

KANSAS FARMER

For the improvement of the Farm and Home

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SHORTAGE OF DRAFT HORSES

Twenty-one Million Horses in Country but Only Million Real Drafters

THE time to keep up horse production is when the average man wants to quit," says Wayne Dinsmore, secretary of the Percheron Society of America, in a recent communication sent to Percheron breeders. From the facts presented by Mr. Dinsmore it is apparent there is a shortage of real draft horses, although there are too many of the smaller horses. Attention is called to the fact that producers or Percherons must never forget their continued prosperity depends on a prosperous condition of the trade in grade horses for commercial purposes.

The latest available figures for European countries, supplied by Food Commissioner Hoover, show an actual increase in the number of horses in Germany and Great Britain since the war began. France shows a decrease of 914,000 head between 1913 and 1916, and all other European countries having available data show decreases except Sweden, where there has been a slight increase. Germany's increase is due to horses taken from Belgium, Northern France and Russia; Great Britain's to horses bought for war purposes. The decrease in France came during the first eleven months of the war—since then there has been a slight gain due to purchased war horses.

The United States had 21,195,000 horses January 1, 1915, and 21,126,000 on January 1, 1917—a very slight decrease, in spite of the fact that we exported 805,422 head during the twenty-eight months ending January 1, 1917. Mules increased from 4,479,000 January 1, 1915, to 4,639,000 on January 1, 1917, although we exported 267,144 mules in the twenty-eight months ending January 1, 1917. Exports have continued at a heavy rate so far in 1917 and will undoubtedly continue while war lasts.

The outstanding fact, however, is that prices have not advanced on any but very heavy draft horses. Grain, cattle, hogs and sheep have doubled or trebled in value—horses have not advanced at all, save for the limited class mentioned. Automobiles and light delivery trucks have displaced nearly all driving and delivery horses. There is no longer a general market for surplus horses under 1,200 pounds weight. Those that will not do for military work sell very low, ranging from \$65 to \$115, and are hard to dispose of at that. Horses from 1,200 to 1,500 pounds are still used to a very limited extent in the cities, and are a popular kind for use on farms. They also have a wide outlet for artillery purposes, but the supply of these, especially those under 1,400 pounds, is more than equal to the demand.

The most experienced horse market men in America—such men as Dr. Reid of Campbell & Reid, St. Louis; P. M. Chappel of Cooper & Co., Chicago, and Harry McNair of Ellsworth & McNair, Chicago, are agreed in declaring that there is still a vast surplus of horses weighing under 1,200 pounds, and by far too many of those which range from 1,200 to 1,400 pounds. They see no possibility of an improvement in prices on these kinds, and are of the opinion that prices on the smaller horses will be cut in half within ten years. Draft horses, however, if over 1,600 pounds in working flesh, give every promise of holding pres-

ent prices, with the probability of some advances.

The supply of heavy horses is limited. The best informed men estimate that of our twenty-one million head, less than a million are real draft horses, weighing over 1,600 pounds; and the demand for these efficient workers is such that they are holding their own in cities and increasing in popularity on farms. There is every reason to believe that the demand for drafters will continue to exceed the supply for at least twenty years yet.

With a view to obtaining the most accurate data possible on horse production, questions were recently sent by the Percheron Society to representative breeders throughout all parts of the United States. Replies were received from 277 prior to the issuance of this letter, and we take this opportunity to thank those who cooperated with us in this inquiry.

Reports from these men on conditions in their own localities show that there has been a marked reduction in the number of mares bred in 1917. While some localities have bred nearly all available mares, this is not generally true, and it appears that not more than 40 per cent of the mares old enough to breed have been bred this season. The number of stallions in service is considerably less than in 1916. This is further confirmed by reports from twelve stallion boards, which reveal a decrease of 625 pure-bred draft stallions, and a total decrease of 3,209 stallions all told, which is a tremendous reduction for one year.

Sixty-eight per cent of the men report very few surplus horses good enough for sale for war or other purposes, on hand in their localities. Horses ranging from 1,000 to 1,200 pounds are reported to be selling from \$90 to \$125 average; horses from 1,200 to 1,500 pounds at from \$140 to \$175 average, and horses over 1,500 pounds at from \$200 to \$250 average.

Eighty-nine per cent of the correspondents report no horses that will ma-

ture at 1,700 pounds or over, or that there are only few; only 11 per cent report over twelve such horses in their communities. This bears out the repeated declarations of market men and horse buyers, who insist that there are very few real draft horses in any section. This, taken in conjunction with the price—\$250 to \$300 on the heavier horses—is ample evidence of our urgent need of more big horses. There is no incentive to produce small horses; every reason to produce more real drafters.

The situation regarding pure-bred Percherons seems especially encouraging. Seventy per cent report that all surplus Percherons of salable age are already sold; 10 per cent report "fairly sold out," and only 20 per cent report any considerable number of salable Percherons left in their communities. Sixty-one per cent report prices about the same as last year, 21 per cent report higher prices, and only 18 per cent report prices lower. Dealers who have made independent reports to the society state that there are practically no three-year-old stallions left in the hands of the breeders, and that the majority of the two-year-old and a good share of the yearling stallions have already been bought up.

Importations have practically ceased. Only sixty-four Percherons have been imported in 1917. One leading importer has publicly stated that the American-bred horses he has bought in the last three years have developed far beyond his expectations. He further says that he can buy better American-bred horses here now than the horses he formerly obtained in France. His purchases confirm his statements. Other importers are gradually coming to the same position. It is, however, necessary for dealers to purchase horses at younger ages, and to provide separate pastures—an acre or more—to prevent the young stallions from injuring each other sufficiently to impair sales.

Consideration of all the facts we have

painstakingly gathered leads to but one conclusion. There is a shortage of draft horses, which is not likely to be fully supplied for at least twenty years. Draft stallions are scarcer than they were and will be in demand to make more draft horses, out of mares that are 1,400 pounds or over. Horses weighing over 1,500 pounds, if sound and right, are bringing approximately \$100 per head more than those under 1,200 pounds, and are averaging \$225 or better. Percherons of salable age are well sold out. Prices are steady or stronger in nearly all instances. The future for Percheron breeding is favorable, but the stock must be sound, well proportioned and well grown to be salable. Young stock especially should be well cared for. Grain can be saved in some degree by giving all the oat straw, corn fodder and alfalfa colts will eat; but even with this allowance foals and yearlings should have daily at least three-fourths of a pound of grain per each hundred pounds live weight.

Winter Care of Stallion

Plenty of exercise, good ventilation, light, and proper care throughout the whole year are necessary for the vigor and health of a stallion. During the winter season there is a tendency to neglect the stallion.

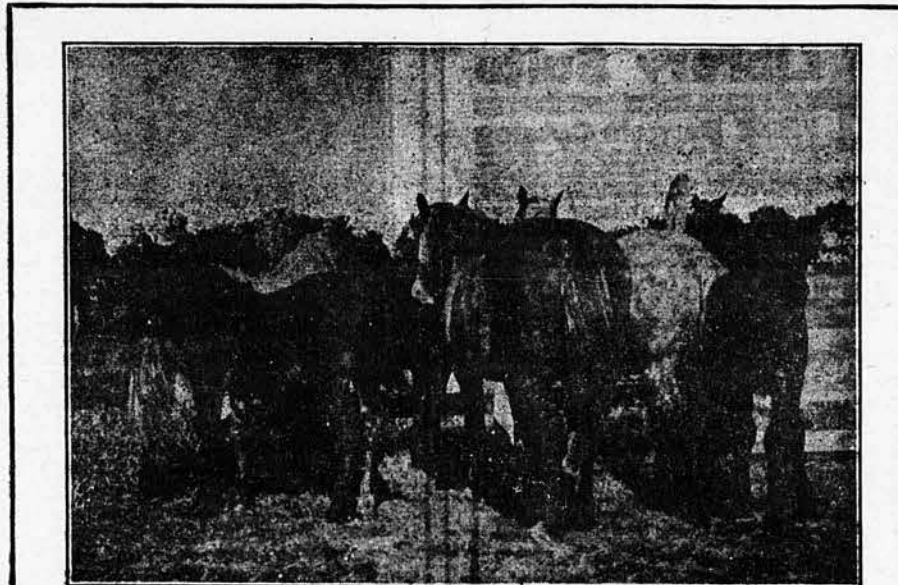
Exercise tones the muscles, stimulates the circulation and digestion, gives strength and vitality to every tissue and every organ of the body. Good honest work is the best kind of exercise for stallions. Some owners find it practical to work them in pairs while others find it more satisfactory when a stallion is worked with a gelding or pregnant mare.

Utmost care is necessary in working stallions. They are big, strong and willing, but are usually soft and fat from lack of exercise. Consequently they must not be given hard work at first. One should begin with light work—only a few hours each day—gradually increasing the work until the stallion is able to do daily a full day's work.

Aside from the economy resulting through such work the stallion will become stronger, more vigorous, more tractable, easier to control, and more agreeable to handle, as well as a better breeder. Of course the owner must use his judgment about special cases.

The proper amount of exercise given will make the question of feeding the stallion less troublesome. How to feed is more important than what to feed. The stallion should be fed three times a day regularly and at the same time each day. Plenty of pure, clean, fresh water should be provided. The problem of proper ration will depend largely on the feeds available, on those that are home-grown, as well as upon the consideration of the amount invested in the stallion. A good wholesome ration should be selected and enough should be fed to keep the stallion in fairly good flesh but not too fat.

The place where the stallion is kept should be flooded with sunlight, and properly ventilated. Sunlight and fresh air are the best and cheapest disinfectants we have, but avoid draughts.—C. W. McCAMPBELL, K. S. A. C.



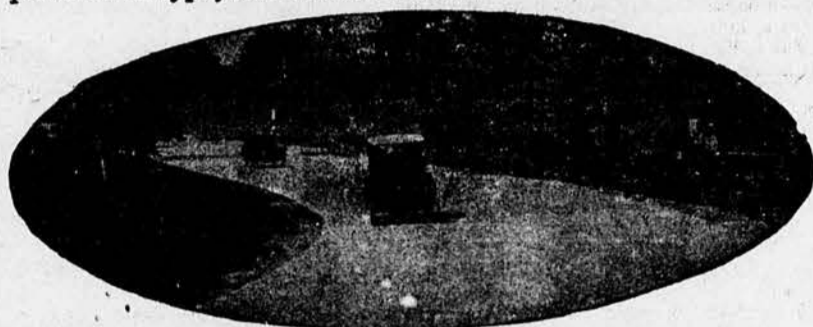
SUPPLY OF DRAFTERS MUST COME FROM FARMS WHERE SUCH MARES AS THESE ARE KEPT AS WORK ANIMALS AND TO RAISE COLTS

A Simple Road Problem

What is the repair cost on your old roads ?

How much would concrete roads cost ?

Your tax receipts will answer the first question. Your county engineer should be able to answer the second. By subtracting the cost of permanent roads from the repair expense for 20 years of poor roads you will find capital for building the permanent type, like the one below:



Sheridan Road, near Kenilworth, Ill.—Built by Edw. Laing, Highland Park, Ill. C. N. Roberts, Chicago, Engineer

THE fact has been established that in the average rural community in the United States, temporary roads cost to repair and rebuild during a 20-year period, about twice what it would cost to build permanent concrete roads.

Concrete roads are not an experiment. Concrete roads are not a luxury. Any community can afford them. No community, from the standpoint of economy, can afford to be without them. Reasonable in first cost, low in upkeep, they immediately become a profit-earning asset of the community.

- CONCRETE ROADS**
 Their Advantages
 No Mud—No Dust
 No Ruts—No Holes
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 No Shaking
 Easy Hauling
 Smooth Riding
 Long Life—Safety
 Always Ready for Use
 Low Maintenance
 Moderate Cost

Be sure you know what a concrete road is. Concrete is made of portland cement, sand and pebbles, or crushed stone, and water. It is hard and durable. Concrete is the material used in building concrete dams, factories, bridges, and big engineering works like the Panama Canal requiring great solidity and strength.

Write for a free copy of our Bulletin 136. After you have read it, pass it on to your road officials, then insist that your road funds be spent for permanent concrete roads.

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\$360 FORD AUTO FIRST GRAND PRIZE

In the picture are hidden a number of faces. How many can you find? Some are looking right at you, others show only the side of the face—you'll find them upside down and every way. Mark each face you find with a pencil, clip out picture, send to us with name and address NOW. We will give away a \$360.00, 1917 Model, Ford Touring Car, as First Grand Prize, and Thousands of Dollars in Cash Rewards, Prizes and Special Premiums. Each worker gets a prize. Solve the puzzle. If you can find as many as FIVE FACES we will send you immediately toward the \$360.00 Ford Automobile and other Grand Prizes.

1000 Free Votes toward the \$360.00 Ford Automobile and other Grand Prizes. We will also give away several 1918 model Coaster Brake \$40.00 Bicycles. These will be given free and extra, regardless of who gets the Ford Auto. Someone will get automobile. **WHY NOT YOU? FARM LIFE, Dept. 60 SPENCER, IND.**



FARM POWER

Items of Interest About Automobiles, Engines, Tractors, and Motorcycles

RECORDS were recently kept very carefully of the cost of hauling gravel for some main roads in Minnesota, which show the value of horse and mechanical traction under similar conditions. About twenty-two miles of road had the gravel distributed over them by teams and about 3.6 miles were covered with gravel hauled by a caterpillar traction outfit. Itemized cost records were kept so carefully that the results of these two methods of hauling can be compared.

Using teams it was found that the cost of loading and hauling a cubic yard up to one mile ranged 57 to 94 cents per mile. Where the hauling was one-half to one mile the cost per mile ranged from 30 to 48 cents. Where it was from one to one and one-half miles, the cost was 23 to 35 cents, and where it was between one and one-half and two miles the cost per mile was 22 to 28 cents. The detailed figures show that the cost depended largely upon the efficiency of the men engaged in loading the wagons. These loading costs varied from 7 to 25 cents per yard. The least figure was obtained by making the teamsters help in the shoveling and the highest figure was due to an excessive amount of frost and firewater.

The tractor outfit consisted of a gasoline driven caterpillar tractor, the type of machine upon which the design of the British army tanks is based, seven 3 1/2-yard spreading wagons, a fifty-yard storage bin and a loading machine. The work was complicated by a very heavy grade at one place. The best that could be done here was to haul four cars across private land and then go back and haul the remaining three cars across this rough ground. A full train was then made up and hauled the remaining two and one-half miles. The total average haul was about three miles. As the work progressed another gravel pit was opened where these grades did not exist and the hauling was done more easily. On the first part of the work the average cost was 15.4 cents per yard per mile and on the latter part it was 15.41 cents.

The engineer who reported these figures, Orrin J. Kitt, has stated that with a more powerful tractor and a loading outfit of greater capacity, a much lower operating cost could have been obtained with the tractor outfit. It is his opinion that with proper equipment, mechanical traction of this type is much cheaper than hauling by team. There are also other advantages which he has summed up as follows: By applying the gravel in two courses with a tractor, the gravel is rolled without additional cost and the road is ready for travel as soon as the tractor leaves it. Furthermore, by loading the gravel into a bin, thence into wagons and finally dumping it on the road, the material is better mixed than when it is shoveled directly from

the bank into the wagons which dump it on the roads.

Farm Tractor Misunderstood

In a recent issue of the Implement and Tractor Trade Journal, Melvin Ryder makes the statement that the farm tractor is still somewhat misunderstood. Charges are made that the chugging machine is intent upon driving "Old Dobbin" from the farm, and predictions follow that soon there will be horseless farms throughout the entire country.

The tractor has no desire to drive out the use of horses on the farm. An investigation will tend to show that the tractor and the horse are not in direct competition, such as would result in the elimination of the one or the other. The tractor has a place in farming, and so has the horse.

For example, if winter wheat is to have a place in the crop rotation the land should be plowed as soon as possible after the preceding crop is removed. The tractor can get to work at once, while the horse must often await suitable weather conditions.

In like manner, the use of fertilizer is frequently contrasted with the use of manure. Just as some farmers are prone to consider the tractor as opposing the horse, so are fertilizers sometimes considered in contrast to manures. It is not a question of eliminating the one and using the other any more than it is a question of eliminating the horse and using the tractor.

Both have a definite and important place in maintaining the fertility of the soil. When each is used to supplement the other, better results and bigger profits will be secured.

Methods and conditions are rapidly changing in the agricultural world. Labor problems, high prices of farm lands, larger investments in machinery and equipment and other factors are now entering into the economics of farming, as never before. Improved machinery that saves labor and secures greater efficiency is being introduced everywhere. The business farmer must keep awake to the changes that are taking place, if he is to secure the greatest net returns from his operations.

With all these factors is coming the vital need of greater production of food-stuffs per acre, not only as a national and world problem, but more directly to the farmer as his problem on his own farm. In order to meet the changes and new conditions that have arisen, greater production demands that greater attention be paid to maintaining and increasing the productivity of the soil. This includes not only crop rotation, the use of lime when necessary and the best cultural methods, but also the utilization of all farm manures, and in addition properly selected fertilizers to meet the plant food requirements of the different crops and make up for the deficiencies of the soil.



