to all progeny intended for breeding purposes. This quality is not easily determined and, in fact, must be largely estimated.

The size of the ram should depend upon breed and class. Quality is very essential. Considerable size is popular with many, but is not a necessity. One of the most noted breeders in England informed the writer that the greatest success in breeding in his flock had come from the smaller rather than the larger rams. Hawkesworth gives preference to a "big good one" over a "little good one," but considers a ram of intermediate size will generally prove the most satisfactory sire.¹ In judging, extremes in size may be regarded with disfavor, other things being equal. A large, coarse ram, however, is subject to more criticism than is one somewhat under size, yet showing much quality.

The form of the ram has already been referred to under the heading of special sex characters. In general, the ram

¹ Australian Sheep and Wool, 1906, p. 135.

should show a frame of the best sort, supported on strong limbs and feet. This is an evidence of vigor and should be associated with a deep, full heart girth and a prominent brisket, features indicating strong constitution. The ram should be short-coupled and, if of the mutton type, tend to compactness of form rather than too much length. There is also a sense of the massive in the male that does not prevail in the female, the various parts being developed on a stronger and heavier scale. A ram with a conformation lacking this masculine character would not prove an attractive sort for a sire.

Breed character in the ram is of paramount importance. In this day of improved breeds there is no excuse for using anything but a pure bred ram. The judge should emphasize breed character as seen in the various features to be found in good individuals of a breed. It is most important that one be familiar with these characteristics. The striking differences in the heads of the Merino, Shropshire, Cotswold or Cheviot show the need of familiarity with each, if the judge is to be capable of passing in judgment. In selecting a sire, or in passing on a ring of sires, preference should be given to such as show the most trueness to breed type.

(B)—JUDGING THE EWES.

The sex character of the ewe is especially seen in the head, neck and breast, and udder. The head is much smaller and more refined than in case of the ram. The muzzle and nose should be free of thickness and coarseness, although a Roman type of nose prevails in some breeds and is no evidence of coarseness. The eyes are smaller and more placid than with the male, and the forehead shows the refinement of the sex. The neck is more slender, lacks in thickness on its upper side, and is not so strongly muscled as a whole. The chest cavity of the female lacks the spread of the male, with the associated width of brisket and withers and heaviness of shoulder. The udder of the ewe

consists of two glands, side by side, each of which has one teat. These glands should be of equal size and in normal condition. The udder should be closely attached at the belly, and should not be very pendant, even during lactation.

The breeding capacity of the ewe is manifested in the depth and spring of rib, in the length and position of rump, and development of udder. The breeding ewe should have considerable depth of body, and the udder should be well developed and in perfect condition. Length of body is also an indication of breeding capacity, the short, close-coupled ewe lacking in this respect.

The size of the ewe in most favor varies from medium to large, associated with plenty of quality. The tendency among present day breeders is to call for size, especially in the female. Large, symmetrical, matronly looking ewes, with quality, always command a premium, and the judge should give them preference. The undersized ewe is usually an unsatisfactory breeder and is far too common in the flock.



Fig. 239.—“Large, symmetrical, matronly looking ewes, with quality, always command a premium.” Southdown ewe and her seven months' old lamb.

The form of the ewe has been likened to a dairy cow. The withers are somewhat narrow, the chest is deep, yet hardly thick, the back of moderate thickness, the loin strong, the rump long, level, wide and the entire body deep and relatively capacious, showing both digestive and breeding capacity. A ewe with the wide, square, compact form of a wether, is less likely to make a good suckling ewe than the one described. The quality of milk production, essential in a breeding ewe, is indicated in this long, deep form, and the well-developed udder.

The breed characteristics of the ewe should be considered when judging breeding stock, but if grade animals are being passed upon then the subject is not so important as in the case of the ram. The pure bred ewe should show breed character quite in keeping with the standard, and should be judged accordingly. Even with the grade ewe, there is more evidence of profit in the one showing plenty of improved blood than in the one of nondescript character. Other things being equal, grade ewes showing considerable breed character will command a higher price than will those lacking in this respect. Trueness to type of breed, then, may be regarded as an important factor in making awards in judging pure bred, while, in the grade, a reasonable degree of consideration should be given to improved blood.

CHAPTER XLII.

DESCRIPTIVE NOTES OF THE MORE IMPORTANT BREEDS OF SHEEP.

THE various breeds of sheep, of which there are many, may be classified in general according to their character of fleece and their relationship to mutton production. The ordinary classification has already been explained on page 374. The following descriptions are intended to set forth the more distinctive characteristics of the various breeds, without going into unnecessary detail. The standard and scale of points, being official information on the subject, are, when possible, made a part of each breed description.

The Southdown breed of sheep was first developed in southeast England, in Sussex county. It is one of the oldest and best-known breeds. The face, ears and legs are very dark reddish-brown in color, with a tendency to grayish brown on the face. In size Southdowns rank as medium, though many mutton breeders think them too small. Mature rams will no doubt average about 175 pounds, and the ewes about 135 pounds. In conformation, specimens of this breed represent the highest ideals in mutton form, being short of head and neck, wide of breast and back, thick and full in leg of mutton, deep of body, short of leg, and generally compact of body. This is a hornless breed, and the head tends to be short and wide. The ears are small and covered with short wool or silky hair. The flesh covering is usually smooth and of superior quality. The yield of fleece is somewhat light; five pounds might be regarded as a fair average, with a length of staple of about two and one-half inches, and of medium quality. The two important criticisms of the breed are lack of size, and the light weight of fleece.



Fig. 240.—Southdown ram, champion at Louisiana Purchase Exposition, St. Louis, 1904.

SCALE OF POINTS FOR SOUTHDOWN SHEEP.

(Adopted by American Southdown Sheep Association.)

	Points
Head —Medium in size and hornless, fine, carried well up, the forehead or face well covered with wool, especially between the ears and on the cheeks, and in the ewe slightly dished	5
Lips and under jaw —Fine and thin	1
Ears —Rather small, tolerably wide apart, covered with fine hair, and carried with a lively back-and-forth movement	2
Eyes —Full and bright	3
Face —A uniform tint of brown, or gray, or mouse color	3
Neck —Short, fine at the head, but nicely tapering, and broad and straight on top at the shoulders	4
Shoulders —Broad and full, smoothly joining the neck with the back	5
Breast —Wide, deep and projecting well forward, the forelegs standing wide apart	5
Back —Back and loin broad and straight from shoulders to rump	7
Ribs —Well arched, extending far backward, the last projecting more than the others	6
Rump —Broad, square and full, with tail well set up	6
Hips —Wide, with little space between them and last ribs	6
Thighs —Full and well let down in twist, the legs standing well apart	6
Limbs —Short and fine in bone, and in color to agree with face	3

	Points
Forelegs—Well woolled and carrying mutton to the knees, but free from meat below	2
Hindlegs—Well filled with mutton, and woolled to the hocks; neat and clean below	2
Delly—Straight and covered with wool, the flank extending so as to form a line parallel with the back or top line	5
Fleece—Compact, the whole body well covered with moderately long and close wool, white in color, carrying some yolk	12
Form—Throughout smooth and symmetrical, with no coarseness in any part	9
General appearance—Spirited and attractive, with a determined look, a proud and firm step, indicating constitutional vigor and breeding	8
Total	100

The Shropshire breed of sheep originated in the counties of Shropshire and Stafford, in western England. This is a hornless breed of the medium wool class. The color of the hair of face, ears and legs is a dark brown, often ap-



Fig. 241.—Shropshire ram, "His Imperial Majesty," breed champion Ohio State Fair, 1911. (Photo by courtesy American Agriculturist.)

proaching black. In size, the Shropshire is somewhat larger than the Southdown, mature rams weighing 200 pounds and ewes 150 to 160 pounds. The better specimens of the breed are characterized by certain distinctive features. The head is covered with a heavy cap of wool, extending near to the nostrils as with a Merino. This feature is more pronounced than with other mutton breeds. The ears tend to be short and broad, and covered with fine hair, or short, curly wool. The legs should be wooled to the ankle joints, and in case of lambs, the wooling should be very marked. The form is distinctly mutton in type, though not so wide of back and short of leg as the Southdown. The fleece combines length, compactness, fineness of staple, and general quality to a degree superior to that of any other mutton breed. In good specimens the shoulder wool, at twelve months is about three and one-half inches long, the fleece as a whole weighing about eight pounds. The skin of the Shropshire is not always uniformly pink in color, there being a tendency to bluish spots on the natural pink. The great popularity of the breed is due to its combining mutton and wool qualities and unusual fecundity. It is the most universally bred of any of the mutton breeds.

SCALE OF POINTS FOR SHROPSHIRE SHEEP.

(Adopted by the American Shropshire Sheep Breeders' Association.)

	Points
General appearance —Attractive, indicating breeding and quality, with stylish carriage, and a symmetrical form covered with a dense fleece	25
Constitution —Robust, as indicated by width and depth of chest, strength and formation of neck, and by bold, active movement	10
Size —In breeding condition when fully matured, rams should weigh not less than 180 to 225 pounds, and ewes not less than 125 to 170 pounds	10
Fleece and skin —Fleece of good length, dense, elastic to touch, medium fine, free from black fiber, slightly crimped, with evenness of texture throughout; scrotum of rams well covered with wool. Skin light cherry color, free from dark spots	15
Body —Well proportioned, with shoulders well placed, fitting smoothly upon the chest, which should be deep and wide, broad and straight back; thick loins well covered with firm flesh; hindquarters well finished; twist deep and full	20

	Points
Head and neck —Head short, broad between the ears and eyes, bold and masculine in rams, without horns, well covered with wool, ears short and erect, eyes bright, color of face and ears dark brown. Neck of medium length, strong and muscular (especially in rams), symmetrically joined to head and shoulders. Rams with horns or stubs are disqualified as heads of flocks	15
Legs —Well set apart, broad, short, straight, color dark brown, and well wooled; pasterns strong and upright	5
Total	100

The **Oxford Down** breed of sheep originated in Oxfordshire, in southern England, dating back to 1833. This breed, in its improved form, resembles the Shropshire. It is hornless and of the medium wool class. The color, as

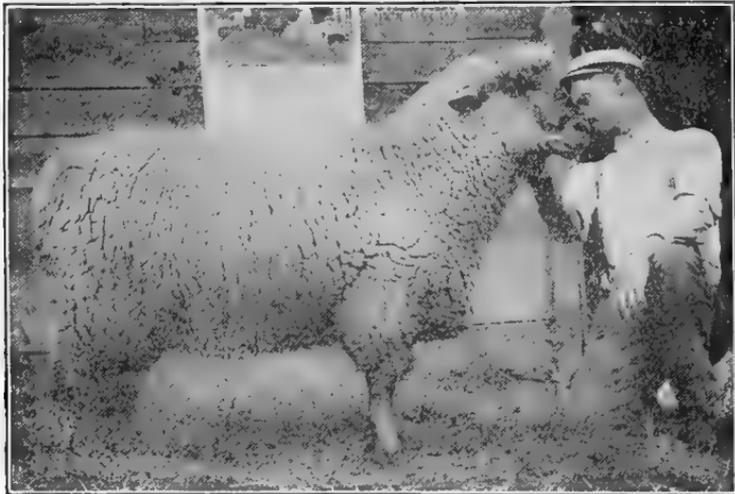


Fig. 242.—Oxford Down ram owned by G. W. Heskett of Ohio.

shown in the hair of head, ears, and legs, is a dark brown. Years ago gray faces occurred, but at present the demand is for dark color, though a touch of gray may occur on the bridge of the nose. In size the Oxford Down is one of the large breeds, and mature rams should weigh, when in good

flesh, 275 pounds or more, and ewes close to 200 pounds. In form, the Oxford Down shows considerable width and depth of body, with a fair leg of mutton. The wool does not usually cover the head much below the forehead, though the tendency is to breed to wool more heavily on the head. The ears are comparatively large and generally free of wool, and are much more conspicuous than in the South-down or Shropshire. The legs, also, are not as a rule much wooled below knees and hocks. The skin is frequently bluish pink or mottled in color, rather than of uniform pink. The fleece combines length of staple and weight in a superior degree, but inclines to be somewhat open, with tendency to a coarse fiber. A year's growth of fleece should weigh 10 pounds or more, and show a length at the shoulder of about four inches.

SCALE OF POINTS FOR OXFORD DOWN SHEEP.

(Adopted by the American Oxford Down Sheep Breeders' Association.)

	Points
BREED TYPE, 30 Points:	
Form—Of a good general appearance, made by a well-balanced conformation, free from coarseness in any part, and showing good style both at rest and in motion	15
Head—Of moderate length and width between the ears and between the eyes, and well covered with wool over poll and down to the eyes. Color of face an even dark gray or brown, either with or without gray spot on tip of nose	6
Rams—When fully matured and in good condition rams should weigh 250 to 350 pounds. Ewes—When fully matured and in good condition, ewes should weigh 180 to 275 pounds	5
Ears—Medium size, not too thick and of an even brown or dark gray color	2
Legs—Short, strong in bone, flat, and of even dark gray or brown color, placed squarely under the body and well apart	2
CONSTITUTION, 25 Points:	
Heart Girth—Large and wide and full in the chest	10
Movement—Must be bold and vigorous	5
Eyes—Bold, prominent and bright	4
Skin—Bright pink in color	3
Neck—Strong and muscular in rams and well set on in both sexes . .	3
MUTTON FORM AND QUALITY, 30 Points:	
Shoulders, back, loin and rump—Wide and straight on top from base of neck to tail	15
Shoulders and thighs—Full and well meated both inside and outside	5
Flanks—Well filled and strong so as to make the lower lines of the body as straight as possible, and side lines straight or rather full . .	4
Carcass—Evenly covered with good, well marbled meat	6

WOOL, 15 Points:

Fleece —Of moderate length, close and of even quality, covering the whole carcass well, and free from black patches upon the body,	
neck or head	15
Total	100

The Hampshire breed of sheep originated in Hampshire, in southern England. This is a large, hornless breed. The color of the hair on head, ears and legs is a very dark



Fig. 243.—Hampshire ram, champion at Ohio State Fair.

brown, almost black in shade. In size the Hampshire ranks among the largest medium wool breeds, mature rams weighing about 250 pounds and ewes from 175 to 200 pounds. Among the most distinctive characteristics of individuals of the breed are the following: the head is somewhat large, with a tendency to Roman nose; the ears are large, bare of wool, conspicuous, and often of droopy carriage; the wool extends but a slight distance over the forehead, so that the

very dark markings of head and ears give a striking personality. The frame of the animal is large and long, and the limbs show heavy bone in comparison with Southdown or Shropshire. The fleece is long, fairly compact, and of the coarser medium wool character, ranging about four inches in length and having a weight for twelve months' growth of about eight pounds.

SCALE OF POINTS FOR HAMPSHIRE DOWN SHEEP.

(Adopted by the American Hampshire Down Sheep Breeders' Association.)

Standard of Excellence.

HEAD AND LEGS:

Head—Moderately large, but not coarse, well covered with wool on forehead and cheeks.

Nostrils—Wide.

Color—(Head and legs): Dark brown or black.

Eyes—Prominent and lustrous.

Ears—Moderately long and thin, and dark brown or black color.

Legs—Well under outside of body, straight, with good size of bone; black.

NECK, SHOULDERS AND CHEST:

Neck—A regular taper from shoulders to head, without any hollow in front of shoulders, set high up on body.

Shoulders—Sloping, full, and not higher than the line of back and neck.

Chest—Deep and full in the heart place, with breast prominent and full.

BODY:

Back—Straight, with full spring of rib.

Loin—Wide and straight, without depression in front of hips.

Quarters—Long from hips to end of rump, without sloping, and deep in thigh. Broad in hips and rump, with full hams. Inside of thighs full.

Scale of Points.

	Points
Head —Size and shape	5
Ears and eyes	3
Color	5
Legs and feet	2
Neck	5
Shoulders	10
Chest and breast	15
Body —Back and loin	15
Rib	5
Quarters —Length	10
Width	10
Twist	5
Wool —Forehead and cheeks	2
Belly well covered	3
Quality	5
Total	100

The Dorset Horn breed of sheep has its native home in Dorset and Somerset counties, in southern England. It is, as indicated by its name, a horned breed of sheep, and is of the medium wool class. The color of the hair of head, ears and legs is white. The horns are the striking characteristic of this breed, those on the mature rams curving



Fig. 244.—Dorset Horn ram, owned by Tranquillity Farm, New Jersey champion at Ohio State Fair.

backward and around spirally, being of large size, while those of the female, which are comparatively small, curve outward, down and slightly forward, with the tips rising about level with or slightly above the eyes. This is a medium-sized breed, mature males weighing about 225 pounds, and females about 165 pounds. The neck and body of the Dorset Horn tend to be somewhat long, and

the spring of rib is frequently not as strong as it should be. The fleece is one of the weak features of this breed, lacking under ordinary condition in length, compactness, weight and quality. Mature rams shear about nine and the ewes about six pounds of wool.

SCALE OF POINTS FOR DORSET HORNED SHEEP.

(Adopted by the American Dorset Horned Sheep Breeders' Association.)

	Points
Head —Neat, face white, nostrils large, well covered on crown and under jaw with wool	5
Horns —Small and gracefully curving forward, rather close to jaw . .	5
Eyes —Prominent and bright	2
Ears —Medium size, covered with short white hair	2
Neck —Short, symmetrical, strongly set on shoulders, gradually tapering to junction of head	5
Shoulders —Broad and full, joining neck forward, and chine backward, with no depression at either point (important)	15
Brisket —Wide and full, forward, chest full and deep	8
Foreflank —Quite full, showing little depression behind shoulder	8
Back and loin —Wide and straight, from which ribs should spring with a fine, circular arch	10
Quarters —Wide and full, with mutton extending down to hocks	10
Belly —Straight on under line	3
Fleece —Medium grade, of even quality presenting a smooth surface and extending over belly and well down on legs	12
General conformation —Of the mutton type, body moderately long; short, stout legs, squarely placed under body; skin pink; appearance attractive	15
Total	100

The Cheviot breed of sheep originated among the Cheviot hills of the border country between England and Scotland, though known as a Scotch breed. It is a medium woolled sheep, and quite generally hornless, although horns occasionally occur on the males. The color is entirely white, excepting the bare flesh at the nostrils, which should be blue black, although this part is frequently mottled in color. The more popular and common color of the hoofs is black. In size the Cheviot is medium, mature rams

weighing in good condition about 200 pounds, and the ewes from 140 to 160 pounds. This breed is characterized by the following distinctive features. The head and ears should be free of wool, and covered with a hard, white, glossy hair. Red or sandy hair occasionally appears, but is very objectionable. Small black spots also sometimes occur on the long, thin, erect ears, and on the head, but are growing in disfavor. A Roman nose is common on the rams, and on some ewes. The eye is prominent and bold.

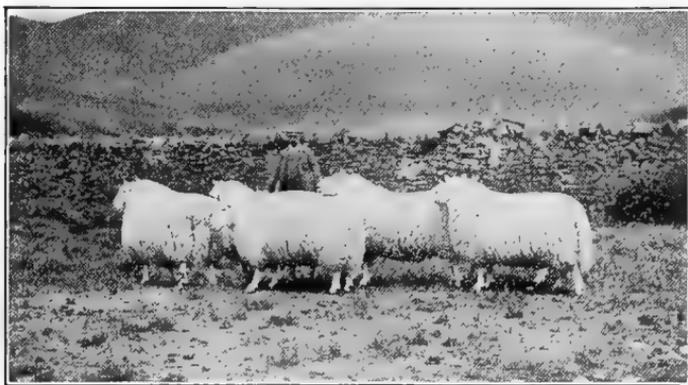


Fig. 245.—Pen of Cheviot rams of J. R. C. Smith, Mowhaugh, Scotland.

The body frequently lacks in thickness, and tends to narrowness of chest, withers and back, compared with the Southdown. The skin is very generally of a bright pink color. The fleece is of medium length, lacks in compactness, and is often somewhat coarse about the thighs. A twelve months' fleece on a mature ram weighs about nine pounds, while seven pounds is a fair weight for an improved ewe. The Cheviot is notable for its style and grace of carriage, being one of the most beautiful of breeds. It is very nervous and active of temperament.

SCALE OF POINTS FOR CHEVIOT SHEEP.

(Adopted by the American Cheviot Sheep Society.)

	Points
General conformation and quality —Deep and full breast and large through chest. Back wide and straight with well sprung, deep ribs. Legs well placed and leg of mutton full and thick. Body well fleshed, skin pink with no blue or dark coloring. Fleece compact and medium fine. Bone strong and fine. General appearance graceful, symmetrical, active	20
Size —In good flesh, when fully matured, a 24-months' old ram should weigh not less than 225 pounds and a ewe not less than 150 pounds	10
Head —Should be medium short and broad with ample breadth between the eyes. Ears should be of medium length and usually erect when at repose. Head covered with clear white hairs, extending from nostrils to back of poll. Ridge of head from between eyes to nostrils straight or slightly arched with females and more strongly arched or Roman with rams. Color of tip of nose black	15
Body —Well proportioned, having notable depth, with thickness on top and at flanks. Loins should be very broad and thick, shoulders should set well back and be smoothly covered, and crops be full and well arched. The rump should be long, broad and level	20
Legs —Should be short, well set apart and be covered with clean white hair, with no wool below hocks and knees. The hind legs should be flat and deep below hocks. Pasterns should be strong and not show weakness, supporting the body well	10
Feet —Symmetrical, squarely placed when in repose and hoofs black in color	5
Fleece —Should cover the body completely to behind the poll and ears, and down to knees and hocks. Under part of the body should be well covered. In mature animals should be not less than three inches long for annual growth, and be compact and of medium wool class. Rams should shear at least 12 pounds and ewes eight pounds when in mature form to be desirable representatives of the breed	20
Total	100

Objections: *Scurs on the head; black spots on the head; flesh colored or spotted skin about the nostrils; hair about the thighs or kemp on the body, reddish or sandy hair on head or legs; lack of wool on under part of body.* **Disqualifications:** *All male lambs shall be ineligible to registration if having scurs or horns exceeding one inch in length.*

The Suffolk breed of sheep originated in southeastern England, especially in Suffolk county. It is a hornless, medium wool breed. It is a very striking sheep in appearance, on account of its black head, ears and legs. In size, the Suffolk ranks above medium, being somewhat larger than the Shropshire. The ram usually has a Roman nose. The ears are large and tend to horizontal carriage. This

is a distinctive mutton breed, and is broad-fronted, wide of back, thick in the hindquarter, and short of leg. The fleece is medium in length and compactness, and the staple of fair quality. Wool does not usually cover the head, ears, or legs below knee and hock. There are very few of these sheep in America, but in England they are regarded with favor for their excellent mutton character.



Fig. 246.—Suffolk ram, first and champion at Royal Agricultural Society Show of England, 1914.

SCALE OF POINTS FOR SUFFOLK SHEEP.

(Adopted by the American Suffolk Flock Registry Association.)

	Points
General appearance —Pleasing outline, good carriage, and symmetry of development	7
General form —Large in size; inclined to be long in body; medium strength of bone; somewhat cylindrical in shape, and straight above, below and in the rear	15
Head —Medium in size, inclining to be long and covered with fine, short, glossy black hair to the junction with the neck; a small quantity of clean white wool on the forehead is not objected to; muzzle moderately fine, especially in ewes; eyes bright and full; ears of medium length and fineness	15

	Points
Neck —Moderately long and well set, and blending well with the body, with some crest in the rams	5
Forequarters —Well developed; breast wide, deep and full; brisket broad; chest capacious, with good heart girth; shoulders broad, oblique and well filled in the neck vein and crops; withers broad; arm well developed	15
Barrel —Roomy; back straight, broad and well fleshed throughout its entire length; ribs well sprung and moderately deep; fore and hind flanks full and deep	10
Hindquarters —Long, deep and full; tail, broad and well set up; buttock broad; twist full; thigh broad and full	15
Feet and legs —Straight, of medium length with flat bone; bare of wool below knee and hock, glossy black in color, and set well apart . .	8
Fleece —Moderately short, with close, fine, lustrous fiber, and without tendency to mat or felt together, or to shade into dark or gray wool or hair, especially about the neck or tail. The fleece should cover the whole body except the head and the legs below the knee and hock; and the skin underneath it should be fair, soft and of a pink color	10
Total	100

The Tunis breed of sheep comes from ancestry tracing back to an importation from Tunis to America, in 1799. Tunis sheep have not been bred extensively in America, and lack uniformity of character. It is a hornless, medium wool breed. The color marks are variable. Some sheep have reddish-brown heads, ears and legs, while with others the colors are mottled brown and white, especially of head and ear. The ears are large, broad and pendulous, and covered with fine hair. In size, the Tunis is of the smaller class of mutton sheep, rams at maturity weighing 150 pounds or more, and ewes 120 pounds. A peculiarity of this sheep is its broad tail. At maturity it may measure five inches or more in width, and maintains this breadth for a length of six or eight inches from the tail-head. The lambs are usually docked, so that the naturally conspicuous character of tail is not seen, though the rump on this account is more full and heavier than with our other breeds. The neck inclines to be long, but the body as a whole is of fair mutton form. There is also a tendency to be somewhat leggy. The fleece is of excellent quality, being fine, soft and fairly compact, and averages about three inches in



Fig. 247.—Tunis ram, "Gen. McPherson" 1619, a noted sire of the breed. (Photo by courtesy The American Sheep Breeder.)

length. The fleece varies in color, and reddish fibers frequently occur among the white staple. The lambs when dropped are of various colors: white, red, tawny, mottled, but with age the fleece loses much of its mottled appearance.

