THE JUDGING OF

LIVESTOCK, DAIRY, POULTRY AND CROPS

Compiled by
H. O. WEST
Coordinator Research Information
Jointly Representing
Mississippi Agricultural Experiment Station
and
Mississippi State Vocational Board

CLARENCE DORMAN, Director
Mississippi Agricultural Experiment Station
State College, Mississippi
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PART I

INTRODUCTION

Livestock, Dairy, Poultry, and Crops judging contests occupy an important place in the Future Farmers of America work in Mississippi. An opportunity is afforded to give a great deal of worthwhile training and experience to the students who participate that will stay with them as long as they live.

The competition afforded serves as an incentive to get the boys to work in training for the contest. This training should begin in the individual schools where the students of that school are competing with one another for a place on the judging team. The students making the judging teams continue their training and compete in the local F. F. A. district elimination contest and the winners in this contest compete in the regional contest, held in connection with the livestock shows. The regional winners compete in the State Contest at State College, and the winner of the State Contest represents Mississippi at the National Future Farmers of America Convention at Kansas City.

In judging livestock, dairy cattle, and crops the judging team is composed of three members and one alternate, and in poultry the judging team is composed of two members and one alternate. The classes of livestock, dairy cattle and poultry, to be judged, are composed of four animals. In crop judging, a class of corn is made up of four ten-ear exhibits; sweet potatoes and Irish Potatoes is made up of four samples of one gallon to one peck to each sample, and a class of cotton is composed of four samples for grade and four samples for staple.

The need for information and help in training F. F. A. judging teams is responsible for the preparation of this bulletin. To become a good judge of livestock, dairy cattle, poultry, and crops will require a great deal of study, and actual practice. It is hoped that this bulletin will, at least in part, meet the need for information to study, and that the judging teams will be better prepared than ever before.

Every farm boy should know how to tell a good animal when he sees one and certainly he should know how to tell to some extent what the grade and staple of his cotton is before it is carried to market. What is a better way of learning these things than by training for and participating in the F. F. A. judging contests?

Information is presented in this bulletin on essentials to be considered in judging all classes of livestock, dairying, poultry, and crops.
**PART II

LIVESTOCK JUDGING**

Livestock judging involves beef cattle, horses and mules, hogs and sheep. In this section these classes of livestock are discussed taking into consideration the different breeds of the above mentioned classes.

**JUDGING BEEF CATTLE**

To judge beef cattle successfully it is important that the judge know the different parts of the animal, and what the ideal for these parts are. The characteristics of the different breeds are very important. Perfection in judging can be reached only through study and actual participation in judging.

![Figure 1. Points of the beef steer](image_url)

<table>
<thead>
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<tbody>
<tr>
<td>1</td>
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<td>Throttle</td>
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<td>Cod or scrotum</td>
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<td>38</td>
<td>Ear</td>
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<td>39</td>
<td>Pastern</td>
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### Placing Card for Breeding Beef Cattle

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<thead>
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<th>Contestant's No.</th>
<th>Team No.</th>
<th>Class.</th>
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</table>

#### POINTS FOR COMPARISON

1. **General Appearance**: Size, form symmetry, breed and sex characteristics

2. **Fore Quarters**: Head, neck, shoulders, chest, crops, ribs, forelegs

3. **Hind Quarters**: Loin, rump, round, hind legs

4. **Quality and Condition**: Size of bone, pliability of hide, smoothness and thickness of natural flesh

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(A) Average of the above scores

<table>
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<th>Second</th>
<th>Third</th>
<th>Fourth</th>
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(B) Final Placing Order

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<th>Second</th>
<th>Third</th>
<th>Fourth</th>
<th>Score</th>
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**FINAL SCORE**: A + B / 2

Prepared by the Bureau of Animal Industry, U. S. D. A.

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Figure 2. The essential qualities in a good beef cow

In judging breeding and fat beef cattle there would be some variation in the value placed on different points to be considered in judging. These factors should be considered in preparation for judging.

The score card is used in placing a class of animals as a means of comparing the different animals of a class in a systematic manner. The following points are considered in judging a class of beef cattle.
1. General Appearance

The general appearance includes weight, form, quality, and condition. In comparing the general appearance of different animals one must consider the relative merits of these points as a single unit. The general appearance is a fair index to the placing of the animal, but the other details must be taken into consideration before a final decision should be made as to the relative merits of different individuals.

![Figure 3. The essential qualities in a good beef bull](image)

**Weight**—The weight of an animal according to its age is considered important as an indication that the greatest possible growth and fattening have been taking place every since birth. Early maturity is desired in beef cattle because it is highly important to have animals which begin to put on flesh early and at the same time show size, vigor and quality.

![Figure 4. Desirable form for beef cattle](image)
Form—In judging fat steers the point of view taken must be largely that of the butcher, and therefore the favored fat animal is of low-set, deep, broad, compact sort that will yield a large quantity of valuable meat. A steer that is high on the legs, cut up in the flank, and small in heart girth rarely makes a good feeder and it is usually the case that such individuals do not develop into the most desirable fat kind.

Breed and Sex Characteristics—A breeding animal must, if it is a purebred, have all the particular characteristics which distinguish the breed to which it belongs from any other. For example, the Hereford must be red with a white head and white marking on the top of the neck, on the breast and underline. An Aberdeen Angus must be black and be naturally polled. A Shorthorn may be any com-

Figure 5, Undesirable form for beef cattle

Figure 6, Undesirable form for beef cattle
bination of red and white or entirely red or entirely white. It must be large and have a small head and horn. The horn of a Shorthorn is much smaller than that of a Hereford.

The bull should be masculine in the head, have the heavy crest on neck and slightly heavy forequarters. A bull that does not have a good, strong, burly, masculine head should not be selected to head a good purebred herd. The cow, on the other hand, is feminine in the head, lacks the development of forequarters which the bull has and is heavy through the middle and wider at the hips than the bull.

2. Forequarters

The forequarters include the shoulder vein, shoulders, brisket, and legs. The forequarters should be well proportioned so as to connect smoothly with the neck and body. Coarseness in the forequarters should be avoided, but a fullness of the various parts is desirable.

The shoulder vein should be full and the shoulders smooth, compact, and evenly covered with flesh so that the neck fits snugly into the body. This part should be free from coarseness and the shoulder blades should be
practically hidden from view. The brisket should be medium sized and prominent enough to make the body appear rectangular as viewed from the side. Freedom from coarseness is desired in the brisket. The legs should be short, straight, set well apart, and show refinement which acts as an indication of quality and a high dressing percentage in the carcass.

The head and neck are not of importance on account of the meat they contain, but because they serve as an indication of the development of the rest of the body. In the feeder or unfattened individual the appearance of the head and neck can be taken as an index of the feeding qualities of the animal. The head serves as a condensed reflection of the rest of the body. To most experienced cattle feeders a view of the head is sufficient to tell whether the animal is a good one.

The head should be broad and short because those qualifications accompany a thick, low-set, blocky body, while a long narrow face usually accompanies a narrow and upstanding body and other features which are undesirable in a beef animal. The muzzle should be broad and the mouth large, because they indicate a good appetite. The nostrils should be large and open, showing good lung capacity. The eyes should be clear and prominent and have a docile appearance, indicative of a quiet temperament. The face should be short and the jaws strong and wide apart at the base. As viewed from the side the profile of the head should show a wide angle. The ears should be medium sized, of fine texture, and covered with fine, silky hair. If horns are present they should be small or medium sized and free from undue coarseness.

The neck should be short and thick and should blend smoothly with the shoulders. The top line of the neck and the back should form a straight line. The throat should be clean and the dewlap light. A long, narrow, ewe-shaped neck is undesirable because it is often associated with poor feeding qualities.

3. Hind Quarters.

The hips, rump, thighs, twist, and legs make up the hind quarters. The hind quarters should be deep and as broad as the shoulders. The hips should be smooth and show no prominence. The rump should be long and wide and gradually round off smoothly from hips to tail head. The rump should be free from patches and rolls caused by uneven deposits of fat. The thigh should be deep and full and the twist deep and plump. The twist constitutes the portion below the tail head on the inside of the leg. The thigh is the outer part of the leg. Both of these constitute the so-called quarter. The hind legs, as in the case of the front ones, should be wide apart, short, straight, and show a fine shank and fine-quality bone.

Great emphasis should be placed upon the development of the hind quarters because the cuts in this part of the body contain some of the highest-priced and best quality meat. The hind quarters in the carcass contain about 23 per cent of the meat of the entire animal. In cutting the carcass the loin and flanks are included with the hind quarters. In making out the score card for fat cattle the purpose has been to assign values to the various parts of the animal corresponding to the relative market values of the corresponding cuts and not to the corresponding relative weights. It is usually considered that the front half of the animal weighs 52 per cent and the hind half 48 per cent. In figuring the relative market values of these parts, based on wholesale prices, the hind half of the carcass is worth about 54 per cent while the front half is worth about 46 per cent. This gives the reason why due emphasis should be placed upon the score of the hind quarters and the loin of the animal.
The body of the animal contains the most valuable cuts of beef. Included under this heading are chest, ribs, back, loin, and flank. In general, the body should be broad and deep with the underline and the top line parallel or nearly so. The body should be well rounded with well-sprung ribs but free from paunchiness.

The chest of a good individual should be wide, deep, and have a large girth. The crops must be full so that there is no depression behind the shoulder.

Figure 9. Exceptional rump and hind-quarter development with extreme smoothness throughout

Figure 11. Desirable top line

Figure 12. Undesirable top line
4. Quality and Condition

Quality in the fat steer means that the animal should have the proper kind of bone, hair and skin, which is known as "general quality"; also a smooth, springy or firm covering of flesh, which is known as "handling quality." General quality, which is largely determined by the eye, is indicated by a clean, small bone; soft, silky hair; small, dense horn; and a loose, mellow, pliable hide. A coarse head, open shoulders and heavy, coarse bone indicate poor quality. Handling quality is indicated by a thick, even covering of firm, springy flesh over the entire body, especially on the ribs and loin. The animal should be free from lumps and patches which often occur on the ribs and around the tail head. These patches are caused by the fat being laid on unevenly and are indicative of an uneven carcass.

By condition we mean the degree of fat together with the natural fleshting or muscling of the animal. The degree of condition is determined by handling the animal along the ribs and over the back and loin. As these are the most valuable parts of the animal it is desirable to have them in high finish. A full tongue root,
a full cod and a thick flank also indicate high condition. But the animal that is well covered over the ribs and loins is in greater demand than the animal bare in these regions but showing a full cod and a thick flank. Do not rely upon the eye only, in determining condition, but on both observation and handling. Animals intended for butchering should be well fattened and in high condition because the meat from such animals is more tender, juicy and palatable and can be stored for a longer time than meat from animals in low condition.

![Desirable type cow](image)

**Figure 15. Desirable type cow**
(Owned by M. A. Moore, Senatobia, Mississippi and bred by T. C. Potts, Crenshaw, Mississippi)

**Breeds of Beef Cattle**

The breeds of beef cattle discussed here are Hereford, Aberdeen-Angus, Shorthorn, Polled Shorthorn, Polled Hereford.

**The Hereford**

History: The native home of this breed is Herefordshire, England. Early breeders selected animal of large size which possessed good grazing ability; and, at the time of the founding of this breed, Hereford steers were known as the greatest draft animals of that country. The first Herefords were imported to this country in 1817 by Henry Clay of Fayette County, Kentucky. Some years later animals of this breed were imported to the United States in large numbers and the American breeders selected animals of a smaller type, capable of carrying more meat. As a result the present day American Hereford is far superior to the English Hereford in that they mature earlier and dress a higher percent of edible meat.

Conformation. The Hereford has been bred strictly for beef production; therefore it is deeply fleshed, closely coupled, thick bodied, and close to the ground. Breeders have not tried to produce good milking Herefords; therefore cows of this breed produce just about enough milk to raise their own calves. The Hereford is the most popular breed of cattle known for the range, because it is
a good grazer and has ability to withstand the rigorous conditions of the range country. This breed is the equal of any other for the production of baby beef or heavy steers.

Color. The colors are red and white. The head and top of the neck, the breast and underline, bush of the tail and the legs below the knees and hocks are white.

Size. Hereford cattle are among the largest, mature bulls weighing 2250 pounds and cows weighing 1400 to 1600 pounds.

Figure 16, Hereford bull. Desirable type.
(Owned by J. F. Goodnight, Sardis, Mississippi and bred by T. C. Potts, Crenshaw, Mississippi)

Figure 17, Hereford cow
(Owned by J. F. Goodnight, Sardis, Mississippi)
The Aberdeen-Angus

History. The native home of this breed is northeastern Scotland where the land is hilly or mountainous and well suited for grazing. In founding this breed the Scotch breeders developed a low-set, compact, thick-meat animal with fine bone that has always been known as a good feeder.

Conformation. The head is small and is naturally polled or "muley." Animals of this breed are inclined to be nervous, but if handled with care are quiet. The body is somewhat more cylindrical in shape than that of the Hereford or Short-horn. Compactness, smoothness and symmetry are the important points of the Aberdeen-Angus. The records of this breed at the International Live Stock Exposition show that it is one of the best in producing high-class carcasses. The Aberdeen-Angus are noted for their feeding ability and early maturity and therefore are extremely popular for baby beef production.

The Shorthorn

History. The original home of this breed is northeastern England, where it has always been the most popular breed of beef cattle. Shorthorns were first imported to Kentucky in 1817, and a quarter of a century later this State was the greatest Shorthorn center in America. Kentucky was the only State that ever produced Shorthorns good enough to send back to England for breeding stock.

Conformation. This is the largest breed of beef cattle we have and the most representative animals are broad, squarely built, possessing a wide rib and a deep body. As a rule they are hardly as low set as the Hereford or Aberdeen-Angus.

Some families of Shorthorns have been developed for milk production while others have been developed for maximum beef production. The milking Shorthorn type usually is longer in body and more angular, having a well developed udder, a large barrel or feeding capacity and longer legs than the beef type Shorthorn.
The Shorthorn crosses well with other breeds of cattle and it is more widely distributed than any other breed of beef cattle. Its popularity has carried it to all continents.

Color. The colors are white or red or any combination of the two, which may be roan or red with white spots. At present the dark roan or red animals are the most popular as breeders.

Size. The largest of the beef breeds. Mature bulls weigh 2200 to 2300 pounds and mature cows 1600 pounds or more.

Polled Shorthorns

This breed is the same as Shorthorns except that the horns are not present. These animals are naturally polled, "muley," the same as Aberdeen-Angus, but the color and conformation are the same as regular Shorthorns. In former years this breed was known as Polled Durhams and were registered in that name. For some years Polled Shorthorns have been down as Double Standard Polled Shorthorns and are registered in the American Shorthorn Association as well as the American Polled Shorthorn Association. This breed has not approached the ideal beef animal so nearly as the horned Shorthorn.

Polled Herefords

The Polled Herefords is an offshoot of the Hereford breed, developed entirely in the United States. Animals of this breed have the same markings and same general characteristics as their horned relatives but the breeding and selection within the ranks of the Polled Herefords has not been so constructive and careful as it was with the horned cattle. Therefore, the animals of this breed usually fall short of the requirements of the present day Hereford.


Breed Associations.
MISSISSIPPI AGRICULTURAL EXPERIMENT STATION BULLETIN [No. 344]

JUDGING HORSES AND MULES

To become a good judge of horses, one must first acquire a clear knowledge of the standards of type under consideration. The first essential to sound judgment in placing a ring of draft horses, for example, is a knowledge of what constitutes excellence in a draft horse. To this must be added a knowledge of the breed requirements. Such information can be acquired only through study, observation, and practice.

In order to become familiar with the various parts of a horse, and to learn to recognize the relative value of horses, the following score card is used. The principal purpose of the score card is to draw attention to small points which would not otherwise be noticed but which, in the aggregate, have considerable bearing on the usefulness of a horse. The score card provides a means of comparison and an opportunity to place a class according to the way the particular judge sees the animals.

Comparative Measurements of Horses

Knowing the usual height and the weight of the various breeds, horsemen visualize the size and the conformation of the horse with reliable accuracy. To be able to do this, calls for skill and this may be obtained only by experience. As an aid in judging, a few of the more significant dimensions were taken of both draft and driving horses. These measurements are summarized in the following tabulation.

Comparative Measurements of Draft and Driving Horses

<table>
<thead>
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<td>Draft</td>
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<td>Number of horses measured</td>
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<tr>
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<tr>
<td>Height at withers</td>
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<tr>
<td>Height at croup</td>
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<tr>
<td>From point of shoulder to point of buttock</td>
<td>67.8 inches</td>
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<tr>
<td>From lowest point of chest to ground</td>
<td>33.5 inches</td>
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<tr>
<td>Circumference of body at girth</td>
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<td>From withers to hip</td>
<td>30.4 inches</td>
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<tr>
<td>From point of hock to ground</td>
<td>25.5 inches</td>
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<tr>
<td>From point of hock to hip</td>
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Placing Card for Mules and Draft Horses

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Desirable Characteristics Which Should Be Possessed by All Horses and Mules

The desirable characteristics which should exist in all horses and mules are:

1. A strong heavily muscled back, which seems short.
2. A short, wide, strong, heavily muscled loin.
3. A deep chest, wide through from side to side.
4. A roomy middle, due to long, well sprung ribs, and a capacious abdominal region.
5. Well set legs, pasterns and feet; that is, they should be correct in position, viewed from front, side, or rear.
6. Strong leg joints, deep from front to rear, that are clearly defined, with dense bone of good quality.
7. Straight action and good wind.
8. Good head, eyes, and temper.

These characteristics are basic and should be virtually the same in all good horses or mules, regardless of size or type.

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Figure 20. The skeleton of the horse, showing the location of the bones, the degree to which the skeleton and the muscle influence the form, and also the location of the various parts and location of unsoundness, when present.

A. Poll Evil E. Bone Spavin H. Curb
B. Capped Elbow F. Bog and Blood Spavins, usually slight-
C. Splint G. Usually slight-
D. Windgall

ly above this
1. General Appearance

Height—The height of the horse is measured in hands and inches, the hand being equal to 4 inches. For example, the height of a horse may be given 16-2, meaning 16 hands and 2 inches, or it may be given as 16½ hands. To come into the draft class, a horse should measure at least 16 hands, while probably the most desirable heights are from 16½ to 17½ hands.

The height of a horse is measured from the top of the withers to the ground. If an accurate measurement is desired, it will be necessary to use a measuring stick. When this is not available, a fairly accurate measurement may be made by using the height of the chin or the level of the eye as a gauge. The person should stand beside the horse on a level with his front feet, and note where the level of his chin or his eye comes in respect to the horse’s withers.

Weight—In order to be classed as a draft animal, a horse must weigh at least 1500 pounds. This weight should be due to a massive form, made up of heavy muscles and large bones, and not to excessive fat.

Weight is essential in holding the horse’s feet to the ground, in order to give him a chance to exert his physical force. The greater the weight that falls against the collar, the greater will be the pull that the horse is able to exert. Weight also helps to establish the value of the draft horse on the market. For many years the horses with the greatest weight, they being equal in other respects, have brought the highest prices.

Form—The form of the draft horse should be low, massive, and symmetrical, indicative of great strength. The body should be of such depth and width as to give good capacity, and the bones should be well covered with large, heavy muscles. The compact body should be set squarely on sturdy legs. Too short legs are as objectionable as too long ones, however, as they affect the efficiency of the horse. Lack of depth and width, ranginess, and lack of muscling throughout are things to be severely criticized in the draft horse.

Quality—Quality is that indication in a horse which shows fineness of finish and wearing ability. Quality is shown by refinement of general appearance, for instance, in a clean-cut, well-defined head with thin lips and small ears, also by neatness and refinement of neck and withers and by soft, silky hair and pliable skin. Quality is also shown by clean, hard cannons with clean, well-defined tendons, giving the cannon a flat appearance, by hard, clean, well-defined joints, and by hard, smooth, fine-textured hoofs.

The term quality as applied to the horse means the opposite of coarseness, grossness, or sluggishness. Excessive quality, such as too fine bone, narrowness, and lack of depth, often denote weakness and lack of muscular development. Quality carried to this degree is highly objectionable, and should be severely criticized.

Color—The color and color markings are determined largely according to breed. The more common colors are bay, black, gray, brown, chestnut, sorrel, and roan, with some variations. The solid colors are generally preferred, since horses of solid colors are easier to match than those with freakish markings about the head and the legs.

Action—The walk is the common gait of the draft horse, and the one at which he does most of his work. The horse should walk with a long, smooth stride. He should lift his feet from the ground with snappy action, and should flex the joints so that the shoes show plainly. He should then pass the feet forward in a straight line and place them on the ground so that the heels land slightly before the toes and with a good firm grip. This does away with the short, stubby gait that is noticeable in many horses when they land the toes on the ground first and slide them along for a very short distance, pushing up dirt ahead of them.
The action at the trot should be practically the same as at the walk; that is, it should be rapid, straight, and regular. Any defects of the gait at the walk will be more easily detected at the trot, and it is for this reason, largely, that the draft horse is judged at the trot. In order to show his action, the draft horse should be led directly away from, then back toward the judge, and past him. In this way the horse's action in going, coming, and passing, may be noted.

The more noticeable defects in the gait of the draft horse are usually reflected in his conformation. Thus the horse with a short neck and a heavy head usually has a short stilted action; one with thick withers and a wide chest often wings his feet outward; one that stands too wide in front usually has a wide, straddling action; the knock-kneed horse has a winging action; the horse that stands with his toes pointing inward as a rule wings his feet outward; and the horse that stands with his toes pointing outward generally wings his feet inward as he travels.

Temperament—The draft horse should have a lively, energetic, and intelligent disposition. He should be a ready and a willing worker, without being irritable and nervous. He should be neither sluggish nor excessively nervous. A sluggish disposition is indicated by indifference and lack of poise, and should be guarded against. The excessively nervous horse should also be guarded against, as he will not make so good a worker nor last so long as will the more docile animal.

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**Plate I.—Front View of Fore Limbs**

A perpendicular line drawn downward from the point of shoulder should fall upon the center of the knee, cannon, pastern, and foot.


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**Plate II.—Side View of Fore Limbs**

A perpendicular line drawn downward from the center of the elbow point should fall upon the center of the knee and pastern, and back of the foot, and a perpendicular line drawn downward from the middle of the arm should fall upon the center of the foot.


*Figure 21, Front and side view of the fore limbs*
Attitude—By attitude is meant the position of the legs in respect to the ground and the body. The legs should be vertical and well set on the body. When viewed from the front, the legs should be straight so that a line dropped from the point of the shoulder will pass over the center of the knee and the center of the ankle, and come to the center of the toe. Some of the common deviations from this are the turning in or out of the toes and the bending in or out of the knees, so that the line passes either side of the center. When viewed from the side, the front legs should be straight so that a line dropped from the center of the shoulder blade will touch the center of the forearm and the center of the side of the hoof, and be parallel with the bones of the leg. Common deviations from this are the placing of the legs too far under the horse, “buck knees” or knee-sprung, when they project too far forward, and “calf-knees,” when the knees tend to spring backward.

When viewed from the rear, the hind legs should also be vertical, so that a line dropped from the point of the buttock will pass over the center of the hock, down the center of the cannon and the ankle, and cut over the center of the heel. Common deviations are the turning in or out of the toes or of the hocks. When viewed from the side, the hind legs should be perpendicular, and a line dropped from the thurl should pass over the center of the gaskin, down parallel to the cannon, and touch the center of the side of the foot. Also a line dropped from the

Plate III.—Side View of Hind Limbs
A perpendicular line drawn downward from the hip point should fall upon the center of the foot and divide the gaskin in the middle; and a perpendicular line drawn from the point of the buttock should just touch the upper rear point of the hock and fall barely behind the rear line of the cannon and fetlock. Correct position of the leg from this view is most important in a horse.
Fig. 13—Represents the correct conformation. Fig. 14—Leg too far forward and hock crooked. Fig. 15— Entire leg too far under and weak below hock. Fig. 16— Entire leg placed too far backward.

Plate IV.—Rear View of Hind Limbs
A perpendicular line drawn downward from the point of the buttocks should fall in line with the center of the hock, cannon, pastern and foot.
Cut 17—Represents the correct conformation. Cut 18—Bow-legged.

Figure 22, Side and rear view of hind limbs
buttocks should touch the hocks and pass down back of the cannon and the ankle, touching all the way down, and meet the ground a few inches back of the heel. Common deviations are too curved hocks with feet too far under the horse known as “sickle hocks”; or the feet and the legs may extend too far back and not be under the horse; or both feet and legs may be too straight and too far under the horse.

Head—The head should be fairly large, and in proportion to the rest of the body. It should be lean, and the features should be clean-cut. The front of the head should be straight. The forehead should be broad, a little more than one-third the length of the head. The depth of the head should be about one-half the length of the head. The length of the head should be about two-fifths the height at the withers.

Neck—The neck of the draft horse should be of medium length and heavily muscled, but should not be thick. It should be slightly arched on top, and should have mane of good quality. The windpipe should be large for this indicates good breathing power. The neck should be smoothly and neatly attached at the shoulders in such a way that the horse can get his head up. The length of insertion should be about equal to the length of the underline. The neck should be free from all coarseness or thickness at the throatlatch, and should fit neatly into the head. Coarseness or thickness at the throatlatch may cause pressure on the windpipe when the horse is checked up, and thus make the breathing thick and heavy.

2. Body

Withers—The withers should be well placed, blending smoothly with the neck and back, as well as giving direction to the shoulder. In the draft horse they should be neither too wide nor too prominent, since these faults expose them to injury from the collar.

Shoulders—The shoulders should be moderately sloping, extending into the back, and smoothly covered with muscle to form a cushion for the collar. The distance from the point of the shoulder to the point of the withers should be slightly shorter than the length of the head. The shoulders should be free from all coarseness, roughness, sores, or tumors. The withers should be well covered and moderately high. The majority of poorly formed shoulders in draft horses are too vertical, although the other extreme too sloping shoulders, may also be found. These often cause collar trouble when the horse is doing heavy work.

Arms—The arms extend from the point of the shoulder to the elbow, and in draft horses it should be relatively short, heavily muscled, and well set. The elbows should be clean and prominent and carried neither too close to the body nor too far from it, for if carried in either of these ways the horse will tend to have a rolling or a sprawling action.

Chest—The chest should be wide and deep, thus giving plenty of room for the development of the heart and lungs. When viewed from the front, there should be good width between the legs, and the breast should be low and level. The heart girth is the circumference of the chest just back of the shoulders. It should be largely due to the spring of the ribs and to depth, which should be about one-half the height of the horse. The large girth should not be caused by excessive fat over the ribs. A large, wide, deep chest denotes vigor, power, and strong constitution, while a shallow, narrow chest denotes the opposite, or poor constitution, lack of endurance, and deficient breathing organs.

Ribs—The ribs form the frame for the barrel, or body, of the horse. They should spring from the backbone in a bold curve and should be long, thus forming a wide, deep barrel. The ribs should be fairly wide apart, and the last, or rear, ribs should be of good length and should extend back close to the hip, giving a deep, full flank. Well-sprung ribs and a rounded barrel are indicative of good digestive
organs and ability to do hard work. Lack of spring of ribs and short rear ribs with tucked-up flank are indications of weakness, poor digestion, lack of appetite, and a horse generally hard to keep.