NORTON County farmers listening to silo talk of Charles R. Weeks, of the Fort Hays Experiment Station, given at Lenora at the time of the visit of the "cross-country truck silo special" run co-operatively by the Division of Extension of the Kansas Agricultural College and the Fort Hays Experiment Station. A. S. Neale, dairyman from the extension division of the college, and W. A. Boys, district agricultural agent in West Central Kansas, are the other speakers who had a part in the campaign. Twenty-four counties were visited, 116 meetings were held, and the total attendance at these meetings was 5,767. This campaign was unique in that the truck made possible meetings at many inland points, at cross roads, and on farms. As a result of the efficient work done during the campaign in the explanation of the different types of silos and the value of silage in farm feeding operations, several hundred silos will be constructed in the section visited.

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LOANS ON GRAZING LAND

The grazing lands of Kansas represent an approximate valuation of \$400,000,000. There are forty acres of grass to every hundred acres in cultivation. Most of this land is more valuable for grazing than for cultivation. The permanence of the cattle industry of the state depends in large measure on the grass lands. Thousands of cattle are turning this grass into wealth each year. The values of grass land are less subject to speculative fluctuation than the values of cultivated land.

In view of the above facts, it would seem that no restrictions should be placed on financing the men who are trying to make the most of this grazing land. A few weeks ago we published a letter from W. P. Harrington, of Gove County, addressed to the Federal Land Bank at Wichita. The arguments presented were directed towards convincing the bank officials that they were wrong in rejecting some loans based on grass lands in Western Kansas. Farmers generally take the view expressed by Mr. Harrington in this open letter to the loan bank. They consider their grazing lands as a part of their productive acreage, and in fact less risk is attached to getting returns from grass than from land that is plowed.

The question of this discrimination against stockmen came up at the annual meeting of the Kansas Irrigation Congress held in Scott City, September 27, and those present went on record in the following resolution:

"We endorse the Federal Land Loan Act and urge all farmers who borrow to take advantage of it. We hope ere many seasons to see all farm borrowing done co-operatively. Complaint has been made that the Federal Land Bank at Wichita is discriminating against stockmen by refusing to make loans on grazing lands. We declare that all who live on the farm and make their living from the products of the soil are farmers, and look alike to us, and all farmers are entitled to like treatment. The live stock interest is as important to the country as grain growing and has the same need for cheap money. We demand that this discrimination against stockmen cease, that they be given the same treatment as grain farmers, and that, if necessary, the Federal Land Loan Act be so amended as to guarantee them all the privileges enjoyed by other farmers."

KANSAS FARMER endorses this view of the farm loan question as regards the discrimination which seems to be now made against live stock farmers, and will lend its influence toward getting the officials in charge of the Federal Loan Act to properly recognize the stockman of Western Kansas. Live stock farming is far safer than exclusive grain farming, and especially for the western part of the state, but the live stock farmer needs more capital than the exclusive grain farmer and should be able to get his money just as cheaply.

FOOD CONSERVATION CAMPAIGN

In last week's issue we published on the editorial page the food conservation proclamation of Dr. H. J. Waters, federal food administrator of Kansas. At the request of President Wilson, the date given in this proclamation for enrolling people in the food-saving campaign has been changed to the week of October 28 to November 4. The reason given is that it was necessary for the Treasury Department to close the second Liberty Loan subscriptions the week of October 21 to 28, and it did not seem best to have these two big events occur the same week.

This change of date imposes additional burden on those who have volunteered to present the food conservation campaign and aid in carrying it to a successful conclusion. President Wilson in asking the Food Administration to change the date says:

"I would be glad if you would convey to all your staff throughout the country my feeling of the prime importance of their plans and their work. I wish par-

ticularly to express my great appreciation of the service which this additional tax on their time will impose upon the many thousand volunteers who have already deferred their own concerns to public interest in this important work. I ask them not to allow this alteration in program to dampen their fine enthusiasm but rather to redouble their energies in their very great branch of national service."

Mr. Hoover's reply is as follows:

"We, of course, have taken the necessary steps to comply with your wish as to deferring the final week of our food conservation pledge campaign until the week of October 28 to November 4. You will, of course, realize that we may be unable to reach some of the more remote districts. I have no doubt that the 500,000 workers who have enlisted in their service will loyally respond to your request for a greater and longer continued exertion. Your emphasis on the national importance of the conservation campaign should stimulate our large body of devoted workers to the utmost effort during the new week."

The plan of the Food Administration of enrolling the whole population of the country as volunteers in the food-saving campaign seems to the average individual to be an almost impossible task. It cannot be successful unless every single person conscientiously does his part without a thought of what someone else is going to do. At a public dinner recently the editor remarked to a lady across the table that she might save some sugar for France by using a little less in her coffee. The people of France will have no sugar at all in a few months unless we as a people cut down our consumption so as to have a surplus to send them. This lady said that she had no assurance that her lump of sugar would ever get to France, and therefore she was going to use all she was accustomed to using. If this feeling prevails generally, we will fail as a people in serving our country as we should in this crisis. To most of us the need for saving and conserving food supplies may seem remote, but we should strive earnestly to visualize the world-wide view. Our mite may seem small, but the united effort of a hundred million people each contributing his little mite to the common cause will accomplish the desired end.

We hope KANSAS FARMER readers will respond to this call for volunteers in the army for food conservation.

COST OF PRODUCING WHEAT

The men who are growing wheat ought to be able to figure out what it costs to produce a bushel of this cereal. On another page of this issue we publish some figures on the cost of wheat production, furnished by farmers who kept cost accounts. We will be glad to give more figures on the cost of growing wheat or other farm products. Why not try to figure out the actual cost of producing all our crops and farm products? If we do not know exactly what it costs to produce an article, and cannot show the different items of expense, we are working in the dark. The pencil ought to take a much more important place in farming than it has in the past.

In urging the importance of selecting from the field early maturing heads of kafir, W. A. Boys points out that F. Buchholtz, of Trego County, has been selecting kafir heads for seed from the field for several years. As a result of having this strong germinating, acclimated seed, last year he had the best matured field of kafir in the district.

It is evident President Wilson did not contemplate the heavy raid on farm labor which the selective draft is making. During his address before the Hereford Breeders' Association in Kansas City the week of the Royal, Gifford Pinchot was interrupted with the question as to how farmers could raise more hogs when the draft had cleaned up all the farm help. One man said that be-

tween the draft and the big demand for labor at the oil wells in his section he was unable to get any farm help. Mr. Pinchot plainly stated in reply that the War Department was to blame for diverting the selective draft from its real purpose so as to cause these heavy drains on farm labor. He urged that protests be made direct to the President by the men assembled.

The live stock department of the Kansas Agricultural College is still winning with the steers bred and fitted on the college farm. There was a time when state institutions picked up their show steers wherever they could be purchased. Prof. W. A. Cochel has demonstrated that an agricultural college can get into the game of breeding cattle that will win in our leading fat stock shows. For several years nearly every animal shown by the Kansas institution has been bred as well as fitted by the college. At this year's Royal the college show herd won first in the two-year-old Shorthorn class on Archer Dale, first in senior calf class on Golden Dale, and first on Short-horn herd of three steers. Other exhibitors were William Herkelmann and the Claverburn Farm of Iowa, J. W. McDermott of Missouri, Eben E. Jones of Wisconsin, and the University of Missouri. The Kansas college also won first in the two-year-old Angus class on Glenn, second on yearling Angus, third on calf, and first on herd of three steers. G. F. Cowden & Son of Texas, Caldwell of Missouri, and the University of Missouri were the other exhibitors. In showing Hereford steers the Kansas college was not so successful. Col. E. H. Taylor, of Kentucky, had the best of the Hereford steer show. The college won second in the two-year-old class, fourth on senior yearling, second on calf, and second on herd of three steers.

In the quality of cattle shown, this year's Royal outclassed any previous exhibition ever made. Not an inferior animal of any of the three beef breeds was led into the ring. The high character of the exhibits was most clearly apparent when the groups and herds were being judged. Many a remark was heard from the spectators to the effect that there was little indication of high priced feed in the condition and quality of the cattle shown. In the showing of groups the skill of the breeder stands out most sharply, for here the uniformity of his animals and their close conformity to the highest ideals can be easily seen.

Live stock shippers will be greatly interested in the results of an important hearing which was recently heard before Examiner Disque pertaining to the matter of rates based on valuations. In his tentative report to the Interstate Commerce Commission, Mr. Disque holds that tariffs collecting rates on ordinary live stock based on valuation are unlawful according to the second Cummins amendment to the act to regulate commerce. Carriers are directed to amend their tariffs accordingly. This decision confirms the position that has been taken by the National Live Stock Shippers' Protective League, and is of great importance to shippers who have been forced by the railroads to declare a valuation on their stock when offering it for shipment.

F. P. Lane, agricultural agent of Harvey County, points out the need of breeding up a strain of early maturing kafir. There are fields now in that county where enough mature heads could be secured to furnish seed for next year's planting, while the rest of the field will not be ripe enough to cut before frost. Let us try a little head selection and build up an earlier strain of kafir.

"Eat less candy. The Allies need the sugar," says the Food Administration. "All right," our patriotic farm boys and girls are saying, "Nuts and popcorn are better anyway."

IMPORTANT HOG MEETING

How to profitably increase the pork production of Kansas will be the subject of a meeting at the Kansas Agricultural College which will be held next week, Wednesday, October 24. The opening session will be at 10 o'clock, in the agricultural building. The department of animal husbandry and the extension division will have charge of the program, which will be of unusual interest to hog growers of the state.

Some of the speakers at this meeting will be G. M. Rommel, chief of the division of animal husbandry of the Federal Bureau of Animal Industry; Doctor White, of the office of hog cholera control of the U. S. Department of Agriculture; J. H. Mercer, state live stock sanitary commissioner; members of the animal husbandry department of the college, and practical hog growers of the state.

Some very valuable feeding experiments have been conducted by the Kansas Experiment Station, and the experiments with 120 pigs are now in progress. These will be used as demonstrations at the meeting. The experiments include the use of self-feeders in alfalfa pasture and in the dry lot, the feeding of corn, shorts, and tankage, corn alone, corn and shorts, and corn, shorts and tankage with and without additional mineral matter on alfalfa pasture. Experiments have also been conducted with brood sows for determining the effect of different rations on the litters, and the results of these tests will be given at this meeting.

It is a significant fact that three-fourths of the world's export of pork and pork products are sent from the United States in normal times. The war has greatly increased this percentage. Notwithstanding the increased demand for pork and pork products, there was a decrease of \$13,000 hogs in the United States between January 1, 1915, and January 1, 1917.

We hope every hog man in the state who can possibly do so will arrange to attend this meeting.

STUDENTS TO DAIRY SHOW

The agricultural college dairy judging team is in Columbus, Ohio, this week, where the members took part in the dairy cattle judging contest of the National Dairy Show, October 19. This trip is made very instructive to the members of the team. They visited many of the great dairy farms of the country on the way to Columbus. Dairy students strive earnestly to obtain a place on the team.

The National Dairy Show, which began October 19, is the largest dairy show in the country. The contest between the teams of the different colleges is always a hard fought one. The main prizes are two \$400 scholarships awarded to the best man in all classes. There are in addition a number of loving cups and medals which are offered to individuals and teams winning.

The Kansas team this year consists of S. M. Mitchell, of Kansas City, Missouri; D. A. Hine, of Manhattan, and L. K. Satm, of Norton, all seniors electing the dairy husbandry course. J. R. Mingle, of Holton, went as alternate. The places on this team are decided by the character of the judging work the men do in class. J. B. Fitch, associate professor of dairy husbandry, accompanied the team and gave them valuable instructions in the course of farm visits they made en route.

The average results at the Fort Hays Experiment Station show that there is little variation in yields of wheat seeded from September 21 to October 15, but from the latter date on the yields decrease rapidly. It is also shown that more seed is required for the later seedings. Where three pecks per acre are seeded on the early dates it would be advisable to seed one bushel per acre for the later October dates.

COST OF GROWING WHEAT

Figures From Several Farms Shows Increases In Many Items



THE EYES OF THE WORLD ARE UPON THE WHEAT FIELDS OF KANSAS.—EVEN WITH INCREASED COST OF PRODUCTION, WHEAT GROWERS ARE RESPONDING TO THE CALL FOR MORE WHEAT

WHAT does it actually cost to produce a bushel of wheat? This question was recently asked by the Federal Price Fixing Commission in their search for information on which to base the Government price for this year's crop. They failed to get any considerable number of very definite statements as to production costs. It is a much more difficult matter to determine the cost of producing an agricultural product than a manufactured product. There are so many variable factors involved, and especially conditions over which the grower has no control.

It is possible, however, even in farming operations to know more about the business end of production than most farmers do. Manufacturing industries made their greatest strides when they adopted systematic bookkeeping, auditing of accounts, and careful cost accounting methods. Farming has lacked the advantages possessed by the big business enterprises, but even on the farm we are beginning to see the necessity of applying similar methods as far as they are practical.

In studying the economics of the farm business, it is important to have a clear idea of the part capital plays in crop production. Some forms of capital as feed, fodder, or fertilizer, is used up and appears as a finished product in some other form. Then there is a kind of capital which is permanent, such as land, buildings, and other equipment. There is a greater risk attached to the use of the first kind of capital, therefore it must be rewarded with a higher rate of interest than capital in land. The fundamental principle is that the earnings of capital must appear in the cost of producing a crop.

We might classify capital as related to crop production into two groups: land and buildings, and working capital. Working capital will include the fixed capital, such as investment in machinery, tools, live stock, work animals, and man labor, and the circulating capital the cash, feeds, seeds, fertilizers, fuel, and food for the farm labor. Every one of these items must be given consideration in figuring on the cost of producing wheat or any other farm crop.

We complain because we have so little part in fixing the selling prices on our farm products. The general rule is for farmers to take what is offered and pay what is asked. Our weakness in dealing on the market as does the manufacturer is to a considerable extent due to the fact that we cannot show definite figures on production costs. It is a serious handicap in the marketing of farm products. When farming as a business can show fairly definite figures on production costs, the producer will be in a much stronger position than at present in marketing wheat or other farm crops.

It is imperative that we study economics, and especially as applied to agricultural conditions. In order to meet the present conditions and obtain justice in the matter of prices, the study of economics as applied to farm business must be widely taken up. Some progress is being made and many people have become interested in making farm management studies. It has been agreed that we have overdone the producing side of agriculture, or at least have devoted an entirely disproportionate amount of attention to production problems to the neglect of the business side of farming. The big problems in agriculture today

center around marketing and the adoption of such business methods as will give agriculture the same sort of knowledge as is now possessed by other businesses.

In a recent issue we quoted some figures on the cost of wheat production as worked out by Prof. L. E. Call, of our Agricultural College. No details were given, and in justice to Professor Call it must be said that these figures were not made on the basis of conditions existing at the present time. Every farmer and wheat grower knows that unusual conditions have prevailed during the past year. In the one item, cost of seed, an attempt was made to bring the figures to date. We gave these figures more with the idea of calling the attention of wheat growers to the various items entering into the cost of production than to offer these figures as fitting the conditions existing at the present time. In giving them we made an appeal for farmers who had kept accounts of wheat production costs to send in their figures. Several have responded, and we hope others will do likewise. It is through such publicity that people generally are stimulated to study the economic side of crop production.

John F. White, of Washington County, says: "In this county of Washington the owner of the land takes two-fifths of the wheat delivered to market, which would leave the wheat grower eight and two-fifths bushels to the acre on the basis of a fourteen-bushel crop. This at \$2 a bushel would net the grower \$16.80. The cheapest price at which I could hire a tractor to plow this fall was \$2 an acre, and I find that plowing with horses costs fully as much. Thirty-seven cents certainly will not cover the cost of drilling when drill rent alone costs 15 to 20 cents an acre.

"The actual cost of producing an acre of wheat is what it will cost to hire the work done. It does not matter who owns the land or who does the work, the cost is the same. Here is a fair estimate of what it would cost in this part of the state: Plowing, \$2 an acre; double disking, 80 cents; harrowing twice, 40 cents; five pecks of seed at \$2.50 a bushel, \$3.12; drilling, 73 cents; twine, 28 cents; harvesting, \$1.15; shocking, 30 cents; shock threshing, labor, 82 cents; threshing bill, 84 cents; bin for storing wheat, 21 cents; delivering to market, 54 cents; hail insurance, 50 cents; 6 per cent interest on the money to handle the work, 70 cents—a total of \$12.39.

"Taking fourteen bushels as the acre yield, the wheat grower would have \$4.40 profit on each acre after deducting what was due the land and cost of production.

"I have sowed wheat eight falls in succession and lost three crops by winter killing. The lost crops could not be considered in the cost of producing an acre of wheat, but I know from experience that these losses wipe out much of the profit when you do get a crop."