SCALE OF POINTS FOR TUNIS SHEEP.

(Adopted by American Tunis Sheep Breeders' Association.)

	Points
Blood —Imported from Tunis, or having a perfect line of ancestors extending back to the flock owned and bred by Judge Richard Peters, of Belmont, near Philadelphia, who received the first pair from Tunis in 1799, and bred them pure for more than 20 years	20
Constitution —Healthful countenance, lively look, head erect, deep chest, ribs well arched, round body with good length. Strong, straight back; muscles fine and firm	15
Fleece —Medium length, medium quality, medium quantity, color tinted with gray, never pure white. Evenness throughout	10

	Points
Covering —Body and neck well covered with wool. Legs bare or slightly covered; face free from wool and covered with fine hair	10
Form and tail —Body straight, broad, well proportioned. Small bone; breast wide and prominent in front. Tail—the little end should be docked, leaving the fleshy part fan-shaped, or tapering; five to ten inches broad, six or eight inches long, and well covered with wool	12
Head and ears —Head small and hornless, tapering to end of nose; face and nose clean, in color brown and white. Ears broad, thin, pendulous, covered with fine hair; in color brown to light fawn	10
Neck —Medium in length, well placed on shoulders; small and tapering	5
Legs —Short. In color brown and white; slightly woolled not objectionable	6
Size —In fair condition, when fully matured, rams should weigh 150 pounds and upward; ewes, 120 pounds and upward	6
General appearance —Good carriage; head well up; quick, elastic movements, showing symmetry of form and uniformity of character throughout	6
Total	100

The Leicester breed of sheep originated in Leicestershire, central England, being one of the older British breeds. It is a hornless, distinctly white-faced breed. The head is a notable feature of this breed. The nose is more or less arching, the eye prominent, frequently a light tuft of wool extends over the poll. Hard white hairs cover the face. There is a bluish tint to the skin on the head. Black spots also occur in a slight way on both head and ears. The flesh at lips and nostrils should be black. The thin, long ears, which are covered with white hair, are directed backward and show much activity. The appearance of head, and its animated, stylish carriage, quite suggests the Cheviot. The Leicester is one of the larger breeds, and mature rams will weigh from 225 to 250 pounds, and ewes from 175 to 200 pounds. The neck is short and not, as a rule, much elevated. The body is wide of bosom, broad of back, and the hindquarters often tend to narrowness. Leicesters, as viewed from above, seem unusually wide, but from one side, give evidence of lack of depth of rib. The legs which are free of wool from knee and hock to the toes, impress one as being somewhat long and fine of bone. The fleece is of the long wool class, being quite curly, somewhat open, and



Fig. 248.—Leicester sheep on pasture in Ireland.

averaging about six inches in length, and weighing about nine or ten pounds. In the border country of England and Scotland has been developed a type known as the Border Leicester. This has a bolder carriage and style of head, and is quite free of wool on the poll. The face of the Border Leicester is a clear white. In carcass the latter is larger and longer, the belly is not quite so full in outline, being carried rather more lightly. The border sheep is also somewhat more leggy than the older type.

SCALE OF POINTS FOR LEICESTER SHEEP.

(Adopted by American Leicester Sheep Breeders' Association.)

	Points
Head —Long, moderately small, tapering toward the muzzle; white and well covered with hair; lips and nostrils black	6
Nose —Somewhat narrow, almost straight in ewes, and slightly Roman in rams	2
Face —Having a wedge-shaped appearance, well covered with fine white hairs	2

	Points
Ears —Thin, rather long, mobile and directed backward; a black speck on face and ears not uncommon	2
Eyes —Large and prominent	4
Neck —Strong and moderately short, level with the back and broad at the base where it leaves the chest, gradually tapering toward the head, being fine where head and neck join; neck straight from chest, showing a straight line from rump to poll	6
Breast —Deep, broad and full	8
Shoulders —Upright, wide across the top, giving good thickness through the heart	6
Chest —Well filled behind the shoulder, with large girth	6
Back —Broad and well fleshed, ribs well sprung, loins wide, hips level, quarters straight and long	12
Barrel —Round, well ribbed home, straight lines above and below	10
Legs —Of moderate length, fairly large and wide apart, with strong flat bone, covered with white hair; brown hair or spots objectionable	6
Flesh —Firm, springy pelt; pink skin	8
Fleece —Fine, uniform and round in staple, curly, with good bright luster, and no dark hairs or kemp, belly well covered	10
Carcass —Rectangular, legs well set on, hocks straight, pasterns good, with neat feet, good general appearance	12
Total	100

The Cotswold breed of sheep originated in central south-western England, in Gloucestershire. It is one of the very old long wool breeds. The head is one of the striking features, being hornless, and usually white, although gray or brown frequently occurs. The tendency to a distinct Roman nose exists, especially with rams, and the nostrils are dark in color. Curls or locks drop over the forehead, these sometimes covering much of the face, especially on show sheep where they have been protected. The ears are somewhat large and coarse, are covered with fine hair, and heavily carried, quite in contrast with the Leicester. In size this is a large breed, mature rams weighing 250 to 275 pounds and ewes 200 to 225 pounds. This sheep has a very wide body, especially in front, and strong spring of rib. There is a tendency to narrowness behind. The legs are long, but heavy in bone, in comparison with the Leicester. In fact, this is a grosser type of sheep in general. The fleece consists of large, lustrous, curly locks, while those on the Leicester are of a finer type. The fleece averages about eight inches long at twelve months, and weighs about 10 pounds.

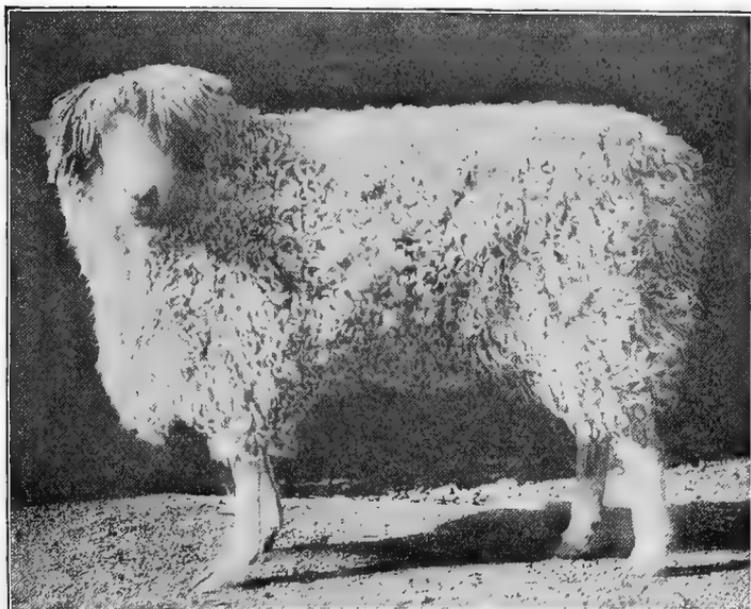


Fig. 249.—Cotswold ram, first in class at Louisiana Purchase Exposition, St. Louis, 1904. (Photo by courtesy American Agriculturist.)

SCALE OF POINTS FOR COTSWOLD SHEEP.

(Adopted by American Cotswold Registry Association.)

Ram.

	Points
Head —Not too fine, moderately small and broad between the eyes and nostrils, but without a short, thick, appearance, and in young animals well covered on the crown with long, lustrous wool	8
Face —Either white or slightly mixed with gray, or white dappled with brown	4
Nostrils —Wide and expanded; nose dark	1
Eyes —Prominent, but mild looking	2
Ears —Broad, long, moderately thin and covered with short hair	4
Collar —Full from breast and shoulders, tapering gradually all the way to where the neck and head join. The neck should be short, thick and strong, indicating constitutional vigor, and free from coarse and loose skin	6
Shoulders —Broad and full, and at the same time joined so gradually to the collar forward and chine backward as not to leave the least hollow in either place	8

	Points
Forelegs —The mutton on the arm or fore thigh should come quite to the knee. Leg upright with heavy bone, being clear from superfluous skin, with wool to fetlock, and may be mixed with gray	4
Breast —Broad and well forward, keeping the legs wide apart, girth or chest full and deep	10
Fore flank —Quite full, not showing hollow behind the shoulders	5
Back and loin —Broad, flat and straight, from which the ribs must spring with a fine circular arch	12
Belly —Straight on underline	3
Quarters —Long and full, with mutton quite down to the hock	8
Hock —Should stand neither in or out	2
Twist —Or junction inside the thighs; deep, wide and full, which, with a broad breast, will keep the legs open and upright	5
Fleece —The whole body should be covered with long lustrous wool	18
Total	100

Ewe.

The standard and scale for the ewe is identical with that of the ram, excepting in the following particulars:

	Points
Head —Moderately fine, broad between the eyes and nostrils, but without a short, thick appearance, and well covered on crown with long, lustrous wool	8
Collar —Full from breast and shoulders, tapering gradually all the way to where the neck and head join. The neck should be fine and graceful and free from coarse or loose skin	5
Fore flank —Same standard as for ram, but points	5
Belly —Same standard as for ram, but points	3

The **Lincoln** breed of sheep originated in Lincolnshire, in eastern England, and is a very old breed of the hornless, long-wooled sort. The prevailing color of face, ears and legs is white, but gray shading frequently occurs on the nose. This is one of the largest of breeds, mature rams averaging, in good flesh, 275 pounds, and ewes about 250 pounds. Characteristic features of the Lincoln are a large, white-faced head, slightly capped with wool; dotted or mottled ears; a wide breast, broad back and general thickness; strong limbs and heavy bone; and a coarse, long, curly, lustrous wool. The fleece may attain an average length of about eight inches and weigh approximately 15 pounds. The locks on the Lincoln have a larger, coarser curl than on the Leicester.

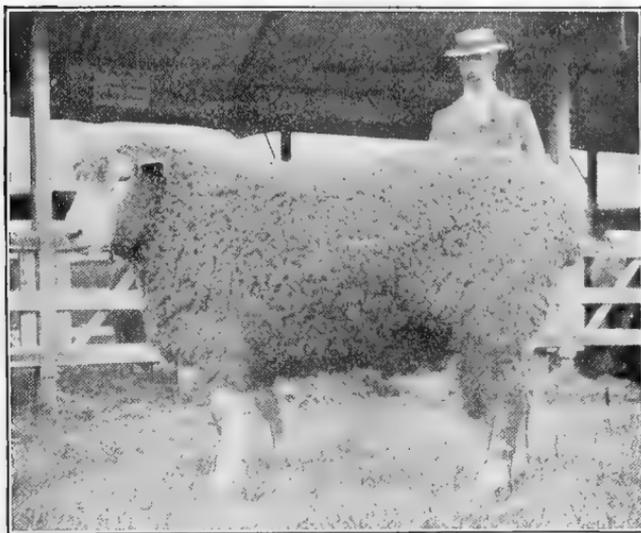


Fig. 250.—Lincoln ram "Dowsby 350 Guineas," first prize, Royal Agricultural Society of England Show.

SCALE OF POINTS FOR LINCOLN SHEEP.

(Adopted by American Lincoln Sheep Breeders' Association.)

	Points
Constitution —Body deep, back wide and straight; wide and full in thigh; bright, large eyes; skin soft and of a pink color	25
Size —Mature rams not less than 250 pounds, when in good condition. Matured ewes not less than 200 pounds	10
Appearance —Good carriage and symmetry of form	10
Body —Well proportioned, good bone and length; broad hindquarters; legs standing well apart; breast wide and deep	15
Head —Should be covered with wool to the ears; tuft on forehead; eyes expressive; ears fair length; dotted or mottled in color	10
Neck —Medium length; good muscle; well set on body	5
Legs —Broad and well set apart; good shape; color white, but some black spots do not disqualify; woolled to the knees	10
Fleece —Of good even length and quality over body; not less than 8 inches long for one year's growth	10
Quality of wool —Rather fine, long wool; strong, lustrous fiber; no tendency to cot	5
Total	100

The Romney Marsh breed of sheep originated on the low-lying meadows of county Kent, in eastern England. This is a pure white, hornless breed. On these lowlands Romneys are said to be comparatively free from foot-rot. The head is covered with hard, white hair up to the forehead, which is tufted over with short wool. The nose has a Roman tendency and the nostrils are black in color. The muzzle



Fig. 251.—Romney Marsh ram, a winner at the Royal Agricultural Society of England Show. (Photo by courtesy American Sheep Breeder.)

has a bluish tint. The ears are of a medium size, and more or less covered with wool. In size, the mature rams weigh about 200 pounds, and the ewes 140 to 160 pounds. This breed has been improved considerably in recent years, and to-day is a fairly thick, compact type of sheep, with considerable width of back and depth of rib, and carrying a heavy leg of mutton. The fleece is of the long wool class

of the finer sort, somewhat open, and weighs about eight pounds under average conditions. There are but a few of these sheep in America, an effort having been made, however, in recent years to introduce them on the western range.

The American Merino (or Spanish Merino) is a sheep of Spanish ancestry, the characteristics of which are set forth in the discussion of the Class A Merino, which is the same thing. There are various families of these sheep, but they all possess the same general features, and their blood is more or less intermingled.

The Delaine Merino is of American breeding, but descended from sheep imported from Spain early in the nine-



Fig. 252.—Rambouillet ram "Altamont," champion at the International Live Stock Exposition, 1905. (Photo by courtesy Mr. George Truesdell.)

teenth century. Delaine Merinoes may be either of Class B or C type, the descriptions of which have already been given in detail.

The Rambouillet breed of sheep is a Merino of the Delaine type, but of French ancestry. The differences between the Rambouillet and Class C Merino in color markings, conformation, size and fleece are very slight. In fact, the blood of the French Merino in times past has been mingled more or less with the Delaine. During recent years of breeding, the Rambouillet has been bred to somewhat greater size, but even then the difference is not always marked. The Rambouillet rams will average about 185 pounds at maturity, and the ewes 150 pounds or slightly more. The fleece at one year of age is usually three inches long, of fine, soft quality, carrying a moderate amount of oil, and weighing about fifteen pounds as taken from mature rams, and ten pounds from ewes. Rambouillet sheep vary considerably in type, ranging from Class B to Class C in form and fleece character. At the Ohio State Fair, Rambouillet sheep have been exhibited in two general classes, B and C, on the same general basis that Merino sheep are given these two type classifications.

CHAPTER XLIII.

THE ANGORA GOAT.

The native home of the Angora goat is the province of Angora, in Asia Minor, some 200 miles south by southeast from Constantinople. Many years ago some goats were brought to America under the name of Cashmere, that are now known to have been true Angoras.

The characteristics of the Angora goat, of the more improved type, are as follows: The color is pure white. The Angora is somewhat smaller than the common short-haired goat, the bucks weighing from 60 to 100 pounds, and the does about 50 pounds. The two most striking features of this goat are the head and the fleece. The head is fine, the forehead being comparatively broad, the eyes bright and fairly prominent, and the muzzle broad. The grayish, flat-like horns are somewhat heavy on the male, and turn back and twist outward and backward for 18 to 20 inches, the tips being widely separated. The horns on the doe show little twist, rise upward and then turn back, being comparatively small. The thin, pointed ears average six to eight inches in length, and about two in width, and are what might be termed semi-pendant. The head should be carried erect and with vigor. The body tends to be round, and deep of rib, with comparatively level back. Width of chest is emphasized as evidence of constitution. Angoras frequently show narrow, droopy rumps, a very undesirable conformation which judges should severely discriminate against. Shortness of leg, strong bone, and well carried pasterns are much to be desired. The short stub of tail is usually carried rather erect. The usual color of the skin is a bright pink.

The fleece of the Angora, commonly known as Mohair in the market, is a class of hair differing from wool in having no exterior scales of importance. The fleece is pure white under natural conditions, and covers the entire body excepting the face, which is usually covered with hard, white hair between the lower part of the forehead and nostrils.

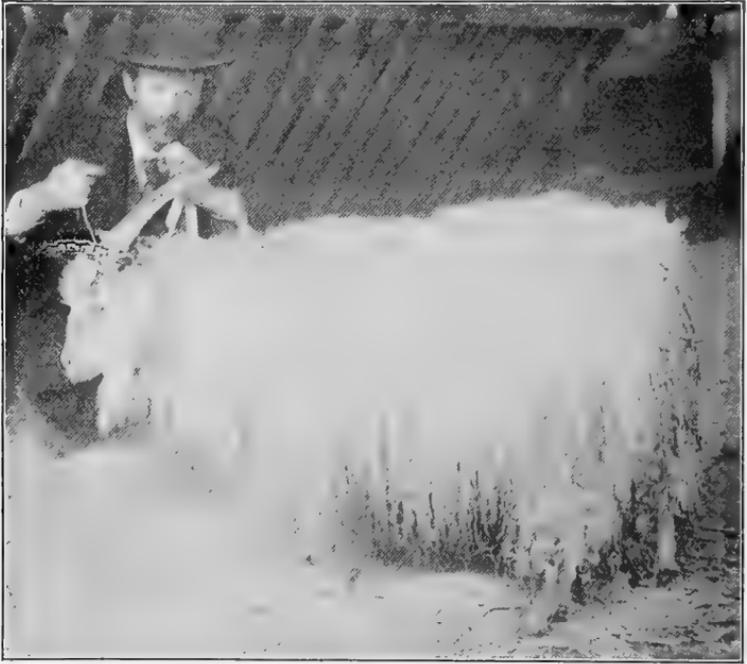


Fig. 253.—Angora goat, "Lazarus," a noted champion. (Photo by courtesy American Sheep Breeder.)

In fact, there are two classes of hair on the Angora, one that is short and kempy, lying close to the skin, and the other the mohair which occurs in wavy curls over the body, attaining a length of about ten inches after a year's growth. The locks should have their corkscrew-like curls carried up close to the body. A wavy staple without much

curl is an evidence of coarseness. The fleece has a beautiful lustre which gives to mohair cloth its attractive silky character. This quality of lustre is one of the important features of the fleece. A pure-bred Angora of good breeding in a year will produce a fleece that will usually weigh five or six pounds, inferior individuals shearing about half that weight. In judging the Angora, special attention should be given to uniformity in fineness and length of staple, and to the prevalence of kemp, which is regarded as highly undesirable. Kemp, either white or gray, is quite common among Angoras, and seriously injures the value of the fleece.

The following very unique standard and scale of points gives no descriptive matter, but enables the judge to classify certain features within three grades of merit, *viz.*: "extra good," credited with 20 points; "good," credited with 14; and "medium" credited with 8.

SCALE OF POINTS FOR THE ANGORA GOAT.

(Adopted by the American Angora Goat Association.)

	Extra Good Points	Good Points	Medium Points
Fineness and lustre of fleece	20	14	8
Quantity of fleece	20	14	8
Freedom from kemp	20	14	8
Size of bone, breadth and depth of carcass	20	14	8
Constitution and form	20	14	8
Total	100	70	40

CHAPTER XLIV.

THE MILCH GOAT.

THE goat is widely used over the world as a source of milk supply among the poorer people. Over much of continental Europe Milch goats are a common sight in the market and about the homes of people of limited means. There are numerous breeds or kinds of goats used for this purpose, but some are much greater producers of milk than are others.

The judging of Milch goats at the present day, according to Pegler,¹ is largely based on a consideration of the following features, in the order given: (1) milking qualities; (2) size and shape; (3) quality and condition; (4) color and markings.



Fig. 254.—“The milking qualities of the goat are manifested in the appearance of the udder.” (Photo by courtesy Orange Judd Company.)

The milking qualities of the goat are manifested in the appearance of the udder, and the relationship of its size, form and quality to the period of lactation. The form of the udder as viewed from behind should be wide and deep, pressing close against the thighs. The goat udder is distinctly pendant, and has but two

¹The Book of the Goat. H. S. Holmes Pegler. Fourth edition. London, 1910, p. 276.

teats, so from a side view one should not emphasize length as in the case of a cow. The udder should be comparatively large, but of superior quality, and this cannot be determined oftentimes without first milking the goat. The udder should not be fleshy, but should be mellow and elastic, and free from hardness or lumps of any kind. The teats should be considered in regard to their size, form, position on the udder and conveni-



Fig. 255.—“Much the same conformation is sought as is found in the dairy cow.”

ence of handling. They should be of comparatively large size, long, cylindrical, and not too wedge-shaped. The teats should be neatly suspended at the bottom of the udder, so that they may be conveniently grasped and the goat milked from the rear. Superfluous teats are undesirable, as they are in the way, and if they yield milk, this is an injury rather than a benefit. The ease with which the goat

milks is an important matter and this cannot be determined unless the judge performs the operation. With some animals the milk flows freely, while it is drawn from others with difficulty.

The size and shape of the Milch goat naturally have an important relationship to production. Pegler states that size carries but little recommendation, and that no judge

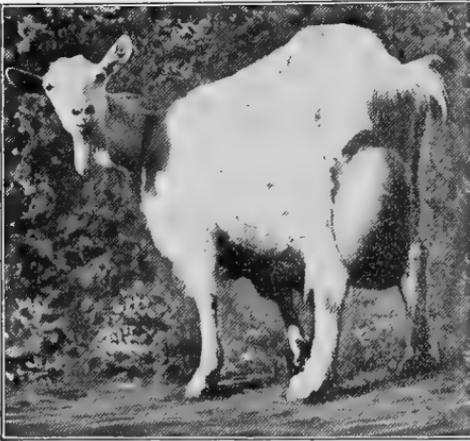


Fig. 256.—“The goat naturally tends to have a droopy and peaked rump.”

worthy the name would think of placing a tall, leggy goat, shallow of frame and with a small udder over another, little more than half its height perhaps, showing a good shape and a large bag. “Size is a quality affecting kids and goatlings rather than full-grown goats, but as we encourage it in these immature animals we cannot alto-

gether ignore it when the same animals become fully developed.” Much the same conformation is sought as is found in the dairy cow. The type and style of head depends somewhat on the breed, but it should show much quality, be wide at the forehead, and gracefully taper to the muzzle, with preferably no beard. The neck should be slender; the chest wide; the withers sharp; the back long and level; the body deep; the hip bones wide apart; the rump long, wide and level; the thighs thin and widely arched between; the legs short and well carried. The goat naturally tends to have a droopy and peaked rump, and the judge should discrim-

inate severely against this defect. "If there is a point on which judges are apt to give exercise to their fancy," says Pegler, "it is in regard to horns. There is no doubt that most breeders, whether acting as judges or buyers, give preference (other points being about equal) to a goat without horns; but if these ornaments, as some consider them, are present, they should undoubtedly be small and slender rather than coarse and heavy. Sharp-pointed horns rising



Fig. 257.—A Saanen goat on pasture in Switzerland.

perpendicularly from the head, are decidedly objectionable from a practical point of view, as they are unquestionably in some degree dangerous. The best shaped, in the writer's opinion, are those which lie close to the head, curving back like the horns in some sheep."

Quality and condition with the Milch goat are important factors, especially quality. This is shown in neatness of form, fineness of bone, in a close, glossy coat of soft, fine

hair, and in a thin, mellow hide. Quality has an important influence in securing success where real merit is concerned. Condition indicates the degree of flesh and bloom, and this will, of necessity, influence the judge more or less. It does not, however, affect the intrinsic merit of an animal. Other



Fig. 258.—Toggenburg buck "Crown Prince." (Photo by courtesy Prof. F. K. Cooke of Illinois.)

things being equal, the animal showing the best condition should receive preference.

The color and markings of Milch goats have very little bearing upon the exhibits, unless in a special breed class. Excepting with certain Swiss breeds, goats are not usually judged from a breed point of view. Color is purely a matter of taste or fancy.