Back—The back extends from the rear of the withers through the last rib, and should be short, straight, broad, and muscular. One should not mistake excessive fat along the back for heavy muscling. Since practically all the power is developed in the hind legs and is transmitted through the back to the shoulder and the collar, it is important that the back should be straight, strong, and short.

Loin—The loin is that region of the back that extends from the last ribs to the hips. In other words, it couples the body to the hips. It should be short, broad, strong, and heavily muscled. The loin of the female should be a little longer than that of the male. In judging a broad, well-muscled loin, care should be taken that fat is not mistaken for muscle.

Underline—The underline should be long, low, and straight. Both the fore-flank and the rear flank should extend well down so as to give a straight line. Lightness or tucked-up flanks show a tendency to lack constitutional vigor.

Hips—The hips should be wide, level, and well covered with muscle, as this gives the required strength and also protects the hips from injury. Roughness across the hips, with prominent hip bones, is undesirable, for it shows a lack of quality, and rough, prominent hip bones are more susceptible to injury.

Croup—The croup extends from the rear of the loin to the insertion of the tail. The croup should be fairly level, of good length, wide, and well muscled. The croup should not be perfectly level, but should slope a little. Some of the most common faults are the very sloping croup and the lack of muscular development.

3. Fore Legs and Feet

Forearms—The forearm extends from the elbow to the knee, and should be of fair length. It is made up of the humerus, which is heavily muscled around the upper half but is clean, cordy, and flat on the lower half, just above the knee. Here and in the gaskin are probably the best places to determine the approximate strength of a horse as these two parts are entirely bone and muscle, and will not take on fat as will the back and the loin or other parts of the horse.

Knees—The knees should be clean-cut, well formed, and with good width and depth. They should be vertical when viewed from the side, bending neither backward, known as "calf knees", nor forward, known as "buck knees", or knee-sprung. The knees should be well supported. The knees cannot well be too large if they are clear of flesheness and well formed and supported. Any blemishes or scars around the knees should be guarded against, for they are sure signs of weak knees.

Cannons—The cannons extend from the knees to the fetlocks, and are composed chiefly of bones and tendons. They should be short, clean, wide, and flat when viewed from the side. The flat appearance should be due to the well-detached tendon in the rear. This tendon should not be tucked in just below the knee. If long hair, or feather, as it is commonly called is found springing from the back of the tendon, it should be fine and silky and not coarse and curly, as the coarseness is an indication of coarse bone and flesh on the cannon. The cannons should be examined for bony bunches or splints, just under the knees, which may cause the horse to be lame, and also for any little bunch along the side of the cannon, which may show that the horse interferes high on the cannon.

Fetlocks—The fetlocks should be wide, deep, clean, and free from all puffiness. They should be straight, strong, and well supported. Any sores or calluses caused by interferring, knuckling, or breaking forward, are highly objectionable. At the back of the fetlocks, in the hair, is a horny projection known as the ergot. This is inclined to be large and prominent in many draft horses.
LIVESTOCK JUDGING

Pasterns—The pastern is between the fetlock and the foot. It should be of medium length, clean, strong, and should support the fetlock joint well. The line showing the slope of the pastern should meet the ground at an angle of about forty-five degrees. The distance from the fetlock to the ground should be about 7 to 8 inches. Pasterns that are too upright and short give the horse a short, stubby gait and also cause various foot troubles and unsoundness. Too sloping pasterns are indicative of weakness, and will generally break down with age or when the horse is put under the strain of hard work for any considerable length of time.

Feet—The foot should be so placed on the pastern that it toes straight ahead and does not turn in or out, for this tends to make the horse either “wing” or paddle. When viewed from the front, the feet should be about as far apart as the width of one of the feet. They should also be practically round with a little sharper turn in on the inside of the toe and more nearly straight to the inside rear quarter. When viewed from the side, the median line of the toe should be parallel to the heel. The median line should meet the ground at an angle of about fifty degrees. The length of the median line on the toe should be about twice the height of the heel. The surface of the foot should be smooth and free from all vertical cracks and ridges or wrinkles extending around the foot.

The foot should be waxy in appearance, and should show density. The horn should be dark colored and neither brittle or shelly. The bottom of the foot should be concave. The heels should be broad throughout its length, widening somewhat as it reaches the sole. The frog, which is the soft, spongy, triangular piece extending from the heel to the center of the foot, should be large, well defined, and soft or elastic to the touch. Frogs that are hard, dry, decaying, or shrunken and cracked open at the center are in a serious condition which should be guarded against. The bars should be well defined, healthy, and strong, since they keep the heel from contracting.

Hoof—When making contact with the ground, the hoof expands, especially at the heel. Likewise, when the weight is relieved as the hoof is raised, it contracts. The hoof is so constructed to break the shock and to absorb concussion. This is significant, for the legs, especially the feet, pasterns, and hocks, are subject to extra strain in locomotion. Because of the pounding to which these parts are subjected, they are exposed to injury, resulting in unsoundness. Special attention should be given them in passing judgment upon the value of a horse.

4. Hind Legs and Feet

Thighs—The thighs, extending from the hips to the stifles, should be strongly muscled, wide, and long. It is most highly important that the thighs should be well muscled, as it is through these muscles that the horse gets most of his power to pull.

Stifle Joints—The stifle joint should be strong, well muscled, with a marked depression both above and below the patella, clean-cut in front, and free from all swelling. The stifle should be close to the abdomen with very slight deviation outward to allow straight, smooth, long, free action in the rear legs.

Buttocks—Viewed from the rear, the buttocks are the heavy muscles on the inner sides of the thighs. They should be full, thick, and carried well down to the gaskin. It is a serious defect in a horse to be light muscled through the buttocks.

Gaskins—The gaskin is the region between the stifle and the hock. It should be heavily muscled near the stifle but lightly muscled near the hock in a way similar to the forearm in the front leg. This is one of the regions in which to determine the muscling of a fat horse, for this region cannot be covered with fat. The gaskins correspond to the forearms, and what is true of one is equally true of the other.
Hocks—The hock is the most important joint of the animal’s body, for it is through this that he pushes or pulls his entire load. The shape, the strength, and the soundness of the hock can best be seen from a position in line with the horse’s head and a little to one side. From this position the face, or inside, of the hock can be seen; it should be broad, flat, clean and well supported below by the cannon bone. The cannon should appear strong and not tucked in below the hock. The hock should then be examined from side and back. It should be long from top to bottom, angular, strong, sharply defined, and well supported on the back by the tendon. The hock should be clean and free from all puffiness. The hocks should not be too close together, neither should they be too far apart; but they should be placed that a plumb line dropped from the point of the buttocks will pass over the center of the hock and down back of the cannon, touching the cannon all the way down. Too curved hocks or “sickle” hocks, are signs of weakness, and generally produce curbs due to strain on the parts.

Cannons—What has been said of the cannon of the fore leg is equally true of the cannon of the hind leg, except that the cannon of the hind leg is slightly longer, being from 11 to 12 inches long. The cannon should be clean, with a flat appearance due to the detached tendon, and should not be light or cut in just below the hock.

Fetlocks—The statements made about the front fetlocks are equally true of the rear fetlocks. They should be clean and free from all puffiness. Puffiness about the rear fetlocks is a most common defect in horses.

Pasterns—All that has been said of the pasterns of the front legs hold true for those of the hind legs, except that the line showing the slope should meet the ground at an angle of about sixty degrees.

Feet—The quality of the hind feet should be the same as that of the front feet. The hind feet should not be quite so round as the front feet, their walls should be a little more vertical, and the heels should be a little higher and separated a little more than those of the front feet. The hind feet should be more concave than the front feet, and the frog and bars should be prominent and in good condition.

Figure 23, Location of common unsoundnesses and blemishes
The Common Unsoundness of Horses and Mules

The horse buyer and judge must be familiar with common unsoundnesses in order to evaluate a horse properly. The following illustrations show the location and effect of a number of these unsoundnesses:

Figure 24, Poll-evil

Figure 25, Fistula of the withers
Figure 28. Ringbone on the bones of the pasterns
Figure 29, A sidebone

Figure 30, Unilical hernia

Figure 31, Bog Spavin

Figure 32, Stifled
Figure 34, Bone Spavin

The Breeds of Horses

Type Breed
|
| Percheron
| Shire
Draft
| Clydesdale
| Belgian
| Suffolk
Light
| Thoroughbred
| Standardbred
| American Saddle
Carriage
| German Coach
| French Coach
| Cleveland Bay
| Hackney
Ponies
| Welch
| Shetland
| Hackney

Figure 33, Foundered hoof
There are five main breeds of draft horses, namely: Percheron, Belgian, Clydesdale, Shire and Suffolk.

**Percheron**

The Percheron horse originated in LaPerche, France. They are now bred and used extensively in America.

**Color**—The color is gray and black, with a small number bay or brown.

**Size**—The size varies from 1,500 to 2,000 pounds. The height ranges from 16 to 17 hands, as a rule.

**Conformation**—The Percheron has a refined head and neck, and a clean bone of good quality. The best specimens are short of back and long underneath. Tail is set fairly high, with the carriage of head and neck gives an attractive appearance. The legs show strength of bone and the feet have good size and texture.

**Action**—The Percheron is the most active of all of the draft breeds. The walk and trot are snappy and elastic.
Shire


Color—Black, bay, chestnut, roan and gray can be found in the breed. They have a greater variety of colors than any other draft horse. Bay, with the white or roan markings, is perhaps the color most often found.

Size—The Shire is a very large, heavy horse, the weight ranging from 1,700 to 2,200 pounds. In height, the Shire varies from 16 to 17½ hands.

Conformation—The breed is extreme of scale, head and neck massive, barrel long and full, with heavy quarters. The bone is very large and round, and the hoof of a somewhat shelly texture. The legs in the rear below the hock and knee have a coarse, long hair, called “feather”.

Action—Owing to his size he is sluggish in movement.

Figure 36, Shire
Clydesdale

The Clydesdale horse originated in the valley of the River Clyde, in Scotland. From this territory they were imported into America and are being produced in considerable numbers.

Color—The popular colors are bays and brown, but gray, black, chestnut and roan are found. As with the Shire, to which they are related, white markings are common. Often too, much white is found in the form of splashes on the body and, frequently, above the knee and hock.

Size—The Clydesdale is not so massive as the Shire, yet he is of greater scale than the Percheron. The weight ranges from 1,600 to 2,000 pounds. The average height is near 16½ hands.

Conformation—The Clydesdale does not have so attractive a head as some other draft breeds; nor is the barrel so full and compact as breeders desire, but the shoulder is long and sloping and the croup is broad and level. It is claimed for the Clydesdale horse that his legs and feet are superior to those of other draft breeds. The pasterns are long and sloping and the rear of the cannon bones shows abundance of long, fine hair or "feather".

Action—The one surpassing quality of the breed is its action. The stride is straight and sprightly. The hocks are kept well together in both walking and trotting.
Belgian

The Belgian horse originated in Belgium from Flemish horse ancestry.

Color—Roan and chestnut are the two colors most frequently found in the breed, but all the other colors are possible.

Size—In size the Belgian ranks next to the Shire. The height is about 16 hands, and the weight of the best specimens goes to 2,000 pounds.

Conformation—The head is medium in size, and the neck is short and heavy. The barrel is wide and closely coupled and the legs are short. The bone is inclined to be round and refined, and the feet are small. Perhaps the greatest fault of the breed is too steep a croup, although breeders are striving successfully to correct the defect.

Action—Owing to the width of the Belgian horses they are inclined to roll or paddle at the walk. The trot, however, is fairly true and rapid.

Suffolk

The Suffolk horse originated in Suffolk County, England, the entire breed springing from the Crisp horse of Ufford, foaled in 1768. The number in America is not large.

Color—All Suffolk horses are chestnut in color. No other breed of horses is uniform in color.
Size—The Suffolk is a horse of medium size, being the smallest of the five breeds of draft horses. The height is from 16 to 16½ hands, and the weight up to 1,800 Pounds.

Conformation—The head is heavy and the neck short, thick and arched. The barrel is short, deep and thick. One fault of the breed is that the body is too compact. The legs are well set. The bone is clean and not so heavy as in other breeds.

Action—Their action is straight and true, with more rapidity of movement than is exhibited by the heavier draft breeds.

Figure 39. Suffolk Stallion

Light Horses

There are three breeds of light horses, Thoroughbred, Standardbred and American Saddle.

Thoroughbred

Origin—The Thoroughbred originated in England about two hundred years ago. The breed was developed to meet the demand for a race horse and is the oldest and the best bred of all breeds of domestic animals. The Thoroughbred was early introduced into America and the blood has been used extensively in improving the light horses for farm use.

Color—Bay, black and chestnut are the usual colors. Gray and roan are not often seen.
Size—The best families of the Thoroughbred are close to 16 hands in height and weigh in good flesh 1,100 to 1,200 pounds; but many strains are 15 to 15.2 hands and only weigh from 950 to 1,050 pounds. Size is not so important as speed.

Conformation—The head and neck of the Thoroughbred denote refinement. The large, clear eye with its prominence and intelligent expression is always attractive. The neck is long and arched and rises out of sharp, neatly turned withers. The top line of the barrel is short in the best specimens. The coupling is close and ribs well sprung. The croup should be level and the quarters straight. From the standpoint of the show ring the most serious fault of the breed is the too great length of leg, due in large measure to the fact that for 200 years the Thoroughbred has been selected to run fast.

Action—The Thoroughbred has three natural gaits: walk, trot and gallop. The trot is neglected in his training and no attention is given to his walk, but at the running gait he is the swiftest of all animals. The best record for a mile is 1:34 2/5 (1 minute, 34 2/5 seconds).

Standardbred

Origin—The Standardbred, or trotting horse, originated in America and most of them trace back in their lineage to Hambletonian 10, who is the founder of the breed. He was foaled in 1849 and the breed has been developed since that date.

Color—All the colors, chestnut, black, bay, roan and gray, appear in the breed and possibly even dun. Chestnut, black and bay are the most fashionable colors.

Size—The Standardbred ranges from 15 to 16 hands in height, and from 900 to 1,200 pounds in weight.

Conformation—The Standardbred is the plainest of the breeds of light horses. The breed is not old and has been bred for speed at the trot and pace,
with little effort given to refinement. The head is plain, and the neck is not greatly arched. As a rule the back is short and the underline is long. There is breadth and strength in the loins. The tail setting varies from the level croup to the sloping one. The quarters and gaskins are strong. The legs may be long, medium or short, but they must not be too short. The bone is hard and durable. The feet are medium in size and the horn is of most excellent quality.

**Action**—For the trotting families of the Standardbred horse the natural gaits are the walk, trot and gallop. An occasional Standardbred horse is double gaited. He can go at both the trotting and pacing gaits. A few of them are trained to race as trotters, and then trained to race as pacers. As a rule, however, a distinct inclination is shown for one gait or the other.

If the horse shows a disposition to trot he is trained at that gait. Horsemen show a distinct preference for the line-gaited trotting horse. By line-gaited is meant a movement in which the hind feet move in a line with the front feet. When the horse is trotting at great speed the front foot is lifted from the ground so that the rear foot passes some distance beyond where the front one was at the beginning of the stride.

The passing-gaited trotting horse is at a discount. Those horses that have the fault go wide in the rear. The hind legs pass the front ones on the outside. It is a gait without ease or grace of movement.

The trotting horse lifts his knee very high when going fast at the trot and also flexes well his hocks.

Pacing is the gait in which the feet on the same side of the body move forward in unison. It is not in demand as is the trotting gait, but faster records are made by pacing horses than are made by trotting horses.
The American Saddle Horse

Origin—The American Saddle horse originated in Kentucky about 1850, but it was not until 1892 that the American Saddle Horse Breeders' Association was formed.

Color—The American Saddle horses are dun, gray, roan, bay, black and chestnut. Bay and chestnut are the colors most frequently seen. Like the other breeds of light horses, the saddle horses are going to the chestnut color.

Size—The Saddle horse varies from 15 hands to 16 hands in height, and in weight, from 900 to 1,150 pounds. The standard in height is 15.3 hands, and in weight 1,050 pounds.

Conformation—The most perfect specimen of the breeder's art is to be seen in the Saddle horse at his best. The head of this horse is neat and well set on a neck gracefully arched. The top line is short and the under line long. The ribs are well sprung and the coupling short. The croup is level and the tail carried in water-spout fashion. The bone is small but very strong. The tendons are prominent. The pasterns are large with the right slope to give elasticity of movement. The conformation is ideal for strength, speed and beauty.

Action—When seen at his best the saddle horse has an action unique for its gracefulness and ease. The hock is flexed and the knee folds gracefully when he goes at the trot. The three-gaited saddle horse has the gaits: flat-footed walk, trot and canter. The five-gaited horse has, in addition to the three mentioned, the rack and the running walk or, in lieu of the running walk, a slow pace may be allowed.

Figure 42, American Saddle Horse
Carriage Horses

There are four breeds of carriage horses, but aside from the Hackney few are bred in America.

The Carriage horse is a large, rangy, upstanding animal, able to go rapidly at the trot. He is larger than the light breeds but not so heavy nor so sluggish as the draft horse.

Some families of the Hackney are small and compact enough for show purposes and are exhibited under the saddle or in fine harness. The prominent feature which they display is the flashy action. Often the fold of the knee is so perfect it is lifted to the body as they go at the trot.

### Market Classes of Mules

<table>
<thead>
<tr>
<th>Type</th>
<th>Height</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mining mules</td>
<td>13 to 15</td>
<td>800 to 1100 lbs</td>
</tr>
<tr>
<td>Cotton mules</td>
<td>14 to 15 1/2</td>
<td>850 to 1100 lbs</td>
</tr>
<tr>
<td>Sugar mules</td>
<td>15 1/2 to 17</td>
<td>1000 to 1500 lbs</td>
</tr>
<tr>
<td>Draft mules</td>
<td>16 to 17</td>
<td>1200 to 1650 lbs</td>
</tr>
<tr>
<td>Farm mules</td>
<td>15 to 16</td>
<td>1000 to 1250 lbs</td>
</tr>
</tbody>
</table>

**Mining Mules** are used in mines to haul coal or other heavy minerals to the shafts. Machinery is rapidly replacing them and the indications are that no mules will be required in mines in the near future. The mining mule is a blocky type, with short legs and a heavy, compact body.

**Cotton Mules** are used on the cotton plantations of the South and are a light type. There is no set size or type for the cotton farm. Almost any mule will be used if he can do the work and stand the treatment he gets in the hot climate. The essential task of a cotton mule is to cultivate growing cotton. The mule is usually worked by a negro who feeds and cares for him. The mule best suited for

![Figure 43. Medium size cotton mule](image-url)
this work is one out of a light type of mare, and that has an abundance of energy combined with quick movement.

Sugar Mules are used on the large plantations of the South devoted to the production of sugar cane. This work demands a large, heavy, well-finished animal, one that can stand excessive stress and strain. Usually mules selected for this work are sixteen to seventeen hands in height and weigh from 1,200 to 1,400 pounds.

Draft Mules are used for the heaviest work in cities or lumber camps or wherever weight and dependability in the collar are necessary. They do not differ essentially in type from cotton mules except that they may, in some cases, be even larger and have a more stylish appearance. The very largest mules are used for this class and ordinarily the more weight and the greater the style, the better.

In height they go from 16 to 17 hands and in weight up to 1,650 pounds.

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Figure 44, Front and rear and side view of draft mule

Figure 45, Farm mule
Judging Jacks

In judging Jack stock and in selecting young stock for breeding it is well to consider the size, style, finish and conformation possessed by the young animals. The one that will ultimately make the best mature animal should be selected, not the one that happens to be most mature in form at an early age. The points in detail for mature animals are as follows:

1. **Size**—Jacks and jennets must have plenty of scale. A jack should approximate 15.2 to 15.3 hands, and a jennet 15.1 to 15.2 hands. If the jack is well proportioned and deep in body, 16 hands is a satisfactory height, but tall jacks that lack depth of barrel will sire leggy mules. A sixteen-hand jack should approximate 30 inches in depth of chest, 34 inches in length of foreleg, and should weigh 1,000 to 1,150 pounds.

2. **Barrel**—The shape and size of the barrel are most important. Some jacks shrink perceptibly behind the shoulders and in front of the hips, and such should be relentlessly rejected. A good length of barrel is desirable. The hind flank should be as deep as the fore flank, each approaching 68 to 70 inches in circumference in a jack that is 15.3 hands tall. By all means, the rib should be well sprung. The best breeders abhor a flat, slim jack.

3. **Bone**—The third essential is a big, clean bone. The small, deer-like cannons are not wanted and have no place in the breed of American jack stock. The front cannon should measure from 8 ½ to 9 inches, half way down from knees to pastern, at the smallest part; and the tape should be drawn tight. The bone should be fluted and clean. Even a 15-hand jack should measure 8 ½ inches in bone. A 16-hand jack should have a ten-inch rear cannon, while a 15-hand jack should have one at least 9 inches in circumference.

4. **Feet**—The feet should be large, round and dense in texture. Jacks usually have durable, flinty feet, but often they are very contracted, and low at the heel. First-class jacks have large, deep feet with well developed frog and bar.

5. **Head and Ears**—It is customary to refer first of all to the head and ears of jack stock. We have preferred to mention the foregoing points first, because they are really more important, although we appreciate fully that an intelligent looking animal with a fine pair of ears is preferable to any other kind.

The face-lines should be straight or slightly Roman. The ears must approximate 33 inches from tip to tip and be carried alert. The poll between the ears should be narrow, approximately 3 inches in width. Nothing condemns a jack quicker than lop ears. The jack should have a strong jaw and heavily muscled neck, The ewe-neck is not permissible.

6. **Hindquarters**—Unfortunately, jacks are notoriously drooping at the rump, light in thighs and ragged about the hips. The best jacks of today show great improvement in these respects. Also, many jacks are crooked in the hocks; but breeders are rejecting all males and females from their herds that have this defect.

7. **Action**—Jacks and jennets should walk straight and true. The feet should be lifted clear of the ground at each step. Some jacks show considerable speed and flexion when trotting in the paddock. Good action is correlated with quality and proper conformation. A sluggish animal is greatly discriminated against.

8. **Style and Quality**—A jack that holds his ears and head erect and walks proudly commands the respect and admiration of experienced breeders, because they know that such an animal is vigorous, properly formed and that his nervous system is well balanced.

Quality is evidenced by fine, clean bone and silky hair. An animal of fine quality usually shows no evidence of jack sores or other derangements.
9. Color—The preferred color is black with white points. The under side of the barrel should be white, and the white should extend between the forelegs and between the thighs. The muzzle should be white also, and in fancy animals there is some white under the throttle and around the eyes. A brownish tinge will not prove a serious detriment, and a black barrel will not debar from the show ring, but a gray jack is at a serious disadvantage in the show ring.

References—Kentucky Extension Service Circular 96, "Fundamentals of Livestock Judging, a Study of Types and Breeds", Lexington, Kentucky.

“Judging Horses and Mules", Horse and Mule Association of America, Chicago, Illinois.

Breed Associations.

JUDGING HOGS

In judging hogs or any other type of livestock the judge should be familiar with the different classes that are judged under each breed. The classes are as follows:

1. Aged Boar, 2 years old and over
2. Senior Yearling Boar, 18 months old and under 24 months
3. Junior Yearling Boar, 12 months old and under 18 months
4. Senior Boar Pig, 5 months old and under 12 months
5. Junior Boar Pig, Under six months
6. Aged Sow, 2 years old and over
7. Senior Yearling Sow, 18 months old and under 24 months
8. Junior Yearling Sow, 12 months old and under 18 months
9. Senior Sow Pig, 6 months old and under 12 months
10. Junior Sow Pig, Under 6 months old

A successful hog grower should be able to judge hogs. To judge hogs requires a great deal of study and practice. The judge should be familiar with the different points of the hogs and how these points should look on an ideal type hog.

Figure 46, Points of the hog

Placing Card for Breeding Swine

<table>
<thead>
<tr>
<th>Contestant's Number</th>
<th>Class</th>
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</thead>
</table>

<table>
<thead>
<tr>
<th>PLACING ON COMPARATIVE POINTS</th>
<th>First</th>
<th>Second</th>
<th>Third</th>
<th>Fourth</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. General appearance, quality and condition: Size, form, smoothness, activity, breed, and sex characteristics</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Head, neck and shoulders: Face, ears, eyes, jowl, and blending of neck and shoulders</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Fore quarters (excluding shoulders): Chest, heart girth, forelegs, fore feet</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Middle: Back, loin, top, and underlines, sides</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Hind quarters: Rump, hams, hind legs, hind feet</td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

**TOTAL**

<table>
<thead>
<tr>
<th>(A) Average of the above grades</th>
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**FINAL PLACING**

<table>
<thead>
<tr>
<th></th>
<th>First</th>
<th>Second</th>
<th>Third</th>
<th>Fourth</th>
<th>Grade</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>(B) Final Placing Order</th>
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</thead>
</table>

**FINAL GRADE: \( A + B \div 2 \)**

There are a number of points that should be considered in judging a class of hogs. The examination of these points should determine the placing of the class on the points as outlined on the score card.

**Weight**

The lack of proper size for age, is a serious handicap to hogs intended for breeding. With practice in judging will come the ability to ascertain when a hog is sufficiently large for its age. Pigs four months old or older should make a daily gain of from ¾ pound to a pound, from birth. Fat hogs of good quality, weigh from 170 to 250 pounds, ordinarily bring the highest prices on the market.

**Form**

It is important that the hog have good form. This factor should be observed at a distance from the animal, because the outline and general proportions can be observed best from a distance of ten or fifteen feet. Judges often make their placings in this manner, after which they make detailed examinations of the animals to see whether their first impressions were correct. From in front note the width between the eyes, the smoothness of the shoulder, width and smoothness of back and loin, and straightness and length of front legs. Passing a little to the right note the smoothness and depth of sides, arch of back, and straightness and trimness of underline. A straight-edge applied to the side of the hog, touching the shoulder and the ham, should touch all along the side. Note also the depth of the shoulder and the ham and the length of legs. The common defects noted from the side are a heavy jowl, cut-up flanks, heavy underline, weak back, and drooping rump. From behind observe the symmetry of lines, depth and thickness of hams, and straightness of legs. The ham is one of the most important parts of the fat hog. A hog that stands with his hind legs close together is usually flat and thin in the ham.
The average hog on the Chicago market dresses 70 percent (head on) of carcass to liveweight. A hog of the ideal form if fat, should dress 85 percent. The fat hog is relatively lighter in offal or waste and yields a large proportion of the valuable cuts.

**Quality**

Good quality in the animal is indicated by fine hair, smooth and pliable skin, an even covering of flesh that is free from lumps and wrinkles, and by clean, straight, strong bone; also, the features will be refined, but not delicate. All these things are indicators of good quality of meat, good health, and general thriftiness. The most frequent faults in quality are coarse, heavy head and ears, coarse bone, coarse, curly hair, and wrinkly skin.

