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H. T. FRENCH, Director

HOG MANAGEMENT

By R. W. CLARK
Extension Specialist in Animal Husbandry, Colorado Agricultural College

I'll Help Ring It Again If You'll Give Me a Chance

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Hog Management

By R. W. CLARK, Extension Specialist in Animal Husbandry,
Colorado Agricultural College

Many of our Colorado farmers possess the idea that the corn belt is the only place to raise hogs. The natural habitat of the hog is in a temperate climate where there are no extremes of temperature either summer or winter. In this respect Colorado is most favorably located. While the corn belt takes first place as a feeding center, it is a mistake to argue that hog feeding will not give profitable returns outside of that region. Any locality that successfully grows clover, alfalfa, peas, beans, or such grains as barley, wheat, oats, rye, or roots as sugar beets, carrots and mangels will be a favorable place for pork production. Where corn can be successfully grown or purchased at reasonable prices, it is a most valuable adjunct to the ration, but it is not indispensable. The alfalfa and clovers of Colorado make a fine foundation for pork production when they can be combined with corn, barley, wheat, oats and skim milk. In the production of pork the Colorado farmer has many advantages. With a splendid climate, a great variety of grains and roots, unexcelled grazing and good water, the Colorado farmer has most ideal conditions for pork production. There is every indication that hog raising is destined in the near future to be one of the most important factors in Colorado agriculture.

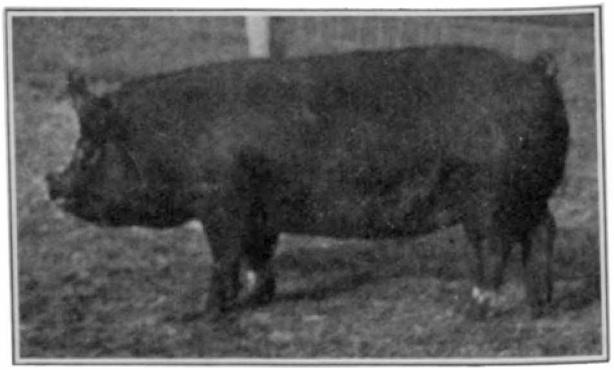
To bring out the greatest possible development of the hog his surroundings should be in harmony with his natural requirements, yet at the same time, fit into the local conditions which are favorable to the greatest and most economical production of pork. The hog should be kept in a place where he will have shade for the hot days of summer, where he will have shelter from the cold winter storms and winds, where there is an abundance of fresh water to drink and wallow in. The forage must be ample and suited to his special needs.

HOUSING

Hog houses may be of different styles, but certain fundamentals should be observed in their construction. The location of the hog house depends upon the plan of the farm. If possible, it should be built on a slight elevation with sufficient slope to insure good drainage. Running water nearby is a very desirable feature.

While there is some danger of disease being spread by a stream, the advantages of fresh running water, both for drinking and wallowing can not be overestimated. A common mistake in building hog houses is to place them where the hogs do not have access to sufficient pasture. The hog is naturally a foraging animal and most of his food should consist of greenstuff. Not only is such food itself important, but large pastures give abundant room for exercise, which helps the development of the animal.

Four things should be especially considered in the construction of the hog house itself; light, ventilation, warmth and cleanliness. The building should be well lighted and so arranged that the rays of the sun fall upon the floor of the pens occupied by the pigs. This calls for plenty of windows. When hogs are confined in a pen, unless ample ventilation is provided, the moisture given off will condense on the walls of the building and be absorbed by



A splendid, growthy, thrifty type with good lines and lots of refinement. Study it.

the bedding, thus making conditions disagreeable and unhealthy. Adequate and proper ventilation should therefore be provided without, however, creating drafts. Hogs require only a moderate degree of warmth and if the pens and bedding are kept dry, they will do well. Cleanliness is absolutely essential to the health and rapid development of hogs. Dirty and unsanitary conditions are responsible for most of the sickness among them.

There are two types of housing hogs, the central housing type and the colony type.

CENTRAL SYSTEM OF HOUSING

By this we mean a method under which a number of hogs are kept in a large, permanent house. This method is convenient; granaries and feed rooms can be located near at hand, and the

feeding can be very easily done by means of a slop cart or carrier. The house can be warmed for the early pigs and it can be used for fattening hogs when not in use for farrowing purposes. Perhaps the strongest argument in its favor is the lessening of labor in caring for and feeding the hogs.

Generally these houses are built with a double row of pens, one on each side of the building with an alley or feed way between. Sometimes this alley is made wide enough to draw a wagon through it, but generally it is from 4 to 6 feet wide. In the more modern houses a litter carrier on a suspended track furnishes a convenient means for feeding and for cleaning out the house. If the site on which the house is built is not naturally well drained, a drain tile should be put in to carry off the surplus water.

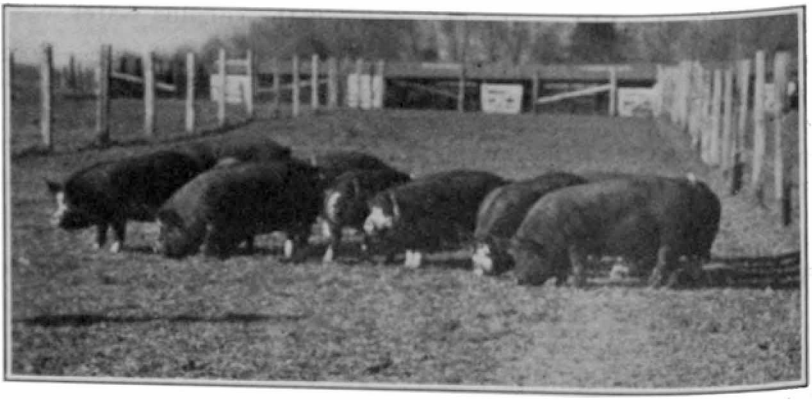
Sunlight is of very great importance in the hog house. To get a maximum amount of sunlight in the winter time, when it is most needed, the building should face the south. Then if sufficient windows are provided, it will be comfortably warm on all save the dark, cloudy days of winter. Besides furnishing warmth, sunlight is of great advantage in keeping the house dry, thus adding to the comfort of the building. Another advantage in having an abundance of sunlight is that it aids as a disinfectant. The direct rays of the sun will destroy disease germs and a large amount of light even without the direct rays of the sun is healthful.

To have the building free from drafts in winter, it should be tightly boarded, especially near the floor where the hogs sleep.

The doors to the outside yards should be well fitted, and the house should set closely on its foundation. The walls should be 2x4 studding sheeted on the outside by shiplap. This if covered with tar paper and boarded on the outside with rustic siding, will make a house that needs no artificial heat even in the coldest weather. Ventilation may be provided by opening the upper windows of the building.

