

SWINE BREEDING

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Swine Breeding.

The early history of the hog is written only on the pages of the rocks and ancient deposits. The evolution of this animal from the prehistoric to the present form covers geological ages of time and represents the passing of perhaps several millions of years. Careful investigation shows that animals of this class existed in the Lower Miocene Period and gradually passed upward through several stages of development, in the course of geological time, becoming more and more developed toward the presentday type as the geological ages became more recent, until in the Upper Pliocene has been found remains of these animals, which were nearly identical to the Wild Boar which was found in nearly all of the habitable portions of the Old World at the dawn of civilization.

At what time or by what people the hog was first domesticated cannot be definitely stated. Remains of the ancestors of our domestic hogs have been found in the Swiss Lake dwellings and in the Pile Works of the Stone Period which shows that they must have been somewhat domesticated even at a very remote period. Civilization in China preceeded that of any other nation, hence it is quite probable that they were the first to reclaim the hog from its wild state. This is again proven by the great prepotency of the blood of the hogs that are found in that country. From the earliest times, hogs have been considered to be a very important animal in Great Britan and large herds were kept there long before the Christian era.

All of the domestic breeds of hogs may be divided into

two groups; one resembling in all important respects and no doubt descending from the Wild Boar. To this group has been given the name *Sus-scrofa*. The other group is called the *Sus-indicus* and differs in several important respects from that of the *Sus-scrofa*.

The wild boar is generally considered to be the parent stock from which all of our domestic breeds have originated. This animal, when existing in the wild state is exceedingly fierce in ^sdisposition and very swift of foot. The mature boars have enormous tusks with which they are able to successfully combat most of their enemies, and are seldom seen with the herd, except during the breeding season, but roam about in solitude and appear as if they neither sought nor avoided any living creature. The wild hog is now nearly extinct except in some of the forests of northern and eastern Europe and western Asia where they have been protected for the purpose of sport. Hunting this fierce beast has been a favorite sport in all countries where it is found, since the earliest ages. The most striking characteristics of this animal are its long muscular legs; high, narrow back; long, bony head; large, drooping ears; and well developed tusks. The color varies somewhat according to the environment as does also the size and form of the body, but is generally of a dusky brown or rusty gray, streaked with black when young, deepening as the animal grows older to a chestnut brown with a tinge of gray at the extremity of the hairs. The body is covered with long, coarse bristles, extremely so along the back and on the neck, and in the colder climates has an under-coat of soft,

downy hair. They do not reach maturity until five or six years old and some have been known to live to the age of thirty years.

The Sus-indicus group is by far the more refined of the two and has been used extensively in the improvement of nearly all of the English and American breeds: The Chinese, Siamese, and Meapolitan breeds all belong to this group. The wild ancestors of this group are unknown but since they breed so freely when crossed on the Sus-scrofa and the fecundity of the off-spring thus produced is not impaired in the least, it is quite evident that they are of the same origin. This group is remarkable for the prepotency of its blood, due to careful breeding for thousands of years. It has been said that the infusion of $1/32$ to $1/64$ part of the blood of the Chinese hog with that of any other of the Sus-scrofa breeds is sufficient to very plainly change the characteristics of the latter. The distinguishing features of the animals of this group are quite different from those of the other. They may be almost any color; are very fine boned, small and delicate; have soft skin, which is nearly destitute of hair; the body is long, deep and massive; the back quite low, the legs short, the ears small and erect, and the head fine and bedded so closely into the neck that when real fat, little more than the tip of the nose can be seen. They fatten rapidly on a small quantity of food and come to maturity at a very early age. These breeds are less hardy than the breeds of England or those farther north and are of value to us only for the purpose of crossing on the coarser types to give refinement. In fact the improvement that has been made in the English breeds has been more

largely through the introduction of this blood than from any other source. Certainly in the matter of early maturity and fineness of bone, this cross has had a powerful influence.

The great difference which exists between these two types has been brought about largely by the different environment to which they have been subjected for thousands of years. These differences were much greater when man first began to select and breed for improvement than they are today, as they have since been bred for one and the same purpose, namely; the production of the greatest amount of pork for the least food consumed. The greater part, if not all, of this difference is due to the different climatic influences to which they have been subjected, which alone are sufficiently powerful, with the different food and habits which necessarily follow, to account for even greater differences.