John P. Reilly, of Pottawatomie County, says: "I object to the first item in the cost of wheat production as given in KANSAS FARMER in the issue of September 29. I offered a tractor outfit in this locality \$2.25 an acre to plow seventy acres this fall and they refused, claiming they had already turned down offers of \$2.50 an acre. A man could not make \$5 a day for himself and a four-horse team disking at 73 cents an acre or harrowing at 33 cents. It takes a live man with four good horses to drill

thirteen acres a day. At 37 cents an acre he would earn \$4.81, which would not make him rich very fast feeding two-dollar corn and fifteen-dollar hay to his teams and allowing fifty cents a meal for himself. A bushel and a half of seed at the government price of two dollars would cost three dollars, and some are selling seed wheat here at three dollars a bushel, which would bring the cost of seed up to \$4.50 an acre. It takes three pounds of twine to bind an acre of wheat in this locality, which at 18 cents a pound makes 54 cents. Some paid 20 cents a pound for twine this year.

"Another item is harvesting. Instead of getting it done for 54 cents an acre, I paid 75 cents an acre this season and furnished the teams to cut eighty acres. I paid \$2.50 a day for shocking and a man cannot shock properly more than seven acres a day, which would make the shocking cost 36 cents an acre instead of 24 cents.

"From the standpoint of investment, I figure four mules at \$200 each, harness \$200, gang plow \$80, harrow \$30, drill \$125, binder \$175, wagon \$90, feed for teams while sowing and harvesting \$180, and land at \$100 an acre. Then there must be an allowance for depreciation on teams and tools, and there are the chinch bugs, Hessian fly, and winter killing to contend with.

"To thresh a thirty-two-acre field yielding twenty-five bushels to the acre took six teams, three pitchers, and two grain teams a day, at a cost of \$41. Two meals for thirteen men at 35 cents, \$9.10; 1,800 pounds of coal, \$5.40; water boy with horse, \$2; machine bill at 8 cents a bushel, \$64. I kept busy myself gathering up around the machine and watching to see that no wheat was lost, but made no charge for my labor. The total threshing expense amounted to \$121.50, or \$3.80 an acre. I figure the total cost of production as follows: Plowing, \$2.50 an acre; harrowing, 40 cents; double disking, 90 cents; drilling, 60 cents; harvesting, \$1.25; twine, 60 cents; shocking, 40 cents; threshing, \$3.80; hauling to market, 62 cents; rent on land, \$5; interest on investment in mules, machinery, feed, etc., 75 cents; seed, \$3.40; depreciation in land, teams and tools, 50 per cent, as teams and tools are useless after fifteen years, and land farmed in wheat continuously falls rapidly in fertility; crop failure, Hessian fly, chinch bugs, flood and drouth, \$1, or 5 per cent of a twenty-bushel average at \$1 a bushel.

"While the Government guarantees two dollars for next year's crop, shorts on the day I write is quoted at Kansas City at \$2.90 a hundred in carlots. Flour at \$6 a hundred is only one dollar cheaper than when wheat was selling for \$3.25 a bushel."

The items which Mr. Reilly gives, exclusive of the depreciation, total \$21.22, which we understand to be his cost of production of one acre of wheat, the acre yield from the thirty-two-acre field upon which the figures are based being twenty-five bushels. In spite of the high cost of some of the items, this seems a very reasonable cost per bushel.

Mr. Reilly enumerates about \$1,500 of investment in teams and tools, but allowing this equipment a life of fifteen years, the annual depreciation would be only \$100, which of course would be distributed over the number of acres involved. A 50 per cent depreciation would

junk the equipment in two years. Land depreciation is a hard item to figure. Every bushel of wheat taken from the land removes fertility from the farm. Scientists tell us that the money value of this fertility is 46 cents a bushel, of which value 26 cents is in the grain and 20 cents in the straw. Of course the straw should be returned to the land in some form or other, but the 26 cents' worth of fertility in the grain is a legitimate item of expense in the production of a bushel of wheat.

William Knabbe, another Washington County reader, writes as follows: "I give some figures on the cost of raising wheat in Washington County. They give the cost if I could or would hire my neighbors to do the work. I figure, as does Professor Call, on an average yield of fourteen bushels to the acre. This at \$1.75 a bushel brings \$24.50. Of this the owner of the land gets two-fifths, or \$9.80. Plowing will cost \$1.50 an acre, harrowing 33 cents, disking 73 cents, drilling 60 cents, five pecks of seed at \$2.50 a bushel, \$3.12; twine, two pounds at 21 cents, 42 cents. The harvesting will cost \$1.50 an acre; shocking 25 cents, stacking 84 cents, threshing, at 6 cents a bushel, 84 cents, hauling crop to market 42 cents, board for help 80 cents, which makes a total of \$21.15, leaving me as a renter a net return of \$3.35 an acre.

"I figure \$1.75 a bushel, because that is about all I can get at my town on the basis of two dollars for number one wheat in Chicago. Number two wheat, which is as high as mine ever grades, will not bring over \$1.75 at my station. At two dollars a bushel, Chicago, I figure that there is not enough net profit for me to put out wheat under my conditions. I have not raised wheat for four years, and lost or wheat every year before that. I had intended to sow some this fall and bought seed at \$2.90, but after the price was fixed at \$2.20 on this year's crop I decided not to risk it and sold my seed at \$2.50 a bushel. I am a corn and hog man, and if you would like to know how I raise hogs to 180 to 200 pounds weight at six months of age, write me."

Mr. Knabbe is probably doing the wise and patriotic thing in confining his efforts to his specialty of corn and hogs. He can without doubt do his bit more effectively in producing pork than wheat. Pork is one of the vital needs of our allies and our own army as well. We hope to have a full account of how Mr. Knabbe makes the 200-pound hog in six months.

The wheat figures submitted are not from sections where wheat is grown extensively. In the real wheat belt of Kansas where wheat is the main crop, the production cost will vary somewhat from the figures given by the farmers we quote above. We hope others will go into this matter of figuring on production costs and give us the results of their experiences and calculation. It is worth while to simply try to set down in black and white the items involved in producing any farm crop.

To sell a cow that you will need again next spring, or that will be needed in your neighborhood, will surely prove a loss. If the war continues, it is possible that the price of cows next spring will be double that of last spring. If you need all the cows and heifers you have, it is a public duty to keep them.



RULES FOR MEASURING HAY

IN THE measurement of hay there are two points to be considered. These are the number of cubic feet required to make one ton and the method of determining the number of cubic feet in the stack.

The number of cubic feet required to make one ton of alfalfa at various seasons of settling are approximately as follows: When the hay has been thirty days in the stack, allow 680 cubic feet to the ton; for sixty days, 540 cubic feet; ninety days, 512 cubic feet; 120 days, 485 cubic feet; in late winter, 450 cubic feet.

Prairie hay packs more closely, the usual figure being 422 cubic feet for one ton in a well-settled stack.

There are three general methods of arriving at the number of cubic feet in the stack. All three methods require the width, length, and over-measurement. The latter is the distance from the ground on one side, straight over the top to the ground on the other side. Where stacks are irregular, it is best to secure a number of measurements for the width and length and the over-measurement, and use the average.

Rule 1.—One-fourth of the "over" multiplied by the width, then multiplied by the length and divided by the required number of cubic feet to make one ton. This rule gives accurate figures on small, squat stacks when the width is from one-third to one-half of the "over."

Last fall the Colorado Experiment Station bought 98.55 tons by the use of this rule, and when weighed out it weighed 98.18 tons.

Rule 2 (Colorado Rule).—Subtract the width from the "over." Multiply one-half the result by the width; multiply the product by the length; divide by the number of cubic feet required to make one ton. This rule is most accurate when the width exceeds one-half the "over."

Rule 3 (Government Rule).—Width plus "over" divided by four and squared, then multiplied by length and divided by the number of cubic feet required to make one ton. This rule is satisfactory for large tall stacks of twenty-five to forty-five tons, and favors the seller with ordinary small squat Colorado stacks.—T. E. LEIPER, Colorado Agricultural College, Fort Collins.

Bonded Warehouses Save Loss

Under the Federal Reserve system, warehouse receipts for various farm products stored in a bonded warehouse become collateral upon which the farmer may borrow from 50 to 75 per cent of the market price at his bank. Usually the local bank holds these receipts, but if necessary they can be rediscounted at the nearest Federal Reserve Bank.

It is said that the operation of this plan gave Florida farmers the first money they had ever been able to borrow at 6 per cent, the legal rate of interest in that state being 8 per cent.

The men who established the Gainesville warehouse have planned a chain of similar enterprises extending through Florida, Georgia, Alabama, and North and South Carolina.

Bulletin for Farm Borrowers

The Federal Farm Loan Bureau has published a "borrowers" bulletin" containing information of value to those who contemplate borrowing under the new federal farm loan system. The bureau will be glad to send the bulletin to any prospective applicant, or, indeed, to anyone interested in the system. The address is: Federal Farm Loan Board, Treasury Department, Washington, D. C.

The Food Administration has secured Henry Wolfer, formerly head of the Minnesota State Binder Twine Works, to undertake at once a complete investigation of the sisal and hemp industry and its distribution with view to action in the reduction of price. The price has been forced up 500 per cent since the war began and has become intolerable.

Winter Care of Bees

While visiting some of the farms of Lyon County in company with C. A. Boyle club leader for that county, he called our attention to the large number of stands of bees. Inquiry revealed

the fact that in most cases the bees were not being profitably kept. This is not because it is impossible to keep bees so as to return a profit. While a great many people have stands of bees, there seems to be a serious lack of knowledge of how to care for them properly.

In a recent issue of the Kansas Industrialist, Prof. J. H. Merrill emphasizes the importance of properly preparing bees for the winter so that strong colonies will be ready for the spring harvest of honey. If the colony is strong, it will raise plenty of brood, thus enabling it to take advantage of the honey flow.

The essential points in preparing the colony for winter are protection from cold and plenty of food. The tendency now is toward outdoor wintering in packing cases and an abandonment of cellar wintering. If the bees are properly protected outdoors they will be safer and in better condition for the honey flow.

Two or more hives may be placed in one packing case and in this way will aid in keeping each other warm. A space of eight inches should be left be-

tween the hives. The packing cases should be filled with some good packing material, such as cork, sawdust, shavings, or leaves. A tunnel should be made from the hive to an outside entrance on the south side of the case.

Doctor Merrill advises that the colonies be packed after the first killing frost. Then if the bees are well supplied with stores there will be no need of disturbing them until the following spring.

From twenty-five to thirty pounds of honey should be left for the bees. Honey is the best winter food for bees. It is

preferable that light honey, such as that from white clover, be left to be used as food. Honeydew honey should never be left in the hive for winter use.

After the honey flow ceases, if it is found that there is a shortage of stores, a sugar syrup may be provided. This is made by boiling for fifteen minutes two to two and one-half parts of sugar to one part of water by volume. One ounce of tartaric acid should be added for every forty to sixty pounds of sugar used.



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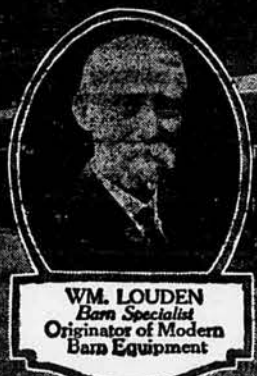
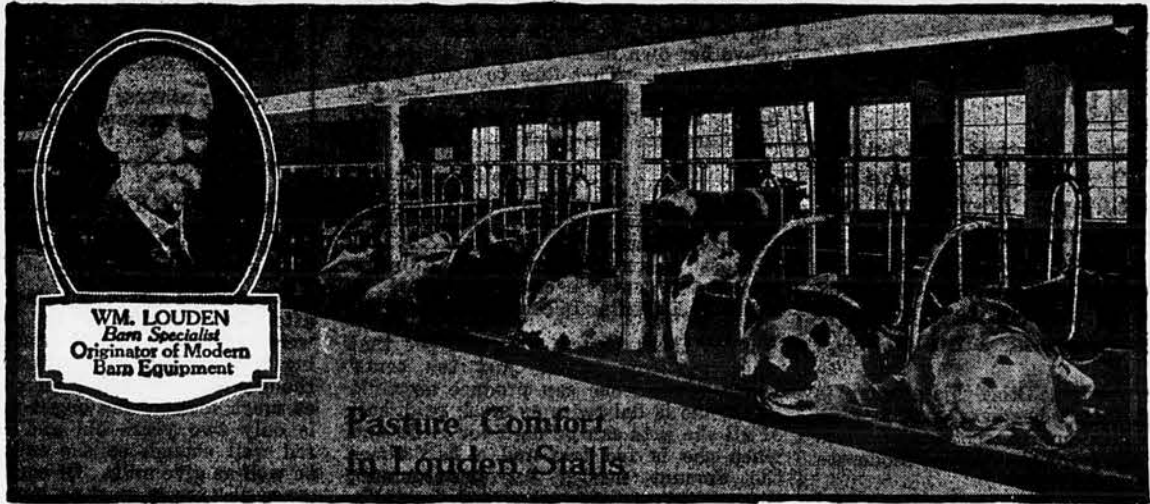
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WHEN WRITING TO ADVERTISERS PLEASE MENTION KANSAS FARMER

KANSAS FARMER DAIRY CLUB

How Much to Feed

LAST week we told about the different kinds of nutrients found in feeds. To feed most economically and with the best results, the different nutrients—protein, carbohydrate, and fats—must be supplied in the right proportions and amounts. Cows can economically use only about six and one-half to seven and one-half pounds of carbohydrates and carbohydrate equivalent to every pound of protein. By carbohydrate equivalent we mean the fat found in feeds after it has been multiplied by 2.25. The reason for doing this is that fat is two and a fourth times as valuable for making heat or energy as carbohydrates. So it would not do to add the fats contained in the feed to the carbohydrates without first multiplying the amount by 2.25. If in feeding the cow she gets too much protein and too little carbohydrate, the expensive protein will be wasted and she will probably fall off in weight. If there is not enough protein the cow simply cannot make milk.

Most farm feeds have plenty of the carbohydrates and fats, but do not have enough protein. Alfalfa or clover hay contains more protein than most farm feeds, and if you can feed either of these kinds of hay, you may be able to get along without buying such feeds as cottonseed meal or linseed meal, which are very rich in protein. Prairie hay, corn or kaffir fodder, or cane hay, contains very little protein, and for that reason is not good milk feed when fed alone. If you have to feed this kind of hay and fodder as your only rough feed, you will have to have some cottonseed meal or linseed oil meal to feed or your cow will not get enough protein to make milk.

In figuring out the balanced ration for your cow, the first thing to consider is how much does she need for her own body? She has to have enough to keep her body warm and to replace wornout parts, and until this amount is supplied she cannot begin to make milk. In so far as making milk is concerned, all she takes for her own body is lost. In feeding for profit, the more the cow can eat above her own needs the more there will be for milk. Therefore to feed profitably you must feed liberally. The following table from Farmers' Bulletin 743 will illustrate this point:

Cost of Ration	Cost of Maintenance	Available for Milk Production	Proportion of Ration Available for Production
10 cents	10 cents
15 cents	10 cents	5 cents	One-third
20 cents	10 cents	10 cents	One-half
25 cents	10 cents	15 cents	Three-fifths

From these figures you will see that when the cow is fed just ten cents' worth of feed she can produce no milk. When she is fed twice as much feed, half of all she eats can be used for milk, and when she is fed two and a half times the amount needed for maintenance, three-fifths of it can be used for milk. One of the most common mistakes made in feeding good dairy cows is in not giving them enough. The better the cow, the more apt you are to make this mistake.

While it may at first seem a little complicated, you will want to know how much protein, carbohydrates, and fat, your cow needs for her own body and how much for milk. In ordinary feeding a daily allowance of seven-tenths pounds of digestible protein, seven pounds of digestible carbohydrates, and one-tenth of a pound of fat is enough for the thousand-pound cow to keep her own body going. In figuring out your balanced ration, then, these amounts of the different nutrients must first of all be provided for. The next question is how much of the different nutrients to allow for the milk. Prof. T. L. Haecker, one of our leading authorities on feeding dairy cows, has found that to make thirty pounds of milk testing 3.5 per cent butterfat requires 1.476 pounds of digestible protein, 6.62 pounds of digestible carbohydrates, and .567 of fat. If we add to these quantities the amounts needed for the cow's own body, we have 2.176 pounds of protein, 13.62 pounds of carbohydrates, and .667 fat as the daily needs of a thousand-pound cow giving thirty pounds of average milk a day. Cows giving richer milk require more feed, and large cows need more for their own bodies. In last week's KANSAS

FARMER on page nine we answered an inquiry from one of our grown-up dairy-men and if you will look up that article you will find a balanced ration figured out. To do this you must of course know exactly how many pounds of digestible nutrients are contained in a hundred pounds of the feeds used. Balancing a ration simply means using the kinds of feeds that will supply enough of these different nutrients and not too much of any one. If you have to feed a lot of kaffir, fodder, corn fodder, cane hay, or prairie hay, your ration will be deficient in protein unless you feed some such feed as cottonseed meal or linseed oil meal to balance it, because this kind of fodder and hay contains very little protein.