The floor best adapted to hogs is the bare earth, but owing to the great difficulty of keeping this in proper condition it is not generally used. A dirt floor will get either too dusty or too damp. Next to the dirt floor, in comfort for the hogs, comes the wood floor. If this wood floor is placed directly on the ground it will rot quickly, while if raised a few inches it will be cold and the liquid in the manure will leak thru and make unsanitary conditions underneath. All things considered, the brick or concrete floor is the most satisfactory for a hog house. The cement floor should be laid on a foundation of cobblestones and gravel or of cinders to cut off moisture below. It should also be raised a foot or more

above the outside ground level to give good drainage. A brick floor is laid by setting the bricks on a foundation of sand and cinders and then flushing the cracks with cement. This makes a solid, permanent floor that will not allow the escape of any liquid manure and can be very easily cleaned. While the cement or brick floors furnish a cool place for the hogs to lie in summer, such floors are cold and damp in winter and pigs kept on them are likely to be affected with rheumatism. To overcome this difficulty movable temporary wood floors may be made for the corner of the pen where the pigs make their nest, by simply nailing together some one-inch boards with some narrow strips underneath. These



The kind that will educate the children. Good uniformity, an essential quality, the kind that is greatest in demand, sells at the highest price and gives the greatest profit.

temporary floors keep the pigs off the cement floor and make the nest very dry during the winter. In the summer these floors may be taken up and put away for use the next winter.

The size of the hog house should be made to suit the convenience of the breeder. It may be 26 feet wide, having pens 10 feet deep on each side of a 6-foot alley. The width of the inside pens depends upon the number of animals to be kept in them. Along the front of each pen is a trough. The panel above the trough is hinged, thus allowing it to swing in and the trough to be cleaned and filled from the outside. In one corner of the pen there is a bedding floor with sides of sufficient height to keep in the bedding. On the two sides of the wall next to the bedding floor there is a fender. This can be made by setting a piece of iron

piping in the cement floor or by nailing a piece of 2x6 lumber to the wall. This fender should be 8 or 10 inches from the floor or low enough to keep the sow from crushing her pigs against the wall. There should be two doors to each side of the pens, one opening into the alley and one leading to a yard outside. At one end of the house should be the feed rooms. Here there should be bins for storing and mixing feed. Hot and cold water and a platform scale should be provided if possible. Hot water for winter uses is often desirable.

The roof on the south side of this house need not be over 8 feet from the floor at the outside wall and should have a slight raise toward the center of the building. From the top of this roof and on a line with the south side of the alley thru the building, a wall should be extended up about 8 feet. In this should be a row of large windows, with double sash if possible and about 4 feet wide. From the top of this wall the roof should pitch sharply to the north wall.

There should be one window for each pen. On the north side but few windows are needed as the double windows on the south provide ample light.

There are some disadvantages in this system of housing. Such a house is expensive. It is hard to get good ventilation with freedom from drafts, or to get rid of all the moisture given off when the house is filled with hogs. It is also difficult to give the small pigs room enough for proper exercise as the quarters used are small and the outside runways are generally wet and muddy when they are most needed. Lastly, disease is easily transmitted from one pen to another. In the mild climate throughout the greater part of Colorado, the central system of housing is questioned.

COLONY SYSTEM OF HOUSING

This provides for scattering the hogs over a considerable area in lots of any desired size, with one or more small movable houses in each lot. Each house is intended to accommodate one or two sows and their litters. There are various kinds of these small houses in use, but the most successful type is the A shape. This house should be built 8 feet by 8 feet with an elevation of 8 feet. The sides and ends should be made of matched lumber and lined inside, which makes the house warm enough for a sow even in zero weather. It can be made either with or without a floor. If made with a floor, this should be detachable to facilitate cleaning. The door in front should be hung from the top, which enables the hog to pass thru either way and still have the door closed. At

the back of the house there should be a small window for lighting and keeping it cool in summer. This house is easily ventilated by small holes near the top. On warm days both the door and window may be left open and in extremely cold weather the house

A Colony House

may be heated by hanging a lantern to the ridge pole. With the colony house system it is a good plan to provide a feeding floor about 6 or 8 feet square, made of plank or cement. The feed trough should be fastened to this floor to prevent the hogs from moving it around.

This house has many advantages. In the first place the cost is small as but little lumber is needed in its construction. It is easily lighted, ventilated, dried out and cleaned. It can be easily moved from place to place and can be put in a pasture where the sow and pigs will have ready access to an abundance of green feed. In a colony house the sow farrows undisturbed. Sanitary conditions are good and sickness is easily checked. The colony house can be used for all classes of pigs, viz; litters, boars, shoats, fattening hogs and brood sows. The central house has a decided advantage over the colony house in convenience of feeding because of the scattered locations of the small houses, but part of this may be offset by a careful planning of the fields. As a rule the larger

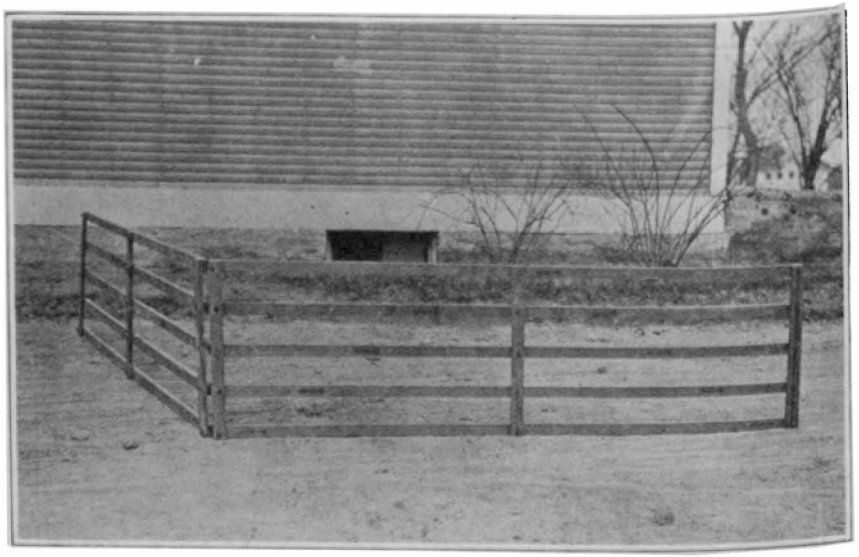
houses are warmer but the colony houses are cheaper and more healthful, and facilitate the use of pastures.

Mortgage Lifters. The largest profits are in the big, thrifty litters. They must have good pasture.

PASTURE

Pastures are necessary for the economical production of pork. There is little profit if any on a straight grain ration. The cost of pork production can be reduced from 25% to 50% by such grazing crops as alfalfa, clover, peas, sorghum, etc. The kind of crop to grow for pasture purposes will depend upon the locality, preference being given to the legume crops as alfalfa, clover and peas. The pasture should be sufficient to furnish an abundance of grazing from early spring until late fall. It is well to provide separate pastures or paddocks for the different classes of hogs. The young pigs should be grouped according to age and sex; the fattening hogs should be by themselves; the brood sows kept together and the various litters will do better if not kept in too large bunches. It is better to have too large enclosures than too small ones and to change to fresh pastures occasionally is most valuable. Other stock should not be run with the hogs and the boar should be kept by himself out of the sight of the herd when not in use. The sows should be carefully handled before farrowing and this can

best be done by the use of pastures. Hogs may be controlled on unfenced pastures by the use of hurdles.



