

KANSAS FARMER

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ALFALFA ON UPLAND

Lime, Barnyard Manure and Drainage Important Factors in Growing Crop

"IT IS no use trying to grow alfalfa on the upland in this section," said A. M. Dunlap of Allen County when Prof. L. E. Call of the agricultural college proposed making some alfalfa-growing tests on his farm three years ago. "Perhaps not," replied Professor Call, "but we would like to make some careful tests, trying different methods of treatment on different plots, and then we will know." Plans were made and the proposed experiments were started the summer of 1914.

On May 23 a meeting was held on this farm attended by over a hundred people and the results secured and the methods followed were studied with unusual interest by those present. After seeing the plots in the field, no one could doubt the possibility of growing alfalfa profitably on the upland soils of this section.

It might be stated in explanation that through the co-operation of such public-spirited farmers as Mr. Dunlap, farm experiments or demonstrations of various kinds are being conducted by our experiment station all over the state. These co-operative tests, or demonstrations, are a most valuable feature of the work of the station. After such tests have been conducted for a few years, Director Jardine or others of the experimental force can answer many questions without even visiting the farm or studying conditions. A man in Cherokee County may write asking if alfalfa can be successfully grown on his farm or whether commercial fertilizer will pay, and if so what kind. If he locates his farm accurately, reference to the soil survey map of the county and the results of the farm co-operative tests that have been made will enable the experiment station man to give the required information in reply. In only a few counties of the state, however, have accurate soil surveys been made, and until this is done it will be difficult to supply accurate information in reply to such questions without visiting the farm and studying conditions.

On Mr. Dunlap's farm a number of valuable tests are being conducted, but the most striking of these in the results so far obtained is the alfalfa-growing test. In this section of the state alfalfa is easily grown on the well-drained bottom land and Mr. Dunlap had good alfalfa on his bottom land, but was very skeptical as to the possibilities of growing it on the upland portion of his farm.

The soil upon which the attempt to grow alfalfa was made was that formed from interbedded sandstone and shale, and is a very common type in that section. A series of uniform plots were laid out and across one end of these plots two lines of tile were laid in advance of the seeding. This made it possible to study the effect of drainage on all the different plots.

In preparing for the alfalfa, one plot

was left without lime, manure, or fertilizer of any kind. The treated plots were as follows: One was given an application of crushed limestone at the rate of three thousand pounds to the acre. On another, barnyard manure at the rate of ten tons to the acre was applied, and on another both manure and lime. Two plots were treated with commercial fertilizer, one having an application of acid phosphate at the rate of 250 pounds to the acre and muriate of potash at the rate of fifty pounds to the acre, and in addition lime. The other plot was given the acid phosphate and lime. The manure and lime were applied before seeding only, but the commercial fertilizers were applied each season in the amounts given.

Before going to the field, Professors Call and Cunningham explained the purposes of the trials and emphasized the need for learning how to successfully grow the various legumes and other forage crops. The audience had gathered on the beautiful lawn in front of the Dunlap farmhouse and were seated under the shade of trees planted by Mr. Dunlap's father when he first came to Kansas.

A chart was tacked on the side of the house showing how the yields of corn in Allen County had steadily decreased. The average yield for the period 1876 to 1880 was thirty-five bushels to the acre. During the next five-year period it dropped to thirty-three bushels. During the period 1886 to 1890 it was but twenty-three bushels, and in each five-year period the yield of corn per acre has steadily decreased, being only eighteen bushels per acre for the period 1912 to 1916.

It was pointed out that in the farming operations of this county the acreage of corn planted had not varied much since 1893. The acreage of wheat grown has fluctuated, probably due to the peri-

odic chinch bug infestation. Forage sorghums have greatly increased in acreage since 1893. The total acreage of alfalfa in 1893 was given as twenty-seven. It is now almost four thousand, but with all the increase in legumes and grasses—such crops as might be called soil-improving crops—the total acreage grown in Allen County at the present time is only a little over thirteen thousand.