The Saanen breed of Milch goats comes from the valley of that name in Switzerland, though widely distributed in that country to-day. It is the largest Swiss breed, is pure white or creamy white in color, and usually hornless. It is very attractive, having breedy looking heads, slender necks, full chests, sharp withers, strong backs, deep bodies, and fairly wide and level rumps, and large udders

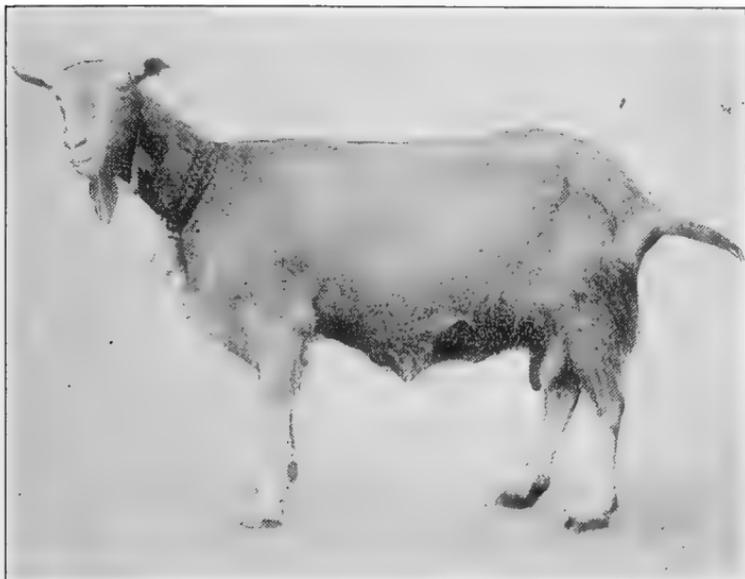


Fig. 259.—Toggenburg milch goat. (Photo by courtesy Mr. Will C. Clos.)

carried high. There are many excellent milkers of this breed. Thompson gives a record of ten Saanen goats that made annual records of from 423 to 951 quarts.

The Toggenburg breed of Milch goats is a native of the Toggenburg valley, in Switzerland. This goat is a medium brown in color, with a white band passing along down each side of the face from eyes to mouth. The breed is usually hornless. The head is broad of forehead, has

some dish of face, and the ears are of moderate size and usually carried erect. The males have a coarse beard and are rather more free of offensive odor than male goats of other breeds. Toggenburgs differ in character of coat of hair, some animals having rough, long coats, others short ones, and still others, coats of a medium character. The udder seems capable of great capacity. When full it is carried high between the legs and has large, long teats. Many of these goats produce from four to five quarts of milk a day, while the best yield as high as seven quarts.

PART V.—JUDGING SWINE.

CHAPTER XLV.

THE ANATOMY OF THE HOG.

The skeleton of the hog is characterized by certain interesting features. The skull varies considerably in length and profile, that of the wild boar being long and slanting, while some domestic breeds have very short skulls with a deeply concave face. The frontal bone rises from the center of the face into a high crest, while at the opposite end, at the snout, between the nostrils, is a small prenasal bone shaped like a three-sided prism. Perhaps the most striking feature of the skeleton is the skull. Youatt makes the following interesting reference to it and its special purpose:¹

“A very slight comparison of the face of this animal with that of any other will prove that strength is the object in view; strength toward the inferior part of the bone. In point of fact, the snout of the hog is his spade, with which in his natural state, he digs and grubs in the ground for roots, earth nuts, worms, etc. And to render his implement more perfect, an extra bone is added to the nasal bone. This one is short and trifacial and placed directly before the nasal bones, with which, and with the edges of the anterior maxillary, it is connected by strong ligaments, cartilages and muscles. This bone has been termed the spade bone, snout bone, and by some writers the vomer, from its supposed resemblance to a plowshare. By it and its cartilaginous attachments is the snout rendered strong as well

¹The Fig, 1847, p. 78.

as flexible, and far more efficient than it could otherwise be; and the hog often contrives to give both farmers and gardeners very unpleasant proofs of its efficiency by plowing up deep furrows in newly sown fields and grubbing up the soil in all directions in search of his living and dead food."

There are six short, wide and powerful cervical vertebræ, 14 or 15 thoracic vertebræ, and six or seven lumbar vertebræ. The sacrum usually consists of four vertebræ which, with age, become fused together, and there are from 20 to 26 vertebræ in the coccyx. There are 14 or 15 pairs of ribs which have a strong curve in the improved breeds. The thorax is longer and more barrel-shaped than in horse or cattle. The shoulder blade (scapula) is quite wide and has a considerable bony prominence on its face. The principal leg bones are comparatively short and strong. The bones of the feet, that is the metacarpal and metatarsal bones, are in four sets. The hog stands on the two larger central toes, while two smaller ones, known by stockmen as the "dew claws," are behind and slightly elevated above the level of the middle toes.

The teeth of the hog number 44, there being in each jaw 14 molars, six incisors and two canines. The molars increase in size from front to rear. The incisors are small and have a very slanting position in the lower jaw. The upper incisors are somewhat curved. The canine teeth are curved and long, mature boars having tusks that are very powerful and sharp. The lower canines in the boar sometimes reach a length of eight inches or more.

Determining the age of swine by means of the teeth is not easy, neither is it necessary under ordinary conditions. In fact the mouth of the hog is less easily examined than is that of other domestic animals. If one wishes to examine the mouth, the best method is to place a slip-noose about the upper jaw, drawing it fairly tight, and fastening the other end of the rope to a post. The hog will pull back, squealing hard, with the mouth open, under which conditions the teeth

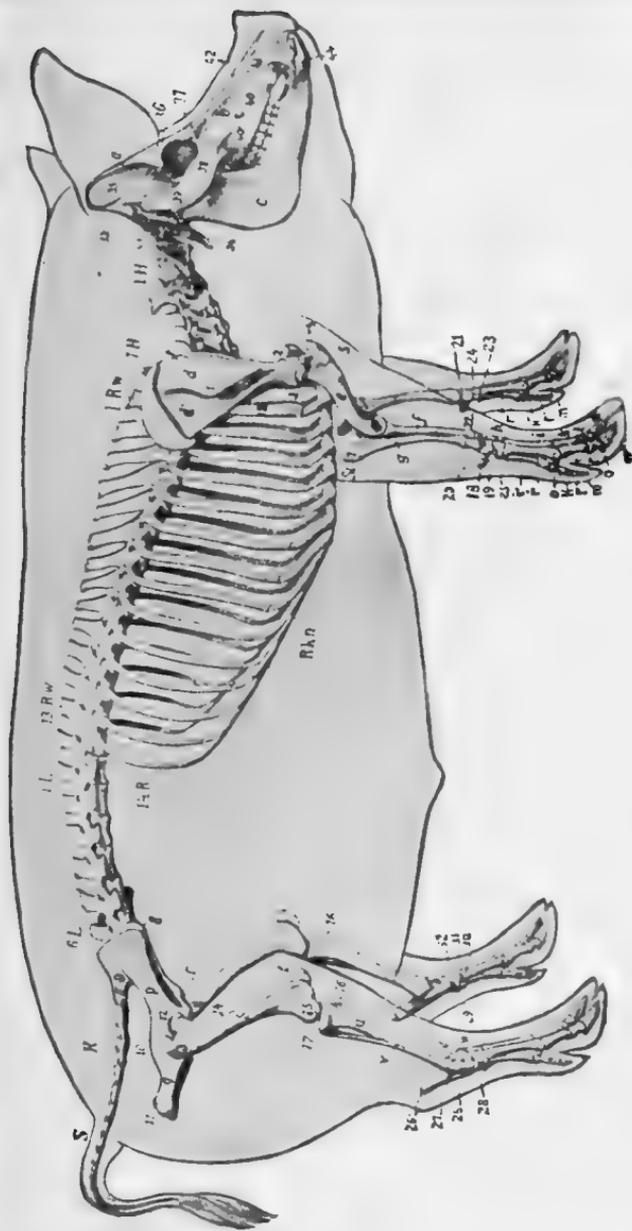


Fig. 260.—THE SKELETON OF THE HOG and its relationship to the contour of body. (Reproduced from *The Anatomy of the Domestic Animals*, by courtesy Dr. S. Sisson.)

can be examined. The following very clear statement of age of teething in swine, is by Dr. D. McIntosh.²

“At birth, the young pig has eight teeth—four temporary incisors and four temporary tushes; about the tenth day appear the second and third temporary molars; at one month, four incisors are out, two in the upper and two in the lower jaw; about the sixth week, the temporary foremost molars are visible; at three months, two more are added to each jaw; at this period all the milk teeth are in position. Time is then allowed for the jaws and teeth to grow, and at six months, in the majority of pigs, a small tooth comes up on either side of the lower jaw, behind the temporary tushes, between them and the molars; and in the upper jaw, directly in front of the molars; at six months, the fourth molar appears through the gums; at nine months the corner incisors are displaced and permanent ones make their appearance. The permanent tushes are also cut at this time, and the fifth molar on each side of both jaws makes its appearance. At one year the middle incisors are replaced by permanent ones, and by this time the tushes are of a considerable size; at this period the temporary incisors are shed and replaced by permanent ones; at eighteen months, in most pigs, dentition is complete, as the lateral incisors and the sixth molar are up.”

The stomach of the hog has a capacity of about one and a half to two gallons. Sisson states³ that its left part is large and rounded, while the right part is small, and bends sharply upward to join the small intestine. There is a large, blind pouch in the upper end of the stomach, the *diverticulum ventriculi*. The stomach of the hog is much more simple than that of the ox or sheep.

The intestine of the hog is about fifteen times the length of the body, the small part being from 50 to 65 feet long and the larger 12 to 15 feet long.

The liver is relatively large, weighing about four pounds

² Diseases of Swine, 1897, p. 22.

³ The Anatomy of the Domestic Animals, 1914, p. 483.

in the mature animal. The *heart* is small, usually weighing less than a pound. The *kidneys* are smooth and bean shaped, about twice as long as broad. The *bladder* is thin and has considerable capacity.

The skin of the hog in the improved breeds varies in character, and ranges in thickness from one to two millimeters (.04—.08 inch). The sebaceous glands in the skin, according to Sisson, are small, and not so abundant as with most other animals, while the sweat glands, to the contrary, are large, yellow or brownish in color, and may often be seen with the naked eye. The exterior layer of the skin is much tougher and denser than with other domestic animals, and contains many large pores. Numerous fine blood vessels, capillaries and nerves extend through the delicate under layer of skin. Referring to the quality of the skin, Youatt states⁴ that in some of the large, old breeds it is thick, coarse, tough and almost as impenetrable, in comparison, as the hide of a rhinoceros; while in many of the smaller breeds, and particularly in those which have a considerable admixture of Asiatic blood, and in the Chinese pigs themselves, it is soft, fine and delicate, and bears no slight degree of resemblance to the skin of a human being.

The hair of the hog is quite variable, according to the individual, or to the part of the body on which it grows. The coarsest, heaviest hairs are found along the back over the spine, and especially over the neck and shoulders. These hairs are known as bristles, and in the case of male hogs, they



Fig. 261.—“Some individuals have coats of curly hair.” This is a Lincolnshire Curly Coated pig, a British breed.

⁴ The Pig, 1847, p. 107.

are sometimes raised more or less erect in time of anger or excitement. The bristles are often very coarse and long especially on boars of large size that show much masculinity. The finer, softer hair is found along the sides of the body. There is considerable range of difference in the character of the hair, even in case of the same breed. Some individuals have coats of curly hair, but this is not popular among producers of pure-bred swine, the straight, smooth coat being preferred. Occasionally on a hog, the hair on the back, at some spot not over two or three inches in diameter, will be more or less awry or twisted, forming what is known as a *swirl* among stockmen. While the swirl is of no special significance, breeders of pure-bred stock discriminate against it, and sell animals having this peculiarity for less money than they otherwise would. The hair about the head is also often coarse, short and wiry.

CHAPTER XLVI.

THE PORK CARCASS AND ITS CUTS.

To be able to judge swine intelligently, it is necessary to understand into what the carcass of the hog, as a product of the feeder's art, may be transformed in its final analysis. The average man knows that from the carcass of the hog are taken hams, pork chops, spare ribs, etc., but he little knows or cares for further information. The qualified judge, however, understands that the carcass of the hog cuts into parts of different values and for various domestic uses. Further, he must learn, as a preliminary part of the study of animal form, that in order to have a carcass of first quality and value, it is necessary to have a live animal of first quality and high-class conformation. High-class meat is a product of quality, and high-priced cuts come from the parts that the intelligent breeder attempts to reproduce in the highest degree of perfection.

The dressed carcass of the hog shows a smaller per cent of waste than any other farm animal. Ordinarily, the hog will dress out close to 80 per cent carcass and 20 per cent offal for fattened stock. The older and more heavily fattened, the greater the per cent of carcass to offal. In the prize hog carcasses at one International Live Stock Exposition, the smallest per cent of carcass to offal was 83.2, and the greatest 88.3 per cent. A record of 85 per cent carcass and 15 per cent offal at an American hog carcass show, is not at all remarkable. At the European shows, such as the Smithfield of London, where the bacon type prevails, the dressing out percentage is considerably less than the highest American records. The weights of carcass vary greatly, but 160 to 250 pounds are popular, while if the market desires lard, a still heavier weight up to 400

pounds gives a fat back and a high dressing out weight if well fattened. Figures show that the hog has less waste in killing than any other farm animal. The butcher in selling the carcass, has much less waste than with either beef or mutton, for as a rule he receives a good price for his extra fat or leaf lard.

The wholesale cuts of the pork carcass especially interest the student of animal conformation. He should be familiar with these, where they come from and their relative values. A knowledge of the retail cuts, while desirable, is less necessary.

The pork carcass when ready for cutting up consists of the body, legs, feet, head and ears, complete, less the internal organs, excepting the kidneys. The body is split completely through on the under line, from the tail to brisket. From this point there is some slight difference in cutting, according to the market classes and uses. However, in general practice, the carcass is cut into two sides. Sometimes the head is divided into two parts, and sometimes it is cut off entirely at the neck.

The parts of the pork carcass are not many, and are easily separated into their several groups. In the large packing-houses, a common sight is to see a half of a dressed hog drop from a floor above to a large chopping block, about which stand three or four men with great cleavers attached to axe-like handles. With one well-directed blow, each man in turn strikes the carcass, so that in a trice the side before them is neatly reduced to standard wholesale cuts, and shoved on to be cared for by the sorters. The wholesale parts of dressed hogs may be divided into the following general classes: Hams, sides, bellies, backs, loins, shoulders, butts and plates, and miscellaneous.

The grading of pork cuts, says Prof. L. D. Hall,¹ is more complex than that of other meats since it involves not only their quality, shape, proportions of fat and lean, and

¹ Market Classes and Grades of Meats. Bull. 147, Illinois Agr. Exp. Station, 1910. This is a very valuable publication, beautifully and extensively illustrated.

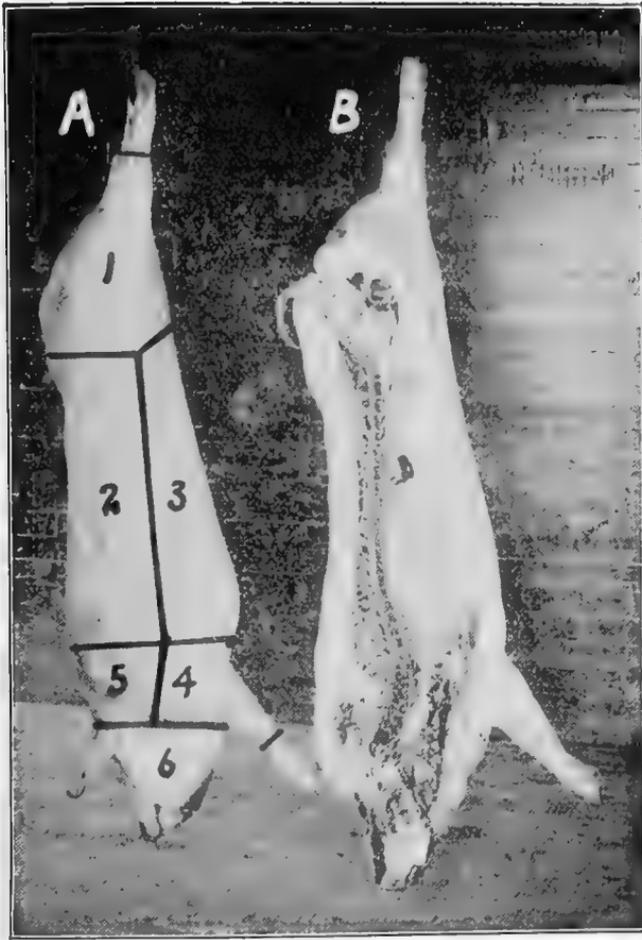


Fig. 262.—“The sides of the hog carcass: 1, ham; 2, middle piece; 3, belly piece; 4, shoulder; 5, Boston butt; 6, head. (Photo by courtesy College of Veterinary Medicine, Ohio State University.)”

weight, but also the styles of cutting and methods of packing by which they are prepared for different classes of trade. Many of the grade names refer merely to different methods of cutting and curing; but since they are applied only to cuts of specified quality, thickness or weight, the grades are in reality based on the latter factors to a large extent. The various cuts differ considerably as to methods of grading; consequently an adequate explanation of the factors involved, and their relative importance, can be presented only by describing the grades of each class.

As a matter of simplicity and convenience, the following parts will be briefly referred to as representing standard cuts.

The hams are cut off just in front of the point of the hips, and are neatly trimmed as may be necessary. However, there are two distinct types of ham cuts, the one given being the American cut. The English and Scotch have a longer cut beyond the point of hip. The leg should then be cut off, and in some cases it is severed just above the hock, and in other cases just below it. Hams pack better with a shorter leg.

The middle piece is the entire part between the end of ham at hip, and back of shoulder. This is separated from the shoulder between the fourth and fifth ribs. This middle piece is of great importance, because it contains the side from which bacon is produced, while its upper part furnishes pork chops or roast pieces. Along the back in fat hogs is a layer of white fat, sometimes over three inches thick. This is what is known as a fat back. The packer slices this off in long strips, from which lard is made. Below the back is the loin piece, which furnishes some of the most popular fresh meat of the carcass. In the lower third is a part termed the belly strip. Bacon of various grades and classes is made from the entire middle strip, and some of the highest class bacon, such as the Wiltshire side, consists of the side, ham and shoulder left in one piece, and then specially treated for the purpose. However, such a

type of bacon is not common in America, the smaller side, free of shoulder and ham, being used.

The shoulder is separated from the head, just back of the ears, and the leg is cut off above the knee joint. The shoulder is prepared into several styles of cuts, and is often sold under the trade name of picnic or California ham. Pieces called butts are cut from the top of the shoulder and from the jowl.

The head is not very valuable, but is used as fresh meat, for scrapple, sausage and head cheese. It is also pickled.

The relative amounts and values of pork cuts, as secured from a 250-pound hog, that dressed out about 80 per cent, are thus reported by Wallace's Farmer (Dec. 8, 1911):

CUTS AND PRODUCTS	Weight	Price
	lbs.	per lb.
Hams	35	\$0.17
Shoulders	30	.10
Sides—thick.. .. .	25	.10
Sides—thin	21	.20
Lard	30	.15
Spare ribs, head, feet, backbone	40	.07
Sausage.. .. .	18	.20
Total	199	Av. \$0.14.1

*Swift's Standard Pork Cuts
Chicago Style*

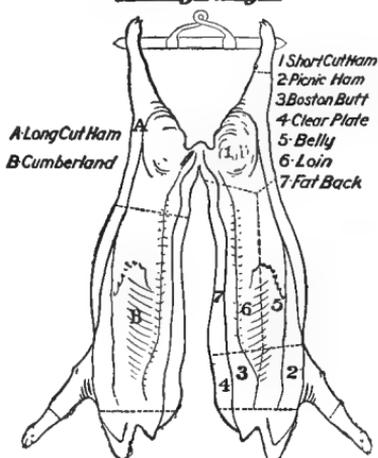


Fig. 263.—“The various cuts differ considerably as to methods of grading.”

CHAPTER XLVII.

THE COMMON TYPES OF SWINE.

ACCORDING to present standards, all breeds and kinds of hogs may be divided into two groups or types, as they are commonly called. By far the most common, especially in America, is known as *the lard type*. The essential features in this case include shortness of head and neck. Considerable relative width of back and fullness of ham, depth of body, shortness of leg, and when well fattened, a thick layer of fat over back, sides and hams. *The bacon type* usually exhibits length in various parts, as shown in the head, neck, body and legs. In this type the back is narrower, the length of side more pronounced, and the hams lack the thickness seen in the other case. There are certain distinguishing

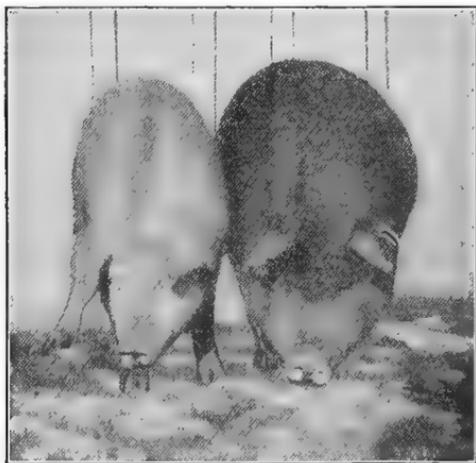


Fig. 264.—“All breeds and kinds of hogs may be divided into two groups or types.”

features, irrespective of breed, in each type. The lard hog is, as the name implies, a producer of excess fat or lard, is phlegmatic of temperament and tends to produce few rather than many young at birth. The bacon hog is valued for its length of side, from which bacon is secured, is very active in temperament, and usually produces large litters. The lard hog, in its more highly developed form, is a product of the great corn-growing section of the Central United States, and is well represented in the vast majority of the hogs that find their way into the American slaughter house. The bacon type is produced in only a small way in this country, while it is quite universal in Europe, where a leaner type of hog is in demand, and where bacon is an important item of consumption. All breeding operations which result in reducing the length of head, of body, and of legs, simply emphasize lard conformation. The best examples of the bacon type have long heads, great proportionate length of body, and long legs. Very fattening foods, like corn, promote the lard type, while the small cereals, especially barley, oats and the by-products of wheat, and skim milk, promote the bacon type.

CHAPTER XLVIII.

JUDGING THE LARD TYPE OF SWINE BY THE SCALE OF POINTS.

The scale of points for the lard type or fat hog, which follows, may be used for the first study of this animal. The hog to be scored will be analyzed with the aid of this standard:

SCALE OF POINTS FOR FAT HOGS OF LARD TYPE.

SCALE OF POINTS	Standard of Perfect Score	Score of Hog Studied
A—GENERAL APPEARANCE, 34 Points:		
Weight: Score according to age, 175 lbs. for 6 mos.;		
300 lbs. at 1 year	4	....
Form, broad, deep, low, symmetrical, compact, standing well	10	....
Quality, hair fine, skin smooth, no coarseness of bone	10	....
Condition, deep, firm, even covering flesh, giving smooth finish	10	....
B—HEAD AND NECK, 7 Points:		
Snout, neither coarse nor long	1	....
Face, wide between eyes, cheeks full, without wrinkles	1	....
Eyes, mild, good size, to be easily seen	1	....
Ears, not coarse, of medium size, neatly attached..	1	....
Jowl, smooth, broad, full to shoulders	1	....
Neck, thick, short, broad on top	2	....
C—FOREQUARTERS, 12 Points:		
Shoulders, broad, deep, full, smooth, compact on top	6	....
Breast, wide, roomy	4	....
Legs, straight, short, strong, wide apart, well set, pastern upright, standing well upon toes	2	....
D—BODY, 32 Points:		
Chest, deep, wide, large girth, flanks well filled . .	3	....
Back, slightly arched, very broad, thickly and evenly fleshed	9	....
Loin, wide as back, full and strong	8	....
Sides, fairly deep, not too long, smooth and full ham to shoulder	6	....
Belly, straight, wide, trim, not paunchy	4	....
Flanks, full and low	2	....

tant, excepting as associated with age. A pig that has been well fed and cared for after being weaned, should gain in weight from three-fourths of a pound to one pound a day. A satisfactory weight of a fat hog at six months of age is about 175 pounds, and at twelve months is about 300 pounds. The market demands as to weight vary, sometimes heavy hogs being wanted, while again lightweights are preferred. In general, 250 pounds is a satisfactory



Fig. 266.—“This thick, deep form suggests the very greatest meat-carrying capacity.”

weight. In the great Chicago hog market, where nearly nine million hogs have been received in a year, the average weight is not far from 225 pounds per head. Winter weights usually run lighter than those of summer by twenty-five pounds or so. With a standard of four points for perfect weight, an animal weighing much under the standard should be scored accordingly. Suppose a weight of 225 pounds at one year, then three points might show the measurement for weight of the pig being scored. A greater

weight than 300 pounds is not usually to be regarded as a fault, and hence should be given perfect score.

The form of the lard hog should be broad, deep, low set, symmetrical, smooth and compact, supported on legs that are strong and squarely placed. Thickness and smoothness of outline are essential, with the parts most valuable to the butcher highly developed, especially the back, sides and hams. A general view shows the sides of the body widely



Fig. 267.—“The hair serves as a protection in summer and winter and should be abundant rather than sparse.” (Photo by courtesy Mr. L. E. Troeger.)

separated yet parallel, no wider in front than behind, while the depth is such as to allow but little space between the belly and ground. This thick, deep form suggests the very greatest meat-carrying capacity. In fact, Europeans and city people have often regarded the form of the lard type as a monstrosity. As expressed in its most perfect form, in a 250-pound pig that has been well fed there may be an excess of fat, but such a form most perfectly illustrates early maturity, a strong development of the parts of car-

cass most in demand by consumers, and, as a rule, most profitable feeding. The injury to form due to long-continued and unwise feeding should cast no reflections on the ideal of the lard type of hog.