Any boy can make a few of these with which to pasture his pig. The slats must be rightly spaced, close rather than too far apart.

WATER

Abundance of good water should be provided for drinking purposes. Hogs should not be allowed to drink stale water from ponds and marshes as these are often breeding places for disease. Good water adds to the health of the hogs and is as important as good food. If a stream of good water does not run through the yard or pasture then an ample supply of water must be provided from the family well. Hogs should have constant access to water if possible and it is economy to have a running stream in the yards.

SELECTING THE BREEDS

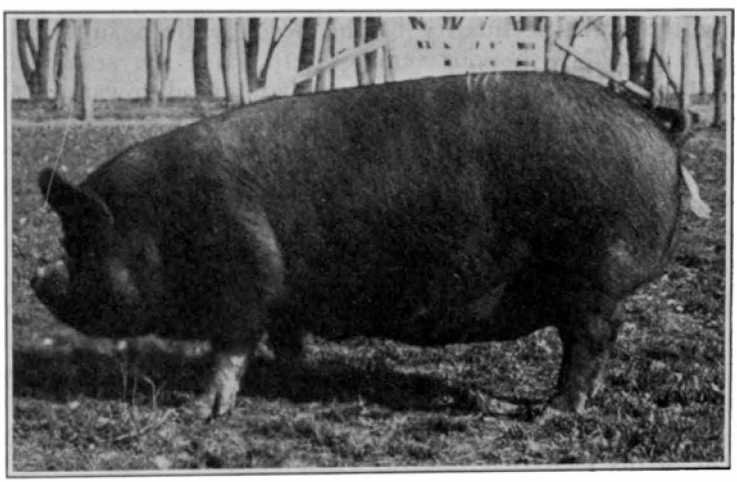
Before selecting a breed consideration should be given to its adaptability to local conditions and to the market. If the beginner is going to raise purebred hogs entirely, then he should select the breed that is most strongly in demand. He can then sell much of his surplus stock at fancy prices for breeding purposes. It is the management more than the breed, that makes a success of hog raising and a person is likely to do best with his favorite breed.

The leading breeds that have made a prominent place for

themselves in Colorado are the Berkshire, Duroc-Jersey and Poland China. The bacon hog was tried out and did not win favor with farmers. White hogs sun scald badly, unless shade is furnished.

SELECTING THE SOW

The selection of the breeding stock is always of great importance. The beginner should start with but few animals and select good individuals for the foundation stock. It is better to buy one good sow than to spend money for several poor ones. After studying the sows and their offspring for a year or two, the breeder will be better able to pick out a more desirable type of male to mate with them. The sow should have a smoother and lighter forehead, lighter neck and firmer head than the boar. The head of the sow should be fine yet broad; the neck should be thick enough to blend smoothly into the shoulders which should be compact and smooth; the forelegs should be straight with strong pasterns; the chest should be deep and wide indicating good constitution; the back should be straight and wide and the ribs



This pig was raised on a good pasture, and was fed all the grain it would eat. The grain mixture consisted of 9 lbs. of corn meal and 1 lb. of tankage.

should be well sprung and long, the whole making a body that is deep and large throughout. Sows with deep, long bodies usually prove to be the most prolific. Care should be taken to get strong backs and pasterns,—two points where hogs are usually deficient. The market requirements must also be considered, such as smooth,

wide shoulders, wide, thickly fleshed back, well sprung ribs, wide thicks loins, broad rumps and deep, plump hams. The back, loins and hams, where the highest priced meat lies, should be especially well developed.

Uniformity is very important. Not only should the animals that have been selected look alike, but they should come from animals that have been bred along the same lines with the same object in view. Whether or not the sow will prove a breeder of uniform stock can be determined only by testing her. Once she has proved worthy, do not part with her so long as she retains her health and vigor. A uniform bunch of pigs will feed better, look better when fat and sell better on the market. Uniformity in a herd is an index to its worth and to the skill of the breeder.

SELECTING THE BOAR

The selection of the boar is most important, equally if not more important than the selection of the sow. The boar represents 50% of the reproducing power of the herd concenctrated in one animal, while the sow represents 50% scattered among several or a large number. Some people believe one boar is as good as another. This is not true. An inferior boar mated with good sows will lower the quality of the herd, while a superior boar, even tho mated with poor females will raise the standard. To secure best results, the breeder must have good sows and should mate them to a boar of even higher quality.

The boar should possess a good pork producing carcass; that is a broad and full chest; wide, straight, and thickly fleshed back; long and well sprung ribs; heavy loins and full hind quarters. A male should be masculine; that is posses a strong head and crested neck. Special attention should be given to the pasterns. Males a few years old may be expected to be down in their pasterns, but young pigs should be especially straight and upright. The boar should be selected to correct any defects in the sows. If the sows are loose, rangy, coarse boned and down in the pasterns, the boar should be compact, fine in quality and upright in the pasterns. On the other hand if the sows are over-refined, closely built and blocky, the boar should be larger, stronger boned, rather roomy in body and somewhat upstanding. In purchasing a boar, select from a herd that has been bred along the lines that you intend to follow.

SELECTION FROM THE LITTER

Selection from the litter should be deferred as long as possible after weaning so as to give the pigs time to grow out and show what they are going to develop into. The older and more devel-

oped the pigs are the better will be the selection. Select for good individuality and select from large uniform litters, from sows that were good mothers and raised most if not all their pigs, and from animals that thrived well from the start. Select the best types and the most growthy, vigorous pigs in the litter for breeding purposes. Poor qualities are transmitted with as much certainty as good ones, so avoid them.

PURE BREEDING

Pure breeding is the mating of pure-bred animals. Pure-bred animals are those that have been bred and selected for a definite purpose for some length of time, without admixture of outside blood. All of our breeds have been established in this way and after a certain length of time, and after certain desirable qualities have been secured a registry is established so as to exclude all animals not so bred, selected and improved. Pure-bred means good qualities, at least should, altho many of our so-called pure-bred animals do not, unfortunately, possess them. It means not only the possession of them, but also the ability to transmit them.

The longer an animal is bred pure, the greater is its power to transmit the qualities that have been selected. Therefore, in establishing or improving a herd of hogs, use pure-bred sires and only those that possess the high qualities desired. Under no circumstances use grade or scrub sires.

GRADING

Grading is improving the herd by mating pure-bred boars with grade or common sows. This method of breeding is highly recommended. Improvement is rapid, economical and satisfactory in every way if good sires are used. A very high degree of excellence can be secured by grading.

CROSS BREEDING

Cross breeding is the mating of animals of different breeds. This is sometimes a success, the offspring being vigorous, excellent feeders, rapid growers and economical pork producers. Cross breeding is to be discouraged. It cannot be carried beyond one generation, as it results in the breaking up of blood lines and the production of great variation and lack of uniformity. Cross-bred animals should not be used for breeding purposes. Improvement by selection in cross breeding is impossible and new animals must be purchased every few years to maintain the herd.