In order to build up depleted soil and establish a more enduring system of farming which must include greater live stock production, Professor Call stated that the proportion of soil-improving crops to such cash crops as corn and wheat should be one to four. He ventured to predict that this county would be growing fifteen thousand acres of alfalfa within the next five or ten years. It did not seem by any means impossible that this prediction would come true after studying the figures on the chart, showing what the treated plots of alfalfa had produced on this farm.

Figures are always dry and uninteresting and apt to be forgotten. It is the actual inspection of the results in a field that carries conviction, and that is the most valuable feature of such meetings as were held on the Dunlap farm. After seeing the splendid growth of alfalfa that had been secured, many will carry with them in detail the methods which made this yield possible.

Anxious as the visitors were to get out in the field and see the alfalfa, they paid close attention while the tabulated results were given. During the two years of 1915 and 1916 the untreated plot yielded a total of 3,208 pounds of hay. It was badly mixed with weeds and grass and this year the plot is practically taken with grass and weeds of various kinds. The limed plot produced during the two years 4,765 pounds of hay, or an increase over the untreated of 1,557 pounds. The plot manured and

not limed produced 6,280 pounds of hay in the two years, or an increase of 3,072 pounds. On the plot given manure and lime the total yield of hay for the two years was 7,571 pounds, or an increase of 4,363 pounds—136 per cent. The acid phosphate and lime plot produced 5,893 pounds of hay, or an increase of 2,685 pounds. The plot treated with acid phosphate, potash, and lime, yielded 6,099 pounds of hay, or an increase of 2,891 pounds.

The cuts on this page are from photographs taken at this meeting and show the growth of the crop. It is very difficult, however, to get much idea from the pictures as to the vigor and thickness of the alfalfa growing on the treated plots.

It was very easy to note the location of the tile drains across the ends of the plots. The alfalfa had made the strongest and most vigorous growth directly over the tile in all the plots. The total production of hay on the undrained portion of the plots for the two years was 5,564 pounds, and on the drained portion 6,406 pounds, or a difference of 842 pounds in favor of drainage. It was stated that on much of the soil of this type drainage would pay, although on this particular farm it did not seem to be absolutely necessary to the successful growing of alfalfa. The important treatment was the application of manure and lime. Where alfalfa has never been grown, inoculation may be necessary. On this farm the soil was inoculated from the spreading of manure from stock fed alfalfa grown on the bottom land.

Where no manure can be obtained, the use of the commercial fertilizers would make it possible to get alfalfa started and make it a profitable crop. The results on this farm, however, indicate that it is not profitable to use potash, since it increased the yield but slightly.

We noticed on another portion of this farm the effect of lime on red clover. Some rotation trials are being made in which the crops grown are oats, clover, and corn. The beneficial effect of liming was as noticeable on the clover as on the alfalfa. It is evident that large use of lime can be made in this part of the state, and we were much gratified to learn that the matter had been brought to the attention of the railroad companies and that they are likely to put into effect in the near future a special rate on crushed limestone so that farmers can afford to ship it in where it cannot be obtained locally.

Through this section there are red limestone soils which will grow alfalfa successfully without treatment. In driving to Colony following this meeting we noticed a number of fields of such land that might well have been in alfalfa instead of corn or other crops. The black limestone soils are quite often too poorly drained to grow alfalfa successfully without the laying of tile.



VISITING FARMERS QUESTIONING PROF. L. E. CALL ABOUT THE GROWING OF ALFALFA ON THE DUNLAP FARM



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FARM POWER

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

THE United States Army has what is believed to be the first complete unit of horseless artillery created. It is possible that tractors and motors to a considerable extent will replace horses and mules in moving ordnance, although at the present time animals are absolutely essential in handling light field artillery. What is being done in the United States along this line is set forth in the following statement authorized by the War Department:

The problem of eliminating the horse entirely from the work of dragging guns to the front is one on which both European and American engineers were working for years before the outbreak of the great war. Successful experiments by the government authorities now seem to promise an early substitution of the machine for the horse in handling nearly all forms of ordnance.

