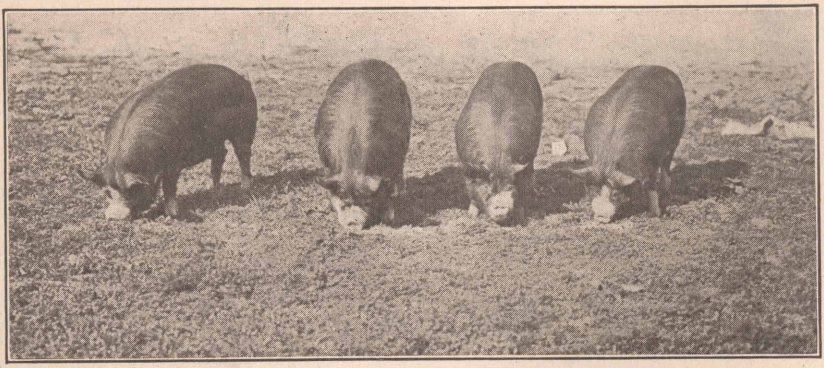
IDAHO AGRICULTURAL EXPERIMENT STATION

MOSCOW, IDAHO

DEPARTMENT OF ANIMAL HUSBANDRY

HOG RAISING FOR THE IDAHO FARMER



BY

W. L. CARLYLE E. J. IDDINGS

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The regular bulletins of this station are sent free to persons residing in Idaho who request them.

HOG RAISING FOR THE IDAHO FARMER

BY

W. L. CARLYLE E. J. IDDINGS

INTRODUCTION

It is very evident that pork production is of deepest interest to the people of Idaho, as indicated by letters of inquiry received at the Idaho Experiment Station during the past two years. These requests for information have come from all parts of the state, have dealt with feeding, breeding, and care and handling of hogs at various ages and under widely differing conditions, and have exceeded many times the letters of inquiry concerning all other classes and kinds of animals. These letters indicate that while many farmers are very much interested in this subject they also are very much in need of some practical and helpful suggestions.

The object of this bulletin is to give results of carefully conducted experiments, testing the value of Idaho feeds for pork production, to give helpful hints, suggestions and practical information to the beginner, to outline approved methods of pig management for the benefit of all inquirers, and to make public the results of experience in handling the University herd of three different breeds.

THE PIG OFFERS ADVANTAGES

The use of live stock permits the crops to be marketed at a higher average price per bushel or per hundredweight, more evenly distributes farm work through the year, reduces and eliminates wastes, and gives a permanency and stability to the farm and its profitable cultivation obtained in no other way.

The hog can eat and assimilate a greater variety of feeds, use up more kinds of wastes, reproduce more rapidly, be acquired and started as a herd more easily, be fed and marketed at a lower average cost and will prove more generally satisfactory to the Idaho farmer than any other class of meat producing animals.

FIELD FOR THE INDUSTRY

There is a shortage of hogs, and hog products, in all northwestern states. Consumers annually send millions of dollars eastward for hogs on foot, and in the form of pork, including the by-products. In meeting this northwestern demand for pork there is a profit for the producer. The northwest farmer should be the producer. He should have the net profit returned and secure all the other benefits that come from live stock husbandry.

In the wheat raising sections of Idaho, a considerable portion of the crop is shattered and lost in harvesting with the combine, and scattered around the separator in conveying it to the machine either in threshing from the field or stack. Hogs can utilize this waste and return from eight to eleven pounds of pork for every bushel of shattered wheat consumed. Wherever extensive dairying is practiced, skim-milk is a by-product and can be used by no animal to so great an advantage as by the hog. The summer fallows of the dry farming sections in many cases can very profitably grow corn, field peas and other crops of similar nature. The newer irrigated sections have thousands of acres in alfalfa which may be utilized to great advantage by pasturing them with hogs. An acre of alfalfa will keep from fifteen to twenty pigs during the summer, and with grain in addition, will make very profitable gains and a high quality of pork. The Missouri Experiment Station made a test of the pork producing capacity of different pastures, when used with a partial grain ration. Valuing pork at six cents per pound, the following returns were secured for a season's pasture:

A COMPARISON OF PASTURES FOR PORK PRODUCTION

	Pounds of Pork Per Acre of Pasture	Value of Pork From Acre of Pasture
Blue Grass	295.2 lbs.	$17.71
Alfalfa	596.8 "	35.71
Clover	572.2 "	34.11
Rape, Oats and Clover	394.0 "	23.64
Cow Peas	224.9 "	13.16
Soy Beans	183.1 "	10.99
Corn	395.2 "	23.71
Rye Grass	244.3 "	14.66

Our western alfalfa produces more heavily, grows more rapidly, and is of higher protein content, or of muscle and bone building capacity, than the eastern grown alfalfa. Red clover is near alfalfa in value as a hog pasture and is grown to advantage in many sections of Idaho. Rape, oats and rye can be grown in practically every part of the state. The other pastures mentioned have as yet not been extensively tested under western conditions. Fine, early cut alfalfa hay and leaves may be used as a part winter ration for all kinds of hogs. Grains grown here are of high quality and are adapted to profitable hog raising and finishing. In almost every farming section hog raising will fit in well with farming practice.

CLIMATIC FACTORS

The hog is adapted to a temperate climate, needs clean, dry, and well ventilated quarters, and should have pure drinking water. Successful swine production requires feeds capable of building a goodly supply of muscle and strong bone, and other conditions that make for sanitation and freedom from disease. In no state can these limiting conditions be more nearly met than in Idaho. Drainage is excellent, the water supply is generally superior, and sunshine abundant for disinfecting purposes. Grains, grasses and forage are rich and nutritious, mineral supplements are easily obtained and cholera and other scourges comparatively rare.

Largely due to these environmental conditions, Idaho hogs are good rustlers, heavy feeders and at the same time have quality and are capable of high finish.

MARKETS

In the matter of markets or the demand for pork products, the Idaho farmer is fortunate in that market facilities and market demands for hogs are far in excess of present supply. The Union Meat Company of Portland, Oregon, has eagerly bought all hogs offered in the Northwest at liberal prices. In proof of this, may be cited the fact that the average top prices paid for hogs in 1910 at the Portland market was 55 cents per hundred weight above the average top at Chicago, considered the great hog market. Further study makes this showing more favorable. Chicago gets a higher percentage of grain fed and highly finished hogs, and the prices paid there for a good mixed packing hog more nearly corresponds to the Portland top price. Taking all classes and all grades into consideration the 1911 average at Portland was $1.00 per hundredweight above the same average for Chicago.

Large modern packing plants have recently been established at Spokane, Washington. These are conducted by The E. H. Stanton Company, and by the Mitchem Brothers. There is also a distinct and

highly commendable movement toward the establishment and maintenance of small, modernly constructed, thoroughly sanitary and government inspected plants in the cities of Idaho. The most important plants are at Boise, Moscow and Lewiston. Lewiston, Moscow and Wallace have government inspection.

Market conditions fluctuate with the supply and vary somewhat with the tendency, or lack of tendency, of producers to unload in large runs. When prices run high the business attracts a number of new men, or old men out temporarily. Hogs reproduce so rapidly that the newcomers suddenly find production beyond regular demands. Influx of this increase to market causes a drop in prices, and those who may be called speculative breeders quit a seemingly declining and profitless industry. The conservative breeder in the meantime has been handling his usual number of hogs, a number which experience has told him is best suited to his housing, feeding and handling facilities, and has obtained advantage of the high prices, and by temporarily restricting but not closing out operations, pulls even, or, makes a small profit in dull times. This same man sells stock at remunerative prices to his less stable neighbors when prices take an upward turn and encourage the faint-hearted. The man who goes into hog raising to learn and stay by the business makes very satisfactory average returns, and utilizes farm products that would be saved in no other way.

FEEDING EXPERIMENTS

Three experiments for finishing hogs for markets have been completed during the last two years. Publication of results has been delayed in order that later experiments might be used to check data first obtained.