IN-BREEDING

In-breeding is the mating of related animals. While it is the surest and quickest way to fix type by intensifying desirable

characteristics, it should be practiced only by the long-experienced breeder who thoroughly understands the breeding qualities of every mature animal in his herd. As good qualities are intensified and fixed, so are the bad ones. In-breeding is a short cut to improvement but more often results are bad than good. In-breeding is a rapid and sure way to destroy vitality, constitution, resistance to disease and all other qualities upon which successful and profitable hog raising depends.

AGE TO BREED

Young sows should be well fed and cared for from birth so that they will be vigorous and well developed at eight months of age at which time they should be bred. The reproductive organs will then be well developed with the first litter when one year of

This boy loves his pigs. He keeps the old sow well fed at all times. Notice how contented she and her pigs are in the alfalfa pasture. A good pasture will reduce the cost of production from 30% to 50%. Be sure to provide it.

age. The sow should be bred to drop her second litter when two years of age at which time she is fully matured. After this she may be bred to produce two litters a year if conditions are favorable. Breeding at too early an age or breeding when in a stunted condition lessens the vitality of both litter and dam and causes deterioration in the herd.

The sow should be retained in the herd as long as she can produce and raise large litters. It is a mistake to use only young sows, and few herds have enough good gilts from which to pick an entirely new herd every year.

The boar should be well fed and cared for the same as the sow so as to secure good development. He may be used on a few sows at eight months and a few more at one year of age but should not be given regular service until two years of age. At two years of age one mating a day is enough and this should not be continued throughout the year. In emergency cases, a vigorous animal may be used two or three times a day. Lack of vigor and good health in one or both animals at mating time is often the cause of small litters and sometimes none at all.

BREEDING SEASON

The natural time to raise farm animals is in the spring. The early spring pig is always stronger, more thrifty and grows more rapidly than the later arrivals. The proper time to have pigs come depends upon the season in the different localities, but the most favorable months are March or April so that the pastures will be at their best at weaning time. Pigs kept on good pastures all summer with a small allowance of grain require little finishing in the fall to attain marketable weight, 200 to 250 pounds. Fall litters, especially at high, cold altitudes, are not always satisfactory. If the pigs come in late fall or early winter after the weather has turned cold, they are likely to be stunted and will yield unsatisfactory returns. If two litters a year are desired the first litter should come not later than the middle of March and the second litter not later than the first or middle of October. The sow must be especially well fed at all times if she produces two litters a year.

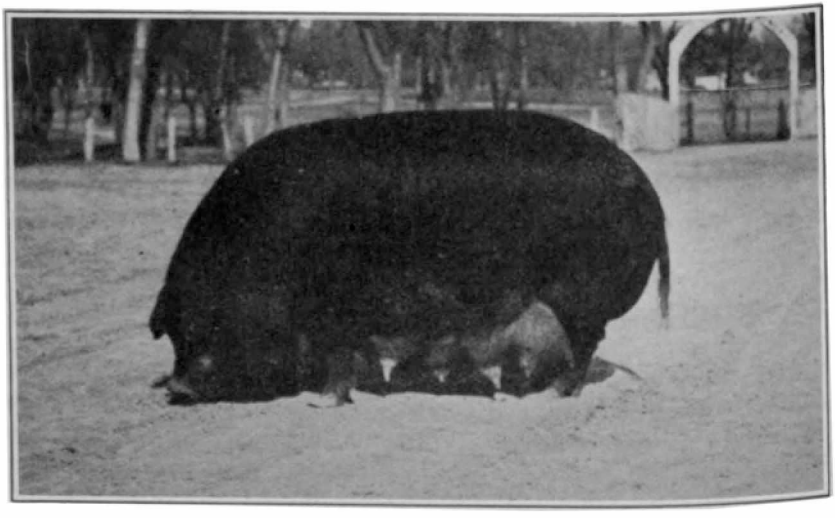
THUMPS

Litters when dropped in the coldest months may be lost for want of exercise. When the weather is cold, young pigs stay in their nest most of the time, become fat and die of what is known as "thumps". In this ailment the heart becomes fat, its muscle fibres lose their elasticity and thus the jerky flank movement. Whole litters are sometimes lost from this cause. While many breeders make a success of fall and winter litters, the beginner will do well to give his attention to producing early spring litters. When the ground is reasonably dry and the weather sunshiny and warm, the little pigs will take exercise and there is no danger of thumps if given lots of yard room in which to exercise. The management and methods that are adopted should be such as to almost assure large, thrifty litters. It does not pay to run a sow a whole year for one or two small litters of runty, scrawny pigs. The beginner must always bear in mind that vigor and good growth are prime essentials in pork production.

FEEDING THE BROOD SOW

Pastures must be provided for all classes of swine. Pork production can not be made profitable unless pastures are provided. Sows that are to remain in the herd for breeding purposes should have sufficient grain, in addition to the pasture to make them vigorous, thrifty and give proper development. Mature sows that are to be dry for some time may be given only good pasture but young sows must always have grain along with the pasture. A brood sow should be well fed for several months before farrowing, because not only the sow but the young that she bears must be well nourished in order that they may be strong and thrifty at the time of birth. There is no danger of overfeeding if the proper food is given and opportunity for plenty of exercise provided. Animals are more frequently under-fed than over-fed, and both conditions may be undesirable.

An over-fed fat sow is likely to be clumsy and kill some of her pigs, and if she has been fed much corn her litter may lack



The kind that produces large litters and raises them all. A splendid type of brood sow and a kind mother.

vitality. An under-fed sow is often a poor caretaker of her pigs and does not nourish them sufficiently. The feed and care is important and should receive close attention.

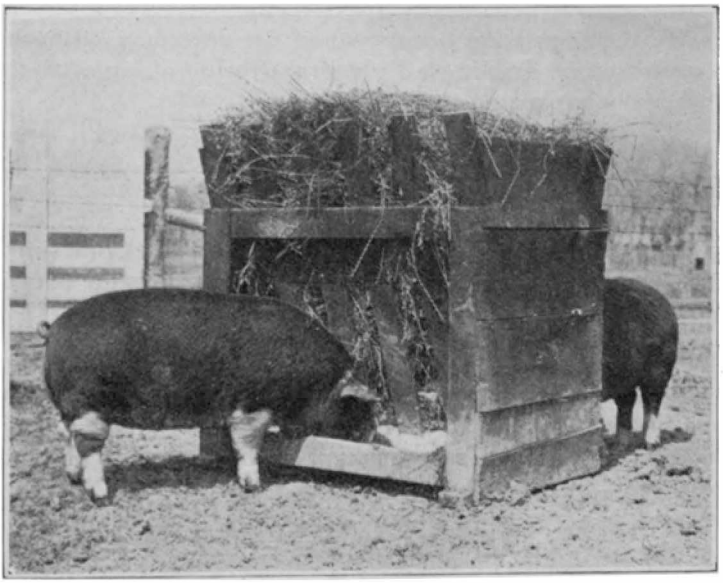
The food should be of such a character as to furnish material for growth and maintain a strong, robust body. Foods rich in protein are best suited to growing and pregnant animals. Among

such foods are wheat, oats, rye, barley, shorts, peas, skim milk, clover and alfalfa.