If you have any questions to ask about feeding your cows, send them in and we will try to help you figure out the best ration to feed for milk. Be sure to get the bulletin we told you about last week. Simply write a postal or letter to the United States Department of Agriculture, Washington, D. C., asking them to send you a copy of Farmers' Bulletin 743, entitled "The Feeding of Dairy Cows."

Grain for Heifer

Harold Laird, of Emporia, writes that his cow has a nice heifer calf. It is nearly all white, with black spots. The editor of KANSAS FARMER saw the cow and calf recently and took a picture of them which will probably appear in some



ELSIE DAVIES, OF EMPORIA, AND PURE-BRED HEIFER

future issue of KANSAS FARMER. Harold asks for advice on what to feed his cow. She is now getting bluegrass pasture and in addition some fodder.

We visited Harold's home a few days after he wrote us about his calf and were very much disappointed in not finding him at home. The heifer looks as though she has not been getting quite as much feed as she ought to have. She is only two years old and ought to be fed well enough so she can grow some as well as give milk. Of course the bluegrass pasture is good as long as she has plenty of it, but it would be a good plan to feed her some grain. At the present time oats is about as cheap a grain as can be purchased. Ground oats make a very fine milk cow feed, although it is sometimes difficult to get them ground. Floyd Gerardy is feeding his cow oats and bran and she is doing very well. We have suggested to Harold that he try feeding a mixture of two parts oats and one part bran by weight, or better yet, a mixture containing a linseed oil meal. For example, this might be mixed in the proportion of four pounds of oats, two of bran, and a half pound of oil meal. We have suggested that he try feeding her two or three pounds of one of the mixtures suggested at each feeding.

When you are feeding grain to your cow, always study the milk record very closely so as to see whether it is making her give enough more milk to pay for the grain. In feeding young heifers, however, part of the feed must always be counted as being used for growth. Of course this means that you will not get immediate returns for it, but the heifer will be growing and developing and will be a better milk cow next year or when she is full grown. A heifer stunted while she is making her growth will never be as valuable a cow as one fed liberally enough so she can grow out to full size. The feed used in this way is not lost, because the heifer will be so much more valuable when she is a mature cow.

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Winter Feeding of Cows

HOW to feed the milk cows most economically and keep them producing profitably is a question confronting every dairyman as the winter feeding period draws near. Feeds have never been higher in price than they are at present and this makes it necessary to study the feeding question much more closely than has been the practice in the past. In a recent bulletin from the United States Department of Agriculture much emphasis is placed on the fact that if dairy cows are to be fed for profitable production they must receive a liberal ration at all seasons. For winter feeding the rations usually used consist of hay, silage, and a mixture of grains. In properly balancing the ration the grain mixture is so prepared as to fit the roughage, giving due consideration to its bulk, cost, palatability, and physiological effect on the cow. For best results cows must be fed as individuals.

A few simple guides for feeding are summarized in this bulletin as follows:

Under most circumstances the cow should be fed all the roughage that she will eat up clean, and the grain ration should be adjusted to the milk production.

A grain mixture should be fed in the proportion of one pound to each three pints or pounds of milk produced daily by the cow, except in the case of a cow producing a flow of forty pounds or more, when the ration may be one pound to each three and one-half or four pounds of milk. An even better rule is one pound of grain each day for every pound of butterfat that the cow produces during the week.

Feed all the cow will respond to in milk production. When she begins to put on flesh, cut down the grain.

It is shown in the treatment of the subject that the problems involved in winter feeding are usually distinctly different from those of summer feeding. Pasture—or green feed—usually the basis of summer feeding, is not available. Broadly speaking, there are two factors involved in this problem: first, to satisfy the needs of the cow, and second, to suit the pocketbook. The cow must have an ample supply of feed of a palatable nature, and this feed must be supplied at a price which will permit a profit on the feeding operation.

Viewed from an economic standpoint, there are some fundamental considerations which should first receive attention. In general farm practice it is advisable, as far as is economical, to use the feeds produced on the farm. Often the freight rates and the middleman's charges, if saved, will constitute a good profit for the feeder. This is especially true of roughage. Such feeds are bulky and in most cases must be baled at a considerable cost; the freight rates also are much greater in proportion to the nutrients contained than on the grains.

When land is high in price and the markets for dairy products are good, it is often impracticable to grow all the feeds on the farm. In such cases arrangements first should be made to grow the roughage, on account of the high cost of transporting these feeds. In most cases the prime object of the farm under such conditions will be to supply the greatest possible quantity of roughage.

It is a difficult problem to provide a system of winter feeding of roughage which will make the best use of home-grown roughage and at the same time insure full production.

In addition to containing the proper nutrients in the right proportion, part of the ration should be of a succulent nature. It is extremely difficult, if not impossible, to keep cows in full production throughout the winter without some succulent feed. There are two chief sources of succulent feed for winter feeding—silage and roots. Of these, silage is in almost universal use by commercial dairymen. While almost any green crop may be used for silage, the heavy yields of corn, as compared with other crops, and its comparative ease of handling, together with its keeping qualities, make it the leading silage crop. Where the cost of land and the prices of dairy products are high, and the system of

farming of necessity is intensive, it is questionable whether the dairyman should consider any other silage crop.

The chief function of roots in cattle feeding is to supply a succulent feed. Under general farm conditions the quantity of nutrients grown per acre in root crops is small in comparison to the cost of production. These root crops, however, can be preserved during the winter equally well whether large or small quantities are fed each day, and therefore have special application when only a few cows are to be fed. Of the different root crops, mangel-wurzels furnish the greatest yield per acre. Other kinds of beets and turnips and carrots may be used. Turnips, however, should be fed after milking rather than before, as they cause a bad flavor in the products if fed immediately before milking. Carrots impart a desirable color to the milk.

The best kinds of dry roughage to be fed to the dairy cow, in connection with corn silage or roots, are leguminous hays, such as alfalfa, red, crimson, or alsike clover, and soy-bean or cowpea hay. While corn silage is an excellent feed, it is not a balanced one, as it does not contain sufficient protein and mineral matter to meet fully the requirements of the cow. The leguminous hays, in addition to being very palatable, have a tendency to correct this deficiency. They are also one of the best and cheapest sources of protein. One or more of these hays can be grown on any farm, and in addition to their value for feeding purposes they improve the soil in which they are grown.

Corn stover, coarse hay, etc., also find a good market through the dairy cow. This class of roughage is low in protein, however, and when it is used the grain ration must be richer in protein.

No positive rule can be laid down as to the quantity of dry roughage that should be fed, but about six to twelve pounds a day for each cow, in addition to silage, will be found to be satisfactory in most cases. When the dry roughage is of poor quality, such as coarse, weedy hay or a poor grade of cornstalks, a large portion can often be given to advantage, allowing the cow to pick out the best and using the rejected part for bedding. With this quantity of dry roughage the cow will take, according to her size, from twenty-five to fifty pounds of silage. This may be considered as a guide for feeding to apply when the roughage is grown on the farm. When everything has to be purchased, it is often more economical to limit the quantity of roughage fed and increase the grain ration.

While a cow's stomach is large and her whole digestive system is especially designed to utilize coarse feeds, there is a limit to the bulk that she can take. This limit is below the quantity of roughage that it would require to furnish the nutrients she must have for maximum production; that is, a ration may contain the proper proportions of protein and carbohydrates and still be so bulky that she cannot handle it. She therefore should have some grain even though the roughage in itself is a balanced ration.

Dairying on Small Farm

On the small farm dairy cows often can be made to bring in more profit than beef cows. J. E. Payne, of Oklahoma, tells of meeting a farmer near Lawton who had until last August kept only beef cattle on his 160-acre farm. He fed all the feed he raised last year to his stock and got no returns, except the growth of the young stock. This was not near enough to pay market price for the feed used. In August of this year this farmer sold his beef cattle and bought eight cows of dairy breeding. These have been bringing him an income of from three to four dollars a day, besides the growth of the young stock. So far they have been fed only a little rough feed while running in a pasture which has a reliable water supply.

This sort of experience suggests the idea that on the small farm milking a few cows will bring good returns from the feed grown.



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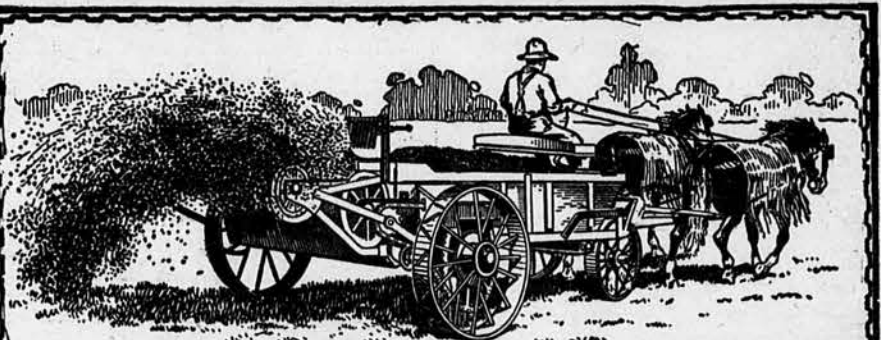
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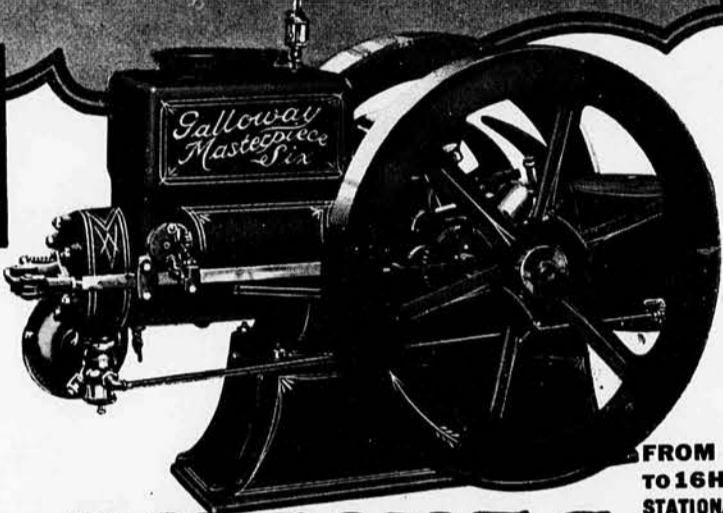
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Bowl runs in true and perfect alignment—which insures perfect skimming—all the time, because it is supported by one casting, the gear case, into which the gear shaft and both spindle bearings are built. Every external part is rounded so there are no sharp corners to gather dirt and grease. Bowl discs separate from each other for washing. All working parts run in constant spray of oil. No sharp edges or corners in the bowl to break up butter fat globules. Every drop of milk gets the full skimming force of the bowl—the milk so distributed that each disc gets its full share to skim. No flooding at top of bowl and no cross currents to disturb the bottom. Skimming capacities of my four 1918 models exactly what I say they are, and more. We believe in under-rating. You get the capacity you want and pay for. Try it. If you like it, buy it. If you don't, send it back. Test it for 90 days—180 milkings—before you decide. It is positively the best separator made, and is sold at the lowest figure a separator can be built and sold for. That's why I can afford to make this unlimited trial test. If Galloway separators were not made as I say they are and did not do the work I claim for them, I could not make such a liberal guarantee. They are described in full in the catalog. Mention separator when asking for my 1918 book.

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FOR the average size farm the Galloway Efficiency tractor is a year round money maker. Unlike other tractors the Galloway tractor is designed and built—not just thrown together. It has plenty of weight in front so that it doesn't fly up or swing around under a heavy load. Develops 20 full horse power at the belt—12 full horse power at the draw bar. Pulls three 14 inch bottoms from 6 to 8 1/2 in. deep in average soil. Has large, powerful, heavy duty type four cylinder tractor motor, 4 in. bore and 5 1/2 in. stroke. Operates equally well on gasoline or kerosene. Eats only when working. When you are not plowing, discing, harrowing, dragging or pulling binders with it, you can use it for sawing, silo filling, a grain separator, and other jobs that require steady, reliable power.

Unit Type Motor and Transmission—NO LOST POWER

Patented transmission eliminates jerkiness in starting—runs in oil bath. 21 sets of anti-friction, power-saving roller and ball bearings—enclosed, dust-proof and long-wearing—the chief reason for the Galloway tractor's great efficiency. These bearings enable the Galloway tractor to deliver 85% of the motor's power for actual work at the draw bar. Few tractors have more than 60%. Double chain drive—no gears to break and no teeth to strip. Pierce governor prevents engine racing. Sectional anti-frost, puncture-proof radiator. Simple control—only two levers. Flows straighter than horses. Drives like an automobile. Rear wheels 58 in. high, 14 in. wide, affording perfect traction. Weight 5000 lbs.

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Note These Big Important Features for 1918

Adjustable bearings. New model 1918 economy carburetor that cuts down fuel bills; simple, positive air valve adjustment makes easy starting any weather, mixes perfect fuel charges, makes gasoline ideal fuel—worth \$15 more on any engine, but costs you nothing extra. Exhaust and intake valves in the head like highest class automobile engines. Double ball governor—never sticks—regulates speed perfectly. Arch of strength, water-cooled cylinder head—positively cannot blow off—absolutely gas tight with end of cylinder. One-piece cylinder and base on all Galloway engines from 4 to 16 h. p.—absolutely insures perfect alignment of cylinder, piston, connecting rod, crank shaft and flywheel and absolute uniformity of wear. Make and break igniter—never misses fire. Webster magneto supplies blue-hot spark. Large counter-balanced flywheels. Water pot and cylinder frost-proof. Improved lubrication prevents engine ever over-heating. Galloway engines honestly rated, scientifically, accurately, handsomely built. For full description mention engines in writing.

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You can properly spread more manure in one day with this light weight, low down, light draft, two horse spreader with less effort on your own and the horses' part than with any other spreader built.

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1918 Features Make Easier and Better Spreading

Wide-spreading V-rake, worth \$15 extra on any spreader, costs you nothing extra on the Galloway. Invaluable, irreplaceable patented roller feed—an exclusive Galloway feature—one of the secrets of its light draft—alone worth \$25 on any spreader—costs you nothing extra. Patented automatic stop, uniform clean-out push-board, worth \$10 extra on any spreader, costs nothing extra. All wheels under the load. Short turn. All steel beater—cannot twist or warp. Get my 1918 catalog. Mention manure spreaders. It tells the history of manure spreaders—how to increase your corn crop—how to increase small grain crops—how to handle manure with the least labor—how a Galloway spreader will pay for itself in one year by increased crop profits. Say that you are interested in a manure spreader and I will send free my famous book "A Streak of Gold." Write now—today—don't put it off.



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Saving a million dollars for the American Farmer is the result of my Factory-to-Farm Method of doing business. That's how I "Divide the Melon." That's how I am saving a million dollars for farmers of America and keeping these savings at home **in farmers' pockets**. I make the better grade implements in my great chain of factories at Waterloo, Iowa, and sell them right off the factory floor at the lowest manufacturer's price, which includes only the cost of raw materials, expert designing, skilled workmanship and one small manufacturer's profit, based on a tremendous, big production. All waste in effort, all waste in time and all waste in money are prevented. **I cut out unnecessary profits between maker and consumer.** I challenge anyone to prove my story is not true. I defy anyone to meet my prices. I invite comparison on the same quality of goods. Abandon prejudice against buying by mail. Throw off old habits. Buy Cream Separators, Manure Spreaders, Gasoline Engines and Farm Tractors the new way—the direct way. **Read my book.** Learn my story—resolve to get your share of these big savings.

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Nineteen years ago I started this business because I knew the farmer was paying two and three prices for his implements. There were too many slices of the Profit Melon divided before the farmer got his goods. Too many had a finger in the Profit Pie. So I started this business—that of manufacturing and selling direct from the factory—to correct the evil. My whole story—how I happened to stumble on to the three and four profit system, how I at one time was a part of that system, how I determined to cut loose, make my own goods and sell them direct, giving farmers the benefit of these great savings—is told completely in my **New 1918 Book**. Read it.

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Why Not Pocket These Big Savings? Add to Your 1918 Profits!



Why haven't you bought from me? Your neighbor has and is satisfied and is buying again. Why lose your share of these savings through habit—the habit of failing to take advantage of money-saving opportunities? In prosperous times as in hard times it is equally important to save. Saving money is earning money. Economy is wealth. The way to these savings is the **Galloway**. Send me **one** order. Start on the way to great cash savings. Do as your neighbors do. **One order** will convince you that Galloway goods are right, that Galloway prices are right—that they have directly and indirectly saved millions of dollars for farmers of America, proving that Galloway **Divides the Melon** with his customers on Spreaders, Separators, Engines, Tractors, and other farm implements.