The quality of the lard hog is seen in the fineness of hair, smoothness of skin and refinement of bone. *The hair* is one of the best indicators of quality. There are, perhaps, greater



Fig. 268.—“Creases, seams or wrinkles become more evident with maturity. They prevail along the sides of the body and particularly about the shoulder, throat and face.”

variations in quality of hair on the hog than any other class of farm animals. This has already been referred to on page 477. The hair on barrows or sows should be smooth, not coarse nor wiry, and should have a glossy appearance without special treatment aside from feeding. The hair serves as a protection in summer and winter, and should be abundant rather than sparse. Hogs that kill out best do not have notably coarse hair. Too fine hair, however, is undesirable, indicating an animal of over refinement, that will not hold up to strong feeding. *The skin* is an important indicator of quality. It should be smooth and free of wrinkles. Creases, seams or wrinkles (different names for the same thing) become more evident with maturity. They prevail along the sides of the body, and particularly about the shoulder, throat and face. Creases sometimes occur in the thicker skin at the points mentioned, that may have a depth of one-fourth inch or more. As hair usually grows from these creases or seams, it is very difficult to scald and remove satisfactorily from such a hog at killing time. Inasmuch as a large per cent of the hogs slaughtered

in America, after scalding are passed through an artificial scraping machine to remove the hair, it can easily be understood why buyers prefer hogs with smooth skins rather than rough, creasy ones. The skin of the hog should also be mellow and uniform in quality over the entire body. The skin about the shoulder, however, is tougher and thicker than it is elsewhere. The pressure of the finger tips, or even of a cane, on the skin at different points, will clearly demonstrate this difference. On the males, the skin often assumes great thickness and hardness at the shoulders, forming what the swine breeder calls the "shields." These are essentially an inheritance from the wild hog, and serve as a protection from injury of the vital parts while fighting. Boars fight by striking with their heads and tusks against the heads and shoulders of their opponents. The strong tusks of the boar cannot easily tear through this shield. In the improved breeds of to-day, as reflected in the case of the fat market hog, heavy, rough skin at the shoulder is objectionable. The fat barrow, for example, should have a skin exhibiting but little variation in quality at shoulder or ham. A scurfy, scaly condition of skin may be due to various causes, but is decidedly objectionable. In hot climates white breeds are often troubled with sun scald and scurfiness, for which reason hogs of this color are not popular in the south. A black or red skin absorbs heat from the air more quickly than does the white, but these also radiate the heat more rapidly, which process serves to cool the body. This explains why, in the tropics, the dark-skinned hog is more popular than the white, being associated with more comfort in keeping cool.

The character of the bone in the hog is an important indicator of quality. The bones about the head and legs serve as the index of quality. If large and coarse, in proportion to size of body, then quality is lacking, for beyond a certain indefinable point, all excess bone is undesirable, as representing waste from a food point of view. Bone in

the hog, however, is regarded somewhat differently from what it is with other farm animals. The demand is for a large, smooth bone, of quality, free from coarseness at joints. In fact, it is undoubtedly true that too much quality, as shown in small and fine bone, is far too common with improved breeds of swine to-day. The fat hog, weighing 250 to 300 pounds, requires a strong bone, to support so great a weight in such small compass. In judging quality of bone, insist on plenty of diameter in the shank bones half-

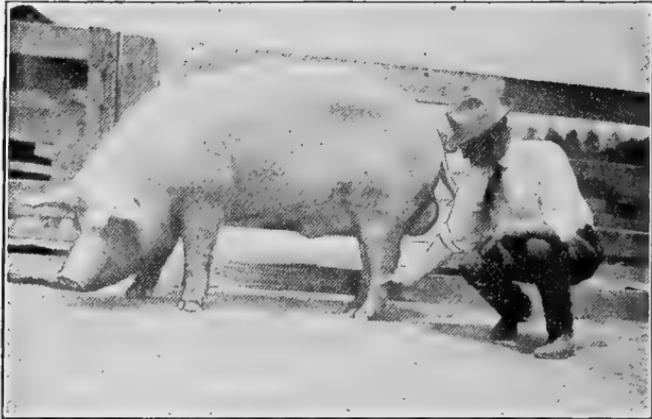


Fig. 269.—“In judging quality of bone, insist on plenty of diameter in the shank bones half-way between ankle and knee or hock.”

way between ankle and knee or hock. Yet one need not place too much stress on this where hogs are fattened, ready for the butcher. It is far more important with breeding stock.

The condition of the lard hog refers to the extent to which fattening has been carried. When the hog is in prime condition, the flesh is laid on smoothly and uniformly and is firm to the touch. Fat hogs are frequently too fat and are perhaps soft and flabby. Also, occasionally when hogs are fed too long and get in high condition, the fat along the sides, especially at the upper part of rib near the

shoulders, slips down toward the end of the rib. This gives a sharply sloping or bevelled appearance on each side of the upper third of the body, the rounded outline that at one time prevailed having disappeared. If the hog is in ideal condition, there is a trim and attractive finish of appearance that is unmistakable. The extremely fat hog in the show ring is not the butcher's ideal as to condition, unless he is seeking a heavyweight from which a special



Fig. 270.—“The extremely fat hog in the show ring is not the butcher's ideal as to condition.”

yield of lard is desired. In scoring, one is justified in discriminating more against the extremely fat animal than against the one that is not quite fat enough. Buyers and judges, however, oftentimes give more credit to mere condition than they should, especially in show-ring competition. This is illustrated by the fact that judges passing on fat Berkshires at the International Live Stock Exposition, sometimes give the highest awards to very fat animals,

whereas barrows of this breed, to be in prime condition, should not carry as much flesh and thickness as most American breeds of the lard type.

The head of the lard hog varies considerably in character, but breed differences in this discussion are unimportant. There are certain features that are regarded with favor by all buyers. The head should be fairly short. Its length is largely dependent on the length of snout. Too long a snout is open to criticism as indicating waste in killing, consequently a short snout, that is not rough and coarse is preferred. *The face* should be wide in front, with ample space between the eyes. Width of face is correlated with



Fig. 271.—“The face should be wide in front, with ample space between the eyes. Width of face is correlated with width of body.”

width of body. Creases on the side of the face sometimes occur, but these are objectionable. Special treatment of the head is frequently required after killing, in order to remove the hairs from the creases of the face. The cheeks should be full and smooth. In scoring the head, discriminate especially against seams and roughness. *The eyes* of the hog should be not only wide apart, but easily seen, having clear whites. Such eyes indicate a quiet temperament. Frequently the eyes are almost hidden, due to excessive fat about this part of the head. Eyes in short, dish-faced heads are less easily seen than in long heads. The eye of the hog is naturally small, but his vision is far better than some might suppose, if he has a fair chance at all for an outlook. Partial or complete blindness is not rare among the improved breeds, and this defect should result in disqualification by the judge. *The ears* assume an erect position in some cases, irrespective of breeds, while with others they may droop over close to the face. This is not important unless one is considering breed character. It is important, however, that the ear be of good texture, covered with fine hair, and neatly attached to the head. The heavy, coarse ear, large at the base, is indicative of general coarseness. Some authorities, in describing the ideal ear, specify that it should be small, but the large ear need not necessarily be coarse. The ear may be large and thin, and quite lacking in coarseness, as occurs with a number of European breeds. If large and thick, and heavy at its attachment, the ear is quite sure to be coarse and unshapely. *The jowl* is the thick, fleshy part at the base of the lower jaw and neck. This part usually carries considerable roundness and fullness, and indicates condition of fleshing. The fatter the hog, the more highly developed the jowl, which in its best form should be round, smooth and firm, and full to the space between the shoulder points. One objectionable feature is often found at the jowl—the occurrence of creases. In judging, emphasize smoothness more than fatness. Flab-

business is also undesirable, a condition to be found in over-fat hogs, when the jowl will shake like jelly, and show much softness. As one feels of this part with the hand, it should be reasonably firm and smooth to the touch. *The neck* of the lard hog is naturally short, broad and deep. There is little likelihood of its being too short, but occasionally there is too much length. The neck naturally rises sharply from back of the ears, for a short distance, after which it more



Fig. 272.—“The neck naturally rises sharply from back of the ears a short distance.”

gradually rises to the point where it merges into the body. The upper part of the neck, toward the head, tends to be narrow and somewhat bevelled on the sides, rather than wide and well rounded off, as occurs generally farther back. On the under side of the neck considerable fullness is likely to occur with the fat animal, and often the throat drops down a pendant, keel-shaped part, which extends back between the legs and quite near the ground. The neck should blend smoothly with the body at the neck-vein or shoulder point. In judging the neck, special emphasis should be placed on a short conformation, as associated with two things, *viz.*, strength of constitution, and a smaller percentage of low-priced meat.

The forequarters, consisting of shoulders, breast and legs are credited with 12 points. In the *shoulder* we find one of the more important parts used as cured meat. If the



Fig. 273.—“The shoulders themselves should be well laid in, and besides the covering on the sides, should be smooth and well filled out on top.”

barrows. The shoulders themselves should be well laid in, and besides the covering on the sides, should be smooth and well filled out on top. A wide, level, thick covering over the ends of the blades is associated with the thick-fleshed type. *The breast* occupies the space just at and in front of the fore-legs, and blends into the lower neck and shoulder. Width and fullness should be features of the breast, with the breast-bone or brisket carried well forward, showing evidence of constitutional vigor. *The front legs* should be reasonably short, strong and, as viewed from in

shoulder-vein is well filled out, it carries smoothly and deeply over the blade, resulting in a wide, thick, meaty shoulder, with no hard prominence at the point. Roughness and coarseness is not infrequent here. Creases and hardness of shoulder covering are sometimes found in fat stags and sows, and some



Fig. 274.—“Modern requirements demand a pastern that is rather short and carried strongly upright.”

front or one side, straight and well set. A natural tendency is for the legs to curve in at the knees, and sometimes the knee joint is markedly curved. As viewed from in front, a slight curve of joint may be expected, but only as consistent with natural joint development, not enough, however, to justify the term "buck kneed." A narrow placing of the legs naturally indicates lack of heart capacity and vitality, and when the knee joints approach too closely to each other, a narrow chest formation is sure to occur. *The pasterns* occupy the space between toes and ankle joints. Much has been said by swine men regarding the pasterns. Modern requirements demand a pastern that is rather short and carried strongly upright, with the hog well supported on the toes. It is assumed that modern methods of feeding produce hogs that are often unable to support their weight on upright toes and pasterns, especially if they have been fattened and pushed for early maturity. The reason so many hogs have badly sloping or broken down pasterns, with the dew claws touching the ground, is said to be because of this excessive weight. However, the author questions the soundness of this argument. It has been his observation, both on wild boars in captivity, and with the bacon type of hogs, that weak pasterns are as much in evidence with these as with hogs of the lard type, which carry much heavier weight. The upright, strong pastern is probably more a feature of the improved swine than of the old, wild or native stock. In early days, before the railways, when hogs were driven to market, strong legs and pasterns were most essential if an animal was to be a good traveller. The necessity of upright pasterns probably is not so great to-day, nevertheless, it may be assumed that they add to the strength of footing, and carry bodily weight more easily than does the sloping so-called weak pastern. *The toes* should not spread too wide apart and, as viewed from in front, they should point squarely ahead. A common weakness of front toe position is "toeing in" or pigeon toe. From a side view the toes

should have quite an erect position. However, animals that are old or heavy frequently break down at the pasterus and slope considerably both at this point and the toes.

The body of the hog is given 32 points—more than to any other one section in the scale of points. This is because six parts are included here, two of which, the back and loin, are most important from a meat-producing point of view. *The chest*, which occupies the space just back of the shoulders, gives evidence of heart and lung capacity, hence a demand here for width and depth, and a distinctly large girth. Special emphasis should be given to fullness at the front flanks, and just back of the shoulder. If the front legs are short and carried wide apart, and the shoulders are well laid in, as a rule the chest



Fig. 275.—“The back of the hog naturally rises in a slight arch.”

will show a wide girth, exhibiting plenty of constitution. Certain features are associated with desirable chest conformation, *viz.*: the low-set floor, and a wide placement of the legs. The chest girth of the hog is relatively large, and a measurement of 38 inches at 9 months of age is quite common. Matured fat hogs may girth 70 inches or more. *The back of the hog* naturally rises in a slight arch, as reference to the skeleton clearly shows. Some breeds exhibit considerable natural arch, and others but little. It is very desirable to secure plenty of length, with slight arch, and considerable spring

of rib or width of back. Young hogs naturally carry the back strong and with a reasonable amount of arch, but with age the tendency is for the back to become more level and even to sag. In scoring, much emphasis should be placed on the back being strongly supported in the case of young animals. More allowance may be made for mature and

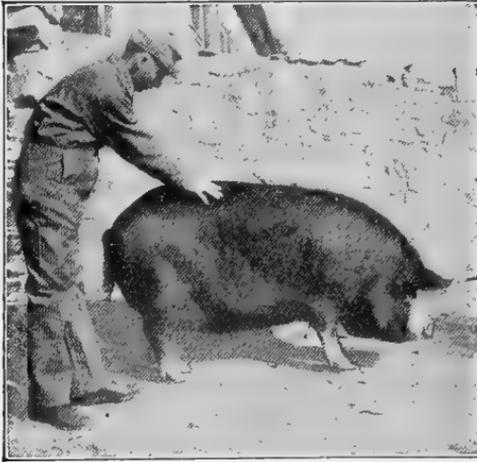


Fig. 276.—“Emphasis should be placed on the loin being quite level with the back, where it merges with the hips.”

especially old animals. As one looks down on the back from above, the ribs should show a strong arch, with the outer back lines parallel to each other. The fat hog, in good condition, will show a thick, even, firm covering of flesh over the entire back. The character of this covering may be determined, not only by the eye, but by the touch of

the finger tips at various points on the back. *The loin* is essentially a part of the back, and so should have all of its width and strength. In the loin, where the muscles are least used, are to be found the tenderest and best cuts of meat, so a smooth, thick fleshing is always desired here. Further, as the kidneys lie below the loin, if this part of the body is strongly developed, with no depression in front of the hips, it may be assumed that the kidneys are well protected and will render the efficient service desired. Emphasis should be placed on the loin being quite level with the back, where it merges with the hips, for a falling away or slackness here is a too common fault. When hogs are over-

forced or are too fat, the fat will show as much in the back and loin as elsewhere.

The sides of the hog should be of good depth, dropping down from a well arched rib. The form of the side depends somewhat on the breed or breed influence, for in some cases the sides are rather curved from the ribs down, while with others they are flat and drop quite vertically toward the belly line. In general it is desirable to have the sides of fair length, carried out in a straight line from shoulder to hip, so that a straight edge will touch all along or nearly so. Smoothness and freedom from creases applies here as elsewhere, and the smoother the side the more uniform the quality of

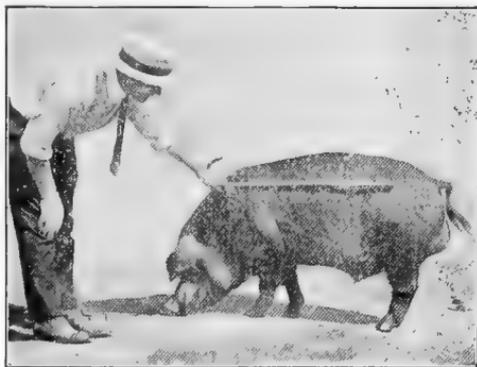


Fig. 277.—“It is desirable to have the sides of fair length, carried out in a straight line from shoulder to hip, so that a straight edge will touch all along, or nearly so.”

the fleshing. Creases often extend in vertical lines along the sides, especially toward the shoulder and give a rough appearance as well as indicating poor fattening character. A side long and deep, perfectly smooth, showing a clean, healthy skin, covered not too thickly with straight hair of fine quality, should score very high. The belly proper may be regarded as the part of the body lying between two lines extending from the lower part of each front flank to hind flank. As one stands off and looks at the belly, the lower edge carries quite level, with clean-cut lines, indicating little waste in killing. A paunchy, rounded belly is much objected to by discriminating buyers, as bearing evidence of too much intestines and consequent

loss in dressed weight. Buyers note sharply this feature. One must not confound this characteristic in the fat hog, with the paunchy look of breeding females, or of young pigs with full bellies. In the latter this condition will change, while the paunchy belly on the fat hog, as a rule, continues its undesirable development. *Flanks* that are full and carried low down are associated not only with depth of body, but thickness as well. Fullness of flank, especially in front, accompanies strong heart girth and vigorous constitution. A full hind flank, showing a tendency to roll somewhat when the animal is in motion, is evidence of easy fattening quality. When the flanks on the same side are low and full, the body line below is quite level and likely to be parallel with the upper line of body. The wise judge will not give a superficial examination to the flanks.

The hindquarters of the lard type of hog, in the estimation of most judges, represent the most valuable part from a commercial point of view. This is because we have here the heaviest weighing part, commanding the highest price per pound. *The rump* is a continuation of the back line, from the outside of the hips to the end of the body. As one looks down on the rump from behind, it should show

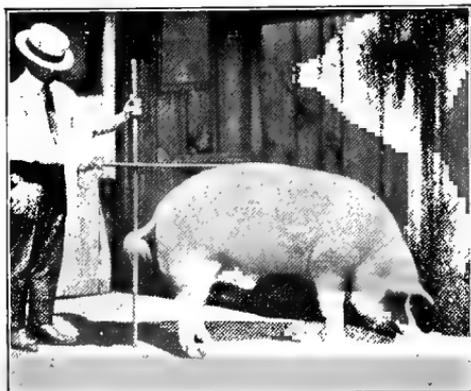


Fig. 278.—“It is quite natural for the rump of the hog to slope considerably.”

the same width throughout, exhibiting thickness and weight. As viewed from one side, the ideal rump will be long and level, that is, the top line will be continued as nearly level as possible, quite close to the setting on of the tail. However, it is quite natural for the rump of the

hog to slope considerably, so that even in the highest scoring individuals one will not find this part so truly level as with high-class cattle or sheep. Great length and thickness are the two most important features, for thus weight is secured. The setting on of the tail is often low, and when this is the case it will be noted



Fig. 279.—“The well-formed ham from this side view will also present much fullness behind.”

that the rump is inclined to be steep, and the ham below is short. All of the arguments are in behalf of a long, full, level rump, with tail attached reasonably high, because this conformation goes with heavy, meaty development below. *The hams* viewed from the side should be wide across at the top, because the rump forms the top of the ham. They should also be wide from stifle to end of body, and of great comparative length, from either hip or stifle to the point of the hocks. This brings out the importance of the long rump. The well-formed ham, from this side view will also present much fullness behind, the outline dropping rather vertically for some distance, and then curving in sharply to form the narrow part of the leg, not far above the hock. From this standpoint the ideal ham will be smooth, absolutely free of wrinkles and folds of skin, but rounded out sufficiently to indicate thickness and weight. The hock itself will be somewhat thick, yet trim and neat. Viewed from behind, the hams should appear thick and meaty, with the outer parts of the thighs widely

separated. Where the thighs contract to form the lower thigh and hock, the curves between the legs at the twist should approach a right angle as much as possible, with the lower thighs widely separated at points of hocks. It is essential that, from a rear view, the hams be both thick and deep. The judge will note that some thick hams lack depth.



Fig. 280.—“The curves between the legs at the twist should approach a right angle as much as possible.”

Others show more thickness through from side to side, and yet possess considerable depth from tail setting to the deepest point between the two thighs. *The hind legs* should stand straight and be well supported on the toes. Viewed from one side, the leg from hock to ankle should come down in a vertical line. It is a common tendency for

the hog to shove the hind legs beneath the body in quite a slanting position, with the dew claws almost, if not quite touching the ground, the weight of body being supported on the entire length of toes, rather than on their tips. This is a very undesirable position, and is usually associated with lack of bone and weak leg formation. From the hock down, the bone should seem reasonably large and strong, in order to bear the great weight of the fat hog. A rear view shows the hocks widely separated, and the shank bones well apart and parallel and strongly supported on the pasterns and toes, which should point directly ahead. If the hocks are too close together then the legs and toes point outward,

a conformation associated with a narrow thigh and ham. If the hocks are widely separated, and the legs and toes point in—a rather unusual position behind—then the legs are usually bowed, and furnish a weak support to the body. The butcher is not interested in this matter of position of leg and bone, if the ham is sufficiently thick and deep, but as a matter of inheritance, the strength of bone and proper carriage of leg have a vital bearing on the character of the



Fig. 281.—“It is a common tendency for the hog to shove the hind legs beneath the body in quite a slanting position, with the dew claws almost, if not quite, touching the ground.”

ham and its value. The pasterns and toes or the hind legs should have an upright, straight carriage, for the same reasons given in the discussion of these parts of the front legs.

The animal being carefully examined, and comparison with the ideal being made through the various steps of scoring, the total score is to be placed at the bottom of the card. In making this detailed examination, the various features of importance are brought to the attention of the judge. A number of other hogs may be scored to advantage

in the same manner, or two may be scored for comparative study. In this score card comparison the same parts of each animal should be systematically compared, step by step. Thus one may note how many points Hog A scores in weight, and how Hog B measures up beside A, and so on, comparing the several other points to be examined. One person may quite conveniently score two animals, and make an interesting comparative study, but it is not desirable to extend much beyond this.

CHAPTER XLIX.

THE COMPARATIVE STUDY OF SWINE.

IN making a comparative study of swine without the use of a scale of points, two or more animals may be brought forward. In general class work, a pen of four makes a convenient number for study. It may be assumed that these are suited to go in the same age class, and have been prepared for the same purpose, so that their conditions are comparable. This puts the comparison on a fair basis as to age, and purpose or type. In view of the fact that these animals are destined for the butcher, the judge in his work must keep first in mind the general considerations of the scale of points, that is, *weight, form, quality and condition*. Therefore, he carefully looks over the hogs, first moving them about to view each from all points whereby comparison may be drawn. He, naturally, at once compares size and, other things being equal, the larger animal has the advantage. Beauty as shown in symmetry of form, at once attracts the judge, but as the butcher is looking for the greatest profit in the carcass, he is not losing sight of quality and condition. So, keeping in mind the need of good, firm flesh, thickly and evenly distributed over the frame, the judge puts a premium on these features, not losing sight of the necessity of dressing out to show as little waste in head, legs and guts as possible. These are all general considerations, and must be weighed up in the comparison. Therefore, in order to bring the contrast to a finer basis, it is necessary that the judge, even with animals for immediate slaughter, should bring into comparison certain important details of conformation. These we would naturally assume to be the back, loin, shoulders, sides and hams, the parts most desired in the carcass. So

the judge, with the aid of his stick, groups his animals side by side in order that he may look down on the backs and compare breadth and length, and note wherein one surpasses another. Standing behind the animals a few feet, one also gets a rump and ham view, as well as back, so that this position gives a good point for observation. To see the sides the hogs must be moved so that an unobstructed view may be had, whereby the sides may be easily studied. An experienced judge usually has the animals well scattered in the judging space, thus enabling him to study and com-



Fig. 282.—“The judge, with the aid of his stick, groups his animals side by side, in order that he may look down on the backs and compare breadth and length, and note wherein one surpasses another.” (Photo by courtesy Ohio Agr. Exp. Station.)

pare at his leisure. If one has four animals very closely matched then some of the minor characteristics, such as length or position of legs, size of ear, width of face, etc., will serve as a basis for arriving at a decision. One year the Ohio State University had in competition at the International Live Stock Exposition, a pen of three fat hogs that had won first prize in class. They were very choice and unusually well-matched individuals, but in the competition for championship honors, after mature deliberation, the prize went elsewhere. The judge later explained, and rightly, that one pig in the Ohio pen had somewhat crooked hind legs, which he persisted in keeping well under his

body. It was this defect, slight as it was, which resulted in the defeat of an otherwise very choice pen. This decision illustrates, that, in the final measurement of the judge, he must frequently emphasize the importance of non-essentials, in arriving at a decision.

A comparative placing card for swine will be found serviceable for students, and may be arranged after the following plan. This card has been filled out for illustrative purposes. Each part may thus be discussed and compared in detail, and differences brought out that might otherwise be quite overlooked:

Comparative Placing Card for Swine	1st Place	2d Place	3d Place	4th Place
Size	A	D	C	B
Condition	A	B	D	C
Quality	A	C	B	D
Head	B	A	D	C
Neck and jowl	A	B	D	C
Shoulders	A	B	D	C
Back	A	B	D	C
Rump	B	A	C	D
Hams	A	B	D	C
Legs	B	A	D	C
Feet	B	A	D	C
Placing	A	B	D	C

The reason for placing the hogs in a ring in their regular order of merit, student or judge should be able to give. No uniform rule is to be applied in the matter of giving reasons, for much more may be expected in some cases than in others. Close competition requires more explanation than where the decision of the judge has been easy. The reasons, however, should deal with features that the well-informed would at once recognize as of first importance.