A mixed ration selected from these foods will give good results with brood sows. Such quantities of food should be given as will keep the animals in thrifty, growing condition, but extreme fatness should be avoided.

Bran, oats and hulled barley are more or less coarse and bulky and should not be fed alone or with too large a proportion of the ration. They can best be fed along with wheat, rye, shorts, peas, and skim milk. Grain that can not be ground should be soaked at least 12 hours before feeding.

Roots and good clover or alfalfa hay should be provided as an addition to the winter ration. Silage made from clover, alfalfa or peas is an excellent winter forage for hogs. Pumpkins, squash,



A simple, inexpensive hay rack

cabbages and all kinds of roots are most valuable. Sugar beets, pulp and mangels go well with clover and alfalfa hay, but should not be fed in too large quantities with grain as they have a tendency in such a combination to fatten. Roots are most valuable in keeping the body and bowels in good working order. The writer has carried mature brood sows through the winter in good condition on alfalfa hay alone, but this is not good practice. Two or four pounds of grain a day along with the hay and roots will give

better results. If the sows show a tendency to become too fleshy and do not take plenty of exercise the amount of food given should be reduced. Skim milk has great food value and the most satisfactory returns are secured when two or three pounds are fed with each pound of grain.

The sows should be carefully fed just before and immediately after farrowing. The feeding immediately after farrowing should also be light, as too heavy feeding stimulates the milk flow in the sow and causes scours in the pigs. In a few days the feed may be increased until the sow receives all she will clean up. If the young pigs do not scour there is no danger from over-feeding. The sow usually loses weight during the nursing period, but this is no discredit to the feeder. It is an indication of a good mother and is a quality much to be sought in the gilts selected for breeding purposes.

After the pigs have been weaned the sow may be brought in good condition by feeding a light grain ration along with the pasture before being mated again.

PIG-EATING SOWS

There are several reasons for sows eating their pigs. The lack of mineral matter in the ration, an improperly balanced ration, lack of succulent food, eating the afterbirth and sometimes it is a habit learned from other sows. The remedy is to prevent the cause by changing these conditions during pregnancy.

How to provide mineral matter, the proper ration and succulent foods, are discussed elsewhere in this bulletin. The sow should be watched at farrowing time, the afterbirth should be removed from the pen as soon as it is delivered, so that the sow cannot eat it, and the pigs rubbed with kerosene oil. A very small amount of kerosene oil should be used, as too much of it will blister the pigs and injure them. When the sow smells the kerosene she will not eat the pigs. A sow that is known to eat her pigs should not be allowed to run with other sows at farrowing time. A better practice is to fatten and dispose of her.

LARGEST PROFIT IN THE YOUNG PIGS

To secure the largest profits the pigs must be well nourished before as well as after weaning. Feed given to the pigs thru the sow before weaning will give greater returns than if given to the pigs direct after weaning. The Wisconsin Experiment Station after making several trials along this line, has published the following results:

FEED FOR 100 LBS. GAIN BY SOWS AND PIGS BEFORE AND AFTER WEANING

	Meal Lbs.	Week Lbs.	Meal Equivalent Lbs.
By sows and pigs 10 weeks before weaning..	237	475	316
By pigs only 7 weeks after weaning.....	288	576	384
By sows only 7 weeks after weaning.....	710	1420	947

With sows and their unweaned pigs 237 pounds of grain together with 475 pounds of separator skim milk, produced 100 pounds combined net weight. Using 6 pounds of skim milk as an equal of 1 pound of mixed meal, it is shown that 316 pounds of meal equivalent is required to produce 100 pounds net gain with sows and their unweaned pigs. Seven weeks after weaning the pigs alone required 384 pounds of meal equivalent to produce 100 pounds of gain which is an increase of 22 percent more feed than required before weaning. This shows that the unweaned pigs are fed more economically thru the sow than the weaned.

The following table shows that the largest profit is made immediately after weaning and that it decreases with the age of the pig.

Average weight Lbs.	Average feed eaten per day Lbs.	Feed eaten daily per 100 lbs. live weight Lbs.	Aver. gain per day Lbs.	Feed for 100 lbs. gain Lbs.
38	2.2	6.	.8	293
78	3.4	4.3	.8	400
128	4.8	3.8	1.1	437
174	5.9	3.5	1.2	482
226	6.6	2.9	1.3	498

This table shows the young pigs eat more per 100 pounds live weight than the older pigs, but make larger gains per pound of food consumed. That means that the young pig should be well fed for greatest profits.

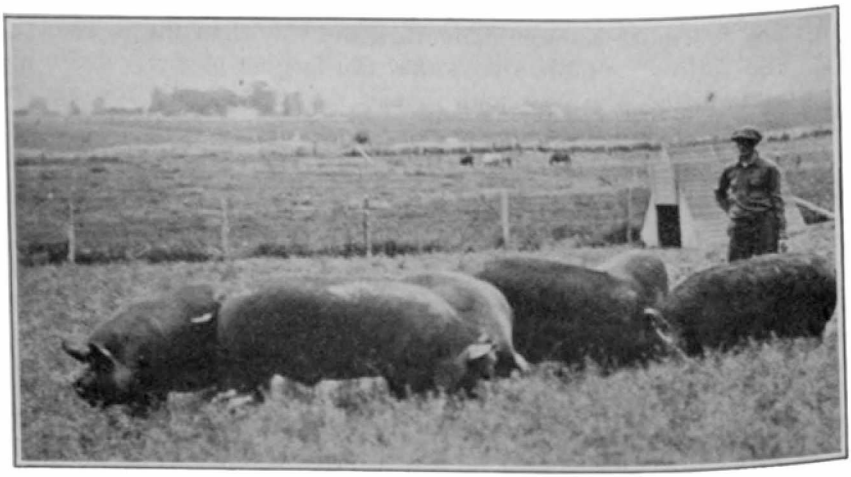
FEEDING PIGS BEFORE WEANING

The sow should receive food at farrowing time that will not cause digestive trouble in the young pigs. Kitchen swill, sour skim milk, butter milk and other fermenting foods should not be fed to the sow for a few days after farrowing, until the pigs have developed considerable strength, and then should be given to her very carefully until the pigs have become accustomed to them. The feed of the sow for the first two or three days should be light, but gradually increased until she has all she can eat without causing her pigs to scour. Such foods as peas, shorts and skim milk increases the milk flow and should be given for it is the heavy milking sow that produces the best pigs. A mixed diet is always better than a single food. When the pigs are two weeks old, a

run should be provided where they can get away from their mother to eat. If a pan of sweet milk is placed in the run, the pigs will soon learn to drink and a supplement to their mother's milk will greatly increase their growth. The supplement may be shorts, skim milk, soaked corn, peas or a combination composed of two or more of these foods. Young pigs should not receive grain containing a high percentage of hulls such as oats and barley. There is no single food better than skim milk for young pigs, and for best results, it should be fed in the proportion of five parts of milk to one part of grain.