**Condition**

Condition is the degree of fatness. It is most important in determining the selling value of lard hogs. The fat covering should be deep and even, especially along the shoulder, back and loin. High finish guarantees a high dressing percentage and improves the keeping and shipping qualities of the meat when cured. Lack of condition and excessive paunchiness are characteristics of hogs that dress out poorly. The fat hog should be smooth in his covering.

The degree of fatness is indicated by a general plumpness and fullness of form, development of fat in jowl, belly line and hams, and thickness of covering over the shoulder, back, loin and sides. The hand can be used to a limited extent to determine the thickness and mellowness of covering.

**Comparative Judging**

All show-ring judging is now done by comparison; that is, the score card is not used.

Judging fat hogs is a matter of placing animals according to merit as shown by the four things which indicate dressing percentage and quality of meat, namely weight, form, quality and condition.

**Judging Breeding Hogs**

The animal used for breeding must in addition to the above mentioned points have a strong constitution, conform to breed type, be strong in feet and legs, and show femininity in the brood sow or masculinity in the boar.

**Constitution**

The chest of the breeding hog must be broad, full and extend well forward; likewise, the flanks should be full and well let down. These are indications of good constitution, and this, in turn, makes the animal more thrifty, vigorous, and resistant to diseases.

**Breed Type**

Representative animals of all the lard-type breeds possess the same general form, yet there are differences between the breeds, or variations within the type, that must not be overlooked. The breeding hogs must show all characteristics of the breed to which it belongs. These characteristics can be learned best by carefully studying typical animals of each breed.

**Other Important Points**

Other points of the breeding hog that must receive careful consideration in judging are, back, and loins, sides, hams and legs. These, of course, must be developed to conform to the type of the breed under consideration. The back should be long, strong, broad, evenly covered with flesh and well arched. The loins, sides and hams furnish the most valuable cuts of meat in the market hog and, therefore, must be well developed in the breeding hog. The legs should be of moderate length, square set and have clean, straight bone of good size and quality. The feet and legs should be of such a character that they will support any weight the hog may attain and yet not show the strain in any way.
Description of Points to be Considered in Judging

The points given below are those considered by judges when judging the show ring, when judging with a score card, and when making selections for the breeding herd.

Head and Face

Duroc-Jersey, Poland China, Chester White, and Spotted Poland China:
Qualifications: Short, good width between eyes, smooth, slightly dished, well tapered down to nose.
Objections: Coarse, narrow between eyes, face straight or decidedly dished.

Berkshire:
Qualifications: Face well dished, snout short and broad.
Objections: Snout long, face too straight.

Hampshire:
Qualifications: Medium length, rather narrow face, nearly straight, medium length.
Objections: Large, coarse, crooked nose or too much dished.

All breeds:
Qualifications: Clear, bright eyes, wide open.
Objections: Small, sight obstructed by wrinkles or fat.

Ears

Duroc-Jersey, Poland China, Spotted Poland China, Chester White:
Qualifications: Medium in size, moderately thin, set well apart, pointed outward and forward, dropped at tip.
Objections: Large or heavy, breaking close to head, obscuring sight, not under control, too rigid or erect.

Hampshire:
Qualifications: Medium length, thin, slightly inclined outward and forward.
Objections: Large, coarse, drooped and not under control.

Berkshire:
Qualifications: Medium size, set well apart, inclined forward, carried fairly erect.
Objections: Large, coarse, drooped.

Neck

Lard breeds:
Qualifications: Short, thick, deep, well set to shoulders, slightly arched. Sows neck not so thick as that of boar. Hampshire should not have neck so thick as other breeds.
Objections: Long, narrow, flat on top.

Jowl

Duroc-Jersey, Poland China, Chester White, Spotted Poland China, and Berkshire:
Qualifications: Broad and full, flesh not hanging too low; fullness carried to point of shoulders.
Objections: Too large, loose flabby, rough, thin, and wedging.

Hampshire:
Qualifications: Light, neat, firm, tapering from neck to point.
Objections: Large, broad, flabby, uneven.
Shoulders

Lard breeds:
Qualifications: Moderately broad, deep, full, smooth, in line with side, not extending above line of back.
Objections: Open, small, extending above line of back, rough, coarse, and shielded.

All breeds:
Qualifications: Deep, full, and wide, even with shoulders, sides extending down to line of belly.
Objections: Flat, low behind shoulders, tucked in back of forelegs.

Back and Loin

Lard breeds:
Qualifications: Strong, slightly arched, medium breadth, even and smooth from shoulder to ham, full at loin.
Objections: Back low or weak, narrow, uneven, too broad, and flat.

Sides and Ribs

Lard breeds:
Qualifications: Good length, deep, even, and full between shoulders and ham. Ribs well sprung at top and bottom. Sides coming well down to line of belly.
Objections: Sides flat, flabby, creased. Ribs not well sprung, lacking depth.

Belly and Flank

All breeds:
Qualifications: Straight on bottom, carried out full to line of sides. Flank full and let down to line of belly.
Objections: Narrow, tucked up, sagging and flabby.

Ham and Rump

Lard breeds:
Qualifications: Ham, good width full, long, smooth, and fleshed well down to the hocks. Rump, same width as back and slightly rounded from loin to root of tail.
Objections: Hams, narrow, rough, too high in crotch, flabby. Rump, steep, narrow.

Feet and Legs

All breeds:
Qualifications: Legs medium length, set well apart and squarely under body, straight, nicely tapering, well muscled, and of medium size. Feet short in pastern, strong, toes close together.
Objections: Legs extremely long or short, weak, crooked, coarse, close together. Toes long, weak, and spreading.

Tail

All breeds:
Qualifications: Set well up. Medium size, tapering from root to end, inclined to curl.
Objections: Extremely slim or heavy, too long or bobbed.

Coat

All breeds:
Qualifications: Fine, straight, smooth, fairly thick, covering body well except belly.
Objections: Bristles, swirls, coarse, curly, very thin.
Color

Duroc-Jersey and Tamworth:
Qualifications: Cherry or golden red without any mixtures.
Objections: Very dark or very light, black or white spots in hair or on body.

Poland China and Berkshire:
Qualifications: Black with white on feet, nose, tip of tail and occasional spots on body; may show tinge of bronze or copper color.
Objections: Numerous large, white spots on body, or white legs.

Hampshire:
Qualifications: Black with exception of white belt encircling body, including forelegs.
Objections: White high up on hind legs or extending more than one-fourth the length of body, or solid black.

Spotted Poland China:
Qualifications: Black with at least 20 percent of body white, which may be in large or small spots.
Objections: Not white enough on body to meet requirements.

Chester White and Yorkshire:
Qualifications: White (dark spots on skin are objectionable, but do not disqualify).
Objections: Any other color than white in hair.

Action and Style

All breeds:
Qualifications: Active, vigorous, graceful, gentle, and easily handled.
Objections: Awkward and wabbling, clumsy, sluggish.

Condition

All breeds:
Qualifications: Skin smooth and mellow, flesh, evenly distributed over entire body.
Objections: Too fat, skin diseased or harsh to touch, hair coarse and rough.

Disposition

All breeds:
Qualifications: Quiet, gentle, and easily handled.
Objections: Cross, restless, wild, or sluggish.

Symmetry

All breeds:
Qualifications: The adaptation of all points combined to make the desired type of model.


Description of Breeds of Swine

Duroc-Jersey

The Duroc-Jersey breed originated in the northeastern section of the United States. It was derived from mating strains of red hogs developed in sections of New York and New Jersey. Those in New Jersey were originally called Jersey Reds; those in New York are said to have been developed by a man who owned the noted stallion Duroc, and people in that vicinity called the red hogs which this man was breeding “Duroc” hogs. Several years after the independent breeding of Duroc and Jersey Reds, these hogs were intermingled in breeding with the
result that there was formed the breed known at the present time as Duroc-Jersey. This breed is red in color, without admixture of any other colors. The popular color is referred to as cherry red; some animals, however, are dark, while others are light. There is no recognizable difference in the feeding or other qualities among hogs of the different shade of color in this breed.

From its early history the Duroc-Jersey was noted for hardiness and prolificacy. It began to be popular in the United States at about the time Poland China breeders were producing the small type of hogs or so-called "hot bloods". This popularity had much to do with making the Duroc-Jersey breed as widespread as it is today. Animals of this breed had sufficient quality and hardiness to make them profitable to hog growers. In type they are similar to big type Poland Chinas. The older boars when in show condition do not as a rule acquire quite so much weight as those of the Poland China breed. The legs are of medium length, with good bone. The sows are prolific and are good milkers and mothers. Duroc-Jerseys are good grazers and are profitably adapted to following cattle in the feed lots.

Pigs of the most desirable type attain a weight of 200 pounds at 6 months of age and are capable of producing a greater weight at a profit if market conditions justify their being fed for a longer time. Boars are massive and have good length and depth with good backs. In show condition they may attain a weight of 1,000 pounds. In breeding condition an aged boar generally weighs from 650 pounds up.

Duroc-Jersey sows generally are upstanding, having good depth with good backs as well as good feet and legs. One seldom finds a sow of this breed cross or fretful. In show condition sows generally weigh from 600 to 700 pounds. In some instances a greater weight is reached.

The association for recording hogs of this breed is the United Duroc Record Association, Peoria, Illinois.

Poland China

The Poland China hog originated in Butler and Warren Counties, Ohio. This breed undoubtedly was derived from the crossing of several breeds. In the seventies two farmers—A. C. Moore, of Canton, Ohio, and D. M. Magie, of Oxford, Ohio, developed a widespread reputation for their hogs and advertised them extensively. Their hogs were known at that time, respectively, as the Moore hogs and the Magie hogs. From the Moore and Magie hogs was developed the breeds now known as the Poland China.

The early Poland China hog was a large, rugged, coarse-eared, heavy-bones prolific, spotted animal that attained a good market weight but was not of the easiest feeding type. During the last decade of the nineteenth century and the first decade of the twentieth century many Poland China breeders, especially those breeding for the show ring, followed what may be termed a fad in their breeding operations. The fashionable type was a short-legged, small, compact-bodied hog popularly known as the “hot blood.” It has six white points, namely, four white feet and a white splash on the end of the tail and at the point of the nose. The sows were neither prolific nor very good sucklers.

Figure 48, Poland China sow

During the last 30 years the type of Poland China hog has been changed materially. On only very few farms can one find any of the old hot-blood Poland Chinas. On a large number of farms, however, Poland Chinas of what may be termed the “medium type” are produced. Many breeds of Poland Chinas still produce the large type, but not the extremely large type, which was popular among some breeders shortly after the close of the World War.

The boars have big, heavy bone, are rugged, possess plenty of length and depth, and with it all have good quality. Mature boars of this type in show condition weigh from 850 to 1,000 pounds. Some animals show greater weights. In breeding condition aged boars should weigh from 650 pounds up and sows from 500 pounds up. The sows are prolific, good sucklers, and are capable of raising good-sized litter. They have plenty of length, are smooth, with good, full shoul-
ders and well-rounded hams. They are naturally active, take plenty of exercise, and are capable of producing strong litters at farrowing time. The color of the present-day Poland China generally is black. Many of them have white spots on different parts of the body.

The Poland China produces an excellent finished carcass at an early age. Hogs of this breed often weigh 200 pounds at 6 months of age.

There are three associations in the United States that register purebred Poland China hogs, namely, the American Poland China Record Association, Union Stock Yards, Chicago, Illinois; the Standard Poland China Record Association, Maryville, Missouri; and the National Poland China Record Association, Winchester, Indiana.


Hampshire

The Hampshire breed originated in the English county of the same name and was introduced into the United States during the first half of the last century. When the Hampshire hog first began to be popular in the United States it was often referred to as the Thin Ring hog and was classed as a bacon breed. It is now recognized as one of the lard breeds. Hampshires have made rapid progress in popularity during the last 20 to 25 years. Sows of the breed are prolific. The mothers are good sucklers and make good use of grass in pastures.

The most striking characteristics of the Hampshire is the white belt around its body, including the shoulders and front legs. The standard of perfection for Hampshire looks with disfavor upon white showing high on the hind legs and on belts greater than one-fourth the body length. Hampshire breeders sometimes discard excellent animals in their breeding operations because of imperfect belts or because they have white hind feet or legs.

The Hampshire in general appearance is smooth and has legs with medium-sized bones. Hampshire breeders are making efforts to increase the size of the bone and the strength of the feet and legs. The body is often not so broad as that

Figure 49, Hampshire Sow
of typical hogs of the other lard breeds, but it is deep and smooth and produces desirable sides for bacon. The jowls are light, the head is small and narrow, the snout rather straight and of medium length, the ears erect, the shoulders smooth and well set, and the hams deep but usually not especially thick. The flesh is of good quality. Animals of this breed sell readily on the open market.

The Hampshire possesses good growing and fattening qualities, and pigs may be brought to marketable weight at from 6 months old up. In show condition mature boars of the breed weigh from 600 to 850 pounds, some attaining a greater weight. Mature sows in show condition weigh from 500 to 700 pounds.

The record association for this breed is the Hampshire Swine Record Association, 915-917 Commercial Bank Building, Peoria, Illinois.


Chester White

The Chester White breed had its origin in Chester County, Pennsylvania. The large, coarse hogs found in the Eastern States, especially in Pennsylvania, early in the nineteenth century, were a mixture of the Yorkshire, Lincolnshire, and Cheshire hogs, all of which were of English origin. In Pennsylvania these hogs were crossed on smaller type hogs, but the most successful cross was by using an imported hog from Bedfordshire, England. This crossing was continuously improved up to 1848, when the breed reached such a degree of purity that it could be relied on to reproduce its desirable qualities. It was named "Chester County White", in 1848, but the word "County" was soon dropped and the present name became established.

The first record association for the breed was formed in 1884, and to it records all individuals of the breed trace. Later there were eight different record associations catering to the business of the breed, and as these lessened the unity of action among the breed's advocates the popularity that the breed had acquired during the latter half of the nineteenth century seemed to wane but in recent years it has regained its popularity.

Figure 50, Chester White Sow
The Chester White is a very prolific hog. It has a good disposition and easily adapts itself to its environment. It matures early, and, being a good grazer, a good feeder, and possessing good dressing qualities, has demonstrated its utility on many farms. From 1884 the uniformity of size for age of the Chester White has been commendable. The score-card type or the standard of excellence is very similar to the type of the other lard breeds of swine. Mature boars of this breed weigh from 600 to 900 pounds, some individuals showing a weight of 1,000 pounds. The sows weigh from 500 to 700 pounds.

The record associations for the breed are Chester White Swine Record Association, Rochester, Indiana; the O. I. C. Swine Breeders’ Association, Goshen, Indiana; and the Breeders Chester White Record Association, 603 Third Street, Des Moines, Iowa.


Berkshire

The Berkshire is one of the oldest of the improved breeds of swine. It was originated and developed in England and is still raised extensively in that country. Many animals of this breed have been imported into the United States and Canada from English herds. Mention is made of the Berkshire hogs in England and Scotland as early as 1789, large specimens being compared with those of other breeds.

Berkshire hogs are found in noted herds in the United States. They are of medium size, generally smooth and of good length and depth, having legs of medium length with fair size. In color this breed is similar to the Poland China, but has not so many white spots. The peculiarity of the Berkshire breed is the short, upturned nose. The face is usually dished and the ears are erect but inclined slightly forward. Berkshire hogs have good width of body, the back is broad and the ribs well sprung. The hams and shoulders are generally smooth and well fleshed. The meat of the Berkshire is generally smooth and well fleshed. The meat of the Berkshire is generally regarded as good in quality.

Figure 51, Berkshire Sow
Good Berkshire pigs can be fed to market weight at from 6 months of age up. Mature boars of this breed in good show condition usually weigh from 600 to 850 pounds. Some attain a heavier weight. Mature sows should weigh from 450 to 650 pounds.

The record association for this breed is the American Berkshire Association, 508½ East Monroe Street, Springfield, Illinois.


**JUDGING SHEEP**

The judging of sheep differs from that of other animals in that the hand must be used almost exclusively to determine the details of form and condition. Before the sheep is handled view it from the front to study the make-up of the head, the width of brisket and the length, straightness and placing of the front legs. From the side study the size, lines, low setness, length and style. From the rear note the width and evenness of body, development of hindquarters and set of legs.

Knowing the location of the parts of sheep is very important in judging.

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**Figure 52, Points of Sheep**

8. Ear
Placing Card for Breeding Sheep

<table>
<thead>
<tr>
<th>Contestant’s Number</th>
<th>Class</th>
</tr>
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</table>

**PLACING ON COMPARATIVE POINTS**

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<th>First</th>
<th>Second</th>
<th>Third</th>
<th>Fourth</th>
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<tbody>
<tr>
<td>1. General appearance: Size, form symmetry, breed, and sex characteristics</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Forequarters: Head, neck, shoulders, ribs, chest, fore legs</td>
<td></td>
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<tr>
<td>3. Hind quarters: Back, loin, rump, dock, twist, thighs, hind legs</td>
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<tr>
<td>4. Quality and condition: Refinement of features, bone and hair; color, pliability of skin; firmness, evenness of flesh</td>
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<tr>
<td>5. Fleece: Density, length, color, crimp, yolk, foreign material</td>
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**TOTAL**

(A) Average of the above grades

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<thead>
<tr>
<th>FINAL PLACING</th>
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<th>Second</th>
<th>Third</th>
<th>Fourth</th>
<th>Grade</th>
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</table>

(B) Final Placing Order

<table>
<thead>
<tr>
<th>FINAL GRADE:</th>
<th>A + B / 2 =</th>
</tr>
</thead>
</table>

**Handling**

The proper way to handle a sheep is to keep the fingers together and lay them flat on the animal, except when it is necessary to grasp the parts, as in feeling the leg of mutton. The sheep should not be pounded around nor should the fingers be stuck into the wool. The sheep may be handled, beginning either at the front or the rear. Figures 53, 54, 55, 56, 57, 58, 59 and 60, show the proper methods of going over the different parts.

Figure 53. The loin should be thick, with no prominence of the backbone
Age

Age may be estimated by the teeth. Sheep have eight permanent front teeth (nippers or incisors) in the lower jaw, but none in the upper. Permanent teeth are those which replace the baby or milk-teeth. The milk-teeth are narrow and white while the permanent teeth are larger and broader, widening out toward the top. The permanent teeth take the place of the temporary in regular order by pairs as the sheep grows older. The first pair, of middle teeth, replace the corresponding pair of milk-teeth when the sheep is about one-year old. The next pair (one on each side of the central pair) appear at two years, the third pair at three years, and the fourth pair at four years. At eight or nine years the teeth begin to fall out, and the sheep is called “broken mouthed.” To observe the teeth, hold the sheep with one hand under the jaw and press down the lower lip with the thumb and forefinger.

Weight

The most desirable fat lamb weighs about 80 pounds. Cuts from a lamb of this size are most popular with the consumer. About 90 percent of all sheep marketed are lambs. Show lambs usually weigh more than market lambs because they are older and fatter. Yearling wethers for slaughter weigh about 100 pounds. Yearling show wethers weigh 125 to 200 pounds, depending on the breed.

Body Conformation

The mutton sheep should be low set, blocky, compact, smooth and symmetrical in build. A short, broad, squarely built head, wide between the eyes and ears, usually indicates a thick, blocky body form. The neck should be short, blending smoothly into the head and into the shoulders. The shoulders should be compact, closely knit on top, and well covered with flesh. The heart girth should be full, the back strong and wide with a full, wide, deep spring of rib, thus giving a capacious chest and middle. The loin should be wide and thick. The rump should be long, wide and level, letting down into a deep, plump, full leg of mutton. The legs should be straight and strong.
Figure 55. A full heart girth and a thick chest gives fullness and smoothness of form

Condition

Condition is thickness of fleshing. It is indicated by the thickness of the dock and thickness of fleshing over the back, loin, ribs and shoulders. To determine the thickness of fleshing the sheep must be felt or "handled" with the hands. In the ideal fat sheep the flesh is firm and the back is well covered with flesh. The flesh should extend well down over the sides without softness.

There are five reasons why the butcher demands fat animals: (1) Other things being equal, the fat animal will dress a higher proportion of edible meat

Figure 56. The loin should be wide and thick
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to offal than will a half fat animal; (2) fat adds to the appearance of the meat; (3) fat carcasses lose less in weight when cooling out in the refrigerator and in cooking; (4) the keeping qualities of the fat carcass excell those of the thin carcass; (5) a considerable amount of fat distributed through the lean makes the meat more tender, more juicy, and of a better flavor.

Quality

Quality is indicated by a neat, well-turned head and ear; by fine, dense bone of medium size; by soft, silky hair on the face and legs and by mellow skin and a smooth, even covering of flesh. Quality is important because the sheep possessing quality usually grows and fattens on less feed and will dress out with less waste than will a coarse sheep. The pelt, which is the skin with the wool on, should be light. The quality of the flesh should be determined when the sheep is examined for condition.

Wool

Quality of wool is determined by its length, density and evenness of covering over the body. A fleece of high quality should be fine, pure and soft, with a close, regular crimp, and should be of uniform diameter of fiber all over. The shortest fleeces usually show the most quality. By crimp is meant the wave in the fiber.

A fleece in good condition is clean and free from harshness and foreign matter, such as dirt, burrs and chaff. Too much yolk or grease is not desirable, but enough should be present to give the fleece a soft texture and a bright luster.

Undesirable Features

(a) Too great weight is associated with coarseness. The cuts are too large for the retail trade. (b) A flat-ribbed, narrow-chested, drooping rumped, upstanding individual with peaked hindquarters carried a large amount of waste in proportion to the valuable cuts. Openness at the top of the shoulder, roughness and angularity invariably go with bareness of shoulder, back and loin, a thin leg of mutton and an excess of bone. Narrow shoulders and long, crooked legs indicate low vitality and poor fleshing qualities. (c) A long narrow head with a pinched muzzle indicates weakness of constitution. A thin neck and narrow head

Figure 57, A deep twist is desirable
go with a slender body. (d) Weak, short, thin loins are found in angular, upstanding individuals, lacking depth of flesh. (e) A drooping rump, thin-fleshed legs and a high, undeveloped twist greatly reduce the value of the carcass. The hind legs and rump of a lamb represent 40 percent of the value of the carcass to the butcher. (f) Coarseness; a thick, wrinkly skin covered with coarse wool; a large open frame with heavy bone and rough joints, and an uneven distribution of flesh add to the waste and detract from the value of the animal.

Comparative Judging

This is the placing or rating of two or more animals according to merit. It is a matter of comparison. Each animal must be inspected, separately, each of the main points of every animal compared and balanced separately and collectively, until the animal is selected which most nearly fulfills all the requirements of the class. This animal is the first prize winner, the next best is the second prize winner, and so on.

Breeding Sheep

The animal used for breeding must have all the excellence of size, form, quality and condition of the fat sheep and must be strong in constitution, conform to the breed type and show pronounced sex characteristics. The fleece is of more importance in breeding sheep than in fat sheep.

Figure 58, The size of the leg of mutton is determined by grasping it well up with both hands

Constitution

A sheep with a strong constitution has the general appearance of being very vigorous and thrifty. A large nostril, strong muzzle, full chest, wide spring of rib, wide chest floor, and a capacious body are indicators of a strong constitution.

Breed Type

The points usually considered under breed type are color, size, fleece and skin. For example, a Shropshire with a speckled face of a Hampshire that is small like a Southdown is said to be “off type.” Breed types is one of the first
Figure 59. The fleece is examined by parting it on the shoulder, on the side and on the thigh.

things to be considered in judging purebred breeding sheep. A sheep that has an excellent body form but is lacking in breed type cannot be placed first in its class.

The Ewe should be:

(a) Well-grown and rugged; (b) feminine; (c) straight in body lines and showing capacity for feed; (d) sound in mouth and udder; (e) covered with a dense, heavy fleece; (f) from one to four years old; (g) similar to the other ewes in size and breeding; (h) a good milk producer.

Figure 60. A deep, wide chest indicates a strong constitution
The Ram should be:

(a) Strong, active, vigorous and massive, with bold features; (b) from one to three years old; (c) a purebred of pronounced breed and type characteristics; (d) symmetrical and evenly developed; (e) covered with firm flesh, and a dense fleece; (f) strong and straight in his legs.

Breeds of Sheep

The more common breeds of sheep may be classified according to type as follows:

Mutton

Southdown, Shropshire, Hampshire, Oxford,

Medium Wool

Cheviot, Dorset, Suffolk,

Tunis, Corriedale,

Ryeland, Columbia

Sheep

Lincoln

Leicester

Wool

Cotswold

Romney

Long Wool

Fine Wool

American and

Delaine Merino,

Rambouillet

Two General Types

The classification divides the breeds of sheep into two general types, according to the purposes for which they are bred. The mutton type is bred primarily for mutton, while the fleece is given only secondary consideration; the wool type is bred primarily for wool, with mutton as a secondary consideration. Consequently, there is a wide difference in the make-up of the two types. The mutton type is square, blocky, and meaty in build, while the wool type is more angular.

In presenting information on judging sheep the Southdown, Shropshire, and Hampshire are the more important breeds, with some interest being manifest in the Corriedale for Mississippi. This being true, only these breeds are discussed.
Southdown

Origin—The Southdown is one of the oldest of the improved breeds of sheep. Native sheep of Sussex County, England, were bred up and developed by the process of selection.

Color—The hair on the face and legs is mouse brown.

Size—Rams, 200 pounds, Ewes, 145 pounds.

Fleece—Length 2 inches. Weight 5 to 8 pounds.

Strong Points—The Southdown is the most ideal in form of the breeds of sheep. It ranks among the first in quality of mutton. It is an excellent fattener, a fair grazer and only fairly prolific. For crossing and grading the rams are extremely propotent.

Criticisms—The Southdown has been criticized for its small size and light fleece. Horns or evidence of their presence, a dark poll, blue skin and speckled face, ears and legs are disqualifications.

Figure 61, Southdown ewe
Shropshire

Origin—Shropshire and Staffordshire, in central western England. Native sheep of these two counties were improved by the use of Southdown, Leicester and Cotswold rams.

Color—The hair on the face and legs is black.

Size—Rams, 225 pounds, ewes 160 pounds.

Fleece—Length 2½ to 3 inches. Weight 8 to 10 pounds.

Strong Points—The Shropshire has been called the “rent-paying sheep” because it combines an excellent mutton form with a heavy fleece of good quality. It is very prolific, is a good fattener, and a fair grazing sheep. It is well adapted to corn-belt conditions.

Criticisms—Dark wool on the head and face are objectionable. Black fibers in the fleece, blue spots on the skin, a rusty brown or faded brown color of face, spotted face, and horns or evidence of their presence, are disqualifications.
Hampshire

**Origin**—Native sheep of Wiltshire and Hampshire, England, were improved by the use of Southdown rams.

**Color**—The hair on the face and legs is black.

**Size**—Rams, 275 pounds. Ewes, 200 pounds.

**Fleece**—Length, 2½ inches. Weight 8 pounds.

**Strong Points**—The Hampshire is noted for its large size and early maturi-
ty. It thrives exceedingly well on forage crops. Lambs eight and nine months old can be made to weigh 200 pounds. The mutton is the finest quality of any of the larger breeds. Hampshire ewes are very prolific.

