

AGRICULTURAL EXPERIMENT STATION

KANSAS STATE COLLEGE OF AGRICULTURE
AND APPLIED SCIENCE

MANHATTAN, KANSAS

DEPARTMENT OF DAIRY HUSBANDRY



A CLASS IN DAIRY JUDGING

JUDGING DAIRY CATTLE¹

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Because of the fact that less than 3 per cent of the dairy cows in the United States have records of production, the dairyman or farmer must rely upon his ability to judge the producing qualities of dairy cows in making his selections. This situation has stimulated the interest of dairy farmers, county agricultural agents, 4-H club members, and all students of the dairy industry, in the judging of dairy cattle.

The best way to get information on judging dairy cattle is by working with and observing dairy cattle on which records of production are kept. A second method is to profit by the experience of dairymen and others who have a knowledge of dairy cattle. The results of this experience may be given in the classroom, by the printed page, or by a combination of these methods. The judging of dairy cattle, more than any other phase of agricultural practice, is based on a great many assumptions having little scientific basis.

1. Contribution No. 82 from the Department of Dairy Husbandry.

Much reliance must therefore be placed on personal experience and opinion.

It is difficult to judge accurately the producing ability of a dairy cow. Even the most experienced man may be mistaken in a cow's ability. In general, high-producing dairy cows have a conformation that has been established by the milking function. This is called the dairy type. Because of the fact that milk secretion is dependent upon the function of a gland, it is possible for animals apparently equally good in dairy conformation to vary widely in their producing ability. This situation is further complicated by the requirements of the different breeds in which the requirements for type are sometimes made of equal importance to indications of producing ability.

The showing of dairy cattle is the sporting side of the dairy cattle business and at times it may appear that little effort is made to connect type and production in the show ring. Of late, however, several shows have added production requirements to their entries—a requirement that will do much to stimulate interest in keeping records on dairy cattle. The more a dairyman studies his cattle the greater his interest will be in keeping records of production on his cows.

Great emphasis has been given to judging dairy cattle by the 4-H club and vocational agriculture movements. At times interest has been stimulated by trips and contests to the extent that the original intent of judging work with dairy cattle has been lost entirely. After all, the value of judging work with dairy cattle is to assist in establishing the dairy conformation and the type requirements in the minds of those interested, without making it necessary for them to spend several years working with dairy cattle. This circular seeks to assist in establishing the dairy type in the mind of the beginning dairyman or student.

VALUE OF JUDGING

Experience in judging dairy cattle affords definite advantages to one who pursues his judging work carefully and faithfully. It develops powers of careful observation and analysis; creates a feeling of personal satisfaction in the knowledge of proved ability in judging; and gives the breeder of dairy cattle an advantage in buying and selling stock by virtue of his ability to recognize and emphasize the good points of the animals in question. Breeding operations are carried on with greater interest, because of good judging experience and ability. Greater success is attained in showing cattle by those who know dairy type.

Proficiency in judging may be acquired through classroom instruction; by the study of score cards and true-type pictures and slides; by attending shows and exhibits and studying the winners; by competing in the show ring as an exhibitor; by competing in judging contests; and lastly and of great importance, by working with good dairy cattle.

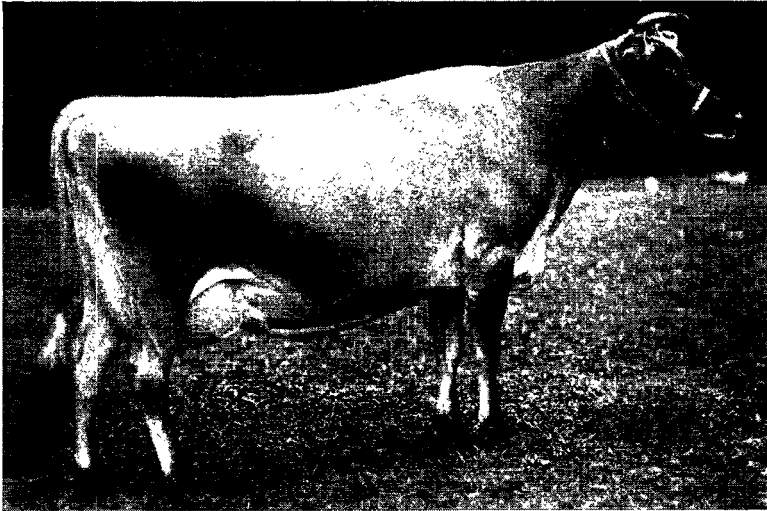


FIG. 1.—Lavender Lady 737333, grand champion Jersey cow at the 1931 National Dairy Exposition. This cow shows pronounced dairy type.

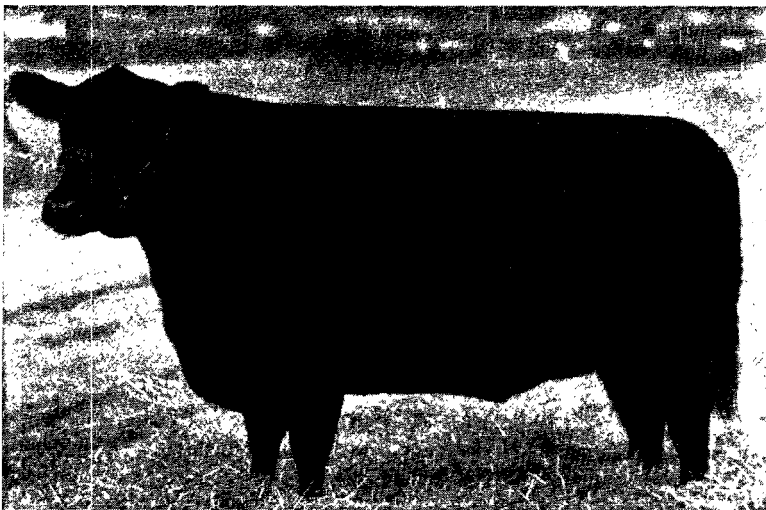


FIG. 2.—Eulixa 2d, pure-bred Angus female showing pronounced beef type.

DAIRY TYPE AND BEEF TYPE COMPARED

Type in an animal is the exemplification of the ideal characteristics for that animal as they have been formulated by functional requirements through generations of painstaking study and selection by breeders. Specific characteristics were identified with certain functions and these formed the basis of selection. Dairy form or type, therefore, became associated with the function of milk production, since in most cases the type that was most approved was the type that resulted in maximum performance. Draft-type horses were developed for pulling power, light horses for speed and stamina, beef-type cattle for meat, and dairy-type cattle for milk production. Form, then, is the result of function, and those animals exhibiting the approved form can generally be expected to function efficiently. Before very great progress can be made in judging dairy cattle a clear understanding of what is meant by dairy type must be acquired. One of the best ways of gaining this concept is through a comparison of the dairy type with the widely contrasting beef type. From the standpoint of general type and function, the dairy cow and the beef cow differ in three major essentials. These are temperament, degree of fleshiness, and mammary development.

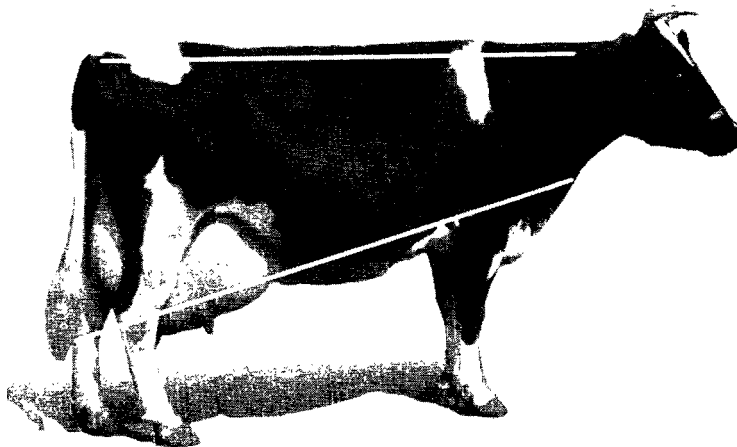


FIG. 3.—A high-producing dairy cow showing typical conformation and diagrammatically emphasizing the so-called "side wedge."



FIG. 4.—Diagrammatic presentation of the so-called "second wedge" that may be observed in dairy conformation. This wedge may be seen when the cow is viewed from the rear.

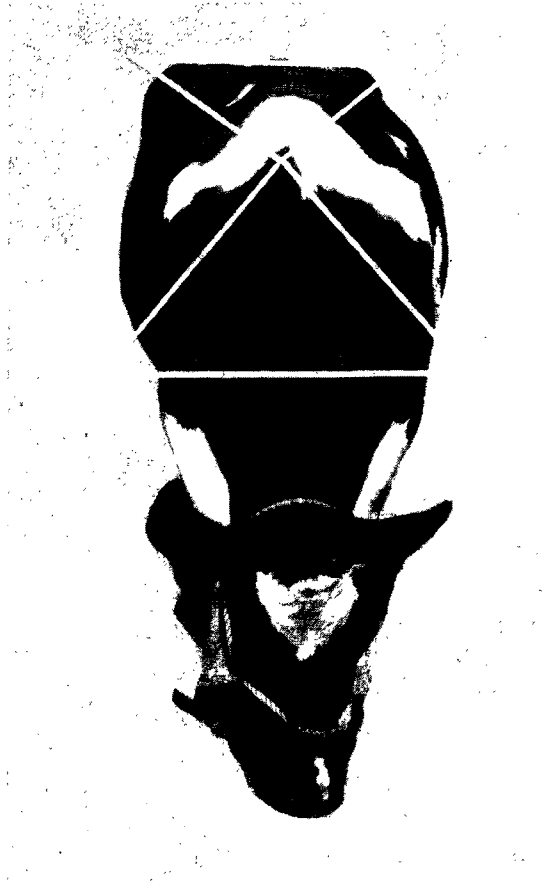


FIG. 5.—Diagrammatic presentation of the so-called "third wedge" formed from the withers to the shoulder point as viewed from the front of a cow of good dairy conformation. The second wedge is also shown in this picture.

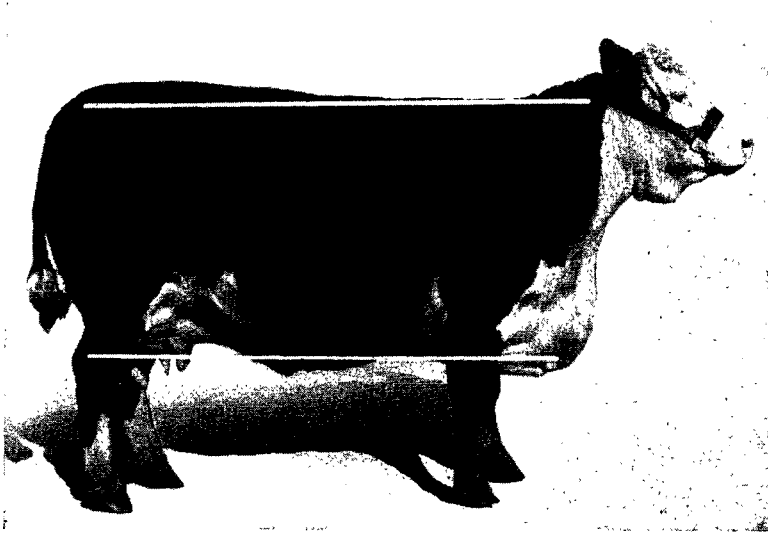
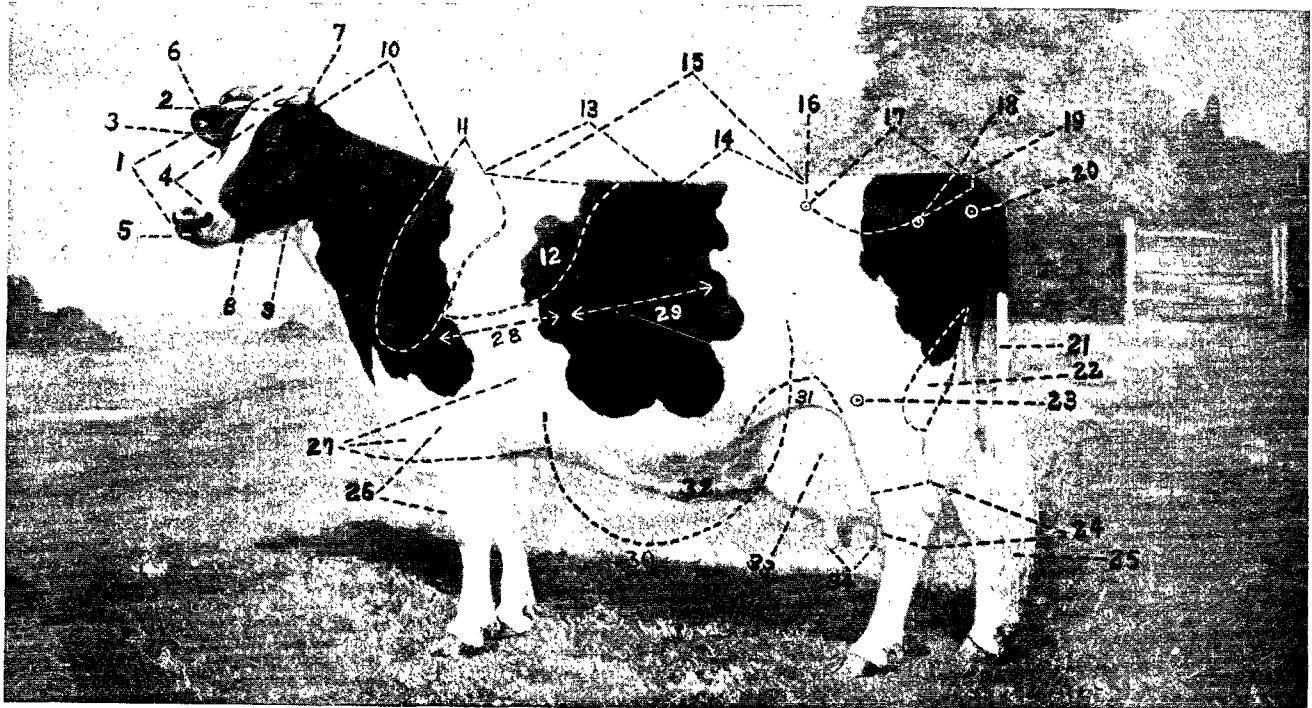


FIG. 6.—A beef cow showing blocky form as compared with the dairy cow. (Figs. 1, 3, 4, and 5.)