FEEDING OF PIGS AFTER WEANING

Pigs should be weaned from 8 to 12 weeks of age, the exact age depending upon the condition of the pigs, the condition of the sow and whether or not the sow is to be mated soon for another

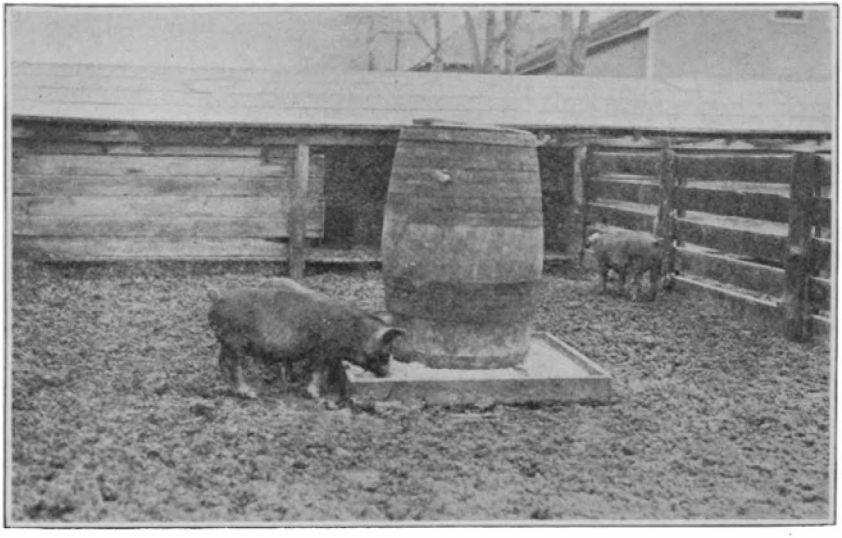


Making hogs of themselves on pasture while the farmer boy watches them grow. The boy has more grain for them in a bucket if they want it.

litter. Pigs should be eating well before they are weaned so that there will be no check in their growth. After they are weaned, the feeding must be liberal and provision made for plenty of exercise. Wheat, oats, barley, peas or corn fed alone or in a mixture, do not make the best kind of a ration for young and growing pigs. When these grains are used, sugar beets, mangels, skim milk, good clover or alfalfa hay or silage made from clover, alfalfa or peas should supplement the ration. Of all the single foods, shorts is the best. Corn should not be fed alone to young pigs. Pumpkins, squash, cabbages and other garden plants will add variety, increase consumption and prove most valuable. In summer good pasture need be the only roughage provided although the greater the

variety of roughage as well as of grains, the larger will be the profits The grain should be fed ground or soaked and such amount of it and the supplemental food given as will be eaten up clean. If skim milk is available, it should always be fed with the grain mixture in the proportion of 2 or 3 pounds of milk to one pound of grain.

As the pigs (now shoats) approach the fattening period, they should be put in closer quarters and their ration gradually made of a fattening nature. Skim milk should be continued in the ration, if available. Roots, hay or silage as previously mentioned, should form a part of the ration. Two pounds of grain to one of roots is a good proposition to begin with and as the fattening period advances, the amount of grain may be increased and the roots decreased. If roots are not available, feed two or three pounds of grain to one pound of good hay with lots of leaves. As the fattening period advances, the proportion of grain in the ration should be increased and the hay and roots decreased. If grain, feed all that will be eaten up clean in a reasonable length of time. Two feeds a day at regular intervals are sufficient.



A simple, home-made self feeder. The bottom is knocked out of the barrel, a stick is run through it near the top as shown, and the barrel wired to the platform from this stick, the wires being inside the barrel. Cleats are placed under the barrel so that the feed can seep out.

The nature of the grain mixture will depend upon prices and what the farmer has to feed. Equal parts of ground corn, ground

barley and shorts will give good results. Ground wheat and oats can be added if prices are not too high. If the grain mixture is composed mostly of corn, 5% to 10% tankage or bloodmeal may be added, but if skim milk or buttermilk is available, this may be omitted. Bran contains a large amount of fiber and should never be given as a single food or form a large proportion of the grain mixture. It does not usually pay to buy bran for hogs as other more efficient foods can be secured at the same price. The fattening process should continue so long as profitable returns are being secured as shown by occasional weighings. The most popular weight at which to sell is 200 pounds.

This is as he should appear when finished

EXCLUSIVE CORN DIET

In some sections of the State corn is the only food given to hogs. Corn lacks sufficient protein and mineral matter and from the standpoint of vitality, growth and profit, as a single food, it will not give satisfactory returns. It should be supplemented by mineral matter, mentioned elsewhere in this bulletin, and by some kind of legume pasture or hay or by dried blood, tankage or other foods containing a high protein content. Any kind of a pasture with corn will give a great deal better results than corn alone.

TIME TO CASTRATE

The best time to castrate pigs is when they are about 6 to 8

weeks old, while nursing the sow. If castrated at this age, there is no shock to their system and no check in their growth. If handled carefully, a mild disinfection used, and the operation properly performed, the pigs will be as bright, lively and do as well as before the operation.

A hog feeder, a very convenient thing in handling hogs

MINERAL MATTER

To meet the requirements of growth and of the fattening process, mineral matter is required. Mineral matter is required for bone development, required by the liquids and secretions of the body and takes a very important place in nutrition. Sows sometimes eat their pigs because of lack of mineral matter in their food. Mineral matter acts as a tonic and appetizer and may be a preventative of worms. When pigs run at large, an ample supply may be had, but when confined in pens some extra mineral matter must be provided. The writer has used the following mixture with success: 9 bushels of wood or coal ashes, 8 pounds of salt, 2 quarts of slacked lime and 1¼ pounds of copperas. The copperas is dissolved in water and thoroughly mixed with the mass by being shoveled over several times. Two bushels of corn-cob charcoal, if available, will greatly improve the quality of this mixture. Common coal ashes, wood ashes, charcoal and salt fed singly or in combination are better than nothing. Something of the kind must be

provided. The above mixture should be placed where the hogs have ready access to it.

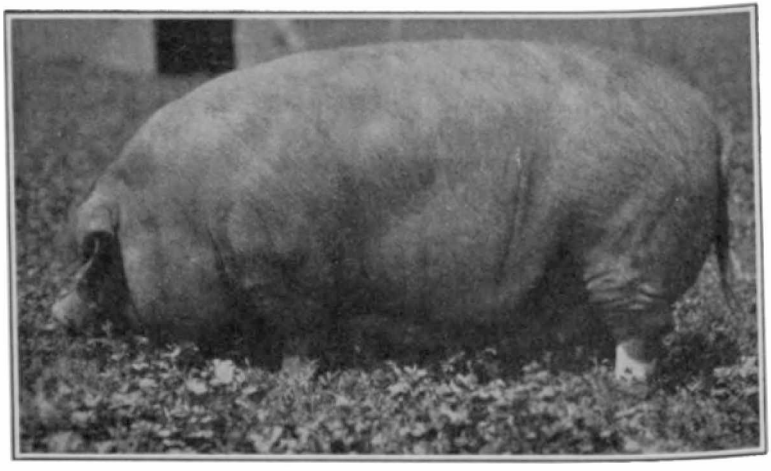
The U. S. Department of Agriculture recommends the following mixtures:

Charcoal	1 bushel
Hardwood ashes	1 bushel
Salt	8 pounds
Air-slacked lime	4 pounds
Sulphur	4 pounds
Pulverized copperas	2 pounds

This formula is to be mixed in the same way as the preceding one. Either of these mixtures is food and should be placed where the pigs will have ready access to it.

