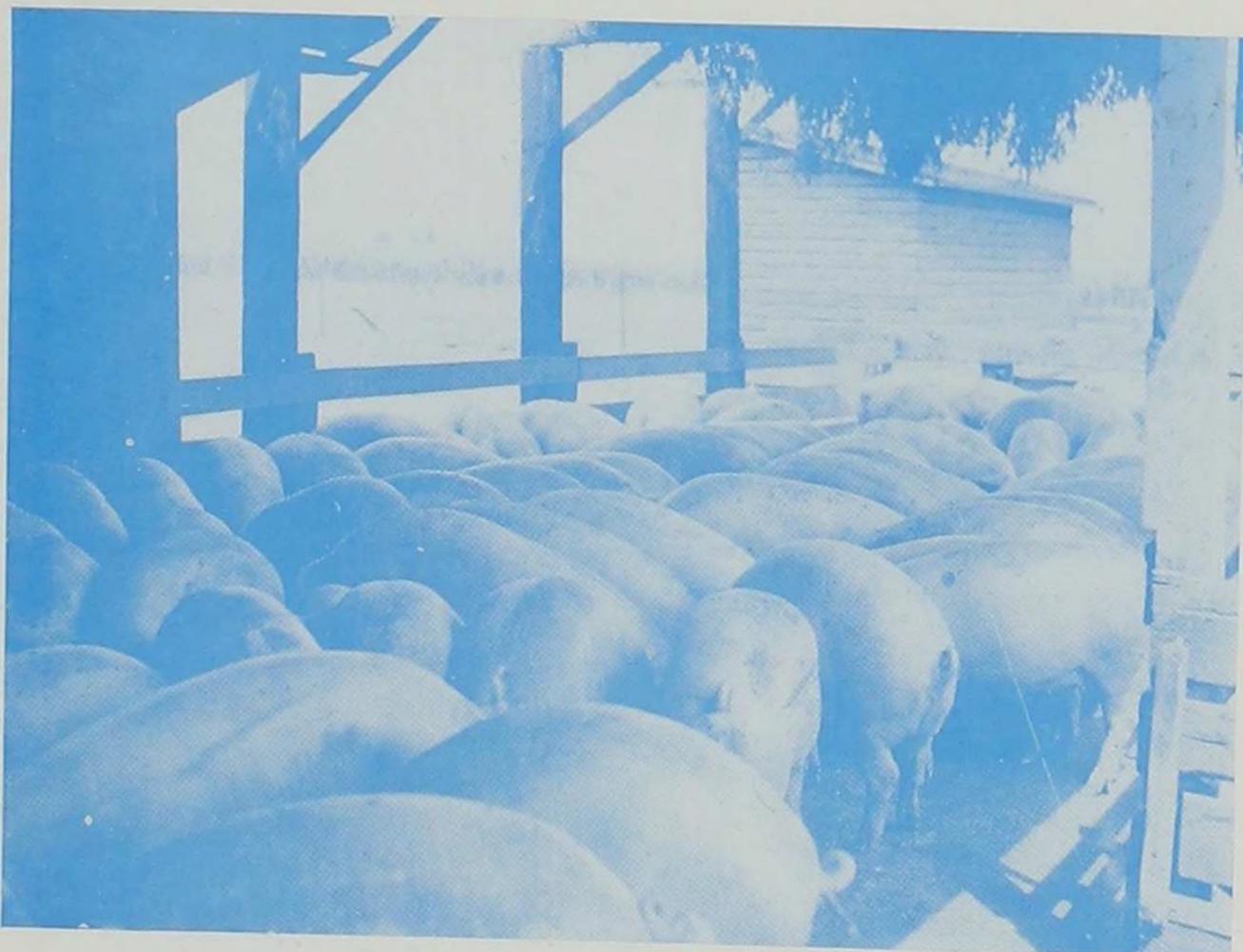


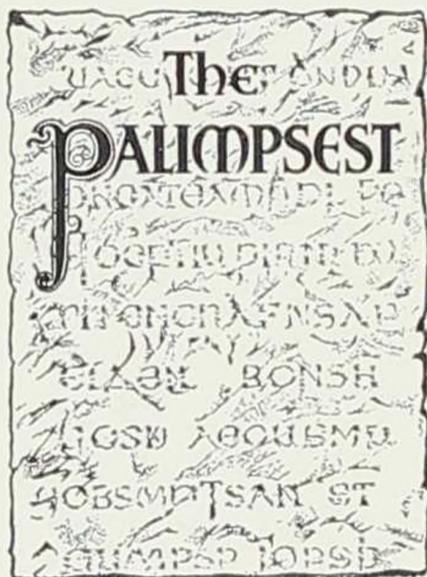
The
PALIMPSEST



HOGS IN IOWA

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The Meaning of Palimpsest

In early times a palimpsest was a parchment or other material from which one or more writings had been erased to give room for later records. But the erasures were not always complete; and so it became the fascinating task of scholars not only to translate the later records but also to reconstruct the original writings by deciphering the dim fragments of letters partly erased and partly covered by subsequent texts.

The history of Iowa may be likened to a palimpsest which holds the records of successive generations. To decipher these records of the past, reconstruct them, and tell the stories which they contain is the task of those who write history.

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ELVIN LEE QUAIFE AND ARTHUR L. ANDERSON

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Cover

Front — Hogs raised in confinement by John Hendricks at West Liberty.

Back — Swine Show at Davenport in March, 1950. Champion pen of three Poland China barrows shown by L. C. Ruess of West Liberty.

All pictures courtesy of the authors.

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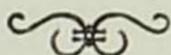
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Hogs in the Colonies

The first hogs in America were brought to Cuba by Columbus on his second voyage in 1493. They were reddish in color and presumably originated in Spain. Allowed to run wild, they increased in numbers rapidly. Bands of wild dogs hunted them down and fed upon those they killed.

In 1539 DeSoto captured some of these Cuban hogs and took thirteen sows with him to Florida. At the end of a year the number had increased to three hundred. From this stock the explorers took animals with them throughout the south and as far west as Mississippi. For many years the wild boar provided great sport for the hunter.

The first importations of hogs of any consequence were made to Virginia in 1608, to Massachusetts in 1624, and to Manhattan Island in 1625. Importations continued until almost every type of hog existing in Europe was found in the colonies.

The hog in the early history of the country was allowed to roam, deriving his existence from

acorns and grazing. It was a case of root hog or die. The Indians stole many of them, making it necessary for the owners to use identification marks, either "cropping" the animals or slitting their ears.

Trouble also soon developed from hogs ravaging fields of grain and rooting in the unfenced fields. Most colonial towns passed regulations requiring owners to put rings in the noses of their pigs. The town of Hadley selected "hog ringers" annually who were to ring all pigs fourteen inches high found unringed in fields from March 1 to December 1. In some places the pigs were required to be yoked as well as rung.