The experimentation was carried on first with various types of tractors under the direction of the Field Artillery Board at Fort Sill, Oklahoma, and by the Ordnance Department of the Army at Rock Island Arsenal, followed later at Fort Bliss, Texas, with a completely equipped battery. The work has been in charge of Maj. Lucian B. Moody. The tractor standards committee of the Society of Automobile Engineers was enlisted at the outbreak of the war and has been actively co-operating in the study of the problem.

"The success of the experiments at Fort Sill justify us in believing that the motorization of most medium caliber guns which have previously been horse-drawn will come in the near future," Major Moody says. "The large howitzer types are sure to be motorized. The motorization of the light types, such as the French 75's, will have to wait for the development of tractors capable of developing a combination of speed for emergencies and pulling power in mud equal to that of horses. This probably will not come immediately, but we shall continue our experimentation with the light types."

European armies have already reduced greatly the number of horses in artillery use, but it has not proved possible so far to eliminate them in hauling certain of the smaller and medium type of ordnance because of the lack of a proper tractor combination of speed and power. The big creeping type tractors capable of handling the heaviest guns which have so far been used in Europe have been unable to meet the demand for making the occasional bursts of speed necessary for getting the light field guns into position and using the minimum of space which conditions on the firing line frequently make vital.

The new creeping or self-track-laying type of small or medium size developed by the American Army is built without the steering arrangement in front, and while possessing relatively as much power as the type now used in Europe is at the same time capable of turning within its own length by simply reversing or stopping one of the creeper drivers while the other side continues to move ahead. The development in this type in tractors powerful enough to haul the heaviest guns will make them entirely available for making the sharp turns and corners and fitting into the inconvenient spaces for which horses have so far had to be used at the very front. The experiments have proceeded far enough to justify plans for the successive motorization of all American artillery units except the smallest calibers required to move at very high speed over bad ground.

The new developments in ordnance traction make up another phase of the valuable experience the American Army gained on the Mexican border, as they are a direct outgrowth of experiments in hauling field guns with American tractors made at that time.

The reasons making it highly desirable to substitute the tractor for the horse in all ordnance traction are both scientific and humane. From a scientific and military standpoint the tractor is much more efficient than the horse. It lasts longer, is capable of performing more work in a day, and costs less for repairs and fuel than the expense of upkeep of the horse. A tractor can, if necessary, be used twenty-four hours in a day, while the horse has to stop for rest, sleep, and feeding, and can seldom be worked more than ten or twelve hours per day at the best. Repairs on tractors even at the front are usually comparatively brief tasks, unless the machine is completely destroyed by shell fire, while horses are continually liable not only to wounds but to disease and injury from exposure and lack of proper care under field conditions. The care of machines, as compared with that which horses must have, is negligible, while the bulky food supply for horses is always a difficult problem.

The humane reasons are equally obvious. The life of the artillery horse at the front is not only brief but often one full of agony. It is seldom possible to give the animals anything like proper shelter and care, and their usual lot is quick death by disease if they are not killed off by shell fire.

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Draft of Plow Varies

Many who are interested in tractors do not understand exactly what is meant by drawbar pull. The tractor manufacturer finds by means of a dynamometer, which is nothing more than a spring scale of large capacity, the number of pounds his tractor will pull at the drawbar under normal conditions. This amount expressed in terms of mechanical horsepower establishes the drawbar rating of his tractor. It would be better if this rating were always expressed in pounds, and there is a movement under way to bring about this method of expressing the drawbar pull of tractors instead of using the horse power rating.

Bearing the point in mind that a tractor can pull a certain number of pounds at the drawbar, soil conditions found on different farms that the number of plows a tractor will pull varies with the kind of soil. By tests it has been found that the draft per square inch of furrow cross section varies in different soils as follows:

In sandy soil, two to three pounds per square inch; in corn stubble, three pounds per square inch; in wheat stubble, four pounds per square inch; in bluegrass sod, six pounds per square inch; in clover sod, seven pounds per square inch; in clay soil, eight pounds per square inch; in prairie soil, fifteen pounds per square inch; in gumbo soil, twenty pounds per square inch.