FEED PRICES

Feeds used in the following experiments are charged at prices that are considered a fair average if bought in ton lots during the last five years. In order to easily compare results secured in the three experiments uniform prices are used in figuring cost of feeding stuffs. Feeds are therefore charged as follows:

	Per Hundredweight.
Ground wheat	$1.25
Cracked corn	1.40
Wheat shorts	1.10
Rolled barley	1.10
High protein tankage	2.00
Low protein tankage	1.50
Field peas	1.50
Soy bean meal (Proteina)	1.90

Tankage is a by-product of the slaughter house and packing plant

composed of thoroughly cooked, dried and ground portions of diseased carcasses, some bone and other animal matter that cannot otherwise be utlized more profitably. In experiments I and II the tankage used was furnished by the Union Meat Company of Portland, Oregon. The protein content of this tankage was guaranteed to be not less than 60 per cent. In experiment III the tankage fed was furnished by the E. H. Stanton Company of Spokane, Washington. This tankage was high in mineral matter and, by analysis of Idaho Station Chemist, J. S. Jones, contained 34.64 per cent protein. For the sake of clearness the former tankage is designated as high protein and the latter as low protein. The lower protein content is responsible for the decreased cost.

Peas used in Experiment II were partly broken and contained some wheat and oat grains. The soy bean meal was imported from Japan and cost $38.00 per ton laid down in Moscow. It is the ground form of the cake left after the extraction of oil from the soja or soy bean. It is guaranteed by dealers to contain 50 per cent protein. Other feeds used are designated by their well-known commercial names.

HOG PRICES

Forty-one head of hogs were purchased for experiment II. These hogs cost $4.00 per head or about $5.70 per hundredweight. The other thirty-nine pigs used in this work were taken from the litters of the University herd. Some were pigs that had not done well enough to sell for breeding purposes and others were growthy pigs, but off color or otherwise undesirable as pure-breds. Inasmuch as forty-one head of the eighty cost less than six dollars per hundredweight and thirty-nine head from the Station were put in the feed lot not in condition to bring top market prices, a uniform charge of six dollars per hundredweight for all pigs used in the experiments is considered conservative.

The pigs in experiment I were sold at $9.10 per hundredweight. By cutting experiment II short two or three weeks, when good gains had already been made, the pigs could have been sold at $8.00 to $8.50 per hundredweight. The experiment was run the full one hundred and five days as originally planned and the pigs brought $7.00 on a falling market. The pigs when taken from Experiment III were sold at $7.50 per hundredweight. In each case the price named is when weighed in Moscow. Since $7.50 per hundredweight is the approximate average of the three selling prices it is used as the uniform selling price in all experiments and is deemed conservative.

EXPERIMENT I

The experiment was conducted from March 22 to June 28, 1910, for the purpose of testing the value of tankage as a supplementary feed in finishing pigs for market. Sixteen pigs averaging seventy-one

and one-half pounds were divided into two lots of eight each. Care was exercised to divide the lots equally as to size and thriftiness. The pigs slept and were fed inside a hog house on a wood floor with access to a small outside exercise yard.

Lot I was fed two parts wheat, one part ground corn and one part shorts. Lot II received two parts wheat, one part ground corn, one part shorts, and one part Digester or high protein tankage. Each lot was started on a daily allowance of four pounds per pig. For both lots a mixture of soft coal, sulphur and salt was provided. Lot I ate this mixture greedily. Lot II cared little for it. The animals in Lot II getting wheat, corn, shorts, and tankage were soon noticed to eat their feed more greedily and drink more water. Throughout the experiment Lot II drank five parts water to three parts drank by Lot I. May 29-June 7 tankage was not available and Lot II was fed during this period the same ration as Lot I. That the tankage was missed was seen immediately in a less hearty appetite and lower water consumption. After having been without tankage for one week the average daily gain of the pigs in Lot II dropped from 1.75 pounds to 1.4 pounds. Both lots were deprived of corn from June 7 to June 14.

TABLE I

RESULTS OF FIRST EXPERIMENT, MARCH 22 TO JUNE 28, 1910.

Lots	Lot 1, 8 pigs	Lot II, 8 pigs	
Rations	Wheat 2 Corn 1 Shorts 1	Wheat 2 Corn 1	Shorts 1 Tankage 1
Total weight beginning, lbs.	538	604	
Average Wt. beginning, lbs.	67.3	75.5	
Total final weight, lbs.	1461	1688	
Average final weight, lbs.	182.6	211.0	
Total gain, lbs.	923	1084	
Average gain, lbs.	115.4	135.5	
Average daily gain, lbs.	1.18	1.38	
Days fed	98	98	
Feed consumed, lbs.	4046	4575	
Average daily ration, lbs.	5.16	5.83	
Feed for 100 lbs. gain, lbs.	438	422	
Cost of feed	$ 50.39	$ 63.29	
Cost of 100 lbs. gain	5.46	5.84	
Cost of hogs at 6 cts.	32.28	36.24	
Gross returns	109.57	126.60	
Net profit for lot	26.90	27.07	
Net profit per pig	3.36	3.38	

It will be noted that the tankage fed pigs ate four hundred and twenty-nine pounds more feed and each gained daily one-fifth of a pound more than the pigs in the other lot. The lot fed tankage required sixteen pounds less feed for each one hundred pounds of gain, but on account of a charge of two cents per pound for tankage, cost thirty-eight cents more for each one hundred pounds gain. When the net profit per pig is figured Lot II has an advantage of two cents.

EXPERIMENT II

This experiment was undertaken August 29, 1910, for the purpose of determining the comparative values of ground corn, field peas, soy bean meal and tankage when fed supplementary to a basic ration of four parts shorts and two parts barley.

The pigs used for this work consisted of seven pure-bred Duroc Jerseys from the University herd and forty-one head bought of B. T. Byrnes of Moscow. The latter consisted of twenty-three grade Poland Chinas and eighteen cross-bred Poland China-Duroc Jerseys. These forty-eight pigs, averaging 73.2 pounds, were divided into four lots of twelve each. Special effort was made to make the divisions equal as to sex, size, growthiness, breed and other variable factors. The lots averaged as follows: 1, 74.5 pounds; 2, 73.7 pounds; 3, 71.9 pounds; and 4, 72.6 pounds.

They were kept in dry lots 200 feet long and 16 feet wide and slept in colony house place at the opposite end of the lot from the place of feeding.

Lot I was fed the basic ration of four parts shorts and two parts rolled barley and one part ground corn supplementary; Lot II basic mixture and two parts cracked field peas; Lot III the basic ration and one part soy bean meal; Lot IV the basic ration and one-half part digester tankage. Feed was given twice per day until December 15, and three times daily thereafter. To save labor the feed was placed in troughs dry and a liberal amount of water poured on it.

On account of chronic eversion of the rectum one pig was eliminated from Lot I, and tabulated results are for eleven animals. Cinders were used to floor feeding pens for a portion of the feeding period. The pigs rooted up the cinders and ate such large quantities as to interfere with best results from grain feeding. Wet weather came November 8, and the pens were then floored with heavy plank. Each lot ate weekly twenty-five pounds of a mixture of four parts crushed coal and one part salt. The tankage fed pigs ate more grain, gained more rapidly and gave results more satisfactory in every way. Tabulated data is found in Table II.

TABLE II

RESULTS OF SECOND EXPERIMENT, AUGUST 29 TO DECEMBER 12, 1910.

Lots	Lot I, 11 Pigs	Lot II, 12 Pigs	Lot III, 12 Pigs	Lot IV, 12 Pigs
Rations	Shorts 4 Barley 2 Corn 1	Shorts 4 Barley 2 Peas 2	Shorts 4 Barley 2 Soy Bean Meal 1	Shorts 4 Barley 2 Tankage ½
Total weight beginning, lbs.	820.00	884.50	862.50	871.50
Average wt. beginning, lbs..	74.50	73.70	71.90	72.60
Total final weight, lbs.....	2273.00	2583.00	2471.00	2629.00
Average final weight, lbs...	206.60	215.30	205.90	219.10
Total gain, lbs.....	1453.00	1698.50	1608.50	1757.50
Average gain, lbs.....	132.10	141.50	134.00	146.50
Average daily gain, lbs....	1.26	1.35	1.28	1.40
Days fed.....	105.00	105.00	105.00	105.00
Feed consumed, lbs.....	7580.00	8498.00	8025.00	8401.00
Average daily ration, lbs...	6.56	6.74	6.37	6.67
Feed for 100 lbs. gain, lbs..	521.80	500.30	498.90	478.00
Cost of feed.....	$ 86.62	$101.97	$ 97.44	$ 98.22
Cost 100 lbs. gain.....	$ 5.96	$ 6.00	$ 6.06	$ 5.59
Cost of hogs at 6 cts.....	$ 49.20	$ 53.07	$ 51.75	$ 52.29
Gross returns.....	$170.48	$193.73	$185.33	$197.18
Net profit.....	$ 34.66	$ 38.69	$ 36.14	$ 46.67
Net profit per pig.....	$ 3.15	$ 3.22	$ 3.01	$ 3.89

As recorded in the table Lot IV made the largest gains, followed in order by Lots II, III, and I. Likewise the tankage fed lot required less feed for one hundred pounds of gain, with III or the soy bean lot second, II or the pea fed lot third and the corn supplement last. Most economical gains were from the tankage with corn second, peas third and soy bean meal fourth. The highest net profit per pig also goes to the tankage fed lot, with peas second, corn third, and soy bean meal fourth. This experiment shows clearly the superiority of tankage over other feeds tried as a supplement to the basic ration.