As the colonies developed, hogs of a more profitable type were imported, George Washington being one of the first importers. Coming from different countries, they varied in type, size, and color. Later on they were used to form the basis for the development of most of the leading American breeds. Some of the crosses developed became known as Chinas, Bedfordshires, Irish Graziers, Red Rocks, Guinea Reds, Jerseys, Cheshire, Siamese, Suffolks, Chesters, and Essex. These names were later dropped. It was not until about 1840 that the present-day breeds became distinct and fairly uniform in type and color.

ELVIN LEE QUAIFE

ARTHUR L. ANDERSON

Production and Marketing

Hog production became important in Iowa immediately after the settlement of the state in 1833. The staple grain crop in Iowa from the beginning was corn, and it soon was produced far in excess of use as a foodstuff. Thus, from the start, the hog became the logical outlet for converting this surplus economically into meat and lard for export. The Census of 1840 showed there were 104,899 hogs in Iowa.

Most of the early settlers brought hogs with them as they crossed the Mississippi. This hog was a tough animal, long of leg and very muscular, built more for speed than for the economical production of hams and savory bacon. He was turned loose to roam in the woods and on the unfenced prairie, and, as in colonial times, the owners "cropped the pigs" or "slit" the ears so that they could be identified. Most pigs were farrowed in the spring months and allowed to shift for themselves during the summer and early winter, when they were penned and fed some corn. They were turned out again the second summer and allowed to grow slowly. The second fall they were penned again and fed corn enough to fatten them for market. Such hogs were large, very active, and nearly

two years old when marketed. The term "razor-back" developed because some of them were, figuratively speaking, as thin as a razor blade.

Pork constituted the main meat supply for the farmer and his family during the winter, and the fat was rendered for lard. If more hogs were raised than the family needed, the surplus in early days was driven to market, a practice followed in marketing hogs in the East.

Some of the drives were made by the owners themselves, but more often by drovers who speculated in hogs. These drives apparently were very spectacular. Men and boys on foot and horseback equipped with sticks and whips would drive large droves running into the hundreds to a market which it took days to reach. Five to ten miles a day was considered a good day's travel. The hog, not adapted to fast walking, is an obstinate creature, difficult to drive. In some instances their eyelids were stitched together so they could not see where they were being driven. Ox teams would accompany the drives, loaded with food for the drivers and corn for the hogs. The overseer of the drive went ahead and arranged for the overnight stopping places. In 1865 a drive was made from Monona County to Yankton, South Dakota, a distance of 100 miles. Other drives were made from eastern Iowa to Chicago and from Delaware County to Ft. Atkinson, Iowa. Stories relate that great difficulty was encountered in getting the

hogs to cross bridges. Often they had to be ferried across, or they swam streams and in some cases crossed on ice. Occasionally the ice would break, plunging the hogs into the stream, and casualties frequently resulted from ice cutting the throats of the swimming hogs. Drivers of hogs in stockyards today usually yell "sui" or "su-boy" to urge the hogs along; this was the term used by the drivers years ago to speed the laggards on their long treks to market.

The steadily growing hog business in Iowa soon began to offer great possibilities for the establishment of the pork packing business within the state. It was quickly recognized that it was less costly to process the live hog near where he was produced, and to ship the dressed pork to the consuming centers of the east, than to drive or ship the live hog long distances with a certain amount of shrinkage as well as possible loss by death.

Local pork packing early became a thriving business in Iowa, especially in the Mississippi River towns. As early as 1841 there were three packing plants in Burlington, and by 1859 interior Bloomfield had "several." By that date, also, a pork packing plant had opened in Council Bluffs on the Missouri River; a year later Ottumwa began her long career as a "packing house" town when George Gillaspay opened a pork packing house there. By 1859 Muscatine and Keokuk had developed the packing business and were packing

about one-fourth as many hogs as Cincinnati which up to that time had been the pork-packing capital of the United States. The early packing centers developed mainly along the rivers because of the availability of water transportation. During the 50's Dubuque, Davenport, and Ft. Madison also packed pork. Later on Sabula and Clinton joined the other cities. Of these, Dubuque, Davenport, and Muscatine are still in the business today.

The opportunity for the development of pork processing at Sioux City was early recognized. The first killing of hogs there was started by accident, when a cargo of wheat became stranded. James E. Booge bought the wheat and fed it to hogs, but when they were finished he was unable to find a market for them. The only alternative was to slaughter the animals and find a way to peddle the meat. In 1860 he built a small plant which marked the dawn of the meat-packing industry in Sioux City.

During and immediately following the Civil War hog production expanded rapidly, as the extension of the railroads brought better transportation to Iowa. In fact, in the decade following the Civil War, there were not many towns in Iowa more than fifteen miles from a railroad station. This development of transportation soon had its effect upon the marketing problems which confronted the producers with their surpluses. The

greatest number of Iowa hogs went to Chicago. The development of Illinois, Iowa, and adjacent territories stimulated increased pork production, thus making Chicago the leading center for the packing of pork, a position maintained until the 1900's. By that time, the development of the so-called interior plants in Iowa and Minnesota began to have its influence upon Chicago. In 1900, for example, Chicago had runs of 100,000 daily; in 1950 a run of 15,000 to 20,000 was considered heavy. Now interior plants often have runs collectively of 90,000 to 100,000 in a single day.

During the period when Chicago and other centers were the main packing plants, hogs were bought at local shipping points by buyers, either operating on their own, or buying for some packing concern. Such a procedure in marketing continued until the late 90's and early 1900's. About this time the cooperative shipping and marketing association came into the field with a membership of farmers who agreed to deliver their hogs to a central point where a paid manager of the association loaded the hogs and shipped them to some market. Later, grading and sorting was practiced, and more was done in the selection of a market which would pay the best prices.

The first of these associations was organized at Postville in 1904. Growth outside of northeast Iowa was very slow until 1919 when popular enthusiasm became general. By 1925 a total of 697

associations handled about one-fourth of all the livestock sold in Iowa, the most of which was hogs. Their success depended upon good management, volume of business, cutting the cost of handling, and return of greater margins to the producer.

For several years these associations operated quite successfully, but it soon became apparent that they were too numerous. The lack of adequate objectives, dependable membership, and the failure to adjust to the changing economic needs of the farmers were all factors contributing to a decline in numbers in the late 20's and early 30's. The development of the trucking system, the advent of hard roads, and the expansion of the interior packing plants further hastened this decline. In 1937 only 173 remained; in 1952 some 60 associations are still in existence.

The growing tide of immigration into Iowa after the Civil War had brought more settled farming practices. Farms were fenced, and the hog no longer roamed at will on the open prairie. Improved breeding of the stock was a result. Whenever a few farmers gathered together, discussion centered on the use of improved breeding stock, better feeding, and the control of diseases and parasites. The farm press published articles on swine, and agricultural societies discussed production. Even during this period the demand grew for smaller, leaner, fresh cuts of pork, and farmers

were thinking about the type and weight of hog they should produce.