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When you read my story you will know the Galloway institution and policies. My book tells the story of the Galloway business since I started nineteen years ago. This book is not merely a catalog, but a helpful farm guide that shows you new ways to get the most out of your farm and make it yield the utmost profits. Now, I want you to have this book. Tell me what implement you are interested in and expect soon to buy. Throw off your old habits or prejudices and hold off buying anything until you get the book. My catalog is my only salesman. It explains what I mean by "Dividing the Melon" and how you get your share of this great million dollar saving. Come to Waterloo some time and see me. You can stop at our Agricultural Club as my guest. Thousands of my farmer friends visit me every year. To save you on the freight I have established a warehouse near you and can ship from Council Bluffs, Chicago, Kansas City, and St. Paul, besides from my factories at Waterloo. Send today.

Use the coupon, or drop a postal or send a letter, but write.

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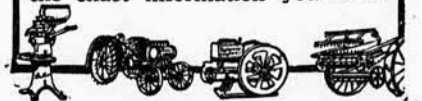
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This is Important

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THIS IS A BIRD'S-EYE VIEW OF THE GREAT CHAIN OF GALLOWAY FACTORIES AT WATERLOO, IOWA, U. S. A.



Keep The Hens That Lay

THE good hen is now paying better than ever, while the poor hen is losing more than ever. These are facts proved by actual production of eggs, marketed from day to day, as compared with the consumption of present high-priced food, by the hens in the American Egg-Laying Contest.

The main trouble lies in the fact that all hens are not good hens. In fact, if we use as a standard of a good hen, a production of 150 eggs per year, we find a large portion of all hens in America fail to qualify. It seems to be a recognized fact, based on the last census figures compiled by our Government, that the average farm hen lays about seventy-five eggs. We believe this is perhaps too low a figure for the present—the 1917 average hen. We believe that the increase in breeding from standard-bred stock in the past five to ten years has already made an improvement in the egg production of the average hen.

In these days when every ounce of food should be conserved by feeding it only where it will produce its like, or more, in food value, and also in these days of high priced grains, we should take steps which insure the keeping of all hens with good laying ability while the non-producers should be culled out and sold for meat.

The present American Egg-Laying Contests and preceding contents have proven the following rules for culling to be profitable, especially under present conditions:

1. Keep the birds with rather large plump combs and wattles.
 2. Hens with pale vents, pale beaks and pale legs have been good layers.
 3. Keep the late molters.
 4. Keep the pullets which mature quickly and start laying first. Those which start laying when less than 200 days old, or nearest that age, are the best layers if they have had the right care.
 5. Market those which have been slow to feather or seem to lack vitality.
- The skin of the best layers should be rather loose and flabby on the abdomen between the vent and breast bone.
7. The pelvic bones must be thin, straight, flexible and wide apart.
 8. Market the hens which are bagging behind and which have a heavy, fat, thick abdomen, which hangs below the point of the breast bone.
 9. Keep the hustlers and heavy eaters that go to bed late and with full crops.
 10. Birds that have long toe nails that show no signs of being workers are usually unprofitable.
 11. If a bird meets the above requirements it should have a broad back, long body, stoutly built and be in good flesh.
 12. If a bird is not molting and still has a small, dried-up comb, covered with a sort of whitish substance, or if a bird has thick or crooked pelvic bones which will be found on each side of the vent and above the point of the breast bone, these are always money losers.—T. E. QUISENBERRY.

Cost of Feeding a Hen

The question before all poultry raisers is how to feed their chickens more economically and yet get satisfactory results. In making changes in rations, one must remember that any quick or marked changes will have a bad effect on the hen. Changes should be made gradually. It takes a month for a hen to respond to a new method of feeding and if this new method can be adopted gradually no ill effects are likely to follow. Frequently a new ration is criticized, when the fault is not with the ration but with the feeder in making the sudden change. The Missouri College of Agriculture recommends corn two parts and wheat one part for scratch food. This constitutes two-thirds of the ration. A mash consisting of equal parts by weight of bran, shorts, corn meal and beef scrap is recommended for the rest of the ration. At present prices for corn and wheat, the scratch food mentioned will cost \$4 a hundred. At present prices for mash constituents—bran \$1.60, shorts \$2.60, corn meal \$4, and beef scrap \$4—the mash would cost \$3 a hundred.

If a hen requires seventy pounds of feed per year, fifty pounds scratch food

and twenty pounds mash, the cost for grain and mash would be \$2 and 60 cents respectively. Thus the total food cost per hen per year would be \$2.60.

By introducing oats into the ration, the cost can be reduced. With oats at 2 cents a pound, a scratch food of one-half oats can be made which will cost 3 cents a pound. This will reduce the cost of the scratch food 50 cents a year for each hen. The mash can also be reduced in cost by substituting middlings for the corn meal. It is doubtful whether wheat should be used for poultry feeding. The by-products, such as bran and shorts, are still available at comparatively reasonable prices. By careful figuring, the cost of feed per hen need not be over \$2 a year. If a hen lays ten dozen eggs, the feed cost of a dozen eggs need not be more than 20 cents.

Reduce Egg Losses

A big percentage of the loss that occurs in marketing eggs might be saved through the organization of egg circles. This statement is made in a recent bulletin from the U. S. Department of Agriculture. The annual value of the country's egg crop is equal to the average value of its annual wheat crop—approximately \$600,000,000. Nearly 8 per cent of the eggs marketed are lost through spoilage or breakage, according to this bulletin. The industry undoubtedly would be put on a more businesslike basis if these facts were more generally appreciated. Improper handling between the farm and the market, the bulletin declares, is responsible for a large part of the loss. This loss, it is suggested, could be greatly decreased if farmers would co-operate more generally and market their eggs through community egg circles. These organizations take care of the frequent collection and the proper packing and marketing of the eggs of members, attend to accounting and making collections, establish standards, encourage the raising of better breeds of poultry, the use of improved methods, and the production of infertile eggs.

The bulletin tells how to go about the formation of a community egg circle and prints a suggested constitution and by-laws for such an organization. Copies of the bulletin, which is entitled "The Community Egg Circle," may be had free, as long as the supply lasts, by application to the United States Department of Agriculture, Washington, D. C.

Laying Hens Need Grit

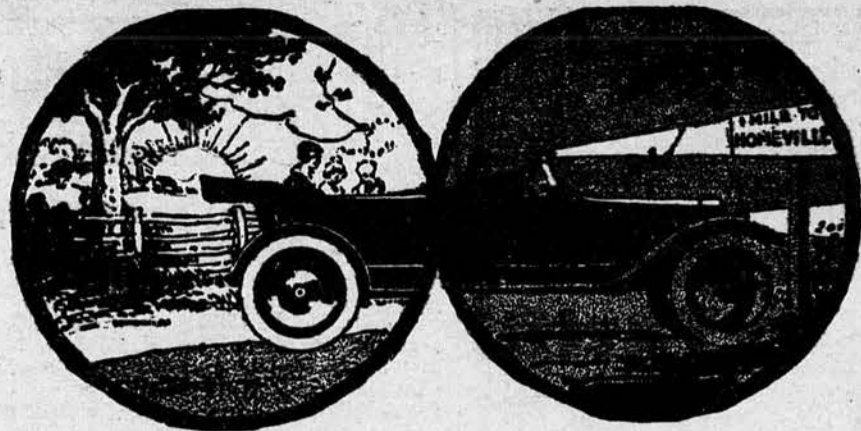
Ground feeds are necessary for most efficient digestion in poultry. Hopper feeding saves labor and furnishes the necessary supplementary feed at all times. There is no danger of poultry over-eating on ground feeds fed dry in a hopper. The hopper is a labor saver in the poultry yard.

Limestone grit or oyster shell is also necessary for laying hens. A laying hen requires large quantities of shell-making material. Nearly all of this must come from the grit and shell she eats. It is poor economy not to keep a liberal supply accessible. One extra egg a year will pay the bill. It returns the money invested a hundred fold.

Chickens raised on range can be produced much more economically than those kept closely confined around the farm buildings. Not only is less feed required, but the danger from disease is reduced. The edge of the corn field makes an ideal poultry range. Chickens grow best on plowed ground and the corn furnishes shade, which is essential during the summer. Under such conditions a pound of chicken can be produced from three to four pounds of grain.

This is a critical time for handling the pullets that are to supply the winter eggs. Special care in the preparation of winter quarters will be more than repaid in winter eggs. Sudden changes are to be avoided. Birds housed too closely after being used to free range are likely to molt and stop laying. Keep the house open and try to minimize changes in feeding and housing.

Tool sheds haven't risen in price nearly so fast as farm machinery.



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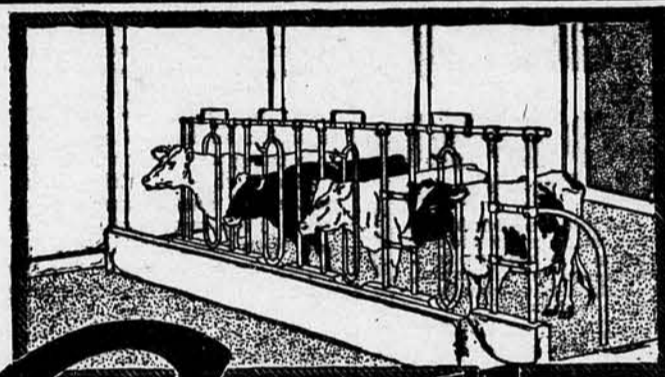
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Take No Chances With Cholera

VACCINATION is cheap insurance against hog cholera in view of the present high prices of pork, says Dr. C. W. Hobbs, field veterinarian and director of the serum laboratory of the Kansas Agricultural College. In discussing vaccination as a safeguard against hog cholera, Doctor Hobbs advises that the exact health condition of the hogs or pigs be ascertained before treatment. The herd should be penned in a clean and disinfected inclosure the day before they are treated. This allows the herd to become reconciled to the new surroundings. One may then take temperatures and come to some definite conclusions as to the condition and health of the pigs.

ASCERTAIN HOG'S CONDITION
Swine that are penned and prepared for immediate treatment will show abnormal temperature and thus render it impossible for the veterinarian to give an accurate statement as to their exact condition.

The operator should be required to take the temperature of each individual before administering the serum or virus, and if any of the animals show an abnormal temperature, they should be given only the serum and be isolated for investigation. All those showing normal temperatures may be given the simultaneous treatment. Those that are isolated may be given the serum and virus after they regain normal condition.

WHEN TO GIVE TREATMENT
The best age for treating pigs is from ten to fifteen days after weaning. Give one cubic centimeter of serum per pound weight of the pig up to thirty-five pounds and after that one-half cubic centimeter per pound weight. Half a cubic centimeter of virus per pig is sufficient. Should there be any infection on the farm, pigs may without danger of infection be treated about ten days before being weaned, as nursing pigs rarely contract cholera. The milk from the mother, if she is immune, protects the pigs. Pigs must not receive the serum and virus treatment before being weaned unless their mothers are immune.

Many breeders are following the plan of vaccinating pigs before they are weaned, as then there is no danger of losing them from the treatment, and the expense is lessened considerably.

TO ADMINISTER SERUM
A convenient method of administering the serum to pigs of from 35 to 100 pounds is to take a V-shaped trough, eight to ten feet long, and place it outside the pen where the pigs are kept. Nail a strip across the trough three feet from the top. Place the pig on his back in the trough with his face under the strip. An assistant should hold his hind legs.

The side of injection should be thoroughly cleaned with a cresol solution and then dried. The serum should then be injected in the arm pit or axillary space, dividing the dosage in each side. The virus should be injected in the inside of the thigh.

KEEP FEED FROM HOGS
Feed should be withheld a day or two previous to vaccination and from six to eight days after. Plenty of exercise and green pasture are all the pigs need after vaccination.

It is advisable at all times to employ a qualified veterinarian to vaccinate swine. He will be able to give the exact condition and will understand the dosage. If one is not available, however, it is easy for a person to learn to administer the virus and serum accurately. Anyone can administer serum but a permit must be secured from the live stock sanitary commissioner before one is allowed to use virus.

New Corn to Hogs

We have been asked if the feeding of new corn is not responsible for some of the hog cholera. It has long been thought that there was some relation between new corn and cholera. This was probably due to the fact that there always seem to be more cases of cholera in the fall after hogs are put on feed. Real hog cholera, however, cannot be caused by feeding new corn. It is true that in the fall when new corn is being fed, we hear of a great deal of sickness

among hogs, especially digestive troubles. A good portion of this is simply the result of changing the ration too abruptly, thus causing derangements of the digestive tract. Sudden changes of diet, especially a change from old corn to new, are apt to cause trouble of this kind, and any derangement of the digestive system will make the hogs more susceptible to other diseases.

The best plan for getting hogs accustomed to new corn is to begin feeding it very gradually some time before it is ready to husk. Our most successful hog men usually begin cutting a little green corn for the hogs soon after it reaches the roasting ear stage, allowing about one stalk a day to each hog. After feeding a stalk a day for a week or two, the allowance can be increased. Later when the stalk and leaves have got so dry that the hogs will not eat any portion of them, the corn can be snapped, and only the ears fed. The ration of old corn should be reduced gradually as more new corn is fed. Beginning in this way the hogs gradually become accustomed to new corn and there will not be the slightest danger of their having digestive troubles of any kind. This is not a means of avoiding hog cholera, however. It is simply a matter of using some reason and judgment in getting the hogs accustomed to new corn so they will not get out of condition and perhaps have some of the symptoms of hogs coming down with cholera.

Student Contest at Swine Show

The first students' judging contest confined exclusively to hogs was held at the third National Swine Show, which was held in Omaha the first week in October. At the banquet given for the college men who took part, the magnitude and importance of the hog industry was the keynote of the talks made. The following men spoke at this meeting: W. M. McFadden, president of the National Swine Show; H. W. Mumford, Illinois University; E. C. Burnett, Nebraska University; Frank Silver, an Iowa hog breeder; C. H. Walker, of the Poland China Journal; L. E. Frost, of the Berkshire World, and L. E. Ashbrook, of the Federal Bureau of Animal Industry.

Hog products are of vital importance in provisioning an army, and Germany and other European countries are suffering more for fat than for any other animal product. These facts lead to increased interest in the hog industry. Hog men of this country will be called on to make good the shortage which exists. The team from the Nebraska Agricultural College won first place in the judging contest. Missouri was second, Iowa third, Kansas fourth, and South Dakota fifth. C. W. McCampbell, associate professor of animal husbandry at the Kansas Agricultural College, accompanied the men of the Kansas team. The cash prizes won by the teams competing and by individual students amounted to \$565.

Spread Manure Thin

In the old days of hand spreading of barnyard manure we did not begin to get full value from the manure hauled out on the fields. Some farmers even came to the conclusion that hauling manure did not pay, because they had seen crops go to the bad following a very heavy application of barnyard manure.

It is almost impossible to spread manure thin enough by hand, but now that we have the spreaders we can distribute it evenly over much larger acreages, and while the effect may not last as long, the results are far more satisfactory. There is no over-stimulation of the crop and there is never enough coarse material plowed under at any one time to dry out the soil, as so often happens when a thick coat of manure is plowed under. On a live stock farm there is no piece of equipment used that pays a better return on the investment than the manure spreader.

Made Money with Sheep

A year ago in August, Thomas Price, of Reading, bought 230 breeding ewes which cost him, delivered at Reading, \$1,700. He wintered them on clover hay,



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GOPHER TRAPS—Something the gophers can't cover up. Descriptive circular sent free. **A. F. RENKEN,** Box 602, Croto, Nebraska.

and during the winter lost fifteen of the ewes and last spring lost a number of the lambs. The ewes sheared 1,950 pounds of wool that brought \$1,796, and when he shipped them in August of this year the ewes brought \$2,492, while the 129 head of lambs brought \$1,236.60. These sheep did not have any grain; they were summered on tame pasture and a weed patch. After deducting the cost of the sheep, he had \$2,824.60 for his trouble.

V. D. Milner, of Hartford, bought 127 head of fall-sheared Mexican ewes last spring at \$9 per head. Soon after they were established on the farm, lambs began to come. One ewe turned out to be a wether, and the remaining 126 ewes produced a 100 per cent lamb crop. The ewes were given alfalfa hay and silage and pastured on weeds and prairie grass. For a short time before shipping the lambs were fed oats, and when marketed brought \$8.80 per head. The ewes sheared three pounds of wool per head, which at present prices will bring \$2.10, and when put on the market the ewes brought 12½ cents a pound.

V. D. Milner, W. W. Pressey and C. K. Turner, of Hartford, and C. E. Haas, of Allen, have bought five single-deck carloads of breeding ewes the past week. They have bought registered Shropshire rams for use in these flocks. People planning to buy sheep should get them soon, as the early lambs are the most profitable.—H. L. POPENOE, in News Letter to Farm Bureau Members.

Self-Feeder Wins Again

In a hog-feeding experiment just concluded at the Nebraska Experiment Station, the self-feeder again found its way to the top of the list as a profit-maker. Corn and tankage in self-feeders, supplemented by alfalfa pasture, made the largest profit per head, \$6.81. Hominy feed, tankage, and alfalfa pasture made the lowest cost of gains, \$13.15 a hundred. Hogs that were fed semi-solid buttermilk with alfalfa pasture made the greatest daily gain, 2.14 pounds. These figures were calculated with feeds at current prices: Corn, \$2 a bushel; semi-solid buttermilk, 3½ cents a pound; tankage, \$80 a ton; hominy, \$70 a ton; and pasture, ½ cent a head daily.