Courtesy Holstein-Friesian Association.

FIG. 7.—Ideal type of Holstein-Friesian cow with exterior parts named.

Names of Parts Indicated in Figures 7 and 8

1—Head.	13—Chine.	25—Switch.
2—Forehead.	14—Loin.	26—Forearm.
3—Eye.	15—Back.	27—Chest.
4—Face.	16—Hip or hip bone.	28—Fore ribs.
5—Muzzle.	17—Rump.	29—Back ribs.
6—Ear.	18—Thurl.	30—Barrel.
7—Horn.	19—Tail head.	31—Flank.
8—Jaw.	20—Pin bone.	32—Mammary veins.
9—Throat.	21—Tail.	33—Udder.
10—Neck.	22—Thigh.	34—Teats.
11—Shoulder.	23—Stifle point.	
12—Crops.	24—Hock.	

Dairy temperament may be defined as the ability of a cow to convert the food she consumes into milk. Conversely, an animal conforming to the approved beef type converts the food it consumes into flesh to build up the body. This function in the dairy animal is associated with an angular conformation, while in the beef animal a rectangular body is the result. These two contrasting types are illustrated in figures 1 and 2. Figures 3, 4, and 5 show the three wedges of the dairy cow as contrasted with the beef cow's rectangular form. (Fig. 6.) Figure 7 shows the parts of the dairy cow, while figure 8 is a diagrammatic representation of the same parts named in figure 7.

The dairy cow has a larger barrel in proportion to the rest of the body than does the beef animal. This gives her a "paunchy" appearance which is desirable in the dairy cow from the standpoint of capacity and conformation, but which would be objectionable in a beef animal. Swett and associates found in their researches that the internal capacities of the chest and the barrel of the dairy cow and the beef cow were almost identical, but that the difference in shape and the freedom from excess flesh in all parts, gave the dairy cow the appearance of having a greater barrel capacity.²

A study of figures 9 and 10 reveals a remarkable similarity between the skeleton of a highly specialized dairy cow and a highly specialized beef animal. The investigators (Swett *et al.*³) found that although the beef animal was much larger in many of its external measurements, the dairy cow slightly excelled in many skeletal measurements, such as height and length of body, depth through the chest, length of barrel, length of loin and rump, width of thurls, pin bones, and pelvis, and width of ribs. The width between the ribs averaged almost the same for both types of cows. Though skeletal structures of the two types thus varied somewhat in certain respects as noted, they were generally similar. The observation may then be made that the greatest difference between the two contrasting types of cattle is not in the skeletal structure but in the function of the animals. In the one case the animal is stimulated to produce flesh at the expense of milk production, while in

2. Swett, W. W., Graves, R. R., and Miller, F. W. Comparison of conformation, anatomy, and skeletal structure of a highly specialized dairy cow and a highly specialized beef cow. *Jour. Agr. Research* 37: 685-717. 1928.

3. *Loc. cit.*

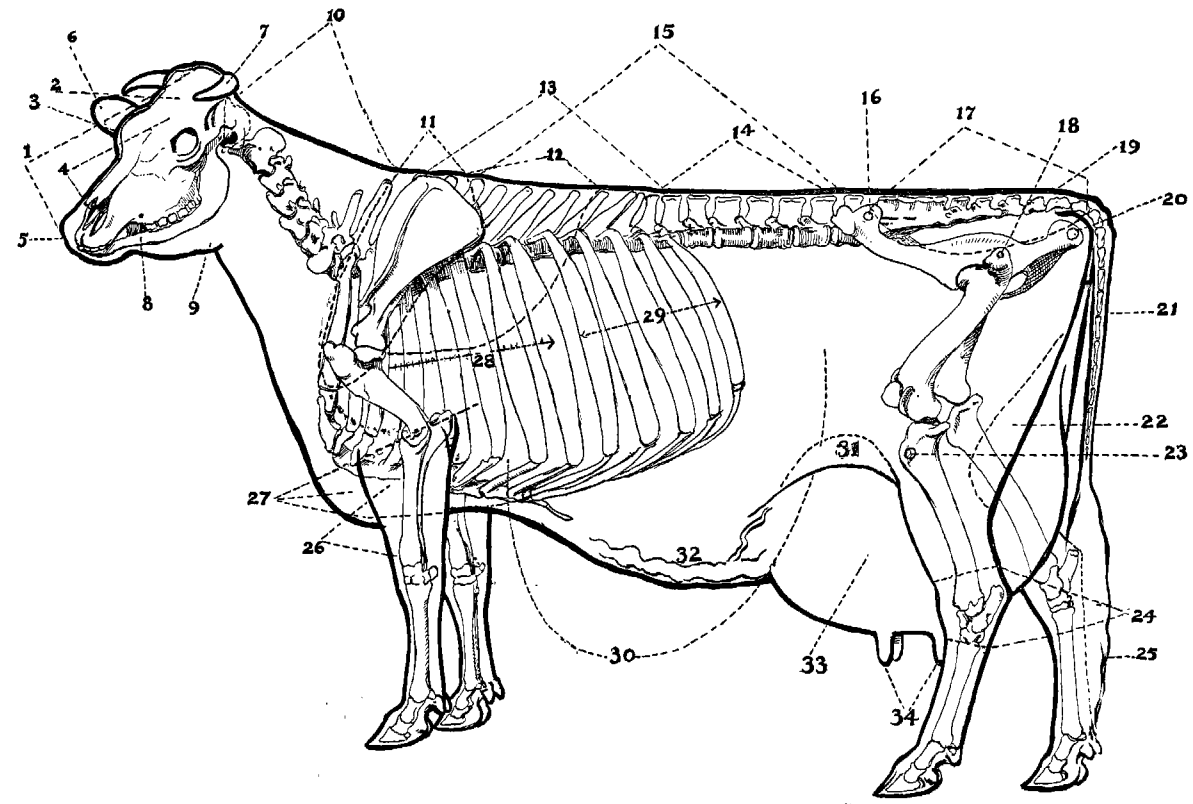
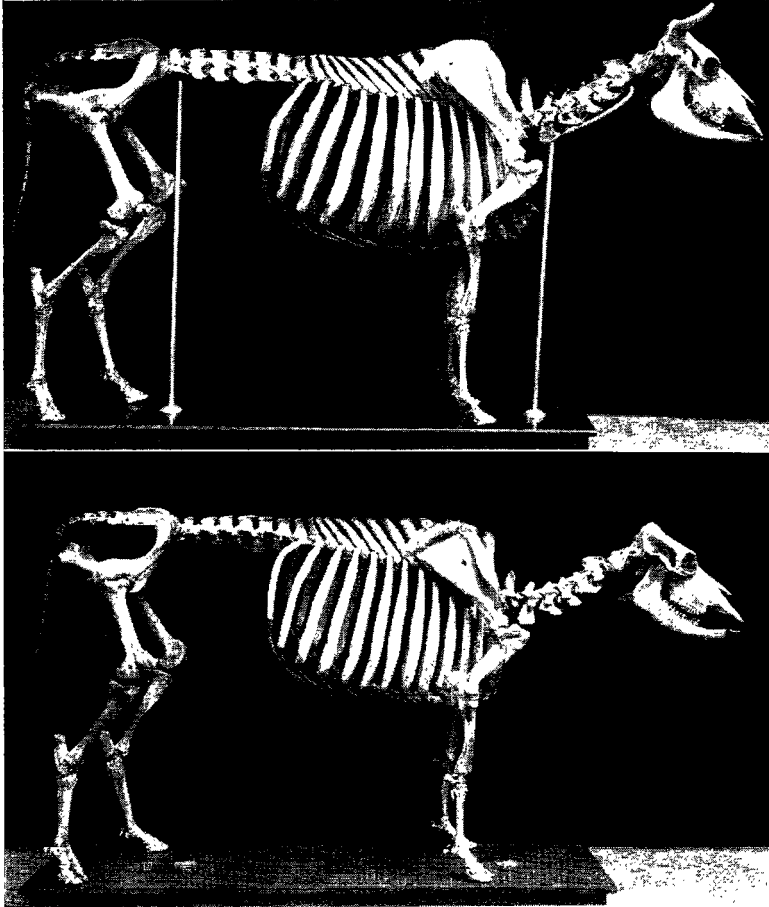
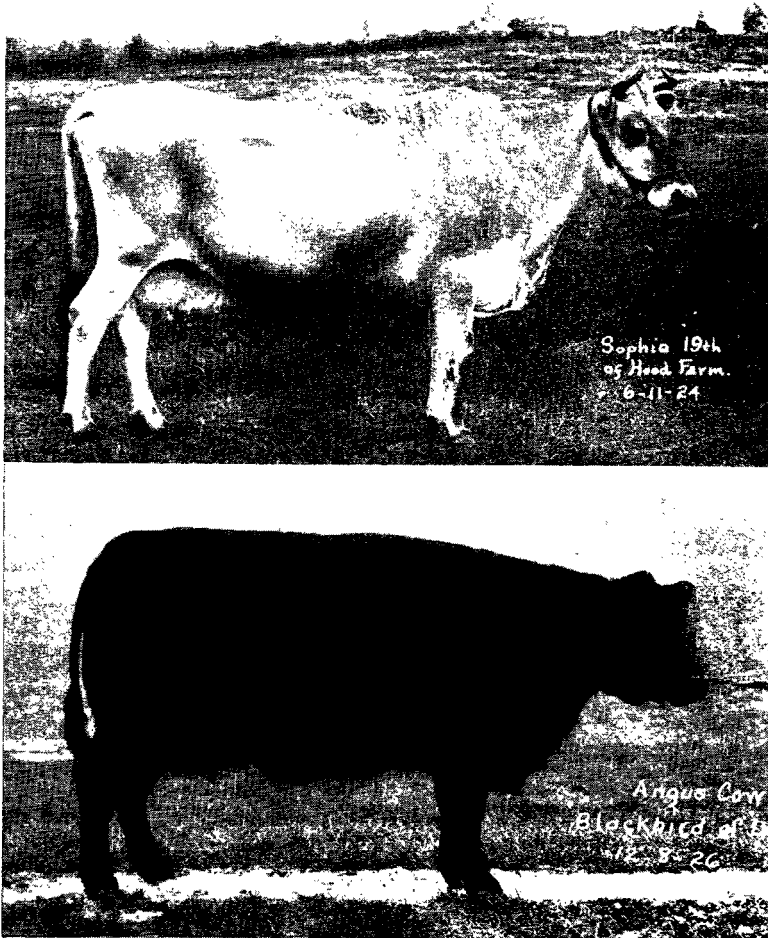


FIG. 8.—Diagrammatic sketch of dairy cow showing certain interior structures and giving names of the same parts indicated in figure 7.
Courtesy Holstein-Friesian Association.