In 1865 there were over one million hogs in Iowa; by 1870 this number had doubled, marking the beginning of intensive hog production. The number in 1880 was 4.5 million and grew to 6 million in 1890. The numbers of hogs since then have varied yearly, depending upon the supply of corn. In 1931 Iowa produced approximately 16 million head, but dropped to less than 10 million in 1935 due to the drought of 1934. Iowa has produced more than twenty million head in two different years, 1943 and 1951.

This growth in the number of hogs inevitably led to a great expansion of pork packing. Many of the small plants organized in Iowa as early as the 1860's have since failed, gone out of business, or been taken over by the large national packers. One of the early establishments is the John Morrell Company of Ottumwa, which began in England in 1827, and had operated a plant in Chicago from 1871 to 1888. In 1877 they leased the old B. Ladd Company plant in Ottumwa. Today the slaughter at Morrells exceeds a million a year, with a killing capacity of 640 hogs per hour, in contrast to the operations of the B. Ladd Company which killed 22,000 head in 1860-1861.

The packing business in Sioux City went through a hectic period from 1860 to the coming of Cudahy & Company on November 28, 1892.

The names of Booge, Haakinson, Silberhorn, and the Union Stock Yards figure prominently in the packing house history during this period. In June, 1901, Cudahy was followed by Armour & Company. During the boom years of 1918 a cooperative company known as the Midland Packing Company was organized and a modern plant constructed, but this enterprise proved a failure. In 1924 Swift & Company bought the plant, thereby expanding a smaller plant which they had operated at Sioux City for a year. Thus, Sioux City had three of the major packing interests, and soon developed into one of the leading livestock markets of the country.

At Waterloo Rath & Company began operations in 1891. Their kill has reached 15,000 hogs a day during the busy season. The hourly kill is 640 hogs. Wilson & Company at Cedar Rapids started the hog buying and packing business in 1930, having purchased the plant from Sinclair & Company which had been in the business there since 1876. The hourly kill is 600 head. In 1934 Tobin & Company started operations at Fort Dodge; they have a maximum kill of 3,500 head daily. Storm Lake is the home of Kingan & Company, started in 1935. They have a daily kill of 2,100 head. Arnold Brothers have a plant at Perry. This plant, started in 1919, was acquired by the Arnolds in 1934. Their kill is 600 to 1,000 head daily.

In Des Moines a meat-packing company had been set up in 1870 under the name of Murphy & Company and the Stowers Pork Packing Company. Between that date and 1917 the plant changed hands several times. The Iowa Packing Company, a branch of Swift, started operations in Des Moines in 1917. Their kill is 400 to 450 hogs hourly. Swift also has a branch plant at Marshalltown. The Decker Division of Armour & Company, located at Mason City, started in 1899. Armour acquired all the stock in 1935. Their kill is a maximum of 5,200 head daily. The Dubuque Packing Company is at Dubuque. In 1946 Oscar Mayer & Company took over the Kohr Packing Plant at Davenport. They kill 300 hogs hourly. There are also several small plants in Iowa, some of which are devoted to the production of sausages, bologna, and specialty hams.

Today the fourteen packing plants in twelve Iowa cities do a tremendous business. Thus the Iowa hog — the famous “mortgage lifter” — has brought money not only to the farmer, but to the industrialist and the laborer as well.

ELVIN LEE QUAIFE
ARTHUR L. ANDERSON

Breeds and Types

By the middle 1850's improved hogs were being introduced into Iowa. The reports of the first two State Fairs, in 1854 and 1855, do not mention any specific breed, but by 1856 such names as Suffolk, Cheshire, Essex, Grazier, Poland China, and Berkshire begin to appear. It is believed that the first of the improved breeds to be brought into Iowa was the Berkshire. By the 90's, M. K. Prine of Oskaloosa was one of the leading breeders. He was followed by C. F. Curtiss of Ames, who for many years maintained the leading herd in Iowa. The Berkshire continues to be popular in Iowa for cross breeding because it improves quality and early maturity.

The Poland China was brought into Iowa about the same time as the Berkshire, and was the leading breed until the 90's. The original Poland China type — large and coarse — was developed in Ohio. Through crossing with the Berkshire, and by judicious selection, a quicker maturing type of Poland was developed which prevailed until the 1900's. Breeders then realized that the Duroc Jersey and the Chester White were beginning to surpass the Polands, largely because the latter had developed into a small "cob roller" type

of hog. The boar "Chief Perfection 2nd," farrowed in 1896, and an outstanding example of the small type, was sold at one time for over \$40,000 in breeding privileges; twenty breeders bought interests at \$2,000 each.

During the 90's Peter Mouw of Orange City developed what is known as the Big Type Poland, but producers did not at first take to it. About 1910, however, the Big Type craze really got under way and continued so into the mid-twenties. During this period many of the Big Type Poland boars sold for as high as \$10,000 each.

The American Poland China Record Association, organized at Cedar Rapids in January, 1878, was one of the first swine associations to be formed. John Gilmore of Vinton, who served as secretary for some time, is credited with being the "father of the American Poland China Record." S. A. Knapp, W. J. Swallow, and E. C. Forest were early breeders of Polands in Iowa.

During the 80's the Duroc Jersey made great progress in Iowa, and in the following decade two leading Duroc Jersey families and blood lines were developed. One of the most noted sires in Duroc history was the boar "Pathfinder," owned by Hanks and Bishop of New London. In the boom period following World War I, a sale of sows bred to "Pathfinder" averaged close to \$2,000 per head. W. M. Holmes, a red hog breeder of Saratoga, New York, moved to Grinnell about 1880

and continued to breed Duroc Jersey hogs under the firm name of his son, C. H. Holmes. Some of the other names conspicuous in early Iowa history of the breed are J. D. Waltemeyer of Melbourne, the Viponds, the Studers, Wellendorf of Algona, and Satres of Stanhope.

The Chester White breed came into Iowa during the latter half of the nineteenth century, but did not make exceptional progress until about 1910. In 1914 and 1915 this breed outnumbered any shown at the Iowa State Fair. Eight hundred head were shown at Des Moines in 1915. Some of the earliest improvers of the breed, who began about 1900, were F. D. Humbert of Nashua, F. P. White of New Hampton, and William Hoover of Oskaloosa.

The Hampshire began its rise in popularity in Iowa about 1910. It is reported that in 1906 only eight or ten Iowa farmers owned Hampshires, but by January 1, 1915, Iowa had become the leading Hampshire state, with 1,600 purebred herds. Hampshires today rank with the Durocs as one of the top if not the top breed in Iowa. Clayton Messenger, H. D. DeKalb, Russell Yates, and F. F. Silver of Wickfield Farms at Cantril were some of the earlier breeders. Rollie Pemberton, now Secretary of the Hampshire Registry Association, has also done much to further the breed.

The Spotted Poland China made its greatest progress in Iowa between 1910 and 1920. At the

Iowa State Fair in 1924 there were more Spotted Poland China hogs shown than any other breed. They rank third in popularity in Iowa.