EXPERIMENT III

The third experiment in pork production was of only fifty-six days duration, September 13-November 8, 1911. It was undertaken to determine the relative value of tankage and soy bean meal when used supplementary to a rolled wheat ration. The pigs used for this test consisted of sixteen head from the University spring litters, nearly all farrowed in April, that were discarded for sale and for breeding purposes. These pigs were divided into two lots of eight each. Lot I consisted of two Poland China barrows, three Poland China gilts, two Duroc Jersey barrows and one Duroc Jersey gilt with an average weight of 116.3 pounds. They were fed wheat eleven parts and low protein tankage one part. Lot II consisted of two Poland China barrows, four Poland China gilts, and two Duroc Jersey gilts, averaging 117.6 pounds. They were fed eleven parts wheat and one part soy bean meal. Methods of feeding were the same as in preceding experiments, except that feed was givn three times per day for the entire period. Feeding yards used were same as in Experiment II. Results follow in Table III:

TABLE III

RESULTS OF THIRD EXPERIMENT, SEPTEMBER 13 TO NOVEMBER 8, 1911.

LOTS	Lot 1, Eight Pigs	Lot 2, Eight Pigs
RATIONS	Wheat 11 Tankage 1	Wheat 11 Soy Bean Meal 1
Total Weight, beginning, lbs.	930	941
Average Weight, beginning, lbs.	116.3	117.6
Total Final Weight, lbs.	1580	1555
Average Final Weight, lbs.	197.5	194.4
Total Gains, lbs.	650	614
Average Gains, lbs.	81.3	76.8
Average Daily Gains, lbs.	1.45	1.37
Days Fed	56	56
Feed Consumed, lbs.	2823	2706
Average Daily Ration, lbs.	6.30	6.04
Feed for 100 lbs. Gain, lbs.	434	441
Cost of Feed	$35.87	$35.29
Cost of 100 lbs. Gain	$5.52	$5.75
Cost of Hogs at 6 cts.	$55.80	$56.46
Gross Returns	$118.50	$116.63
Net Profit	$26.83	$24.88
Net Profit per Pig	$3.35	$3.11

This experiment was very satisfactory in both Lots I and II—both in respect to rapidity and economy of gain. For a third time, however, tankage wins with .08 pounds per day more average gain, seven pounds less feed for one hundred pounds gain, twenty-three cents less cost of one hundred pounds gain and twenty-four cents per pig more net profit.

SUMMARY OF RESULTS

For the reason that the feeding value of tankage as a supplement to standard grain rations is under investigation in each experiment, Table IV is given to summarize and compare results. Columns 1, 2 and 3 give comparisons of tankage results from the three reported experiments. The results in average daily gain, feed required for one hundred pounds gain, and net profit per pig are so near together as to recommend them as dependable. In columns 4 and 5 the average of the tankage and non-tankage fed lots are compared. Tankage makes the better showing from every point of view.

TABLE IV
SUMMARY OF RESULTS

No. Experiment	I.	II.	III.	Summary Tankage Fed Lots	Summary Lots Fed Other Than Tankage
Rations Used	Wheat 2 Corn 1 Shorts 1 Tankage 1	Shorts 4 Barley 2 Tankage 1-2	Wheat 11 Tankage 1		
Average Gain, lbs.	135.5	146.5	81.3	121.1	119.9
Average Daily Gain, lbs.	1.38	1.40	1.45	1.41	1.29
Days Fed	98	105	56	86.3	93.8
Average Daily Ration, lbs.	5.83	6.67	6.30	6.28	6.17
Feed for 100 lb. Gain, lbs.	422	478	434	445	480
Cost 100 lbs. Gain	$5.84	$5.59	$5.52	$5.65	$5.85
Net Profit per Pig	$3.38	$3.89	$3.35	$3.54	$3.17
Net Profit Daily per Pig	3.45 cts.	3.70 cts.	5.98 cts.	4.38 cts.	3.58 cts.

CONCLUSIONS

I. Tankage feeding supplementary to standard single grain or mixed rations gives a better appetite to the pigs and means for higher water consumption, more rapid gains, less cost of same and greater net profit per pig as compared with other supplements used.

II. In Experiment I eighty-four and two-fifths pounds of high protein tankage fed to Lot II replaced twenty-five pounds of corn, twenty-five pounds of shorts, and fifty pounds of wheat as compared with Lot I in making one hundred pounds gain and was worth $29.74 per ton. In making one hundred pounds of gain in Experiment II thirty-six and four fifths pounds of high protein tankage replaced four pounds of shorts, two pounds of barley and seventy-four and one-half pounds of corn and was worth $60.34 per ton as compared with corn at $28.00 per ton; thirty-six and eight-tenths pounds of tankage, forty-four pounds of shorts and twenty-two pounds of barley replaced 125 pounds of peas and the tankage was worth $62.56 per ton as compared with field peas at $30.00 per ton; thirty-six and eight-tenths pounds of tankage, four and five-tenths of shorts and two and three-tenths pounds of barley replaced seventy-one and three-tenths of soy bean meal and the tankage was worth $65.52 per ton as compared with soy bean meal at $38.00 per ton. In Experiment III thirty-six and two-tenths pounds of low protein tankage replaced six and four-tenths pounds of wheat and thirty-six and seven-tenths pounds of soy bean meal in making one hundred pounds of gain and as compared soy bean meal was worth $43.04 per ton. An average of the five results given above shows tankage to have a value of $52.24 per ton when used with grains in proportion of from one in thirteen to one in five.

III. Poorest results with tankage were secured in Experiment I when it was fed one to five. The ratios of one to eleven and one to twelve gave much better results and are undoubtedly more economical for average farm use.

IV. The smallest amount of feed for one hundred pounds of gain was used in the first experiment with hogs fed under cover, on board floors and permitted but little exercise.

V. A wheat ration supplemented with one-twelfth tankage for a feeding period of fifty-six days made .07 pounds greater daily gain and required but 2.8 per cent more feed for one hundred pounds of gain as compared with a more varied ration—wheat, corn and shorts, supplemented with one part tankage in five as found in Experiment I. In a similar manner the wheat and tankage ration as fed in Experiment III showed more rapid daily gains and more economical gains than any lot of Experiment II, where a much more varied ration was fed, and in average net profit per pig excelled all lots of Experiment II except four, where the tankage supplement produced a net profit of $3.89 per pig as compared with $3.35 for tankage feeding in Experiment III. In a smiliar way wheat and soy bean meal in Experiment III produced more rapid gain than Lot 1, Experiment I and was not far

from either lot in economy of gain. As compared with Experiment II wheat and soy bean meal required less feed for one hundred pounds of gain than any of the lots, made more rapid gains than any lot but IV and more net profit per pig than lot III and near the results in net profit of Lots 1 and 2. This indicates the success to be attained by heavy use of wheat for short feeding periods where a rich protein concentrate, such as tankage or soy bean meal, is used as a supplement in proportion of one in ten to one in thirteen.

VI. Very satisfactory results secured in Lot 1, Experiment III seems to indicate a comparatively high feeding value for low protein tankage. Further investigations of this question will be undertaken.

VII. By charging pigs at six cents, regarded as reasonable for pigs and thin shotes, and figuring selling price at seven and one-half cents, which is the actual average selling price of the three experimental groups, commercial prices are received for all grains and other feeds used and a liberal net profit in addition. Eighty pigs were fed in the three experiments and the average net return per pig was $3.27. Pig feeding as shown by this experimental data, therefore, affords the farmer a home market for his grains and farm by-products, and for a feeding period of from fifty-six to one hundred and five days returns the feeder better than $3.00 net profit per pig.