Concrete Feeding Floors

Concrete feeding floors are money-makers. With corn at present prices we cannot afford to let hogs waste it by feeding in the mud. If a large number of hogs are being fed, a concrete feeding floor will pay for itself in a single season.

Anyone who will follow a few simple directions carefully can build a concrete feeding floor. They are nothing more

than several strips of concrete sidewalk laid side by side. They may be rectangular or any other shape. Most feeders prefer a square floor.

The following table shows the size of floor required for different numbers of hogs and the materials necessary:

No. of Hogs	Sq. Ft. of Floor Required	Sacks of Cement	Cubic Yds. of Sand	Cubic Yds. of Pebbles
10	150	17	1.25	1.75
20	300	33	2.5	3.75
40	600	65	5	7.25
60	900	98	7.25	11
80	1200	130	9.75	14.5
100	1500	163	12.1	18

Each ten lineal feet of curb and apron requires 2½ sacks of cement, 4½ cubic feet of sand and 6½ cubic feet of pebbles. All of the above based on a 1:2:3 mixture, floor five inches thick.

A feeding floor should be located so it will be slightly higher than the immediate surroundings; drainage from beneath the floor will then be good. It should be near the corn crib or granary and have a south exposure so animals will have protection in cold weather. Where the ground is firm and well drained, concrete may be laid directly upon the soil after all grass roots and other perishable matter have been removed and the area brought to proper level and firmly compacted.

Concrete feeding floors should be made five inches thick. What is known as one-course construction, which means the same mixture of concrete throughout, should be used. The best mixture is a 1:2:3, which means one sack of Portland cement to two cubic feet of clean, well graded sand, to three cubic feet of clean, well graded pebbles or broken stone. Two-inch lumber should be set up for forms and be firmly staked to line and grade. The floor should be sloped in at least one direction so it will drain quickly after rains. Sunshine and rain will then keep the surface clean—sanitary. A slope of a fourth of an inch to the foot will be enough. Not all of the area which is to be concreted need be staked out with forms at once. Concreting may be done in strips, just as concrete walks are made, laying alternate slabs first and intermediate slabs last. Slabs should be five feet square and joints between them extend clear through to the foundation or subgrade. Finishing should be done with a wood float instead of with a steel trowel so that the even gritty surface thus obtained will provide a foothold for the animals.

It is a good plan to build a curb or apron on three sides of the floor so that hogs cannot push grain off when feeding. This curb or apron should also extend twelve inches below ground level to prevent hogs from rooting underneath the floor.

After concreting has been finished the work must be protected by a covering of moist earth or similar material kept wet by sprinkling for about a week, then the covering can be removed and the floor put into use. Wagons should not be driven over it, however, until it is at least three or four weeks old.

Cement advertisers or cement dealers will gladly supply pamphlets giving directions and plans for concrete work on the farm.

Shredded Fodder

While visiting on some of the farms of Lyon County recently, we were asked if it would not pay this year to get a feed cutter and cut up the fodder for stock. When rough feed is very expensive it is sometimes the practice to chaff or shred hay or fodder in order that animals will not waste so much. Cutting or shredding rough feed, such as fodder, straw, or hay, does not make it more digestible, but does induce stock to eat more of it. The shredder puts the fodder in better shape, however, than a cutter such as is used for cutting the silage crop. The stalks of dry corn or kafir fodder are very hard and when cut into short pieces there will be a good many sharp edges which will hurt the mouths of the stock. In the silo this material is kept soft by the juices of the plant.

Well cured shredded fodder is worth about three-fourths as much as prairie or timothy hay, and it is much more convenient to feed than whole fodder. It can be stacked or blown into a barn loft. The refuse from shredded fodder makes good bedding also, and the manure can be handled without trouble. It is almost impossible to handle the manure in yards where whole fodder is fed until the rejected stalks have had time to thoroughly decompose.



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Better not wait till your hogs or other animals begin to cough, have a lean, lank look, roughened hair, panting sides, get feverish and lose appetite. It isn't safe—you're taking desperate chances with your live stock profits. Give them a chance to keep well with

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MENTION KANSAS FARMER WHEN YOU WRITE.

FARM AND HERD.

G. E. Cox & Son, Elk City, Kansas, have announced a closing sale of their entire herd of sixty-five head of Angus cattle at the farm on November 22. Mr. Cox is leaving the farm and will offer this valuable herd of registered cattle without reserve. A number of the cows have calves at foot and are rebred to the great herd bull, Rosebud Crown, by Blackbird Crown by Prince Ito 2d. The herd cows represent all the popular families of the Angus breed and are a useful lot of breeding cattle.

J. R. Young, of Richards, Missouri, has catalogued fifty-seven head of very high-class Poland Chinas for his November 9 sale. The offering consists of fifteen fall and winter gilts by The Mint, by Golden Gate King; thirty choice spring gilts sired by Caldwell's Big Bob, the grand champion Poland China bear at the 1917 swine show and weighs 1,150 pounds; Fessy's Timm, King Joe and Big Bob Wonder. This promises to be one of the real high class offerings to be sold this year.

U. S. Byrne, of Saxton, Missouri, has announced December 5 as the date of his Poland China sale. Mr. Byrne will sell eighty head, including two great herd boars, B. Wonder and Long Jumbo 2d, two of the leading boars of the breed. Among the sow offerings are some of the very best herd sows of popular blood lines.

For fifteen years the Star Breeding Farm, near Elk City, Montgomery County, Kansas, has been the home of a choice herd of Hereford cattle. Samuel Drybread started fifteen years ago with only a small herd and 150 acres of farm land. Today Mr. Drybread owns 400 acres of land, well improved, and has 175 head of registered Herefords on the farm. While he has raised registered Duroc hogs and kept a few registered Percheron horses, the real money maker has been his Hereford herd. Mr. Drybread has announced November 22 for his sale and will catalog and offer to the public seventy-five head of cows, heifers and young bulls from his famous herd of Herefords on that date.

The Hampshire Association sale held at Valley Falls, Kansas, October 12, was one of the satisfactory sales of this breed. Forty head of March and April pigs sold for an average of \$44.75. The top price was paid for No. 40 in the catalog, which went to F. W. Timmerman, West Liberty, Iowa. The Halcyon Hampshire Pig Club has made great progress under the management of George Elin, secretary of the Kansas Hampshire Association.

Arthur Patterson, of Crystal Springs Farm, Ellsworth, Kansas, reports his Duroc herd doing well. Mr. Patterson has built up one of the outstanding herds of Durocs in Kansas. He has the best blood lines of the breed and few herds have more prize winning breeding. This year he raised a choice lot of spring pigs, a lot of them sired by the grand champion at Iowa and Nebraska, 1917. He has a very choice lot of herd sows and recently sold one of them with her fall litter for \$400.

Mahlon Groenmiller, of Pomona, Kansas, reports his herd of pure-bred Red Polled cattle making a good record this year. Mr. Groenmiller owns one of the good herds of this popular dual-purpose breed and a feature of his herd at this time is the outstanding lot of young stock.

Bert E. Hodson, Ashland, Kansas, is the owner of one of the largest Poland China hogs in Kansas, McGath's Big Orphan. This hog was first and grand champion Poland China boar at both the Topeka Free Fair and the Kansas State Fair at Hutchinson. Mr. Hodson reports eleven litters by this great hog now in his herd that are the best prospects he ever had on the farm. He has a number of very high class herd sows, including Bessie Wonder, the highest priced sow sold in Kansas last year; Tecumseh Girl, the dam of Big Hadley Jr., the boar that was grand champion of Oklahoma this year; Goldie Bob by Caldwell's Big Bob, the grand champion of the National Swine Show at Omaha.

J. H. Keith, of Coffeyville, Kansas, owner of a very fine herd of Hereford cattle, reports his herd doing well. Mr. Keith has succeeded in building up a herd of pure-bred Herefords, representing the best blood lines of the breed and made up of choice individuals. At this time a feature of the herd is a very fine lot of cows and heifers and some outstanding young bulls.

W. L. Hunter & Son, the well known Jersey cattle breeders of Lincoln, Nebraska, have announced a sale of Jersey cattle to be held November 2. The offering will include seventy head of very high-class richly-bred Jerseys. Among the sixty-two cows and heifers catalogued there will be many Register of Merit cows and their descendants. Daughters of Golden Fern's Noble, Cowell's Golden Lad, Financial Countess Lad, Hebron's King, Owl of Hebron, Glendora's Champion and other great sires will be in this sale. The bulls will include a great son of Noble's Jolly Sultan, the undefeated champion and grand champion at Nebraska state fairs of 1916 and 1917. E. C. Settles, of Palmyra, Missouri, will manage the sale.

Homer Drake, of Sterling, Kansas, who has succeeded in building up a choice herd of pure-bred Durocs, reports his herd doing well. Mr. Drake has the best blood lines of the breed in his herd. He also has the big easy-feeding early-maturing type. A feature of his herd is the choice lot of young Durocs by such boars as Reuben's Wonder and Col's Wonder by Crimson Wonder Again Jr.

Robinson & Shultz, of the Albechar Holstein Farm at Independence, Kansas, have announced December 3 and 4 for a two days' sale of 125 head of registered Holstein cows and heifers. This offering will include more high class registered Holstein cows than will be sold in any sale in Kansas this year and they will all be bred to one of the best bulls of the breed. This firm has been breeding Holstein cattle for a number of years and has built up one of the best dairy plants in the Southwest.

A. A. Meyer, of McLouth, Kansas, owner of one of the outstanding herds of pure-bred Poland Chinas in Kansas, reports his herd doing well. This year Mr. Meyer raised one of the best lots of pigs in the history of his herd. This is the last lot of pigs he will have by his great breeding boar, Meyer's Orange, and the lot includes some outstanding herd material.

Max J. Kennedy, of Fredonia, Kansas, has announced a dispersion sale of his entire herd of registered Holsteins, to be held on

October 30. The offering will include thirty head of registered cows and heifers, two bull calves, and one of the best two-year-old herd bulls in the state. The cows and heifers are all bred to Sir Johanna Walker Pietertje, whose first five dams have an average seven-day butter record of 27 pounds. This bull will also be sold. Daughters and granddaughters of Colantha Johanna Lad, King of the Pontiacs, and other noted sires, will go in this sale.

Mott & Seaborn, of Herington, Kansas, owners of one of the outstanding herds of Duroc hogs in Kansas, report their herd doing well. A feature of their herd at this time is the fine lot of young boars and gilts all of popular breeding and including outstanding fall yearling boars, spring boars and fall and spring gilts.

Dr. F. B. Cornell, of Nickerson, Kansas, has announced a big sale of live stock to be held October 24. His offering will include a lot of draft and standard-bred horses, some jacks and jennets, ten choice Jersey cows, some Jersey bulls, a lot of high grade Shorthorn heifers, a fine offering of big-type Poland China hogs, twenty head of Shropshire ewes, and twenty head of Hampshire ewes.

C. F. Pfuetze, of Manhattan, Kansas, reports his Jerseys making a fine record. Mr. Pfuetze has one of the richly-bred Jersey herds in Kansas. They are bred for producers and are the kind that are profitable. A feature of his herd is the choice lot of young cows and heifers of record breeding.

WHEN WRITING TO ADVERTISERS MENTION KANSAS FARMER

More or less silage will decay at the top unless the silo is sealed over or unless feeding is begun soon after filling. To prevent much of this loss, seal the silo with three or four loads of green corn from which the ears have been removed. Some use other sorts of heavy green crops, while still others use sawdust satisfactorily. In every case it is advisable to soak this covering thoroughly with water and tramp it regularly for several days after it has been placed in the silo.

When Writing to Advertisers, Please Mention Kansas Farmer

GOING TO COLLEGE?

Our young readers who contemplate attending business college this fall or winter will find it to their advantage to write KANSAS FARMER for information that will be valuable to them.

It will cost you nothing but a postal card or a two-cent stamp to find out what our proposition is. Address

DESK D, KANSAS FARMER
Topeka, Kansas

Real Estate For Sale

10,000 ACRES of good grazing land, well watered, for \$3 to \$5. All crops good. No drought, no hot winds. Grass for cattle and corn for hogs. Best country in the world to live and make money.

W. W. TRACEY - ANDERSON, MISSOURI

Best Bargain in S. E. Kansas

300 Acres, 160 acres fine wheat, corn and alfalfa land. Rich creek bottom soil. Balance pasture. \$5,000 worth improvements. Splendid oil prospects. A snap. For quick sale, \$45 per a. M. T. Spang, Fredonia, Kan.

EIGHTY ACRES

Seven miles McAlester. Fifty acres cult. 25 a. dry bottom, 25 a. slope. No rock. No overflow. Balance pasture. \$22 per acre. SOUTHERN REALTY CO., McAlester, Okla.

FOR CASH RENT

March 1, 1918, 240-acre farm in Wabaunsee County, Kansas; twelve-room house, all needed farm buildings. Adjoining 182 acres same party may rent.

Route 26 MRS. E. C. OBRECHT
Topeka, Kansas

THE STRAY LIST.

TAKEN UP—ON THE 18TH DAY OF August, 1917, by W. H. Pottorff, in Royal Township, Ford County, Kansas, one yearling bay mare valued at \$25. H. N. Kinkead, County Clerk.

12 Grafted Apple Trees



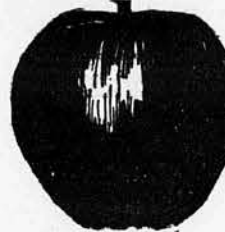
Given FREE!



3 GENUINE DELICIOUS
This apple has, ever since its introduction, secured and maintained the highest price ever paid for any apple. A beautiful deep red, shading to golden yellow at the blossom end. Of wonderful flavor and aroma.



3 STAYMAN WINESAP
Deep, rich red in color, is a marked improvement over the old Winesap, both in appearance and quality. It is a universal favorite in all markets.



3 JONATHAN
The Jonathan is liked by everyone. Its deep wine color apparently reflects its rich wine flavor. Invariably in good demand at high prices.



3 WEALTHY
One of the first really good apples of the season, and a general favorite, especially for eating out of hand.

This Home Orchard Collection

CONSISTING OF

12 Grafted Apple Trees

Given with Kansas Farmer This collection of Twelve Grafted Apple Trees which we want to send you, consists of three trees each, of four varieties of proven merit. They are hardy, will thrive anywhere, and provide a nice succession of quality fruit.

INCLUDING THREE GENUINE DELICIOUS, THREE STAYMAN WINESAP, THREE JONATHAN AND THREE WEALTHY

These Trees are genuine grafted stock, guaranteed true to name, sound and healthy. We have arranged with one of the largest nurseries in the country for a supply of these grafted trees, and we want to send you a set of twelve. Whether your place is large or small, these twelve trees will find a place, and add to its beauty and value.

Early Maturing Varieties such as these four grand varieties, mean that you will have fruit from this orchard in just a few years. In three years you should have some apples from these trees; in five years you should have an abundance. No better varieties could be found for a Model Home Apple Orchard than the four in this collection.

Complete Instructions are sent with each set of twelve trees, practical, simple directions that explain just how to plant and take care of these twelve trees. By following these instructions you will have, in a few years, an orchard that will prove a constant source of pleasure and profit to you.

Our Offer is made possible by a comparatively new method of propagating the apple tree. Instead of the slow, laborious method of "budding" a "seedling" apple tree to obtain the variety desired, a much quicker method is now employed. Healthy, vigorous branches are clipped from trees selected for their size and yield. To each of these branches a strong root from a tree of the same type is carefully grafted, and the little tree, thus complete, is ready to be set out. The twelve little trees we send you are all produced in this manner. They take root at once, make thrifty growth, and develop into large, heavy-bearing orchard trees as soon or sooner than a large tree set out at the same time. These little trees are about a foot long, and the thickness of a lead pencil. You could not secure trees of better quality, or trees that would come into bearing quicker, if you were to pay a dollar apiece for them. Thousands of trees are sold every year and sent packed in damp moss at the proper time for planting.

How to Get These Trees

If you will send us \$1.00, we will enter or renew your subscription to KANSAS FARMER for one year and send you the TWELVE (12) Apple Trees postpaid to you; or, if you will send \$2.00, we will renew your subscription two years and send KANSAS FARMER one year to some new subscriber you may name, and send you the trees. As the demand for these trees is enormous, you should take advantage of this offer at once. We reserve the right to refund money after the supply is exhausted.

Send All Orders to

KANSAS FARMER

625 Jackson Street, Topeka, Kansas



These twelve Grafted Apple Trees are packed in sphagnum moss, are well wrapped in heavy allied paper, and securely tied. They will stand the longest trip by parcel post, and arrive in perfect condition for planting.

AYRSHIRE CATTLE.