The following discussion of placing a ring of market lard hogs, was prepared by a man who gives especial attention to the judging of swine:

"I placed B first, C second, A third and D fourth.

"B is placed over C because of pronounced superiority in form and quality. B is broader, deeper and longer than C; B furthermore has a more neatly laid in shoulder, which joins to a smoother, longer side. In rear end development B is superior to C, having a broader and longer rump, which in turn gives more width and thickness of loin. B's superior quality is shown by a more even distribution and fineness of coat covering, by a harder, denser character of bone, and by more evenness and smoothness of contour generally. In view of these points of excellence which B shows over C, one would judge the former as dressing more meat of superior quality when placed in the hands of the butcher.

"C is placed over A chiefly because of superior condition, there being little difference in form and quality. C's better condition is shown by greater thickness over the top, sides and hams. Briefly stated, C shows more finish than A and therefore would be more desirable from the standpoint of the butcher.

"D in this ring is an outstanding, inferior hog, and therefore is placed last. He lacks the width, depth and thickness possessed by the other animals, and is furthermore inferior in his arch of back, strength of loin, and smoothness of body generally.

"Briefly summarized, B is superior to C in form and quality, C is superior to A chiefly in condition, and A is in most every respect superior to D."

The above illustrates a common method of expression in giving reasons for placings, whether oral or written. Naturally, persons will differ in the degree of emphasis they will place on the different parts, either good or bad. Further, the same person will necessarily discuss each pen as a separate affair, emphasizing more in one case than another, as impressed by the personality of the animals judged. However, one thing the judge should always keep in mind, and that is to discuss his placings in as systematic a manner as possible.

CHAPTER L.

DESCRIPTIVE NOTES ON THE LARD TYPE BREEDS OF SWINE.

THE lard type of swine being almost universal in the United States, the breeds of that kind are common, while those of the bacon type are comparatively rare.

The Berkshire breed of swine originated in the county of Berks in south England. Its prevailing color of skin and hair is black, with white hair on the face, lower parts of legs, and tail. These six white points need not necessarily all be in evidence, but the breed has been developed to a degree that almost insures their presence. The body itself

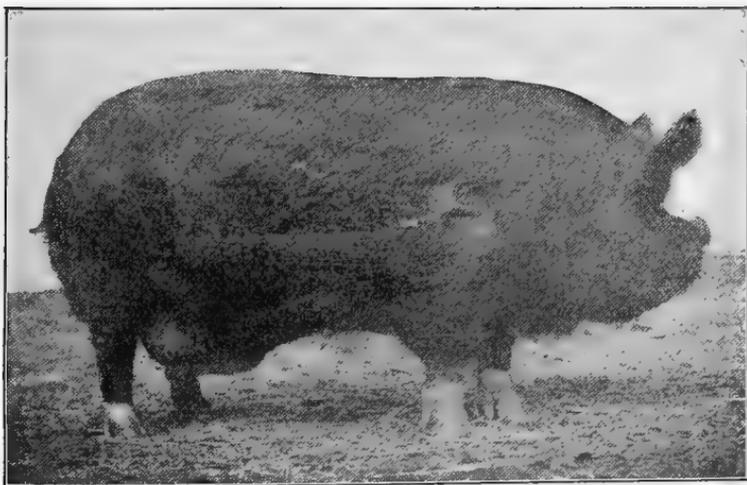


Fig. 283.—BERKSHIRE BOAR. "The head is comparatively short and more or less dished."

should be black, but white marks may occur elsewhere, especially on ear, throat and armpit, without disqualifying for registration. In size, the Berkshire ranks well. Young pigs at six months of age should weigh 175 pounds, and 300 at twelve months. In ordinary condition mature boars should weigh 600 pounds and sows 500 pounds. The Berkshire possesses certain quite distinctive breed features. The head is comparatively short and more or less dished, in some cases

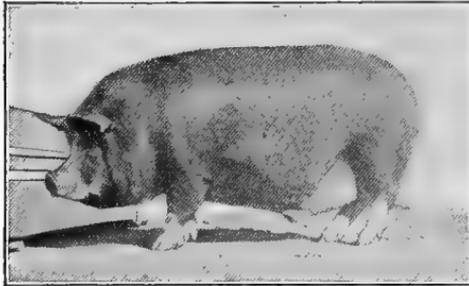


Fig. 284.—A Berkshire barrow, champion at the International Live Stock Exposition.

the nose turning up to an extreme degree, not approved of by very thoughtful breeders. The ears should be erect of carriage, especially with young animals; on old hogs the ears tend to lean forward more or less, due to

weakening of the muscles connecting with the head. The back of the Berkshire carries but little arch and is of fair length; from an end view it does not usually show as much width as some other breeds. The rump may be of excellent length, but the ham tends to lack somewhat in thickness. The bone is of fair quality, and Berkshires stand as well on the feet as do most breeds. The quality of the flesh is of the highest grade, and in general fleshing, the Berkshire shows up smooth and to advantage. This is a breed that does not naturally carry the thickness of the Poland-China, Chester White or Duroc-Jersey, being the narrowest of the lard type breeds. British breeders favor a leaner-fleshed pig than do Americans. Our judges should not seek the same width and roundness of form with the Berkshire as have the other breeds mentioned.

SCALE OF POINTS FOR BERKSHIRE SWINE.

(Adopted by the American Berkshire Swine Association.)

	Points
Color —Black, white feet, face and tip of tail, but skin and hair occasionally showing tinge of bronze or copper color. An occasional splash of white not objectionable; lack of either of white points admissible	3
Face and snout —Face well dishd and broad between the eyes; snout short and broad	7
Eyes —Prominent, clean, clear, large, dark hazel or gray	2
Ears —Medium size, setting well apart, carried fairly erect, inclining forward, especially with age	3
Jowl —Full, firm, not flabby or hanging too low, running back well to neck	3
Neck —Full, short, slightly arched, broad on top, well connected with shoulder	3
Hair —Fine, straight, smooth, lying close to and covering body well; free from bristles	3
Skin —Smooth and mellow	3
Chest —Deep, full and wide, with good heart girth	6
Shoulder —Smooth and even on top and in line with side	6
Side —Deep, smooth, well let down, straight side and bottom lines	6
Back —Broad, full, strong, level or slightly arched; ribs well sprung	10
Flank —Extending well back and low down on leg, making nearly a straight line with lower part of side	5
Loin —Full, wide and well covered with flesh	6
Ham —Deep, wide, thick and firm, extending well up on back and holding thickness well down to hock	10
Tail —Well up on line with back, neither too fine, short or tapering	2
Legs and feet —Straight and strong, set wide apart, short in pastern, with hoofs nearly erect, capable of carrying great weight	10
Size —Size all that is possible without loss of quality or symmetry, with good length. Weight in good condition, boars at 12 months 350 to 450 pounds; at 24 months, 500 to 700 pounds; sows at 12 months 350 to 400 pounds; at 24 months 500 to 700 pounds	6
Appearance and character —Vigorous, attractive, of good disposition, firm and easy of movement	6
Total	100

The Poland-China breed of swine is of American origin, having its early development in southwest Ohio. This is a breed that has gone through some changes in color markings. Formerly, the body was black, with white spots of variable size on the black background. In recent years the Poland-China has been bred to color markings quite like the Berkshire, the face and legs especially being more or less white. White marks may occur elsewhere, however. In fact there is now some attention being paid to what is termed the Spotted Poland hog, which may be registered in one of the recognized Poland-China record books as well as in the National Spotted Poland Record Association. The

body color of the Poland-China is strictly a deep black, not having any suggestion of bronze or reddish tint, as in case of the Berkshire. The size of the Poland-China ranges from medium to large. Pigs at six months should weigh about 175 pounds, and at 12 months the standard insists that pigs of either sex must weigh at least 300 pounds. At full maturity, in fair condition, boars should weigh 600 pounds or more, and sows not less than 450 pounds. In



Fig. 285.—Poland-China sow, "Lucille," grand champion Louisiana Purchase Exposition, 1904. (Photo by courtesy American Agriculturist.)

ordinary breeding condition they will be quite likely to weigh less than this. The head of the Poland-China is straight of face. The ears should be fine and break over at the upper third into a neat droop. With age, the ears frequently droop quite low over the face. The back should show quite a pronounced arch, as viewed from one side, while an end view exhibits a strong spring of ribs, with a tendency for the body to be much narrower below than above. The hindquarters of fair specimens of this breed

have wide, long rumps and deep, thick thighs. The rumps, however, are often somewhat droopy. Thickness of ham is a characteristic of this breed. The bone is often light for the weight carried, and the pasterns may be quite sloping. Breeders of Poland-Chinas have almost divided themselves into two groups, one favoring a medium-sized, quick maturing pig; the other, a larger, heavier boned, coarser hog. Unquestionably, this breed has lost much ground among farmers in the middle west, due to over-refinement and small litters. These objections, advocates of the so-called "big type" are endeavoring to overcome. If a combination of scale and quality are present, other things being equal, the large type will usually receive the approval of the judge. Quality must be emphasized.

SCALE OF POINTS FOR POLAND-CHINA SWINE.

(Adopted by the National Poland-China Record Association.)

	Points
Head and face —Should be broad, even and smooth between and above the eyes; slightly dished, tapering evenly and gradually to near the end of the nose. Broad lower jaw; head inclined to shortness, but not enough to give appearance of stubby nose. In the males a masculine appearance and expression	3
Objections: <i>Head long, narrow between the eyes; nose uneven and coarse; too large at the muzzle or the head too short; not full or high above the eyes; or too much wrinkled around or above the eyes.</i>	
Eyes —Full, clear, prominent, expressive	2
Objections: <i>Dull expression, deep set or obscure. Sight impaired by wrinkles, fat or other cause.</i>	
Ears —Ears attached to the head by a short, firm knuckle, giving free and easy action. Standing up slightly at the base to within two-thirds of the tip, where a gentle break or drop should occur; in size neither too large nor too small, but even, fine, thin, leaf shape, slightly inclined outward	2
Objections: <i>Large, floppy, straight, upright or coarse; knuckle long, letting the ear drop too close to the head and face, hindering free use of the ears.</i>	
Neck —Short, wide, even, smooth, well arched, rounding and full from poll to shoulder, with due regard to the characteristics of the sex	2
Objections: <i>Long, narrow, thin and drooping from the shoulder to the poll, with unevenness caused by wrinkles or creases.</i>	
Jowl —Full, broad, deep, smooth and firm, carrying fullness back near to point of shoulders, and below line of lower jaw so that lower line will be as low as breast bone when head is carried up level	2
Objections: <i>Light, flabby, thin, and wedge-shaped, deeply wrinkled, not drooping below line of lower jaw and not carrying fullness back to shoulder and brisket.</i>	

	Points
<p>Shoulder—Broad and oval at top, showing evenness with the back and neck, with good width from the top to the bottom, and even smoothness extending well forward</p> <p>Objections: <i>Narrow at top or bottom, not as deep as the body, uneven width, shields on pigs under eight months of age, or showing too much shield at any age.</i></p>	6
<p>Chest—Large, wide, deep and full; even underline to the shoulder and sides, with no creases, giving plenty of room for the heart and other organs, making a large girth indicating much vitality. Brisket smooth, even and broad; wide between the legs and extending well forward, showing in front</p> <p>Objections: <i>Pinched appearance at the top or bottom, or tucked in back of the forelegs; showing too narrow between the legs; not depth enough back of the shoulder. Brisket uneven, narrow, not prominent.</i></p>	12
<p>Back and loin—Broad, straight or slightly arched, carrying same width from shoulder to ham; surface even, smooth, free from lumps, creases or projections; not too long, but broad on top, indicating well sprung ribs; should not be higher at h p than at shoulder, and should fill out at junction with side, so that a straight edge placed along at top of side will touch all the way from point of shoulder to point of ham. Should be shorter than lower belly line</p> <p>Objections: <i>Narrow, creased back of shoulders, swayed or hollow, dropping below a straight line; humped or wrinkled; too long or sunfish shaped; loin high, narrow, depressed or humped up; surface lumpy, creased, ridgy or uneven; width at side not as much as shoulder and ham.</i></p>	14
<p>Sides and ribs—Sides full, firm and deep, free from wrinkles; carrying size down to belly; even from ham to shoulder; ribs of good length, well sprung at top and bottom</p> <p>Objections: <i>Flat, thin, flabby, pinched, not as full at bottom as at top; drawn in at shoulder so as to produce a crease, or pinched and tucked up and in as it approaches the ham; uneven surface; ribs flat or too short.</i></p>	8
<p>Belly and flank—Belly broad, straight and full, indicating capacity and room, being about the same or on a level at the flank with the underline of the chest; underline straight, or nearly so, and free from fleshy appearance</p> <p>Objections: <i>Belly uneven and flabby, or apparent looseness in the make-up. Pinched up in the flank or flanked too high.</i></p>	4
<p>Hams and rump—Hams broad, full, deep and long from rump to hock. Fully developed above and below, being wide at the point of the hip, carrying width well down to the lower part of the hams. Fleshy, plump, rounding fullness perceptible everywhere. Rump rounding and gradually sloping from the loin to the root of the tail. Broad and well developed all along from loin and gradually rounding to buttock; lower front part of ham should be full, and stifle well covered with flesh. Even width of ham and rump with the back, loin and body. Even a greater width as to females not objectionable</p> <p>Objections: <i>Ham short, narrow, too round or slim, not filled out above or below, or unshapely for deep meat; not as wide as the body; back or loin too tapering, or small; rump narrow or pointed, not plump or well filled or too steep from loin to tail.</i></p>	10
<p>Legs and feet—Legs medium length, straight, heavy bone, set well apart and squarely under body, tapering, well muscled and wide above knee and hock; below hock and knee round and tapering, capable of sustaining weight of animal in full flesh without breaking down; bone</p>	

	Points
firm and of fine texture; pasterns short and nearly upright. Feet firm, short, tough and free from defects	10
Objections: <i>Legs long, slim, coarse, crooked; muscles small above hock and knee; as large at foot as above knee; pasterns long, slim, crooked or weak; the hocks turned in or out of straight line; legs too close together; hoofs long, slim and weak; toes spreading out or crooked or unable to bear up weight of animal without breaking down.</i>	
Tail —Tail of medium length and size, smooth and tapering well and carried in a curve	1
Objections: <i>Coarse and long without a curl; or short, crooked or stubby; or too small, fine, uneven, not tapering.</i>	
Coat —Fine, straight, smooth, lying close to and covering the body well; not clipped; evenly distributed over the body	3
Objections: <i>Bristles, hair coarse, harsh, thin, wavy or curly; swirls; standing up; ends of hair split and brown, not evenly distributed over all of the body, except the belly. Clipped coats should be cut 1.5 points.</i>	
Color —Black with six (6) white points; tip of tail, four white feet and white in face, or on the nose or on the point of the lower jaw. All to be perceptible without close examination. Splashes of white on the jaw, legs or flank or a few white spots on the body not objectionable	2
Objections: <i>Solid black, white mixed or sandy spots. Speckled with white hairs over the body; mottled face or white and black; hair mixed, making a grizzly appearance.</i>	
Size —Large for age. Condition, vigor and vitality to be considered. There should be a difference between breeding animals and those kept or fitted for the show of at least 25 per cent in size. In show condition or when fat, weights for the different ages should be about as follows: Boars over two years old, seven hundred (700) pounds. Sows over two years old, six hundred (600) pounds. Boars eighteen months old, six hundred (600) pounds. Sows eighteen months old, five hundred (500) pounds. Boars one year old, four hundred and fifty (450) pounds. Sows one year old, four hundred and fifty (450) pounds. Boars and sows six months old, one hundred and eighty (180) pounds. All hogs in just fair breeding condition, one-fourth less for size. The keeping and chance that a young boar has cuts quite a figure in his size and should be considered, other points being equal. Fine quality and size, combined, are desirable	10
Objections: <i>Overgrown, coarse, flabby, loose appearance, gangling, hard to fatten; too fine, undersize; short, stubby, inclined to chubby fatness. Not a hardy, robust animal.</i>	
Action and style —Action vigorous, easy and graceful. Style attractive; high carriage; and in males testicles should be prominent and of about the same size, and yet not too large or pouchy	3
Objections: <i>Clumsy, slow, awkward movement; low carriage, waddling or twisted walk. A seeming tired or lazy appearance; not standing erect and firm.</i>	
Condition —Healthy, skin clear of scurf, scales and sores; soft and mellow to the touch; flesh fine; evenly laid on and free from lumps and wrinkles. Hair soft and lying close to the body; good feeding qualities	2
Objections: <i>Unhealthy, skin scaly, wrinkled, scabby or harsh, flabbiness or lumpy flesh; too much fat for breeding. Hair harsh, dry and standing up from the body; poor feeders; deafness, partial or total.</i>	

	Points
Disposition —Lively, easily handled and seemingly kind and responsive to good treatment	2
Objections: <i>Cross, sluggish, restless, wild or of a vicious turn.</i>	
Symmetry of points —The adaptation of all the points, size and style combined to make the desired type or model	2
Total	100

The Chester White breed of swine is of American origin. It is a pure white breed, except for the occurrence of an occasional blue-black spot in the skin. Any black or red hair indicates impurity of blood. In size, the Chester White ranks among the large breeds. Mature boars in fair flesh should weigh about 600 pounds, and mature sows about 500. Boars and sows six months old weigh about 175 pounds in fair condition. Rather distinctive features of this breed are a nearly straight face, and ears that droop or break over one-third to one-half their length. Much emphasis is placed on the ears being fine of texture and carried so as to break over neatly. Erect ears are not characteristic of the breed. Good specimens show a fairly short head, although long heads are rather common. The back on well-

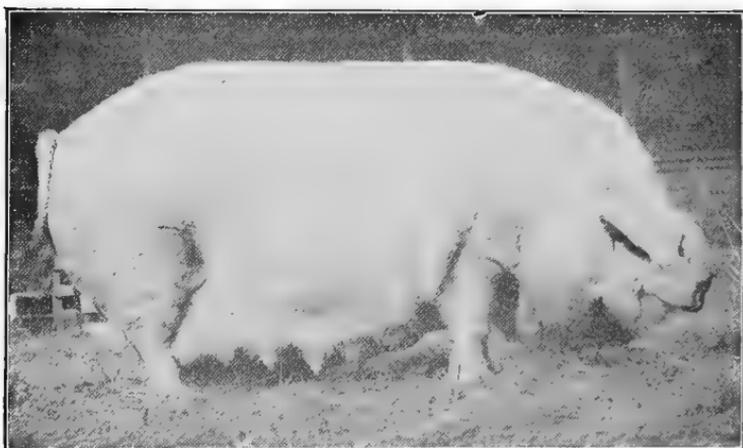


Fig. 286.—Chester White sow, "Barget C," first prize in class at Ohio State Fair.

fattened animals has great width and arch of rib, as viewed from one end, while the side view should show a strong arch in the back line. Chester Whites tend to be rather fine of bone for the weight they carry. The pasterns are often too sloping and appear weak and unable to give proper support to the body. Coats of curly hair occasionally occur with this breed and, while not popular, do not disqualify for registration.

SCALE OF POINTS FOR CHESTER WHITE SWINE.

(Adopted by the Chester White Record Association, 1913.)

	Points
Head and face —Head short and wide; cheeks neat; jaws broad and smooth; forehead medium, high and wide; face short and smooth; nose neat, tapering and slightly dished	4
Objections: <i>Head long, narrow or coarse; cheeks too full; forehead low and narrow; jaws contracted and weak; face long, narrow and straight; nose coarse, clumsy or dished like the Berkshire.</i>	
Eyes —Bright, large, clear and free from wrinkles or overhanging fat . .	2
Objections: <i>Small, deep set, surrounded by wrinkles or fat.</i>	
Ears —Drooping at tip to give graceful appearance; thin, soft, pointing outward and forward; well proportioned to size of body	2
Objections: <i>Too large and coarse; thick, lopping; lying too near the face; stiff, erect or too small. Not under control.</i>	
Neck —Wide, deep, short and nicely arched; neatly tapering from the shoulder	2
Objections: <i>Narrow, thin, long, flat on top; tucked up; not extending down to breast bone.</i>	
Jowl —Smooth, neat, firm, full, carrying fullness well back to shoulders and brisket when head is carried up level	2
Objections: <i>Light, rough, and deeply wrinkled, too large and flabby, not carrying fullness back to shoulders and brisket.</i>	
Shoulders —Broad, deep and full, extending in line with the side and carrying size down to line of belly	6
Objections: <i>Deficient in width or depth, extending above line of back; thick beyond line of sides and hams; shields on boars too coarse and prominent.</i>	
Chest —Heart girth large, wide, deep and full; even underline to the shoulder and sides, with no creases; giving plenty of room for the heart and other organs, making a large girth, indicating much vitality. Brisket smooth, even and broad; wide between the legs and extending well forward, showing in front	12
Objections: <i>Pinched appearance at the top or bottom, or tucked in back of forelegs; showing too narrow between the legs; not depth enough back of the shoulder. Brisket uneven, narrow, not prominent.</i>	
Back and loin —Broad, straight or slightly arched, uniform width, free from lumps or rolls, same height and width at shoulder as at ham	14
Objections: <i>Narrow, swayed, humped, creasing back of shoulders, sun-fish shaped, uneven width, lumps or rolls.</i>	

	Points
Sides and ribs —Sides full, smooth, deep, carrying size down to line of belly, even with line of ham and shoulder. Ribs long, well sprung at top and bottom, giving animal a square form	9
Objections: <i>Sides: Flat, thin, flabby, uneven surface, compressed at bottom, shrunken at shoulder and ham. Ribs: Too short, flat.</i>	
Belly and flank —Belly same width as back, full, straight, drooping as low at flank as at bottom of chest; line of lower edge running parallel with sides. Flank full and even with body, equalling heart girth	4
Objections — <i>Belly narrow, pinched, sagging or flabby. Flank thin, tucked up or drawn in, less than heart girth or length of body from top of head to root of tail.</i>	
Hams and rump —Broad, full, long, wide and deep, admitting of no swells; buttocks full, neat and clean; stifle well covered with flesh, nicely tapering toward the hock; rump slightly rounding from loin to root of tail, same width as back, making an even line with sides	10
Objections: <i>Narrow, short, not filled out to stifle, too much cut up in crotch or twist, not coming down to hock; buttocks flabby; rump flat, narrow, too long, too sharp or peaked at root of tail.</i>	
Legs and feet —Legs medium length, strong and straight, set well apart and well under body; bone of good size, firm, well muscled, wide above knee and hock, round and tapering below knee and hock, enabling the animal to carry its weight with ease; pasterns short and nearly upright. Feet short, firm, tough, animal standing well up on toes	9
Objections: <i>Legs too short or too long, weak, crooked, too close together; muscles weak; bone too large and coarse, without taper; pasterns long, crooked or slim. Hoofs long, slim, weak; toes spreading, crooked or turned up.</i>	
Tail —Small, smooth, nicely tapering, root slightly covered with flesh; carried in a curl	1
Objections: <i>Coarse, too long, clumsy, straight.</i>	
Coat —Fine, either straight or wavy, with preference for straight, evenly distributed and covering the body well	3
Objections: <i>Bristles, swirls, hair coarse, thin, standing up, not evenly distributed over all the body except the belly.</i>	
Color —White. Red or black spots in hair disqualify, but blue spots in hide (commonly known as freckled) while objectional and should be discouraged, do not argue impurity of blood	2
Objections: <i>Color any other than white.</i>	
Size —Large for age and condition. Boars two years and over, if in good flesh, should weigh not less than 500 pounds; sows same age and condition, not less than 450 pounds. Boars eighteen months old, in good flesh, should weigh not less than 400 pounds; sows 350. Boars twelve months old, not less than 350 pounds; sows 300. Boars and sows six months old not less than 150 pounds each, and other ages in proportion	8
Objections: <i>Overgrown, coarse, uncouth, hard to fatten.</i>	
Action and style —Easy and graceful; high carriage; active; gentle and easily handled. In males, testicles should be readily seen, and of same size and carriage	3
Objections: <i>Sluggish, awkward, low carriage, wild, vicious. In males, testicles not distinctly visible, nor of same size and carriage.</i>	
Condition —Healthy and mellow touch, fat evenly laid on	2
Objections: <i>Harsh to touch, flabbiness, fat in lumps on back or sides.</i>	
Disposition —Quiet and gentle	2
Objections: <i>Cross, restless, quarrelsome.</i>	

	Points
Symmetry or adaptation of points —The adaptation of all the points, size and style combined to make the desired type or model	3
Total	100

Disqualifications for registry:

1. Sows scoring less than 60 points.
2. Boars scoring less than 70 points.
3. Red or black hair in coat.
4. Barren or stunted animals.