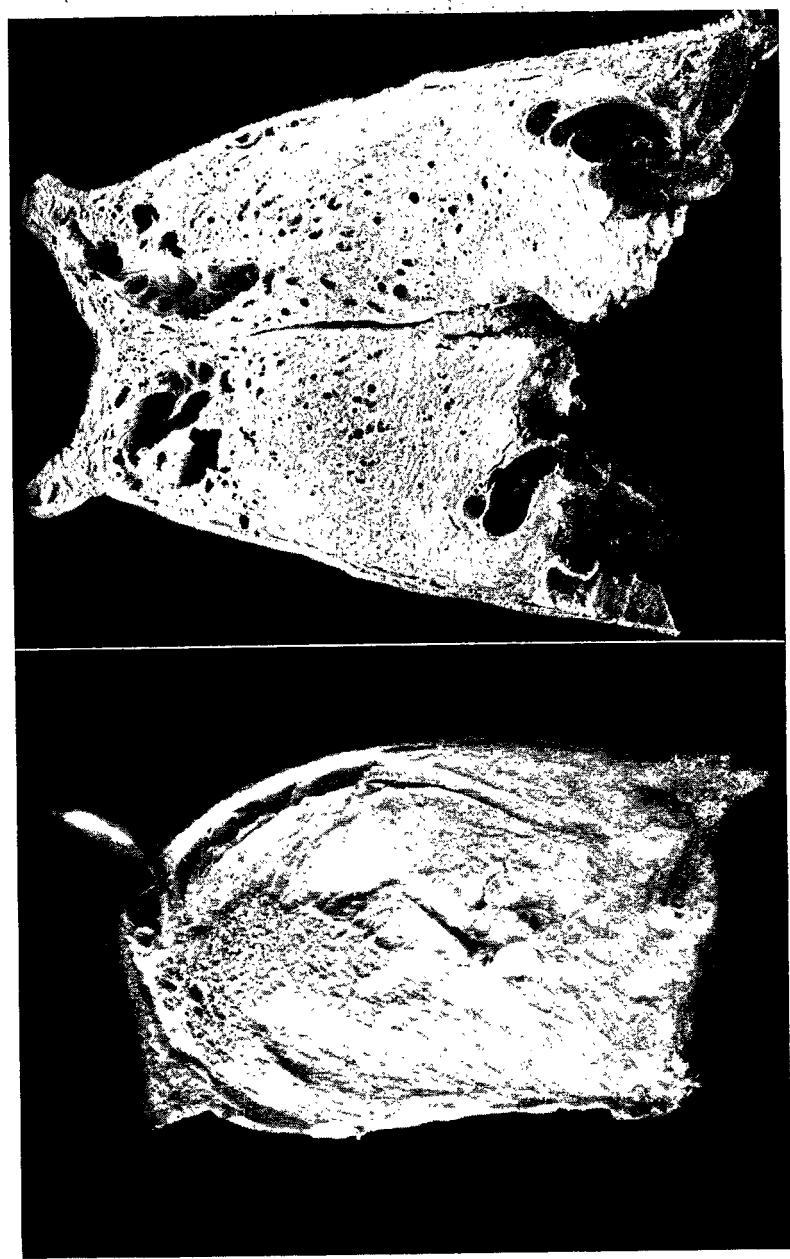
Courtesy Bureau of Dairy Industry.

FIG. 9.—Upper—Skeleton of the Jersey cow, Sophie 19th of Hood Farm, representing a highly specialized dairy cow. Lower—Skeleton of Blackbird of Dallas, a pure-bred Angus cow representing a highly specialized beef cow.



Courtesy Bureau of Dairy Industry.

FIG. 10.—Upper—A picture of Sophie 19th of Hood Farm taken a short time before her death. This cow held the world's record for the Jersey breed from 1914 to 1918 with a production of 17,558 pounds of milk and 999 pounds of butter fat. This cow is also one of the high cows of all breeds in lifetime production, having produced 7,544 pounds of butter fat in 11 official records. Lower—A picture of Blackbird of Dallas, pure-bred Angus, a consistent showing winner for her breed. Note the difference in body conformation of the two animals and compare with the pictures of the skeletons. (Fig. 9.)



Courtesy Bureau of Dairy Industry.

FIG. 11.—Upper—Sectional cut showing internal structure of the udder of the dairy cow, Sophie 19th of Hood Farm. Lower—Sectional cut showing internal structure of the udder of the beef cow, Blackbird of Dallas.

the other the mammary gland is stimulated to produce milk and the amount of flesh is low.

The mammary system presents one of the most striking contrasts between the two types of cattle. The udder of the dairy cow is large, capacious, soft, and spongy, while that of the beef cow is smaller and more meaty. The difference in internal structure is readily apparent in figure 11. Note the porous nature of the milk-producing tissue in the udder of the dairy cow and the large amount of fatty tissue in that of the beef animal.

CHARACTERISTICS OF A GOOD DAIRY COW

The outstanding characteristics of a good-type dairy cow are size, constitution, barrel capacity, mammary development, dairy temperament, and quality.

SIZE

Size is of importance in the dairy cow. Gowen noted that the body measurement most closely associated with milk production is that of weight.⁴ McDowell found from a study of about 220,000 yearly dairy herd improvement association records that "in general an increase in size of a cow within the breed results in increased production and income over cost of feed."⁵ It is desirable to have cows of good size for the breed they represent.

CONSTITUTION

The importance of a strong constitution is emphasized when it is realized that a high-producing dairy cow works hard in converting feed into milk. The authors have estimated that on an energy basis the average Kansas Dairy Herd Improvement Association (D. H. I. A.) cow expends an equivalent of 90,530 foot pounds of work in producing 7,721 pounds of milk in a year; while the average Kansas farm horse working an average of eight hours per day for 100 days of the year expends an equivalent of 30,140 foot pounds of work. A strong constitution is evidenced by well-sprung foreribs, a deep chest, good width across the floor, and a large heart girth.

BARREL CAPACITY

Barrel capacity is taken as an indication of an animal's ability to consume food. A large barrel capacity is necessary because only by consuming large amounts of feed is the cow able to produce large quantities of milk. For every 100 pounds of milk produced a dairy cow will consume on the average 84 pounds of roughage, 6 pounds of silage, 20 pounds of grain, and the equivalent to 3 days grazing on pasture.⁶ The average Kansas D. H. I. A. cow referred to above would require something like 11,500 pounds of hay and silage and

4. Gowen, John W. Judging of dairy cattle and some of its problems. *Jour. Heredity* 17:18-26. Jan. 1926.

5. McDowell, J. C. Within the breed the big dairy cows excel. *U. S. Dept. Agr. Dept. Circ.* 114:1-4. 1930.

6. Peck, F. W. and Boss, Andrew. The cost of milk production. *Minn. Agr. Expt. Sta. Bul.* 173:1-26. 1918.



FIG. 12.—Several undesirable udders. Note the poor teat placing and the lack of udder development as compared with the udder development of representative cows of the different breeds.

1,540 pounds of grain per year. Body capacity is indicated by a long body, great depth through the barrel, and well-sprung ribs that are wide and far apart. A short, shallow, narrow body reduces feed capacity.

MAMMARY DEVELOPMENT

The mammary system is the most important factor in measuring the ability of a dairy cow. This is evidenced by the fact that a total of from 20 to 38 points is allowed on the different breed score cards for this part alone. Balance and symmetry of the udder, as well as quality, are of equal importance with capacity. Tilted, quartered, pendulous, and funnel-shaped udders, such as illustrated in figure 12, are particularly objectionable. Udders of these types are lacking in capacity, undesirable in appearance, and difficult to keep clean. Graves,⁷ Gaines,⁸ and Gowen⁹ have shown that the milk is manufactured and stored in the udder prior to the time it is drawn. This fact makes clear the necessity for a large udder in the case of heavy-producing cows. Size and balance alone cannot insure efficiency in the udder unless accompanied by quality. The udder must be spongelike in texture, and must feel soft, flexible, and free from meatiness and hardness when handled, indicating the presence of a large amount of milk-secreting tissue. Short, soft hair, a thin skin, and prominent veins on the udder are thought to be indications of good quality in the udder.

DAIRY TEMPERAMENT

Dairy temperament and its place in judging has been mentioned previously. Dairy temperament is indicated by a lean, angular appearance coupled with the indications of quality in all parts of the body. It reflects the ability of an animal to give large amounts of milk. Dairy temperament is best shown by condition of flesh when a cow is giving a good flow of milk and is securing sufficient feed to support her milk production. Dairy temperament and dairy conformation are important guides in selecting dairy animals, but the fact that the stimulation to produce milk is dependent upon inherited factors that cannot be accurately measured by external appearance causes records of production to be the only true measure of the ability of a dairy cow.

QUALITY

The term quality as applied to dairy cattle is a somewhat comprehensive expression. It refers not only to the mellowness and flexibility of the hide and udder, but includes the whole tone of the animal as well. Indications of quality are found in the bright appearance of the eyes, the fineness of bone, the trimness about the head and body, and the elasticity and thinness of the hide.

7. Graves, R. R. Mammary-gland studies. In U. S. Dept. Agr. Bur. Dairy Indus. Rpt. 1928-29. Ref. pp. 8-9.

8. Gaines, W. L. How much milk in the udder. Hoard's Dairyman 72:942. Oct., 1927.

9. Gowen, John W. and Tobey, Elmer R. Udder size in relation to milk secretion. Jour. Gen. Physiol. 10:949-960. 1927.

BREED TYPE

The well-defined dairy breeds of the present day have been slowly developed through the influence of environmental conditions, selection, market demands, and personal preference of breeders. As these influences have gradually taken effect, new types or breeds of cattle have been developed, possessing distinctive features and characteristics which collectively make up what is referred to as breed type. Broadly speaking, breed type is a composite of all the characteristics which differentiate one breed from another. These differences, which are found in the general appearance of the animal, the size, color markings, style, and the quality of the milk produced, have accumulated during years of breeding through a blending of the ideals of the master breeders who have worked for the development of the respective breeds and the functional demands of the animals. Breed type has been specifically defined by word and in pictures, resulting in breed score cards and pictures and models of ideal-type animals symbolizing the breeder's concept of the ideal animal. The score cards and true-type pictures and pictures of typical or representative animals (figs. 13 to 20) for the respective breeds are presented on the following pages. A careful study of these will aid materially in fixing in mind the major differences among the breeds and in gaining a concept of breed type.

THE SCORE CARD AND ITS USE

Animals may be judged in two ways: From the standpoint of scoring the individual excellence, or from the standpoint of comparative judging or ranking the animals according to their excellence. When studied on the former basis a score card for the breed must be used. A careful study of the score card and a thorough grasp of its details furnish the basis for comparative judging.

The breed score card is a standard of perfection with which a particular animal may be compared and the parts evaluated. It serves to define and describe the characteristics of the ideal dairy animal; it sets forth the relative values of the different parts of the animal; and through its application it makes for more careful analysis rather than hasty observations and conclusions. These breed cards should logically be used in conjunction with true-type or representative pictures of the respective breeds since the pictures are the pictorial representation of the type described by the score cards.

For class instruction it may be desirable to use first a general dairy score card which gives the details of dairy conformation without regard to type for the different breeds. This card is especially valuable in familiarizing beginners with the nomenclature and the external anatomy of the dairy cow. It is also a help in evaluating the parts of the cow. A copy of a widely-used dairy score card approved by the American Dairy Science Association is given on page 19. After some use of this general dairy cattle score card, attention may then be given to the breed score cards from which a knowledge of the specific characteristics of each breed may be

gained. Careful study of figures 7 and 8 will aid materially in locating the parts of a dairy cow and in making clear the relationship between the external features of the dairy cow and the skeletal structure.

In scoring an animal, rarely, if ever, should more than 50 per cent of the perfect score be deducted on any given point. For a slight defect a cut of up to 10 per cent of the perfect score is sufficient; for an appreciable deficiency not more than 25 per cent, and for a marked deficiency not more than 50 per cent of the perfect score should be deducted. On this basis an excellent individual should score 85 points or over, a very good animal, 75 to 85, a good animal, 65 to 75, and a poor individual below 65 points.

After the type of a breed is fixed in one's mind, the use of a breed score card is about ended. From this time on the judging of animals is by comparing one animal with another or by placing a group of animals in the order of their excellence.

In judging a group of animals without the use of a score card it is implied that all the points on the card will be taken into consideration, but instead of putting down a numerical value, the animals will be ranked in the order of their excellence for the various points of difference. When reasons are given to explain the placing, the important differences of the animals are mentioned.

Scale of Points for Dairy Cows

General Score Card

I. Characteristics Indicating Dairy Form

Style and General Appearance—20 Points		Perfect Score
1. Head. —Erect, clean cut; neck slender; eye prominent, alert, and placid		3
2. Back. —Straight and strong, hips wide apart and level.....		4
3. Rump. —Long, wide, and level; thurls, wide apart and high; level tail setting.....		5
4. Legs. —Straight, bone fine.....		3
5. General Build. —Rugged and large for the breed without coarseness; Jerseys 950 pounds, Guernseys and Ayrshires 1,100 pounds, Holsteins 1,350 pounds.....		5

Dairy Conformation—15 Points

6. The cow should be clean cut with feminine appearance; absence of tendency to lay on fat.....	5
7. Shoulders, Withers, Vertebrae, Hips, and Pin Bones. —Prominent and free from fleshiness. (Period of lactation to be considered)	4
8. Loin. —Wide, ribs long and wide apart.....	3
9. Disposition. —Active, with good nerve control.....	3

II. Characteristics Indicating Constitution, Vigor, and Condition—15 Points

10. Chest. —Broad and deep with well-sprung ribs.....	8
11. Nostrils. —Large and open.....	2
12. Condition. —Thrifty and vigorous, in good flesh but not beefy..	5

III. Characteristics Indicating Ability to Consume and Digest Feeds—15 Points

13. Muzzle. —Large, mouth broad.....	1
14. Skin. —Mellow, loose, medium thickness showing good circulation and secretion; hair soft.....	4
15. Barrel. —Deep, wide, and long, well supported, ribs far apart..	10

IV. Characteristics Indicating Well Developed Milk Secreting Organs—35 Points

16. Udder:	
(a) Capacity. —Large in size.....	7
(b) Quality. —Pliable, free from lumps.....	7
(c) Shape. —Extending well forward and well up behind, level on floor, not pendulous, quarters full and symmetrical	6
17. Milk Veins. —Large, long, crooked and branching; milk wells large and numerous.....	7
(a) Milk veins on udder crooked, numerous, and large....	3
18. Teats. —Convenient size, uniform, and well placed.....	5

100

NOTE.—In case of marked deficiency, as many as 50 points may be deducted.