In all animal life there is a tendency to adapt itself to the conditions under which it must exist. Hence we find in a cold climate that the body is protected with a coat of long, coarse hair or bristles and underneath this another coat of fine, soft, downy hair or wool. In warm countries and where artificial protection is furnished, this wool is entirely wanting and in some cases the bristles are quite thin and short. In the wild state these influences were more effective than they are at the present time as they have been modified to a large extent by man. Before domestication, the hog was compelled to roam about and secure its own food and shelter. In the cold countries where summers were short and the winters long and severe it was compelled to travel great distances and

root deeply in the frozen ground a greater part of the year in search of food. This caused it to be very slow in coming to maturity and developed its legs and snout to an enormous size. These hardships also caused it to become very hardy, and we find, as a general rule, that the animals of the cold countries are hardier than those grown where it is warm. In countries where the temperature seldom, if ever, falls to the freezing point, the type of hog is entirely different. The food supply is nutritious and abundant and always easily obtained, hence the animals become sluggish and travel around but very little. The legs and snout not being used to any great extent, have not developed to so great size, and fat is taken on more rapidly, thus lessening the time of maturity.

A decided change has taken place in the size, form, and age of maturity, since man began to furnish artificial conditions and domesticate these animals, but these changes have been more noticeable in those of the colder climates. They have been protected from the cold, their food has been provided for them, and they have not been permitted to run about to excess, hence they are becoming more and more like those of the warmer districts. Domestication has not produced so much change in the pigs of the tropical climates but even here there has been much done in the line of improvement.

The supply of food has a decided influence upon the animal body. If an animal is abundantly supplied with nutritious feeds it will develop rapidly into a broad, deep bodied, animal with comparatively short legs and head and will be well covered with a fine, slick coat, while the same hog with poor

food and deficient in quantity will grow very slowly and be long in the head and legs, narrow and light in the body, and have a rough coat.

The wise and judicious use of feed is responsible for much of the improvement that has been made in all classes of live stock, while by poor methods of feeding, all that has been accomplished by years of careful management and feeding, will be overcome in a short time. Suitable and abundant food supplies, aided by careful selection of the breeding animals, have affected much improvement in digestion and food assimilation. Thus improvement is not only secured but the way is opened for still further improvement by increasing the capacity for the same. The length and capacity of the digestive tract in the domestic hog today is nearly double what it was in the wild hog, hence the food is more completely digested and less is required to produce the same results. The character of the food and proper combinations are but little less important than the abundance of the same. To secure the highest possible development from food, it must have the food nutriment well balanced and have sufficient succulence and digestibility. The proper supply of food is far more important while the animals are young than after they have reached maturity for when they once get stunted, it is impossible to feed them so as to overcome the bad effects. It should be remembered that it takes a certain amount of food to supply the increasing waste beside maintaining the increasing growth. The young animals turn more of the food into flesh than the old animal, because the waste is less and the demand for build-

ing material for the bones, muscles, nerve tissues, etc., is greater.

Hogs may be fed so as to produce a large proportion of either fat or lean meat or a fair proportion of both, as desired. Where fat is desired the food should consist largely of fat-producing material with but little exercise, but when lean meat is desired, a large proportion of the food should be grass and other green food, together with plenty of nitrogenous and albuminoid substances and an abundance of exercise.

Domestication alone has affected great improvement. Instead of searching for its food at night and hiding in solitude during the day, it has become gregarious and feeds during the day. No longer dependent on its senses to warn it of danger, its ears have become much smaller and less movable and the sense of smell and touch are also less developed. Organs of defence no longer being needed, the tusks have become quite small. As we recede, however, from the wild condition by domesticating, and subject the animal to circumstances which modify form and system, it is done so at the expense of certain qualities for the sake of gaining other qualities better suited to the wants of man. The reproductive powers are weakened, the vitality and vigor of constitution lessened, but the tendency to produce meat of the desired quality is greatly increased.