The Hereford, one of the newer breeds, first appeared at the Iowa State Fair in 1931, and a class was provided for the breed in 1939. John C. Schulte of Norway, Harris Sellers, Jr. of Chariton, and Monroe D. Yoder of Kalona are some of the earlier promoters of the Hereford in Iowa.

The foregoing breeds are primarily of the lard type. There are two breeds, the Yorkshire and Tamworth, which are of the bacon type. The Yorkshire was first brought to Iowa by John Morrell & Company of Ottumwa. Sows of the breed were distributed within their trade territory, and Morrells paid a premium for purebred Yorkshires or those of high grade. In 1910 Morrells, Sinclair & Company of Cedar Rapids, and Armour & Company of Chicago cooperated with the Chicago, Rock Island & Pacific Railroad in running "The Breakfast Bacon Special." This train had for its purpose the furthering of the Yorkshire breed, and 271 meeting stops were made throughout the Midwest. This breed has had its ups and downs in Iowa over the years. Whenever lard has been low in price, as it has a number of times during the past fifty years, Iowa farmers have shifted to the leaner Yorkshire. At present the Yorkshire is on the upswing.

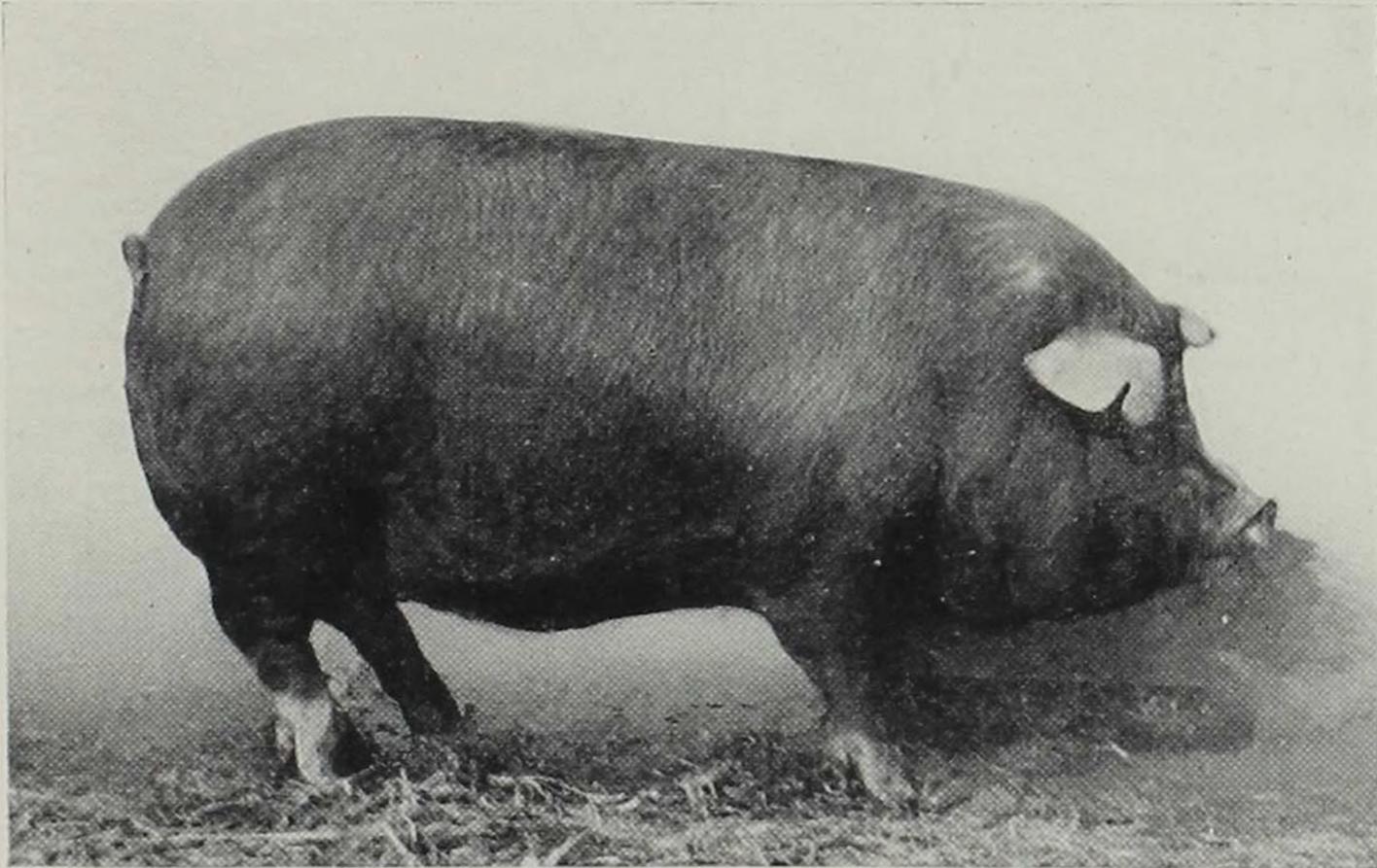
The other bacon breed, the Tamworth, was

brought into Iowa just before 1900. Johnson County has since led in Tamworth breeds, while Washington County is also heavily populated with this type. Some early Iowa breeders were A. E. Augustine of Oskaloosa and I. M. Reed of Rose Hill, and D. W. Overholt, C. C. Roup, E. R. Thomas, J. W. Justice, and Propst Brothers of near Iowa City. The Tamworth, like the Yorkshire, is used primarily for crossing with the lard breeds.

Breeds of swine are continually shifting in their popularity, depending much upon the aggressiveness of the various breed associations and the trends of demand as to pork products. There have been breeds such as the Essex, Cheshire, Victoria, Suffolk, and Mulefoot which at one time were quite numerous in Iowa; today they are practically all extinct. In 1887 the Victoria hog, a white animal, led all breeds at the Iowa State Fair.