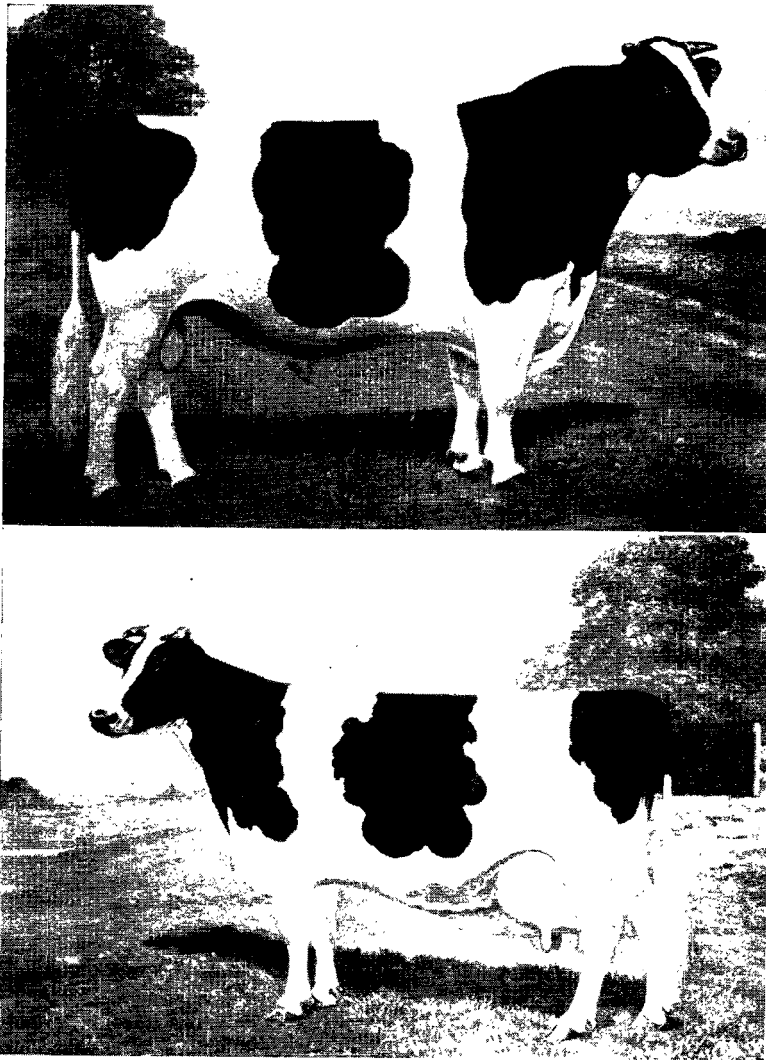


FIG. 13.—Upper—The ideal-type Holstein-Friesian bull. Lower—The ideal-type Holstein-Friesian cow.

Scale of Points for Holstein-Friesian Bulls

	Perfect Score
1. Forehead. —Broad between the eyes; dishing.....	2
2. Face. —Of medium length; clean cut; masculine; the bridge of the nose straight	1
3. Muzzle. —Broad, with strong lips; nostrils large and open; jaws strong	3
4. Ears. —Of medium size; of fine texture; well carried.....	1
5. Eyes. —Large; full; mild; bright.....	2
6. Horns. —Short; of medium size at base; gradually diminishing toward tips; inclining forward; moderately curved inward.....	1
7. Neck. —Long, well crested; fine and clean at junction with the head; strongly and smoothly joined to shoulders.....	5
8. Shoulders. —Of medium height; of medium thickness, smooth and rounding over tops; broad and full at sides; smooth over front...	6
9. Crops. —Full; level with shoulders.....	6
10. Chine. —Straight; strong; broadly developed, with open vertebræ...	5
11. Loin and Hips. —Broad; level or nearly level between the hip bones; level and strong laterally; spreading from chine broadly and nearly level; hip bones fairly prominent.....	9
12. Rump. —Long; broad; nearly level laterally; full above the thurls; carried out straight to tail head.....	8
13. Pin Bones. —Wide between; nearly level with hips.....	2
14. Thurls. —High; broad through.....	2
15. Tail Head and Tail. —Strong at base without coarseness; the setting well back; tail long, tapering finely to a full switch.....	2
16. Chest. —Deep; wide; well filled and smooth in the brisket; broad between the forearms; full in the foreflanks.....	7
17. Barrel. —Long; deep; well rounded; strongly and trimly held up....	9
18. Flanks. —Deep; full	2
19. Thighs. —Wide; deep; straight behind; wide and moderately full at the outsides; open, well cut out in the twist; with escutcheon well defined	5
20. Mammary Veins. —Large; long.....	5
21. Rudimentary Teats. —Well placed forward of scrotum.....	3
22. Legs. —Medium length; clean; nearly straight; wide apart; firmly and squarely set under the body; arms wide, strong, and tapering.....	4
23. Hair and Hide. —Hair healthful in appearance, fine and soft; hide of medium thickness, mellow and loose.....	10
	100

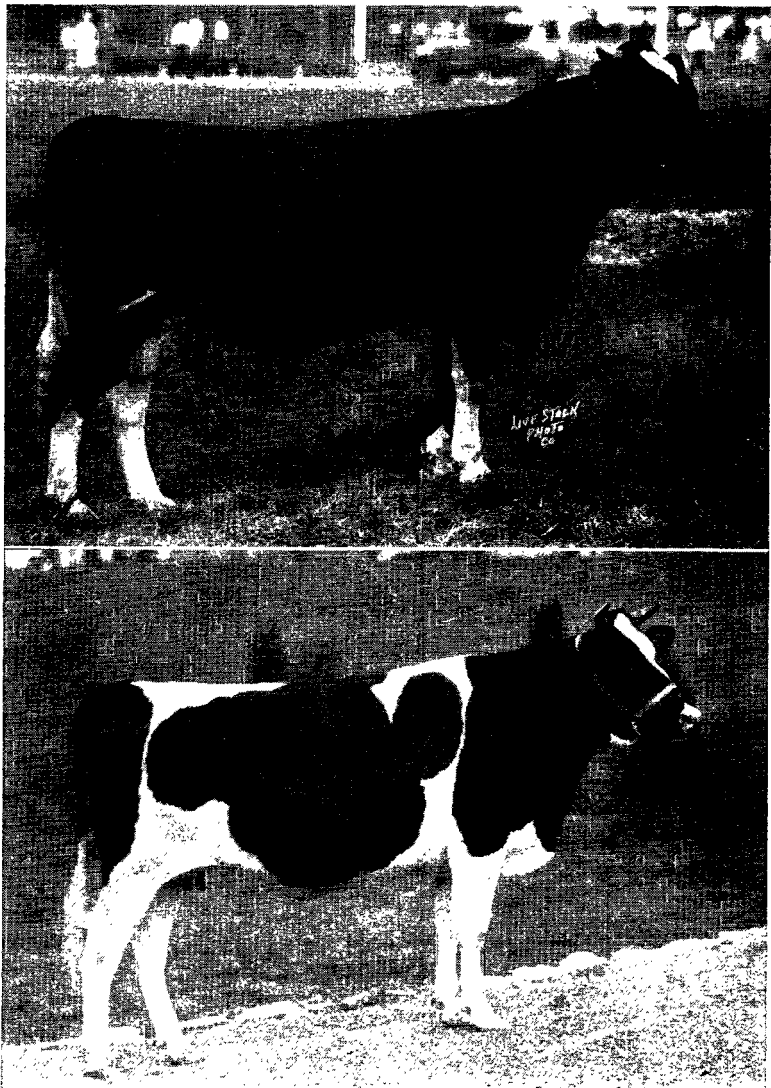


FIG. 14.—Upper—King Bessie Korndyke Ormsby 574194, a good representative yearling Holstein-Friesian bull. Lower—Oakwood Piebe Ollie 2d 1261987, an outstanding yearling Holstein-Friesian heifer.

Scale of Points for Holstein-Friesian Cows

	Perfect Score
1. Forehead. —Broad between the eyes; dishing.....	2
2. Face. —Of medium length; clean cut; feminine; the bridge of the nose straight	1
3. Muzzle. —Broad, with strong lips; nostrils large and open; jaws strong,	3
4. Ears. —Of medium size; of fine texture; well carried.....	1
5. Eyes. —Large; full; mild; bright.....	2
6. Horns. —Small; tapering finely toward the tips; set moderately narrow at base; inclining forward; well curved inward.....	1
7. Neck. —Long; fine and clean at junction with the head; evenly and smoothly joined to shoulders.....	3
8. Shoulders. —Slightly lower than the hips; smooth and rounding over tops; moderately broad and full at sides.....	3
9. Crops. —Full; level with the shoulders.....	5
10. Chine. —Straight; strong; broadly developed, with open vertebræ....	4
11. Loin and Hips. —Broad; level or nearly level between the hip bones; level and strong laterally; spreading from chine broadly and nearly level; hip bones fairly prominent.....	6
12. Rump. —Long; broad with roomy pelvis; nearly level laterally; full above the thurls; carried out straight to tail head.....	6
13. Pin Bones. —Wide between; nearly level with hips.....	2
14. Thurls. —High; broad through.....	2
15. Tail Head and Tail. —Strong at base without coarseness; the setting well back; tail long, tapering finely to a full switch.....	2
16. Chest. —Deep; wide; well filled and smooth in the brisket; broad between the forearms; full in the foreflanks.....	6
17. Barrel. —Long; deep; well rounded; strongly and trimly held up....	9
18. Flanks. —Deep; full	2
19. Thighs. —Wide; deep; straight behind; wide and moderately full at the outsides; twist well cut out and filled with development of udder; with escutcheon well defined.....	2
20. Mammary Veins. —Large; tortuous; entering large orifices or double extension; with additional developments, such as branches and connections entering numerous orifices.....	8
21. Udder. —Capacious; flexible; quarters even and of uniform texture; filling the space in the rear below the twist; extending well forward; broad and well attached.....	14
22. Teats. —Well formed; plumb; of convenient size; properly placed....	4
23. Legs. —Medium length; clean; nearly straight; wide apart; firmly and squarely set under the body; arms wide, strong and tapering...	4
24. Hair and Hide. —Hair healthful in appearance, fine and soft; hide of medium thickness, mellow and loose.....	8

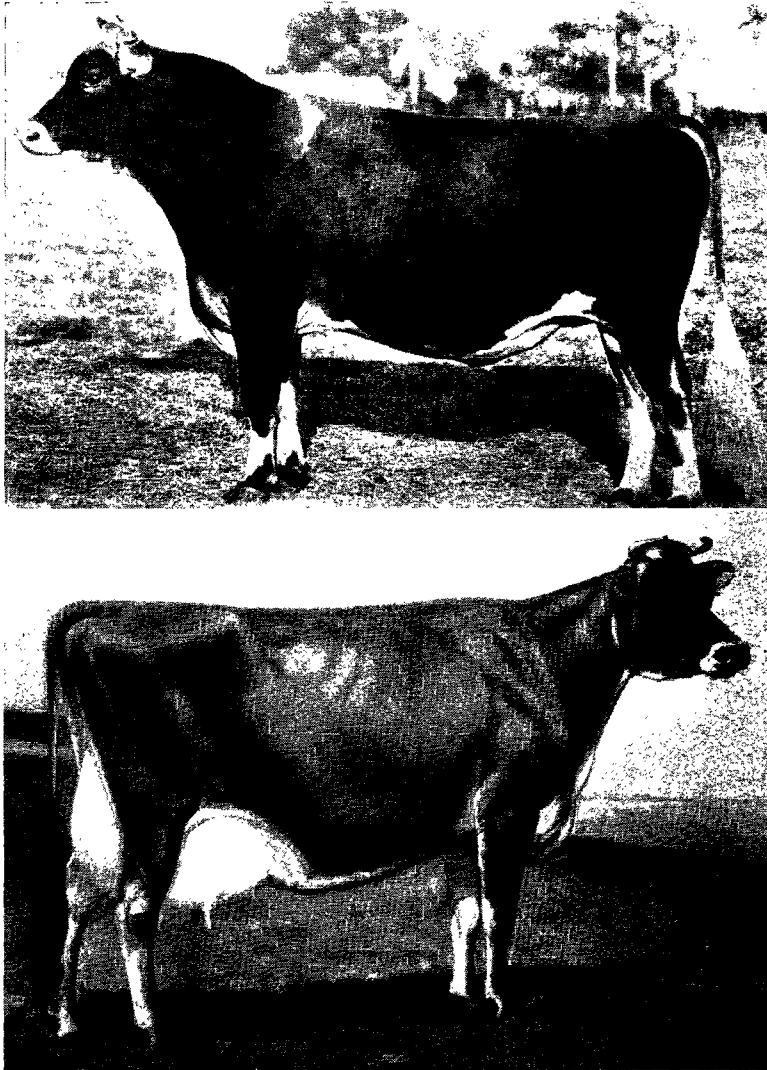


FIG. 15.—Upper—Oxford Lassy's Design 323676, an excellent two-year-old Jersey bull, grand champion at the 1931 National Dairy Exposition. Lower—The ideal-type Jersey cow.