In order to be a successful hog breeder a man should carefully consider his surroundings, his locality, his situations, his opportunities, and his liking to the business. Next he should become thoroughly familiar with the laws and principles

which govern reproduction. There is an attraction in the business of breeding swine, which does not exist in so great a degree in the breeding of any other class of farm animals, as they reproduce at so early an age, so many at a litter and so often, that in no other field can the breeder so readily acquire information by actual experience.

Swine breeding is a science in so far as it determines and systematically arranges the truths and principles which relate to the improvement of the hog. It is an art in so far as it applies these truths and principles in producing the desired improvement. To search out these principles has been the work of the most successful and prominent breeders of this, as well as earlier times. Some knowledge of these principles has been possessed from a very early period but just how early, is not known. It is only within the last one-hundred twenty-five to one-hundred fifty years, however, that any attempt at systematic breeding has been done and during the last fifty years, more has been accomplished in the improvement of the hog than during all the time preceding in the history of agriculture. The knowledge of these principles has not only come to be better known but this knowledge has been scattered to all parts of the country where agriculture is practiced. This knowledge is, as yet, however, quite imperfect, but if carefully followed, is a valuable guide.

The breeder should know the effects of environment on development and the feeding value of available foods and the methods of mixing and feeding them for the best results. He should be well versed in pedigrees and know what is meant by

a standard of excellency, as it is impossible to attain any marked degree of success without some standard to which to breed.

A standard of excellence is an ideal for the guidance of the breeder and one which he should at all time strive to reach. In the absence of a standard it is impossible to secure uniformity and even with the aid of one, perfect uniformity cannot be secured, but it may be more nearly secured with one than without it. The necessity of breeding only from animals which conform to this standard is based on the first and greatest law of all breeding, i. e., that like produces like. This law implies that the offspring will resemble the parent in all important respects. This is the fundamental law in all questions of breeding. On this foundation, men have worked from a very early age. According to the laws of nature every animal and plant, under ordinary conditions, produces offspring after its own kind. If this law did not hold true to a great extent, the existence of breeds would be an impossibility.

The power of an animal to transmit its characteristics depends upon the purity of the blood, the closeness of the breeding, the length of time the breeding has been kept pure, and the prepotency peculiar to the individual animal. The existence of this law makes it possible for the breeder to maintain improvement after it has been once secured. The tendency to deteriorate seems to present itself as soon as the influences which tend to improvement are neglected, hence the breeder must always be working higher.

Following this law comes the law of variation. This law implies that the offspring does not always resemble the parent in every particular but may, on the other hand, be quite different in one or more respects. The tendency to variation is great in animals of impure breeding and where care is not taken in the selection of the breeding stock while with pure breeding and careful selection to a certain tupe, the tendency is greatly reduced. As a result of this law the breeder may take advantage of the variations for the formation of new breeds and in effecting improvement in the ones already formed. If it were not for this law it would be impossible to effect improvement or to form new breeds as the offspring would be identical to the parent in every particular. The tendency in all animals is to produce offspring, no two of which are exactly alike in every particular. Some of these will be better than the parent and some poorer in most cases, but in some instances all may be better and in others none as good, hence by always selecting those that are better, improvement is obtained.

In the whole art of breeding there is no one principle of so much importance as that of selection. To select judiciously requires good discrimination, correct judgment, and a thorough knowledge of the art of breeding. The breeder should always have his ideal in mind and select so as to more nearly approach this at every successive step. He should know the weak as well as the strong points of each animal in his herd and be able to select the best for breeding purposes, as the best are none too good. If the individual animals are

well selected to a uniform type, stronger hereditary power and more permanance of qualities will be secured with each successive generation. If the sire and dam possess qualities and characteristics alike, they will transmit these qualities with force to the offspring; there will be a uniformity in their progeny that could never be obtained from parents of unlike characteristics. The nearer the parents are alike, the more certain will they transmit their qualities to their offspring; while if they are unlike the one possessing the greatest prepotency will exert the greater influence over the offspring.