From the above it can be readily seen how foolish it would be for a tractor company to guarantee its tractors to pull the same number of plows "anywhere."

What the tractor buyer should do always is to match up his soil conditions with the drawbar pull of the tractors he has under consideration and calculate definitely how many plows he can expect the tractor to pull in his soil, and at the depth he wishes to plow.

To figure the number of plow bottoms with the above table is simple. Suppose a man is considering the purchase of an 8-16 tractor, which has a drawbar rating of 1,500 pounds at a two-mile speed. Suppose the most difficult plowing this man would ever have upon his farm is in clover sod, which requires a draft of seven pounds per square inch in furrow cross section. Plowing six inches deep, a 14-inch plow bottom has a total of eighty-four square inches, and at seven pounds per square inch the total pull required for a plow bottom is 588 pounds. Dividing the drawbar pull of the tractor, or 1,500 pounds, by 588 pounds, we find that this tractor will pull approximately 2.5 plow bottoms.

According to the above calculations, this 8-16 tractor can safely be depended upon to pull two 14-inch plows in clover sod of average soil texture.



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A SUCCESSFUL MEETING

The report on the results of the cattle feeding experiments conducted at the Kansas Experiment Station during the past winter was the central feature of the cattlemen's meeting held in Manhattan June 1. Owing to the steady down-pour of rain it was impossible to visit the farm and feed lots as planned, and a great many were prevented from attending because the roads were impassable for automobiles. In spite of these unfavorable conditions, however, there was a large attendance. If the weather had been favorable, the old chapel room in which the program was given would not have held the audience.

In introducing W. A. Cochel, head of the animal husbandry department, who explained the experiment and gave the results, President Waters called attention to the fact that during the last five years eighty-five per cent of the graduates of this department had gone back to the farm. He attributed this to the influence of the men in the agricultural division of the college.

Six years ago the live stock holdings of the college had an inventory value of fifty thousand dollars. This spring the inventory showed the institution to own live stock valued at \$300,000. This includes the stock owned at the branch station. It was also pointed out that much of this live stock had been bred and developed by the college. Aside from one stallion, the college has not paid more than \$500 for any animal it owns, and last year the average price received for bull calves sold was more than \$500. There now stand at the head of herds in half a dozen agricultural colleges of the United States sires which were bred and produced by the Kansas institution. The animal husbandry department has sold during the past two years, stock to more than half the states of the Union.

The annual cattlemen's meeting is serving a most important purpose in making the work of the Experiment Station real. Those who visit the college at this time and see with their own eyes what has been accomplished, take with them the lessons taught and turn them to practical account on their own farms.

For the first time in the history of experimental cattle feeding, the results obtained have come from feeding cattle whose dams have been grown under experimental conditions so that an accurate record of the cost of producing them has been obtained.

In the test just closed six lots of steers were fed, there being fourteen head in each lot. The cows from which these calves were produced cost thirty dollars a head at weaning time in the fall of 1913. A year later they weighed 642 pounds and had cost \$51.60 a head. Two years later they weighed 928 pounds and had cost \$70.97 each. They were bred in the spring of 1915 and produced the calves which were used for the feeding tests when thirty-six months of age and weighing 928 pounds. The total cost of maintenance from the fall after they were bred until the calves were weaned was \$22.14 a head. With an 80 per cent calf crop the average cost of these calves at weaning time was \$27.61. These figures are based upon the cost of feeds, interest on investment, taxes, labor charges, and the ordinary losses.

In estimating the value of feeds it was put in at market prices at the time fed. A considerable quantity of the material used would have been wasted if the cattle had not been used for its marketing. The cattle in this way furnished a market not only for the farm products but also for all the products

produced in connection with the usual systems of grain farming in Kansas.

A detailed report of the results of the test will be given in our next issue. The program as a whole was a most profitable one. We hope to be able to give in part at least some of the addresses.