Scale of Points for Jersey Bulls

	Perfect Score
Head—10 Points	
1. Broad, medium length; face dished; narrow between horns; horns medium in size and incurving.....	5
2. Muzzle broad, nostrils open, eyes full and bold; entire expression one of vigor, resolution, and masculinity.....	5
Neck—7 Points	
3. Medium length, with full crest at maturity; clean at throat.....	7
Body—57 Points	
4. 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
5. Barrel long, of good depth and breadth, with strong, rounded, well-sprung ribs	15
6. Back straight and strong.....	5
7. Rump of good length and proportion to size of body, and level from hip bones to pin bones.....	7
8. Loins broad and strong; hips rounded, and of medium width compared with female	7
9. Thighs rather flat, well cut up behind, high arched flank.....	3
10. Legs proportionate to size and of fine quality, well apart, with good feet, not to weave or cross in walking, and not crooked.....	5
Rudimentary Teats—2 Points	
11. Well placed	2
Hide—2 Points	
12. Loose and mellow.....	2
Tail—2 Points	
13. Thin, long, reaching the hock, with good switch, not coarse or high at setting-on	2
Size—5 Points	
14. Mature bulls, 1,300 to 1,600 pounds.....	5
General Appearance—15 Points	
15. 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
	100

Scale of Points for Jersey Cows

	Perfect Score
Head—7 Points	
1. Medium size, lean; face dished; broad between eyes; horns medium size, incurving	3
2. Eyes full and placid; ears medium size, fine, carried alert; muzzle broad, with wide, open nostrils and muscular lips; jaws strong....	4
Neck—4 Points	
3. Thin, rather long, with clean throat, neatly joined to head and shoulders	4
Body—37 Points	
4. Shoulders light, good distance through from point to point, but thin at withers; chest deep and full between and just back of forelegs..	5
5. Ribs amply sprung and wide apart, giving wedge shape, with deep, large abdomen, firmly held up, with strong muscular development,	10
6. Back straight and strong, with prominent spinal processes; loins broad and strong	5
7. Rump long to tail-setting, and level from hip bones to pin bones....	6
8. Hip bones, prominent and wide apart.....	3
9. Thighs flat and wide apart, giving ample room for udder.....	3
10. Legs proportionate to size and of fine quality, well apart, with good feet, not to weave or cross in walking, and not crooked.....	2
11. Hide loose and mellow.....	2
12. Tail thin, long, with good switch, not coarse at setting.....	1
Udder—26 Points	
13. Large, flexible and not fleshy.....	6
14. Broad, level, not deeply cut between teats.....	4
15. Fore udder full and well rounded, running well forward of front teats and firmly attached.....	10
16. Rear udder well rounded, well out and up behind, wide and firmly attached	6
Teats—8 Points	
17. Uniform, convenient length and size, regularly and squarely placed...	8
Milk Veins—4 Points	
18. Large, long, tortuous, and elastic, entering large and numerous orifices,	4
Size—4 Points	
19. Mature cows, 900 to 1,100 pounds.....	4
General Appearance—10 Points	
20. 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 individual, with capacity for food and productiveness at pail.....	10
100	

Scale of Points for Brown Swiss Bulls

	Perfect Score
Head—18 Points	
1. Forehead broad between eyes, dishing.....	2
2. Face of medium length, clean cut.....	3
3. Horns short, not too heavy, regularly set with black tips.....	1
4. Eyes moderately large, full, and bright.....	2
5. Ears of medium size, carried alert.....	2
6. Nostrils large and open.....	2
7. Muzzle strong.....	1
8. Jaws wide at base and strong.....	1
9. Expression full of vigor, masculine.....	4
Neck—5 Points	
10. Long and clean at junction with head; evenly joined at shoulders....	5
Fore Quarters—17 Points	
11. Shoulders strong, smoothly blending into body with good distance through from point to point and fine on top.....	8
12. Chest broad between back and forelegs.....	5
13. Brisket not too prominent, with very little dewlap.....	2
14. Legs and Feet.—Legs well apart and straight; feet of medium size...	2
Body—20 Points	
15. Back short and straight.....	5
16. Loin broad, strong, and level.....	5
17. Ribs long, broad, well sprung, and wide apart.....	5
18. Abdomen large and deep, well held up, with muscular development..	4
19. Flank thin.....	1
Hind Quarters—18 Points	
20. Rump level, long from hooks to pin bones.....	4
21. Hooks wide apart, level with back.....	2
22. Pin bones high, wide apart.....	2
23. Thighs long and wide apart.....	4
24. Tail fine, long, and set on level with back.....	3
25. Legs and Feet.—Legs straight, set well apart; feet of medium size, not to cross in walking.....	3
Scrotum—2 Points	
26. Well developed and strongly carried.....	2
Rudimentary Teats—4 Points	
27. Squarely placed, wide apart, and free from scrotum; veins long, large, and tortuous.....	4
Hide—8 Points	
28. Hide: (a) Medium thickness, mellow and elastic.....	5
(b) Color, shades from dark to light brown, at some seasons of the year gray; mealy stripe along the back preferred. Dark smoky skin objectionable. Hair between horns usually lighter shade than body.....	3
Style—5 Points	
29. Active, vigorous, showing strong masculine character.....	5
Weight—3 Points	
30. At maturity not less than 1,800 pounds.....	3
	100

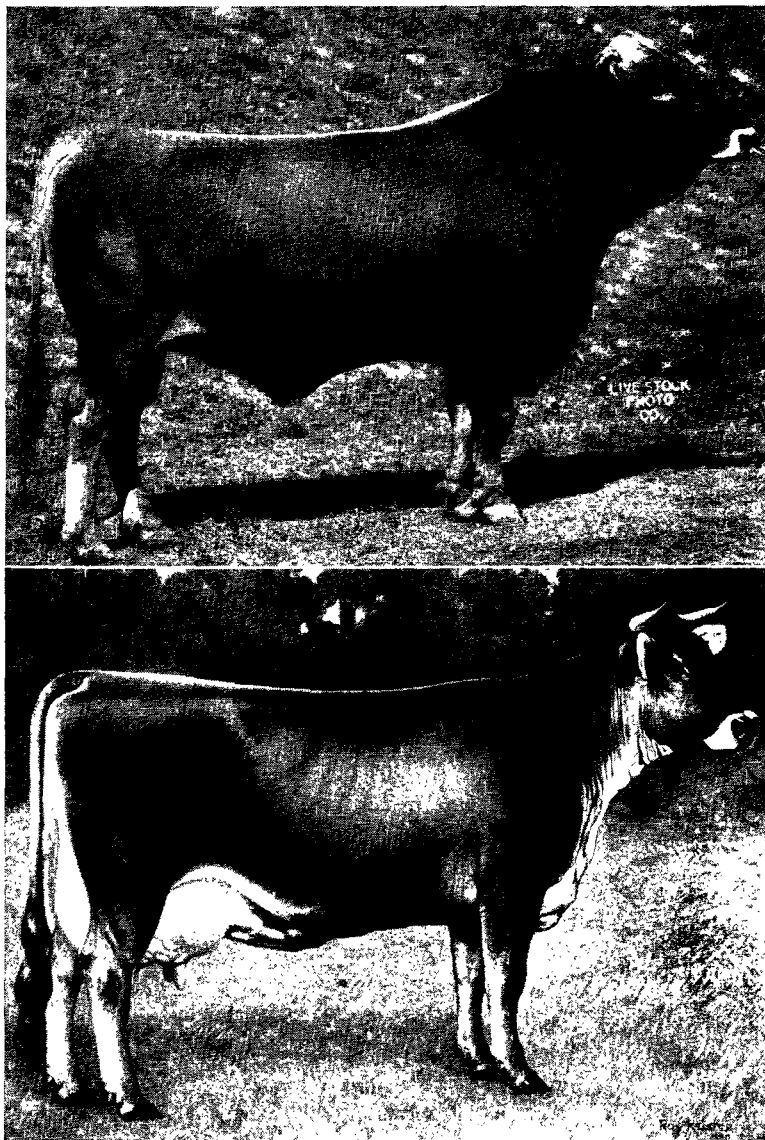


FIG. 16.—Upper—March Molly 3d Master 14350, grand champion Brown Swiss bull, National Dairy Exposition, 1930. Lower—Ideal-type Brown Swiss cow.

Scale of Points for Brown Swiss Cows and Heifers

	Perfect Score
Head—10 Points	
1. Size and Form. —Medium and rather long.....	2
2. Face dished, narrow between horns and wide between eyes.....	2
3. Ears fringed inside with light-colored hair, medium size and carried alert	1
4. Muzzle large and square, with mouth surrounded by mealy-colored band, nose and tongue black.....	2
5. Eyes full and bright.....	2
6. Horns short, not too heavy, regularly set with black tips.....	1
Neck—5 Points	
7. Of good length, throat clean, neatly joined to head and shoulders, moderately thin at the withers.....	5
Fore Quarters—9 Points	
8. Shoulders not too heavy and smoothly blending into body.....	4
9. Chest deep and full between and back of forelegs.....	4
10. Brisket, medium	1
Body—13 Points	
11. Back level to setting of tail and broad across the loin.....	6
12. Ribs long and broad, wide apart and well sprung.....	3
13. Barrel long, deep, and well rounded.....	4
Hind Quarters—10 Points	
14. Hips wide, pin bones high and wide apart, rump long and level from hip bones to tail setting.....	6
15. Thighs flat and wide apart, giving ample room for udder.....	2
16. Tail slender, well set on, with good switch.....	2
Legs—2 Points	
17. Of medium length and straightness, with good hoofs.....	2
Hide—5 Points	
18. Medium thickness, mellow and elastic.....	3
19. Color, shades from dark to light brown, at some seasons of the year gray; white splashes on underline of belly are objectionable but do not disqualify. Dark smoky skin objectionable. Hair between horns usually lighter shade than body.....	2
Udder—32 Points	
20. Size. —Long, wide, deep but not pendulous or fleshy.....	6
21. Attachment. —Firmly attached to the body.....	4
22. Veins. —Udder veins well developed and plainly visible.....	2
23. Balance. —Extending well up behind and far forward, quarters even...	5
24. Sole nearly level and not indented between teats.....	2
25. Teats of good uniform length and size, regularly and squarely placed,	6
26. Texture mellow, free from meatiness.....	7
Mammary Veins—6 Points	
27. Large, long, tortuous, elastic, and entering good wells.....	6
Disposition—2 Points	
28. Quiet but alert.....	2
General Appearance—6 Points	
29. General appearance	6
	100

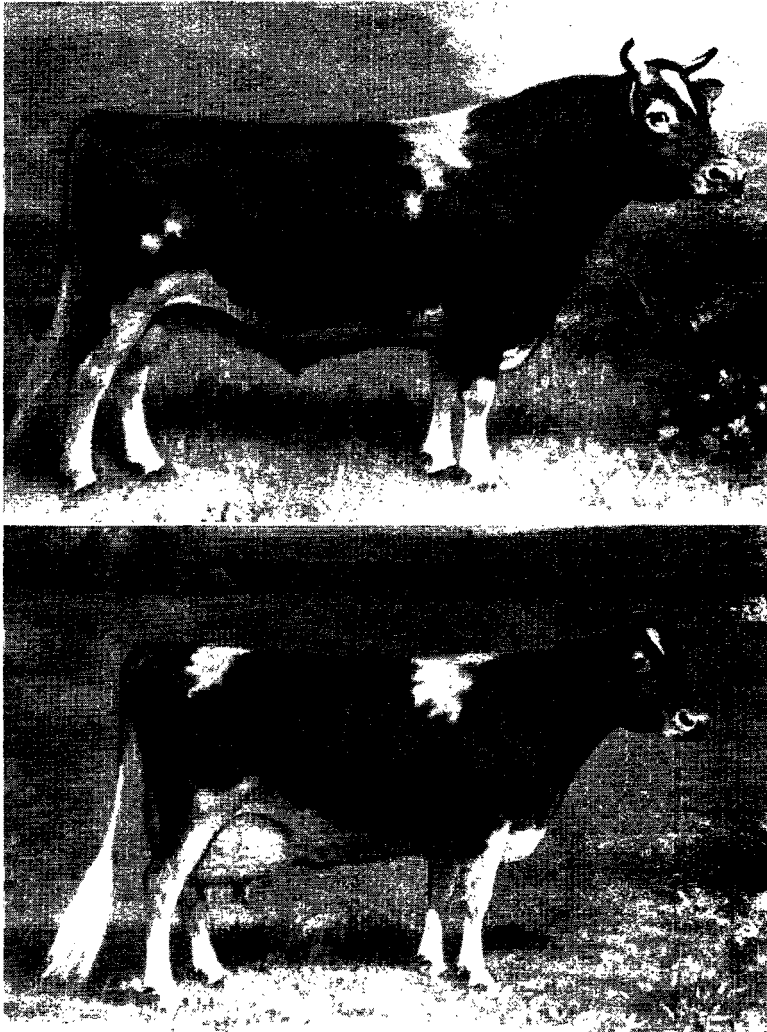


FIG. 17.—Upper—The ideal-type Guernsey bull. Lower—The ideal-type Guernsey cow.