SELECTING AND HANDLING THE HERD

TYPES FOR HOGS

For most classes of improved animals, America has gone across the Atlantic, and, yet goes year after year for blood to replenish the herds and flocks and prevent degeneration. In hogs, however, America has been a leader. Our farmers have developed and made popular a new kind or type of hog called the lard or American type. This hog has been bred for quick feeding and early maturing qualities, and possesses those qualities to a remarkable degree. This hog is of medium length, is low-set, deep, broad, compact and full made in every part. This means a short nose, wide face, fine ears, short, thick neck, the shoulders smoothly laid, wide and barrel-like in spring of rib, wide and deep of loin, long, wide and full in the rump and very heavily fleshed in the hams. The legs are short and comparatively fine, but too often sufficient size and sufficient strength of pastern are not demanded. This kind of a hog is not very active, is an excellent feeder, takes on fat readily and in large quantities, and when desired can be made to take on a rounded and finished form at a comparatively early age.

Recent years have seen a revolution in size and ages of market hogs. Fifteen to twenty years ago, it was considered best to make a hog as fat as possible and heavyweights were deemed most profitable. As a result the farmer who had sufficient feed forced his marketable hogs to weights of four hundred to five hundred pounds. Lard was then more in demand, lean meat was not considered so highly as now, and early and rapid gains and quick turning of moneys invested in animals were not so much appreciated. Today the progressive farmer finds that the market pays most for a pig weighing from one hundred and ninety to two hundred and fifty pounds, and he finds that the most rapid and cheapest gains are made from birth to those moderate weights. The average weights of hogs killed during winter months in middle western packing centers was, during the decade 1870-'79, about two hundred and seventy-five pounds. During the last decade it was two hundred and nineteen pounds.

England, the native home of many of our improved breeds of hogs, has a different ideal of market hog. The ideal English hog is one bred and fed for bacon. For this purpose, a conformation decidedly different from the American type is demanded. The bacon hog is grown primarily for a long, deep and lean side of bacon. Such bacon is found on the rather long legged, long bodied and active style of pig. The nose is long and pointed, the face and head narrow, the neck rather rangy, the shoulders of medium width and the hams rather fine and tapering neatly to the hocks. From this kind of a hog comes our highest quality of bacon, and special American demand will in time make it exceedingly profitable to grow bacon hogs in America. At present American markets offer no encouragement for the production of the bacon type.

Lard type hogs are quiet, quick to fatten, fine in head and bone, easily handled and well suited to western conditions. Objections are delicacy and lack of bone and vigor, and a tendency to small and weak litters.

Bacon hogs are active, good rustlers, reputed to be slow of growth, vigorous and healthy and ordinarily to be depended upon for very large litters.

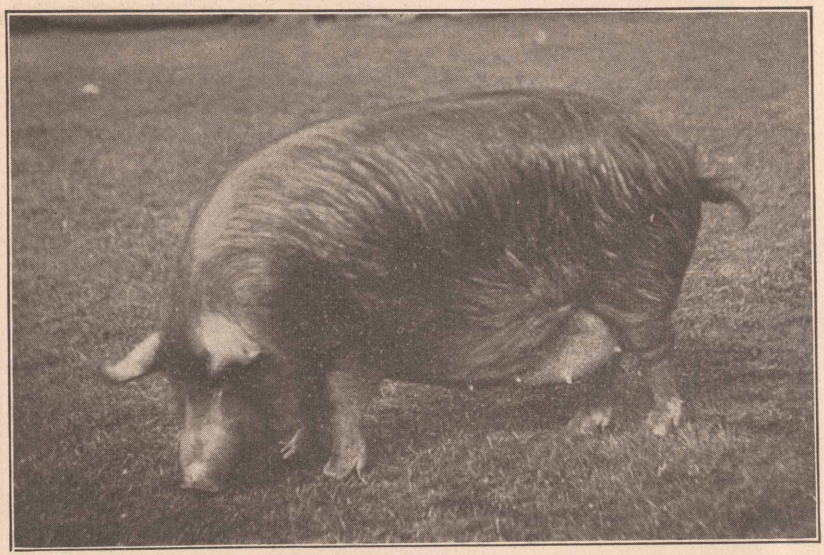
Under present conditions most farmers prefer to breed a modified lard type, and such a course is advised when inquiry is made of the Animal Husbandry Department of the Experiment Station. Among lard hogs, however, there are several different standards or tendencies to different conformation and type. A few years ago the cornbelt favored a short, compact, small boned-hog. These were very quiet, and quick feeders, but rather delicate, and when fed on carbonaceous feeds fell short to a marked degree from a profitable standard of prolificacy. A great many breeders are now going to the other extreme and are demanding so much size, frame and bone that often mere coarseness is secured instead of the more useful qualities. The

right kind of a hog to breed is the long, deep, broad, low-set, compact, smooth, vigorous and quick growing type. This is in most cases medium in size.

BREEDS

Seven distinct pure breeds of hogs have been introduced into various parts of the west. These are the Tamworth and Large Yorkshire, bacon breeds; the Hampshire or Thin Rind, a so-called dual purpose breed; and the Berkshire, Poland China, Duroc Jersey and Chester White, lard breeds or breeds of the popular American type.

The Large Yorkshire is a rather large framed, long, smooth, pure white hog, lacking in fullness and compactness from the American point of view. Long legs and rangy conformation, a reputation for slow growth and tendency to sun scald have kept the breed out of nearly



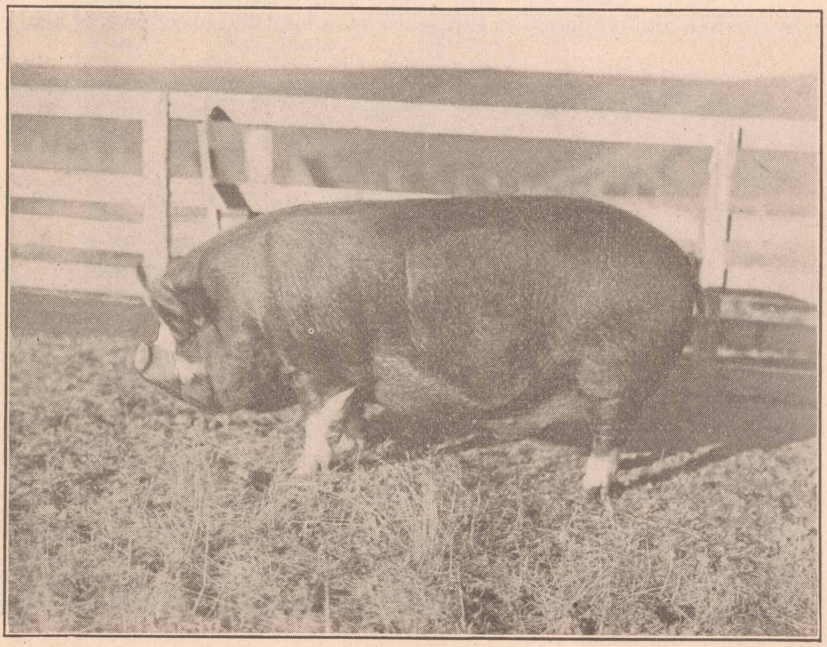
TAMWORTH SOW.
This is an outstanding animal of the breed and champion at one of the leading shows of England.

every section of the west. Yorkshires are good mothers and the sows are very prolific.

Although a strictly bacon type, the Tamworth has met with much greater favor than the Yorkshire. The bred is a very old one originating in central England. Tamworths are noted as rustlers, for hardi-

hood, for large litters of ten to fifteen pigs, and for quality of meat. Though reputed slow growers, these hogs in some tests have surpassed our popular lard breeds in rapid and economical growth. The general appearance of this hog is not inviting. The legs are long, the body rather long and slender, the neck and nose long, and the shoulders and hams comparatively small, the back narrow but strong, and the approval color is cherry red.