JERSEY BREEDERS ORGANIZE

The Kansas Jersey Breeders' Association was organized at Holton, May 30, with a charter membership of over a hundred. This is another forward step in the development of the dairy interests in Kansas. While this organization is especially designed to promote the Jersey breed, its avowed purpose is to exert its influence in promoting dairying as a farm industry. This is a common platform upon which the members of all dairy breed organizations can meet and through such co-operative effort the dairy business of the state can be greatly improved.

The organization took place following a banquet given by the Holton Business Men's Association. This was a most enjoyable occasion. Over two hundred Jersey breeders and others interested in the cause of dairying were present. Some most interesting and instructive talks were made following the dinner.

The officers elected were as follows: President, D. A. Kramer, Washington; vice-president, E. V. Fitts, Paola; secretary-treasurer, J. A. Porter, Mayetta. A vice president will be elected for each county in the state.

The forming of this association adds another link to the organized forces banded together in Kansas to work for more and better dairying. We have reached the point in our dairy development where increased attention should be given to improved dairy methods. Such organizations can serve a most useful purpose in directing the attention of the dairymen of Kansas along these lines.

MILO FOR LATE PLANTING

It is safe to plant dwarf milo as late as June 15 to 20. Both milo and feterita are earlier in maturity than kafir and for grain should be planted in preference to kafir at this late date or in the extreme western or northwestern parts of the state where the frosts come early. All these grains can be used as substitutes for corn in feeding stock. During recent years new uses have developed for the grain sorghums, namely, the making of alcohol and yeast.

The grain of the white seeded varieties of grain sorghums can be used as human food. It makes a meal very similar to corn meal, which can be used in the same way either alone or mixed with wheat flour. Kafir grain will pop like popcorn. Since the grain sorghums can be used as food both by man and animals, there should not be the slightest difficulty in finding a market for all that can be grown this year.

These crops all make excellent silage, and kafir has a high fodder value cured dry, even when it is grown to produce grain. The stalks and leaves of milo and feterita ripen and dry earlier than the grain and they have less fodder value when the grain is fully ripe.

BUSINESS AS USUAL

We are being warned by one group in this country that "business as usual" must be our program. Another group is preaching an almost hysterical economy. As the business of the country is adjusting itself to a war basis it is becoming more and more apparent that there should be a proper balance maintained between these two extreme views. Econ-

omy carried to extremes will react and harm a great many people. On the other hand there can be no question as to the need for economizing in food. This does not mean hoarding food as some are inclined to do. Buying and storing ten sacks of flour where but two are needed saves nothing, in fact may result in waste and is sure to decrease the available supply.

Conservation of our food supply means using food properly with the least possible waste and not taking available food supplies out of use. The extent to which we should economize after seeing that we are not carelessly wasting food of any kind is an open question. If we follow the rule of cutting out expenses which we should have cut out even with the country at peace, we will not go far wrong. It is the dollar in circulation that keeps business active.

OVERSTOCKING WITH PROVISIONS

People who lay in large supplies of flour, meal, breakfast foods, and other similar products for fear of having to pay higher prices later may not find the practice very economical in the long run. Such hoarding of food supplies is sure to temporarily affect the market and mill products, dried fruits, and many other foods commonly purchased and stored are very apt to become infested with worms of various kinds. These worms are the larvae of different species of beetles and moths that always are more or less common in the pantry, flour chest, cabinet, or other places where food products are stored. The housewife must wage a continual warfare against these pests. There is always danger that flour and other food products stored in quantities will become wormy in spite of the efforts put forth to destroy sources of infection.

The sorghum crops will again come to the rescue in Western Kansas. They are the surest crops to grow on the abandoned wheat land. Dwarf milo or feterita will produce grain under the most adverse conditions. Kafir of early-maturing strains will mature over most of Western Kansas, and as forage crops almost any of the sorghums can be grown with almost positive assurance of success. A seed exchange is being conducted by the Hays Experiment Station to help those who wish to secure seed of adapted varieties. A bulletin entitled "A Cash Crop Which Grows After Wheat Fails" can be secured by addressing Charles R. Weeks, Superintendent Fort Hays Experiment Station, Hays, Kansas.