Scale of Points for Guernsey Bulls

	Perfect Score
1. Style and Symmetry. —Impressive; showing vigor, masculinity, and breed character, a harmonious blending and correlation of parts, an active, well-balanced walk.....	10
2. Head. —Clean-cut, showing masculinity, breed character, lean face, wide mouth and wide muzzle, wide, open nostrils, and full, bright, masculine eyes. Broad between the eyes and moderately dishing. Bridge of nose straight.....	6
3. Horns. —Yellow, small at base, medium length, not too spreading....	1
4. Neck. —Long, masculine neck with moderately strong crest, smoothly blending into shoulders; clean throat.....	3
5. Withers. —Chine rising above shoulder blades, with open vertebræ...	3
6. Shoulders. —Shoulder blades set smoothly against chine and chest wall, forming neat junction with the rest of the body.....	2
7. Chest. —Wide, and deep at heart with least possible depression back of the shoulders.....	4
8. Back. —Appearing straight from withers to hips.....	8
9. Loin. —Strong, broad, and nearly level laterally; width carried forward to junction with the ribs.....	3
10. Hips. —Wide apart, not too prominent.....	2
11. Rump. —Long, continuing with level of the back, also level between hip bones and pin bones. Pin bones well apart.....	6
12. Thurls. —Wide apart and high.....	2
13. Barrel. —Deep and long with well-sprung ribs. Individual ribs long, flat, wide apart and free from excess tissue.....	10
14. Thighs. —Incurving as seen from side, thin and wide apart from rear; well cut up in the twist.....	2
15. Legs. —Flat, flinty bone; tendons clearly defined; front legs nearly upright from hock to pastern, set wide apart and nearly straight when viewed from behind. Pastern strong and springy.....	2
16. Skin. —Loose and pliable; medium in thickness; hair fine and silky..	5
17. Tail. —Long, with neat, strong, level attachment; neatly set between pin bones.....	2
18. Rudimentary Teats. —Teats wide apart, squarely placed, and free from scrotum.....	2
19. Rudimentary Veins. —Well defined and prominent, with large and numerous wells.....	3
20. Secretions Indicating Color of Product. —Indicated by the pigment secretions of the skin which should be a deep yellow inclining toward orange in color; especially discernible in the ear, at the end of the bone of tail, around the eyes and nose, on the scrotum, and at the base of horns; hoofs and horns, yellow.....	20
21. Color Markings. —A shade of fawn with white markings.....	2
22. Size. —Mature bulls about 1,700 pounds.....	2

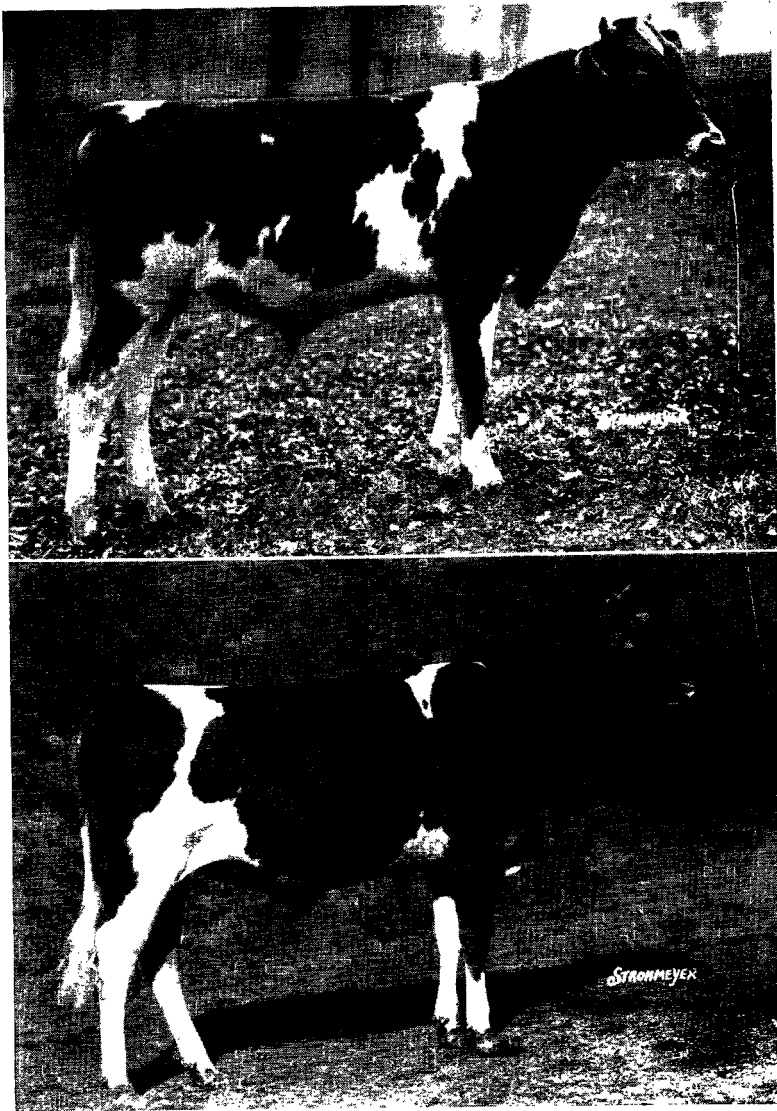


FIG. 18.—Upper—Florham Beau Ideal 182430, a representative Guernsey bull calf. Lower—Boulder Bridge Dora 31364, a typical yearling Guernsey heifer.

Scale of Points for Guernsey Cows

	Perfect Score
1. Style and Symmetry. —Attractive individuality revealing vigor, femininity, and breed character; a harmonious blending and correlation of parts; an active, well-balanced walk.....	5
2. Head. —Moderately long, clean-cut, showing femininity and breed character; a lean face; wide mouth and broad muzzle with open nostrils; strong jaw; full bright eyes with gentle expression; forehead broad between the eyes and moderately dishing; bridge of nose straight	5
3. Horns. —Yellow, small at base; medium length; inclining forward; not too spreading.....	1
4. Neck. —Long and thin; clean throat, smoothly blending into shoulders,	2
5. Withers. —Chine rising above shoulder blades, with open vertebrae...	2
6. Shoulders. —Shoulder blades set smoothly against chine and chest wall, forming neat junction with the body.....	2
7. Chest. —Wide, and deep at heart with least possible depression back of shoulders	4
8. Back. —Appearing straight from withers to hips.....	5
9. Loin. —Strong, broad, and nearly level laterally; width carried forward to junction with the ribs.....	3
10. Hips. —Wide, approximately level with the back; free from excess tissue	2
11. Rump. —Long, continuing with level of the back, approximately level between hip bones and pins. Pins well apart.....	4
12. Thurls. —Wide apart and high.....	2
13. Barrel. —Deep and long with well-sprung ribs. Individual ribs, long, flat, wide apart, and free from excess tissue.....	10
14. Thighs. —Incurving when viewed from side; thin and wide apart when viewed from rear; well cut up between the thighs.....	2
15. Legs. —Flat, flinty bone; tendons clearly defined; front legs straight; hind legs nearly upright from hock to pastern, set wide apart and nearly straight when viewed from behind. Pastern strong and springy	2
16. Skin. —Loose and pliable, and not thick, with oily feeling; hair fine and silky	3
17. Tail. —Long, tapering with neat, strong, level attachment, neatly set between pin bones; fine bone and hair; nicely balanced switch.....	2
Udder:	
18. Uniformly fine in texture; free from meatiness; covered with pliable, velvety skin	3
19. Veins prominent	1
20. Attachment to body strong, long, and wide.....	4
21. Extending well forward; extending well up behind.....	4
22. Sole. —Level between teats.....	2
23. Teats of even, convenient size; cylindrical in shape; well apart and squarely placed, plumb.....	3
24. Mammary Veins. —Long, tortuous, prominent, and branching with large numerous wells.....	3
25. Secretions Indicating Color of Product. —Indicated by the pigment secretion of skin which should be a deep yellow inclining toward orange in color; especially discernible at the ear, at the end of bone of tail, around the eyes and nose, on the udder and teats, and at the base of horns; hoofs and horns amber color.....	20
26. Color Markings. —A shade of fawn with white markings.....	2
27. Size. —Mature cows about 1,100 pounds in milking condition.....	2

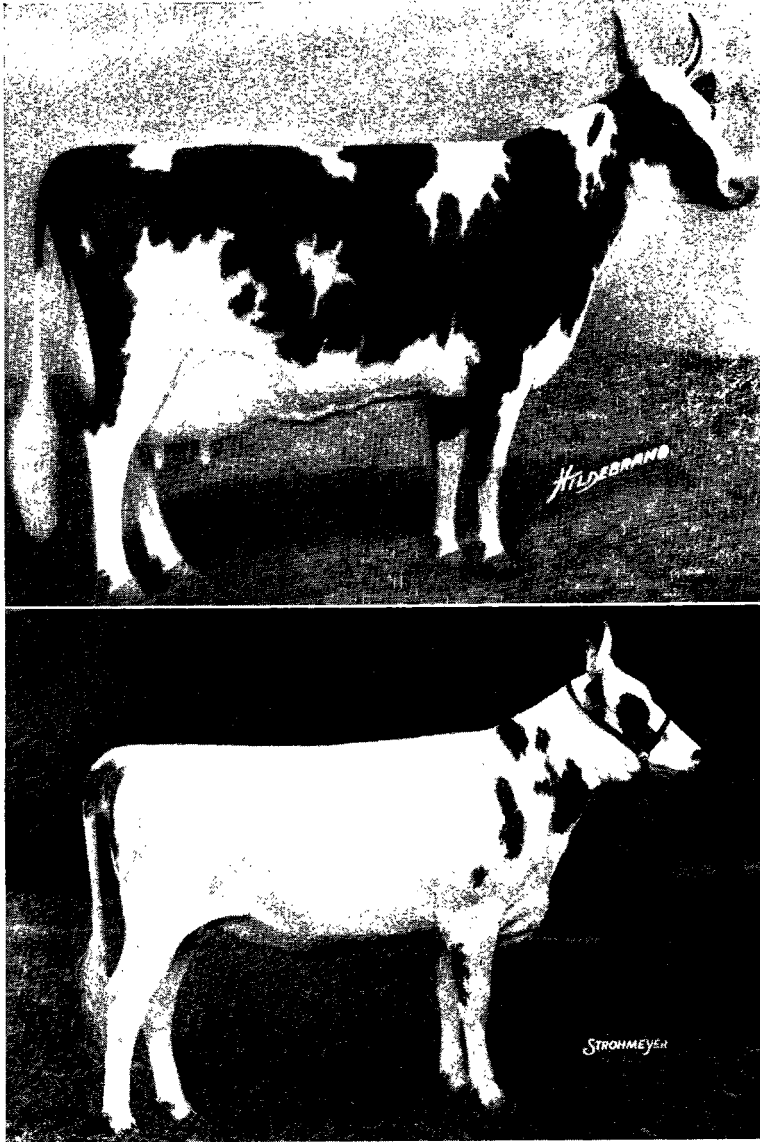


FIG. 19.—Upper—The ideal-type Ayrshire cow. Lower—Sycamore Lorada 127111, a very typical yearling Ayrshire heifer.

Scale of Points for Ayrshire Bulls

Note.—Section I covers anatomy only.

Supplemental schedule A must be computed and deducted from result of score of Section I to complete score of an Ayrshire bull. Supplemental schedule B is to be used as directed in cases of animals showing unnatural defects or blemishes or extreme overfitting.