It has often been said that the sire is half of the herd. If this is true too much study and care cannot be used in the selection of the right kind of a hog to head the herd. He should always be a model of the breed which he represents and should have a strong masculine appearance. When a breeder has succeeded in getting a good one, and one that is a good breeder of the right kind, he should by all means, keep him until he has another that has been tried and found to be as good or better than the first. The use of an inferior boar always lowers the quality of the entire herd, while a superior boar has an effect in the opposite direction. The practice of buying a young boar that has not been tried and discarding the individual as soon as the breeding season is over should be deplored, unless it is found that he has failed as a breeder. If the boar is one half the heard, the sow certainly is the other half, hence she should be as carefully selected. When once a breeder has obtained a good sow and

one that is a regular breeder and a good mother, he should not part with her at any price. In the selection of gilts, it is wise to first study the dams, giving preference to those from large, even litters, and from mothers of the desired qualities. It is also well to look to the sire as a sire from a large litter is more likely to transmit this characteristic to his offspring than one from a small litter. In selecting sows, uniformity is a quality that must be kept constantly in mind for without a uniform herd of sows, it is impossible to get a uniform herd of pigs.

As to the practice of in-and-in breeding, the general conclusion is that it is safe only within narrow limits, and then only in the hands of skillful breeders. In-and-in breeding is the breeding together of very closely related animals. It has been followed to a considerable extent by a few breeders of swine with good success, but with the average breeder it has been a failure in most cases. Unless the results are carefully controlled it will have a harmful effect. It greatly weakens the reproductive organs, injures the vigor of constitution and often leads to other and more serious evils, if not properly conducted.

The purpose of in-and-in breeding is to establish uniformity of characters and to intensify the power to transmit these characters. It is practiced in the formation of all breeds of live stock, to a considerable extent, as it is nearly always necessary in order to establish the desired character to breed closely related animals.

By prepotency, a term previously used, is meant the pow-

er one parent exerts over the other in determining the characteristics of the offspring. Prepotency is indicated in the male by a strong masculine character and in the female by strong feminine characters.

To get some idea of what has been accomplished by intelligent breeders and those who have made a careful study of these principles and applied them in their practice, and the difficulties that have been met and overcome, it is only necessary to compare the improved breeds of the present day with their ancestors of but a few centuries ago.

There are good reasons for supposing that the Old English hog was very originally the only domestic hog found in Great Britain. This breed was obtained by the domestication of the wild hog found in that country. These hogs were generally of a very light, sandy color with dark spots or streaks, had large lank bodies, low shoulders with high narrow back, long coarse legs and head, heavy pendant ears, and a very coarse coat of long bristles. They were hard feeders and slow in coming to maturity, but grew to an enormous size. A large part, if not all, of the improved breeds in England are descended from this breed.

The first improvement was the Berkshire. Their original home was in the countries of Berkshire and Wiltshire, in the southern part of England. The original Berkshire was of large size, somewhat coarse in the body and had large pendant ears. They were of a sandy color, more or less spotted, with brown or black. Improvement in this breed began in about 1780 by crossing with the Chinese, Siamese, and Neapolitan breeds.

These crosses gave refinement to the breed, made them earlier in coming to maturity, decreased their size and fitted them to the demand for a more delicate port. They were introduced into America about 1832 and here they have attained to a higher excellence than they have in their native country. The modern Berkshire is characterized by a uniform black color, with white markings in the face, on the feet, and brush of the tail. The head is shorter and broader, and the face well disked; the ears are medium sized and are carried erect; the body is long, deep and broad; the legs are short and fine; and they mature at an earlier age. They combine with a high degree of excellence, both the lard and the bacon qualities.

The Improved Large Yorkshire is another breed of hogs of which little is known of its origin. The first descriptions of this hog show it to be a long, narrow bodied, coarse boned animal, having a long head and long legs, and very drooping ears. It has a strong coat of white hair, was very hardy, but slow in coming to maturity. The modernizing of this breed began about the middle of the last century by crossing with some of the more refined breeds of white hogs found in the country, principally the Leicesters, and by careful selection of the breeding stock. They were first introduced into the United States in 1893 and since that time large numbers have been imported. The improved Large Yorkshire is one of the most popular bacon breeds in England and Canada, but in the United States it has not taken so well. The principal objection, however, is its lean, leggy type and slow fattening character. As the demand for bacon increases, the breed will

become more popular even in the United States as they are excellent rustlers and very prolific. The imported type is quite different from the original, being broader and deeper in body, shorter in the head and legs, the ears are small and carried ~~direct~~ and there is general refinement throughout the entire animal.