**Criticisms**—Hampshire are inclined to fall off behind the shoulders. Dark fibers in the fleece and a dark tinge to the head wool are quite common and are very objectionable. A bar of light brown or gray hair across the face just below the wool cap, is unfavorably regarded in rams. Horns or evidence of their presence amount to a disqualification.

Corriedale

The Corriedale is a new breed which has developed in New Zealand since 1880. Lincoln, Leicester and Romney rams were bred to Merino ewes, and after close culling toward the type desired the half-breeds were mated together. This resulted in a breed called the Corriedale.

The Corriedale is a combined wool and mutton sheep. The face, ears and legs are white. The fleeces average 10 to 12 pounds in weight and 3 inches or more in length.

PART III

DAIRY CATTLE JUDGING AND SELECTION

The subject of dairy cattle judging constitutes one of the major divisions of successful dairy farming and is closely related to the other divisions, feeding and breeding. The real students of dairy judging must be practical and keen sighted to attain success, and must have clearly in mind the ideal dairy type animal necessary for high milk production. Not until the students have mastered all these details of dairy form, as well as the different breed characteristics, can he expect to be classed as a dependable judge of dairy cattle.

Classes of Dairy Cattle

<table>
<thead>
<tr>
<th>Class</th>
<th>Age Description</th>
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<tbody>
<tr>
<td>Junior Bull Calf</td>
<td>4 months and under 1 year</td>
</tr>
<tr>
<td>Senior Bull Calf</td>
<td>1 year and under 18 months</td>
</tr>
<tr>
<td>Junior Bull</td>
<td>18 months and under 2 years</td>
</tr>
<tr>
<td>Bull</td>
<td>2 years and under 3</td>
</tr>
<tr>
<td>Bull</td>
<td>3 years and under 4</td>
</tr>
<tr>
<td>Bull</td>
<td>4 years or over</td>
</tr>
<tr>
<td>Cow</td>
<td>5 years or over</td>
</tr>
<tr>
<td>Cow</td>
<td>4 years and under 5</td>
</tr>
<tr>
<td>Cow</td>
<td>3 years and under 4</td>
</tr>
<tr>
<td>Senior Heifer</td>
<td>2 years and under 3</td>
</tr>
<tr>
<td>Junior Heifer</td>
<td>18 months and under 2 years, not in milk (Heifers calving after 24 months actual age may enter as 2-year-olds)</td>
</tr>
<tr>
<td>Senior Heifer Calf</td>
<td>Heifer not in milk, 1 year and under 18 months</td>
</tr>
<tr>
<td>Junior Heifer Calf</td>
<td>4 months and under 1 year</td>
</tr>
</tbody>
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Dairy Type

A proficient judge of dairy cattle must thoroughly understand what is meant by dairy type and also have a clear knowledge of the relative values of the different parts of the animal, as set forth on the score card for each breed.

Figure 64, Desirable type
To produce large quantities of milk the cow should have a large digestive system; a strong constitution; a highly developed mammary system; and be outstanding in dairy temperament. These essentials of body form together with proper breed characteristics, size, quality, and general appearance make up what is known as dairy type.

Figures 64 and 65 illustrate desirable and undesirable dairy type.

To judge dairy cattle successfully it is very essential that the judge know the different parts of the cow and their location on the animal together with the breed characteristics of the different breeds. Below is a diagram showing the different parts of the cow and their location. This diagram is followed by the score card used in judging dairy cattle.

Figure 66, Diagram showing parts of the cow
9. Throat

Placing Card for Dairy Cattle

Contestant's Number ____________________________ Class ____________________________

<table>
<thead>
<tr>
<th>PLACING ON COMPARATIVE POINTS</th>
<th>First</th>
<th>Second</th>
<th>Third</th>
<th>Fourth</th>
<th>Grade</th>
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</thead>
<tbody>
<tr>
<td>1. Body capacity and size; Depth, width and length of body; full size for breed</td>
<td></td>
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<tr>
<td>2. Dairy temperament; Tenderness to lean-ness, angularity; absence of beefiness at neck; withers, brisket, back and thigh</td>
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<tr>
<td>3. Mammary system: Size, shape, attachment and soundness of udder; size and placement of teats</td>
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<tr>
<td>4. Health and vigor; Absence of indications of frailty; delicacy, weakness of constitution, sickness and lack of fertility</td>
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TOTAL

(A) Average of the above grades

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<tr>
<th>FINAL PLACING</th>
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(B) Final Placing Order

FINAL GRADE: \[ A + B \div 2 \]

Body Capacity

Body capacity is indicated by a large barrel. If a cow is to be able to consume large quantities of roughage and grain, she must have room to store it. To be able to do this the barrel must be long, deep and wide. Length of barrel is determined by the distance from the shoulders to the hips. This distance should be great and the ribs should be broad, flat and spaced well apart. Ordinarily, one should be able to insert three fingers between the last two rear ribs. Depth of barrel is measured from the top of the back to the bottom of the stomach. It is very essential that dairy cows be deep through the barrel and never shallow in this region. The width of the barrel is determined by the spring of the ribs. The ribs should be well sprung on both the top and sides of the barrel. Such a large barrel must be held up by a wide and strongly muscled loin and back. The back of a dairy cow from withers to hips should always be straight.

The flanks should be deep and full; fullness of flanks indicates high development of the digestive system. The cow with a shallow drawn flank is usually a light feeder.
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Figure 67. A contrast in body capacity

Since there is a direct relation between feeding capacity and milk yield, it is essential that dairy cows have large feeding capacity. The cow in figure 67-A (above) has excellent capacity, as shown by great depth, length and width of barrel. The lower cow in Figure 67-B lacks depth and width of body.

Dairy Temperament

Dairy temperament is absolutely essential in a dairy cow; but is a term which confuses many students. The dairy animal must not only have the essentials of body form already discussed, but also must possess the tendency or ability to utilize the body mechanism to produce large quantities of milk. This tendency to produce milk is called dairy temperament and is indicated in many ways as follows:
(1) Forehead: Broad between the eyes; dishing. The wide forehead is associated with strong constitution. Too great width at poll is associated with coarseness. Dish of forehead indicates breeding, quality, and dairy temperament.

(2) Face: Of medium length; clean cut; feminine; the bridge of the nose straight. The face may be too short, or it may be too long. The short blocky face indicates tendency to beefiness and is associated with too short bodied animals. Extreme length or narrowness indicates generally too rangy build, weak constitution and slow developing qualities. The face should be distinctively feminine.

(3) Muzzle: Broad with strong lips; nostrils large and open; jaws strong. Good feeding tendency and constitution are indicated by a broad muzzle and large open nostrils. The lines from face into muzzle should be flaring.

(4) Ears: Of medium size; of fine texture; well carried. The thin ear carried alert indicates quality. The lop or careless carried ear indicates a lack of vitality.

(5) Eyes: Large; full, mild, bright. Bright, full eyes indicate health and vigor. The setting should be prominent but not too bulging.

(6) Horns: Small, tapering finely toward the tips, set moderately narrow at base, inclining forward; well curved inward, not to be discounted if neatly dehorned. The beauty of the head and general appearance of quality can be made or marred by the size and shape of the horn. A firm, clean, healthy appearing horn usually denotes the same characteristics of the bones.

(7) Neck: Long, fine and clean at junction with the head, evenly and smoothly joined to shoulders. Length of neck is associated with length of body. The short neck accompanies a tendency to beefiness.

(8) Shoulder. Slightly lower than the hips; moderately broad and full at sides running to a wedge at the top blending smoothly into the neck and the middle. The coarse, flat topped shoulder is associated with lack of milking qualities. Preceding first lactation period, heifers in good condition appear heavy over shoulder, reducing to proper width after freshening. Too fine shoulder indicates lack of ruggedness.
(9) Crops: Full, level with the shoulders. Fullness of crops accompanies good spring of rib and well held up body. Depression back of shoulder is associated with a weak back and lack of constitution.

(10) Chine: Straight, strong, broadly developed, with open vertebrae. Widely spaced and prominent spinal processes indicate dairy temperament.

(11) Dairy temperament is indicated by a natural leaness throughout the body of the well fed dairy cow.

Therefore the dairy cow should show throughout the body a freedom from patches of fat or fat forming tendencies, and these, together with a highly developed mammary system in the dairy cow indicate dairy temperament.

Mammary Development

Mammary development includes the udder, teats, and milk veins and is a most vital factor in selecting a dairy cow. To secrete large amounts of milk, the cow should have a large udder, but above all the udder must possess softness or quality. There are two kinds of tissue found in the udder. One is a rather hard fibrous tissue, the only purpose of which is to give shape to the udder. The other is the soft tissue which contains the all important milk secreting cells. Conse-
quently, a good dairy cow's udder should contain as little as possible of the hard tissue and as much as possible of the soft milk secreting tissue. Thus the udder should be soft, elastic, pliable and free from hard lumps. The udder should be capacious, strongly attached to the body, and should extend well up behind and far forward. The quarters should be even in size, smoothly joined at sides and only slightly grooved between the right and left half. The udder should be deep but never pendulous. The floor of the udder should be level and not cut up between teats.

Teats: Well formed; plumb, of convenient size, properly placed. Rear and fore teats should be attached on the same level in proper place and even distance apart on each side of the udder. They should hang plumb and be of convenient size for milking.

Figure 75, Teats too close, legs not straight. An example of sickle hock.

Thighs: Wide, deep, straight behind, wide and moderately full in the outsides; twist well cut out and filled with development of udder; with escutcheon well defined. To afford strength the muscular development on the thigh should be full and deep on the outer surface. The twist or inner thigh should be well cut out, affording room for a wide udder attachment.
Mammary veins: Large, tortuous, entering large orifices or double extension; with additional developments, such as branches and connections entering numerous orifices. The mammary veins found on both sides of the abodmen are an indication of milk producing tendency. They are the external part of the veining system which carries the blood from the udder back to the heart and lungs. A well developed network of these veins denotes that a large quantity of blood has supplied the milk secreting glands. The mammary veining system develops in varying degrees with each lactation period. The extension of veins on the chest, double branching and a center vein are degrees of development generally found only in the mature animal, but may be indicated in rudimentary form in the case of a heifer. A network of veins on the surface of the udder indicates a high development of the circulatory system in the udder.

Constitution

A strong constitution is indicated by great chest or forequarters development, which demands good depth from top to bottom of the body just back of forelegs. The chest should be deep, wide; well filled and smooth in the brisket; broad between the forearms; full in the foreflanks. Constitution is primarily dependent on breadth between and just back of forelegs; as the organs or respiration and circulation are located in the chest cavity.

The heartgirth should be large and the distance between forelegs should be wide. Thus the foreribs should be well sprung as well as deep. The nostrils should be large and open. The wind pipe should be large. The crops should be well de-
veloped. Cows possessing these essentials of good constitutions are able to withstand the strain of heavy milk production over a long period of years and still remain in good health.

In figure 79 strong and weak constitutions are illustrated.

Figure 79. Comparison of constitution.

In order to maintain high production year after year, a dairy cow must possess rugged constitution and physical stability and substance. The two cows shown above are exceptionally good producers. The cow in figure 79-A, has constitution to withstand many years of production, while physical instability may limit the productive years of the cow in figure 79-B.
Hindquarters

Loin and hips: Broad, level or nearly level between the hipbones; level and strong laterally; spreading from chine broadly and nearly level; hipbones fairly prominent. The low, narrow loin is associated with the weak back. A broad, level loin strengthens the back and supports the reproductive and milk producing organs. A broad prominent hip indicates strong feminine characteristics.

Rump: Long, broad with roomy pelvis; nearly level laterally; full above the thurls; carried out straight to tail head. The underline of the udder tends to parallel the line of the rump. The length of the rump largely determines the length of the udder. The broad level rump is associated with a broad level udder.

Pinbones: Wide between; nearly level with hips. Narrowness at pinbones makes parturition more difficult and tends to narrowness of rear attachment of udder.

Thurls: High, broad through. High and broad thurls provide roominess in the pelvic region.

Tail head and tail: Strong at base without coarseness; the setting well back; tail long, tapering finely to a full switch. Coarseness at tail indicates lack of quality throughout.

One of the serious faults found in cows with sloping rumps is that, as a rule, the udder tilts forward at an angle similar to that of the slope of the rump. In cows of this type the rear quarters of the udder frequently become overde-
veloped, causing the front attachment to break away from the body and the udder to become pendulous. A level rump and an udder with a level floor are shown in figure 82 while figure 83-A and 83-B illustrate a badly sloping rump and an udder suspended at the same angle.

Figure 83, A. Note crosses on hip bones and thurl. Compare with true type. Sloping rump, poor udder. Figure 83, B. Rear view of sloping rump.
Size

Under-size is one of the chief defects found among Southern dairy cattle. Other things being equal the larger the animal, the better. Production and size usually go together. However, quality and size are not so closely correlated and in the selection of dairy cattle, one of these factors should not be gained at the expense of the other. Rather a happy medium between the two is desired, that is, good size and plenty of quality along with it. Each breed specifies on the score card desirable weights for the animals of their respective breeds.

Quality

All dairy cattle should possess quality. The hide should be thin, loose and pliable, with good secretion. The bones should be medium sized and not coarse.
A fine, clean bone is always associated with general quality and vigor. A clean cut head and general refinement throughout the animal are other indications of quality.

General Appearance

In addition to the points already discussed, a good dairy cow should present a pleasing general appearance. By this is meant, she should be symmetrical, or with all her parts properly developed and blended together to give the cow the ideal dairy type. Her total length must be proportional to her depth and width, and she must be alert and carry herself gracefully.

Judging Dairy Bulls

In judging dairy bulls, the points indicative of production in the cow such as constitution, capacity, dairy temperament, and breed characteristics, are just as important and should be considered in selecting the dairy bull.

The dairy bull, first of all, must be masculine in appearance. He must have bold appearance, the entire expression being one of vigor, resolution, and masculinity. Masculinity is further indicated by a broad, strong head, eyes full and bold, large, open nostrils, and broad muzzle. The neck should be of medium length, with full crest at maturity, and clean cut at the throat-latch with little or no excess dewlap. The shoulders should be strong and well developed but not coarse. These developments of the head and neck, which are so different from those of the cow, are all indicative of masculinity, which the dairy bull must possess.

Next, special emphasis should be given to constitution. The chest should be deep and wide, with great heartgirth development behind the shoulders, and full development of the crops.

The body of a dairy bull is very important. It should be deep, fairly long, and the ribs should be well sprung. The back should be straight, strong and open jointed, and possess a good spring of ribs. The hips should be moderately broad, and the rump long and level. The thighs should be relatively thin and incurving and the body should be free of any tendency toward beefiness. The rudimentary teats should be placed far apart and be free from the scrotum. The hide should be soft and pliable.

Finally, the bull should possess the breed characteristics, size, quality and color desired for his particular breed.

How to Examine a Class of Dairy Animals

The dairy animals should be lettered A, B, C, D, etc. This may be done by marking these letters on cardboard to hang on the animals or to hang on the attendants leading the animals in the show ring.

It is best to lead the animals in alphabetical order before the judges and to keep them in that order throughout the judging. In leading the animals, the attendant should hold the halter rein about six inches from the cow's head. He should walk beside the cow and not lag behind or walk in front of the cow. He should be on the side of the cow which is opposite from the judge.

The class of animals should be led in a ring about 30 feet in diameter, with the judge in the center of the circle. The animals should be led in one direction for 3 minutes and then in opposite direction for 3 minutes. This enables the judges to see both sides of the animals.

While the animals are being led around the ring, the judge should make careful observation of those exhibiting superior general appearance or dairy type. Individual points such as size, color, length and depth of body, straightness of back and rump, depth of chest, size and shape of udder and breed characteristics are also observed at this time, but they all must be viewed from the stand-
point of the whole animal rather than from that of the individual part. During this time the judge must keep in mind the ideal dairy type and be constantly comparing the animals in the ring to this mental picture of the ideal dairy cow.

Next the animals should be lined up a few feet apart, in alphabetical order, to give the judge an opportunity to examine the animals at close range. At this time comparisons are made of such points as to head, width of chest and barrel, width of rear udder, width of rump and pin-bones, and spring of ribs on back. The quality of hair and hide, the texture of the udder and the milk veins are carefully examined. These close inspections are made mainly to confirm the decisions made by the judge when the animals were observed from a distance. These examinations should be made quickly and accurately.

In many judging contests, handling the animals is often prohibited. Under such circumstances it is assumed that there are no defects in any of the animals not visible to the eye. Even when handling is permitted, the animals should only be handled when absolutely necessary to gain information. The judge should approach the animals in a quiet manner, always being gentle and never rough in the actual handling of the animals.

The Jersey Breed

Detailed Description

Jerseys have beautiful heads, very clean cut and breedy in appearance, broad, rather short, with considerable dish of face. Their heads are proportionately shorter and wider than those of other dairy breeds. The muzzle should be wide and the nostrils large and open. The ears should be of medium size, fine and carried alert. The eyes should be large, full, and rather prominent; those of the cow placid in expression; those of the bull bold, indicative of masculinity and vigor. The eyes of Jersey cattle are larger and more prominent than in other breeds. The horns of the cow should be rather small, fine, and incurving; those of the bull medium in size, rather short, strong, and less curving than in the cow. Amber colored or white horns with black tips are preferred. The neck should be of medium length and clean at the throat; refined and clean in the cow; clean, muscular, and with a full crest at maturity in the bull.

The shoulders of the cow should be light, wide through from point to point, but refined and thin at shoulder tops or withers; those of the bull full and strong, with well defined withers. The chest should be deep, fairly wide, and full, with good width between front legs and well filled out in forerib and foreflank. Too frequently the chest lacks proper width. The back should be straight and strong and in the cow the backbone should be prominent. The loin should be broad, strong and carried up in line with back and rump. Some dips or depression over the loin is not uncommon and this is very objectionable.

The barrel of the cow should be deep, wide, and large, the ribs being long and well arched. The barrel or middle of the bull should be moderately long, of good depth and breadth, with strong, rounded and well-sprung ribs. The hips of the cow should be prominent and wide; those of the bull smoother and of medium width compared with the cow. The rump should be long and level and in the cow should be wide throughout, including good width at the pin-bones. Jersey cows generally have good rumps, though desirable width is sometimes lacking. The rump of the bull need not show quite as much width as the rump of the cow, but should be proportionate to size and body. The tail should be refined and long, with good switch, and tail setting should not be coarse nor high, but neat and straight in line with line of rump. In Jersey cattle the rump, thighs and all other parts should be free from undesirable fleshiness, being clean cut and trim throughout. The legs should be straight, refined in bone and joints, strong, and
of medium length. Quality and refinement in the legs should be well marked and care should be taken to avoid sickled or bent hind legs. The hide should be loose, mellow, and rather fine.

![Figure 85, Jersey cow](image)

The scale of points adopted by the American Jersey Cattle Club allots 24 points out of 100 to the udder, 8 points to teats, and 4 points to the milk veins, a total of 36 points for the entire mammary system. The scale of points specifies that the udder should be "large, flexible, and not fleshy; broad, level, not cut between teats; foreudder full and well rounded, running well forward of front teats and firmly attached; rear udder well rounded, well out and up behind, wide, and firmly attached".

The teats of the Jersey should be of medium size, uniform in size, well separated, and squarely placed. The milk veins should be large, long and tortorous, entering large and numerous milk wells. The rudimentary teats of the bull should be well defined and prominent.

**Color**

The color of Jersey varies, many being of solid color. White markings are true Jersey characteristics and are no indication of admixture of other blood. Soft tints of fawn or cream color are common, though different shades of mouse color, gray, red, and brown are frequently found and some are mulberry black. They may be solid color of any of these shades, or spotted with white. The muzzle, tongue and switch may be black or white, or mixture of black and white.

**Size**

The Jersey ranges from small to medium in size, it is smaller than the Holstein, Guernsey and Ayrshire breeds. The Jersey scale of points specifies a weight of 1300 to 1600 pounds for bulls and 900 to 1100 pounds for cows.

**Quality**

Jersey cattle are noted for their refinement and quality. No breed of dairy cattle average as high a degree of quality in head, horn, bone, skin, hair and udder as the Jersey. In some instances refinement is carried to the extreme and this should be avoided.
The Guernsey Breed

Detailed Description

The head of the Guernsey should be of medium size, moderately long, clean cut, with a lean and moderately dished face, bridge of nose straight, broad muzzle, open nostrils, strong jaws, full bright eyes, broad forehead, and horns, that are small at the base, medium in length, inclining forward, not too spreading and yellow in color.

The head of the Guernsey represents a sort of medium between the Jersey and Holstein in length, width and dish. In both sexes the neck should be long, clean at throat, and should blend into shoulders smoothly; in the cow it should be refined and thin, and in the bull it should be masculine with moderately strong crest. Bulls usually show some degree of dewlap, but excessive dewlap is objectionable.

The shoulders should be smooth, with the shoulder blades snugly attached to the underlying ribs. The tops of the shoulders or withers should be refined and sharp in the cow, showing complete absence of any fleshy tendency; bulls and dry heifers may be somewhat less sharp, but should be refined in this region. The chest should be wide and deep with the least possible depression back of the shoulders or in the crops. Forelegs should be wide apart so that ample width of chest is indicated. A straight, strong back and loin is essential for strength as well as beauty. The barrel should be deep and long with well sprung ribs. While a well sprung rib is desired it is not wanted at expense of body depth. As a rule the middle of the Guernsey is lengthy, but is not always large enough in circumference. The hips of the cow should be wide and prominent, those of the bull fairly wide and not too prominent. The rump should be long, wide and level, and wide at pin-bones. The tail should be long and tapering, with full switch, and tail setting neat, free from coarseness, and straight in line of rump. For many years short sloping rumps were found in Guernsey cattle; but breeders have made much improvement in this respect during late years and faulty rumps are less common. The thighs of Guernsey cattle should be thin and wide apart as viewed from behind. The legs should be of medium length, clean and rather refined in bone and joints, and legs should be straight, strong and squarely placed. The hide should be loose and pliable, medium fine, with an oily feeling, and hair should be soft and fine.

The scale of points allots 30 points to the mammary system.

The score-card describes the ideal Guernsey udder as follows: “Uniformly fine in texture, free from meatiness, covered with pliable velvety skin; veins prominent; attachment to body strong, long, and wide, extending well forward, teats of even, convenient size, cylindrical in shape, well apart and squarely placed, plumb. The quality of the udder is apparent in the elasticity, fineness, and abundance of skin in the rear attachment. In the case of heifers, emphasis should be placed on the proper placement and size of teats. A strong attachment of the udder to the body is necessary to assure the carrying of the udder close to the body”. The score-card specified high rear udder attachment and that milk veins should be long, tortorous, prominent, branching, with large numerous wells. The rudimentary teats of the bull should be wide apart, squarely placed and of even size. The rudimentary milk veins should be well defined and prominent.

Color

The color of the Guernsey should be some shade of fawn with white markings. Guernseys vary widely in color from the lightest shade of yellowish fawn to brownish or reddish fawn. While all these colors are accepted, the most desired color is the medium shade of fawn with white shield in forehead, white over shoulders and hips, white belly, white legs, white switch and with buff nose. Black
muzzles are objectionable. The skin should be a deep yellow inclining towards orange in color, especially discernable inside the ear, at the end of the bone of the tail, around eyes and nose, on the udder and teats and at the base of the horns. Guernseys and Jerseys excel other breeds in ability to absorb and transfer to their butterfat a large proportion of the Carotene in feed which is responsible for this yellow color. The Guernsey breed has the highest color of skin secretion and the greatest natural color of butter of any of the breeds.

![Guernsey cow](image)

**Figure 86. Guernsey cow**

**Size**

The Guernsey ranks between the Holstein and Jersey in size. Mature Guernsey bulls vary in weight from 1200 to 2200 pounds but a weight of 1700 pounds is preferred by most breeders. The cows vary in weight from 800 to 1400 pounds with 1100 pounds being an acceptable weight for a cow of milking condition.

**Quality**

Although the Guernseys are not equal to the Jerseys in quality they have very mellow, thin, elastic, oily hides, moderately fine hair, and richly colored skin secretions. In comparison to their size, Guernseys may be described as medium in quality of head, horn, and bone.

**The Holstein-Friesian Breed**

**Detailed Description**

The head is usually medium size, lean, somewhat long of face, with a straight nose and a broad muzzle and strong jaws. The forehead should be broad and slightly dished between the eyes, nostrils large and open. The ears should be of medium size, of fine texture and carried alert. The eyes should be large, full, mild and bright. The horns, in the cow, should be small and short, tapering finely towards the tips, inclining forward and being well curved inward. Those of the bull should also be short, but heavier than in the cow, and rather straight. The neck should be long, and should be fine and clean at the injunction with the head. The neck should join the shoulders evenly and smoothly and in the mature bull should be well crested, strong and masculine.
The shoulders of the cow should be slightly lower than the hips, smooth and refined over tops. The shoulders of the bull should rise a trifle higher than the hips, should be of medium thickness, stronger, and heavier than in the cow, yet smooth and rounding over the tops. Care should be taken to avoid shoulders that are too heavy and prominent. The ribs should be well sprung. Good spring of ribs is one of the important requirements of approved Holstein-Friesian type. Particularly should the foreribs be well arched so as to fill out crops even with shoulders. The chest should be deep, wide between the front legs, and full in the foreflanks. The back should be straight and strong and should have width without beefiness. The loin should be broad, level and strong; and the hips wide and prominent, though not too prominent, especially in the bull. Probably no part of the Holstein has come in for closer scrutiny during late years than the rump. Too frequently, it has been short and sloping. It should be long and level, wide and free from beefy tendency. The pin-bones should be wide apart and the tail-setting should be straight in line with the rump, free from coarseness, and the tail long and tapering; finely to a full switch. The thighs should be wide, deep, with inside cut out so as to provide ample space for the udder. Too frequently the thighs are rather thick, with more beefiness than is desirable. The udder of the Holstein cow is frequently very large, but often inclined to be pendulant rather than firmly attached, and fore udder sometimes lacks proper extension forward.

The udder should be level, flexible, capacious, extending well forward extension of the milk veins. The teats should be well formed, plump, of convenient size and properly placed. The legs should be of medium length, clean in shank, straight, strong and wide apart. The hide should be of medium thickness, mellow, and loose; and the hair fine and soft.

Figure 87, Holstein-Friesian cow

Color

The color of the Holstein-Friesian is black and white. They must be nearly all white or black, but no solid-colored animal can be registered. They must carry both black and white. A desirable proportion of black to white is shown in the "true type" published by the Holstein-Friesian Association. The black markings not only should be large but sharply defined, with no inter-mixture or blending
of the two colors. Roan is undesirable. The switch of the tail should be entirely white. Black color below knees and hocks is undesirable and may prevent registration.

Size

This is the largest breed of dairy cattle. The weights of Holstein-Friesian cows that have been milking four to six months should be from 1300 to 1600 pounds. These may be classed as medium weights. The mature Holstein-Friesian bull should weigh not less than 2000 pounds and from 2200 to 2400 pounds is much more desirable.