Fifty-five new members joined the farm bureau of Jewell County in one week. This bureau has been organized and doing active work for three years. The rapid addition of new members is evidence of the value placed on the bureau by farmers of the county.

Plan for plenty of feed for the cows for next winter. Feed the springers and dry cows to get them in the best possible condition, so they will be able to do a big year's work.

The dairy cow is the most efficient producer of animal food. Hence it is all the more important that the dairymen be alive to their opportunity for service. Greater consumption of dairy products will lower the "high cost of living." We should do all we can to stimulate the use of dairy products, and, with growing production, keep pace with the growing demand.

FARM DEMONSTRATION MEETING

On the title page of this issue is an account of a meeting held on a farm in Allen County. A. M. Dunlap, the owner of this farm, is co-operating with the Experiment station in making trials of different cropping methods. We considered it a rare privilege to be able to attend a meeting of this kind.

We feel that Mr. Dunlap and other farmers who are co-operating with the experiment station deserve a great deal of credit for what they are doing. As a result of such community meetings where tests of this kind have been made the farming methods of the whole neighborhood are sure to be improved. Those who are actually tilling the soil have too often looked upon the work of the experiment station as something remote and not applicable to their conditions. Tests of the kind here conducted followed by the calling together of the people to study the results makes the work of the station real.

This meeting was attended by ex-Congressman Charles F. Scott, of Iola, who was reared on a farm in this immediate neighborhood; J. T. Tredway, of LaHarpe, president of the State Board of Agriculture; E. J. Macy, county agent of Montgomery County, and F. J. Robbins, county agent of Franklin County. Mr. Scott presided at the meeting, and by way of introduction recounted some of the agricultural history of the county and especially emphasized the possibilities of making a much wider use of the grain sorghums. Mr. Scott, who is a member of the State Council of Defense, called attention to the fact that people generally have little appreciation of the value of these grains as human food. He urged that greater consideration be given to the growing of grain sorghums and the using of these crops both as human food and as feed for live stock.

We felt very much at home in studying the conditions on this farm. The writer grew up on a farm in an adjoining county and struggling with the problem of trying to grow alfalfa on upland soil was one of the experiences through which we passed. It is a most wonderful crop and the acreage devoted to it can be profitably increased on many Eastern Kansas farms.

FARMERS' UNION PICNIC

The Farmers' Union of Riley County and the unions of adjoining counties are to hold a picnic meeting at the agronomy farm at the Agricultural College, Manhattan, on Friday, June 15. The college and experiment station authorities are the hosts and will do all in their power to make the visit pleasant and profitable. All union members are invited to bring their families and lunch baskets. They will sit down to a picnic dinner on the lawn of the college farmhouse. Following the dinner will be a short program. Talks will be made by Maurice McAuliffe, president of the State Farmers' Union, and several other members of the union. President H. J. Waters, Director Jardine, and others of the college and station staff will speak.

A canning demonstration will be given at the farmhouse for the benefit of the women. The men will be taken on a trip over the experiment station farm.

We hope this will become an annual event. The Farmers' Union is a most powerful organization and its members are all vitally interested in the work of the experiment station. It is only by studying this work closely that its full value is appreciated. We have marked this date on our calendar and plan to be present.

THE FARM SHEEP BUSINESS

Mutton and Wool Production Requires Minimum of Grain Feeding

By F. R. Marshall, Bureau of Animal Industry, Washington, D. C.

UNTIL two years ago the raising of sheep either on farms or on the range was quite an uncertain business. Partly owing to periods of lack of confidence occasioned by tariff manipulations the supplies of western sheep fluctuated widely. The outlet for lambs or mutton was quite limited and there were frequent periods of ruinous prices. During the time referred to there were usually liberal supplies of wool that could be imported from abroad and wool prices were just as changeable as those for sheep.