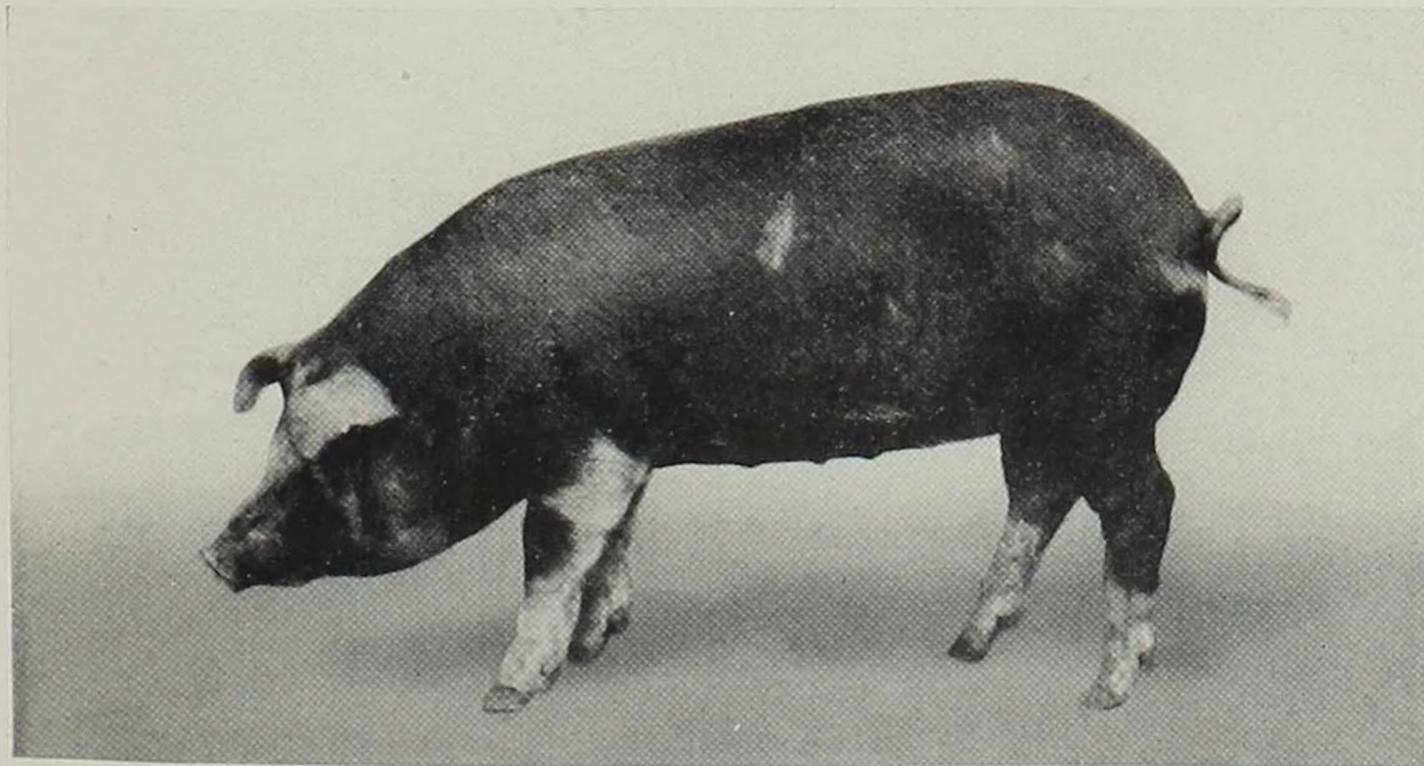
Some new breeds, most of which have been developed outside the state, are being used to a considerable extent by market hog producers in Iowa. The Hamprace, Minnesota Number I and Number II, Beltsville Number I, Maryland Number I, the Landrace, and possibly others are being used primarily for crossing purposes in market hog production. These breeds are all of a leaner type than the lard breeds.

The Iowa Swine Producers Association was created by legislative action in 1937. The duties



A SMALL TYPE MARKET PIG

Such pigs are finished at light weights but have a high lard yield at common market weights.



A LARGE, OR RANGY-TYPE, MARKET PIG

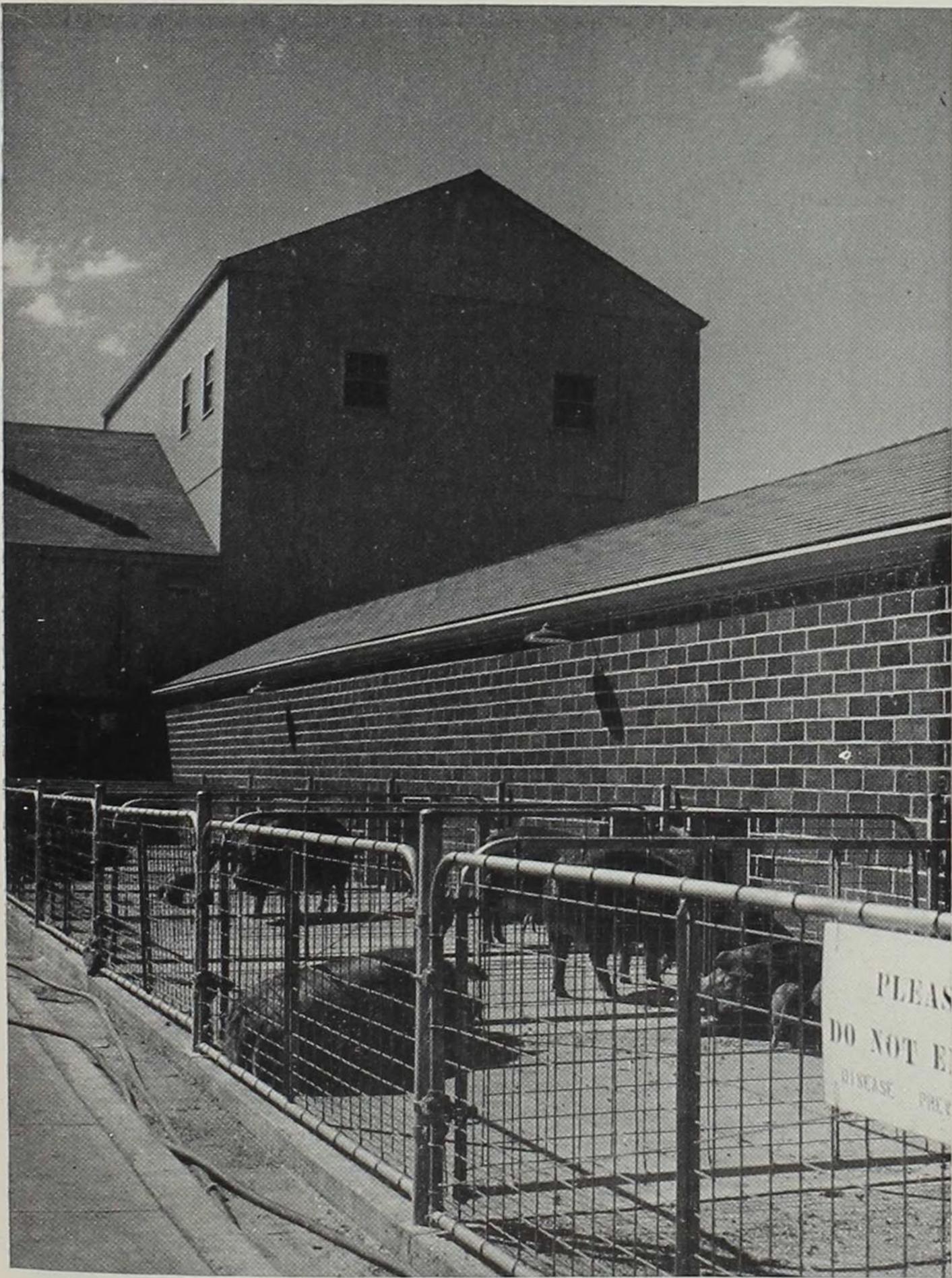
Such pigs must be carried to rather heavy weight to have sufficient finish.