Quality

This is not a particularly refined breed, but it should not show coarseness and roughness. The head should be of medium size and clean cut, the bone medium and clean, the hide mellow and medium in thickness, and the hair rather fine and soft. The skin secretion of the Holstein-Friesian does not show a yellow color.

The Ayrshire Breed

Detailed Description

The Ayrshire head is medium in length, fairly wide, slightly dished between the eyes, lean of face; broad, strong muzzle; prominent, rather lively eyes, medium sized ears, and horns that curve outward and strongly upward, usually turning back at the tips in cows. The horns are set wide apart, are long and large and are often quite heavy in the bulls. The head is strong and wide at the poll and not coarse, though without the refinement found in Jerseys and Guernseys. The head of the bull should have a vigorous, resolute, masculine expression; that of the cow should be mild and feminine. The neck should be moderately long, clean at the throat and well carried. Both sexes are very trim about the neck, being practically free from loose skin.

The shoulders of the cow should be light, wide through from point to point, sharp at withers, and smooth throughout. The chest should be wide, deep, and full. The back should be straight. The loin should be broad, level and strong. Ayrshire cattle are excellent in straightness and strength of top line. The middle should be wide, deep and large. The hind flank should be thin and arching. The hips of the cow should be wide and not project above the level of the back. The hips of the bull are proportionately narrower and smoother. Ayrshire cattle are noted for uniformly straight, square rumps. The rumps should also be long, broad, wide at the pinbones, and not too fleshy. There is a tendency in some individuals to be too fleshy in rump and thighs. The legs are rather short and are usually straight, strong and set well apart both in front and behind. The shanks and joints should be clean, and reasonably fine. The skin should be medium thick, mellow, and elastic, and the hair soft and fine. The hair is somewhat thicker than that of other breeds, but not coarse and wiry. The Ayrshire has a large, full udder that is universally acknowledged to be close to perfection in balance, levelness, shape, attachment, and placement of teats. However, the Ayrshire udder is usually too firm and meaty in texture and this is very objectionable. The teats are squarely placed and uniform in size, but often are too small. The milk veins and milk wells of the breed average good in size, length and capacity. The Ayrshire score-card gives 30 points out of 100 to the mammary system, and emphasizes size and shape of udder; attachment of udder; texture of udder; size and placement of teats and veining and milk wells.

Color

The Ayrshire may be red of any shade, mahogany, brown, or these with white or pure white. Black markings and brindle sometimes occur but are strongly objectionable. The most desirable color is white with dark red markings of a rich mahogany shade. Each color should be distinctly defined.
Size

Mature Ayrshire cows should weigh from 1100 to 1400 pounds depending on period of lactation. Bulls four years old and over in good breeding condition should weigh from 1700 to 2000 pounds.

Quality

The breed ranks medium in quality. The general appearance in head, bone and throughout is one of strength, rather than high refinement. They are not rough or coarse, however, but are in fact rather smooth cattle, possessing a degree of ruggedness without coarseness.

References: Mimeograph Agricultural Education Department, "Dairy Cattle Judging and Selection," Raleigh, North Carolina.

Breed Associations.
Contestant's Score Card for Milk

<table>
<thead>
<tr>
<th>Student</th>
<th>Official</th>
<th>GRADE</th>
<th>CRITICISMS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Score</td>
<td>Description</td>
</tr>
</tbody>
</table>

**FLAVOR AND ODOR**
- Bitter
- Cardboard
- Cooked
- Cowy
- Disinfectant
- Feed
- Flat
- Garlic
- High Acid

**SEDIMENT**
Score cottons as per photographs, p. 17, Circular 384 (revised 1929) U. S. Department of Agriculture.

**BOTTLE AND CAP**
- Absorbent cap protector
- Chipped mouth
- Dirty bottle
- Leaky cap
- Lip not protected
- Lip partially protected
- Loose cap cover
- Not full

(On back of Score Card)

**Flavor and Odor**

<table>
<thead>
<tr>
<th>Score</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>23 and above</td>
<td>Supreme quality</td>
</tr>
<tr>
<td>21 to 23</td>
<td>Lacking special high flavor, flat, very slight feed, slightly cooked</td>
</tr>
<tr>
<td>18 to 21</td>
<td>Cooked, feed, salty, slightly cowy, slightly metallic</td>
</tr>
<tr>
<td>12 to 18</td>
<td>Strong feed, weedy, bitter, strong, musty, cowy, metallic, slightly rancid (cappy or cardboard)</td>
</tr>
<tr>
<td>12 to 0</td>
<td>Rancid, strong cowy, high acid</td>
</tr>
<tr>
<td>0</td>
<td>Sour, putrid, or any flavor sufficiently strong to render unfit for market purposes</td>
</tr>
</tbody>
</table>

**Sediment**
Score cottons as per description and photograph on pages 16 and 17, Circular 384, Rev. 1929, United States Department of Agriculture, which circular may be obtained on application to the Office of Information in the department. Smallest cut given 0.1 point. No criticisms required.

**Bottle and Cap**

<table>
<thead>
<tr>
<th>Score</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Not full</td>
</tr>
<tr>
<td>4.9 or less</td>
<td>Loose cap cover</td>
</tr>
<tr>
<td>Dirty bottle</td>
<td>No criticism</td>
</tr>
<tr>
<td>Absorbent cap protector</td>
<td>Lip not protected</td>
</tr>
</tbody>
</table>

**INSTRUCTIONS:** Students will score each item and place check mark to right of defect. If defect is not listed write it in blank space.

**NOTE:** Normal score on flavor ........................................ 18 to 23.5
Normal score on sediment .................................................. 0 to 10
Normal score on bottle and cap ........................................ 3 to 5
### Suggested Cuts on Bottle and Cap

<table>
<thead>
<tr>
<th>Condition</th>
<th>Score Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bottle not full</td>
<td>0.25 to 1.0</td>
</tr>
<tr>
<td>Dirty bottle</td>
<td>.5 to 2.0</td>
</tr>
<tr>
<td>Cap poorly seated or leaky (if uncovered)</td>
<td>.1 to 1.0</td>
</tr>
<tr>
<td>Chipped lip</td>
<td>.1 to .5</td>
</tr>
<tr>
<td>Pouring lip unprotected</td>
<td>1.0</td>
</tr>
<tr>
<td>Pouring lip partially protected</td>
<td>.25 to .75</td>
</tr>
<tr>
<td>Cap covering loosely fastened</td>
<td>.25 to .50</td>
</tr>
<tr>
<td>Cap covering non-waterproof</td>
<td>.25 to .75</td>
</tr>
</tbody>
</table>
PART IV

Judging Poultry for Production and Exhibition

Birds arranged in display coops for judging are constantly changing the position of their bodies. They appear to a much better advantage in one position than in other positions. Each bird should be given credit for the appearance in the best position it can be made to assume. Therefore each bird should be posed before judgment is passed upon it. When the bird has been properly posed the person placing the class should retire a few feet to obtain the best view of the individual and the class.

Each bird in the ring should be carefully observed and the ring tentatively placed before handling the fowls. To make a detail examination of the fowls before getting a general perspective often causes undue emphasis to be given to minor details and defects. The animal as a whole is being judged, therefore undue emphasis should not be placed on minor details.

A definite procedure should be followed in the examination of the bird. A good plan is to begin with the head, followed by an examination of the breast, body, abdomen, legs, and plumage, noting both surface color and under color, quality and condition. Standard disqualifications should also be detected during the examination.

In handling the hens for judging, all birds should be held in a similar position. The correct way in holding for examination is to allow the bird to rest on the palm of the hand with the index finger between the legs, the thumb around one thigh and the remaining three fingers around the other. To remove a bird from an exhibition coop reach both hands into the coop, place the right hand over the back of the bird and grasp with the left hand in the manner indicated above. Remove the bird from the coop head first.

In judging poultry for production the essential points to be considered are constitutional vigor and temperament, body conformation, including head and adjuncts, quality and condition. Breed and variety characteristics in the flock are also important in order to maintain standard appearance and uniformity of market products, both poultry and eggs.

1. Constitutional Vigor and Temperament:

Constitutional vigor and temperament are those characteristics which enable a bird to stand up under the strain of egg production over a long period of time. These are indicated by general health, activity, energy, erectness of carriage, alertness, rugged yet refined in head and body conformation.

Figure 89. Showing points of chickens
1. Single comb  
2. Rose comb  
3. Points  
4. Blunt points  
5. Serrations  
6. Blade  
7. Spike  
8. Eye  
9. Nostril  
10. Beak  
11. Ear  
12. Earlobe  
13. Face  
14. Wattles  
15. Neck  
16. Hackle  
17. Cape  
18. Shoulder  
19. Wing-bow  
20. Wing-bar  
21. Wing-bay  
22. Primaries  
23. Pinion feathers  
24. Back  
25. Saddle  
26. Cushion  
27. Tail-coverts  
28. Lesser sickles feathers  
29. Main tail feathers  
30. Greater sickles  
31. Fluff  
32. Body  
33. Breast  
34. Thigh  
35. Hock Joint  
36. Shank  
37. Horny spur  
38. Rudimentary spur  
39. Toe  
40. Toe nail

Figure 90. A well developed hen
Figure 91, A poorly developed hen

Placing Card for Poultry

<table>
<thead>
<tr>
<th>Contestant's Number</th>
<th>Class</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>PLACING ON COMPARATIVE POINTS</th>
<th>First</th>
<th>Second</th>
<th>Third</th>
<th>Fourth</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Constitutional vigor and temperament: Alertness, activity; size, shape and prominence of eye; sex characteristics</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Breed and variety characteristics: Size, trueness to type, color of plumage; symmetry; freedom from serious defects</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Conformation: Shape of head and beak, width, length, and shape of back; length and depth of body; angle of tail; width and depth of breast</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Quality and condition: Texture of skin; comb, and wattles; pigmentation; molt; fleshing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TOTAL</th>
</tr>
</thead>
</table>

(A) Average of the above grades

<table>
<thead>
<tr>
<th>FINAL PLACING</th>
<th>First</th>
<th>Second</th>
<th>Third</th>
<th>Fourth</th>
<th>Grade</th>
</tr>
</thead>
</table>

(B) Final Placing Order

FINAL GRADE: \( A + B \div 2 = \)
Figure 92, Illustrations showing method of determining relations of keel to back. In the high producer (A) the finger tips of the lower hand point downward. In the non-producer (B) the finger tips of the lower hand point toward the tail. The first years production records of these hens are: (A), 187 eggs, (B), 97 eggs.
Figure 93. Left: Head of high producer. Comb and wattles are full, bright, and velvety; beak short, well curved; eye bright, prominent; beak, eye-ring and ear-lobe pale in color.
Right: Head of poor producer. Comb and wattles are small, shrunken, scaley; eye dull, sunken; beak, eye-ring, ear-lobes and shank have yellow color.

Figure 94. Left: Back of good producer. Note the breadth, and how it extends to the rear.
Right: Back of poor producer. It is narrow and tapering.
2. Conformation:

The head should be medium in length, deep, broad, clean cut in appearance, and free from excess flesh. The beak should be medium in length, and strong. The eyes should be large, full bright and prominent. The comb and wattles should be well developed, medium in size, fine in texture and bright red in color when laying. The ear lobes should be smooth, medium in size and conform to breed requirements in color. The neck should be of medium length and strong.

The body should be long, deep, wide, properly balanced and conform to the size and type for the breed. The back should be long and wide with uniform width to the tail. The breast should be full and round, the body deep, the keel bone long and straight, and the abdomen well developed. When in laying condition, the pubic bones should be wide apart (two or more fingers in width) and the distance from the pubic bones to the keel deep (three or more fingers.) The tail should be fully developed and properly carried for the breed. The legs should be straight, strong, and medium in length. The toes should be straight, strong and well placed.
3. Quality and Condition

Quality is indicated throughout the bird. Evidences of quality are texture of comb and wattles, pliability of skin, thickness of pubic bones, softness of abdomen, flatness of shanks, and fineness of scales on shanks.

In condition, the bird should be well fleshed at all times. When laying, all yellow skin breeds will show bleaching in the skin and body parts. Birds which have been in continuous laying for a long period of time will be completely bleached in the skin and body parts. When laying ceases, the yellow pigment returns if the birds are receiving feeds which contain yellow pigment.

Molting or the renewal of feathers occurs normally once a year in laying birds. Very few feathers are molted during egg production except in the case of the highest producing hens. Hens which have been in production over a long period of time have old plumage, worn in appearance. The best producing hens molt in the fall and winter while poor producers molt early in summer.

4. Breed and Variety Characteristics

The various breeds are distinguished by their size and shape. The birds of any breed should conform as nearly as possible to standard weight and type. Comb color and pattern are variety characteristics. These should meet the requirements of the standard. Certain defects of conformation and feathering disqualify a bird as standard-bred.
Judging for Present Production

<table>
<thead>
<tr>
<th>Character</th>
<th>Laying Hen</th>
<th>Non-Laying Hen</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vent</td>
<td>Large, dilated, oblong, moist</td>
<td>Small, contracted, round, dry</td>
</tr>
<tr>
<td>Pubic bones</td>
<td>Flexible and wide apart</td>
<td>Rigid, close together</td>
</tr>
<tr>
<td>Comb</td>
<td>Large, red, full, glossy</td>
<td>Small, pale, scaly</td>
</tr>
<tr>
<td>Wattles and lobes</td>
<td>Prominent, soft, smooth</td>
<td>Inconspicuous, rough and dry</td>
</tr>
</tbody>
</table>

Judging for Past Production

<table>
<thead>
<tr>
<th>Character</th>
<th>Long Laying Period</th>
<th>Short Laying Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vent</td>
<td>Bluish white</td>
<td>Flesh colored</td>
</tr>
<tr>
<td>Eyelids</td>
<td>Thin and edges white</td>
<td>Thick, yellow tinted</td>
</tr>
<tr>
<td>Eye</td>
<td>Prominent, keen, sparkling</td>
<td>Listless, sunken</td>
</tr>
<tr>
<td>Earlobes</td>
<td>Enamel white</td>
<td>Yellow tinted</td>
</tr>
<tr>
<td>Beak</td>
<td>Pearlly white</td>
<td>Yellow tinted</td>
</tr>
<tr>
<td>Face</td>
<td>Clean cut, sunken</td>
<td>Full, well fleshed, yellowish</td>
</tr>
<tr>
<td>Shanks</td>
<td>White, flat, thin, creased</td>
<td>Yellow, round, smooth</td>
</tr>
<tr>
<td>Plumage</td>
<td>Worn, soiled, lifeless</td>
<td>Signs of molting, loose-feathered</td>
</tr>
</tbody>
</table>

Judging for Intensity of Production

<table>
<thead>
<tr>
<th>Character</th>
<th>High Rate</th>
<th>Low Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Keel</td>
<td>Slopes downward</td>
<td>Slopes upward</td>
</tr>
<tr>
<td>Pubic bones</td>
<td>Tips thin, point straight out</td>
<td>Tip thick, curved in</td>
</tr>
<tr>
<td>Capacity</td>
<td>Four to five fingers</td>
<td>Two fingers</td>
</tr>
<tr>
<td>Abdomen</td>
<td>Soft, pliable, dilated</td>
<td>Fatty, hard, contracted</td>
</tr>
<tr>
<td>Lateral processes</td>
<td>Prominent, pointed outward</td>
<td>Hard to find, pointed inward</td>
</tr>
<tr>
<td>Skin</td>
<td>Soft, thin, loose, silky</td>
<td>Thick, dry, underlaid with fat</td>
</tr>
</tbody>
</table>

General Disqualifications

1. **Deformities**—Deformed beaks, crooked backs, a wing showing clipped flights or secondaries or both, a slipped wing, a split wing, twisted feather or feathers in wing or tail. Entire absence of main tail feathers, decidedly wry tails, a decided squirrel tail.

2. **Weight**—In Barred Rocks and Rhode Island Reds an individual falling more than two pounds under standard. In White Leghorn males more than one to one and one-half pounds under weight and females more than one pound under weight.

3. **Comb**—Lopped comb in Barred Rocks and Rhode Island Reds. Split combs. Side sprig on all single combs. Absence of spike in Rose Comb varieties.

4. **Head and Adjuncts**—Positive enamel white in the face of Leghorn cockerels and pullets. Positive enamel white in the ear lobes of males or females of Rhode Island Reds, Barred Rocks or Wyandottes.

5. **Shanks and Toes**—Stubs or feather-like growth on the shanks, feet or toes of Leghorns, Rocks, Red or Wyandottes. Any down, stubs, or feather-like growth on the hocks that is disconnected from the feathers on the thigh. Web-feet, absence of spurs on cocks, more or less than four toes.

6. **Color**—Shank, shanks, foot, feet, or toes of color foreign to the breed. Red or yellow in the plumage of any black variety. Black in quills of primaries or secondaries of white varieties. Foreign color in any part of the plumage of white varieties, except slight gray ticking.
Scale of Points Used in Scoring Birds in Exhibition Judging

<table>
<thead>
<tr>
<th></th>
<th>White Shape</th>
<th>White Color</th>
<th>Solid Color Other than White Shape</th>
<th>Solid Color Color</th>
<th>Parti Color Shape</th>
<th>Parti Color Color</th>
</tr>
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<tbody>
<tr>
<td>1. Symmetry</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
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<td>2. Weight or size</td>
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<tr>
<td>3. Condition and vigor</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Comb</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td></td>
<td></td>
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<tr>
<td>5. Beak</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>6. Head</td>
<td>3</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>7. Eyes</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>8. Wattles</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
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<td>9. Earlobes</td>
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<td>2</td>
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<tr>
<td>10. Neck</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>4</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>11. Wings</td>
<td>5</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>12. Back</td>
<td>8</td>
<td>4</td>
<td>7</td>
<td>5</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>13. Tail</td>
<td>5</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>14. Breast</td>
<td>7</td>
<td>3</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>15. Body and Fluff</td>
<td>5</td>
<td>3</td>
<td>5</td>
<td>3</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>16. Legs and Toes</td>
<td>5</td>
<td>3</td>
<td>5</td>
<td>3</td>
<td>5</td>
<td>3</td>
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<td></td>
<td>72</td>
<td>28</td>
<td>66</td>
<td>34</td>
<td>62</td>
<td>38</td>
</tr>
</tbody>
</table>

Breed Description

1. Plymouth Rock

The Plymouth Rock breed of poultry is very important in America. The first of this breed were exhibited in America at Boston, Massachusetts in 1849. There are several varieties of the Plymouth Rock breed: namely, Barred, White, Buff, Silver Penciled, Partridge, Columbian and Blue Plymouth Rocks.

Detail Characteristics of Male and Female

Comb: Single, small proportionate to size of specimen; set firmly on the head; straight, upright; evenly serrated, having five well-defined points, those in front and at rear being somewhat smaller and shorter than the other three in the female while with the male those in front and at rear a little smaller than the other three, giving the comb a semi-oval appearance when viewed from the side; fine in texture, blade not conforming too closely to head.

Beak: Stout, comparatively short, regularly curved.

Head: Male: Moderately large; face, smooth. Female: Moderately large and broad, medium in length; face, smooth.

Eyes: Large, full, prominent.

Wattles: Male: Moderately long, nicely rounded at lower edges, uniform, fine in texture, free from folds or wrinkles. Female: Small, well-rounded, uniform, fine in texture, conforming to size and shape of head.

Ear-Lobes: Male: Oblong, smooth, hanging about one-third the length of wattles. Female: Oblong in shape, smooth.

Neck: Male: Rather long, moderately well-arched, having abundant hackle flowing well over shoulders. Female: Medium in length, nicely curved and tapering to head, where it is comparatively small; neck feathers moderately abundant, flowing well over shoulders with no apparent break at juncture of neck and back.

Wings: Of medium size, well foldered and carried without drooping; fronts, well covered by breast feathers and points well covered by saddle or back feathers; primaries and secondaries, broad and overlapping in natural order when wing is folded.

Back: Male: Rather long, broad its entire length, flat at shoulders, nearly horizontal from neck to saddle, where there is a slight concave sweep to tail; saddle feathers, rather long, abundant, filling well in front of tail; feathers
moderately broad. Female: Rather long, broad in its entire length, flat at shoulders, rising with a slightly concave incline to tail; feathers moderately broad.

Tail: Male: Of medium length, moderately well spread, carried at an angle of thirty degrees above the horizontal, forming no apparent angle with the back; main-tail feathers, broad and overlapping; sickles, well-curved, covering tops of main-tail feathers, conforming to the general shape of the tail; lesser sickles and tail-coverts, of medium length, nicely curved and sufficiently abundant to almost hide the stiff feathers of the tail when viewed from front or side. Female: Of medium length, fairly well-spread, carried at an angle of twenty degrees above the horizontal, forming no apparent angle with the back; tail-coverts, well developed; main-tail feathers, broad and overlapping.

Breast: Broad, full, moderately deep, well-rounded.

Body and Fluff: Body, rather long, broad, deep, full, straight, extending well forward, connecting with breast so as to make no break in outline; fluff, moderately full.
Legs and Toes: Legs, set well apart and straight when viewed from front; lower thighs, large, of medium length and well-feathered, smooth; shanks, of medium length, smooth, straight, stout; toes, of medium size and length, straight, well-spread.

Barred Plymouth Rocks

Disqualifications: Red or yellow in any part of plumage; two or more solid black primaries, or two or more solid black secondaries, or two or more solid black main-tail feathers; shanks other than yellow.

Color of Male and Female:
Comb, face, wattles and ear-lobes: Bright red
Beak: Yellow
Eyes: Reddish bay
Shanks and Toes: Yellow
Plumage: Male: Grayish white, each feather crossed by regular parallel, sharply defined, dark bars that stop short of positive black; free from shafting,

Figure 98, Barred Plymouth Rock Female

brownish tinge or metallic sheen; the light and dark bars to be of approximately equal width, in number proportionate to the length and width of the feathers, and to extend throughout the length of feathers in all sections of the fowl; each feather ending with a narrow, dark tip; the combination of overlapping feathers giving the plumage a bluish appearance and of an even shade throughout.
Female: Grayish white, each feather crossed by regular, parallel, sharply defined, dark bars that stop short of positive black; free from shafting; brownish tinge or metallic sheen. The light bars, in all sections of the fowl shall be in numbers proportionate to the length and breadth of the feathers; each feather ending in a narrow, dark tip; the combination of over-lapping feathers giving the plumage a bluish appearance and of an even shade throughout.

2. Wyandottes

The true origin of the Wyandotte breed is not definitely known. The following are varieties of Wyandottes: Golden-Laced, White, Buff, Black, Partridge, Silver Penciled and Columbian.

Detail Characteristics of Male and Female:

Comb: The comb of both the male and female are similar, that of the female being much smaller than that of the male. Rose: low, firm on head; top, free from hollow center, oval, surface covered with small, rounded points; tapering to a well-defined point at rear; the entire comb curving to conform to the shape of skull.

Beak: Short, well-curved.

Head: Short, round, crown broad; face, smooth and free from small feathers.

Eyes: Full, round, prominent.

Wattles: Male: Moderately long, nicely rounded at lower edges, uniform, fine in texture, free from folds or wrinkles. Female: Fine in texture, well rounded.

Ear-Lobes: Oblong, well-defined, hanging about one-third the length of wattles; smooth in the male. With the female they are oblong in shape, well-defined.

Neck: Short, well-arched, hackle or neck feathers abundant.

Wings: Medium in size, well-folded; carried not too closely to body, and without drooping; sides, well-rounded; primaries and secondaries, broad and overlapping in natural order when wing is folded.

Back: Male: Medium in length, broad its entire length, flat at shoulders; saddle, broad, full, rising with concave sweep to tail; saddle feathers, abundant. Female: Medium in length, broad its entire length, flat at shoulders; rising in a concave sweep to a broad; slightly rounded cushion, which extends well on to main-tail; plumage abundant.

Tail: Male: Short, well spread at base, carried at an angle of forty degrees above the horizontal; sickles, moderately long, curving gracefully and closely over tail; coverts, broad, abundant, filling out well in front, hiding the stiff feathers; main-tail feathers, broad and overlapping. Female: Short, well-spread at base, carried at an angle of thirty degrees above horizontal; coverts, broad, abundant; main-tail feathers, broad and overlapping.

Breast: Broad, deep round.

Body and Fluff: Body, medium in length, deep, round; fluff, fairly well developed but not so abundant as to hide profile of hocks.

Legs and Toes: Legs, set well apart and straight when viewed from front; lower thighs, short, stout, showing outlines when viewed sideways, well-covered with smooth feathers; shanks, moderately short, well-rounded; toes, straight, well-spread.

White Wyandottes

Disqualifications: Shanks other than yellow.

Color of Male and Female:

Comb, face, wattles, and ear-lobes: Bright red
Beak: Yellow
Eyes: Reddish bay
Shanks and toes: Rich yellow
Plumage: Web, fluff, and quills of feathers, in all sections, pure white

3. Rhode Islands

The origin of this breed dates back about eighty years to a fowl bred in that section of New England which is located between Narragansett Bay and Buzzard's Bay. There are two varieties: Rhode Island Reds and Rhode Island Whites.

Detail Characteristics of Male and Female:

Comb: Single; medium in size, set firmly on head, perfectly straight and upright, with five even and well-defined points, those in front and rear smaller than those in center; in the male there is considerable breadth where the comb joins the head; blade, smooth, inclining slightly downward but not following too closely the shape of head.

Rose Comb: Male: Low, firm on head; oval, free from hollow center, surface covered with small rounded points, terminating in a spike at the rear, the spike dropping slightly but not conforming too closely to the shape of head. Female:
Low, free from hollow center, set firmly on head, much smaller than that of male and in proportion to its length, narrower; covered with small points and terminating in a small, short spike at the rear.

**Beak:** Medium length, slightly curved.

**Head:** Moderate in length, fairly deep, inclined to be flat on top rather than round; face clean-cut, skin fine in texture, free from wrinkles.

**Eyes:** Large, full, prominent.

**Wattles:** Male: Of medium size, uniform, free from folds or wrinkles. Female: Of medium size, regularly curved.

**Ear-Lobes:** Oblong, well-defined, smooth.

**Neck:** Of medium length, hackle, abundant, flowing over shoulders in male, moderately full feathered.

**Wings:** Male: Of good size, well-folded, carried horizontally; primaries and secondaries, broad and overlapping in natural order when wing is folded. Female: Rather large, well-folded; fronts, well covered by breast feathers; flights, carried nearly horizontally; primaries and secondaries, broad and overlapping when wing is folded.

**Back:** Long, moderately broad its entire length, carried horizontally; saddle, in male, moderately broad, feathers of medium length, moderately abundant, blending into tail.

**Tail:** Male: Of medium length, well spread, carried at an angle of forty degrees above the horizontal; sickles of medium length, extending slightly beyond main-tail feathers; lesser sickles and tail-coverts, of medium length, well feathered; main tail feathers, broad and overlapping. Female: Of medium length, moderately well-spread, carried at an angle of thirty degrees above the horizontal; main-tail feathers, broad and overlapping.

**Breast:** Moderately deep, full, well-rounded.

**Body and Fluff:** Body, long, broad, moderately deep, straight, extending well forward, giving body an oblong appearance; feathers carried close to body; fluff, moderately full.