The Duroc-Jersey breed of swine is of American origin, and has gone through its most important development in the middle west, especially in Ohio. This is a red breed, the color varying from a light sandy red to a dark cherry red. The brighter color is more popular. Very dark red or chestnut is objectionable. Black spots in the skin are also unpopular. In size, the Duroc-Jersey ranks among the large breeds. Boars two years old or over, in fair condition, should weigh about 600 pounds, and sows of the same age and condition about 500 pounds. Boars twelve months old, in fair condition, should weigh about 350 pounds, and sows of the same age and condition about 300 pounds.

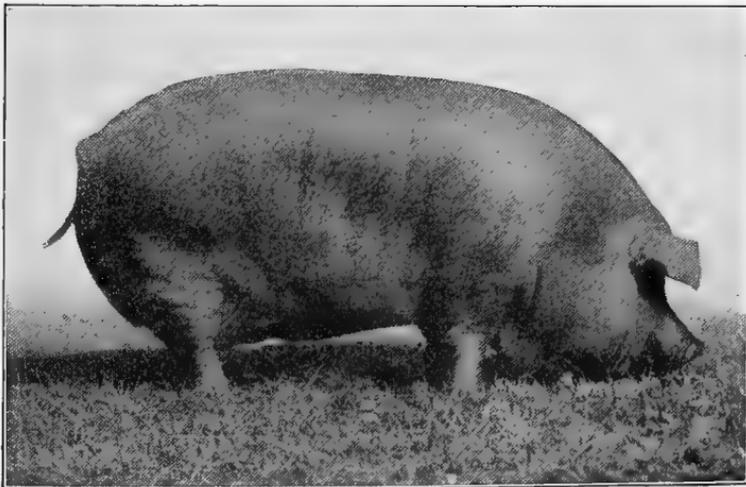


Fig. 287.—Duroc-Jersey sow, "Pearl M. C."

Boars of this breed are reported to have weighed 1,000 pounds and more. The face of the Duroc-Jersey is either nearly straight or slightly dished, the nose of medium length, and the ears drooping forward, the top third breaking over. Young Duroc-Jersey males often show considerable length and coarseness of face, but this feature may be more or less outgrown. Two types of Duroc-Jerseys are more or less to be seen, a large-bodied, strong-framed, stretchy sort, and a more refined and compact kind, that matures early and does not attain the largest size. Size with quality is what is attracting attention with present day breeders. To secure this the body should be long, the back strongly arched, the ribs well sprung, and with plenty of depth. Large, strong bone is a much desired feature, with the animal standing well on the toes. The Duroc-Jersey has been much improved since the year 1900, and smoothness of fleshing is especially emphasized by the best breeders. Heaviness of shoulder and creases on the body are regarded with special disfavor. The Duroc-Jersey should show a long, wide, level rump and thick, well filled-out thighs, although the ham lacks the roundness and fullness so often seen in Poland-China. In temperament the Duroc-Jersey ranks well, being active, yet usually quiet and easily handled.

SCALE OF POINTS FOR DUROC-JERSEY SWINE.

(Adopted by the National Duroc-Jersey Record Association.)

	Points
Head and Face —Head small in proportion to size of body, wide between eyes; face nicely dished (about half way between Poland-China and Berkshire), and tapering well down to nose; surface smooth and even	4
Objections: <i>Large and coarse, narrow between eyes, face straight, crooked nose or too much dished.</i>	
Eyes —Lively, bright and prominent	2
Objections: <i>Dull, weak and obscure.</i>	
Ears —Medium, moderately thin, pointing forward and downward and slightly outward, carrying a slight curve, attached to head neatly . .	2
Objections: <i>Very large, round or nearly so; too swinging or flabby, not of same size, or different positions, and not under control.</i>	
Neck —Short, thick and very deep; slightly arching	2
Objections: <i>Long, shallow, thin.</i>	

	Points
Jowl —Broad, full and neat, carrying fullness back to point of shoulders, and in line with breast bone	E
Objections: <i>Too large, loose and flabby, or too small, thin and wedging.</i>	
Shoulders —Moderately broad, very deep and full, and not extending above line of back; carrying thickness well down	6
Objections: <i>Small, thin, shallow, extending above line of back; boars under one year old heavily shielded.</i>	
Chest —Large, very deep, filling full behind shoulders, and breast bone extending well forward so as to be readily seen	12
Objections: <i>Flat, shallow, or not extending well down between forelegs.</i>	
Back and loin —Medium in breadth, straight or slightly arching; carrying even width from shoulder to ham; surface even and smooth . .	14
Objections: <i>Narrow, creased behind shoulders; swayed or humped up.</i>	
Sides and ribs —Sides very deep, medium length; level between shoulders and hams, and carrying out full down to belly. Ribs , long, strong, and sprung in proportion to width of shoulders and hams	9
Objections: <i>Flabby, creased, shallow and not carrying proper width from top to bottom.</i>	
Belly and flank —Straight and full, and carrying out full to line of sides. Flank well down to lower line of sides	4
Objections: <i>Narrow, tucked up, sagging or flabby. Flanks tucked up or drawn in.</i>	
Hams and rump —Broad, full and well down to hock. Buttocks full and come nearly down to and fill full between hocks. Rump should have a rounding slope from loin to root of tail; same width as back, and well filled out around tail	10
Objections: <i>Hams narrow, short, thin; not projecting well down to hocks; cut up too high in crotch. Rump narrow, flat or peaked at root of tail, or too steep.</i>	
Legs and feet —Medium in size and length; straight, nicely tapering; wide apart and well set upon the body, pasterns short and strong. Feet short, firm, tough	9
Objections: <i>Legs extremely long or short, slim, coarse, crooked; as large below the knee and hock as above; set too close together; hocks turned in or out of straight line. Hoofs long, slim and weak; toes spreading and crooked.</i>	
Tail —Medium large at base and nicely tapering and rather bushy at point	1
Objections: <i>Extremely heavy, too long andropy.</i>	
Coat: Moderately thick and fine, straight, smooth, and covering the body well	3
Objections: <i>Many bristles; hair coarse, harsh and rough; wavy and curled; swirls or not evenly laid over the body.</i>	
Color: Cherry red, without other admixtures	2
Objections: <i>Very dark red or shady brown; very light or pale red; black spots over the body; black flecks on belly and legs not desired, but admissible.</i>	
Size —Large for age and condition; boars two years old or over should weigh 600 pounds; sows, same age and condition, 500 pounds; boars eighteen months 475 pounds; sows, 400 pounds; boars twelve months, 350 pounds, and sows 300 pounds; boars and sows six months of age, 150 pounds. These figures are for animals in fair show condition . .	8
Objections: <i>Rough, coarse and lacking in feeding qualities.</i>	
Action and style —Action, vigorous and animated; style, free and easy . .	3
Objections: <i>Dull and stupid, awkward and wobbling. Testicles not easily seen, nor of same size or carriage; too large or only one showing.</i>	

	Points
Condition —Healthy; skin free from any scurf, scales, sores and mange, and flesh laid evenly over entire body and free from lumps.	2
Objections: <i>Unhealthy, scales, sores and mange; too fat for breeding purposes; hair harsh and standing up; poor feeders, etc.</i>	
Disposition —Very quiet and gentle; easily handled or driven	2
Objections: <i>Wild, vicious or stubborn.</i>	
Symmetry of points	3
Total	100

Disqualifications.

Form: Ears standing erect; small cramped chest and crease back of shoulders, so as to cause a depression in the back easily noticed; seriously deformed legs and badly broken down feet. **Size:** Very small or not over half size as given in this standard. **Condition:** Excessive fatness; barrenness; seriously diseased; blindness. **Score:** Less than 50 points. **Pedigree:** Not eligible to record.



Fig. 288.—Cheshire boar, twice grand champion of breed at New York State Fair. (Photo by courtesy American Agriculturist.)

The Cheshire breed of swine originated in Jefferson County, New York. In color, the Cheshire should be pure white, excepting for the occasional occurrence of small blue-black spots on the skin. The size is of the medium class, and the standard of excellence gives 400 to 600 pounds for hogs of the breed when of mature size and well fattened. Special characteristics of the Cheshire, other than those

above noted, are a tendency to shortness of head, a moderately dished face, erect or nearly erect small ear, wide and slightly arched back, and hams of the thick-fleshed type. These pigs are little known outside of New York and have had a very limited distribution.

SCALE OF POINTS FOR CHESHIRE SWINE.

(Adopted by the Cheshire Swine Breeders' Association.)

	Points
Head —Short to medium in length, short in proportion to length of body..	8
Face —Somewhat dished, and wide between the eyes	8
Jowl —Medium in fullness	3
Ears —Small, fine, erect, and in old animals pointing slightly forward..	5
Neck —Short and broad.. .. .	3
Shoulders —Broad, full, deep.. .. .	6
Girth around heart	8
Back —Long, broad, straight nearly to root of tail	10
Sides —Deep and full, nearly straight on bottom line	7
Flanks —Well back and low down, making flank girth nearly equal to heart girth.. .. .	3
Hams —Broad, and nearly straight with back, and running down well toward hock	10
Legs —Small and slim, set well apart, supporting body well on toes ..	10
Tail —Small, slim and tapering	3
Hair —Fine, medium in thickness and quantity	3
Color —White, and colored hairs to disqualify	2
Skin —Fine and pliable, small blue spots objectionable, but allowable..	3
Symmetry —Animal well proportioned, handsome and stylish	8
Total	100

The **Hampshire** breed of swine is of American origin, having long been known in Kentucky and southern Indiana under the name of Thin Rind. The early career of this breed in the middle west was as a bacon type of pig, but in recent years it has been bred in the corn belt so as to closely approach the lard type hog. However, it is more comparable with the leaner type of Berkshire. The Hampshire is a black breed with a white belt about the body. This belt, which should encircle the body between shoulders and hips, may be quite narrow, or rather wide, there being no uniformity on this point. A band four to 12 inches wide just back of the shoulders, is most approved. It is not at all unusual for Hampshire sows to farrow solid black pigs, which illustrates the difficulty in uniformity of reproduction of the desired white belt. In size the Hampshire

is of medium class, although some large examples have been produced. Boars sometimes attain 600 pounds weight, although this is not often the case. Mature breeding males will usually weigh from 400 to 500 pounds and females from 350 to 400 pounds. A standard weight for boars or sows at twelve months is 300 pounds. The head of the Hampshire is moderately long and straight, of just fair width, and with more or less erect ears that point slightly forward. The shoulders tend to be smooth and well laid

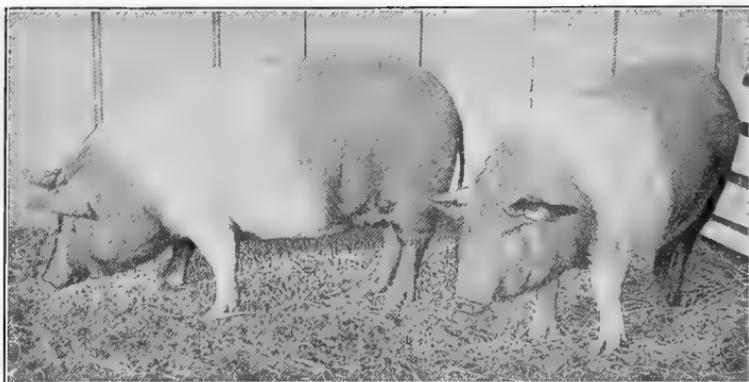


Fig. 289.—“The Hampshire is a black breed with a white belt about the body.”

in, the back of only medium width, yet well supported. The rump often lacks in width, but shows ample length, and the hams are of medium thickness only, the twist often showing a shallow development. Hampshire pigs may show notable smoothness of body and be lacking in depth of rib, compared with the more prominent lard type breeds. Formerly, the Hampshire inclined to be somewhat leggy, but present day type pigs of the breed are not subject to special criticism in this regard. In a general way, the Hampshire is a very trim, active breed of hogs, that produces excellent meat. In recent years it has grown greatly in popularity in the middle western states.

SCALE OF POINTS FOR HAMPSHIRE SWINE.

(Adopted by the Hampshire Record Association.)

	Points
Head and face —Head medium length, rather narrow, cheeks not full.	
Face, nearly straight and medium width between the eyes; surface even and regular	1
Objections: <i>Head large, coarse and ridgy; nose crooked or much dishd.</i>	
Eyes —Bright, and lively, free from wrinkles or fat surroundings	2
Objections: <i>Small, deep or obscure, or vision impaired by fat or other cause.</i>	
Ears —Medium length, thin, slightly inclined outward and forward	2
Objections: <i>Large, coarse, thick, large or long knuckle, drooping or not under good control of the animal.</i>	
Neck —Short, well set to the shoulders, tapering from shoulder to head . .	2
Objections: <i>Long, thick or bulky.</i>	
Jowl —Light, and tapering from neck to point; neat and firm	2
Objections: <i>Large, broad, deep or flabby.</i>	
Shoulders —Deep, medium width and full, well in line with back	6
Objections: <i>Narrow on top or bottom, thick beyond line with sides and hams.</i>	
Chest —Large, deep and roomy; full girth, extending down even with line of belly	12
Objections: <i>Narrow at top or bottom; small girth, cramped or tucked up.</i>	
Back and loin —Back straight or slightly arched, medium breadth, with nearly uniform thickness from shoulders to hams and full at loins; sometimes higher at hips than shoulders	15
Objections: <i>Narrow, creased or droopy behind shoulders; surface ridgy or uneven.</i>	
Sides and ribs —Sides smooth, full, firm, carrying size evenly from shoulders to hams; ribs strong, well sprung at top and bottom	8
Objections: <i>Sides thin, flat, flabby or creased, or ribs not well sprung.</i>	
Belly and flank: Straight and full, devoid of grossness; flank full and running nearly on line with sides	6
Objections: <i>Belly sagging or flabby; flank thin or tucked up.</i>	
Hams and rump: Hams of medium width, long and deep; rump slightly rounded from loin to root of tail; buttock full, neat and firm; devoid of flabbiness or excessive fat	10
Objections: <i>Ham narrow, cut too high in crotch; buttock flabby; rump too fat, too narrow or too steep, or peaked at root of tail.</i>	
Legs and feet: Legs medium length, set well apart and squarely under body, wide above knee and hock, and rounded and well muscled below, tapering; bone medium, pasterns short and nearly upright; toes short and firm, enabling the animal to carry its weight with ease	10
Objections: <i>Legs too long, slim, crooked, coarse or short; weak muscles above hock, and knee bone large and coarse, and legs without taper; pasterns too long to correspond with length of leg, too crooked or too slender; feet long, slim and weak; toes spreading, too long, crooked or turned up.</i>	
Tail —Medium length, slightly curled	1
Objections: <i>Coarse, long, clumsy, swinging like a pendulum.</i>	
Coat —Fine, straight, smooth	2
Objections: <i>Bristles or swirls, coarse or curly.</i>	
Color —Black, with exception of white belt encircling body, including fore-legs	2
Objections: <i>White running high on hind legs, or extending more than one-fourth length of body, or solid black.</i>	

	Points
Size —Large for condition; boar, two years old and over, 450 lbs.; sow, same age, 400 lbs.; eighteen months boar, 350 lbs.; sow, 325 lbs.; twelve months boar or sow, 300 lbs.; six months, both sexes, 140 lbs.	5
Action and style —Active, vigorous, quick and graceful; style, attractive and spirited	4
Objections: <i>Dull, sluggish and clumsy.</i>	
Condition —Healthy, skin free from all defects, flesh evenly laid on and smooth and firm, not patchy, and devoid of all excess of grossness . .	4
Objections: <i>Skin scurfy, scaly, mangy or otherwise unhealthy; hair harsh, dwarfed or cramped, not growthy.</i>	
Disposition —Docile, quiet, and easily handled	3
Objections: <i>Cross, restless, vicious, or with no ambition.</i>	
Total	100

Disqualifications.

Color—Spotted, more than two-thirds white, or solid black.

Form—Any radical deformity, ears very large or drooping over eyes, crooked or weak legs, or broken-down feet.

Condition—Seriously impaired or diseased, excessive grossness, Larrenness in animals over two years of age, chuffy or squabby fat.

Size—Not two-thirds standard weight.

Pedigree—Not eligible to record.



Fig. 290.—“The distinguishing feature of this breed is a solid instead of cloven hoof.” (Photo by courtesy Mr. G. C. Kreglow.)

The Mulefoot breed of swine is of uncertain nativity. In its improved form it is an American product, having received its first important development in Ohio and Illinois. It may be regarded as of the lard type. The distinguishing feature of this breed is a solid, instead of cloven foot, suggestive of the hoof of a mule in miniature. The color is usually a solid black,

though white points are admissible. The size is medium; boars over two years of age should weigh about 500 pounds in fair condition, and sows of the same age about 400 pounds. Boars or sows at twelve months of age weigh about 300 pounds. In general conformation the improved Mulefoot closely resembles the Poland-China, the blood of which, it may be assumed, has been at some time used on the Mulefoot. Aside from color and foot character, no striking differences are manifest between good examples of the two breeds. The Mulefoot, however, shows a greater variation in character than usually occurs with an improved breed. The claim has been made by its promoters that this is a cholera-proof breed, but there is no satisfactory evidence to support this claim.

SCALE OF POINTS FOR MULEFOOT SWINE.

(Adopted by the National Mulefoot Hog Record Association.)

	Points
Head and face —Head medium length. Face broad between the eyes, nearly straight, cheeks full, surface even and regular	4
Objections: <i>Head large, coarse, crooked or much dished, long nose.</i>	
Eyes —Bright and lively, free from wrinkles or fat surroundings	2
Objections: <i>Small, deep or obscure, or vision impaired by fat or other cause.</i>	
Ears —Medium length, thin tipped, slightly inclined outward and forward, knuck small and well set to the head	2
Objections: <i>Large, coarse, thick; large or long knuck drooping or not under good control of the animal, or too erect.</i>	
Neck —Short, well set to the shoulders, tapering from shoulder to head	2
Objections: <i>Long, thick or bulky.</i>	
Jowl —Full, neat and firm, tapering from neck to point	2
Objections: <i>Thin or flabby.</i>	
Shoulders —Medium width, deep, full, not extending above line of back	6
Objections: <i>Narrow, cramped, flat, extending above line of back and sloping too much from point to top.</i>	
Chest —Large, deep and roomy; full girth, extending down even with line of belly	12
Objections: <i>Narrow at top or bottom, small girth, cramped or tucked up.</i>	
Back and loin —Slightly arched, good breadth, with uniform thickness from shoulders to hams; full at loin	15
Objections: <i>Narrow, creased or drooped behind shoulders, surface ridgy or uneven.</i>	
Sides and ribs —Sides full, smooth form, carrying size evenly from shoulders to hams; ribs strong, well sprung at top and bottom	8
Objections: <i>Sides thin, flat, flabby, or creased; ribs not well sprung.</i>	
Belly and flank —Straight and full, devoid of coarseness; flank full and running nearly on line with side	6
Objections: <i>Belly sagging or flabby, coarse; flank thin or tucked up.</i>	

	Points
Hams and rump: Hams full, long and deep; rump slightly rounded from loin to root of tail; buttock full, neat and firm	10
Objections: <i>Ham narrow, cut too high in crotch; rump too steep or too narrow, peaked at root of tail; buttock flabby.</i>	
Legs and feet —Legs medium length, set well apart and squarely under body, wide above knee and hock, rounded and well muscled below; tapering; medium bone; pastern short and nearly upright. Foot solid, short, smooth, enabling the animal to carry its weight with ease	10
Objections: <i>Legs too long or too short, slim, crooked or coarse; muscles weak or light; joints coarse, not tapering; pastern too long, crooked or slender; foot long, slim, weak or turned up.</i>	
Tail —Medium length, straight or slightly curled	1
Objections: <i>Coarse, long, clumsy, swinging.</i>	
Coat —Fine, straight, smooth, soft to touch	2
Objections: <i>Bristles or swirls, coarse or curly hair.</i>	
Color —Black; white points admissible	2
Objections: <i>Too much white on feet, any white spots on body or head.</i>	
Size —Large for condition; boars two years and over should weigh 500 pounds, sow same age, 450; twelve months boar or sow, 300; six months boar or sow, 175 pounds	5
Action and style —Active, vigorous, graceful, style attractive	4
Objections: <i>Dull, sluggish, clumsy.</i>	
Condition —Healthy; skin free from defect; flesh smooth, firm and evenly laid on	4
Objections: <i>Unhealthy, skin scurfy, scaly or mangy; hair harsh, not growthy.</i>	
Disposition —Docile, quiet and easily handled	3
Objections: <i>Cross, restless, nervous, sluggish or without ambition.</i>	
Total.	100

CHAPTER LI.

JUDGING THE BACON TYPE OF SWINE.

THE bacon hog is a well-recognized market type and is increasing in importance with the demand for leaner pork, and especially breakfast bacon. The most valued characteristic of the bacon type is a long side, that when properly cured produces the choicest grade of bacon. Such bacon as this has alternate layers of lean meat and fat, firm of quality, without the heavy layer of external fat so much a feature of the lard hog. In years past, in southern England, in the county of Wilts (usually termed Wiltshire), the people produced and fed a class of hogs from which was made the choicest bacon. Gradually the fame of the Wiltshire side and bacon became widespread, so that to-day this name is supposed to be representative of the choicest quality of bacon. This ideal bacon hog is commonly produced in England, Scotland, Ireland, Denmark and to a considerable extent, in Canada. Large Yorkshire or Tamworth hogs or their grades, represent the best bacon type. Animals of their class, when properly fed such foods as barley, peas, oats, skim milk, etc., produce the choicest grades of bacon. Indian corn is not only too fattening, but produces a softer grade of fat than is approved of by the bacon judges. Bacon hogs, raised in the corn belt and fed corn as the major part of their rations, after some generations lose much of the more important bacon-producing characteristics, and tend more and more toward the lard type. Hogs of the bacon type are comparatively uncommon in the United States. Farmers of this country have looked to the hog as an important consumer of the great corn crop, and the lard type seems in part to result from this feeding.

SCALE OF POINTS FOR THE BACON TYPE OF HOG.

SCALE OF POINTS		Standard of Perfect Score	Score of Hog Studied
A—GENERAL APPEARANCE: 34 Points:			
Weight. Should be well developed for age. Market hogs should weigh 160-200 lbs. as most approved weights		5	....
Form, long, smooth, deep, strong top line, underline straight, belly trim and neat, entire form well balanced		10	...
Quality, hair fine, skin smooth and free of creases, bone clean and strong, flesh firm and smooth at all parts		10	....
Condition, well covered with firm flesh, especially on back and loin; not too fat		6	....
Style, active and sprightly, walking true, standing up well on toes		3	....
B—HEAD AND NECK, 8 Points:			
Snout, medium length and not coarse		1	....
Face, broad between eyes, poll broad and full		1	....
Eyes, of good size, full and bright		1	....
Jowl, fair width and muscular, very neat and not flabby		2	....
Ears, moderately thin, fringed with fine hair		1	....
Neck, medium length, muscular, without arch at top		2	....
C—FOREQUARTERS, 12 Points:			
Shoulders, smooth, upright, well laid in, compact, no wider than back		6	....
Breast, good width and full		3	....
Forelegs, set well apart, medium length and straight, bone clean and not coarse, pasterns erect, toes not spread, and erect		3	....
D—BODY, 33 Points:			
Back, medium width, rising slightly above a straight line, making slight arch from neck to tail		6	....
Loin, wide as rest of back, strong and full, not much arched		5	....
Ribs, well sprung, then sharply vertical, long		4	....
Sides, long, fairly deep, flat, straight from shoulder to ham, smooth		8	....
Chest, full, even with shoulder, with no tucked-up appearance above or back shoulders		5	....
Flanks full and low, not flabby		2	....
Belly, firm, trim, thick, yet not flabby nor shrunken		3	....
E—HINDQUARTERS, 13 Points:			
Rump, same width as back, long, level, tail set fairly high		4	....
Hams, full, not flabby, thighs tapering toward hocks, without folds or creases		6	....
Hind legs, set well apart at hocks, medium long, straight, bone clean and strong, pasterns upright, toes not spread and erect		3	....
Total points		100	....

In the following discussion, emphasis will be placed on those features that are specifically characteristic of the bacon hog. Other features that have a similar significance in both lard and bacon type, and which have already been discussed in the case of the lard pig, need not be so extensively considered here. Persons interested in the details of judging swine should first be familiar with the pages preceding, that discuss the methods and details involved in judging lard hogs.

The general appearance of the bacon hog as compared with the lard type, shows considerable length of body, distinctly less thickness and depth, a greater length of leg, and much less fullness about the jowl, neck, shoulder and ham. As an animal of this type walks about, the onlooking judge is impressed with a conformation in which length and narrowness are associated with a sort of litheness of



Fig. 291.—“The general appearance of the bacon hog, as compared with the lard hog, shows considerable length of body, distinctly less thickness and depth, a greater length of leg, and much less fullness about the jowl, neck, shoulder and ham.”

form and activity of limb, freedom of motion, quite in contrast with the shorter, thicker, more phlegmatic lard hog.