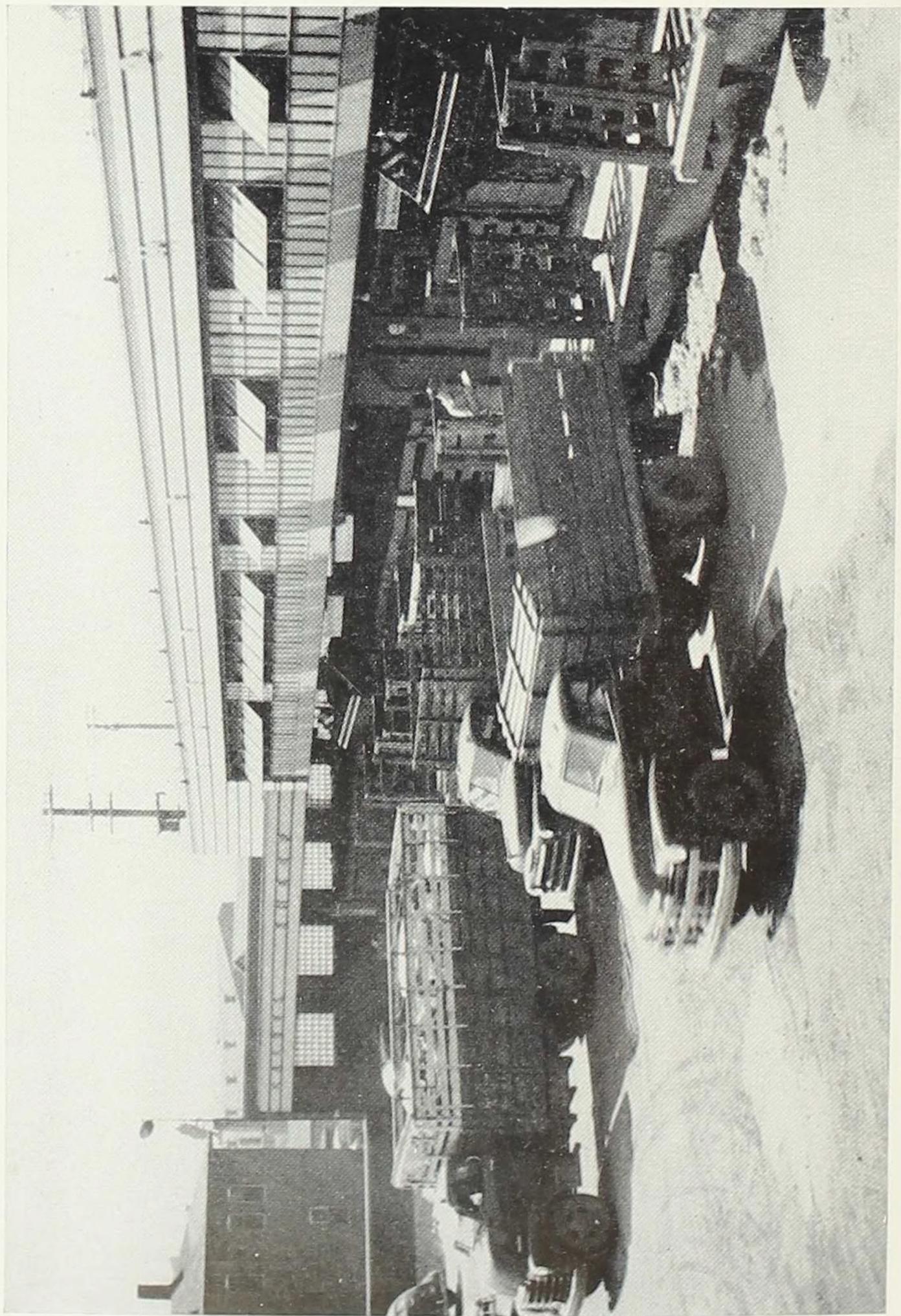
Hog Feeding in Early Days



Modern Hog Raising in Wright County



Iowa State College New Swine Nutrition Laboratory



Unloading Hogs at a Modern Iowa Packing Plant

and objectives are: (1) To promote the Iowa swine industry. (2) To aid in the orderly marketing of swine. (3) To carry on educational work to increase consumption and improve the processing of pork and its products. (4) To make an annual report of its proceedings and expenditures to the Secretary of Agriculture.

In the early establishment of most all the so-called purebred hogs, crossing of breeds of different types was practised. In fact most of the purebreds were derived by crossing. Even in the twenties some cross breeding was practiced in several of Iowa's most popular breeds. Since hog raisers found that in general the results from crossing were beneficial, the practice has become very widely used in Iowa in the production of market hogs. The three forms followed are: (1) breed upon breed; (2) back crossing, alternating in the use of boars from two unrelated breeds; (3) the three-way cross where boars of three different breeds are used consecutively in order upon the gilts produced by the previously used boar.

Cross breeding in Iowa received its greatest impetus by the experimental work conducted at Iowa State College by Lloyd Jones in 1916, by the late John M. Evvard in 1920, and by Professor Shearer and co-workers in 1926. Prompted by the results obtained by experimentalists in hybrid corn, workers at the Iowa Agricultural Experiment Station began in the early 1930's to develop

inbred lines of swine from purebred Poland Chinas. In 1934 the Danish Landrace was added. This work later came under the direction of the Regional Swine Breeding Laboratory at Ames and embraced the activities of several state experiment stations, particularly in the Midwest. Dr. W. A. Craft of Ames is now in charge of this field laboratory. The crosses of some of the inbred lines appear to have possibilities in commercial pork production.

This inbreeding work conducted by the college and later on by commercial organizations led to the production of so-called hybrid hogs. The Farmers Hybrid Company of Hampton, a pioneer in this field of breeding, began selling hybrid boars in 1945. Since that time several other companies have developed the same kind of enterprise.

By selection within the breeds and by a crossbreeding program, Iowa swine producers are today endeavoring to produce more of a meat type hog. Within the breeds there is also found a difference in type. Swine producers can change the type of hog they produce rather quickly because of the early maturity of the animal. Experiences with the short chunky swine showed that this type was not prolific and yielded cuts of meat which proved unsatisfactory to the consumer. The market for lard has dwindled to an extent that the less fat a hog carries the more he is worth.

The big extreme rangy type followed the short

chunky type. This hog reached heavy weights but proved too slow in maturing and did not carry enough finish at popular weights of 215 to 240 pounds. The cuts of meat also proved to be too heavy for consumer demand. Therefore swine producers in the late 1920's sought to produce a hog in type somewhere between the two extremes. After years of selection, and through educational programs conducted by Iowa State College in cooperation with the packing companies of the state, a "middle of the road" type of hog has emerged. This type has further been encouraged and exemplified by numerous barrow shows conducted at Cedar Rapids, Ottumwa, Davenport, and the Iowa State Fair. Iowa swine producers have had experience with hog types to the extent that they know quite well what will do the best for them, and it is safe to say that on Iowa farms today the type of hog being raised is the best in Iowa's hog raising history.