**Legs and Toes:** Legs, set well apart, straight when viewed from front; lower thighs, of medium length, well-feathered, smooth; shanks, of medium length, smooth; toes of medium length, straight, well-spread.

**Rhode Island Reds**

**Disqualifications:** One or more entirely white feathers showing in outer plumage; shanks and feet other than yellow or reddish horn.

**Color of Male and Female:**

- Comb, face, wattles, and ear-lobes: Bright red
- Beak: Reddish horn
- Head: Plumage, brilliant red
- Eyes: Reddish bay
- Neck: Male: Rich, brilliant red; plumage on front of neck, rich red. Female: Rich red, with slight ticking of black, confined to tips of lower neck feathers; feathers on front of neck, rich red.
- Wings: Fronts and bows, rich brilliant red; coverts, red, primaries, upper webs red, lower webs black and narrow edging of red; primary coverts, black edged with red; secondaries, lower webs red, the red extending around end of feathers sufficient to secure a red wing-bay and lacing the upper portion of upper webs, this color growing wider in shorter secondaries; remainder of each black, feathers next to body being red on surface so that wing when folded in natural position shall show one harmonious red color.
Tail: Male: Main-tail feathers, black; sickle feathers, rich, lustrous greenish black; coverts, mainly greenish black, red as they approach the saddle. Female: main-tail feathers, black; the two top feathers may be edged with red.

Breast: Rich red.


Legs and Toes: Lower thighs, rich red; shanks and toes, rich yellow tinged with reddish horn. In the male, a line of red pigment down the sides of shanks, extending to tip of toes, is desirable.

Plumage: Male: General surface, rich, brilliant red, except where black is specified; not so dark as to appear brown or chocolate nor so light as to appear orange, free from shafting or mealy appearance; the less contrast there is between wing-bows, back, hackle, and breast the better. A harmonious blending in all sections is desired. The specimen should be so brilliant in color as to have a glossed appearance. Female: General surface color, rich, even red, except where black is specified, not so dark as to appear brown or chocolate nor so light as to appear chestnut, free from shafting or mealy appearance.

Under-color of all sections: Red.

Figure 100, Rhode Island Red Male
4. Leghorns

The original breed came from Italy, but its many sub-varieties originated or were developed in England, Denmark or America. The different varieties of Leghorns are as follows: Single-Comb Browns, White and Blacks, Rose-Comb Browns and Whites, Single-Comb Buffs, Single-Comb Columbians, and Reds and Black-Tailed Reds.

Detail Characteristics of Male and Female:

Comb: Male: Single, fine in texture, of medium size, straight and upright, firm and even on head, having five distinct points, deeply serrated and extending well over back of head with no tendency to follow shape of neck; smooth, free from twists, folds or excrescences. Female. Single, medium in size: deeply serrated, having five distinct points, the front portion of the comb and the first point to stand erect and the remainder of comb drooping gradually to one side; fine in texture; free from folds or wrinkles.

The Rose comb of the male and female is very similar; of medium size, square in front, firm and even on head, tapering evenly from front to rear and terminating in a well-developed spike which extends horizontally well back of head; flat, free from hollow center and covered with small, rounded points.

Beak: Medium in length, strong, nicely curved.

Head: Moderate in length, fairly deep, inclined to be flat on top rather than round; face clean-cut, skin fine in texture, free from wrinkles.
Eyes: Rather large, full, prominent.

Wattles: Male: Moderately long, uniform, well-rounded, smooth, fine in texture, free from folds or wrinkles. Female: Of moderate size, uniform, free from folds or wrinkles, fine in texture, smooth, well-rounded.

Ear-Lobes: Male: Oval in shape but rather broad, smooth, of moderate size, fitting closely to head. Female: Of moderate size, oval in shape, smooth, thin, free from folds or wrinkles, fitting closely to head.

Neck: Male: Moderately long, nicely arched, hackle abundant, flowing well over shoulders. Female: Moderately long, gracefully arched, tapering to head.

Wings: Large, well-folded and carried without dropping; primaries and secondaries, broad, and overlapping in natural order when wing is folded.

Back: Male, Rather long, moderately broad its entire length, slightly rounded at shoulders, slightly sloping downward from shoulders to center of back, then rising in a gradually increasing concave sweep to tail. Saddle feathers long, of good width, abundant, filling well in front of tail. Female: Rather long, moderately broad its entire length, slightly rounded, with a slight slope down from shoulders to center of back, and rising from center with a concave sweep to tail, feathers of sufficient length to carry well-up to tail.

Figure 102, White Leghorn Male
Tail: Male: Large, well-spread; main-tail feathers, broad and overlapping carried at an angle of forty degrees above the horizontal; sickle feathers of good width, well curved; lesser sickles and tail-coverts, long, of good width, nicely curved and abundant. Female: Long, full, well-spread, feathers of good width, carried at an angle of thirty-five degrees above the horizontal; main tail feathers broad and overlapping; coverts, broad and abundant, extending well onto main tail.

Breast: Full, well rounded, carried well forward.

Body and Fluff: Body, moderately long, rather deep, (showing good heart and body girth in the male); carried horizontal but sloping very slightly from front to rear; fluff, short. Under line to conform generally to top line.

Legs and Toes: Legs, set well apart, straight when viewed from front; lower thighs and shanks, moderately long; toes, medium length, straight, well-spread.

White Leghorns

Disqualifications: Shanks other than yellow.

Color of Male and Female:
Comb, face, and wattles: Bright red
Beak: Yellow
Eyes: Reddish bay
Ear-lobes: Enamel white
Shanks and Toes: Yellow
Plumage: Web, fluff, and quills of feathers, in all sections, pure white.
PART V
CROP JUDGING

The Crop Judging contest as set-up at the present time includes cotton, corn, sweet potatoes, Irish potatoes and seed identification. In this section an attempt is made to point out those points that should be considered in judging the crops mentioned above.

COTTON JUDGING

Cotton is one of the major sources of farm income in Mississippi, and individual producers possibly know less about the classing of this crop for market than any other produced.

There are about 2 million farms in this country that produce cotton, and in any given year great variation is found in the quality of this production. Variations may occur in the quality of cotton grown on a single farm. Soils, rainfall, temperature, varieties planted, tillage methods, and harvesting and ginning methods vary. To such variations may be attributed the many differences in the quality of the cotton crop as it comes to market.

In the manufacture of cotton, uniformity of quality in the raw material is essential and since manufacturers must have cotton that is more or less uniform in respect to grade, staple length, and character, it is necessary to accumulate cotton of the several grades and staple lengths.

Cotton is classified mainly on grade and staple. In classifying for grade, the sense of sight is principally used; for staple and character, sight and touch are used in combination.

Factors of Grade

Grade of cotton, as the term is most widely understood, include three factors—color, foreign matter, and ginning preparation.

Color may be described in terms of three attributes—hue, brilliance, and chroma. Hue may be most simply defined as the name of a color, as for example yellow, red, blue; brilliance, as the lightness or darkness of a color; and chroma, as the intensity, strength or degree of color. In its application to the color of cotton the term “chroma” refers to the degree of yellowness. The darker gray cot-
tons possess little chroma; the yellow stained, a great deal more. Differences in brilliance and chroma are the only important color differences in cotton classification, since hue varies little in upland cotton.

The effect of weather on color is very great. In the early part of the season cotton is generally of high grade; that is to say, it is bright in color and does not carry a great amount of leaf. Cotton from bolls that open after frost may be tinged or stained a yellow color. When such bolls are picked and are ginned with other bolls that have opened normally before frost, spotted cotton results. Spots are also caused by insect injury, and in localities of red soil by the inclusion of bolls that have fallen to the ground and become stained by the soil. Open cotton that is left in the field exposed to the weather becomes darker and dull in color and therefore lower in grade, as illustrated in figure 104. When cotton from tinged or stained bolls is mixed with that from bolls that have been dulled by exposure, the resulting mixture has a mottled color.

**Foreign Matter**

Foreign matter includes dried and broken plant foliage of various kinds, motes, seed-coat fragments, and sometimes sand and dust. Leaf may be divided into two general groups, (1) large leaf and (2) "pin" or "pepper" leaf. Large leaf is generally less objectionable than pin or pepper leaf, since larger particles are more easily removed in the spinning process and are less likely to appear in the yarn. Many of the leaf particles are removed in the picker room of the mill, and most of those that remain are removed by the carding process. Stems and hulls, like large leaf, are easily separated from the lint and in the manufacturing process never get further than the cards; but shale, the silverlike lining of the carpel or burr which before the opening of the boll serves to separate the locks, is highly objectionable and difficult to remove from the lint. Motes, which are immature and undeveloped seeds, are also objectionable. They vary considerably in size. Some are exceedingly small but others are nearly as large as mature seeds. These motes sometimes have a number of long fibers attached that usually are thin-walled. Some of the motes are crushed during ginning, and the fragments of various sizes that result are scattered through the lint, as illustrated in figure 105.

Fragments of mature seed coats are also found in the lint. These fragments result mainly from two causes: (1) The cutting of the seed by the teeth of the gin saw, and (2) the pulling away of the blunt end of the seed during ginning. The pulling away of this large fragment is usually accompanied by separation from it of smaller particles of seed coat with their attached fibers. These smaller particles may be very neplike in appearance. They also occur in very small numbers other neplike structures such as (1) knot formed by fibers becoming entangled around bits of foreign matter or small particles of seed coat, (2) small fragments from the brittle, glistening, compressed sheets of fibers occasionally found on seeds or motes, and (3) small yellowish fragments from dried diseased areas which frequently occur on the seeds.

If sand and dust are found in quantities exceeding a trace, they constitute what is known as a special condition. Sand in a sample may be detected by shaking the sample gently over a piece of clean paper. Dust is not so easily detected. Its presence is indicated by a dull, unnatural color in the cotton and can be detected by manipulating the sample somewhat as a bellows, that is, by clasping it between the hands which are then pulled gently away from each other, but not enough to separate the sample, and then pushed together, thus forcing air through the sample. As the air is forced out it carries with it some of the dust, which is visible in the surrounding air.

Foreign matter varies in quantity through each of the grades, increasing by progressively lengthening steps from the high grades, in which there is little
leaf to the lower grades, in which the proportion is comparatively large. The proportion of waste varies inversely with that of the spinnable lint, and therefore the grades with the highest spinning qualities, other conditions being equal, are those in which there is the least proportion of leaf and other foreign matter.

![Figure 105. A. Leaf; B. Motes; C. Shale](image)

**Preparation**

Preparation is a term used to describe the degree of smoothness with which the lint is ginned, and the relative nappiness or neppiness of the ginned lint.

The spinning utility of cotton depends to some extent upon its preparation. Generally, smoothly prepared cotton contains less waste and produces a smoother and more uniform yarn than roughly prepared cotton. It is generally difficult, however, to gin long-staple cottons so that the ginned lint will have as smooth and even an appearance as the shorter staples.

Neps, in contrast to naps are the small tangled knots of fibers that are visible as dots or specks when a thin web of fibers is held to the light or against a dark background. Neps in lint are very undesirable for, if not removed, they will appear as knots in the yarn and fabrics. The removal of neps from the lint is difficult, costly, and frequently impossible to accomplish. The longer and therefore finer cottons tend to be more “neppy” than the shorter, coarser cottons. Lints possessing a high percentage of thin-walled immature fibers are especially likely to be neppy.

The term “nappy” describes a lint that is rough and lumpy, and the term “nap” is applied to the definitely large clumps or matted masses of fibers that contribute to the rough appearance of ginned cotton. Their formation is influenced to a large extent by the condition of the seed cotton at the time of ginning, for cotton that is ginned green or wet tends to be nappy. In ginning, a very tight seed roll tends to result in the production of nappy lint and the breaking of the fiber.

As stated above the factors of grade are—color, foreign matter, and preparation. In grading it is almost impossible to set-up a standard for the above factors. The higher grades have a rather creamy yellowish color, with a small amount of foreign matter and the preparation good. Any one factor of grade being low will lower the grade of cotton. All three factors of grade must be considered together to determine grade. A sample of cotton with a high grade color may take a low grade due to the foreign matter and preparation. The individual classer, must have in mind all three factors and grade a given sample on what a combination of all three factors of grade show.

The cotton classer of upland cotton will deal mainly with the following grades: No. 2, or Strict good middling; No. 3, or Good middling; No. 4, or strict middling; No. 5, or middling; No. 6, or strict low middling; No. 7, or low middling; No. 8, or strict good ordinary; and No. 9, or good ordinary. The lower the
number the higher the grade. Government Standards of these grades may be secured to make comparisons of samples to determine grade, and to get in mind how the different grades should look.
Factors of Staple and Standards for Staple

Staple is one of the most important factors of quality because, other factors being equal, longer staples are required in spinning the finer yarns, and in yarns of a given fineness, longer staple cottons ordinarily produce greater strength than do shorter staples.

There may be considerable variation in the length of fibers in a sample of cotton. When fibers from a sample of cotton described as being 1 5/36 inches in staple length are arrayed they have been found to range from less than 1/8 of an inch up to 1 5/8 inches in length, figure 107.

![Figure 107](image1)

**Figure 107.** An array of the fibers found in a sample of cotton called 1 5/32 inches in staple. The fibers range in length from less than one-eighth inch up to 1 5/8 inches.

In determining the staple length of the sample fibers are rejected in pulling. The smooth, curved line in figure 108 represents the fibers in the sample from which the pull was made, and the broken curve line is diagram of the fibers in the pull itself. From this diagram it is easy to see which fibers were rejected and which were retained during the process of pulling for stapling. It will be observed that some of the long and some of the short fibers were disposed of but that some of both were retained.

![Figure 108](image2)

**Figure 108.** Diagram of fiber arrays made from a classer's pull and from a sample of the bale from which the pull was made, indicating what part of the fiber the classer discarded in making his pull.
The Department of Agriculture, Washington, establishes the staple types for each length. There were originally nine standard lengths for staple set-up in October 1918. Since that time the original standards have been amended under the authority of the Cotton Futures Act and the Cotton Standards Act by authorizing the issuance of staple types for additional lengths. Such types are available in 1938 for American upland cotton of the lengths 3/4, 13/16, 7/8, 29/32, 15/16, 31/32, 1, 1 1/32, 1 1/16, 1 3/32, 1 1/8, 1 5/32, 1 3/16, 1 7/32, 1 1/4, 1 9/32, 1 5/16, 1 11/32, 1 3/8 and 1 1/2 inches respectively.

The staple types as listed above may be obtained from the Department of Agriculture in Washington.

Figure 109, Staple lengths. Pulls from types representing the official standards for nine selected lengths of staple.

Method of Stapling

Regulations concerning stapling: The classification of cotton according to length of staple should be considered in conjunction with provisions of the regulations of the Secretary of Agriculture under both the Cotton Futures Act and the Cotton Standards Act which state: (1) That if the sample drawn from one portion of a bale is shorter in length than one drawn from another portion of the bale, except as otherwise provided in the regulations, the classification of the bale shall be that of the sample showing the shorter length; and (2) that if cot-
ton be reduced in value by reason of the presence of extraneous matter of any character or irregularities or defects below its apparent length of staple according to the official cotton standards of the United States, the length of staple from which it is so reduced and that to which it is so reduced, and the quality or condition which so reduces its value, shall be determined and stated. In addition, there is the provision in the regulations under the Cotton Futures Act that all cotton whether tenderable or untenderable shall be classified on the basis of the official cotton standards of the United States in effect at the time of such classification, and that it shall be deemed a sufficient compliance for the purpose of that act if cotton of tenderable length of staples shall be classified in sixteenths of an inch. These regulations as well as those regarding the conditions of handling and classing the cotton must be observed.

Figure 110. Method of pulling staple (See text for instructions).
Typical portion selected by stapling. In the practical application of the standards, the selection or determination of a typical portion of the fibers of any cotton is made by a process of manual stapling. The method of stapling recommended by the Department of Agriculture is given below:

Instructions for pulling staple. Grasp in the two hands a tuft of cotton of a size convenient for the purpose (about one-fourth of an ounce), holding it firmly between the thumb and forefinger of each hand, with the thumbs placed together, the fingers being turned in toward the palms of the hands, and the middle joints of the second, third, and fourth fingers of each hand touching the corresponding joints of the fingers of the other hand, so as to give a good leverage for breaking the cotton (figure 110-A).

Pull the cotton slowly with about the same leverage of each hand on the joints of the fingers, separating the tuft of cotton into two parts (figure 110-B).

Figure 111, Method of pulling staples (continued).
Discard the part remaining in the right hand (figure 110-C).

Grasp with the thumb and forefinger of the right hand the end of the tuft of the cotton retained in the left hand. The point of pressure on the cotton in the left hand is just below the joint of the thumb and at the nail joint of the forefinger (figure 110-D).

With the right hand draw layer of fibers from the cotton held in the left hand (figure 110-E). Retain in the right hand the layer so drawn (figure 110-F). Repeat this operation four or five times, placing each successive layer directly over the fibers previously drawn, using care to see that the ends of all the layers are even with each other between the thumb and forefinger of the right hand (figure 110-G and 110-H, figure 111-I and 111-J).

After discarding the cotton in the left hand, hold the fibers thus obtained between the thumb and forefinger of the right hand and smooth them with the thumb and forefinger of the left hand (figure 111-K and 111-L).

Place these fibers on a flat, horizontal surface with a black background, preferably black velvet (figure 111-M and 111-N).

Block off the ends of the fibers with a cotton-stapling rule, so as to indicate the length of the bulk of the fibers, and measure the distance between the blocked-off ends (figure 111-O and 111-P).

If this method is correctly and consistently followed, the length obtained should agree with that obtained by comparisons with pulls from the official staple types.


CORN JUDGING

Type

Corn type is a direct outgrowth of standards that have been created for varieties. It deals with variety characteristics, especially those of a more constant nature, such as color, shape and size of grain, color of cob, and indentation. To establish a definite type within any variety is difficult because corn is materially affected by the soil and climatic factors. However, within certain zones of latitude, (a state, or a major portion of a state) definite types can be established to which the majority of ears will largely conform. While type involves all the score card points, some are of far greater significance than others.

It is only through a thorough knowledge of type features that one will ever become able to recognize varieties and standardized types within the varieties. Unless samples of corn are exhibited in a variety class, type is not a feature to which judges pay attention. For example, samples of corn exhibited merely as either yellow or white corn are judged upon features other than type. Type, then, is a study of the characteristics peculiar to the variety.
Placing Card for Corn Judging

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<tr>
<th>Contestant’s No.</th>
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<tr>
<td>Soundness and maturity—freedom of disease character of germ</td>
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<tr>
<td>Uniformity of ears, size and shape</td>
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<tr>
<td>Uniformity of kernel—shape, size, color, indentation, etc.</td>
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<tr>
<td>Fancy points, straight rows, covered tips, butts, etc.</td>
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<tr>
<td>Average of above scores</td>
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<tr>
<td>FINAL PLACING SCORE</td>
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<tr>
<td>SCORE</td>
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Shape and Size of Ears

Within any variety of corn numerous shapes of ears will be noted. The cylindrical ear with a slight, gradual taper toward the tip is most desirable. As a rule, sharply tapering ears have less uniform kernels not regularly arranged and frequently they have a lower percentage of shelled corn. Furthermore, they do not make as good an appearing sample when exhibited for show corn. In addition to being cylindrical, an ear should be straight and have straight rows of kernels.
Each ear should be well proportioned in size, consideration being given to both length and circumference. In well-proportioned ears of dent corn, the circumference should measure about three-fourths of the length. Long, slender ears are objectionable because they generally have shallow kernels and poorly filled tips and butts. On the other hand, short, thick ears are undesirable, not only from their lack of length, but also because they are liable to possess an oversized cob, usually meaning a low shelling percentage. Most Southern varieties are prolific, or semi-prolific, and ears are usually smaller than single-ear varieties. In judging corn, ear size is important only as it conforms to varietal characteristics.

**Color of the Grain**

When the corn is grown and harvested under normal conditions, color of the grain is one of the more constant characteristics. Although there are variations in color within any variety. Good type will not tolerate colors other than color specified for each variety. In addition, ears should be sound and uniform in color. Ears badly discolored are usually diseased and have poor germinating qualities.

Since corn is a plant that naturally cross fertilizes, one should be careful to study the ears closely for mixtures in color which are liable to be present. Mixed seed are not typical of any variety and ears having them are not desirable for planting.

**Color of Cob**

Cob color should be true to varietal standards. Usually white varieties have glistening white cobs, notable exceptions to this, however, are Jarvis, Paymaster, and Whatley, while yellow varieties have red cobs. In addition, the study of the cob may furnish an index to the vitality of the seed. Dark colored, moldy, sappy cobs indicate a diseased condition. All such conditions should be carefully guarded against.
Market Condition

Of all the points considered in judging corn, market condition is of the greatest importance to the grower. It has to do with two principal factors—degree of maturity and soundness. Immature corn will not keep well and it quickly loses its power to grow. When immature ears are dried out, the immaturity is indicated by loose, poorly filled kernels and light weight ears. On the other hand, mature ears when curved have plump well-filled kernels that are set close together so that there is very little, if any, looseness of kernels. Good seed and show corn should be perfectly sound. Damage of any kind will discredit a sample. Judges and growers cannot be too critical in the matter of knowing what excellent market condition means. Frequently there are those who think that market condition also deals with shelling percentage and mixture. This is not the case and the two considerations should never be confused.

Tips and Butts

Well-filled and regularly formed tips and butts add materially to the appearance of an ear or a sample of corn. This is a matter more largely concerned with fanciness than with practical features. Therefore, it is not nearly as important as market condition, purity and uniformity of the sample. To select ears either for seed or for the show largely from the standpoint of good tips only is a serious mistake, though in judging a large number of well-selected exhibits, this otherwise minor point is sometimes of considerable importance. In a perfectly formed tip the rows are rarely found, but in making up show samples one should select the best he can find and still maintain other more valuable qualities in the
ears. Long tapering tips are very undesirable because they usually result in a large percentage of irregular and shallow kernels. In addition, the general appearance of the ear will not be good.

The butts should also be well filled out with regular rows so as to round out nicely about the shank. In most varieties the shank attachment, indicated by the scar, should be about three-fourths the diameter of the cob. Shanks beyond this size usually mean coarse butts covered with large, irregularly shaped kernels. Both tip and butt kernels should be rejected for planting, as they will not feed uniformly through the planter plates.

Figure 116, Ears that possess the desirable features for the variety and in addition are well tipped and butted.

Uniformity and Shape of the Kernels

Uniformity in size and shape of kernels on a single ear as well as among the ears in a sample is a highly desirable feature. It not only indicates good breeding through proper selection, but adds greatly to the general symmetry of the sample or ear. Furthermore, ears with uniform kernels when used for seed will produce a better stand of plants in the field because the planter will drop them at a more even rate. It would be difficult indeed to find ears whose kernels are exactly uniform, but great variations should be guarded against.

In dent corns the medium wedge-shaped kernel is best because it occupies the kernel space on the cob most completely. Square and rounded wedge-shaped kernels permit wide space between the rows. In general, the crown of the kernel should be from two to three times as wide as it is thick. This will give it an oblong appearance.
Length of the Ear

Although the ears in any variety of corn will show considerable variation in length, still when grown under normal climatic soil conditions, the majority of ears will conform reasonably well to the variety standard of length. This is especially true of pure varieties. Upon this basis standard lengths for each of the leading varieties have been established. Long ears are usually objectionable because they are inclined to have poorly filled tips, irregular butts and shallow kernels. On the other hand, short, stubby ears are inclined to be coarse in every respect.

Circumference of the Ear

In a well-proportioned ear the circumference measured at about one-third the distance from the butt will be from three-fourths to four-fifths of the length measurement. A little experience in handling ears of corn will soon make the beginner capable of estimating these measurements accurately. However, he should begin by making the actual measurements.

Space between the Kernels

Straight rows are desirable because the spaces or furrows between them are usually very narrow. Poorly shaped and shallow kernels usually accompany wide furrows. The furrow or groove should not extend to any great depth. It should simply mark the dividing line between the rows. Wide and deep-furrowed ears are liable to be light in weight. Spaces between the kernels at their tips are also very objectionable.

Percentage of Shelled Corn

Shelling percentage refers to the amount of shelled corn obtained from any given weight of ears. While it can only be determined accurately by actually shelling the ears and making the proper calculations, one is able to recognize high- and low-shelling ears by studying them for the factors concerning shelling percentages. One hundred pounds of ear corn, slip shuck basis, of average quality will shell about 80 pounds of corn, the remainder being the weight of the cobs. Therefore, it is commonly said that corn shells an average of 80 per cent. One experienced in handling ear corn soon learns to recognize the factors concerned with a high-shelling percentage. The three most important of these undoubtedly are the following: maturity, depth of kernel, and number of rows. To these might also be added filled tips and butts, medium-sized cobs and close-furrowed rows. Good seed corn and certainly show corn should shell higher than the average.
Figure 118. Ears with spiral rows should not be accepted either for seed or show purposes.
Figure 119. The ear at the left is coarse cobbled and shallow kenneled and therefore will hardly show a normal shelling percentage. The one at the right shows an opposite condition and will shell a high percentage of corn.

Corn Varieties

Cockes Prolific

Named for General Cocke of Bremo Farm in the James River Valley of Virginia and recognized before the Civil War. J. B. Allen of Port Gibson, Mississippi, made selections from it. Dr. H. B. Brown obtained seed from Mr. Allen in 1915 and did further work with it at the Mississippi Experiment Stations.

Cockes Prolific is a white variety usually producing two or more ears per stalk. Ears are a little larger than Hastings, but considerably smaller than Mosby. Ears slightly tapering, 7¼ to 8½ inches in length, 1½ to 2 inches in diameter, and bear 12 to 14 rows of kernels. Kernels of medium length, broad, plump, and
Figure 120. Cockes—A bit irregular in type, but a high producer.

grayish white in color with very slight indentations. Cob small and white. Matures in 120 to 125 days.

College 47

First produced at the Mississippi Experiment Station by the hybridization of two well known varieties, Cockes Prolific and Laguna. Like Laguna it has considerable ability to withstand adverse conditions. Ears medium to large and tapering, 8 to 9 inches in length and 2 to 2½ inches in diameter. Cob white, medium large, and bears 14 to 16 rows of kernels. Kernels are pearly white, medium length, wide, and plump with smooth creased indentation. Ear tip seldom filled well, butts flat. Matures in 120 to 125 days.

Since this is a cross between two varieties, it must be treated as a hybrid and new seed obtained each year for planting. It is a varietal cross; and therefore not a hybrid between inbred lines.

Golden Dent

A good yielding yellow variety, ears long and slightly tapering 8 to 9 inches long and 2 to 2½ inches in diameter, bears 16 rows of kernels. Kernels medium length, wide, plump, and golden yellow in color; smooth dimpled to rough creased indentation. Matures in 115 to 120 days.

Hastings

The exact origin of this corn is not known. H. G. Hastings and Company, Atlanta, Georgia, obtained seed first from a Georgian whose father had grown the crop before the Civil War. The seed having first been obtained from a covered wagon transit passing through Georgia from the Carolinas. The Hastings firm has selected, developed and grown this corn since before 1900.