The Tamworth is another of the strictly bacon breeds. Its origin is also obscure to a large degree. They are supposed to be the purest bred breed in Great Britain and have long been noted for their superior bacon qualities. The early type of this breed was narrow and shallow in body, long in the head and legs, very active and hardy, but slow in coming to maturity and were of a sandy or reddish color. Improvement in this breed was effected principally by selection and improved methods of breeding and management; very little, if any, outside crossing being done. They were introduced into the U. S. in 1882 but like the Yorkshire they are of a type that does not meet with special favor with the farmers and breeders living in the corn belt, hence have not become a very popular breed. They also, are very prolific and excellent grazers and rustlers. The type of the improved breed resembles the original breed in some respects but are very much deeper and broader in the body and are more refined in bone and about the head. As the demand for bacon increases this breed will also find a place even in those parts of the country commonly considered as given over to the production of the fat hog.

The Improved Essex breed is the outcome of crossing the Neapolitan on the Old Essex, the native breed of the country

of Essex. This breed was black and white in color, large and coarse in build, long in the legs and snout, flat-sided and roach-backed, unquiet in disposition, and great consumers of food. By crossing with the Neapolitan, the size was reduced, the legs and snout shortened, the general form and aptitude to fatten greatly improved, and the quality of bone greatly refined, but because of the closeness of breeding, the breed became less vigorous and less prolific. These impaired qualities were restored by crossing the refined animals upon those that had no mixture of Neapolitan blood. Animals of this breed were introduced into the United States about the middle of the last century but have not become as popular as the Berkshires.

Of the truly American breeds, the Poland China is without doubt, the one in most favor in the United States, at least. There has been much controversy concerning the origin of this breed but that most generally accepted is that endorsed by the American Swine Breeders' Association which is as follows: In 1816 the Shakers in Warren Co., Ohio, purchased a boar and three sows of what was at that time believed to be the pure China. They were called the Big China. Subsequently other China pigs were introduced and extensively used. In a short time Russian and Byfield crosses were introduced and also used to a considerable extent. These crosses produced a hog of exceedingly fine quality for that time and this was generally known as the Warren County hog. This was the condition of the breed in 1835. In that year the Berkshire was introduced and used extensively for three or four years. In 1839 some choice specimens of the Irish grazier were introduced

duced and crossed extensively on the best specimens of the breed. This crossing continued for a time but in a few years entirely ceased and for over half a century no outside crosses have been made. The cross between the Berkshire and the Warren Co. hog gave the black color, improved the symmetry and imparted additional strength to the limbs.

The color of the Poland China has undergone somewhat of an evolution. Originally the use of white pigs formed a leading feature in the formation of the breed, but the Berkshire was instrumental in giving the black color. As late as 1875 large sandy spots were quite common and until quite recently white spots were not objectionable, but of recent years the solid black color, with white face, feet and tips of tail, has attained much popularity in the show-ring, although white spots elsewhere do not evidence impurity of blood. At the present time the breed is represented by two types, which will in time, develop into distinct breeds, unless some measures are taken to keep them closer together. There is now nearly as much difference between these different types as there is between either of them and the Berkshire and these differences will increase if no preventative steps are taken. These types are known as the large and the fine boned. The best specimens of the fine boned type are small, quite symmetrical, uniform, very fine featured, fine boned, and mature at a very early age, while those of the large boned type are larger and coarser, longer in the head and legs, and do not mature at so early an age, but still they are not lacking in either style or quality and are more prolific.

The history of the Duroc-Jersey is of comparatively recent date as it was formed only about thirty years ago by the amalgamation of the Duroc and Jersey Red breeds. The origin and early development of these breeds is apparently not well known.

The Duroc breed is said to have been established by Isaac Frink of New York. In 1823 he obtained a red boar pig from a litter of ten; this product of a pair of red pigs purchased by Harry Kelsey, also of New York in 1822. Of the breeding of these pigs nothing is known except that they were red. Mr. Kelsey owned the famous stallion Duroc, hence Mr. Frink named his boar and descendants in honor of the horse. This boar was crossed on common sows and many of his offspring resembled him, being long and deep of body, lop-eared, heavy in the shoulders, having a quiet disposition, and making rapid growth. In 1830 Mr. William Ensign of the same county as Mr. Frink got a pair of red hogs from Connecticut, where they were known as Red Berkshire, and the following year got more from the same place. These two families were crossed and thus the breed became established.