Of more recent origin than the above named breeds is the Thin Rind or Hampshire, a medium sized black hog, marked with a white belt. Hampshires are of medium width and depth, are a little leggy, with comparatively light hams and shoulders, erect ears, straight faces and light jowls. The sows are prolific and excellent mothers. The pigs

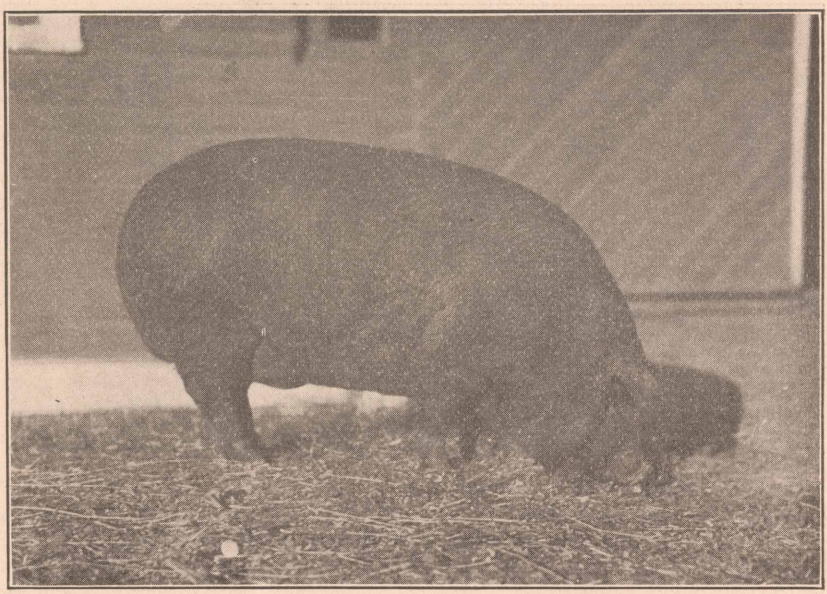


PURE BRED BERKSHIRE BARROW, Royal High Clare 8th.

This barrow was champion barrow at the Northwestern fairs in 1911 and was taken on the demonstration trains of both North and South Idaho in 1911-12. Loaned to the University of Idaho for class and demonstration work by Barrows & Davenport of Crabtree, Oregon.

are hardy, good grazers and make a superior carcass. Question as to maturing and feeding qualities and the upstanding rangy form have not served the popularity of the breed.

The Berkshire is one of our oldest breeds of hogs, and his blood has been used in building up and improving the Poland China, the Duroc Jersey and several other less well known breeds. The Berkshire is a native of Central England, and has been bred there for at least a century and a quarter. He is a long hog, with a long deep side, and in his native home fed on small grains, roots and dairy by-products, yields a superior quality of bacon. Fed on highly carbonaceous feeds in our cornbelt states, a relatively higher percentage of fat is laid on the body, and the Berkshire becomes a lard breed. Outstanding characteristics of the breed are long, low-set body, strong back of medium width, deep shoulders and heavy hams, short thick neck, short face, rather heavily dished, and upturned nose and erect ears. Standard color is black and six white points. Berkshires are stylish hogs with breed character stamped in every feature. They mature early and fatten rapidly, but are not so highly regarded in this respect as the lard breeds yet to be mentioned. The Berkshire is active on its feet and is an excellent grazer.

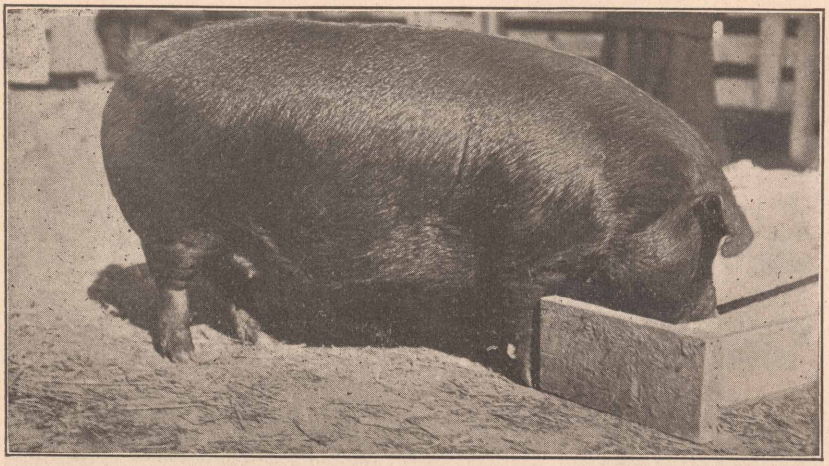


POLAND CHINA SOW, MISS LADY LINN.
This sow was champion female of her breed at the Oregon and Washington State Fairs of 1911. Owned by the University of Idaho.

If the American farmer had done nothing else, the development of the Poland China breed of swine would assure him a place of honor

among the great improvers of the domestic animals. This breed originated about seventy years ago in southwestern Ohio from the combined blood of five or six different types and local strains. Being bred for fleshing qualities and early maturity the Poland China became the popular hog among American farmers. Distinguishing characteristics are a low-set, broad, full made body, with great hams and shoulders, short neck, straight but short face, full jowl, and fine bone. The popular color in late years is black with white face, feet and tip of tail. White spots on other parts of the body, preferably not on the back, are allowable. The ear should be of medium size and break over one-third from tip.

Poland Chinas can be fattened and finished at any time after weaning, make excellent returns for feed consumed, and the meat is of fine flavor. In the cornbelt, the more compact and finer boned kind were found delicate and subject to disease, and were also lacking in prolificacy. For home use there is too much fat on the Poland China car-



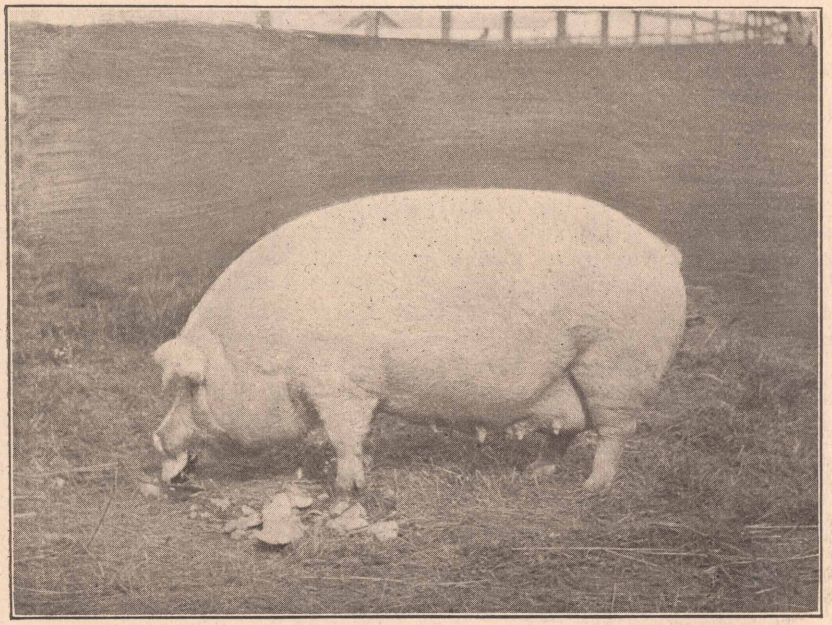
PURE BRED DUROC JERSEY SOW, GRACE OF OVERBROOK.
This sow was reserve to champion over all breeds at the Idaho Intermountain Fair of 1911. Owned by D. C. McWaters of Milner, Idaho.

cass. Western feeds, soils and climatic conditions give the carcass a higher percentage of lean meat and stronger bone. By selecting for long bodies, strong legs and pasterns and a more growthy type, a hardier, better grazing, more prolific and more profitable strain has been developed among breeders both east and west. No hog excels this kind of a Poland China in meeting the farmer's needs.

The Duroc Jersey is another breed of American origin. The

foundation stock came from New York and New Jersey, and was from the combined blood of at least four kinds of red hogs, with the old red Berkshire exercising a powerful influence. Duroc Jerseys vary in color from sandy to dark red. Cherry red is preferable. In conformation the ideals of this breed approach closely the modern approved type of the Poland China. The same long, deep body, with broad, strong back, large hams and shoulders, straight face and droop of the outer third of the ear are demanded. The average Duroc is a little heavier in bone, rougher in fleshing and hair, and lighter in hams as compared with the Poland China. Advantages claimed for the Duroc are in prolificacy, vigor, and grazing and rustling qualities.

The Chester White is also an American product made up of the



CHESTER WHITE SOW, GEM IOLA.