CARE OF ANIMALS FOR BREEDING PURPOSES

The animals to be kept or sold for breeding purposes should have a run sufficiently large to allow plenty of exercise. They must not become fat but be kept in a good thrifty condition. Skim milk, alfalfa or clover hay, roots or pasture with a grain mixture will give good results. The sows should be fed so that they will



Notice the long, smooth body, great height and depth, and fullness of ham, side and shoulder. A good brood type.

weigh at least 200 pounds at eight months of age. In order to preserve the breeding qualities of the boars, they should have the same treatment as the sows. The boars should be separated from the sows long before they begin to breed.

PRECAUTION AGAINST CHOLERA

If the suggestions given in this circular are heeded, there will

be little if any disease in the herd unless cholera is present in the neighborhood. New hogs added to the herd from time to time for breeding purposes should be isolated for two weeks so as not to introduce cholera. If this disease should break out in the herd, separate the well and sick animals immediately, throw lime in the feed troughs, spray buildings and cots with a strong solution of ordinary stock dip, do not allow persons or dogs to come near the hog end of the farm and by telegraph immediately notify the State Veterinarian, Denver, Colorado.

TREATMENT FOR WORMS

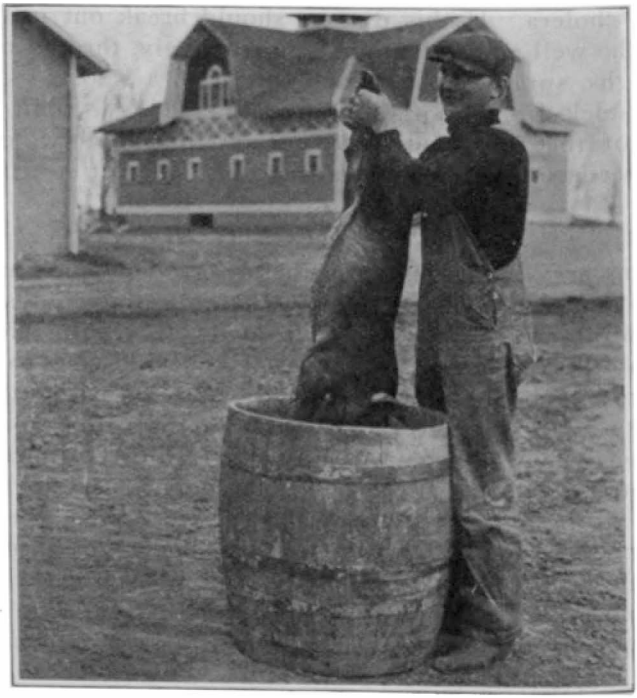
Worms are serious and injurious to growing pigs and when once in a herd are difficult to get rid of. Hogs fed slaughter refuse are often infested. The sleeping pens, feeding floors and runs should be kept clean and dry at all times. Every part of the building or cot should be whitewashed or treated with a disinfectant solution twice a year. The best time to get rid of worms is in the summer when the hogs are on pasture. This is difficult to do in the winter when the hogs are closely confined and are reinfected by the droppings. Some of the most successful hog raisers in the country recommend pumpkin seeds to reduce the worms or get rid of them from the body. The hogs get plenty of these in the fall when feeding on pumpkins. Pumpkins fed with grain are an excellent feed and the farmer should raise a few of them at least whenever they can be grown successfully. The mineral mixtures previously mentioned are recommended.

The United States Department of Agriculture gives the following treatment for worms in hogs: For a 40-pound to 50-pound shoat, give in swill for three consecutive mornings, before other food is given, 4 grains of santonin combined with 15 grains of calomel. For smaller pigs, 3 grains of santonin and 10 grains of calomel will be sufficient. The medicine must be so given that each animal gets its share. In case the first or second dose purges considerably, let a day or two elapse before another dose is given and slightly decrease the amount of calomel. Keeping the pigs in a thrifty, growing condition, with proper rations and care under good sanitation is more satisfactory than the use of drugs.

TREATMENT FOR LICE

Lice are quite troublesome sometimes on hogs. The most effective treatment is a washing with an ordinary stock dip solution. This may be done by hand, but a more thorough treatment can be given by swimming the pigs through the solution in a dipping vat and occasionally pushing their heads under so that all parts will

be covered with the dip. The dipping should be repeated in about two weeks, or as often as is necessary.



In dipping the pig, submerge him completely, but don't drown him. Do it quickly.

List of Available Extension Bulletins

Bulletin Number

101 **The Smith-Lever Act and What It Provides for Colorado Farmers and Housekeepers.** 8 pages.

An explanation of the Federal Smith-Lever Act, providing for extension service in Agriculture and Home Economics, Includes a copy of the Act, together with a graphic description of the amount of funds provided.

103 **Preparation of Agricultural Exhibits,** by James D. Marshall, J. A. Helmreich, E. P. Sandsten, and Inga M. K. Allison. 16 pages.

Describes briefly, and with illustrations, methods of preparing exhibits of grain, livestock, fruits and vegetables, and household materials.

104 **Dry Farm'ng in the Plains Region,** by Alvin Kezer, J. W. Adams, W. E. Vaplon, and R. McCann. 16 pages.

Includes short articles on the following subjects: "Some Principles of Soil Moisture Under Dry-Farming Conditions," "The Construction of Pit Silos at the Plains Substation," "Poultry on the Plains," "Going into Dairying."

105 **Household Exhibits at Fairs,** by Inga M. K. Allison. 16 pages.

Includes suggestions on the transportation, preparation and entering of exhibits, and presents specimen score cards for the different classifications.

106 **The Why, What, Where, Who, When of Boys' and Girls' Club Work,** by W. E. Vaplon. 12 pages.

Explains in detail the plan of organization of Boys' and Girls' Clubs in Colorado, the activities of the Clubs and a list of things Clubs can do for the school, for the child, and for the community.

107 **Silos and S'lage,** by R. W. Clark and Chas. I. Bray. 12 pages.

Part I consists of an article by Mr. Clark upon the advantages of the silo, including two valuable tables on silo capacities and the relation of the herd to the diameter of the silo, as well as tables of silo rations. The construction of pit silos is explained by Mr. Bray, the discussion being illustrated with photographs.

108 **Domestic Water Supply.** 11 pages.

Explains in detail, system for installing running water in the farm home, from the most inexpensive to the more elaborate, including drawings and directions from which systems may be installed without the aid of an expert or plumber.

109 **Annual Report of the Director of the Extension Service, for the Year Ending June 30, 1916,** by H. T. French. 17 pages.