She had to HUNT for her living on the Scottish moors and hills— That's what developed the valuable qualities of the—

AYRSHIRE

hardy vigor, health, strength, vitality, her willingness to browse and her great production on scanty feed. Dairymen and Farmers who MUST make their herds profitable in these days of high costs are naturally turning to this breed. Write for information to the—

AYRSHIRE BREEDERS' ASSOCIATION
C. M. WINSLOW, Sec'y. - 33 Park St., Brandon, Vt.

AYRSHIRE BULLS

Ready for service. Sire a son of Canary Bell, 17,466 pounds of milk, 786 pounds of butter in one year. From cows with records from 10,000 to 13,000 pounds of milk yearly. Dairy Department
UNIVERSITY OF MISSOURI, Columbia, Mo.

MULEFOOT HOGS.

KNOX MULEFOOT HOGS

Orders booked for fall pigs. A few choice May pigs, either sex, not related. Write for price and booklet.
S. M. Knox, Humboldt, Kansas

SHEEP.

200 - RAMS - 200 REGISTERED SHROPSHIRE
Our flock was awarded 20 prizes at 1917 Iowa State Fair. Weight and wool always win. Rams and ewes for sale. O. W. & Frank Chandler, Kellerton, Ia.

HAMPSHIRE HOGS

HALCYON HERD HAMPSHIRE HOGS
Best breeding, best type. Stock for sale.
GEO. W. ELA, Valley Falls, Kansas

POLLED DURHAM CATTLE.

DISPERSION SALE of all my double-standard Polled Durham cattle soon. Watch for date.
D. C. VAN NICE - RICHLAND, KANSAS
(On Mo. Pac. Ry., 17 Miles S.-E. of Topeka)

HORSES AND MULES.

PERCHERONS-BELGIANS-SHIRS
2, 3, 4 and 5-yr. stallions, ton and heavier; also yearlings. I can spare 75 young registered mares in foal. One of the largest breeding herds in the world.
FRED CHANDLER, R. 7, Chariton, Ia. Above Kansas City.

Choice Young Belgians, English Shires, Percherons, also Coach stallions, also mares. Many first prizes. Long time 6% notes.
Illinois Horse Co., Good Bk., Des Moines, Ia.

Barn Full of Percheron Stallions and Mares. Twenty-five mature and aged jacks. Priced to sell.
AL. E. SMITH, Lawrence, Kansas.

CHESTER WHITE HOGS

WESTERN HERD CHESTER WHITE HOGS

Thirty spring boars, forty spring gilts, bred or open. Write for prices. Satisfaction guaranteed.
F. C. Gookin, Russell, Kansas

FOR SALE
Spring Pigs in Pairs and Trios Not related, from my undefeated show herd 1916. Ship at weaning. Send for prices and show record.
COLEMAN & CRUM, Danville, Kansas.

Clinton County Chesters

Booking orders for spring pigs of National Swine Show blood lines. Fall and spring pigs at bargain prices.
J. H. McANAW - CAMERON, MISSOURI

DUROC JERSEYS.

CRYSTAL SPRING DUROCS
Twelve head of Duroc Jersey spring boars, no better breeding anywhere, seven of them sired by Kern's Sensation, grand champion of Iowa and Nebraska this year. Priced reasonable.
ARTHUR A. PATTERSON, Ellsworth, Kan.

DUROC JERSEYS

FORTY DUROC-JERSEY BOARS
Cholera immuned, of rare breeding and excellent individuality. Sired by Gold Medal 176231, R. L.'s Model Chief 105673, Taylor's Model Chief 126455. Order yours now. Our prices are reasonable.
W. R. HUSTON - AMERICUS, KANSAS

TAYLOR'S DUROCS

For Sale—One Missouri State Fair prize winning boar. Seven yearling boars sired by champion boars that are real herd headers. Fifty spring boars that are fine prospects. Write for prices or come and see my herd.
Chas. L. Taylor - Olean, Mo.

IMMUNED DUROCS

With size and bone. Bred sows and males a specialty. 150 early pigs; pairs and trios, no kin. All immuned. Satisfaction guaranteed. **C. G. Dittmars & Co., Turney, Mo.**

DUROC BOARS

Thirty-five spring boars by G. M.'s Crimson Wonder, Crimson Wonder Again Jr., Critic D. and Great Wonder, out of my best herd sows. Priced to sell. Come and see my herd.
G. M. Shepherd, Lyons, Kansas

McBRIDE'S DUROCS

I have four Pathfinder Duroc boars for sale, all immune. Also one Orion Cherry King, four months old, weight from 125 to 140 pounds, and they are extra nice ones. Priced right. **W. T. McBRIDE, Parker, Kan.**

HARRISON'S DUROCS

Pure-bred Duroc boars.
W. J. HARRISON - AXTELL, KANSAS

Royal Grand Wonder Durocs

The first prize junior yearling at Kansas State Fair heads my herd. A few choice March boar pigs for sale. Come and see my herd.
E. R. ANDERSON, R. 7, McPherson, Kansas

Immune Duroc Boars on Approval

Pedigreed Duroc boars with size, length and bone. Immune and guaranteed breeders. Shipped to you before you pay for them.
F. C. CROCKER, BOX K, FILLEY, NEB.

IMMUNED DUROCS

A few good boars by Rhuben's Wonder and Colonel's Wonder by Crimson Wonder Again Jr. **HOMER DRAKE, Sterling, Kan.**

Jones Sells On Approval

Large-type spring boars and gilts of fashionable blood lines at reasonable prices. Herd immuned.
W. W. Jones, Clay Center, Kan.

MAPLEWOOD DUROCS

Seventeen yearling and early spring boars, ready for service, as good as we ever grow. Twenty-five gilts, open. Three bred gilts due to farrow this month and early in November. Prices reasonable. Write us your order at once and get first choice.
MOTT & SEABORN, HERINGTON, KAN.

DUROC SPRING BOARS

That weigh over 200 pounds, sired by Illustrator's Orion 3d, that giant son of the Champion Illustrator dam by Joe Orion 2d. Two by Fancy's Victor dam by John's Combination. Come, see, write or wire.
John W. Petford
Route 1 Saffordville, Kansas

SHORTHORN CATTLE.

ABBOTSFORD SHORTHORNS
Two choice bulls and ten extra good heifers for sale. Priced to sell. The kind that always please.
D. BALLANTYNE & SON, Herington, Kan.

Sunflower Herd of Shorthorns

A few good cows and heifers for sale, also choice bull calves. Come and see my herd.
A. L. HARRIS - OSAGE CITY, KANSAS

SHADY LAWN SHORTHORNS

At head of herd, Kansas Archer 440809 by Mistletoe Archer. For sale, fifteen choice young bulls from spring calves to yearlings. Come and see our herd.
F. H. HULL & SONS - EUREKA, KANSAS

SHORTHORN CATTLE

A few Scotch bulls for sale of breeding age. Red and roans. Write or come and see my herd.
O. A. HOMAN & SON, PEABODY, KANSAS

Doyle Spring Shorthorns

Bulls twelve to fifteen months old, sired by Orange Marshall and Star Goods.
DOYLE SPRING STOCK FARM
Peabody - Kansas

ALYSDALE HERD OF SCOTCH SHORTHORNS

Prince Valentine 4th and Clipper Brawith in service. Orange Blossoms, Butterflies, Queen of Beautys and Violets. Choice young stock for sale.
H. H. HOLMES, Route 28, Topeka, Kansas

Pearl Herd Shorthorns

Valiant 246162 and Marengo's Pearl 391-962 in service. Young bulls up to 10 months old for sale. Reds and roans, in good thrifty condition and the making of good useful animals. Inspection invited.
Can ship on Rock Island, Union Pacific or Santa Fe Railway.
C. W. TAYLOR - ABILENE, KANSAS

Jerseys for Net Profits



You're in the dairy business for profit—the net profit that your herd has made you at the end of the year will determine the size of your bank account. Jerseys yield the largest returns from every ounce of feed—proved by tests at two great expositions. Jersey milk averages 5.3% butter fat, 9.1% solids not fat—highest of all breeds. Buy a Jersey bull.



Write the breeders advertised below for prices, pedigrees, etc.

The American Jersey Cattle Club, 375 West 23rd Street, New York City

120 JERSEY COWS AND HEIFERS

Pure-bred and high-grade. Forty bred yearlings, superior individuals, all from profitable dams, now for sale.

J. W. Berry & Son
JEWELL CITY - KANSAS

IDYLVILD STOCK FARM

For Sale—Bull calf dropped March 3, 1917; dam, Pet of Clover Hill F's 2d 221416; also, Jacob's Prize Premier 137930. Price, \$50.00.

C. F. Blake, Glasco, Kan.

LONGVIEW JERSEYS

(Register of Merit Herd)

Bull calves sired by champion bulls out of Register of Merit dams, for sale at all times.

Longview Farm

LEE'S SUMMIT - MISSOURI

Registered Jerseys

Cows, Heifers and Calves. Good breeding, good individuals. Must reduce herd. Price reasonable.
C. F. Pfeutze, Etc. 4, Manhattan, Kan.

Catalogs Are Ready

For the following Jersey Sales to be held under my management:
Loehrie & McCoy, Carl Junction, Mo., Sept. 27; Oklahoma Breeders' Sale, Oklahoma, Okla., Sept. 29; Hedmon & Sons, Tipton, Mo., Oct. 1; Geo. W. Hagan, Lee's Summit, Mo., Oct. 31. Write today and ask to be placed on my mailing list. Address
B. C. SETTLES, Sales Mgr., Palmyra, Mo.

REGISTERED JERSEY BULLS

BUTTER-BRED, FROM HIGH-PRODUCING COWS. Photo furnished.

Maxwell's Jersey Dairy
ROUTE 2 TOPEKA, KANSAS

LOMAX JERSEYS

A Herd of Producers. Backed by Records. Popular blood lines. Choice individuals. We invite inspection of our herd at all times.

Write us your wants.

Dr. J. H. Lomax

STATION B - ST. JOSEPH, MO.

J. B. PORTER & SON

MAYETTA, KANSAS

BREEDERS OF HIGH-CLASS JERSEYS. STOCK FOR SALE AT ALL TIMES. WRITE US YOUR WANTS.

DISPERSAL SALE OF SEVENTY HEAD OF REGISTERED JERSEYS

AT LEE'S SUMMIT, MISSOURI, WEDNESDAY, OCTOBER 31

Mr. Geo. W. Hagan has been breeding Jerseys for over twenty years, and he will sell a splendid lot of profitable cows and heifers of the best St. Lambert and Tormentor blood to be found in any herd. The cows are all heavy persistent milkers, tuberculin tested and in perfect health. Don't fail to write at once for catalog to

B. C. SETTLES, SALES MANAGER, PALMYRA, MO.
COL. P. M. GROSS, AUCTIONEER, KANSAS CITY, MO.

GREAT DISPERSAL SALE

Of 100 Head A. J. C. C. Jerseys, Owned by E. E. Knoche, Martin City, Missouri, November 3, 1917.

Fifty cows averaging 450 pounds butter per year, and their female descendants, will go in this sale. Prof. C. H. Eckles of the Missouri University says: "The best producing herd in the state."

Write at once for catalog to

B. C. SETTLES, SALES MANAGER, PALMYRA, MO.
Col. Perry, Auctioneer

70 - HEAD - 70

COMPLETE DISPERSAL SALE

W. L. Hunter & Son's Imported and Home-Bred REGISTERED JERSEY CATTLE

State Fair Grounds, Lincoln, Neb., Friday, Nov. 2, 1917

SIXTY-TWO FEMALES, including many Register of Merit cows and their descendants; daughters of Golden Fern's Noble, Cowslip's Golden Lad, Financial Countess Lad, Hebron's King, Owl of Hebron, Glenida's Champion, and other great sires. EIGHT BULLS, among them Imp. Euterpean, son of Noble's Jolly Sultan and an undefeated champion, grand champion Nebraska State Fairs, 1916-17. A show and breeding bull of unusual merit. Your chance to buy good foundation blood from one of the greatest herds in the West. Write for catalog.

B. C. SETTLES, PALMYRA, MO., SALES MANAGER
COL. D. L. PERRY, AUCTIONEER

POLAND SALE

At Richards, Mo., Friday, Nov. 9

HERE IS THE BUYER'S GOLDEN OPPORTUNITY.

In view of the unprecedented demand for brood sow material this sale assumes unusual importance at this time. The sale includes fifteen fall and winter gilts by The Mint, a great breeding son of Golden Gate King. Big, growthy gilts, excellent propositions in herd improving material or to fill out winter sale offerings.

Thirty choice spring gilts sired by Caldwell's Big Bob, Fessy's Tim, King Joe, Big Bob Wonder, and others of the breed's leading sires. These gilts are exceptionally fine.

The boar offering of unusual class includes an even dozen of the tops of the 1917 crop. Nothing but the very best will be sold in this sale.

THIS OFFERING INCLUDES ALL OUR MISSOURI STATE FAIR PRIZE WINNERS

Here is one of the last offerings to be sold this fall and one of the best. Get the catalog of this big sale and arrange to attend.

THE ENTIRE OFFERING IS IMMUNE

When writing for catalog, please mention Kansas Farmer.

J. R. YOUNG, RICHARDS, MO.
O. W. Devine will represent Kansas Farmer at sale.
Col. R. L. Harriman, Auctioneer.

POLAND CHINAS

POLAND CHINAS.

BERRY'S IMMUNED SPOTTED POLANDS

March pigs, weight 150 to 160 pounds, price \$35; pairs, \$70; April pigs, \$30; May, \$25. Sired by Spotted Mike 81038, a 600-pound yearling. Lots of spots, bone, and good backs. Write me your wants. Can furnish pairs, not related.
E. C. BERRY, ROUTE 3, HARRIS, MISSOURI

Spotted Poland Chinas

Thirty spring boars, thirty spring gilts. Sired by Billie Sunday, Cainville Giant and Perfect Judge. Sows by Brandywine, Budweiser, Old Clipper and Spotted Giant. Priced to sell.
J. O. RILEY & SON - CAINSVILLE, MO.

DEMING RANCH QUALITY

Big-Type Poland China Hogs.
Fifty March boars for sale. All immuned. Brood sow sale February 18. Send for catalog.
H. O. Sheldon, Herd Manager
OSWEGO, KANSAS.

TOWNVIEW HERD BOARS

Ten big stretchy fellows farrowed in June. Every one a good one. Two choice fall yearlings. I ship my boars and gilts any place on approval. They make good. Prices are right.
CHAS. E. GREENE, Peabody, Kan.

OLD ORIGINAL SPOTTED POLANDS

Stock of all ages, sired by seven of the very best boars of the East and West. Priced right. Write your wants to the
CEDAR ROW STOCK FARM
A. S. Alexander, Prop. Burlington, Kansas

SPOTTED Poland Chinas

Two hundred fall pigs in pairs and trios, not related, sired by two state fair winners. Price, \$25 each. Also a few choice spring boars and gilts. All immuned. Write your wants.
E. R. McKEEFER & SON, Ossian, Indiana

GREEN WOOD FARM POLANDS

Spring boars, very best big-type breeding, sired by Big Wonder, my 900-pound boar, and Orange Wonder, an Iowa bred boar, out of big sows. Farmer prices.
M. F. RICKERT - SEWARD, KANSAS

Faulkners Famous Spotted Poland

Late summer and fall pigs for sale. Buy them from the Fountain Head. Annual brood sow sale February 13. Ask for catalog.
H. L. FAULKNER, Box K, Jamesport, Mo.

McGATH'S BIG ORPHAN

Grand champion Topeka and Hutchinson fairs, 1917. Thirty-five boar pigs by the grand champion for sale. Write for prices.
Bert E. Hodson, Ashland, Kan.

The Lone Cedar Poland

Last Lot of Meyers' Orange Pigs. I will have either sex, some extra fine gilts. Cholera immune for life.
A. A. MEYER - McLOUTH, KANSAS

FAIRVIEW POLAND CHINAS.
Heavy-boned March pigs, either sex. Eighty to select from. Prices reasonable. Write us your wants.
P. L. WARE & SON - PAOLA, KANSAS

SPOTTED POLAND CHINAS
Baby pigs, either sex. Priced right. Papers furnished.
B. A. SHEHI, WESTMORELAND, KANSAS

POLAND CHINA BOARS

Fifteen spring boars sired by Sir Dudley, Eclipse Model and Exile. Price, \$30 to \$45. Write at once.
C. B. PALMER
ROUTE 5 MARION, KANSAS

Langford's Spotted Poland

—Last call for early spring boars. Yours for good hogs—
T. T. Langford & Sons, Jamesport, Missouri.