Hastings is a true prolific characterized by small ears 6½ to 7½ inches in length and 1½ inches in diameter. Cob is small and white bearing 12 to 16 rows of kernels, usually two to four ears per stalk. Kernels of medium length, hard, slightly indented, and grayish white in color. Matures in 125 to 130 days.
Figure 121. Hastings Prolific, high producer, small eared, widely grown.

Figure 122. Jarvis, a very popular yellow corn.
Jarvis

Developed by J. M. Jarvis, Winston-Salem, North Carolina. Mr. Jarvis followed the system of field selection from stalks which produced two good ears. Other points were probably kept in mind, but the chief consideration was given to yield. Jarvis also seems to have an advantage in soil adaptability.

It is true prolific yellow variety easily distinguished by its white cob and other ear and plant characters. It has a medium low stalk, with low set ears 7 to 8 inches in length and 1 1/2 to 2 inches in diameter. Twelve to 14 rows of kernels, slightly tapering, and golden yellow in color. Kernel of medium length, broad, full, hard, and very slightly indented. Butts flat, tips fair. Matures in 115 to 120 days.

Jellicorse

A white variety of corn developed by Reggie Jellicorse, Elmwood, Tennessee. Selections were made by Mr. Jellicorse for yield and quality of grain. The grain is of excellent quality. Ears are 6 1/2 to 7 inches in length and approximately 2 inches in diameter. Cob white and bears 12 to 16 rows of kernels. Matures in 120 to 125 days.

Jellicorse has proven to be a high yielding variety in the northern one-third of the state, but may be questionable in the central and southern portions.

Figure 123. Johnson's Prolific, uniform in type, a medium producer.

Johnson’s Prolific

Johnson’s Prolific is a white variety resembling Mosby except the ears are a little shorter. Ears 6 1/2 to 7 inches in length, 1 1/2 to 2 inches in diameter. Cob white and bears 14 rows of kernels. Developed by J. W. Johnson, Quitman, Miss.
Laguna

For a number of years Laguna has been kept in a high state of production by the Mississippi Experiment Station. Apparently this is one of the best varieties known for late planting in this state. Although the time required for the maturing of Laguna is approximately the same as for Mosby and other varieties, it seems to stand the adverse weather conditions that usually occur during the latter part of the growing season, and like Mexican June will build its yield above other varieties planted under these conditions.

Laguna is a white variety with medium size stalks and medium ear height. Ears 7½ to 8½ inches in length and 2 inches in diameter. Kernels broad, medium length, and plump with a characteristic white cap. Indentation smooth creased to dimpled. Cob white, medium size, and bears 14 rows of kernels. Tips of ear seldom well filled, butts flat. Matures in 120 to 125 days.

Marchetti

A yellow dent variety developed by J. W. Marchetti, Hazlehurst, Mississippi. Relatively small ears 6½ to 7 inches long and 1½ to 2 inches in diameter, usually very irregular in length. Cob dull red and bears 14 rows of kernels. Kernels of medium length and plump with smooth to rough indentations. Matures in 115 to 120 days.

Mosby

Developed by J. K. Mosby, Lockhart, Mississippi, in the late 90's. Later strains including Delta Mosby, Woodruff's Mosby, Suttle Mosby, and others have been developed by the experiment stations and individual breeders.

Mosby is a white semi-prolific variety normally producing one large ear and a nubbin to two medium sized ears per stalk. Ears 8 to 9 inches long, slightly tapering, and approximately 2 inches in diameter. Cob is white and bears 14 rows of kernels. Kernels are of medium length, wide, wedge shape, and roughly indented. Tip of ear usually not so well filled. Matures in 120 to 125 days.
Figure 125, Mosby, a very popular general purpose corn

Figure 126, Paymaster, a high producing soft corn suitable for north third of State.
Neals Paymaster

Developed by W. H. Neal at Lebanon, Tennessee. Mr. Neal began some 25 years ago with a mixed variety and has persistently selected for yield and a red cob. He made his selections in the field from plants that produced two good-sized ears to the stalk.

Paymaster is a white variety with a medium sized stalk and medium ear height. Ears are 7 to 8 inches in length and 2 to 2½ inches in diameter, slightly tapering, and bear 14 to 16 rows of kernels. Grain white in color. Cob is small and light red. Matures in 115 to 120 days.

This variety is probably one of the best that can be grown in the northern one-third of the state, but like Jellicorse may be questionable in the central and southern portions.

Piggotts Red Cob

Originated and developed by B. W. Piggott and Son, Tylertown, Mississippi.

This variety is sometimes called shoe peg corn. It has long pointed kernels and a very small cob. Ears 5 to 6 inches long, 1½ to 2 inches in diameter. Cob very small, deep red, and bears 16 to 20 rows of kernels. Kernels are ivory or straw white in color, extremely long, narrow, and almost round with very rough or beaked indentation. Matures in 120 to 130 days.

Surecropper

This variety was originated and developed in Texas. The grain is creamy white and very susceptible to ear rot. Ears 7 to 8 inches in length and approximately 2 inches in diameter. Cob white and bears 14 rows of kernels. Indentation smooth to rough creased. Matures in 115 to 120 days.

Figure 127. Whatley Prolific, high producer, small eared; not widely distributed.
Whatley Prolific

Originated and developed by Whatley Brothers, Helena, Georgia. It is a white variety with a red cob, resembling Paymaster to some degree but can be identified quite well from it. Ears 6 1/2 to 7 inches in length and 1 1/2 to 2 inches in diameter. Cob dull red and bears 12 to 14 rows of kernels, indentation rough to beaked, ears slightly tapering, grain pearly white. Matures in 120 to 130 days.

Reference: Mississippi Farm Research, Volume 3, Number 3, March, 1940.

SWEET POTATOES

Porto Rico

Vines medium to long, 5 to 10 feet; stems coarse, internodes short, reddish purple in color, hair especially at the nodes and on young growth; leaves shouldered, large in size, green except purple at base of blade and one veins, slightly hairy on upper surface, smooth below; petioles medium long, 5 to 8 inches, reddish purple in color, deeper at the base of the leaf blade, color extends up on veins of lower sides of leaf, color also deeper at base of petiole. Roots light rose in color, fusiform to globular and irregular in shape, smooth, flesh orange-yellow to salmon.

Nancy Hall

Vines medium in length 4 to 8 feet; stems somewhat hairy, green; leaves toothed or entire with 4 to 10 marginal teeth, hairy on upper surface and slightly hairy or smooth beneath, green except a reddish purple stain at the juncture of the blade and petiole, the later slightly hairy, green except at upper end. Roots yellow tinged more or less with salmon, veined, or smooth and regular, fusiform in shape, medium to large in size; season early; of excellent quality.
Judging Sweet Potatoes

1. **Trueness to Type**: The roots should be of uniform shape and color which are characteristic of the variety. There are several strains within the varieties which vary in color, and while the richer colored strains are usually preferred, uniformity of color is a more important factor in judging. The shape should not be too much like a turnip nor too long and slender, but more of an oval or spindle shape for the more popular varieties (Porto Rico or Nancy Hall).

2. **Freedom from Disease**: Any sign of any discolored diseased areas such as black rot, soft rot, scab, or stem rot on the tubers should be considered a serious defect. Scurf is less serious but undesirable.

3. **Size**: The most desirable market sweet potatoes range in size from 2½ to 3 inches in diameter and 5½ to 7 inches long. However, U. S. No. 1 grade allows sizes ranging from 1¾ to 3½ inches in diameter and 4 to 10 inches long.

4. **Uniformity**: Individual potatoes in a sample should be as near the same weight, shape and color as possible. The color should be uniform over the entire root.

5. **Market Quality**: Quality has to do with general appearance. The roots should be smooth and free from defects such as cuts, bruises and colored areas, and should be bright and clean.
Placing Card for Potato Judging

<table>
<thead>
<tr>
<th>Contestant's No.</th>
<th>Team No.</th>
<th>Class</th>
<th>POINTS FOR COMPARISON</th>
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**Official Grades**

U. S. No. 1 shall consist of sweet potatoes of similar varietal characteristics which are firm, not badly misshapen; free from black rot, decay and freezing injury; and free from damage caused by dirt, secondary rootlets, bruises, cuts, scars, growth cracks, scald, scurf or other diseases, weevils or other insects, and mechanical or other means. Diameter, 1½ inches to 3½ inches; length 3 inches to 10 inches.

Tolerances—In order to allow for variations other than size incident to proper grading and handling, not more than 10 percent by weight of the sweet potatoes in any lot may be below the requirements of this grade, but not to exceed a total of 5 percent shall be allowed for defects causing damage, and not more than one-fifth of this amount or one percent shall be allowed for sweet potatoes affected with soft rot.

In addition not more than 10 percent by weight of the sweet potatoes in any lot may not meet the size requirements, but not more than one-half of this tolerance or 5 percent shall be allowed for sweet potatoes which are below the minimum size requirements.

U. S. No. 2 shall consist of sweet potatoes of similar varietal characteristics which are firm; free from black rot, decay and freezing injury; and free from serious damage caused by dirt, bruises, cuts, scars, growth cracks, scald, disease, weevils or other insects and mechanical or other means. Diameter, 1½ inches to 3½ inches; length, 3 inches to 10 inches.

Tolerances—In order to allow for variations other than size incident to proper grading and handling, not more than 10 percent by weight of the sweet potatoes in any lot may be below the requirements of this grade, but not to exceed one-tenth of this amount or one percent shall be allowed for sweet potatoes affected with soft rot.
In addition not more than 10 percent by weight of the sweet potatoes in any lot may not meet the size requirements, but not more than one-half of this tolerance or 5 percent shall be allowed for sweet potatoes which are below the minimum size requirements.

U. S. Fancy shall consist of sweet potatoes of similar varietal characteristics which are firm, smooth and well-shaped; free from black rot, decay and freezing injury; and free from damage caused by dirt, secondary rootlets, bruises, cuts, scars, growth cracks, scald, scurf, or other diseases, weevils or other insects and mechanical or other means.

The diameter of each sweet potato shall not be less than 2 inches, nor more than 3½ inches, and the length shall not be less than 3 inches nor more than 6 inches, but the length may be less than 3 inches if the diameter is 2½ inches or more.

Tolerances—In order to allow for variations other than size incident to proper grading and handling not more than 10 percent by weight of the sweet potatoes in any lot may be below the requirements of this grade, but not to exceed a total of 3 percent shall be allowed for defects causing serious damage and not more than one-third of this amount or one percent shall be allowed for sweet potatoes affected with soft rot.

In addition not more than 10 percent by weight of the sweet potatoes in any lot may not meet the size requirements, but not more than one-half of this lot tolerance or 5 percent shall be allowed for sweet potatoes which are below the minimum size.

Unclassified shall consist of sweet potatoes which are not graded in conformity with any of the foregoing grades.

**Definition of Terms**

“Similar varietal characteristics” means that the sweet potatoes in the same container shall have skins of similar color, such as white, yellow or red. Moist (Southern) and dry (Northern) types shall not be mixed.

“Firm” means that the sweet potato shall not be flabby or shrivelled.

“Badly misshapen” means that the sweet potato is so misshapen as to cause a waste for ordinary use of more than 20 percent by weight of the potato.

“Damage” means any injury which materially affects the appearance of the lot or causes appreciable waste in the ordinary preparation for use.

“Serious damage” means any injury not including misshapen potatoes which seriously affects the appearance of the lot or causes a waste of more than 20 percent by weight in the ordinary preparation for use. Black rot shall be considered as serious damage.

“Diameter” means the greatest dimensions at right angles to the longitudinal axis.

“Smooth” means that in addition to other defects which cause roughness, sweet potatoes shall be free from prominent veinings.

IRISH POTATOES

Irish Cobbler

An excellent table potato; tuber white, roundish, slightly flattened, blocky, deeply recessed at seed ends and stem ends. Eyes deep, sprout green, tinged reddish pink.

Plant: Stems medium light green, tinged with purple at nodes and base, leaves medium light green, glossy, broad. Flowers light rose-purple, under intense heat may be almost white.

Figure 130, Irish Cobbler

Triumph

Size: medium; shape: roundish, blocky, slightly flattened; surface: fairly even; distal (bud) end: roundish to truncate (blunt); bud-eye cluster: large, lateral to central, medium to deep. Stem end: very truncate (blunt). Stem: small, central; cavity: very large, broad, deep to very deep, very irregular. Skin: thin, tender, solid red. Eyes: fairly numerous, medium in size, rather deep, reddish. Eyebrows: prominent, long, moderately curved. Flesh: fine, firm, juicy, white.

Standard Size of Tubers of Triumph Variety

Circumference longitudinal (lengthwise) ........................................... 8 3/4 inches
Circumference latitudinal (crosswise) ............................................... 8 1/2 inches
Length ......................................................................................... 2 3/4 inches
Width .......................................................................................... 2 1/4 inches

Tubers of the above sizes will weigh about six or seven ounces.
Judging Irish Potatoes

1. Trueness to Type: Potatoes should be true to the type of the variety judged. Irish Cobblers are round, have rather deep eyes, and white skins. Tubers which do not have the true varietal characteristics should be placed below those which are more nearly of the right type.

2. Freedom from Disease: Diseases most likely to be observed are scab, Rhizoctonia, and rots. In a judging contest tubers are not usually cut to observe internal diseases. Scab causes rough, unsightly spots on the exterior of the tuber. Rhizoctonia occurs as small, hard, dark, colored bodies the size of a pin-head or larger, adhering to the skin of the tuber. They turn black when moistened. Samples showing disease should be placed according to the severity of the infection, the worst samples being placed last.

3. Size: Tubers may be as small as four ounces or as large as twelve ounces. The most desirable size is from six to eight ounces. If samples are larger or smaller than this they should be graded off accordingly.

4. Uniformity: This is considered one of the important points in exhibition products. The individual tubers should be as nearly the same size, shape and color as possible.

5. Quality and General Appearance: After the other points are judged, quality and general appearance should be considered. These indicate the general character of the sample and the care with which it has been selected and handled.

General Statement: In comparing samples of seed potatoes in regard to the above points bear in mind that Trueness to Type and Freedom from Disease are of almost twice as much importance as the other characteristics. These characteristics will influence the crop produced by such seed and are, therefore, of a great deal more importance than uniformity and general appearance. In judging market potatoes, uniformity and general appearance would be of almost as much importance as trueness to type and freedom from disease.

SEED IDENTIFICATION

In seed identification it is necessary for the judge to know the characteristics of the seed to be judged. In this connection the description of a number of crop seed are given.

Legumes

Alfalfa

Description of Plant: Alfalfa may be described briefly as being a deep-rooted, long-lived herbaceous forage plant belonging to the botanical family Leguminosae, or pod-bearing plants. Its flowers are violet, clover shaped, and borne in compact oblong racemes, or clusters. The pods are small, slightly hairy and spirally coiled in two or three turns. The kidney-shaped seeds are about one-twelfth of an inch long, and several are contained in each pod.

One of the most important characteristics of alfalfa is its long tap-root, often extending 15 or more feet into the soil. This enables the plant to reach stores of plant food in the soil which cannot be secured by the ordinary shallow-rooted field crops. This long tap-root is also of great importance in sections of limited rainfall, as by this means the plant is enabled to withstand extremes of drought which would otherwise be fatal.

Description of Seed: Olive green to brownish green color, slightly kidney to angular in shape, similar in size and color to sweet clover.

Distinguishing Characteristics: Flowers, violet color; clustered raceme; seed pods, spiral and many seeded; three leaflets, upper one with short stem. Leaflets slightly notched at the tips only. Stipules at the base of leaf stem are narrow ing-shaped. Stems of young plants are square.

Alsike Clover

Description of Plant: Alsike clover is a perennial but it is usually classed agriculturally as a biennial. Many smooth stalks grow up from the crown root system. The stems bear smooth leaves, each with three leaflets. The flower heads vary in color from partly pink and partly white to all white or all pink. After the flower heads mature and fade they bend over and hang down.

The length of the stalks vary from 8 to 12 inches on poorer and dry soil to 1½ to 3½ feet on moist soils under most favorable growing conditions. Single from each leaf axil. The main axis keeps on growing instead of terminating in a flower or flowering branch. The leafy branches may in turn keep growing forming flower heads or smaller branches in the axil of each leaf.

The terminal heads are the last found, the older ones being successively lower on the stem. The stem, however long, may bear flower heads along its entire length. Due to its method of growth Alsike clover may be cut for hay over a longer period of time than other clovers.

Description of Seed: The seed are light to dark green in color, small heart shaped and about the same size as white clover seed.

Distinguishing Characteristics: The stems are smooth and weak. The main stem is branched but does not terminate in a flower head, thus different in respect from red clover. The branches off the main stem terminate in flower heads. They are small, roundish, and of a white to pinkish color.

The leaflets are joined at a common point but have no white spot in the center. The stipules at the base of the leaf stem are wide and wing-shaped.

Burr Clover

Description of Plant: Annual, much branched, 15 to 60 branches at the base, ascending and spreading, smooth; stems 15 to 30 inches long. Leaves petioled, three-parted; leaflet broad at the apex, pointed at the base, emarginate, cuneate,
wavy, margin, $\frac{3}{8}$ by $\frac{1}{2}$ inch; stiples, small dentate. Flowers yellow, $\frac{3}{4}$ inch long, in small heads of two to four. Pods $\frac{3}{4}$ by $\frac{3}{4}$ inch, spirally twisted in two or four coils; coils flat, veined, each provided with two rows of reflex prickles. Seeds three to five to the pod, $\frac{3}{4}$ to $\frac{3}{16}$ inch long, strongly kidney-shaped, deep yellow in color. Nitrogen tubercules forked, rather flattened, $\frac{3}{4}$ to $\frac{1}{2}$ inch in diameter. Native of Europe and Asia supposed to have been introduced into America in ship ballast.

**Distinguishing Characteristics:** Burr clover spreads over the ground with many branches during its growth. The leaves are trifoliate (three in a cluster) and usually have V-shaped black spots on them. The leaflets are broader at the apex than at the point of attachment.

The seed are borne in characteristic twisted pods with prickles attached. The seed are flat kidney-shaped and vary from yellow to bright brown in color. They are somewhat larger than either red clover or alfalfa.

**Crimson Clover**

**Description of Plant:** Although crimson clover is an annual, it has a semi-biennial habit, as it, when sown in the summer or fall, will mature during the spring of the following year. It is upright in its habits of growth, and under favorable conditions attains a height of twenty to thirty inches. From the crown of the root are developed four to thirty or more erect branches on which a large amount of foliage is produced. The stems and leaves are quite hairy. The heads are terminal, being some distance above the last leaves, and are somewhat longer than those of red clover. They are of a rich, crimson color and are strikingly beautiful in their appearance. The leaves are borne on long leaf stalks. It is much earlier in maturing than red, mammoth, and alsike clovers. It grows late in the fall and starts growth early in the spring.

**Description of Seed:** They are egg-shaped, the largest of the clover seeds, and vary from flesh to reddish brown in color.

**Distinguishing Characteristics:** Crimson clover grows with the stem terminating in a spike-like raceme bearing the crimson flower. The stems and leaves are hairy. The leaflets are broader at the apex than at the point of attachment, and are much larger than the leaves of white clover. They also tend to be more rounding without the color marking that distinguish red and white clover.

**Red Clover**

**Description of Plant:** Red clover is a biennial and is especially adapted to short rotations. It is a herbaceous plant and is composed of numerous leafy stems arising from a thick crown. The stems and leaves are hairy, with each leaf having three leaflets. The flowers are rose-pink in color and they remain erect even after the flower fades. The main axis terminates in a flower and thus limits the growth of the stem. Branches arise from the leaf axis and these in turn are terminated by flowers. Thus the terminal flower head of the main stem or branch is the oldest of the plant or branch. The flower heads of red clover are not borne at exactly the same height from the ground. There is no great difference between the level to which the various flower heads rise.

**Description of Seed:** The seed are somewhat heart-shaped, deep purple to light yellow and mottled in color. They are about the size of alfalfa seed and somewhat smaller than crimson clover.

**Distinguishing Characteristics:** The stems and leaves are hairy. The main stems are strong and usually erect and terminate with the flower head limiting growth. The flower heads are large, slightly elongated, and of a purplish pink color. The leaflets are joined at a common point usually bearing irregular V-shaped white markings. The stipules at the base of the leaf stem are attached about three-fourths of their length.
Sweet Clover

Description of Plant: Sweet clover is an erect-growing legume with trifoliate leaves and white, yellow, or purple flowers. It is similar to and closely related to alfalfa and true clovers. In its early stages it is difficult to distinguish from alfalfa. All sweet clovers have a bitter taste and have, when bruised, a characteristic pleasant odor due to a substance within the plant known as cumarin.

The flowers are produced on long flowering stems, or racemes, which arise in the axils of the leaves. A raceme may bear as many as a hundred flowers. Most strains of white sweet clover (Melilotus alba) usually begin blooming in June about ten days after the yellow-flowered species (Melilotus officinalis). Blooming begins at the base of the raceme and continues to the tip. The normal blooming period for a single stem is ten days or two weeks, usually with not more than half the flowers on the raceme in bloom at one time. The shorter blooming period of the yellow species is due to the more rapid opening of the flowers.

Description of Seed: Seeds of sweet clover and alfalfa are often confused because of their similarity, the sweet-clover seeds are comparatively short and thick and alfalfa seeds are bean-shaped. Some unhulled seeds are frequently found in a sample of sweet clover. Sweet-clover seeds have a characteristic bitter taste and sweet odor and are slightly smaller and more oval in shape than alfalfa.

Distinguishing Characteristics: Flowers, white or yellow, produced on long flowering stems (racemes). Seed pods, dark in color bearing only one seed. Three leaflets, upper one with short stem, leaflets are notched all around the edge. Stipules are very narrow and bristle-like. The stems of the young plants are many sided; juice of stem bitter.

The seed are olive green to yellowish green to brown, somewhat smaller than alfalfa, uniform, oval in shape with distinct crease three-fourths the length of the seed.

White Clover

Description of Plant: White clover is a smooth perennial; the stems are slender spreading, creeping, and rooting at the joints; the leaves are trifoliate, leaflets being inversely heart-shaped, and the leaf-stalks long; the flowers are white to an occasional pale pink arranged in small globular heads on long stalks; the first is a small, usually four-seeded pod; the growing season in the South is almost the entire year except dry summer. White clover grows on a variety of soils. It is distributed throughout North America, except the extreme North and the extreme South.

Description of Seed: The seed are small heart-shaped and vary in color from yellow to brown.

Distinguishing Characteristics: White clover is a dwarf low growing legume with creeping stems which root at the joints. The white flower heads are borne on the end of the long stalks. The leaflets are inversely heart-shaped each marked with a white V-shaped spot.

Lespedeza (Common)

It is thought that common lespedeza came originally from the Orient and probably grew first at Charleston, South Carolina, about the year 1830, and was spread from there to various parts of the South. It was first grown for pasture. Later it was grown for hay. Common Lespedeza belongs to the species striata, and is an annual. It will stand heavier and closer grazing and will reseed itself better than other annual varieties.

Distinguishing Characteristics: The plant tends to grow erect but not as erect or as tall as Tennessee 76. The leaves are composed of three leaflets. The leaflets are long and narrow. The stipules are narrow and pointed.
The seed remain in the hull when threshed. They are shaped like a shield, with three distinct points opposite the base end.

**Kobe Lespedeza**

J. B. Norton, an explorer for the United States Department of Agriculture, found what proved to be Kobe lespedeza while on a trip in Japan during the year 1919. He gathered plant specimens near the city of Kobe, and later sowed them in his garden at Hartsville, S. C. The Coker Pedigreed Seed Company of Hartsville, S. C., grew the first seed crop from Mr. Norton’s selection in 1923.

Kobe is characterized by larger leaflets, stems, and seed. The shape of the leaflets are about the same as common lespedeza, but are larger and broader. Kobe matures later than Korean but is a little earlier than Tennessee 76.

**Distinguishing Characteristics:** The plant is much larger than common and has longer and broader leaflets. The seed are larger than common lespedeza. Kobe seed are grayish brown while the common are chocolate brown.

**Korean Lespedeza**

Korean Lespedeza, as the name indicates, was first found at Sorai Beach in Korea by Doctor Ralph G. Mills. Korean lespedeza seed were sent by Dr. Mills to the United States Department of Agriculture trial grounds at Arlington Farm, Rosslyn, Virginia, about 1921. These seed were grown and proved to be the heaviest yielder of seed and forage of any of the varieties grown as far north as Washington, D. C.

The plant is larger and coarser than common. The leaflets have a distinctive shape in that they broaden toward the apex. The stipule is broad in comparison to the narrow stipule found on the common lespedeza.

**Distinguishing Characteristics:** The plant is larger and coarser than common, and its leaflets are more rounding while common is oblong or long and narrow in shape. The stipules of Korean lespedeza are much larger than common. The mature plants bear special flowering branches. These branches have elongated hairy leaves placed close together giving a feathery appearance. The flowers and seeds are borne in the axils of the leaves.

The seed are oval in shape, almost the same size as common, but smaller than the Kobe. They are grayish brown in color in the hull and purple when threshed free of the hull.

**Lespedeza Sericea**

Sericea lespedeza seed were sent to the United States from Japan by Dr. Seaman A. Knapp about 35 years ago. The first plants were grown on the Arlington Farm, Washington, D. C., several years before this date.

Professor Geralk McCarthy of North Carolina planted some seed on his farm near Raleigh, North Carolina. Descendants of the original plants may still be found in waste places on this same farm. Strange to say, this variety did not become important until introduced by the United States Department of Agriculture in 1923.

Sericea is a perennial, producing a large coarse plant during the second year’s growth. Mature plants reach a height of 3 to 4½ feet on good soil. The stems are very woody with light green leaves, silky on top and hairy beneath. The stems are also covered with small white hairs. Sericea is best cut for hay when cut at not over 12 inches high.

**Distinguishing Characteristics:** The plant is branched and very large and woody. Leaflets are long and narrow and square at the tip and somewhat pointed at the base.

The seed in the hull are dark brown, when dehulled green and oval in shape.
Austrian Winter Peas

Description: The Austrian winter field pea (Pisum arvense) is a cool weather legume that closely resembles the garden or English Pea and the sweet pea in habit of growth and appearance. On fertile soil the climbing vines may reach a length of five or more feet.

The flower is reddish purple in color, resembling a small sweet pea blossom. Blooming generally commences in April.

The seed are of a brownish mottled color, somewhat larger than hairy vetch seed and are borne in small pods that ripen in May.

Distinguishing Characteristics: Plants similar to garden pea. Seed greenish-gray to brown, round and dimpled. They are about 5 mm. in diameter.