This sow was a first prize winner at the Idaho fairs of 1910 and was champion female over all breeds at the Idaho Intermountain Fair of 1911, Owned by George H. Lawshe of Falls City, Idaho.

blood lines of a number of light colored breeds and strains. As a result of years of careful breeding and selection from sixty to eighty years ago in Pennsylvania and Ohio, and improvement work in later years in the Mississippi and Ohio Valley States, has come the modern

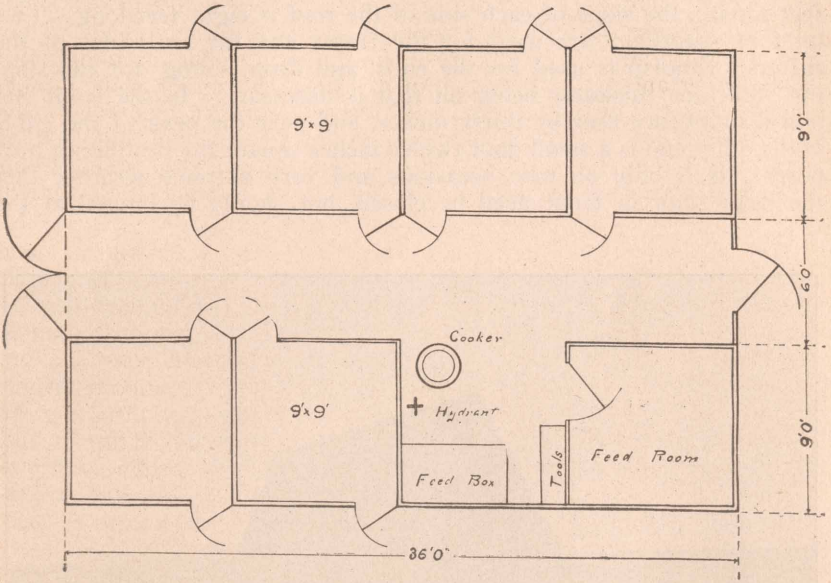
Chester White—a pure white hog of large size, low to the ground, of good length and in width and fleshing of back, depth of shoulders and size of hams, near the Poland China as an ideal. They make rapid gains when well fed but are inclined to be coarse and rough in many instances. They rank high as breeders, are fair in quality of meat, while in grazing qualities they compare well with other breeds. They are not very uniform as a breed, and some trouble is found with sun burning and scurfy hides. An experienced breeder near Jerome, Idaho, however, states that he has had no trouble with the breed in this respect in a region quite typical in amount of sunshine and lack of shade of the irrigated sections of the southern part of the state. Long and weak pasterns, formerly common in some families of the breed, have been much improved in recent years.

In selecting a breed for Idaho conditions a choice should be made from the Berkshire, Poland China, Duroc or Chester White. In weight, western specimens of these four breeds differ little. Standard size for the boar is six hundred pounds and for the sow five hundred pounds. The relative number of pigs per litter is an important consideration. Studies of the herd books and other sources of information by Rommel and others give the following average of pigs per litter for the breeds: Poland China 7 1-2, Berkshire 8 1-4, Chester White 9, and Duroc Jersey 9 1-4. The bacon breeds are even more prolific and produce from 10 to 15 pigs per litter. There are families and strains within breeds that differ widely in growthiness, resistance to disease, early maturing qualities and in prolificacy. No matter what breed is selected, the long, deep and broad bodied, strong backed hog that stands well on its feet, and shows evidence of growthiness will be found the profitable farmer's type. When this kind of a hog is selected, there is little difference between the breeds in general body structure. The Berkshire and Chester White are some longer of body than the other two breeds. Otherwise, the principal distinguishing points are in color, in form of ear, and shape of head. In any of the breeds the pigs should be marketed at from six to eight months of age, weighing from one hundred and ninety to two hundred and fifty pounds.

HOUSES FOR HOGS

Houses for hogs in the country generally are of every possible style and quality—good, bad and indifferent and none at all in many instances. There are two styles of farm hog houses that are generally approved. It may be safely said that some form of movable hog house must be provided where hogs are to be successfully raised on a farm during a period of years. At the same time that this is true, it may also be safely said that in a climate such as we have in Idaho something more commodious, convenient and permanent should also be provided, where feed may be prepared, and that will supply a certain number of pens for use at farrowing time. It may therefore be said that where hogs

are to be raised in any numbers the farm should be equipped with a small and complete stationary building provided with a feed room for storing the different kinds of feed. It should also have some facilities for heating water or steam in case it is decided to prepare any feed



FLOOR PLAN OF HOG HOUSE

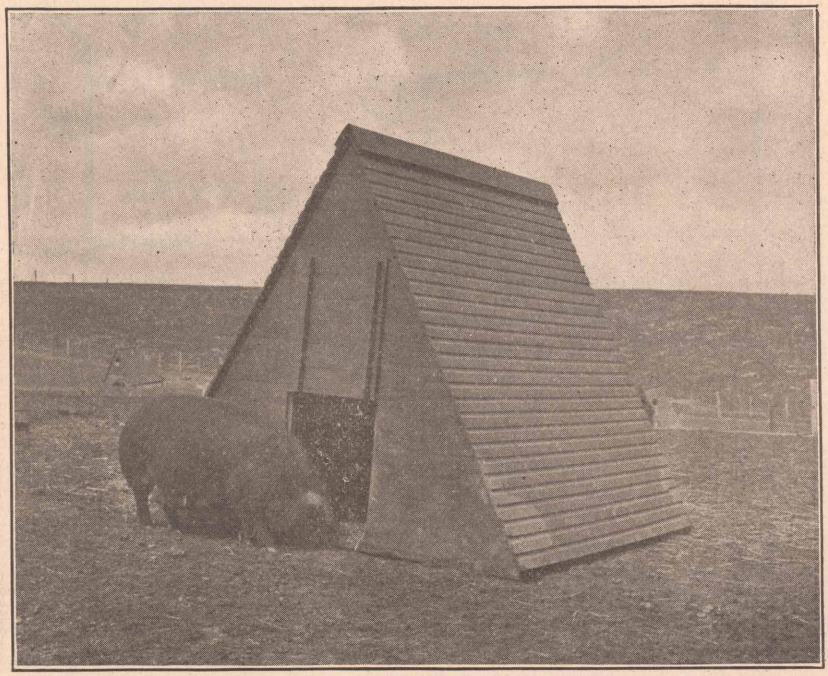
Simple plan for Hog House combining features of moderate cost, centrally located farrowing pens and feed storage room. Outside doors of pens should lead into exercise yards.

in this way. The accompanying ground floor plan will suffice to give an idea of what may be a suitable plan.

This plan may be changed to suit the convenience or the wishes of the farmer. A proper shelter, however, for the young pigs, for the growing and fattening hogs, and for the brood sows during the winter is the small "A" shaped hog houses 8x8 feet square on the ground as shown in the accompanying cut, and which can be made from the following bill of lumber:

8 2x4 Scantling, 16 feet long.
8 1x6 Shiplap, 20 feet long.
12 1x4 Drop Siding, 16 feet long.
1 1x6 Board for comb of roof, 16 feet long.
1 Pair 6 in. Strap Hinges.
I Pair 4 in. Strap Hinges.
8d and 12d Nails.
1 Gallon Paint.

This house may be set on a pair of skids and hauled anywhere with a single horse, or, it may be moved by two men when only necessary to move it a short distance. It may be built so as to be cool in summer and warm in winter. These houses need not have any floors. The base of the house consists of two by four scantling, and is eight feet square, the slope of each side of the roof is eight feet long. Two by four scantlings are used for the frame and for two sides of the rafters. Shiplap is used for the ends, and drop siding for the sloping roof, one thickness being all that is necessary. In the front end is a door twenty-four by thirty inches, and near the peak of the gable in the other end is a small door twelve inches square for ventilating purposes. It is only on rare occasions and very extreme weather that the large door in front need be closed, but should be hinged at the



Form of Colony House used in handling the University of Idaho herd.

top and hooked up out of the way. In winter weather a gunny sack hung over the opening will allow ventilation but retain the warmth. Ground may be banked about these houses in winter, and by using plenty of straw for bedding all kinds of hogs may be kept

very comfortably. If these houses are located on a slope where water is liable to drain into and through them a ditch six or eight inches deep on the higher side of the slope will carry off this water.

MANAGEMENT AND FEEDING

Factors in the success of progressive hog raisers are first, skillful use of cheap feeds; second, wise adaption of feeds to varying needs of different ages and kinds of hogs; third, modern sanitary precaution; fourth, careful and judicious selection and use of animals, and fifth, early marketing.