The origin of the Jersey Red is not positively known. They have been bred in the State of New York for a period of at least fifty years and with many farmers are considered to be a valuable breed. They are large in size and coarse in bone, hair and flesh. The head is small in proportion to size and length of body, the snout is of moderate length, and the ears are long and lopped. They are coarser in bone and larger than the Durocs. As to the origin of the first red hogs, we have practically no authentic history. Undoubted-

ly the most extensive introduction of red swine into the United States came through the early importations of the Berkshire. In fact, the old Jersey Red was very similar to the old-fashioned Berkshire.

In 1877 breeders of Durocs in New York agreed on a standard of characteristics and had these printed in the agricultural papers of that time. The breeders of the Jersey Reds united with those of the Durocs, and the result has been the Duroc-Jersey breed of today. Improvement in the breed began with this union and the result is a pig of smaller size than the Jersey Red with a better quality of flesh and better feeding qualities. In form, they rather closely resemble the Poland-China than the Berkshire. The color is red, varying from light to dark, but a bright cherry red is preferable. As a breed they are very prolific and mature at a moderately early age.

The Chester Whites originated in Chester County, Pennsylvania, from which they received the name. The foundation stock of this breed is supposed to be the descendants of importations made from England by the early Colonists. These hogs were white in color, very large and coarse in every particular and supposed to be of breeding similar to that of the ancestors of the Yorkshires.

In 1820 Captain James Jeffries, of Chester County, Pa., imported a pair of white pigs from England and began crossing them on those already found in that part of the state. The boar had been a prize-winner in his native county and was an excellent individual, having a broad back, excellent hams, short legs, a refined head with drooping ears, and he had a distinctly refining influence on the breed. A short time

after the Jeffries importation, Mr. Atwood of Delaware Co. imported some white Chinese stock from England and the progeny of these two importations were blended together along with the common white pigs of that region, and from this has come the fast strain of the Chester White blood. This breed became very popular for a time; so much that dishonest parties sold very common white hogs as pure Chester Whites and thus the breed was brought into disrepute.

There has been at least five associations formed in the interest of this breed. The last of these is to further the interests of the strain known as the Ohio Improved Chester White, or the O. I. C. hog. The origin of this strain is credited to Mr. Silver of Ohio. He became greatly interested in the breed and endeavored to establish a uniform type. As the name indicates, these hogs are white in color. In general conformation they somewhat resemble the Poland-China and Duroc-Jersey breeds.

The Hampshire, or Thin Rind as it is more commonly known, is the only bacon hog originating within the United States, all the others being of the fat or lard type. The ancestry of this breed is not definitely known and information relating thereto cannot be obtained. In 1835 Major Joel Garnett, of Kentucky, is said to have introduced the Thin Rind breed into his home state, having purchased the same in Pennsylvania. Some have claimed that the ancestors of these pigs were introduced into Pennsylvania from Canada, and into Canada from Hampshire, England. However, no description of any breed has been found in the early English writings that will apply

to this breed: While others claim that they were imported from China by a New Orleans merchant. In Kentucky they became very popular and spread through the state of Ohio, Indiana, Illinois, etc. They were given the name of "Thin Rind" because of their mellow skin and soft silky hair. The head is of medium length with a very light jowl, the ears are small and stand nearly erect, the back is of medium width, the body of moderate depth and length, the hams are high, and the legs tend to be a little long. The color is black with white forelegs and a white belt around the body at the shoulders.

These hogs have not been distributed very extensively but are beginning to be somewhat at the present time. As a breed they are the most prolific of those originating in America. They are good rustlers and thrive well on good pasture. This quality with that of fecundity, has made the breed popular where it is known. The quality of the meat of this breed is excellent, having a desirable proportion of lean to fat. Since 1893 the interest of the breed has been promoted by the American Thin Rind Record Association, but in 1904 the name of the breed was changed to Hampshire and the association was changed to the Hampshire Association.