Includes report of the various activities of the extension service for the fiscal year designated.

112 **Girls' Sewing Club (Second Year),** by Charlotte E. Carpenter and Maude E. Sheridan. 31 pages.

Written along the same line and for the same purpose as Bulletin No. 111.

113 **Books for the Farmer's Wife,** by Charlotte A. Baker. 12 pages.

A comprehensive list of books upon administration of the home, planning, furnishing and care of the home, conservation of health, the selection, preparation and use of foods, the clothing problem, the social life of the home, how

Bulletin
Number

science affects the home, woman out of doors, together with the publisher's name and price and including miscellaneous and free publications.

115 **Growing Corn in Colorado**, by Alvin Kezer. 20 pages.
Deals with corn as a grain crop, as a forage crop, corn soil, location for corn, manure, preparation of the seed bed, planting, cultivation, harvesting, a discussion of varieties and of seed selection.

116 **Girls' Cooking Club (First Year)**, by Charlotte E. Carpenter and Maude E. Sheridan. 28 pages.
Written for use in Girls' Cooking Clubs. Includes besides plan of organization, a comprehensive list of recipes.

117 **Prevention of Smut in Oats**, by Harvey E. Vasey. 8 pages.
Discusses cause of smut, kinds of smut, method of treating seed to prevent smut.

118 **Fighting Grasshoppers**, by Chas. R. Jones. 12 pages.
Includes the results of a campaign against grasshoppers conducted in 1916, and suggestions for the control of the pests.

120 **Preservation of Fruits and Vegetables by Drying**, by H. W. Allinger. 16 pages.
Commercial evaporators, sun drying, sulphuring, home drying, sweating, storing dried products, fruit drying vegetable drying, grading and packing are discussed.

121 **Farm Storage of Apples and Potatoes**, by James L. McGinnis. 19 pages.
Describes in detail construction of storage cellar, including plan, and discusses important points of management; a brief section is also devoted to storage of potatoes in pits.

122 **Harvesting and Storing Vegetables for Home Use**, by J. J. Gardner. 7 pages.
Tells how vegetables to be stored should be harvested, and discusses different methods of storage, including out-of-door pits and the home cellar.

123 **Trees for Non-Irrigated Regions in Eastern Colorado**, by W. J. Morrill. 20 pages.
Contains lists of trees, shrubs and vines adapted to the plains region, together with a description of each, and instructions on how to plant, where to plant, and how to care for the trees. Three or four pages are devoted to illustrations of planting operations.

124 **Girls' Sewing Club (First Year)**, by Charlotte E. Carpenter and Maude E. Sheridan. 31 pages.
Written especially for use in Girls' Sewing Clubs, and deals with the work to be done the first year, including many photographs illustrating the different stitches, articles to be made and other features.

125 **Wheat Growing in Colorado**, by Alvin Kezer. 7 pages.
Discusses varieties, preparation of the soil, seeding, seed treatment, cultivation, manuring and harvesting.

126 **The Poultry House**, by W. E. Vaplon. 7 pages.
Gives a discussion of the foundations and floors, ventilation and light, arrangement of fixtures, the underground house, roosts, nests, and includes photographs and drawings.

Bulletin
Number

127 **Management of the Dairy Herd,** by R. W. Clark. 13 pages.

The barn, pasture, feeding, selecting, health, raising the dairy calf and breeding, are discussed and the bulletin is well illustrated.

128 **Meat and Meat Cookery,** by Miriam M. Haynes. 20 pages.

Complete and comprehensive discussion of the subject, including illustrations with cuts of beef, veal, lamb and mutton; the principles of cooking meat, degrees of cooking, a good list of recipes, including sauces, suggestions for combinations for meats and vegetables and for the use of left-over meat.

129 **Home Curing of Meats and Their Preparation,** by Miriam M. Haynes. 12 pages.

Discusses various methods of curing meat, including smoking, dry salting, the brine method, sugar curing, drying, and freezing; includes recipes for cooking cured meat.

130 **Poultry Management,** by W. E. Vaplon. 8 pages.

Deals with markets, feeds, and the importance of bookkeeping; for use in boys' and girls' poultry clubs, but contains valuable information for the poultry raiser.

131 **Storing Vetetables for Home Use,** By R. A. McGinty. 4 pages.

Directions for storing common garden vegetables so the products of the garden may be preserved for use during the winter.

132 **Girls' Sewing Club (Third Year),** by Charlotte E. Carpenter and Maude E. Sheridan. 34 pages.

Written for use in the third-year work of the girls' sewing club; includes detailed instruction for the making of a simple cotton dress, the remodeling of a woolen skirt, and the making of an embroidered dresser cover; contains many photographs and drawings to illustrate the subject matter.

133 **Reports and Plans of Town and City Garden Clubs,** by W. E. Vaplon. 15 pages.

Shows in an effective manner, by the use of actual photographs, the results accomplished in boys' and girls' clubs in the cities and towns of Colorado last year, and contains specimens of survey blanks and record blanks, together with a suggested plan of organization, which will be valuable in organizing the garden work in the cities and towns of the State.

134 **The Prevention of Smut in Grain by Seed Treatment,** by H. E. Vasey. 4 pages.

Deals generally with cereal smuts and their prevention by the soaking method, the sprinkling method, and the spraying method.

135 **Hints on the Conservation of Food,** by Miriam M. Haynes. 4 pages.

Contains brief suggestions on the saving of money in buying, the saving of food by proper storage, careful preparation, careful cooking and the proper use of "left-overs."

136 **Potato Diseases and Methods of Control,** by H. E. Vasey. 4 pages.

Gives discussion of Black Leg, Dry Stem Rot, Wilt and Tuber Dry Rot, Common Scab, Early Blight and other potato diseases and their control.

137 **Incubation and Feeding of Little Chicks,** by P. F. Schowengerdt. 12 pages.

A practical bulletin upon selection of eggs and care of chicks for hatching, artificial incubation, natural incubation, artificial brooding, and natural brooding.

Bulletin
Number

138 **Feeding and Care of Little Chicks**, by P. F. Schowengerdt. 8 pages.

Gives practical suggestions for feeding and care of little chicks, including rations for each week for the first eight weeks, and touching briefly on diseases and parasites and their control.

139 **Water Hemlock, A Poisonous Plant**, by W. W. Robbins. 4 pages.

Designed especially to give warning to school teachers and others regarding the deadly nature of these poisonous plants, the roots of which are sometimes eaten by children with fatal results. Also gives description of the plant, its distribution and habitat, its eradication, the symptoms of poisoning in humans and animals, and treatment in both cases.

140 **Prevention of Blackleg**, by Geo. H. Glover. 4 pages.

Describes in brief form the different means of immunizing calves against blackleg. Including the attenuated virus, tissue filtrate, culture filtrate, serum, serum-and-virus.

142 **Poisoning by Larkspur**, by Geo. H. Glover. 4 pages.

Designed to inform stockmen regarding the dangerous nature of this plant, the symptoms of its poisoning, the animals which are liable to be poisoned, conditions of poisoning, and prevention and treatment.