I. The hog is the most economical producer of flesh of all our farm animals. Furthermore, he can utilize a wider variety of cheap feeds than any other domestic animal. In gathering waste wheat, oats and barley the hog saves grain otherwise a loss, and adds to the farmer's income. Recognition of this fact is the increasing popularity of hog-tight fences for the grain raising sections of the state. Small potatoes, fallen apples, pumpkins and squashes, shattered alfalfa leaves and by-products from the kitchen and dairy can be used to very great advantage in cheap pork production. Four to four and one-half pounds of potatoes are equivalent to a pound of grain. Apples, pumpkins and squashes are fed in the raw state. Dairy and kitchen wastes are fed directly in thin liquid form or are used to moisten or make a slop of a ground grain ration.

In addition to cheap feeds above mentioned wide use should be made of pasture. Under the pasture system the hogs harvest the crops, develop strong bone, make vigorous growth and make cheaper gains than by any other system of feeding. Alfalfa is the most successful of all hog pastures. An acre will carry during the summer season six to nine brood sows or fifteen to twenty good sized pigs, and will produce from five hundred to eight hundred pounds of pork. By means of permanent hog-tight fences or, temporary fences of panels, pastures should be divided into lots of from two to five or six acres in order to provide for a system of rotation by means of which one lot is used until eaten close and then allowed to make fresh growth. Furthermore, in handling sows and their litters, the pigs, especially just after weaning, should have separate fresh and tender pasture.

If the pasture is near a central hog house the division can be arranged so that each lot has one portion near the house. It is more convenient, however, in using pasture to place colony houses temporarily in the pastures. Shade is necessary for making good growth with pigs, and for keeping older pigs in good condition. If no trees are in the pasture or, on dividing lines, a cheap artificial shade can be made by setting four posts two feet in the ground and twelve feet apart extending out of the ground three and one-half feet. On top of these posts a flat roof is constructed. No side walls are used which

allows free circulation of air and breeze while the roof keeps off the sun's rays.

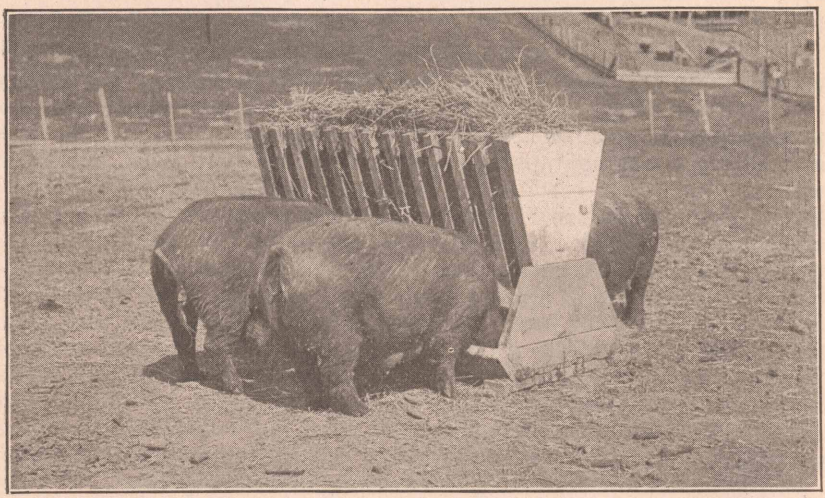
Good drinking water is essential at least twice a day in the summer time. Successful hog raisers no longer expect their animals to drink from dirty mud puddles or dainage from barns and manure pile. If the farmer has running water or vertical tanks or pressure system it is good practice to place hydrants in the various pasture lots. Drinking water is given in the troughs as often as circumstances seem to warrant. For bathing on hot days a wood box ten feet square and twelve inches deep should be buried flush with the top and filled with water. The hogs will soon puddle it to hold water, and for sanitary purposes, to kill lice and improve the skins, two per cent of Kreso, Zenoleum, or other similar products is placed in the bath. Hogs take readily to this kind of a wallow and it helps to keep them looking thrifty and doing well.

As shown in the early pages of this publication, clover is near alfalfa in value as a pasture for swine. Most hogmen understand how to seed both alfalfa and clover. Those who desire information on this point can secure it by writing this Station. Field peas and peas and oats are popular pastures in Canada, and have been successfully used on the Idaho Station farm. They may be sowed broadcast or with the ordinary grain drill and should be sowed as early in the pring as the soil can be nicely worked. Rape and kale are comparatively little known as pastures but have been very successfully used in Idaho. These crops should be sowed in rows twenty to twenty-eight inches apart. The Wisconsin Station found that an acre of rape properly handled was worth one and one-quarter tons of corn. Rape has been used for two years for pasturing pigs of the University herd and has given excellent returns. Cereal pastures, such as wheat, oats, rye, or a combination of the same are used to advantage in some parts of our state.

Herd management with all of these pastures should be practically the same as with alfalfa. The herd boar needs a little grain and a lot of pasture. Sows suckling pigs need about one-half grain ration and good pasture, suckling pigs should be pastured and taught to eat grain as soon as possible. From weaning time on they should have enough grain in addition to pasture to keep them growing vigorously and making good gains and prevent stunting and excessive paunch development. The question is often asked as to how much grain in pounds is advisable? Results of experiments show it most profitable to feed to pigs on pasture one pound to two pounds of grain daily for each one hundred pounds of live weight of the pigs. Dry brood sows and all older hogs kept for breeding purposes can be handled successfully on pasture alone. Many advantages of pasturing

have been mentioned; the principal one, however, is cheapness of summer feeding without interfering with ample nutrition.

The problem of cheapening winter feeding is now solved by the use of legume hay. Alfalfa, clover, vetch and field peas are most suc-



Feeding Rack for alfalfa hay that has given satisfaction on the University Farm. In wet weather a cover should be provided.

cessfully and commonly used. Hay feeding is frequently abused by expecting hogs to winter on hay alone. An animal with so small a stomach as the hog is not adapted to utilizing large quantities of roughage and, in every case, some other less bulky feed should be used in addition. The boar cannot be expected to come through the winter advantageously on hay alone; brood sows need one-third to one-half of a full grain ration and, in addition, alfalfa or other legume hay; young gilts must have nutritious feed to make growth and nourish their litters, if pregnant, and should have at least a one-half grain ration. The Idaho Station has secured no accurate data on use of hay in fattening hogs, but judging from results secured by the Nebraska Experiment Station, hay might be successfully used in this state for finishing hogs for market one part hay to four of grain to one part hay to nine of grain. Methods generally used in feeding hay are fed whole in rack, cut and mixed with dry or moistened feed and fed in form of meal, mixed with grains or grains and slop. When alfalfa is abundant and cheap it is most economically fed whole in racks. The coarse stems are largely cellulose or crude fiber and contain comparatively little feeding value for hogs. For that reason, the

finer hay particles as found in second and preferably third cutting are more valuable in hog feeding. Good results are secured in feeding cut alfalfa and the meal, and this is advisable where alfalfa is hard to obtain and expensive.

Skillful use of pastures and hays mentioned means healthy hogs, rapid growth both winter and summer, and production of marketable pork at from three and one-half to four and one-half cents per pound.

II. Our common feed stuffs are divided into two great groups—protein or muscle and bone building and carbohydrate or fat, energy or heat producing. The former kinds of feeds are needed in comparatively large quantities by the brood sow heavy with litter, by pigs and all hogs making rapid growth, and by the herd boar, and must form an important part of the rations of fattening hogs. The carbohydrate feeds are used along with protein feeds for purposes above named and, in addition, form the more important part of fattening rations. Hog feeds commonly used in the west that can be classified under the protein group are soy bean meal, tankage, meat meal, blood meal, oil meal, shorts, bran, field peas, alfalfa, clover, vetch, and skim milk. The carbohydrate group includes corn, wheat, barley, rye, potatoes, sugar beets, mangels, carrots, pumpkins, molasses, etc. Oats are midway between the two groups. A judicious combination of feeds selected from these two groups, with due consideration of the purpose for which the animal is kept, is called the balanced ration.

The brood sow needs to grow a strong and healthy litter. Protein and ash should therefore be prominent factors in her feed, young ones requiring a higher proportion of these substances than old ones. A sole corn diet lacks in protein and ash and, for that reason, tends toward small litters and weak boned pigs. Furthemore, corn is heating and leads to laying on of fat—both of which are detrimental to best results from breeding animals. Wheat likewise has a heating effect leading to the production of soft flesh and, as a sole ration, is not fed wisely to breeding animals. One-fourth to three-fourths corn, one-fourth to two-thirds wheat, one-fourth to three-fourths barley or a combination of these grains may form a basis of the ration. Oats are often added to give variety, for bulk and for muscle building. In addition a protein concentrate, such as soy bean meal, tankage, oil meal, meat meal, shorts or bran should be used.