	Perfect Score
1. Forehead. —Broad between the eyes, and slightly dished.....	2
2. Face. —Of medium length, clean cut, masculine; the bridge of the nose straight to nostrils.....	2
3. Muzzle. —Broad and strong, with large open nostrils.....	3
4. Jaws. —Wide at the base, well muscled and strong.....	2
5. Eyes. —Moderately large, full, and bright.....	3
6. Ears. —Medium size, fine, and carried alertly.....	1
7. Horns. —Medium size at base, not coarse nor too long; inclining upward.....	2
8. Neck. —Medium length, somewhat arched, inclined to flatness on sides, smoothly blending into shoulders, clean at the throat.....	4
9. Shoulders. —Long, sloping and tapering from the base to the top of shoulder blades; neatly and firmly attached to the body wall. Tops of the blades not extending to the top of chine.....	8
10. Chest. —Full, and wide between and back of forearms. Brisket smooth and not too prominent, with very little dewlap.....	7
11. Chine. —Straight, strong, open jointed, narrow at the top, nicely blending into shoulders, and a well-sprung rib.....	4
12. Crops. —Full, level with shoulders.....	6
13. Barrel. —Medium length, deep but strongly held up. Ribs well sprung; bones long, flat, and wide apart.....	11
14. Loin. —Broad, strong, and level with hips.....	5
15. Rump. —Long, wide; top line level to tail head, with pin bones nearly level with hip bones; dishing slightly to thurls.....	7
16. Hips. —Medium distance apart. Level with back line.....	3
17. Pin Bones. —Wide apart; nearly level with hips.....	3
18. Thurls. —Widely set; slightly below line from hip bones to pins.....	1
19. Tail. —Neatly set; level with back line, long, and fine.....	1
20. Flank. —Deep, slightly arched, and of medium thickness.....	2
21. Thighs. —Deep, straight, and trim when viewed from the side. Outside lines straight or moderately full when viewed from the rear. Inside open, cut well up in the twist.....	4
22. Mammary Veins. —Large, long.....	1
23. Scrotum and Rudimentary Teats. —Scrotum well developed and strongly carried. Rudimentary teats placed well forward of scrotum.....	3
24. Legs and Feet. —Widely and squarely set under body, clean flat bone; front legs straight, hind legs nearly straight when viewed from rear. Hock neatly and firmly molded. Feet round with plenty of depth at heels.....	10
25. Hide and Hair. —Mellow, elastic hide, of medium thickness; hair fine and soft.....	5

Perfect score	100
Actual score	_____
Points to be deducted for deficiency in breed characteristics..	_____
Points to be deducted for blemishes, unsoundness, or overfitting	_____
Total deductions	_____
Net score	_____

Supplementary Schedule "A" for Breed Characteristics

In addition to the above scale of 100 points, the following schedule of 20 points has been made to cover certain distinguishing breed characteristics of style, symmetry, balance, size, weight, and color. It is recognized that whereas these features may not be essential to the usefulness of the animals, nevertheless they are appreciated by constructive breeders interested in conserving distinctive Ayrshire type, and are usually considered by them in the selection of breeding and exhibition animals.

Rule for Use of Supplementary Schedule "A"

After completing Section I score the following breed characteristics, and deduct from the score above the total number of points in which the animal is deficient in these characteristics.

	Deduct up to
Style. —Alert, head well carried, eyes and ears expressive. A bold and expressive carriage and an active, graceful walk.....	6
Symmetry and Balance. —A symmetrical balancing of all the parts and the proper proportioning of the various parts to each other.....	7
Size and Weight. —Bulls four years old and over in good breeding condition should weigh from 1,700 to 2,000 pounds.....	5
Color. —Red of any shade, mahogany, brown, or these with white, or white, each color clearly defined. Distinctive red and white markings preferable. Markings of solid black or brindle strongly objectionable.....	2
Total deductions for breed characteristics.....	_____

Supplementary Schedule "B" Covering Blemishes and Unsoundness

In an effort to further standardize judging practices, the following specific instructions for deductions because of blemishes, unsoundness, or other abnormal conditions are enumerated. In each case the maximum number of points which may be deducted is given. It is assumed that the scorer will carefully consider the extent and permanence of the blemish or unsoundness and make his deductions from the anatomical score accordingly.

An indication of decided lameness which may be permanent.....	10
Lameness plainly indicated to be only temporary.....	3
Minor defects, such as blindness in either eye, capped hips, enlarged knees and hocks, slight rupture, enlarged glands or other blemishes.....	5
Animals of any age presenting unmistakable evidence of extreme overfitting to the point of impairing future usefulness or preventing reasonable discernment of natural conformation.....	25
Total deductions for blemishes and unsoundness.....	_____

Bulls showing but one testicle or a decidedly enlarged testicle, indicative of an abnormal condition, shall be disqualified.

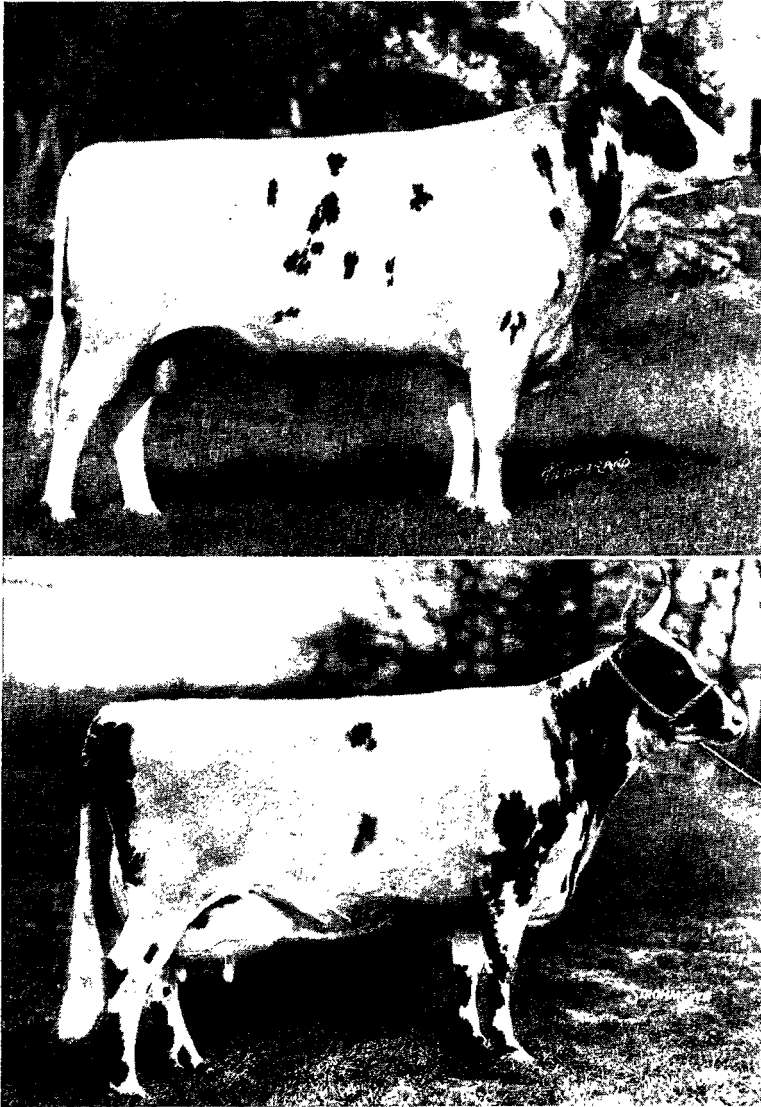


FIG. 20.—Upper—Morton Mains Lord Barrylyndon Imp. 25000, a typical Ayrshire bull. Lower—Barr Dairy Queen 103808, an outstanding Ayrshire cow. This picture was taken at four years of age. Her herd-test record as a two-year-old was 10,189 pounds of milk and 462 pounds of butter fat.

Scale of Points for Ayrshire Cows

Note.—Section I covers anatomy only.

Supplemental schedule A must be computed and deducted from result of score of Section I to complete score of an Ayrshire cow. Supplemental schedule B is to be used as directed in cases of animals showing unnatural defects or blemishes or extreme overfitting.

Section I	Perfect Score
1. Forehead. —Reasonably broad between the eyes, and slightly dished,	1
2. Face. —Of medium length, clean cut, feminine; the bridge of the nose straight to nostrils.....	1
3. Muzzle. —Broad and strong, with large open nostrils.....	2
4. Jaws. —Wide at the base, well muscled and strong.....	1½
5. Eyes. —Moderately large, placid, full and bright.....	1½
6. Ears. —Medium size, fine, and carried alertly.....	½
7. Horns. —Small at base, not coarse nor too long; inclining upward..	1½
8. Neck. —Medium length, smoothly blending with shoulders and throat, showing feminine refinement.....	2
9. Shoulders. —Long, sloping, and tapering from the base to the top of the shoulder blades; neatly and firmly attached to the body wall. Top of the blades not extending to the top of chine.....	5
10. Chest. —Full, and wide between and back of forearms. Brisket light and refined.....	5
11. Chine. —Straight, strong, open-jointed, narrow at top, nicely blending into shoulders and a well-sprung rib.....	3
12. Crops. —Full, level with shoulders.....	4
13. Barrel. —Medium length, deep, but strongly held up; rib, well sprung; bones long, flat, and wide apart.....	10
14. Loin. —Broad, strong, and level with hips.....	4
15. Rump. —Long, wide; top line level to tail head, with pin bones nearly level with hip bones; dishing to thurls.....	7
16. Hips. —Wide; level with back line; points well defined, and not overlaid with fat.....	2
17. Pin Bones. —Wide apart; nearly level with hips.....	2
18. Thurls. —Widely set; slightly below line from hip bones to pins...	1
19. Tail. —Neatly set, level with back line, long, and fine.....	1
20. Flank. —Deep, slightly arched and refined.....	1
21. Thighs. —Deep, straight, and trim when viewed from the side. Flat and broad on side when viewed from rear, twist well cut out for udder development, with escutcheon well defined.....	2
Mammary Development—30 Points	
22. Attachment of Udder. —Attached well forward with a neat and firm junction at body wall; carried high behind, no evidence of breaking of tissues supporting front quarters nor of drooping of floor of udder	6
23. Size and Shape of Udder. —Broad, level, capacious, quarters even and of uniform size extending well forward, and high behind. Not severely cut between the quarters, neither through nor across	10
24. Texture of Udder. —Fine, pliable, and of good quality, with light skin	4
25. Size, Shape, and Placement of Teats. —Convenient size, symmetrical, hanging perpendicular.....	5

26. Veining and Milk Wells. —Mammary veins large, long, tortuous, branching, and entering large orifices. Small veins clearly defined on udder	5
27. Legs and Feet. —Widely and squarely set under body; clean flat bone; front legs straight; hind legs nearly straight when viewed from rear. Hocks neatly and firmly molded. Feet round with plenty of depth at heels.....	8
28. Hide and Hair. —Mellow, elastic hide of medium thickness. Hair fine and soft.....	4
	100

Supplementary Schedule "A" for Breed Characteristics

In addition to the foregoing scale of 100 points, the following schedule of 20 points has been made to cover certain distinguishing breed characteristics of style, symmetry, balance, size, weight, and color. It is recognized that whereas these features may not be essential to the usefulness of the animals, nevertheless, they are appreciated by constructive breeders interested in conserving distinctive Ayrshire type, and are usually considered by them in the selection of breeding and exhibition animals.

Rule for Use of Supplementary Schedule "A"

After completing Section I score the following breed characteristics, and deduct from the score of Section I, the total number of points in which the animal is deficient in these characteristics.

	Deduct up to
Style. —Alert, but docile; having an impressive carriage, graceful walk, and above all, displaying evidence of outstanding dairy character.....	6
Symmetry and Balance. —A symmetrical balancing of all the parts and the proper proportioning of the various parts to each other.....	7
Weight. —Mature cows should weigh from 1,100 to 1,400 pounds, depending on period of lactation.....	5
Color. —Red of any shade, mahogany, brown, or these with white, or white, each color clearly defined. Distinctive red and white markings preferable. Markings of solid black or brindle strongly objectionable.	2
Total deductions for breed characteristics.....	

Supplementary Schedule "B" Covering Blemishes and Unsoundness

In an effort to further standardize judging practices, the following specific instructions for deductions because of blemishes, unsoundness or other abnormal conditions are enumerated. In each case the maximum number of points which may be deducted is given. It is assumed that the scorer will carefully consider the extent and permanence of the blemish or unsoundness and make his deductions from the anatomical score accordingly.

A slight deficiency in one quarter of the udder.....	5
A marked undevelopment of one or more quarters which are not functioning, or two slightly deficient quarters.....	15
An udder that has plainly lost evidence of normal attachment and has become entirely pendulous.....	20
Evidence of an obstruction or a side leak in a teat.....	5
An indication of decided lameness which may be permanent.....	10
Lameness plainly indicated to be only temporary.....	3
Minor defects such as blindness in either eye, capped hips, enlarged knees and hocks, slight ruptures, enlarged glands, or other blemishes..	5
Animals of any age presenting unmistakable evidence of extreme overfitting to the point of impairing future usefulness or preventing reasonable discernment of natural conformation.....	25
Total deductions for blemishes and unsoundness.....	