Hairy Vetch versus Smooth Winter Vetch

Hairy vetch is one of the oldest and most commonly used green manure crops of the cotton belt. Being one of the most winter hardy of the vetches, it seldom suffers any winter injury. It is usually considered as a winter annual, although it is often carried over into the second year as a biennial when sown in the spring. The stems are comparatively weak or viny, ascending only with support. It has a higher minimum of zero growing point than other vetches that are less winter hardy, so that in seasons with a low mean temperature less growth may be expected from this variety than from others with a lower zero growing point. In mild winters, however, or winters having a high mean temperature, hairy vetch may yield as heavily as any less hardy variety. The seed of this variety cannot be distinguished from that of smooth vetch, and the two varieties are being sold under the name hair vetch. In growth, however, the two varieties are very distinct, the hairy vetch having long hairs on the stems and leaves, while the smooth vetch has fewer and less conspicuous hairs. A tufted growth at the ends of the stems of hairy vetch is also characteristic. The flowers of hairy vetch are a little larger than those of smooth vetch and of less reddish-purple color.

Distinguishing Characteristics: Hairy is distinguished by beans covered by fine hair. Smooth vetch as the name indicates is free of hairs on leaves and stems. The seed of hairy and smooth vetch cannot be distinguished. The flower clusters are a little larger in hairy vetch than in smooth vetch. The hairy vetch plant is distinctly hairy while smooth vetch has very few or no hairs at all. A tufted growth at the ends of the stems of hairy vetch is also characteristic.

Velvet Beans

The velvet bean is the most vigorous-growing annual legume cultivated in the United States, the vines often reaching a length of more than 50 feet. The leaves are petioles and trifoliate. The mebranous leaflets, which are shorter than the petiole, are from 3 to 10 inches long and about two-thirds as broad, the terminal one being rhomboid-ovate and the lateral ones obliquely so. The flowers of the different varieties, which vary in color from white to dark purple, are 1 to 1½ inches long and are borne singly or in two’s or three’s in long pendent clusters.

Velvet bean pods are of two distinct types, one being covered with a dense, black, velvety pubescence, as in the Florida and Alabama varieties, while in the other type the pubescence consists mostly of short white or grayish hairs, as in the Lyon and Chinese varieties. In all kinds, the pods are covered with more or less numerous short bristles which cause a slight irritation of the skin. Much of this pubescence falls off soon after maturity. The pods of some varieties are only 2 to 3 inches long, while those of others may reach a length of 5 to 6 inches. The seeds vary from nearly white to marbled brown, brown and black. Varieties which commonly produce marbled seeds produce occasionally an entirely white or an entirely colored seed.
Velvet beans have numerous rather fleshy surface roots, which are often 20 to 30 feet long and abundantly supplied with nodules varying from one-fourth to one and one-half inches in diameter. The plants are rarely attacked by root-knot and are immune to wilt.

**Distinguishing Characteristics:** Velvet beans have either a bunch or viney habit of growth. The leaves are petioled and trifoliate. The leaflets are shorter than the petiole, and the terminal one egg-shaped, and the lateral ones lobed. The pods are borne on a single raceme usually in large clusters. The seed are nearly spherical in shape, 10 to 12 mm long, to 10 mm wide, 6 to 8 mm thick. The hilum is usually surrounded by a light color mottled with brown but sometimes it is solid white or brown.

**Biloxi Soybeans**

Introduced under S. P. I. No. 23211 from Tangsi, China, in 1908. Plants stout, erect, bushy, maturing in about 165 days; pubescence, tawny; flowers, purple, 85 to 90 days to flower; pods 2 to 3 seeded; seeds dark brown with brown hilum, about 1,875 to the pound; germ, yellow; oil, 20.1 per cent.

**Distinguishing Characteristics:** Hilum and seed coat brown, seed large 10 to 11 mm long, 7 to 8 wide, 6 to 7 thick.

**Laredo**

Introduced under S. P. I. No. 40658 from Yangpingkwan, China, in 1914. In China this variety is said to be adapted to drier lands than other varieties. Plants, slender, erect, inclined to lodge on fertile soils, maturing in about 140 days; pubescence, tawny; flowers, both purple and white, 70 to 75 days to flower; pods, 2 to 3 seeded; seeds, black with black hilum, about 7,776 to the pound; germ yellow; oil, 14.0 per cent. The Laredo is highly resistant to wilt and nematodes.

**Distinguishing Characteristics:** Seed covering and hilum, black, 6 to 8 mm long, 4 to 5 mm wide, 2 to 3 mm thick. Sides, flat, somewhat oblong to egg shape.

**Mammoth Yellow Soybeans**

One of the early importations, but exact date and origin seems somewhat indefinite. A late-maturing (140 day) seed type of bean adapted to a wide range of soil conditions.

**Plant and Seed Characters:** Plants erect, bushy, stems large and coarse; leaves medium size; pubescence, gray; flowers, white; pods, straw yellow; seed, medium large, 2,145 pound, almost spherical in shape; seed coat, cream buff; hilum, fawn color to bone brown (light to dark brown); cotyledons, yellow.

**Distinguishing Characteristics:** Seed, cream to straw color; hilum, light to medium dark brown, 7 to 8 mm long, 6 to 7 mm wide, 5 to 6 mm thick, somewhat spherical in shape.

**Otootan Soybeans**

Introduced from the Hawaiian Island in 1911 by C. K. McClennad, Georgia Agricultural Experiment Station. It is said to have come originally from Formosa. Plants, slender, erect, bushy, but lodging under favorable conditions, maturing in about 175 days; pubescence, tawny; flowers, purple, 90 to 95 days to flower; pods, 2 to 4 seeded; seeds, black with black hilum, about 6,150 to the pound; germ, yellow; oil, 17.7 per cent.

**Distinguishing Characteristics:** Seed covering and hilum black, 6 to 7 mm long, 5 to 6 mm wide, 4 to 5 mm thick. Spherical in shape.

**Tokyo Soybeans**

Introduced under S. P. I. No. 8424 from Yokohama, Japan, in 1902. Plants, stout, erect, bushy, maturing in about 140 days; pubescence, gray; flowers, both purple and white, 70 to 75 days to flower; pods, 2 to 3 seeded; seeds, yellowish green with pale hilum, about 2,260 to the pound; germ, yellow; oil, 18.4 per cent.
Distinguishing Characteristics: Seed, olive yellow; hilum, pale, 7 to 8 mm long, 6 to 7 mm wide, 5 to 6 mm thick, somewhat spherical in shape.

Virginia Soybeans

A selection from the Morse made by representatives of the U. S. D. A. in 1907. A medium-late 125 day bean of a hay type, doing unusually well on the poorer types of soil. Has a tendency to lodge badly on rich soils, but stand much better on poorer soils, giving a surprisingly large yield of either hay or seed under such conditions.

Plant and Seed Characters: Plants, slender, twining; leaves, medium size; pubescence, tawny; flowers, purple; pods, tawny and distributed throughout the length of the long, slender stem; seed, medium-small (4,092 per pound) oblong, much flattened; seed coat, medal bronze (greenish brown) to Prouts brown (dark yellowish brown); hilum, olive brown; cotyledons, yellow.

Distinguishing Characteristics: Seed coat and hilum olive to brown in color, 8 to 9 mm long, 5 to 6 mm wide, 4 to 5 mm thick; seed, flat, somewhat oblong to kidney shape.

Mamredo Soybeans

The Mamredo was developed from a black-banded yellow bean discovered by H. A. York in 1924 in a quantity of Mammoth Yellow soybeans which had grown in a field adjoining a field of Laredo soybeans. The Mamredo is, therefore, presumed to be a natural hybrid between these two varieties. The Mamredo is one of the Delta’s best early high producing yellow beans. It makes a very good quality of hay and holds the beans well when first mature, but shatters somewhat after the beans have been ripe for some time.

Distinguishing Characteristics: Mamredo is semi-erect with twining terminals, medium in size with abundant stems and leaves, and matures in about 145 days. The pubescence is tawny and the flowers both purple and white, requiring 75 to 80 days to bloom. Pods are tawny and two- to three-seeded. The seed are yellow with tan and brown hilum and the germ is yellow. Approximately 3,220 seed are required to make a pound. Mamredo is one of the Delta’s best early, high producing, yellow beans.

Mamloxi Soybeans

Mamloxi is a Mammoth Yellow-Biloxi hybrid, resulting from a cross made by H. A. York at the Delta Branch Experiment Station in 1925. Selections have been made from its progeny for a high-yielding, non-shattering, medium-early yellow bean. The type is now well fixed, though the seeds still have some reversionary brown markings. It has the production and color qualities of the Mammoth Yellow, and the non-shattering qualities of the Biloxi, and is a combination of the plant type of both parents. It has been one of the highest yielders of grain for the past ten years and is grown extensively over the Delta.

Distinguishing Characteristics: A Mammoth Yellow-Biloxi hybrid, is a high yielding non-shattering, medium early, yellow bean. It still has some reversionary brown markings. Pods are tawny and gray and flowers are purple and white. The plant is stout, erect, and bushy. It grows taller than the Mammoth Yellow and matures seed in about the same time, 145 to 150 days. The seed are yellow and about the size of the Mammoth Yellow, probably a little larger, requiring approximately 2,330 beans to a pound. It is very prolific. The beans are well retained in the pod during adverse weather. It is too coarse and woody for the best quality of hay, unless planted very thick.

Delsta Soybeans

Delsta is a high yielding grain bean, and medium to late in maturity. The plants are very stout, erect, and bushy, and mature in about 165 days. The flowers are white and require about 75 to 80 days to bloom. Pods are gray and
two- to three-seeded. The seed are yellow, large, with about 1,860 beans to the pound. The Delsta shatters some if allowed to stand too long after fully matured. The hilum and germ are yellow. The stems are coarse and the leaves medium in size and late in maturity. It is a heavy yielder of grain but not a good hay bean. If planted thick enough it will make a good quality of hay. When given space, plants grow about \( \frac{3}{2} \) feet high with several branches from the central stalk approaching the height of the main axis and spreading into a broad top.

**Blackeye Cowpeas**

The Blackeye varieties are quite numerous and are very similar to each other, the name applying in general to all white sorts with a black eye. The varieties of this group have been grown as a table vegetable since ancient times. One of the earliest forms is the Extra Early Blackeye, a sort adapted to the northern part of the cowpea region. The California Blackeye is grown quite extensively throughout the interior valley of California.

**Distinguishing Characteristics:** The seed coat is white with a blackeye. The size varies from small to large.

**Clay Cowpeas**

The term Clay is applied commercially to a group of medium-late varieties with buff-colored seed rather than to any one sort. The Iron cowpea is not included in the Clay group. There are many buff-seeded varieties, all of which have practically the same habit of growth, but they differ slightly in time of maturity, size and form of seeds. The sorts which mature their first pods in about 110 days or less make up the most of the seeds sold as Clay, while the sorts requiring 110 days or more to mature the first pods are called Wonderful or Unknown. On account of its large vigorous growth, the Clay group, especially the Unknown or Wonderful, is grown to a considerable extent for forage and soil improvement.

**Distinguishing Characteristics:** The seed coat is cream buff. The seed are medium sized and somewhat larger than Iron.

**New Era Cowpeas**

The New Era is one of the important commercial varieties of cowpeas. It is especially valuable on account of its earliness, its erectness, and the smallness of the seed. It usually produces a heavier yield of seed than the Whippoorwill. Plants, tall, erect, half bushy, very prolific; pods held high, the first maturing in about 75 days; seeds thickly and evenly speckled with blue.

**Distinguishing Characteristics:** The seed are buff with fine blue specks evenly distributed over the seed coat. The seed are similar to but smaller than Groit.

**Whippoorwill Cowpeas**

Probably more than half of the acreage of cowpeas in the United States is devoted to this variety. It is easily distinguished by its subreniform seeds, which are buff marbled with brown. This variety is also called Shinney and Speckled. It has been known in the United States for at least seventy years.

**Groit Cowpeas**

This is a cross between Whippoorwill and New Era, the seeds sharing the coloration of both parents, apparently superimposed on each other. It is larger and more prolific than New Era, and on the whole the best forage cowpea for states north of the cotton belt.

**Grasses**

**Bermuda Grass**

Bermuda grass (Cynodon dactylon) is so well known that a detailed description is unnecessary. Sometimes, however, the grass is confused with crabgrass or crowfoot, and water Bermuda grass. It is distinguished from all of these plants, however, by the ring of white hairs at the base of each leaf blade. Another
conspicuous characteristic of the plant is the mass of creeping stems or runners which it produces. It is by no means exceptional to find runners many feet in length, usually forming a matted growth, well adapted to withstand grazing and trampling. The combination of the creeping stems above the ground and of root- stock immediately below the surface makes Bermuda grass pernicious when growing when it is not desired. From the creeping stems, upright branches arise at intervals to a height of 6 to 12 inches, and sometimes taller. Each flowering branch is crowned by a cluster of three to five slender ascending spikes arranged like the rays of an umbrella. The stems of the grass are compressed and consist of numerous joints, each of which, if separated, may grow readily into a new plant.

Distinguishing Characteristics: The plant is distinguished from the crab grass by a ring of white hairs at the base of the leaf blade. The flowering stems form a compound spike with 2 to 5 racemes which are joined at a common point. The plant has a creeping habit of growth by means of stems above and below the ground.

The seed are angular and pointed about the same size as carpet grass. They are light gray in color. They are 2 mm long and 1 mm wide.

Carpet Grass

Carpet grass (Paspalum compressum) is a slender, erect perennial six to twenty-four inches high; the creeping branches root at the joints and send up numerous leafy, flower-bearing branches; the head consists of two to four slender branches, each two or four inches long; the plant produces seed freely; the growing season is April to October. Carpet grass is common on low ground and in moist pastures on the coastal plains from Virginia to Texas.

Distinguishing Characteristics: The plant is creeping in habit of growth with compressed buds and flat blades. The compound spike usually has 3 racemes, with two at the top joined together at a common point and one, rarely two or three, joined at different intervals down the stem.

The seed are flat-oval in shape and of medium size. They are full gray in color with a distinct hair base, 2 mm long and 1 mm wide.

Dallis Grass

Dallis (Paspalum dilatatum poiret) is known also under the names of large water grass, golden crown grass, and hairy-flowered paspalum. It is smooth perennial, with a deep, strong root system and grows in clumps or bunches 2 to 4 feet high. The leaves are numerous near the ground but few on the stems. The stems are slender and usually drooping with the weight of the flower clusters.

Dallis grass produces seeds rather freely, but owing to the fact that they ripen from the tip downward and shatter off as soon as ripe, good visible seeds can be gathered only by hand. Seed is high-priced and usually of low germination.

Distinguishing Characteristics: The plant produces erect flowering stems from a prostrate (flat) base. These stems bear 3 to 5 racemes originating at different points along the flowering stem. The spikelets are single flowered. The seed are flat-oval in shape 2 to 3 mm long and 2 mm wide.

Italian Rye Grass

Italian rye grass (Lolium multiflorum Lamarck; L. italicum R. Brown) is readily distinguished from perennial rye grass by the awn on each floret and by the young leaves being enrolled at first. The grass is not truly an annual, but under farm conditions few of the plants live more than one year. Each plant under favorable conditions make a round bunch with two or more flowering shoots 1½ to 3 feet high. Many varieties have been distinguished, based on different criteria.
Distinguishing Characteristics: The plant produces as many as twenty stems. The flowers are borne on a spike with 6 to 8 flowers per spikelet. The seed are medium large, about 7 mm long and 1.5 mm wide. The rachilla is flattened, narrow at the base and gradually widening out toward the summit. The Italian rye grass seed bear an awn while English rye do not.

Kentucky Blue Grass

Kentucky Blue-Grass (Poa pratensis) is with the possible exception of timothy, the most noted grass in North America. Perhaps on account of the famous blue-grass country in Kentucky the opinion prevails that the grass is a true native. Such, however, is not the case, the blue-grass did not grow in Kentucky when Boone discovered that attractive region. Like most of our best cultivated grasses, blue-grass is a native of the Old World, where it occurs natural over much of Europe and Asia. It was brought over by the early colonists as one of the species contained in mixed grass seeds, and, like some of the others, found the soils and climatic conditions congenial. The name blue-grass has been supposed to be due to the purplish color of the flowers, but there is good evidence that the name was first applied to Canada blue-grass, which has Bluish foliage, and was later transferred to the really green plant now called Kentucky blue-grass.

Kentucky blue grass has creeping underground stems, each bearing a tuft of leaves at the tip. Unlike some other grasses Kentucky blue-grass blooms but once each season. When not in bloom it can usually be recognized by the leaves, which are V-shaped in cross sections, and by the peculiar leaf tip, which resembles the bow of a boat.

Distinguishing Characteristics: The plant produces a uniform sod by means of underground stems. The leaves are V-shaped on cross section with the tip resembling the bow of a boat. The mid-vein of the leaf blade is prominent, with a short ligule (little tongue) attached to the base of the blade. The flower head is open with the lower-most branches normally in a whirl of five branches. The spikelets are crowded with 3 to 5 flowers per spikelet.

The seed are medium sized, from 3 to 4 mm long. They are ovate, lanceolate, broadish near the center, and acute at tip in shape, and have brownish straw color. The seed have distinct veins on either of the mid-rib of the major glume.

Meadow Fescue

Meadow fescue (Festuca elatior) also called English blue-grass and, in the South, Randall grass, is a hardy perennial grass attaining a height of 15 to 50 inches, or even more on rich land. It does not propagate by root-stocks or form a heavy sod, neither is it inclined to be bunched, as orchard or tall meadow oat grass. Its leaves are bright green and very succulent. The seed are produced in abundance in open panicles, similar to Kentucky blue-grass, although much larger and more easily harvested.

Meadow fescue is useful as a pasture grass, and it makes a very good quality of hay and gives a fair yield. On average 1 and 2 tons per acre is not exceptional, and it is possible to produce even more than this under proper treatment. Where the hay is used it is considered of very good quality, but it is nowhere grown in large quantities. Meadow fescue does not reach its highest state of productive-ness as quickly as timothy but usually persists much longer.

Orchard Grass

Orchard Grass (Dactyliis glomerata) is a well-known standard grass which is grown to some extent in nearly every state in the Union and quite commonly in the region east of the Mississippi River and north Alabama and Georgia. It attains most importance, however, in Kentucky, southern Indiana, Tennessee, North Carolina, Virginia, West Virginia, and Maryland, and seems thoroughly adapted to a variety of soils in these states. It was first cultivated in Virginia in 1760, although the grass is a native of Europe.
Orchard grass is readily distinguished by its large circular bunches, folded leaf blades, and compressed sheaths, and by the peculiar form of its flower heads. The shape of the head has suggested the common English name of cocksfoot. Its ability to grow in the shade of trees is responsible for the name orchard grass.

Distinguishing Characteristics: The plant grows in large circular bunches. Its leaf blades are folded. The sheaths are compressed. The flowers are borne in compact clusters on branched panicles.

The seed are from 8 mm to 9 mm long including awn point. It is strongly compressed and somewhat flattened on the sides, with the awn and tip forming a curve which makes the seed appear sickle shaped. The color of seed is pale yellowish white.

Redtop

Redtop (Agrostis alba) is the only grass of much prominence as a hay plant among the many grasses belonging to the genus Agrostis. It was early introduced into the American colonies. This grass has been known under many common names, such as white-top, florin, white bent, and herd's grass. As all of these names belong more properly to grasses they should not be used for redtop.

It is a perennial grass, with a creeping habit of growth, which make a coarse, loose turf. It matures at about the same time as timothy. The leaves are about one-fourth of an inch wide and the stems slender. The loose widely branched panicle has a reddish color at maturity.

No other grass will grow under as great a variety of conditions as redtop. It is the best wet-land grass among the "tame" species. It will grow on soils so very poor in lime that most other grasses fail. It is strongly drought resistant and is often used for holding banks to prevent erosion. Redtop is second only to blue-grass as a pasture plant in the northeastern part of the country. It is a vigorous grower and will form a good tuft in a short time.

Most of the seed of redtop is produced in southern Illinois. The seed is smaller than that of any other commercial grass and for that reason should be comparatively free from impurities, as it is easily separated from other seeds by screening.

Distinguishing Characteristics: The slender stems with the loose, widely branched reddish panicles and single flowered spikelets make it easy to identify as a plant. The seeds are very small, both hulled and unhulled. They are slender and pointed and silver-whitish and amber.

Sudan Grass

Under cultivation in the United States, Sudan grass has shown itself to be distinctly an annual. Only under practically frost-free conditions, such as obtained along the Gulf Coast and in Southern California, have plants lived over winter. This grass is very closely related to the cultivated sorghums though for many years Johnson grass has been credited by some botanists with being the primitive form of the sorghums.

Sudan grass when seeded broadcast or in drills grows about 3 to 5 feet high and has stems about three-sixteenths of an inch in diameter (a little smaller than a lead pencil). If grown in rows and cultivated, it reaches a height of 7 to 8 feet and stems are about ¼ inch in diameter. The panicle is loose and open, very much like that of Johnson grass, but a little larger and a little less open. The hulls or glumes are awned and when in flower are often purplish in color. This color usually fades to a pale yellow when ripe. The awns are broken off in threshing, so that the commercial seeds rarely have awns. The leaves are broader and more numerous than those of Johnson grass, giving the grass a much more favorable appearance as a hay plant. The most important difference, however, is that the
aggressive underground stems, or root-stocks, with which Johnson grass is equipped, are entirely absent in Sudan grass. Sudan grass, like the cultivated sorghums, never develops anything but fibrous roots, therefore, it cannot become an obnoxious weed as the perennial Johnson grass does. Furthermore, it has shown no tendency to persist in fields as an annual weed through volunteer seeding.

**Distinguishing Characteristics:** The only way to distinguish the plant from Johnson grass is by the absence of root-stock. Sudan grass does not have root-stock. The seed are usually larger and have only a third or less of the red colored seed. The two rachillas of the Johnson grass seed have rachilla that tend to remain on the seed, and the top portion of the rachilla is larger than the base. The seed are oval, somewhat flattened and pointed. They are 5 to 6 mm long and 2 to 3 mm wide.

**Johnson Grass**

Johnson grass is a perennial, reproducing by seed and underground root-stocks. This weed is wide-spread throughout the southern states and is limited in the North by severe winter freezing.

**Description:** Johnson grass grows erect 3-6 feet tall depending on the fertility and moisture in the soil. The habit of growth, the stem and leaves are similar to the cultivated sorghums and Sudan grass. The flowering heads are open and many branched quite similar to the flowering heads of Sudan grass, however, Johnson grass has a larger number of flowering head with reddish colored seed.

**Distinguishing Characteristics:** Johnson grass is very similar to Sudan grass in appearance. It is distinguished by the presence of root-stocks. The seed are oval-flattened and somewhat pointed in shape. The seed coats are thick and glossy, the majority of them being a dark reddish color, the remaining straw color.

**Timothy**

Timothy (phleum pratense) is one of the best known of all grasses and is not likely to be confused with any other.

Timothy is well adapted to the northern half of the United States and somewhat farther southward in the mountains. The southern limit of its successful culture is approximately the same as the northern limit of cotton culture. To the northward it will produce well and survive the winters practically up to the Arctic.

Timothy differs in one respect from most other grasses in that one (sometimes two) of the lower internodes is swollen into an ovoid body, referred to as a "bulb" or "corm" but in reality only a thickened internode. Each one of these "corms" is annual in duration, forming in early summer and dying the next year when the seed matures.

Timothy consists of many different strains, so that there are large possibilities of improvement by selecting the most desirable forms. Already much has been done along this line to produce improved varieties.

Timothy is a perennial with erect, simple stems one to four feet high, and with a dense, cylindrical, spike-like panicle one to four inches long. This grass is a native of Europe, but is now much cultivated throughout the North and is naturalized throughout the whole country. Wild plants are occasionally found in Mississippi.

**Distinguishing Characteristics:** It grows in clumps and is erect with simple stems. Its blades are flat and elongated. The panicles are dense, cylindrical and spike-like. The spikelets are single-flowered and laterally compressed. The seed thresh in the hull unless harvested in an over-ripe condition. The seed are small,
from 1.5 mm to 2 mm long. Hulled seed are roundish in shape and acute at the base. Unhulled seed have a silver white color, while the hulled seed are light amber color.

Small Grains and Peanuts

Spanish Peanuts

Small podded variety, strong grower, stems upright, foliage abundant and heavy; pods clustered about the base of plant; usually two seeds in a pod, entirely filling the pod; color of peas light brown, pods adhere well to plant in digging. This variety frequently yields 60 bushels of marketable peas and a ton of hay to the acre. The peas of this variety are rich in oil content. The weight per bushel of Spanish peanuts is 30 pounds.

Distinguishing Characteristics: Small-podded variety with two seeds per pod. The seeds are light brown in color.

Virginia Bunch Peanuts

Large podded variety, plant rather dwarf, stems upright, foliage rather light; pods clustered about the base of plant; usually two, sometimes three seeds in a pod, pod bright and clean, color of peas light brown; pods adhere well to plants in digging. The customary weight per bushel of this variety is 22 pounds.

Distinguishing Characteristics: Large-podded variety, two and sometimes three seeds in a pod. Seed, light brown in color.

Fulghum Oats

The Fulghum oat has recently come into prominence in some sections, particularly where the Red Rustproof has been practically the only variety grown for decades. It was first grown extensively in southeastern Georgia, where it is believed to have originated. It is an awnless selection of Red Rustproof. This new variety soon became widely distributed in adjoining states, and it is now second to Red Rustproof in importance among fall-sown oats. It matures about 10 days earlier than Red Rustproof and the grain is usually lighter in color. In the field the Fulghum can be readily distinguished from the Red Rustproof by its more erect heads or panicles. The kernels of the Fulghum also are smaller and nearly free from the awns and basal hairs, characteristic of that variety; consequently its weight per bushel is usually higher. As it yields nearly or quite as well, its earliness gives it a distinct advantage.

Grain Description: Plump, uniform grain somewhat smaller than Red Rustproof, Fulghum is supposed to be awnless, however, on analysis, the grain may show 10-15 per cent awned. The lower grain may bear an awn, but the upper grains never bear awns.

Distinguishing Characteristics: Fulghum is distinguished from Red Rustproof by per cent of awns on back of grain. Fulghum grain about 15 percent awned. Red Rustproof grain practically all awned.

Abruzzi Rye

Introduced from Italy by the U. S. Department of Agriculture. Especially adapted to the Southern States. Superior to common rye as a winter cover crop, pasture, and green manure.

Abruzzi rye is a fall-sown crop, out yielding common rye for grain, as well as other uses in North Carolina. Abruzzi is 10 days to 2 weeks earlier in maturity.

Distinguishing Characteristics: Abruzzi rye grain is large and plump. From light gray to dark brown in color. A pure Abruzzi grain, does not contain a distinct greenish color.
Tennessee No. 6 Barley

The Tennessee No. 6 Barley is one of the many hybrids resulting from crosses made by the Tennessee Agricultural Experiment Station, between Tennessee Winter (Bearded) and Horsford (Hooded) and Union Winter (Bearded) and Horsford (Hooded) crosses. The resulting hybrids were tested in 1920 and 1921. The hybrids No. 5 and No. 6 were found to be the best of the lot. In later tests by the Station the Tennessee No. 6 Barley has proven to be inferior as a grain crop.

Distinguishing Characteristics: The six-row Barley having a hood-like formation at the apex of the inner glumes or chaff.

The seed hulls adhere closely to the kernel. Theoretically two-thirds of the grain are slightly twisted, one-third plump and straight. The threshed seed usually contain remnants of the hood as borne on inner glumes.