POLAND CHINA HOGS

150 HEAD IN HERD
Breeding stock for sale. Immune. Satisfaction guaranteed. Come and see me.
V. O. JOHNSON - AULNE, KANSAS

POLAND CHINAS

For Sale—Ten fall yearling gilts, bred for September farrow to Dalebanks Hadley and King Jumbo; twenty-five spring boars ready for service; twenty-five spring gilts open. One hundred and fifty head registered hogs in my herd. Write today what you want.
E. L. BARRIER - EUREKA, KANSAS

Henry's Big Type Poland

March and April pigs, sired by Big Wonder, first in class at Topeka; Mammoth Orange and King Price Wonder. Immune.
JOHN D. HENRY, LECOMPTON, KANSAS

White Oak Park Poland

Outstanding herd boar prospects by 1,100-pound Missouri Jumbo 21041 and 1,000-pound Long Big Joe 22737, twelve-inch bone. Dams popular big-type breeding. If you want boars that will mature to 1,000 to 1,100-pound hogs, I have them, big high-quality fellows. Fall boars farrowed August and September, spring boars February and March. Will record in buyer's name. All immune.
Henry Koch, Edina, Missouri

OLD ORIGINAL SPOTTED POLANDS

March and April pigs for quick sale.
H. A. or PAUL H. MATTOX, Route 2, Burlington, Kan.

GUERNSEY CATTLE.

GUERNSEY BULLS.
Buy a grandson of Imp. May Royal, whose dams are granddaughters of Imp. Masher Sequel. One to seven months old. ADAMS FARM, Gashland, Mo., 12 miles from K. C.

GALLOWAY CATTLE.

GALLOWAY BULLS
SIXTY yearling and two-year-old bulls, strong and rugged; farmer bulls, have been range-grown. Will price a few cows and heifers.
E. E. FRIZELL, Frizell, Pawnee Co., Kansas

MYERS' POLAND CHINAS

Gardner, Kans., Wednesday, Nov. 7

52 Head Spring and Fall Boars and Gilts

Twenty choice Spring Boars, twenty tippy Spring Gilts, sired by GIANT JOE, KING GIANT by King of Wonders, MODEL BIG BOB, MASTER ORPHAN, WEDD'S LONG KING, and ECLIPSE MODEL. The dams of these are sired by Wedd's Long King, King of Wonders, Caverly's Big Defender and Big Bob Wonder. Ten Fall Gilts, big and smooth, sired by Giant King, will be sold with breeding privileges to Giant Joe.

One sired by GIANT JOE out of Queen of Wonders, the top sow in the Wilver Dell herd sale. The other by GIANT BEN, the noted Pfander boar, out of Big Bob's Wonder by Big Bob.

ARRANGE TO ATTEND THIS SALE.

When writing for catalog, please mention Kansas Farmer. O. W. Devine representing Kansas Farmer.

H. E. MYERS, GARDNER, KANSAS
COL. J. C. PRICE, AUCTIONEER

HOLSTEIN CATTLE.

HOLSTEIN CATTLE.

CLYDE GIROD, At the Farm

F. W. ROBISON, Cashier Towanda State Bank

HOLSTEIN FRIESIAN FARM, TOWANDA, KANSAS

BREEDERS OF PURE-BRED HOLSTEINS

We offer special attractions in choice young bulls, ready for service, both from tested and untested dams, at prices within reason. Let us furnish you a bull and improve your herd.

IT WILL PAY YOU TO SEE OUR OFFERING

of high grade young cows and heifers, all springers, in calf to pure-bred sires, large developed females, good udders, nicely marked and the right dairy type at prices that challenge comparison for Holsteins. A visit to our farm will convince you. Keep us in mind before purchasing. Wire, write or phone us.

GIROD & ROBISON - TOWANDA, KANSAS

MAURER'S HOLSTEIN FARM is offering twenty-five pure-bred heifer calves from six weeks to eight months old; also a choice lot of yearlings, bred heifers and young cows, all with top-notch breeding and at prices that cannot be equalled elsewhere; grade cows and heifers. **BUY YOUR NEXT PURE-BRED BULL FROM US.** For description and prices, wire, write, or call.
T. R. MAURER & COMPANY - EMPORIA, KANSAS



HOLSTEINS AND GUERNSEYS

High grade cows and heifers, carloads or less. Calves crated and shipped anywhere, price \$20.

F. W. WALMER

Way Side Stock Farm - Whitewater, Wis.

HEREFORD CATTLE.

Greenwood Hereford Farm

Prince Rupert Herefords

One carload yearling bulls; fifty head bull calves. Will price single lot or carload.

W. J. Brown, Fall River, Kan.

IDEAL HEREFORDS

For Sale—Ten to twenty cows bred, some now calving, also some yearling heifers and choice young bulls from six to twenty months old. Blood of Prince Rupert 52d, Generous and Don Perfect. Outstanding good cattle. Priced right.

J. H. Keith, Coffeyville, Kansas

Public Sale

October 24th.

SHEEP—

Twenty Shropshire Ewes.
Twenty Hampshire Ewes.

JERSEYS—

Ten Cows under five years old, fresh or fresh soon.
Two Bull Calves.
All strong in the blood of Eminent Golden Jolly.

POLAND CHINAS—

Nineteen Sows with pigs or to farrow soon.
Fourteen Spring Pigs.
Some fine Herd Boar prospects.
Everything vaccinated. These hogs are from the best herds in the West. Gerstale Jones, Big Price, Blue Valley, Big Orange, Oakland's Equal and Big Gem being represented.

HORSES—

Several Standard-Breds. Good drivers and good prospects.
One Percheron Mare five yrs. old, in foal.
One Percheron Mare two yrs. old, in foal.
One Percheron Mare six months old.
Two Jennets in foal.
One Jack Colt coming two years old. A good one.

All above stock is registered or can be. Will also sell twenty-five high grade Short-horn heifers, some young mules and other stock.

DR. F. B. CORNELL

Nickerson - - - - Kansas

Please Mention Kansas Farmer
When Writing to Advertisers,

BERKSHIRE HOGS.

BERKSHIRE HERD BOARS

For quick sale—Two choice Berkshire herd boars, three winter boars and five spring boars, all choice.
E. D. KING - BURLINGTON, KANSAS

Butter Bred Holsteins

Buy your next bull calf from a herd that won the butter test over all breeds.

J. P. MAST - SCRANTON, KANSAS

SUNNYSIDE HOLSTEINS

"Echo Segis Fayne," our great herd sire, for sale to avoid inbreeding. He is a grand individual, only 3 years old, and by King Fayne Segis Clothilde, brother to Segis Fayne Johanna, the world's 50 pounds butterer in seven days, cow. Price \$700. Also yearlings and bull calves sired by Echo Segis Fayne, for sale. **SUNNYSIDE STOCK FARM, John Montle, Prop., U. S. P. O. Derby Line, Vt.**

GOLDEN BELT HOLSTEIN HERD

Herd headed by Sir Korndyke Bess Hello No. 166946, the long distance sire. His dam, grand dam and dam's two sisters average better than 1,200 pounds butter in one year. Young bulls of serviceable age for sale.

W. E. BENTLEY, MANHATTAN, KANSAS

Holsteins and Guernseys

FOR SALE—High grade Holstein and Guernsey springer cows and heifers. A choice lot. Cows, \$100 to \$150; large heifers, \$90 to \$125; heifer calves, \$20, crated. Don't write, but come and see them.

BOCK'S DAIRY

Route 9 Wichita, Kansas

Segrist & Stephenson, Holton, Kan. Breeders exclusively of pure-bred prize-winning record-breaking Holsteins. Correspondence solicited.

HOLSTEIN CALVES

Very high grade heifer calves, five weeks old, nicely marked, \$25 each delivered to your station. We can supply you with registered or high grade Holsteins, any age or number, at reasonable prices. Clover Valley Holstein Farm, Whitewater, Wisconsin.

CHOICE HOLSTEIN CALVES

Twelve heifers and two bulls, 15-16ths pure, beautifully marked, five weeks old, from heavy milkers, at \$20 each. Safe delivery and satisfaction guaranteed.

FERNWOOD FARM, WAUWATOSA, WIS.

Braeburn Holsteins Always A. R. O. Bull Calves, a few females to make room.
H. B. COWLES, 608 Kan. Ave., Topeka, Kan.

AUCTIONEERS.

P. M. GROSS

Live Stock

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Twelve years on the block.

Pure-bred sales a specialty. Sales made anywhere.

4230 Paseo

Kansas City, Mo.

SAPPHIRE (BLUE) HOGS

SAPPHIRE (BLUE) HOGS
The quickest pork producer known. Breeding stock for sale. **L. E. JOHNSON, Waldron, Harper County, Kansas.**

RED POLLED CATTLE:

Mahlon Groenmiller, Pomona, Kansas.

HEREFORD CATTLE SALE - 110 HEAD - AT HUTCHINSON, KANSAS, MONDAY, NOVEMBER 19, 1917



SEVENTY-FIVE HAND-PICKED COWS AND HEIFERS

Big, roomy, prolific cows of the choicest breeding, including about twenty 2 and 3-year-old daughters of Generous 5th, bred to Lawrence Fairfax and imported Shucknall Monarch; thirty of same age sired by Gladwyns, College Count and Beau Donald 33d, bred to Generous 5th, the show bull Sampson, Lawrence Fairfax and Shucknall Monarch. Others range four to seven years old and are safely bred to our herd bulls.

We consider this the most valuable lot of young females we ever offered and, being mated to such good bulls, believe they present the best investments to be offered in any sale.

WRITE FOR OUR ILLUSTRATED SALE CATALOG AND MENTION THIS PAPER.

REPPERT & MILLER, AUCTIONEERS O. W. DEVINE, KANSAS FARMER REPRESENTATIVE

THIRTY-FIVE TOP BULLS

Mostly sired by Generous 5th by Old Generous, out of dams of Rich Anxiety breeding. Others by College Count, Gladwyns, Marion, Beau Donald 33d. Extra heavy-boned well-grown husky fellows. The best bunch we ever raised.

HERD BULLS of great character and substance a plenty, including the show and breeding bull **SAMPSON 437001**

Besides the thirty-five head catalogued, we have two carloads of yearlings of like breeding and character for private sale, making this the best opportunity of the fall for bull buyers.

W. I. BOWMAN & CO., NESS CITY, KANSAS

POLAND CHINA HOG SALE

**At Sterling, Kansas on
Tuesday, November 6, 1917**



28 Spring Gilts

12 Fall Gilts

5 Tried Brood Sows with Litters at Side

20 Spring Boars Ready for Service, and

A number of fine Herd Boar prospects of strictly big-type Poland China.

They are well grown out and we guarantee a good offering. Catalogs are ready to mail out. O. W. Devine will represent Kansas Farmer at the sale. Send for catalog today to

ROSS & VINCENT

STERLING - - - KANSAS

Hurst's Annual Fall Sale

Bolckow, Mo., Thursday, Nov. 1, 1917

40 HEAD OF TOP BOARS AND GILTS 40 AT AUCTION

BY FAR THE BEST OFFERING WE EVER MADE

We Have Them with
SIZE, STRETCH, BONE and FINISH

"WE SELL SOME SALE TOPPERS EVERY TIME"

SPECIAL ATTRACTIONS

Boars and gilts by COL. CRIMSON, the boar that sires our best ones.

ONE LITTER BY KING'S COL., dam QUEEN ELIZABETH, litter sister to the World's Fair Grand Champion sow. (By one of America's greatest brood sows, RED LADY.)

UNEEDA WONDER is siring good ones. Watch for his pigs sale day.

See the ones by UNEEDA GIANT and JUMBO MODEL.

Our offering is BETTER BRED, HAS MORE SIZE AND QUALITY THAN EVER BEFORE.

Write for catalog today to

R. L. HURST, Bolckow, Mo.

PERCHERON STALLIONS

FOR SALE THIS FALL AT REDUCED PRICES

Two yearling colts; two 2-year-old colts; two 3-year-old colts; two 4-year-old colts, and one herd stallion. All sound and registered in Percheron Society of America. Blacks and bays. If sold this fall I will cut the prices. Also five registered Shorthorn bulls, reds and beans. Come and see me.

J. C. PARKS - - - HAMILTON, KANSAS

MODERN HEREFORDS
HAZFORD PLACE

Home of the Grand Champion BOCALDO 6TH, assisted by CALDO 2D, PUBLICAN 4TH AND BEAU BALTIMORE.

All our show cattle our own breeding. Inspection of farm and breeding herd invited. A few choice young bulls reserved to head high-class pure-bred herds now ready for inspection and sale. William Condell, Herdsman.

ROBT. H. HAZLETT, EL DORADO, KANSAS

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Jas. T. McCulloch Live Stock Auctioneer. I make sales anywhere. CLAY CENTER, KANSAS
Write for date.

Live Stock and Real Estate Auctioneer. Fifteen years experience. Write for terms. Thos. Darcey, Hutchinson, Kansas.

Breeders' Directory

ANGUS CATTLE.

D. J. White, Clements, Kan.

DORSET HORN SHEEP

H. C. LaTourette, Route 2, Oberlin, Kan.

ENTIRE DISPERSAL SALE REGISTERED HOLSTEIN CATTLE

OF GREENSWARD FARM, FREDONIA, KANSAS
TUESDAY, OCTOBER 30, 1917

Thirty Head of Registered Cows and Heifers, Two Bull Calves, and the Best Two-Year-Old Bull in Kansas

All cows and heifers will freshen soon to Sir Johanna Walker Pietertje, whose first five dams average over 27 pounds butter per week. This bull also sells at sale.

Every animal tuberculin tested.

Daughters and granddaughters of Colantha Johanna Lad, King of the Pontiacs, the \$50,000 bull; King Segis Pontiac Alcartra, Sir Ormsby Skylark, King Walker, etc. Some prize winners and grand A. R. O. cows.

Sale held within one-half block of union depot and within fifty feet of stock yards, rain or shine, under cover, in warm building. Write for catalog.

GREENSWARD FARM - FREDONIA, KANSAS

MAX J. KENNEDY, PROPRIETOR

(On three railroads—Frisco, Santa Fe and Missouri Pacific.)

<p>\$1525</p> <p>Mitchell — a roomy 7-passenger Six, with 127-inch wheelbase and a highly developed 48-horsepower motor.</p> <p>Three-Passenger Roadster, \$1499 Club Roadster, \$1599</p> <p>Sedan, - - \$2275 Cabriolet - \$1969 Coupe, - - \$2195 Club Sedan, \$2185</p> <p>Also Town Car and Limousine.</p>	<p>TWO SIZES</p> <p><i>Mitchell</i></p> <p>SIXES</p>	<p>\$1250</p> <p>Mitchell Junior — a 2 or 5-passenger Six on similar lines, with 120-inch wheelbase and a 40-horsepower motor. ¼-inch smaller bore.</p> <p>Club Roadster, \$1299 Sedan, - - \$1950 Coupe, - - \$1850</p> <p>All Prices f. o. b. Racine.</p>
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Double Margins of Safety Mean Lifelong Service—Less Repair Costs

Three years ago, after 11 years of car building, we decided to double the usual margins of safety.

We adopted the standard of 100 per cent over-strength. We based our requirements on the careful watching of many thousand cars. Then we devised radical tests to prove that parts had twice the needed strength.

It meant some added weight. It meant oversize parts. It meant higher grades of steel. The Mitchell of today has a wealth of Chrome-Vanadium. It has 440 parts made of toughened steel. It has gears which are tested for 50,000 pounds per tooth. It has rear springs which have never yet been broken.

\$100,000 For Inspection

We spend \$100,000 yearly for testing and inspecting parts and cars. Our steels are made to formula. They are proved in a crushing machine of 200,000 pounds capacity. We have our own speedway for testing the finished cars.

The result of these standards, apparently, is a lifetime car. Two

Mitchells that we know of have already been run over 200,000 miles each. That is 40 years of ordinary service. Repair cost has been lessened by some 75 per cent.

Mitchell endurance has become world-famous. Under the hardest road conditions — in Russia, Australia and South America — it has won a great reputation. It is known in America as "The Engineers' Car"—so many noted engineers have bought it. The demand for the Mitchell has quadrupled since this standard was adopted.

Many Extra Attractions

The Mitchell is also a most complete car. It has 31 wanted features which nearly all cars omit. These include a power tire pump, reversible headlights, a dashboard engine primer and shock-absorbing springs.

It is also an extra-luxurious car. It has a deep, enduring finish, fixed by electric heat. It has extra-grade leather, deep upholstery, a light in the tonneau, a locked compartment, etc.

Before designing these Mitchells, our experts examined 257 show models. So all the known attrac-

tions are combined in these new cars.

A Bate-Built Factory

With all these added values, Mitchell prices are far below other cars in this class.

The reason lies in factory savings, in minimized labor cost. This mammoth plant was built and equipped under John W. Bate, the efficiency expert. Every building, every machine was designed to build this one type economically.

Here we build the whole car — chassis and body—under Bate efficiency methods. The yearly saving amounts to millions of dollars. Under no other conditions could cars like these be built at Mitchell prices.

The Mitchell comes in two sizes, at two basic prices. The smaller Six—at \$1250—has a 120-inch wheelbase and a 40-horsepower motor.

When you buy a fine car and a car to keep, you will want a car like this. It means low upkeep, small repairs, and a car to be proud of. See the latest models. If you do not know our nearest dealer, ask us for his name.

MITCHELL MOTORS COMPANY, Inc., Racine, Wis., U. S. A.