The weight of the bacon hog naturally depends on the age, condition and purpose. For market purposes, from 160 to 200 pounds is most acceptable, although individuals may reach 225 pounds and meet with favor. When especially fed for bacon production, however, it is conceded that the farther the animal passes beyond the 200 pounds weight, the more the tendency to produce an undesirable amount of fat. Therefore, in judging market weight, these figures must be given careful consideration. With five points as a perfect score for weight, an animal weighing 250 pounds might be graded off 30 per cent, giving a score of 3.5 points, thus indicating undesirable weight. In case one is scoring breeding hogs of this type these figures would not apply. Persons scoring breeding stock on weight might adopt 300 pounds for twelve months of age, with 600 pounds for mature females and 700 pounds for boars. Yet these weights are frequently exceeded, especially by Large Yorkshires and Tamworths.

The form of the bacon hog, as has already been expressed, should show great proportionate length, with strongly sustained back, though but little arched. From a side view, the form appears very smooth, free of creases, and having fair depth, though with plenty of daylight below, and with back and belly lines rather parallel. As the form is surveyed from either in front or behind, it seems narrow, with opposite sides parallel from shoulder to ham. Roundness and fullness are distinctly lacking in any great degree.

Quality in the bacon hog is not essentially different in character from that of the lard type. However, much emphasis is placed on smoothness and freedom from creases or wrinkles, for a side thus affected would be quite impossible for making prime bacon. The judge should discriminate sharply against any roughness and creases about the shoulder and sides. A fine coat of hair, uniformly and smoothly distributed over the body, is an indicator of su-

perior quality of fleshing, such as is much desired in bacon production. Roughness of bone is most easily to be noted with bacon hogs, and should be discriminated against severely. The bone should be clean and neat. The head being comparatively lean and long with this type also gives expression to quality in a considerable degree. However, lack of quality here is measured rather by roughness and coarseness than by length.

One may see some bacon hogs with very long heads which in no sense lack quality.

Condition in the bacon hog is a very special feature of this type. The frame should be covered with firm flesh, without a thick layer of fat. Nothing suggestive of rolls of fat at any part of the body, or unevenness of condition, meets with favor in the eyes of the bacon judge. The entire covering should rather be neatly laid on, showing a firm consistency of flesh so highly essential in bacon. The touch of the fingers to back, side shoulder or ham, should give a firm, yet mellow response,

without the deepness of fleshing felt in the lard type. The buyer of bacon hogs places great emphasis on this condition.

Style and action in the bacon hog are quite notable. In action, in particular, this is manifested by a long stride and much activity, due to a rather muscular conformation, very good length of limb and perhaps nervous temperament.

The head and neck of the bacon hog, as combined features, exhibit length to a marked degree. In fact, it is impossible to maintain bacon type with short head and



Fig. 292.—“As the form is surveyed from either in front or behind, it seems narrow.”

neck, characteristic of the lard type. *The snout* is naturally the part which shows length to the most striking degree, and sometimes with the Tamworth, the length of snout is extreme. Bacon producers do not discriminate against hogs with long snouts if they possess plenty of quality. *The face* should be broad between the eyes, and but very little dished if at all. The dish face is rather a characteristic of the shorter bodied, fatter type of hog. For a time, Large Yorkshire breeders favored the dish face, and breeding with this point in view resulted in reducing size and increasing the tendency toward the lard type. In other words, thickness and shortness are inconsistent with bacon conformation. *The eyes* of the bacon hog should never be surrounded by wrinkles of fat; they should be prominent and easily seen. If the whites can be clearly seen, which is usually the case, then the eyes are not lacking in size. Occasionally the eyelids are red and inflamed and the animal looks far from attractive. *The jowl* should be very trim and neat, firm and muscular, rather than round and heavy with fat. A heavy jowl is an indication of a tendency toward fat production on the part of this type of hog. Look for a neatly rounded, smooth jowl, as expressing ideal conformation and quality. *Ears* inclining to be thin and long, rather than thick and short, are characteristic with the bacon sort. *The neck*, as has been already stated, with this type, inclines to be long and lacking in flesh. It is important, however, not to have too much length and leanness, for this implies waste and, in breeding stock, lack of stamina and poor feeding qualities. A medium between the short, thick, fat neck and the long, lean one is what is desired. Day states¹ that "a short, thick neck with an arch, or crest of fat on top, such as is commended in the fat hog, will cause the side of bacon to be heavy at the shoulder and neck end, and this is the cheap end of a side of bacon." Therefore, any tendency to an arch is quite undesirable, and the judge should discriminate

¹ Productive Swine Husbandry, 1913, p. 16.

against it. The top of the neck, however, should not be too narrow and ridge-like near the head. It should rather round up over the top in full form as one evidence of necessary vigor.

The forequarters of the bacon hog include the shoulders, breast and forelegs. *The shoulders*, as a first essential, should be smooth, light, and neatly laid in, and bacon hog judges emphasize these features. This being one of the cheaper parts of the body, a heavy shoulder is not wanted. Another feature of conformation, also, is rather an upright carriage of shoulder, for the reason² that when in this position the animal is "comparatively short from the back of the shoulder to the snout, but long from the back of the shoulder to the rump." When viewed from above, the shoulders should appear compact on the top, and well covered, rather than open and lacking in covering. The thickness over the shoulder tops should not exceed the general back width, in fact it should be slightly less. If it is notably more, then the conformation is heavy and the outside of the blade is not well covered. *The breast* should be wide and full, the sternum projecting even with the front of legs or beyond, indicating constitution. Depth of breast is also sought for, but with the bacon type this is not emphasized as with the lard type. If the chest lacks materially in depth, then there will be a lack in depth of side, which is highly undesirable. *The forelegs*, excepting for length, should possess the same general characteristics found in the lard hog. They incline to be long, however, and should not be severely scored by the judge, unless their length is associated with a shallow depth of body.

The body of the bacon hog furnishes the most important and highest-priced cuts of pork, for in it we find the back, loin and side. *The back*, as a first essential, must not be too wide, but rather of medium width, for the wide back is usually associated with fat production. It should be well carried, arching very slightly, especially at the loin, and

² Productive Swine Husbandry p 17

just enough to furnish strong support. A sagging back in a breeding animal should be scored severely, excepting for old age or in the case of a sow heavy in pig. In the case



Fig. 293.—“There should be a layer of fat from an inch to an inch and a half in thickness, extending smoothly and uniformly from neck to loin.”

of hogs ready for the market, then some sag of back is not so important from the butcher's point of view, provided there is the right width and covering. *The loin* furnishes the most valuable cut in the back, and should have the same width as the rest of the back. This part, however, in prime condition, is very strong, and is covered with a smooth and firm layer of flesh. Extending over the back and loin as a whole, for it is all back, in fact, there should be a layer of fat from an inch to an inch and one-half in

thickness, extending smoothly and uniformly from neck to loin. This fat covering is an important point with bacon producers, and any excess in fat deposit is much discriminated against by buyers, for the best grades of bacon carry no thick layers of fat. One of the fine points in feeding bacon hogs, is to determine when the condition of flesh is just right, and so

sell before the hogs are overdone. In scoring on this point, grade the animal in high condition more severely than the one somewhat lacking in this respect. *The ribs* in a bacon hog of the best type have a strong arch and then come down sharply into rather a vertical position. This is a distinctive feature of the ribbing, and through this conformation is secured the flat side so much valued by the bacon curer. The ribs should also be long, so as to provide depth of body and size. *The side* of the bacon hog, to meet a critical standard, must furnish as completely as possible four things, *viz.*, length, depth, smoothness and condition.

“From a packer’s standpoint,” says

Day,³ “a bacon hog cannot have too long a side, but the breeder must exercise care that he does not secure this extreme length at the expense of constitution. . . . It is absolutely necessary, however, that the hog should have a good length of side, much more than is found in the fat type.” In the scale of points, eight points are credited to the sides, or really 12, if we include the ribs. No other part is allowed so many points and, in judging, this must be kept in mind. Emphasize the four essential features in the bacon side, and score sharply if the animal is much defective in these characteristics. Note, in particular, smoothness and condition of fleshing. *The chest*, as

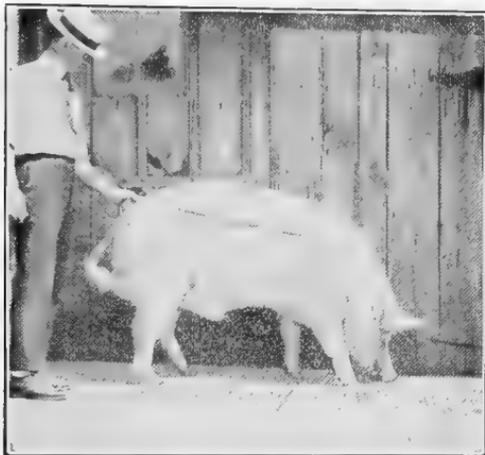


Fig. 294.—“ A bacon hog cannot have too long a side.”

³ Productive Swine Husbandry, 1913, p. 18.

the part enclosing the vital organs, should be relatively thick and deep. No depressions back of the shoulders, or hollow or tucked-up flanks should be seen. A full, firm-fleshed flank is essentially associated with constitutional vigor and a good side of bacon as well. *The belly*, though furnishing some of the cheapest meat, should be neat and trim,



Fig. 295.—“A comparison of the hind ends of lard and bacon types of hogs brings out in sharp contrast the difference in thickness of hams, as well as spread and height between the legs.”

thicker in its fleshing here than in the lard type, and quite lacking in flabby condition or shrinkage about the flanks. Paunchiness or flabby condition of the belly should meet with distinct disfavor.

The hindquarters of the bacon hog involve hips, rump, hams and legs. *The rump* should be long, of the same width as

the back, be carried level rather than droopy, and be slightly rounded over the top from one side to the other. The flat-topped, broad rump is likely to carry too much fat. *The hips* should not be wider apart than the width of the back, and should be smoothly covered. *The hams*, also called the *gammons* by some British authorities, have a shape very distinctive to this type of hog. They should exhibit much less thickness and fullness than does the ham of the lard type, being more split up between, showing comparatively little twist, yet having a long, smooth muscle of firm appearance, fleshing neatly and completely about the lower thigh quite to the hock. The pared-off lower thigh is easily seen from either one side or behind. A comparison

of the hind ends of lard and bacon types of hogs, brings out in sharp contrast the difference in thickness of hams, as well as spread and height between the legs. Allowance should be made in passing on the hind legs, for more closeness between them than usually prevails with the lard type, a feature that has no special bearing on the correct posture of legs and feet. Cleanness and strength of bone, straightness of leg, uprightness of pasterns and proper placings of toes should be emphasized just as much as with the lard hog. One naturally expects the bacon hog to carry himself in ideal form on toes and pasterns, but he is often disappointed in that respect. The judge should not be too severe in his criticism of these two features, unless they are distinctly and markedly defective. Furthermore, the judge should be more exacting in the case of a young breeding animal than one going finished to the shambles.

CHAPTER LII.

JUDGING BREEDING SWINE.

THERE are certain very essential things that must be kept in mind and understood when judging breeding swine. Where hogs are simply fed and finished for the butcher, then they are passed upon solely for their value as meat, having in mind the standards already discussed in detail in the preceding pages. But if the hogs are to be considered as breeding animals, to be used for purposes of reproduction, then still other qualities and characteristics must be considered. One must have in mind the ideal lard or bacon type, and then either add to or subtract from this type, so as to secure the ideal breeding conformation and character. This requires consideration of the following features when applied to the boar or sow :

- (a) **Sex character.**
- (b) **Temperament.**
- (c) **Size.**
- (d) **Frame.**
- (e) **Breed characteristics.**

(A)—THE BOAR.

Sex character in the boar is manifested in several ways. The head is strong, is larger than that of the female, and shows pronounced masculinity. After attaining a few months of age the young males begin to show a slight increase in size of head and, as maturity approaches, heavy tusks appear on the sides of each jaw. Thus in the mature boar one looks for a strong head, with what might be regarded as a tendency to coarseness, as shown in the larger features, thickness of skin and coarse type of hair. The

neck should be strong, somewhat thick and perhaps a trifle arched, though much arch is undesirable. In the shoulders, sex is strongly manifested, in the shields, heavy coverings of tough hide, which are very undesirable, and expert judges always give the preference to the boar with smooth and well-laid shoulder. The entire front part of the boar tends to broaden and spread with age. Such undesirable development is liable to be reproduced in the progeny. The sex of the boar is also prominent in his reproductive organs. The scrotum or sac containing two testicles, appears in an inconspicuous form on the young male



Fig. 296.—“In the mature boar one looks for a strong head.” “Berryton Duke, Jr.” 77:41, a noted Kansas Berkshire boar. (By courtesy Orange Judd Pub. Co.)

pig, between the hams and just below the vent or anus, and with maturity this part assumes considerable size, and projects out with distinct prominence. The judge should see that there are two of these glands, of equal size and exposure. Sometimes but one “seed,” as the stockman terms it, comes down from the scrotum and, though such an animal may be a breeder, he is regarded as defective, and should be so judged.

The temperament of the boar should be active to a certain extent, but not nervously so. He is naturally inclined to

fight with strange boars and to insist on having his own way. There is altogether more self-assertion than in the case of either barrow or sow, and sometimes he is blessed with too much of this quality. Frequently, in the show ring, he champs his jaws and froths at the mouth, a temperamental action peculiar to his sex.

The size of the boar should somewhat exceed that of the sow or sexless animal. At maturity he should show a marked increase in size over the female, though no definite figures can be established for this difference. It will depend on the breed more than anything else. Large size of male is not so essential, however, as some think. In fact, if associated with coarseness it is undesirable. Perhaps 100 pounds greater weight than the sow, in the same flesh, will not be much out of the way. The young boar should have plenty of size for his age. If the boar is undersized while young, he will not be likely to attain the size he should at maturity.

The frame of the boar is to be seen in the character of the bone, and in the breeding animal of this sex it should be medium to large in size, with plenty of quality. Many breeders prefer a large bone, especially as seen in the legs. Too much refinement is objectionable, because at maturity the animal cannot sustain his weight well and be used to the best advantage for breeding, unless in a crate. The boar, in ideal condition, has a strong frame, well covered with muscles, such as indicate plenty of vitality. The boar one sees so often at the shows, heavily covered with fat, overdone and lacking in the activity so much desired in breeding animals, is hardly a fit example of what the breeding boar should be. The judge should discriminate against the frame unduly submerged in fat.

Breed characteristics are important factors to consider when one is judging pure bred animals. Each breed is characterized by certain features of conformation and color. The judge should be familiar with these characteristics. The breeds differ more or less in shape of head, carriage and

type of ear, conformation of body as expressed in width of back and depth and length of middle, and in color and coat of hair. Some breeds closely resemble each other in certain things, such as head or color, for example. Between yet other breeds there are striking differences in various ways. The boar should be a good model of the breed, and whether he is or not will depend on how closely he compares with the breed standard.

(B)—THE SOW.

Sex character in the sow is especially seen in the feminine type of head and neck; the smooth, well-laid shoulder; length and depth of body, and mammary glands. The head of the sow should show distinct refinement, and lack of the self-assertive character so manifest in the boar. The neck should be free of any thick, heavy crested condition, but should be trim and neat, and appear a trifle longer than with the boar. The shoulders should be smooth and laid in neatly, so that the body will be no wider at this part than further back, excepting when in thin flesh, due to nursing, etc. Any thickness and heaviness of shoulder tends to masculinity. The most distinguishing sex features of the sow are the mammary glands or udder, which occupy the entire space of the lower part of the belly. One gland extends along each side, with a series of teats at regular intervals. Six sound teats on each side are to be desired, though there is some variation in this regard. One frequently finds sows with blind or defective teats, due to injury, lack of use, etc. Emphasis should be placed by the judge on the necessity for sound and well-placed teats.

The temperament of the brood sow is of great importance. A naturally nervous, restless temperament is the cause of great loss in young pigs, injured or neglected by the mother. The model brood sow will lie quietly after pigging, and while nursing her young will move about among them with much care and quietness. She is not startled by every noise, and grunts in a soothing, contented manner

to her pigs. In the show ring one cannot always determine this matter of temperament, but, as a rule, the brood sow that is quiet and easily moved about may be regarded as having the most desirable temperament. Occasionally one finds a sow that is lazy and awkward, lacking in activity, and not disposed to attend to her pigs. She is almost as bad as the high strung, nervous sow, for she rarely raises a litter.

The size of the brood sow should be large, without coarse-



Fig. 297.—“The most distinguishing sex feature of the sow is the mammary glands or udder.”

ness. The present day tendency is to demand brood sows with plenty of size and a reasonable amount of quality. In the show ring the larger animal, other things being equal, is given the preference. One reason for the great popularity of the Duroc-Jersey in the middle west is the considerable size of the matured females. The compact, tidy, quick-maturing sort, that at one time was in favor, has given way to the larger, slower-maturing, more capacious animal. A brood sow weighing around 400 to 450 pounds in the best of breeding condition will meet with favor. Some breeds, like the Large Yorkshire, at maturity, weigh

600 pounds and more. The most desirable size will quite depend on breed influence.

The frame of the brood sow is more expansive, with greater stretch than in the case of the boar. The ribs show the depth so important in maternity, while emphasis is placed on length of body and width and strength of back. This body, neat and smooth in its lines, should be easily carried on strong feet and legs. The side view, in particular, should show a frame well covered, not in high condition, and bearing evidence of first-class reproducing capacity. With too much length of frame comes a tendency of the back to sag. This is indicative of weakness, consequently a strong carriage of back is desirable. The judge, however, should not severely discriminate against a sow heavy in pig, for the great weight within naturally pulls down the back line. Also, old brood sows, that have raised a number of litters, tend to sag in the back with age, but young sows should show a frame especially strong.

The breed characteristics of the brood sow need no special discussion here, for what has been stated regarding these features in the boar, will have quite a general application with the sow.

CHAPTER LIII.

DESCRIPTIVE NOTES ON THE BACON TYPE BREEDS OF SWINE.

The Large Yorkshire breed of swine is of English ancestry, having long been bred in England, and being the most common of the British breeds of swine, where it is known as the Large White Breed. It is white, and should show no other color, except occasional small blue-black spots on the skin. This is one of the largest breeds of swine, and cases are on record of individuals weighing in excess of 1,200 pounds. Mature boars, in fair flesh, at two years of age or over, should weigh about 700 pounds, and sows of the same age and condition, about 600 pounds. At one year of age, either boars or sows should weigh about 350 pounds. This is a bacon type of swine, when properly bred, and presents the following special characteristics: a rather long, narrow and slightly dished face; a large erect or semi-erect ear, pointing forward; a smoothly laid-in shoulder; narrow, long, yet strong, back; comparatively wide loins; long, smooth, moderately deep sides; long, fairly level, but only medium wide rump; long, wide, but not thick hams, with light twist; and a tendency to more length of leg than is popular with many American pork producers. In general, one is impressed with the large percentage of side meat and much less thickness of back, jowl, shoulder and ham, than obtains with the lard type. This is quite a prolific breed, and the udder on the breeding females should be well developed, and show twelve or more teats.

In Great Britain there is a type of Yorkshire that is shorter of head, and thicker all through, known there as

the Middle White. In the United States there is a tendency to show hogs of this type as Large Yorkshires, as they meet with more favor from our swine raisers. In Great Britain, a Large Yorkshire (Large White) may farrow a litter, some of the pigs of which may be Middle Whites, and will be so recorded on the records of the National Pig Breeders' Association of Great Britain. There is a still smaller type known as the Small Yorkshire (Small White) that, at one time, was very common in England. This was a very short,



Fig. 298.—Large Yorkshire boar, bred and owned in England by Mr. Sanders Spencer. (Photo by courtesy American Agriculturist.)

wide-bodied, extremely dished-faced pig, the breeding of which has been about discontinued. Recently the Royal Agricultural Society of England abolished a place in its premium list for the Small White breed, which is equivalent to condemning it for further breed consideration.

SCALE OF POINTS FOR LARGE YORKSHIRE SWINE.

(Adopted by the American Yorkshire Club.)

	Points
General outline —Long and deep in proportion to width, but not massive; slightly arched in the back, symmetrical and smooth, with body firmly supported by well-placed legs of medium length	5
Outline of head —Moderate in length and size, with lower jaw well sprung, and some dish toward snout, increasing with advancing maturity	4
Forehead and poll	1
Jowl —Medium, not carried too far back toward neck, and not flabby	1
Eye —Medium size, clear and bright	1
Snout —Turning upward with a short curve, increasing with age	1
Ear —Medium in size, standing well out from head, nearly erect, but inclining slightly forward	1
Neck —Of medium length, fair width and depth, rising gradually from poll to withers, muscular but not gross, evenly connecting head and body	3
Outline of body —Long, deep and of medium breadth, equally wide at shoulder, side and ham; top line slightly arched, underline straight	7
Back —Moderately broad, even in width from end to end; strong in loin; short ribs of good length	10
Shoulder —Large, but not massive; not open above	6
Arm and thigh —Broad, and of medium length and development	2
Brisket —Wide, and on a level with underline	3
Side —Long, deep, straight and even from shoulder to hip	8
Ribs —Well arched and deep	5
Heart girth and flank girth —Good and about equal	8
Hindquarters —Long, to correspond with shoulder and side; deep, with moderate and gradual droop to tail	5
Hams —Large, well let down on thigh and twist, and rear outline somewhat rounded	10
Twist —Well down and meaty	1
Tail —Medium, not much inclined to curl	1
Legs —Medium in length, strong, not coarse, but standing straight and firm	5
Hair —Abundant, long, of medium fineness, without any bristles	4
Skin —Smooth and white, without scales, but dark spots in skin do not disqualify	2
Color —White on every part	1
Movement —Active, but not restless	5
Total	100

The **Tamworth** breed of swine is of English nativity, having had its early development in central England. Its color is red, the shade varying from light to very dark. A golden-red hair in a flesh-colored skin, free from black spots, is the most approved color marking. In size this is a large breed of the most distinctive bacon type. The average mature boar will probably weigh about 600 pounds, and the sow 450 pounds. At six months pigs will weigh

about 175 pounds. This breed presents certain well-defined characteristics, besides the color and size. The head is very long and straight of face, and inclines to be slender of snout. The forehead is retreating, the eyes prominent, and the large ears lean forward but do not break over. The neck inclines to be somewhat long and slender, the chest and back narrow, the sides long and smooth, yet lacking depth, and the hams large but deficient in thickness and showing



Fig. 299.—Tamworth sow, "Brookhill Fancy," a first prize-winner. (Photo by courtesy American Agriculturist.)

very little twist. The males at maturity often have heavy, rough shoulders, and as a rule, the Tamworth emphasizes length of leg to a degree not common with other breeds known in America. This is a very fecund breed, and breeding females should exhibit considerable udder development and 12 or more teats. The more improved Tamworth has a fair depth of body, not excessive length of leg, and superior smoothness and quality. Shortness of head is not associated with the reproduction of bacon type, although

a heavy, long, coarse head is objectionable. The Tamworth is temperamentally very active, and in a measure lacks in quiet disposition.

OFFICIAL STANDARD OF EXCELLENCE FOR TAMWORTH SWINE.

(Adopted by the National Pig Breeders' Association of Great Britain.)

Color—Golden red hair in a flesh-colored skin, free from black.

Head—Fairly long; snout moderately long and quite straight; face slightly dished, wide between ears.

Ears—Rather large, with fine fringe; carriage rigid, and inclined slightly forward.

Neck—Fairly long and muscular, especially in boar.

Chest—Wide and deep.

Shoulders—Fine, slanting, and well set.

Legs—Strong and shapely, with plenty of bone, and set well outside of body.

Pasterns—Strong and sloping.

Feet—Strong, and fair size.

Back—Long and straight.

Loin—Strong and broad.

Tail—Set on high and well tasseled.

Sides—Long and deep.

Ribs—Well sprung, and extending well up the flank.

Belly—Deep, with straight underline.

Flank—Full, and well let down.

Quarters—Long, wide, and straight from tip to tail.

Hams—Broad and full, well let down to hocks.

Coat—Abundant, long, straight, fine.

Action—Firm and free-spirited.

Objections—*Black hair, very light or ginger hair, curly coat, coarse mane, black spots on skin, slouch or drooping ears, short or turned-up snout, heavy shoulders, blocky build, small heart girth, elephantness, wrinkled skin, bent knees, hollowness at back of shoulder.*

APPENDIX.

RULES GOVERNING LIVESTOCK JUDGING CONTESTS.

IN view of the great interest taking place these days in livestock judging contests, it has seemed appropriate to include, as appendix to this volume, examples of rules and regulations governing such contests.

The following rules are based on years of experience in the management of judging contests, and may be regarded as the most recent drafts on the subject.

RULES AND REGULATIONS GOVERNING THE INTERNATIONAL LIVESTOCK EXPOSITION LIVESTOCK JUDGING CONTEST.*

(1) Rules Governing Eligibility of Contestants.