As to the choice of a breed, it is impossible to say which is the best. They are all good but are not all suited to the same purposes and conditions. Before deciding on a breed the breeder should become familiar with all the factors which will influence his success. His own likes and dislikes, his location and the demand of the market he is to supply, etc., will largely determine the choice of a breed. Some breeders

prefer a hog of bacon type while others prefer one of the lard type and neither would be successful if compelled to breed the type he did not like. The same is true in regard to the differences in color and some other minor differences. If he is located in a district where some special breed is in favor, it may be well for him to produce superior animals of this breed; or if he is situated close to the railroad where he can ship to some different market where a different breed is in demand, it may not be best to choose that breed. If his lot happens to be cast in a place where pasture and other nitrogenous feeds are easily obtained, it may be better to choose a different breed than if placed where corn is the principal food to be had.

After the question of breed has been settled the next in order is the selection of breeding stock. Much time, patience, and labor are required in this step as it is impossible to establish a herd of superior quality without the most rigid selection. Time spent here is the most important and is never lost. By proper selection and pairing, it is possible for the skilfull breeder to produce anything he desires. The next step after the foundation is laid is the care and management of the herd.

Although many volumes have been written on the subject of care and management of breeding stock it is a fact that more breeders fail in this particular than in any other. Skill in this part of the business marks the breeders success to a considerable extent. Bad management will degenerate the best herd that was ever established in a very short time.

The methods of management varies with different localities and circumstances. There are, however, certain sanitary conditions to be observed in all systems of management in order to make the business profitable. That hogs may be healthy, they must have, in addition to plenty of suitable food, pure water, pure air, plenty of room, and cleanly surroundings. Crowding hogs into close, damp quarters is the cause of nearly all of the diseases which occur among these animals. Growing animals and those kept for breeding purposes and show stock should always have plenty of exercise, but those that are being fattened for the market require but little.

If the boar at the head of the herd is a superior animal he is one of the most important members of the herd; hence should have the best of care and attention. It is a great mistake to allow the boar to run with the sows, as serious accidents are often the result. The vigor of the boar is impaired from the frequent service of the sows and the litters of pigs are apt to be small and weak. The better plan is to keep the boar in a lot to himself, far enough from the other hogs that he will not be bothered by them, and when a sow is to be bred she may be turned into the pen with the boar and removed after one complete service, as this is just as effective as several matings and the strain on the boar is much less. The use of a breeding crate is quite commendable and should be practiced more than it is. The boar should always be kindly, but firmly treated, otherwise he is liable to become vicious and dangerous to the attendant.

The food of the boar should be regulated according to the

amount of work required, and to its age. The young, growing boar should have a liberal supply of nutritious feeds, including meal and other grains. Also, he should have the run of a small pasture. If this is impossible, green feed should be given him in his pen. After a year the meal should be reduced and lighter feeds, such as bran, oats, etc., substituted. A mature boar, when not in use, will live and thrive on little or no grain for a time if he has plenty of pasture and green feed.

The care of the sow is also a very important factor in the production of swine. There can be no doubt that many valuable sows have been utterly ruined for breeding purposes by over-feeding on corn, which alone possess too much heat-producing and too much muscle-forming material to supply the needs of the animal body. On this account sows should not be allowed to run with fattening hogs which are being fed on corn but in a pasture where, in summer, there is plenty of green feed, and in the winter this can be substituted for with alfalfa hay. They should also have in addition to this, a liberal supply of sloppy food, consisting of shorts, bran, and a small amount of meal.

When a sow gets sucked down quite thin it is sometimes advisable to feed a liberal amount of corn for awhile, but this is not to be recommended when sows are in good condition. At farrowing time the sow should be separated from the rest of the herd and placed in a pen by herself where she will not be molested. She should be given a good, warm shed and enough bedding to make it comfortable, but this supply should

be limited as she will make a deep nest and the pigs will get covered yup and laid upon if too much is given. After farrowing the sow should not be disturbed for eight or ten hours at least. Generally, by this time she will relish a drink of water or light sloppy food, such as shorts or bran but the supply should be limited for a few days. By the time the pigs are a week old the sow may be put on full feed and a little meal added. It is very important that the tendant watch the sow and pigs at all times and be ready to remedy trouble at any time. It is also important that the pigs become accustomed to eat as soon as possible. They will generally begin this habit by the time they are a month old or possibly a little sooner if a small trough is put where they can get at it and a little feed put into this every time the sow is fed.