ELVIN LEE QUAIFE
ARTHUR L. ANDERSON

Diseases and Parasites

As swine increased in numbers, diseases began to appear — hog cholera being the most serious. There have been three periods — 1887, 1896, and 1913 — when cholera caused heavy losses. In 1896 about 13 per cent of all the hogs in the United States died from this disease; in 1913 more than 10 per cent died. Iowa suffered heavy losses in both these periods. In 1896 little was known about hog cholera, and owners who lost hogs endeavored to keep their losses secret.

The discovery of the fact that a virus was the cause of the disease led to the development of a serum to counteract it. Dr. W. B. Niles, Dr. M. Dorset, and Dr. C. N. McBride, of the Bureau of Animal Industry, finally developed such a serum in 1907. It was administered to hogs along with a dose of virus which rendered them immune. By 1914, as the results became known, its use became general. Since that time the losses from hog cholera have been greatly reduced. In 1921 the Iowa legislature passed a bill permitting swine producers to obtain a permit to immunize their own swine, after they had attended a two-day school of instruction and passed a written examination supervised by the Extension Service of Iowa State

1907

College. Thousands of Iowa swine producers have secured these permits, although the majority of immunization is still done by veterinarians.

Since the misuse of live virus in immunizing hogs allowed for the possibility of a cholera outbreak, several new so-called "killed virus" vaccines have been developed. Two of these have been used considerably — Crystal Violet Vaccine and Boynton's Tissue Vaccine (B.T.V.) — and render temporary immunity, perhaps for the length of the fattening period. During the past few years two or more attenuated vaccines have been developed which are supposed to immunize hogs without the danger of a cholera outbreak.

Brucellosis among swine has been prevalent for years and has taken a large toll in the form of premature litters. During the year 1952 an intensive educational program has been instituted by the Veterinary Extension Service of Iowa State College in cooperation with other state agencies, with the hope that within a few years this menace to the swine industry may be eliminated.

Erysipelas showed up in Iowa during the late 20's and early 30's in an alarming way and has now spread to every locality. Some producers immunize against this disease while others just live with it. Gastro-enteritis, a very virulent form of scours, is one of the most devastating of little pig troubles. No sure preventative or adequate control is known at present. Heavy mortality results

once it strikes litters of newly born pigs. Rhinitis is one of the so-called newly recognized diseases, although it is known to have been in Iowa for many years past. It, too, is causing much loss through unthriftiness and actual death loss. Neither the cause nor the treatment are known.

Parasites, such as the common round worm, and infectious diseases such as enteritis, common to old barnyard lots in which hogs have been raised for years, increased as hog populations increased. They reached such seriousness between 1910 and 1920 as to prompt the adoption of a "clean ground" plan of raising hogs known as the McLean County (Illinois) system. Since this system was introduced to Iowa swine producers during the early 1920's it has been one of the most important projects of the Iowa State College swine extension service. The late Dr. K. W. Stouder was a leader in this field of education. Thousands of Iowa producers now follow the plan of management, which is a tribute to Stouder's earnest endeavors in the cause of sanitation.

The four essentials of the system are: (1) thoroughly clean the farrowing pen and scrub with scalding hot water and lye; (2) wash the sows with warm soapy water, especially the udders, before putting the sow in the farrowing pen; (3) move the pigs to clean ground pasture, equipped with houses that have been thoroughly cleaned and disinfected; (4) keep the pigs on clean ground

pasture until they are four months of age. In 1929 two special trains known as "Pig Crop Specials" were run by the Extension Service in cooperation with the Chicago, Burlington & Quincy and the Chicago & North Western railroads. These trains carried exhibits of equipment suitable for use with the clean ground program. One car was devoted to an exhibit of live swine. A total of 64 stops was made with an attendance of 83,000 people.

A modification of the clean ground system developed by a few swine producers in Iowa is known as the confinement system. This plan involves keeping the pigs on a concrete floor from birth to market weights. John Hendricks of West Liberty was a successful exponent of this plan.

As the years have passed, the maintenance of good health in hogs, and freedom from disease and parasites has become and will continue to be one of the most important problems confronting swine producers. The transportation of hogs by common vehicles, the bringing in of breeding stock, and the possibility of the spread of disease by birds, dogs, and stray animals all contribute to difficulties in raising healthy hogs. There is no plan of hog raising which can succeed that does not pay heed to the fundamentals of sanitation as laid down by the McLean County system and to other sanitation practices.

ELVIN LEE QUAIFFE

ARTHUR L. ANDERSON

Feeding and Management

In the early days in Iowa most of the pigs were farrowed in the spring months. At that time weather conditions were more favorable and vegetative growth more abundant; inasmuch as the pig was not confined closely, he had a better chance of survival if farrowed in the spring months.

The sows were fed corn supplemented with small grain and such waste as was found about the farm until the pigs were weaned at eight to ten weeks of age. In many cases the pigs weaned themselves. After weaning they were kept in a pen or small enclosure and fed corn, oats, shorts, and such other foods as cooked potatoes and table refuse. Later they were turned out to roam over the prairie, in the woods, or into the fields after harvest.

In the fall the shoats were confined and fattened. Some were slaughtered or marketed sometime during the late winter. On many farms skim milk, buttermilk, pumpkins, artichokes, and wheat were used to supplement the corn. A great deal of "slopping" or "swilling" was practiced in those days. Soaking corn, or cooking of corn, potatoes, and pumpkins was advocated and practiced by the best of hog producers. Very little thought was

given to efficiency of production because at this time hogs had not reached economic importance.

In 1859, however, a feeding practice was recommended for more profitable production. "Put pigs on pastures in the summer, confine them in September, and feed a swill of cooked pumpkins, potatoes, beets and carrots, adding two bushels of corn and oatmeal to the barrel. Increase the meal gradually, eliminating the roots the last six weeks of feeding." Wood ashes, coal, charred cobs, charcoal, and salt were the chief mineral substances used. As early as 1865 farmers claimed that pigs got something in following cattle which did them good. Later observations and more recent trials at the Wisconsin Experiment Station have substantiated this claim as being due to certain vitamins, probably B₁₂. About 1865 clover became established, and farmers began to fence their land. The sows and pigs were also confined more and fed more heavily upon corn. Hogs became of greater importance following the Civil War, and the best farmers were beginning to "full-feed" their hogs to get them to market sooner.

The agricultural colleges and experiment stations were getting under way in the 70's but it was not until the early 90's that the Iowa Experiment Station began work with swine. R. P. Speer, director of the Iowa Agricultural Experiment Station, said in 1890: "We will not promise many experiments in breeding or feeding domestic ani-

mals, because thousands of skillful breeders and feeders are conducting such experiments in all parts of the West." In the first twelve bulletins issued by the Iowa Agricultural Experiment Station, from 1888 to 1891, the only reference to hogs refers to the occurrence of hog lice in the college herd and the use of kerosene emulsion as a control measure.