These past turmoils of the sheep raiser are no cause for discouragement for either ranchmen or farmers at present. The world's supply of wool has ceased to increase while the consumption is steadily growing. This condition was evidenced even before the war, as the American wool clip of 1914 was handled at materially higher prices than the 1913 clip. There is the best of assurance of strong future wool values and some authorities predict phenomenal prices. This does not justify engaging in sheep raising on the wool basis, but does add a considerable certainty to the business, because wool and lamb production can not be separated. The certain prospect of high and steadier values for meat give the same assurance of steadiness to the sheep business as is in prospect for the raisers of cattle and hogs. Since lamb became high in price it has greatly increased in popularity and there can be no doubt that the meat trade will handle all the production of the next few years without difficulty.

The discouraging statistics of earlier sheep raising which are quoted by some pessimists during recent months have no relation to the present condition. Those statistics relate almost entirely to sheep kept for wool production with very little regard to the production of meat. We now have a new economic situation, one that requires the use of sheep on most farms in order to keep down the operating costs and to insure the maximum returns. While the type of sheep which we must now begin to raise will be primarily a mutton or rather a lamb-producing sheep, the wool question will continue to be an important one and can be well attended to without detriment to the other function. While authorities differ as to the possibility of dual-purpose types in cattle, there is no room for a difference of opinion as to a practical and profitable combination of wool and mutton production in the same animal.

ECONOMIC ADVANTAGES OF SHEEP

Now that we are assured a fair and steady outlet for sheep products, we are for the first time ready to determine just what relation the farm flock should bear to the other stock on the farm and under what conditions sheep should or should not be kept. Unfortunately our understanding of this class of stock is far behind our information regarding the economic production of beef and pork. The situation is comparatively new and the experiment stations have not had the opportunity to determine the most profitable lines of operation as they have done so notably in the other classes of stock.

One of the main economic features of sheep in which they differ from other farm stock is in their producing marketable products with a minimum of grain. The lamb which the market most appreciates these days carries a much smaller development of fat than do steers or hogs. A ewe can be well kept throughout the year and her lambs marketed in good condition with a maximum use of seventy-five pounds of grain. Lambs go to market before weaning and most of their growth is produced by the milk of the ewes. By feeding the older animals, a larger proportion of roughage and pasture is utilized. No other stock can make such quick or valuable returns from pasture or other grazing crops as do sheep. This fact suggests the keeping of sheep on farms not well adapted to the production of grain. It also calls for the use of parts of other farms as a

means of soil improvement and production of a marketable crop without the use of high-priced grains.

A second important economic feature of sheep is the quickness of returns. Lambs can and should be marketed within ten months after the ewes are bred. This feature is an important item of security in the commercial side of the farm business.

The labor requirements in connection with sheep adapt them to a place in systems of mixed stock farming. The labor of feeding and caring for a flock of ewes is comparatively light labor and can well be done by boys of the family. It is attractive to them when they are given a fair interest in the returns and if a boy who is well instructed and directed in the raising of sheep there is no better training for developing powers of observation and for efficiency in live stock farming. The main part of the labor with sheep is at lambing time, though frequent and constant attention is necessary through the year. The lambing season can and should be arranged to come before the pressure of other work in the spring. Both the wool and lamb crops are marketed before harvest time and the ewes require a minimum of attention while other farm work is more pressing. In these times of high-priced farm labor regard must also be had for the fact that by the use of forages sheep can harvest their own crops and for the further fact that as gleaners and weed destroyers a flock of ewes replaces a great deal of hand or horse labor that would otherwise be required in keeping grain fields and pastures clean.

DIFFICULTIES TO BE MET

During the period of uncertainty and pessimism regarding farm sheep, which period is now ended, many excuses and explanations were offered for the small interest in farm flocks. The fact was that the business lacked the proper incentive of good prices. It is true that the dog problem requires careful consideration by the sheep farmer. With a general desire to keep sheep there is now less difficulty in enlisting the support of a majority of farmers in a county for the enforcement of adequate dog laws. In fact the changed attitude of the farmers themselves will of itself to a large extent be sufficient to reduce the number of dogs and to control the actions of the remainder.