PLACING THE CLASS AND GIVING REASONS

Of the points that enter into the final selection of an animal, 85 per cent can be observed without handling the animal. For this reason the group of animals under observation must first be viewed and compared from a distance both while standing and while in motion, and such points studied as defects in conformation, breed characteristics, style, symmetry, and balance of the udder. When this is done, brief close examinations may be made in order to verify first impressions and to note such factors as quality of hide, color of skin, and condition of udder.

The ability to give good reasons for placing a class of animals is of greater importance to the student than to the practical breeder, yet the ability to discuss intelligently a group of animals is of value to the dairyman and farmer.

A set of reasons, whether oral or written, should be grammatically correct, coherently presented, and consist of complete sentences presented in logical order. The most important and outstanding points should be given first and each one fully discussed before the next point is taken up. Monotonous repetition of terms and expressions must be avoided, and this is true especially of the term "better." The term "better" in itself has no significance unless it is explained in what way the one point is superior to the other. Direct comparisons must always be made and reasons given for placing the one animal first rather than describing the defects of the inferior animal. Finally, reasons must always be brief and concise, yet include a discussion of all of the major points of difference.

CORRELATION BETWEEN TYPE AND PRODUCTION

The final selection of a dairy animal should be made when possible only after careful inspection of the individuality, production, and pedigree of the animal. Since it is not always possible to study all three of these factors, the animal must often be selected on individuality alone. The scope of judging, therefore, lies within the limits of selection on the basis of individuality or type and consists of an attempt to determine from the appearance of an animal something of its ability to produce. The assumption rests upon the hypothesis that there is a correlation between conformation and production.

In a study of the production records of Guernsey show-ring champions, Gifford brought out the fact that all but one of the senior champions of the National Dairy Exposition from 1910 to 1929, inclusive, had Advanced Register records and these records averaged 760 pounds of butter fat per cow on the mature-equivalent basis. The average of all single-letter 365-day records in the mature division of the Advanced Register of the Guernsey breed up to December 15, 1930, was 556 pounds of butter fat. The senior champions, therefore, produced over 200 pounds of butter fat per cow more than

the average cow with a mature record in the Advanced Register.¹⁰ The Advanced Register Division of the American Guernsey Cattle Club made a study in which they showed that the 274 first- and second-place show-ring winners that had Advanced Register records at four of the major shows in the United States, averaged consistently higher in production than the average for the respective Advanced Register age classes.¹¹

These studies indicate that animals that are capable of making good production records are also of the type that is being selected by leading judges of the breed from a type standpoint. Similar conclusions have been drawn by other investigators as related to other dairy breeds. In a study of the Jersey breed, Gowen¹² raises the question, "Is conformation related to productivity?" In other words, is the external form of a dairy cow inherited, or is her external form the result of her producing ability, or is her producing ability influenced by her form? He partially answers these questions in his conclusion that, "One cannot believe . . . that inheritance of conformation takes place," but later states that when the scores as determined by comparison with the scale of points were secured on 1,670 Jersey Register of Merit animals and these scores then compared with the milk yields of those cows, it was found "that certain points of these scores are related to milk yield in a small but significant degree." The more important of these points in order of their rank, as listed by Gowen, are: Total score, milk veins, size and quality of udder, development of rear udder, body shape, size of paunch, and general appearance.

Gifford¹³ found, "That the difference in type found in the select group of animals having won awards at the National Dairy Exposition has not been followed by a significant difference in production. Too, the junior winners have not proved to be as satisfactory producers as the senior groups. This comparatively low production of the females exhibited in the junior classes may indicate that the judges were not able to select the outstanding producers or it may be an indication that the treatment and management given the younger animals while on show circuits are not conducive to a mature development that insures the most satisfactory milk and butter-fat production."

In regard to actual body measurements, Gowen¹⁴ also showed statistically that those factors which tend toward increases in body size seem to affect production materially. In order of their significance may be listed weight, body length, hip width, and body girth. Of interest is the fact that the much-emphasized length of

10. Gifford, Warren. Production records of champions. *Guernsey Breeders' Jour.* 39:8-9. Jan. 1, 1931.

11. Advanced Register Division of the American Guernsey Cattle Club. The quality-quantity cow. Correlation of Guernsey type and production. *Guernsey Breeders' Jour.* 25:494. May 15, 1924.

12. *Loc. cit.*

13. Gifford, Warren. Records of show-ring winners. *Guernsey Breeders Journal.* 39:205. Feb. 15, 1931.

14. *Loc. cit.*

rump has a relatively low relation to the productivity of Holstein-Friesian cows, while hip width exhibits a rather high correlation.

Gowen¹⁵ in a later study used 1,500 Jersey cows with Register of Merit records in which he studied measurements including weight, height at withers, depth at withers, heart girth, paunch girth, width of hips, body depth, and rump length. He concludes: "The data herein presented allow of the conclusion that two items of body pattern, weight and a wedge-shaped form when viewed from the front, are to a limited degree indicative of the amount of milk the cow will secrete."

These studies are sufficient to indicate that there is a correlation between conformation and production in certain respects, but that perhaps some of the factors emphasized on the score card take their greatest value from the beauty rather than from the utility standpoint.

JUDGING YOUNG STOCK

Judging young dairy heifers and bulls is more difficult than judging mature animals because of the immaturity of the animals and the possibility of change in conformation with advancing age. Young stock must be judged not only for present appearance and defects, but consideration must also be given to the possibilities of future development.

Young stock is judged on the basis of breed type, general appearance, quality, body capacity, and mammary development.

Breed type is evidenced by the head and horns, color markings, size, and general appearance. The head is very important and should show sex, character, quality, strength, temperament, and good proportion. Color markings, while not of first importance in dairy cattle, do readily differentiate the breeds. Young stock should be large for the age consistent with the breed. The smaller breeds will show greater refinement, while in the heavier breeds somewhat more scale and openness of frame is permitted.

As in judging mature animals, the general appearance of the animal as viewed from a distance is of major importance. Straightness of top line, squareness of rump, and a balance of all parts are the main points to be observed. A sloping rump, low, weak back, and pinched heart girth are particularly objectionable since these characteristics become more pronounced as the animal matures. Symmetry and balance in the young animal are characterized by a straight top line, clean brisket, full heart girth, a well-proportioned trim barrel, and a deep flank. This results in an almost rectangular conformation as viewed from the side, as contrasted with the wedge shape noted in the mature cows. Figures 18 and 19 (lower) are illustrations of young dairy stock showing desirable conformation.

Quality is an outstanding characteristic of the young dairy animal. This is characterized by a clean-cut appearance, a thin pliable hide, fine bone, and a clean-cut head. A thick hide and a coarse, staggy

15. Gowen, J. W. Body pattern as related to mammary gland secretion. Reprint from the Proceedings of the National Academy of Sciences. 17:518-523, September, 1931.

appearance are particularly objectionable in young animals, although a little roundness over the shoulder and smoothness of flesh may be permitted in heifers approaching calving time, as contrasted with mature cows in milk.

The mammary system is not given so much weight in young stock as in mature animals. Although there is no definite evidence that there is a relationship between size of the udder and the placement of teats in the young heifer and the size and balance of the udder in the mature cow, good judges of dairy cattle, nevertheless, closely observe these points in heifers. The udder should be well developed for the age, and large and squarely placed teats given first consideration. The milk veins should be readily discernible and extend well forward.

JUDGING A COW WHEN NOT IN MILK

Judging a dry dairy cow is only slightly less difficult than judging a dairy heifer. The body conformation of a dry cow is but little changed. The udder, however, changes materially. The udder of a dry cow should shrink into folds of loose pliable skin which will present the outline of the udder when it is distended. It is very difficult to find weak or spoiled quarters of the udder when the cow is dry. Hardness of quarters or hard places in the udder should be considered with suspicion. The milk veins do not shrink to the extent that the udder does, and they may be used as a guide in determining the amount of blood that goes to the udder.

Dairy temperament is not so pronounced in the dry cow. The plan generally followed is to feed the cow so that she will put on flesh while dry. This surplus is to be used as a reserve when the cow freshens. Excess flesh to the extent of patchiness is objectionable even with dry cows.

A cow looks her best just before or immediately after calving and is least attractive when dry. For this reason it takes real ability to determine the value of cows when they are dry.

JUDGING THE DAIRY BULL

The dairy bull is judged on many of the same points that are given consideration in the cow. The more important of these are size, breed type, body capacity, dairy conformation, and quality. The condition of the legs and feet are of great importance in older bulls.

The bull is larger than the cow and is more massive and heavier-boned consistent with his sex. Whereas, the cow should be lean and trim in the neck and forequarters, the bull must carry a heavy crest and be strongly built in the shoulders. A full heart girth giving a smooth blending of the shoulders with the body is desired, while the body should be large and deep. Paunchiness is very undesirable in bulls. A straight, strong back with a long, level rump and trim hind quarters are essentials. Quality is evidenced by a relatively thin, mellow, elastic hide and freedom from excess fleshing on the body and surplus folds of skin on the neck and brisket.

In order to show desirable dairy conformation, the bull should be free from all tendency toward coarseness and beefiness and though not possessing the wedge conformation noted in the cow, he should be angular in form and have the appearance of leanness and strength rather than beefiness. Viewed from the rear, the thighs should be strong but incurving and well cut up in the twist.

The mammary development of the bull is judged for size and placement of the rudimentary teats and for prominence and length of the milk veins. The teats should be spaced well apart and attached up on the body, rather than down on the scrotum.

The points mentioned above are desirable in the herd sire because it is hoped that he will transmit the desired characteristics to his offspring. It is possible, however, for bulls of good individuality to sire heifers that show characters that are not apparent in the sire and dam. For this reason it is well to remember that the ability of a sire is, after all, measured by the quality of his offspring.

JUDGING ON BASIS OF TYPE, PRODUCTION, AND PEDIGREE

In the past few years some criticism has been aimed at the standards by which dairy cattle are being judged in the show ring. From the standpoint of the practical breeder and the commercial dairyman, the main function of the dairy cow is economical milk production, and the breeder and dairyman are concerned with the matter of straight top lines, level rumps, and well-shaped udders only in so far as these make for greater production. Sufficient evidence has not yet been produced to prove conclusively that these factors do directly influence production. Furthermore, it is of importance to these practical men to know what breeding, as shown by the pedigree, is back of the individual before they can satisfactorily estimate the animal's ability.

For certain purposes the production records and the pedigree of an animal should be taken into consideration as well as its individuality. This can be accomplished only through a system of judging based on a score card covering not only type, but also production and pedigree.

A tentative score card including these three main features is shown on page 46. This card is divided into three sections, of which section A allows for a score of the type of the animal on the basis of our present score card for dairy cattle, section B contains a scale of points for scoring the production records of the animal, and section C provides a score card for the animal's pedigree.

APPLICATION OF THE TYPE, PRODUCTION, AND PEDIGREE SCORE CARD

The animal may first be scored on type, using section A of the Type, Production, and Pedigree score card. The detailed breed score cards may be substituted in section A and the type score determined for the animal. The production records of the animal are next secured and a score allotted according to the scale of points in section B.

The pedigree of the animal is next examined and a score placed upon it, using section C of the Type, Production, and Pedigree score card. The type of the ancestors may be judged by their show-ring performance as indicated by the pedigree, while their production may be evaluated on the basis of section B. If the animal being scored has no offspring, the full score of 25 per cent allowed for type and production, respectively, in section C, may be allotted to the ancestors in each case. The final scores given in sections A, B, and C are then totaled in order to arrive at a final score for the animal in question.

A score card of this type not only gives a more balanced estimate of the value of the animal, but an analysis of the score reveals in what feature the animal excels, whether in type, production, or pedigree.

Type, Production, and Pedigree Score Card for Dairy Cows

Section A—Type

Perfect score 100

Use the breed score card and enter the final score below.

Score on type

Section B—Production

The following requirements are taken as the minimum requirements for a score of 100 points.

To receive the base score of 100 points, cows must have completed yearly records as follows:

Freshening between 2 and 3 years of age	300 pounds butter fat
Freshening between 3 and 4 years of age	335 pounds butter fat
Freshening between 4 and 5 years of age	370 pounds butter fat
Freshening over 5 years of age	400 pounds butter fat

Bulls and females under four years of age can be scored by applying the above requirements to the records of their dams.

For animals unable to meet the requirements, deduct two points for each pound or fraction of a pound of butter fat under requirements.

For Dairy Herd Improvement or Herd Test records, add one point to the score for each pound of butter fat in excess of the above requirements. For Advanced Registry records, add one-half point for each pound of butter fat in excess of breed requirements.

Score on production

Section C—Pedigree

Perfect score 60

Type of ancestors	10
Type of offspring	15
Production of ancestors	10
Production of offspring	15

The type of ancestors is indicated by the show-ring winnings given on the pedigree and by the appearance of the offspring available.

The production requirements under Section B may be used as a guide in scoring the records on the pedigree.

If the animal being scored has no offspring this score should be applied to the type and production of the ancestors.

In the absence of show-ring winnings or production records deduct one-half of the score allotted.

Score no pedigree

Total score

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