1. Any farmer's son under twenty-five years of age who has never attended an agricultural college or agricultural school, may enter.

2. Any agricultural college undergraduate student representing his institution, who has never taken part in any meat-stock or heavy-horse judging contest of interstate or international character previous to the year in which the contest is held, may enter, provided he is in attendance as a regularly enrolled student in the institution he represents, has taken two years' work in that institution, has not been away from the institution more than one year at a time after first entering said institution, and who has at no time served in the capacity of animal husbandry teacher in any agricultural college.

3. No college shall be represented by more than five men, which number shall constitute a team.

4. Each institution shall file with the Superintendent of the Students' Judging Contest, at the time its students are entered,

* International Livestock Exposition. Preliminary Classification, 1916.

an authoritative statement covering the eligibility of each of its representatives.

(2) Superintendent.

1. It shall be the duty of the Superintendent to see that all rules and regulations governing the contest are duly carried out. He shall see that the contest is conducted with fairness and justice to all concerned.

2. The Superintendent shall have a chief clerk and helpers to assist him in superintending the students while working on the different classes of stock, and to aid him in such other capacities as he may require.

3. He shall direct the contestants which class to judge, time to commence work, and time to stop.

4. He shall say nothing to a contestant concerning the method to follow, either in judging the class, forming the reasons, or giving reasons before the committee.

5. The Superintendent shall have nothing to do with placing the animals in the various classes, nor with the grading of the placing, or the reasons.

6. He shall have charge of all the grades given for both placing and reasons, and it shall be his duty to have these tabulated and totaled, and he shall deliver the result of the contest to the Secretary of the International Livestock Exposition, who shall publish the result.

(3) Clerks, Assistants and Attendants.

The clerks, assistants and attendants shall be at the command of the Superintendent and shall carry out his orders, and none of these assistants shall confer with the contestants, unless directed to do so by the Superintendent.

The attendants showing the livestock shall hold the animals in a careful manner, so that all contestants may have a fair chance to make observations on the same.

(4) Judges.

1. There shall be three judges for each class of stock judged. It is preferable that two of each set be stockmen (breeders or feeders of the class to be passed upon), and the third an animal

husbandry instructor. No one shall be allowed to act as judge in a class in which his animals are shown.

2. It shall be the duty of each committee of judges to look over the class of stock, and of each judge to decide as to the order in which the class shall be placed, and to decide on the essential reasons for placing the first above the second, the second above the third, and the third above the fourth. The judges shall keep their ratings of the animals secret until after the contestants have been before the committee.

3. When the contestant appears before the committee, the clerk shall present the contestant's card bearing his rating of the animals and each judge shall make a note of the same and grade it as his judgment dictates and record his grade for placing on a card bearing the contestant's number. Fifty points shall constitute a perfect mark for placing. The contestant shall have two minutes in which to give his reasons for placing the animals. It shall be the duty of the committee to hear those reasons, to grade the same independently, and to record their grade for reasons on the cards mentioned above. Fifty points shall constitute a perfect mark for reasons.

4. As soon as the judges have recorded their grades, the clerk shall collect the three cards. The three grades on placing shall be averaged, and the average shall stand as the contestant's grade for placing that class.

5. The grade for reasons shall be arrived at in the same manner.

(5) Contestants.

1. All prospective contestants must send in their entries to the Secretary of "International" Exposition by November 15, 1916.

2. Regular entry forms will be mailed all prospective contestants who request the same before November 15, 1916.

3. An entry fee of \$2.00 will be charged each contestant, which sum must be forwarded with the application. The money received from this source is to be used in defraying the expenses of the examiners.

4. Each college will be restricted to entering five (5) men, which number shall constitute a team.

5. Each contestant shall report to the Superintendent in the amphitheatre at 7:30 A.M., Saturday, December 2, 1916, when he will be assigned a number and such instructions as the Superintendent desires to give.

6. No contestant will be permitted to inspect the livestock at the International Livestock Exposition prior to the contest. Any transgression of this rule will be sufficient cause to bar a student from the contest.

7. No contestant shall wear any uniform, college colors, college hat, nor shall he in any way signify to the judges his identity or the identity of the college which he represents.

8. While the contest is in progress there shall be no conferring between contestants or between a contestant and anyone else, except as directed by the Superintendent or his representative. Any violation of this rule will be punished by the expulsion of the offender.

9. The contestants shall be divided by the Superintendent into four groups, A, B, C, D, and shall be so designated thereafter throughout the contest. In no group shall there be more than two contestants from one college.

10. When the four classes of stock are brought in, Group A contestants shall be assigned to one class, B to a second class, C to a third class and D to the fourth class of animals. All groups shall be notified three minutes before time is up. When final time is called, Group A shall move to the second class, B to the third, C to the fourth and D to the first class, and shall continue to rotate in this way until each group has passed on every class of livestock.

11. The contestant shall hand his card, bearing his number, the descriptive name given the class of animals, and his placing, to the Supervising Clerk, immediately after he finishes with each class.

12. Each student shall be required to give reasons on two of the three rings of stock he has examined in each class.

The contestants will be informed which two of the three rings of livestock of each class reasons will be required upon as soon as that point is decided.

13. When the contestants have passed upon all of the rings of stock they shall be taken to convenient quarters, where each contestant shall be called before each committee of judges to give reasons for placing each ring. The contestants will be required to give reasons on one ring only at each hearing before the respective committees. The contestants shall be called before the committees to give reasons in the same order that they followed in placing the rings of stock in the arena.

(6) Time.

1. In each of the classes eighteen minutes shall be allowed the contestant to make his observations, record his placing, and write such memoranda as he may desire. No contestant shall hold any paper, card or device that will assist him while he is giving his reasons before the judges, except that he will be handed the card he turned in, which he will be allowed to retain while giving his reasons.

Each contestant shall appear singly before the judges and will be allowed two minutes to give reasons for his placing of each ring of animals. The contestant shall write his placing on a card and hand it to the clerk as soon as he has finished the work of placing the class.

FORM OF CARD.

Contestant's number.....

Class.....

Placing:

1st.....2nd.....3rd.....4th.....

Card shall be four inches by two and one-half inches.

(7) The Rings of Livestock—How Selected.

The representatives of institutions having full teams of students in the contest shall divide themselves into committees, at a meeting to be held in the amphitheatre on the morning of the contest at 7:30 A.M., and immediately report their committee lists to the Superintendent. It shall be the duties of these committees to select and get out the rings of stock to be used in said students' judging contest. It shall be their further duty to specify the description of the ring that shall be given to the students.

The representative of each institution having a team entered shall inform these committees what stock on the exposition grounds his team of students have worked upon.

(8) Classes of Livestock and Methods of Numbering

1. Four animals shall constitute a class.
2. The horses, cattle and sheep shall be identified by placing a card on the animal. These cards shall be lettered A, B, C, D.

The pigs shall be numbered by sticking large gummed labels bearing the letter on the rump.

3. All newspaper men, officials and others, except the Superintendent, his assistants, the judges, policemen and holders of stock, shall be excluded from the ring while the contest is in progress.

The program to be followed will be given to the students by the Superintendent in charge, on the morning of December 2nd.

Full instructions will be given the students in the arena on the morning of the above date.

The following program shall be followed, beginning Saturday, December 2, 1916 at 7:30 A.M.:

7:30 A.M.—Superintendent gives instructions to students.

9:20 A.M.—First ring: Horses, cattle, sheep and swine.

9:40 A.M.—Second ring: Horses, cattle, sheep and swine.

11:00 A.M.—Third ring: Horses, cattle, sheep and swine.

12:20 P.M.—Luncheon.

1:20 P.M.—Students give reasons before judging committees. Each student will be allowed six minutes for giving his reasons for the three rings of horses, cattle, sheep and swine, respectively, making a total of twenty-four minutes for reasons.

RULES FOR BOYS' STOCK JUDGING CONTESTS.

1. All contestants must reside within the county.
2. Contestants are limited to boys and girls under 19 years of age who have not attended a State Agricultural College.
3. All contestants must report to the person in charge not later than 9:30 A.M. on the day of the contest.
4. Contestants shall fill out an application blank furnished by the Secretary, before the day of the contest.
5. A "team" shall consist of three contestants whose names have been furnished to the Secretary on one card before the day of the contest. Membership in a team shall in no way hinder the contestant from competition for an individual prize or trip.
6. Each contestant shall be given a number by the Secretary by which he shall be known during the contest.

7. Each contestant shall be required to place and give reasons for placing two or three classes of stock selected from the following list: Draft Horses, Beef Cattle, Dairy Cattle, Mutton Sheep, and Lard Hogs. The Association holding the contest shall determine which classes of stock will be used.

8. Score cards may be used in training the contestants beforehand, but no score cards shall be used in the contest.

9. Printed forms will be given each contestant on which to make written reports of classes judged, and any contestant writing his name or placing any other identifying mark other than the number assigned to him on his written report will be excluded from the contest.

10. Each contestant shall devote his time strictly to the judging of the stock and shall not refer to text-books or other data; neither shall he converse with any other persons on any class of stock being passed upon or to be passed upon.

11. The length of time allotted to each ring shall be at the discretion of the person in charge. In grading, 60 per cent shall be allotted to placing, and 40 per cent to reasons.

The association holding the contest shall delegate one of its numbers to assist the instructor in charge and to arrange for the securing and getting out of animals for the different classes.

RULES OF STUDENTS' CONTEST IN JUDGING DAIRY CATTLE AT NATIONAL DAIRY SHOW, 1916.

ELIGIBILITY OF CONTESTANTS.

Any student of an agricultural college, or of a secondary school under direct supervision of a land-grant State Agricultural College, who is regularly matriculated in a course of at least two years in agriculture or dairying and has taken not less than twelve weeks' undergraduate work during the calendar year in which the show is held, who has never taken part in any dairy cattle judging contest of a national or international character, who has never acted as an official judge of cattle at a fair or show, and who has at no time served in the capacity of a teacher of animal husbandry or dairy husbandry in an agricultural college or secondary school as above mentioned, may enter as a member of a team.

SUPERINTENDENT.

1. It shall be the duty of the superintendent of the contest to see that all rules and regulations governing the contest are duly carried out, and that the contest is conducted with fairness and justice to all concerned. He shall decide all questions which may arise in connection with the interpretation of the rules governing the contest.

2. He shall have a sufficient number of clerks and assistants to help him in conducting the contest.

3. He shall direct the contestants as to which class to judge, time to commence work, and time to stop.

4. After instructing the contestants in a body regarding the contest, the form in which to prepare their reasons, etc., he shall say nothing to any contestant as to the method for the contestant to follow, either in judging the class or in writing his reasons.

5. The superintendent shall not take part in the rating of the contestants.

6. He shall have charge of all records, shall have all ratings tabulated and totaled, and shall deliver the results of the contest to the general manager of the National Dairy Show Association.

7. The superintendent shall not designate the animals for the first class until after the assistants have taken charge of the contestants; he shall do this not more than thirty minutes before the first class is to be judged.

CLERKS, ASSISTANTS AND ATTENDANTS.

1. The clerks, assistants, and attendants shall be at the command of the superintendent, shall carry out his orders, and none of them shall confer with the contestants unless so directed by the superintendent.

2. The animals shall be held in a careful manner, so that all contestants may have a fair chance to examine them.

3. One assistant shall have charge of each group of contestants, and shall see to it that each contestant in his group remains in his presence the entire time the contest is in progress, except in cases of emergency, and then as directed by the superintendent.

4. Clerks shall also be provided for the judging committee.

JUDGES.

1. The judging committee shall consist of one man from each institution having a team in the contest. This man shall be either the head of the department which has charge of instruction in dairy-cattle judging in the institution represented or the assistant who coached the team, or another assistant who shall be designated by the head of the department; provided, however, that the last-named assistant shall have the approval of the majority of the members of the committee. If, for any reason, an institution is not represented on the judging committee as above provided for, the committee shall proceed with its work just as if each institution having a team in the contest were represented on the judging committee; however, a team from an institution which is not represented on the judging committee is not eligible to compete for team trophies unless good and sufficient reasons for the insti-

tution not being represented have been given, and accepted by the superintendent of the contest.

2. It shall be the duty of the judging committee to decide the official placing of each ring (four bulls and four cows) after the contestants have judged the ring. The judges will enter their placing on cards handed them when they enter the ring. Each judge will also receive with the placing card a memorandum card, on which he may copy the official placing and make such notes about the animals as he wishes. Fifteen minutes will be allowed the judging committee to place each class and make notes on the cards.

Five minutes will be given the members of the judging committee to examine the animals, record which animal is to receive first place, and sign their cards. These cards shall then be collected, and the clerk shall make known to the judging committee which animal has received the majority number of votes. This animal shall be accorded first place. Four minutes shall then be allowed the committee to choose the animal for second place and hand in their cards. When the votes are counted the clerk shall make known to the committee the animal receiving the majority. Three minutes shall be allowed the committee for placing the third animal, which will be designated by the clerk after the votes have been counted. The remaining animal will be accorded fourth place.

In case no animal receives a majority on the first ballot, a second vote shall be taken on the two highest animals. If no majority results, the superintendent shall by lot withdraw the name of one member of the judging committee, who shall retire from the committee while another vote is taken. In cases of ties not provided for in these rules, the superintendent shall designate the method of breaking the tie. Three minutes shall be allowed the judges for recording the final official placement on the memorandum cards and making such notes on them as they desire, at the end of which time the cards will be taken up by the clerks.

3. During the contest the judges may converse with one another, with the clerks, and the superintendent of the contest, but with no one else until their work is completed; but they shall not discuss with one another anything pertaining to the classes of animals used in the contest except when requested by the superintendent, until the papers containing the reasons have been rated.

4. After a class has been officially placed by the judging committee, it shall be decided by the vote, while the animals are still in the ring, whether there is a pair or pairs of animals in that particular class sufficiently close to warrant the penalizing of the student less than fifteen points for the switching of the pair in question. It shall further be decided whether there is a pair or pairs of animals in the class sufficiently widely separated to warrant the penalizing of the student more than 15 points for each animal incorrectly placed.

Two animals shall be considered as *close* if the animal second in succession received more than one-half as many votes as the first for the higher place. The two animals shall be considered as far apart if the animal second in succession received less than one-fifth as many votes as the first for the higher place.

The student shall be cut 10 points instead of 15 for switching a close pair; however, if the contestant separates the close pair by a third animal there shall be no reduction in the amount (15) of the cut.

When a pair of animals within a class is far apart, the class becomes divided into two groups. The student shall be cut 5 additional points for each lower-group animal that he places in the higher group.

5. The clerk will compare the placing of the animals on each contestant's card with the official placing by the judges as determined by the plan above. One hundred points will be allowed the contestant on placing if his placing is the same as that of the official placing; and for each place that each animal is out of the way fifteen points shall be deducted, except as otherwise provided for in paragraph 4. Until after a report of the contest is made public the judges shall not know what any contestant gets on placing.

The following scheme illustrates the variation in placing. The correct order, A, B, C, D, gives 100 points, or perfect grade, for placing:

A B C D	100	B A C D	85	C A B D	70	D A B C	55
A B D C	85	B A D C	70	C A D B	55	D A C B	40
A D B C	70	B C A D	70	C B A D	55	D B A C	40
A D C B	55	B C D A	55	C B D A	40	D B C A	25
A C B D	85	B D A C	55	C D A B	40	D C A B	25
A C D B	70	B D C A	40	C D B A	25	D C B A	10

The following examples illustrate the method of rating when two animals are close. The official placing is A B C D and A and B are a close pair. The reversing of this pair by a contestant is to be cut only 10 points:

										Normal Rating	Corrected Rating
B	A	C	D..	..	..	..	..	..	..	85	90
C	B	A	D..	..	..	..	..	..	..	55	60
C	D	B	A..	..	..	..	..	..	..	25	30
B	C	A	D..	..	..	..	..	..	..	70	70

(B and C are separated and there is no reduction in the amount of the cut.)

The following examples illustrate the method of rating when two animals are far apart:

										Normal Rating	Corrected Rating
A	B	C	D..	..	..	..	..	..	..	100	100
A	C	B	D..	..	..	..	..	..	..	85	80
A	D	B	C..	..	..	..	..	..	..	70	65
C	D	A	B..	..	..	..	..	..	..	40	30

(The official placing is A B C D, and B and C are far apart.)

6. The judging committee shall, under the superintendent's direction, be divided into four groups, each group to hear and grade the reasons on one breed, consisting of one class of cows and one class of bulls, for all contestants, basing their rating of the reasons on the final official placing of the class as reached by the entire committee.

7. The judges' memorandum cards for a class shall be returned to them while the reasons on that class are being rated. The clerk shall read to the judges the reasons of each contestant without allowing them to know the contestant's number. Each judge in each group, after hearing the reasons of the contestant, and without conferring with the other judges, shall write down on a card prepared for the purpose the rating assigned by him to the contestant and sign his name. These cards shall then be passed to the clerk, who will put the number of the contestant on them and ascertain the average grade, which shall be the grade of the contestant on reasons. One hundred points shall constitute a perfect grade on reasons.

When the papers of a class of animals have been rated, the judges shall return their memorandum cards to the clerk and he shall deliver them to the superintendent, who shall make them a part of the permanent records of the contest.

At no time during the contest shall the judges have access to the papers on which the contestants give their reasons.

All papers on one class of animals shall be rated and the judges' memorandum cards returned to the clerk, before another class is taken up.

8. In case of a tie between contestants, either individuals or teams, the tie shall be broken by finding which has obtained the highest rating on judging cows. The ratings of the contestants otherwise shall remain the same.

9. The clerk shall deliver the contestants' cards, the judges' cards, and the final cards to the superintendent as a part of his report.

CONTESTANTS.

1. All entries of contestants must be received by the general manager of the National Dairy Show Association.

2. In due time regular entry forms will be mailed to the professor of dairying or animal husbandry of each State Agricultural College.

3. An entry fee of \$2 will be charged each contestant, which must be forwarded with the application. The money received from this source is to be used in helping to defray the expenses of the contest.

4. Each institution eligible to participate in this contest will be permitted to enter a team, which shall consist of three eligible students of that institution.

5. Any contestant who visits the cattle barn before the contest shall be debarred.

6. Each contestant shall report to the superintendent of the contest at the office of the general manager at 8 A.M. October 13, 1916, when he will receive a number and such instruction as the superintendent may deem necessary.

7. No contestant shall wear any uniform, college colors, college hat, college pin, or anything which may in any way reveal his identity or the identity of the college which he represents.

8. No student shall be allowed to take any book, notes, or writing paper into the contest except such cards as are provided by the superintendent of the contest.

9. While the contest is in progress there shall be no communication among the contestants, or between a contestant and any one else, except as directed by the superintendent or his representative, and then only in the presence of the superintendent or his representative.

10. Reporters, officials, and others except the contestants, the judges, the superintendent, his assistants, policemen, and holders of stock, shall be excluded from the ring while the contest is in progress.

11. Any contestant violating any rule will be debarred from the contest. If a member of any team is debarred because of violation of rules, that team will be debarred from the team contests, although the remaining members may compete for individual prizes.

12. The contestants shall be divided by the superintendent into groups, N. O. P., etc., and each contestant shall have a number by which he shall be designated throughout the contest. In no group shall there be more than one contestant from the same college.

13. When the first two classes are brought into the ring, group N contestants shall examine one class, and each contestant shall designate on the placing card how, in his opinion, the animals should rank. Group O contestants shall in like manner examine the other class. Contestants shall be notified three minutes before the time is up, and when final time is called, the placing cards shall be collected by the assistant in charge of each group. Groups N and O will then exchange places in the judging ring and place the remaining class. Groups N and O shall then hand their placing cards to the assistants and be conducted to the examining room, where they shall write down their reasons for the placing of the animals. Groups P and Q shall then examine the animals and proceed as groups N and O; and any other groups in like manner.

14. Each contestant on entering the ring will receive two cards, one a blank form for the placing of the animals, the other a blank card for notes. The placing card will be handed to the attendant before leaving the ring. In the examining room a blank form will be provided on which to write the reasons for the placing of

the animals. This, together with the student's card for notes, will be collected before the student leaves the examining room.

TIME.

1. Fifteen minutes for each class shall be allowed the contestants in the ring to make their observations, write down their placings, and make such notes as they wish to assist them in remembering the class when they go to the examining room.

2. When the contestants enter the ring, the animals shall be moved around for two minutes so as to enable the contestants to see them in motion.

3. Each contestant shall be allowed fifteen minutes to write down his reasons for placing each class of animals.

CLASSES OF ANIMALS.

1. Four animals shall constitute a class. In each breed there shall be one class of bulls and one of cows.

2. The cattle shall be known by cards (A, B, C, D) on the animals' attendants.

AGE CLASSIFICATION IN THE SHOW RING.

The classification of animals in the show ring on the basis of age, is a well established necessity. Animals subjected to comparative placing should not vary too widely in age, especially when of immature form. As a matter of common custom, an animal is termed a yearling from the beginning of the thirteenth to the end of the twenty-fourth month. Yet if we were to compare yearlings born on January 2d and December 28th, of the same year, we should quite likely find the older animal much the larger and more mature. In the endeavor to establish uniformity in size and age in cases of this sort, dates have been adopted for basing the age classification of the younger classes of animals. A form of classification is expressed in the following illustrations as applied to a fall show of cattle.

Senior calf, calved on or after September 1st, shown the following year.

Junior calf, calved on or after January 1st, shown the same year.

Senior yearling, a year older than the senior calf.

Junior yearling, a year older than the junior calf.

Two-year olds and under three, dating from September 1st.

Three-year old and under four, dating from September 1st.

Four years old or older are assumed to be mature animals, and comparable irrespective of age date.

If a calf is dropped on September 10, 1916, and is to be shown at the 1917 International Live Stock Exposition, he must be entered as a senior. If dropped on February 10th, he must be entered as a Junior. This arrangement provides for two groups of animals of the calf class, where the conditions of size and age will be fair for comparison in each class. At many fairs ages of horses and foals date from January 1st.

A classification after the above form may apply to either horses, cattle, sheep or swine. Variations occur in classifications, according to local conditions, but the present day live stock show requires exhibitors to enter all live stock exhibits on an age basis. The following are examples taken from a prominent state fair premium list, showing age classes provided for horses, cattle, sheep and swine.

Horses.....	{	Stallion 4 years old or over. Stallion 3 years old and under 4. Stallion 2 years old and under 3. Stallion 1 year old and under 2. Stallion colt under 1 year. Mare 4 years old or over. Mare 3 years old and under 4. Mare 2 years old and under 3. Mare 1 year old and under 2. Filly colt under 1 year old.
Cattle.....	{	Bull 3 years old or over. Bull 2 years old and under 3. Senior yearling bull. Junior yearling bull. Senior bull calf. Junior bull calf. Cow 3 years old or over. Cow or heifer 2 years old and under 3. Senior yearling heifer. Junior yearling heifer. Senior heifer calf. Junior heifer calf.
Sheep.....	{	Ram 2 years old or over. Ram 1 year old and under 2. Ram under 1 year old. Ewe 2 years old or over. Ewe 1 year old and under 2. Ewe under 1 year old.

Swine.....	}	Boar 2 years old or over.
		Boar 18 months old and under 24 months.
		Boar 12 months old and under 18 months.
		Boar 6 months old and under 12 months.
		Boar under 6 months old.
		Sow 2 years old or over.
		Sow 18 months old and under 24 months.
		Sow 12 months old and under 18 months.
		Sow 6 months old and under 12 months.
		Sow under 6 months.

CLASSES AND GROUPS OF ANIMALS IN THE SHOW RING.

Animals are ordinarily exhibited at live stock shows or fairs, under the heading of the breed or breeds to which they belong. At many local fairs of minor importance little emphasis is placed on the breed, and grades are allowed places in the classes. In the better shows, grades are exhibited only in non-breeding classes as for example, geldings, steers, barrows, or wethers.

The classes in the show ring are the groups that are arranged and exhibited on an age basis. In our shows it is the common custom first to make the awards in the classes, usually beginning with the aged males, and judging in order from the oldest to youngest class of each sex. An arrangement of the classes has already been given under age requirements.

The herds or groups of the show ring, consist of collections of animals shown as such, rather than as single individuals. There are various groups based on different requirements. The more common are the following:

Exhibitors' herd.—One bull, 2 years old or over; one cow, 3 years old or over; one heifer, 2 years old and under 3; one heifer, 1 year old and under 2; one heifer, under one year, all owned by the exhibitor. This is often termed a "step-ladder" herd.

Breeder's young herd.—One bull, under 2 years old; two heifers, 1 year and under 2; two heifers, under 1 year old, and all excepting the bull to be bred by the exhibitor.

Calf herd.—One bull and two heifers, all under one year old and bred by the exhibitor.

Get of sire.—Four animals of any age or sex, the get of one sire.

Produce of dam.—Two animals of any age or sex, the produce of one cow.

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