During the 90's experiments were conducted showing the value of buttermilk fed with corn. The value of cottonseed meal was tested in 1895, because of its importation into the North as a feed for swine following the drought of 1894. Breed comparisons and that of various breed crosses and comparison of bacon versus the lard breeds were conducted in 1896. Tankage in the early 1900's was becoming readily available. Beginning with 1902 and continuing for many years afterwards many tests were conducted to learn the value not only of tankage but of the many wheat by-products, oil seed by-products, and other animal by-products as supplements to corn. "Proprietary feeds," "condiments," mineral concoctions, and other stock feeds began to appear in the market, and large quantities were used by swine producers. Strong claims were made for these feeds, many of which were exploded by tests made by the Experiment Station.

It was not until 1910 that swine experimental feeding got under way on a big scale, with the

coming to Iowa State College of the late Professor J. M. Evvard. The experimental field was wide open, and Evvard soon began tests comparing the value of different rations fed to pregnant sows. Later on he ran numerous tests comparing animal and vegetable proteins. About 1918 one of the most far-reaching developments in swine feeding took place when Evvard suggested a Trio mixture (50 pounds tankage, 25 pounds corn oil cake, and 25 pounds alfalfa meal). Shortly after this the "Big 10" was adopted, consisting of five protein materials and five minerals.

These mixtures marked an important step forward in swine nutrition, and have served as the basis for the formulation of most of the mixed feeds on the market today. Hand feeding and slopping of swine had been the common practice before Evvard came to Iowa. About 1914 he began experiments comparing self feeding dry feeds in self feeders versus hand feeding and slopping. His experiments demonstrated that the hog was a good balancer of his own ration and that self feeding was a great labor saver. Since that time self feeding has been the universal practice. Evvard also established the value of minerals; his work with salt had prompted him to call it "white gold." Evvard left Iowa State College in 1930. Since then, for a period of about 15 years, the experimental work has centered on breeding rather than upon nutrition.

The organization of 4-H pig clubs during the period 1910-1915 and that of FFA chapters during the period 1928-1930 have been important factors in spreading the gospel of good feeding and management as well as that of the use of good breeding stock. The Iowa Falls FFA chapter, under the leadership of Clarence Bundy, attained state and national recognition during the 30's and early 40's for its contribution to improved swine husbandry.

During the early 30's hog production in Iowa reached its lowest ebb due to low prices and droughts. The corn-hog program was instituted in 1933 under Henry A. Wallace, and the killing of 6,200,000 little pigs was a highlight at that time in swine production. Prices reached another very low level in 1939 and 1940, but with the outbreak of war in the early 40's hogs entered a very profitable period which continued until 1951.

Many other changes have come in recent years. During the 40's the use of electricity on the farms became general, and swine producers began to use it as a source of heat in their hog houses. Brooders and heat lamps have noticeably reduced losses from chilling. In 1949 the discovery of vitamin B₁₂ proved a great factor in efficient production, as a replacer of animal protein. A year later the value of antibiotics was established and these two materials have created more interest in efficient pork production than anything recommended to

date. The year 1950 saw farrowing stalls used on Iowa farms, and swine producers find them helpful in the saving of pigs. In 1951 several commercial companies developed formulas for the raising of orphan pigs with synthetic milks. This practice involved removing the pigs from their mothers at two to three days of age and raising them on a substitute milk, along with a pig meal. The success of this procedure has not been too well established at this date.

Swine production through the use of labor saving equipment, the practices recommended by Iowa State College, and the use of better balanced rations has reached a high degree of efficiency. There are no better hog raisers to be found than the Iowa producers, and they are equipped with the "know how" to do even better.

ELVIN LEE QUAIFE

ARTHUR L. ANDERSON

The Iowa Hog

Iowa, famous for its corn, bacon, and ham, raises twice as many hogs as the next ranking state. She produces one-fifth of all the nation's swine and one-fourth of the federally inspected slaughter. In 1943 she had 20,900,000 head; in 1951 she reached a record high of 21,304,000. Of every dollar coming to the farm, hogs return between 40 and 45 cents. More than 50 per cent of Iowa's golden corn is marketed through her millions of hogs.

Iowa swine producers are always striving for more efficient production. Not so many years ago it took eight months to get hogs to a market weight. Now it is attained in six months or less. In 1924, the first year any official record of the number of pigs weaned per litter was made available, Iowa swine producers weaned an average of 5.10 per litter. In 1950 the average saved was 6.64 or an increase of over 30 per cent.

Ten years ago the Master Swine Producers Project was started, which each year gives awards to 25 outstanding swine producers, based upon their efficiency in the number of pigs marketed per sow and the weight attained. In 1951 the high 25 marketed an average of 9.27 pigs per litter far-

rowed, with an average weight of 221 pounds at 187 days of age.

The plan of hog production in Iowa varies with the location, tenancy, and type of farming. The heaviest population is in Benton, Cedar, Clinton, Iowa, Jackson, Johnson, Jones, Muscatine, Washington, and Scott counties. Washington County led all Iowa counties on January 1, 1952. In northwest Iowa, Plymouth and Sioux are two of the heaviest producing counties, while Appanoose and the counties in the central southern tier are the low producing counties.

Spring farrowings (December 1 to June 1) comprise about 70 per cent of all litters farrowed. The eastern part of the state has about 60 per cent spring farrowings and 40 per cent fall, whereas in northwest Iowa the farrowings are about 80 per cent spring and 20 per cent fall. During the past few years there has been a slight tendency to an increase in fall farrowings, since swine producers realize that if they are to avoid the gluts which come in November, December, and January, they must spread the farrowings more evenly throughout the year. The relationship between spring and fall farrowings may shift quite markedly one year with another, depending upon the corn supplies, although the greatest cuts in production usually come in the spring farrowings.

Iowa not only feeds her own hogs but she also ships in many feeder pigs from surrounding states.

Many feeders of hogs buy feeding pigs, particularly in the grain producing areas where hog production is light. Cattle feeders usually buy feeding pigs to follow their cattle. This demand for feeder pigs has given rise to the establishment of so-called "pig hatcheries" or "piggeries." These are in their infancy and it remains for the future to determine whether they can succeed. If they can be successful, the future may see considerable of Iowa's pig crop produced in this manner. They now raise a large number of pigs and sell them to prospective buyers at eight to ten weeks of age. The going price for such pigs ranges from \$14 to \$16 per head. Another basis for determining the price is to charge one-third of the amount a 250-pound hog brings in the market.

The future expansion and the trend of Iowa's hog production will depend upon the grain supply. If Iowa's grain supply can be increased, as it probably will, Iowa may have a capacity of 25 to 30 million head of hogs raised annually. It is difficult to think of Iowa other than as a great corn and hog state. That's where the tall corn grows.

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