Pigs should have plenty of greed feed and do much better if milk can be had. There is no danger of forcing the little pigs to fast if fed on milk and other sloppy feed, and allowed to run on good pasture. Pigs that are kept in small pens without green feed, cannot thrive and grow as well as those that have the liberty of a good pasture.

It is not only important that both the sow and the boar should be the best representatives of the breed to which they belong, but they should also be allowed to attain a certain age before being used as breeders. Many farmers and breeders make a great mistake by permitting animals to breed before they have become fully developed. By this practice it is impossible to get the best results, for immature par-

ents will not and cannot produce large, strong, and vigorous offspring. Pigs from mature parents will be larger, more vigorous, and develop faster than those from immature ancestors. If, while growing, the sow is obliged to yield much of her strength and vitality to the production of her offspring, her growth will be checked and she will be unable to impart that vigor of constitution, and tendency to rapid growth to her young, that she would if fully developed before breeding. Old sows will, as a general rule, produce larger litters of strong pigs and take better care of them than young sows.

If the boar is kept until he is a year old before being put to service, he will produce stronger offspring than if used for this purpose earlier. However, if he is well-developed and managed rightly, he may be used on a very limited number of sows after he is eight or nine months old. A boar may be used with good success until he is at least five or six years old and sometimes they are used to a greater age. However, after this age they generally become vicious and dangerous to handle and the power of producing strong, vigorous offspring is reduced unless exceptional care is used in their management.

Altogether much has been accomplished by breeders of the past as well as of the present day, in the improvement of the hog; it is quite evident that much still remains to be done before perfection is reached. One great evidence of the need of improvement may be found in the great variety of types among exhibits of the same breed that are seen in the various show-rings of our country. This lack of uniformity is due to the fact that each breeder has a different standard toward which he is breeding, or has no standard at all. Uniformity

in type will only be secured when each and every breeder decides upon a definite standard and endeavors to attain to that standard. The hog industry in our country is, as yet in its infancy and will continue to develop and grow as long as meat is consumed, hence the producer of superior animals will always have a ready market for his product at good prices. At the present time the hog that demands the highest price is that of the fat or lard type. Nevertheless, indications point to the fact that in the near future the bacon hog will be in greater demand than the fat hog. Of recent years the public demand is beginning to favor a leaner port, and as it learns that it can be supplied, the demand is increasing for the leaner and more palatable meats. The use of cottolene and other products of a similar nature are being used as a substitute for lard to a considerable extent, thus decreasing the demand for the lard hog. The reason for this is that they can be produced at a less cost than lard.

The United States produces more pork than all other nations combined. They are competing with Canada and Great Britain, which are bacon rather than lard producing countries, in some of the largest markets of the world. These markets are coming more and more to demand the bacon rather than the lard type and if we wish to be successful in competing with these nations we must furnish the kind of product which these markets are looking for.

The cause for the change in the demand of these markets is due to the fact that the consumers of port products are beginning to realize the superior quality of bacon over that

of fat, and demand the bacon even at advanced prices. This change will not mean the extirmination of the breeds we now have, but it is quite possible that they will be bred more toward that type than they are at the present time. The ease with which the characters of the hog can be changed, make it possible for skilled breeders to modify the form of their animals to suit the demands of the market in a comparatively short time. The standard for all breeds is determined by the demands of the market. Hence there is a tendency for all breeds to converge into a common type; in fact the greater part of the differences which exist between the different breeds in this country today are only in the minor details, such as color, shape of head, ears, etc., but in all the essential features they are quite similar.

It has been said of Robert Bakewell, the most successful of our early improvers of live stock, that he considered the animals in his herd and flocks as wax in his hands, out of which he could mold any type he desired. If all breeders of swine at the present day, with their increased advantages, were as earnest in the improvement of their animals as Bakewell, there would be great advancement in the hog industry in the near future.

B. C. Copeland.