As before suggested from one-half to two-thirds of the ration may consist of alfalfa or other legume hay. A ration found successful is one-half alfalfa hay (third cutting) and one-half grain made up of six parts barley, three parts shorts, and one part tankage.

It is not desirable to have the herd boar in more than moderate flesh. For that reason, a carbohydrate or fattening and heating ration should not be fed. The ration just suggested for brood sows with less proportion of grain as compared with hay is good for the boar. In cold weather the hay may be chopped, mixed with the grain and steamed before feeding. This method also gives good results with

brood sows, but it is questionable whether advantages gained pay for the extra trouble.

One of the most important problems of the hogman is the feeding and growing of pigs. This is largely a question of feeding. Warmth and protection are necessary for the first few days. At three or four weeks of age the pig will begin to pay attention to its mother's feed. This is to be encouraged and as soon as the pigs are eating well a creep to a pig feeding lot should be provided. Skim milk is the standard pig fed, and should be used if available and gives better results warm from the separator. Grain should be fed in addition mixed with the milk. A palatable grain mixture is four parts shorts, two parts corn and one part tankage. Barley may be used instead of corn, and wheat is good if used in moderate amounts. The thing to be attained is to furnish the pigs a palatable grain mixture not too bulky and so balanced between the protein and carbohydrate feeds as to produce rapid and normal growth. The pigs should be trained to depend largely on prepared feed before weaning time. Practice in weaning varies from six to twelve weeks of age. If the sows are to be rebred at once the pigs should be weaned not later than seven or eight weeks of age. If one litter per year only is planned the pigs may be allowed to run with the sows until ten or twelve weeks of age. After weaning, plenty of skim milk, fresh pasture and a grain ration in addition are necessary for best results. In no case will it be found advisable to expect pigs to make a profitable growth on pasture alone.

Pasture and an appetizing grain mixture give, under good conditions, from three-fourths to a pound of daily gain.

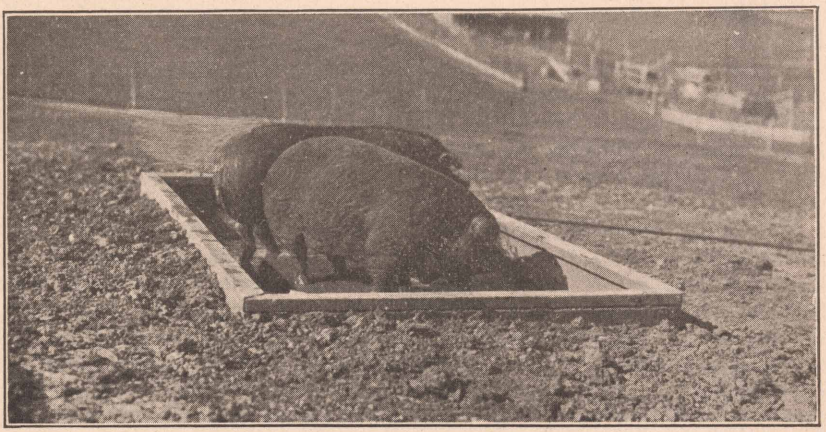
If pasture is good it is often advisable to keep the pigs on it until they have reached a weight of one hundred and forty to one hundred and eighty pounds. Where no objection is had to a feeding period of from eighty to one hundred and ten days the pigs are put in dry lots for fattening at weights of from seventy to one hundred and twenty pounds. In the fattening pen the problem is simply that of most quickly and cheaply securing the rounded form and putting on the fat and finish required by market standards. Building of bone and muscle is no longer so important. A good appetite, rapid gains and smooth deep fleshing are evidences of the good feeder. Corn, barley, field peas, shorts, wheat, potatoes, and other standard commercial feeds should enter largely into the ration. Tankage, meat meal, a small percentage of alfalfa hay, pure drinking water and a variety ration means for good appetite, a relish of feed and good gains. Best results are as a rule secured from a use of two or three standard grains or grain by-products, such as corn, wheat, barley, or shorts, as a basic ration, and from one-thirteenth to one-tenth tankage, in addition. More complete discussion of feeding for market is found in the section of this bulletin dealing with feeding experiments.

There is considerable difference in practice in preparation of feed. Corn is fed to advantage in the ear, but if shelled should be ground or

soaked twelve hours. Smaller grains, such as barley, wheat, oats, etc., should be ground, rolled or soaked for several hours. All roots except the potato are fed raw and slicing is advisable in some cases. Potatoes should be either cooked or steamed. Cooking or steaming pays with potatoes, is of advantage for winter feeding in that the natural animal heat is conserved by using hot feeds and often makes feeds more palatable. It does not, however, add to the nutritive value of feeds. Dry feeding of finely ground grains is successful by use of self feeders. If fed in troughs ground feed should be wetted.

In addition to feeds listed above it is advisable to have continually before hogs of all ages a mineral mixture of charcoal, wood ashes, or slack coal and salt. The salt should form one-twenty-fifth to one-tenth of the mixture. Such a mixture helps the appetite, is preventive of worms and other diseases and satisfies the hog's craving for mineral matter.

III. Losses from contagious diseases have been one of the most discouraging features of the pork producing industry. So far these diseases have not prevailed in the western states, and if proper sanitary precautions are observed such diseases will in all probability never make headway here. If shipping hogs from the east, try to obtain them from districts not recently infected with cholera or other infectious diseases. Isolate imported hogs for at least two weeks, burn



Cheap form of Hog Bath or Artificial Wallow.

bedding from shipping crates and thoroughly disinfect hogs. A two per cent solution of coal tar dips or bichloride one to one thousand are cheap and effective for this purpose. Dark, dirty, corners in houses are to be avoided, dirty water holes shold be filled up, and warm, dry

beds, good sized exercise yards, and board, cinder, or concrete feeding floors in wet weather are necessities.

For cooling bath and to help in controlling lice and skin troubles, use the bath as heretofore explained. A rubbing post wound with rope or gunny sack saturated with kerosene or crude oil helps to get rid of lice in winter. If this does not suffice use brush or broom to spread kerosene, or crude oil, or ten per cent coal tar dip behind ears, under armpits and elsewhere over body. Some breeders prefer to spray with kerosene emulsion made by diluting to twenty per cent a stock solution of four gallons of crude petroleum or kerosene, one gallon of water and one pound of laundry soap.

At the present time a mechanical or automatic greaser, called the Sherman Hog Greaser, is on trial in the University herd. So far the machine has given good results. The hog is naturally a cleanly animal and will be handled with greater pleasure and profit if ordinary sanitary precautions are exercised.

IV. A great many hog breeders are not careful and skillful in selecting animals for breeding purposes. Gilts are bred at four or five months of age and permanently stunted and the young boar is far more popular than he deserves. It is certain that mature animals are more efficient and successful as producers, and it is undoubtedly true that too many old boars, well-known for success as breeders, are sold for breeding purposes at a sacrifice or sent to slaughter on account of unpopular size. Likewise old sows are the best breeders, and, if still retaining their breeding powers, should not be sacrificed or replaced by gilts. The relative efficiency of old and young sows was tested at the Iowa Experiment Station. Fifteen gilts bred at eight months averaged seven and two-thirds pigs per litter, sows twenty-four months old averaged nine and six-tenths pigs, and aged sows averaged ten and six-tenths pigs. Pigs from the gilts weighed an average of 2.39 pounds at birth, from the two-year-old sows 2.63 pounds at birth and from the aged sows 2.61 pounds at birth. When six weeks old, pigs from the gilts had made an average daily gain of .32 pounds, while the pigs from the older sows had gained 0.40 pounds daily.

V. Early marketing means shorter risk from disease, quicker turning of money and less interest charges to be considered and more profitable gains. At the age of weaning the pig is making very rapid and his most profitable growth. It takes fifty per cent more feed to put a pound of gain on a 150-pound pig than to put a pound on one weighing forty pounds, and 83 per cent more feed for a 350-pound hog. Keep the pigs gaining rapidly while young on pasture and dairy by-products always supplemented with a grain ration.