Stomach worms and other parasites have been held up as the "hoodoo" of the sheep business. Any difficulty is insurmountable to the man who does not understand it. Stomach worms are likely to trouble sheep in any part of the country. They can be treated satisfactorily if taken in time, but the most profitable method of raising lambs avoids this trouble almost entirely. To any one who understands sheep and the handling of them the question of parasites is no more difficult or discouraging

than hog cholera or the diseases of cattle.

The only serious difficulty to be met in the development of our farm sheep husbandry lies in the scarcity of men who understand sheep and are ready to set the example for their neighborhoods as to the best methods of handling them. The difficulty is only temporary in character.

RETURNS FROM FARM FLOCKS

On a conservative basis of nine cents a pound for lambs the gross returns from a well managed farm flock can safely be placed at \$10 per ewe each year. The portion of this which is net profit depends entirely upon the methods employed for computing costs. Because of this it is difficult and unsatisfactory to attempt to compare net returns from sheep and other classes of stock. When the needs of the flock are understood and properly attended to, the profits from the use of land for sheep raising can be made equal to those obtained from the raising of other stock. The keeping of 500 ewes on a good quarter-section farm is entirely practical. A net income of \$5,000 may not be as large as can be obtained from other stock, but when the advantage to the land and the economy in labor are considered it becomes apparent that sheep are not especially more profitable or less profitable than cattle or hogs.

The main consideration is the way they are handled, and to those who prefer sheep raising or whose farm and labor conditions are better for sheep than for stock requiring a larger use of grain, there is abundant opportunity for satisfactory outcome with this kind of farming.

PROFITABLE TYPE OF SHEEP

The first consideration in the farm flock of the future is the production of lambs. In most cases, and in most sections, the greatest economy of production will require the marketing of lambs before weaning at from four to five months of age and from sixty-five to eighty pounds. The market does not require a high development of fat on these lambs, but they must be well bred and well cared for to sell satisfactorily at this age. The larger breeds of sheep may make the weight mentioned at weaning time but are not likely to have the market finish of the "Down" breeds. Considering the requirements of the lamb market it would seem that Shropshires, Hampshires, Oxfords, Dorsets, and in some cases Southdowns, will need to be used chiefly in the profitable farm flocks of the future. Each breed has its peculiar adaptabilities to be taken into account in planning the system of raising to secure the greatest margin of profit. The hothouse lamb business is not likely to prove practical for many farmers. In fact the summer and fall prices of lambs have been maintained at such high levels during the past two seasons that the extra difficulty of raising the winter

lamb is not likely to be offset by its value except by those who are specialists in that line of business.

In any system of mutton production the value of the fleece must be kept strongly in mind. The amount of wool carried by the market lamb is a considerable factor in determining its price and the value of the breeding ewe's fleece is a very important consideration. Mutton sheep breeders are already responding to the new condition by giving greater attention to character and quality of fleece. There need be no sacrifice of mutton conformation or of capacity for rapid growth in keeping the wool side of the flock at a high standard.

SYSTEMS OF PRODUCTION

Methods of handling flocks necessarily vary in different sections. For the most of the middle western farm country the market requirements and the health of the flock make it desirable that lambs be dropped in February or March and marketed in June or July. The ewes must be fed during these months in any event and the labor of attending to the lambing and giving the lambs a good start can well be done at that time of year. With alfalfa hay and silage and a small grain ration ewes can be made to milk well enough to give the lambs an excellent start before being turned out to pasture.

While grain feed for lambs at this time is not essential, it will be found that there is no place on the farm where a small grain ration can be used to secure such large returns as can be secured from giving lambs one or two months old a chance to eat what grain they will take. This method gives the lambs a good start and safeguards against danger from stomach worms during the early part of the summer. They are marketed before the worst part of the season and the question of parasites is not nearly so serious in the case of the breeding ewes as it is with lambs.

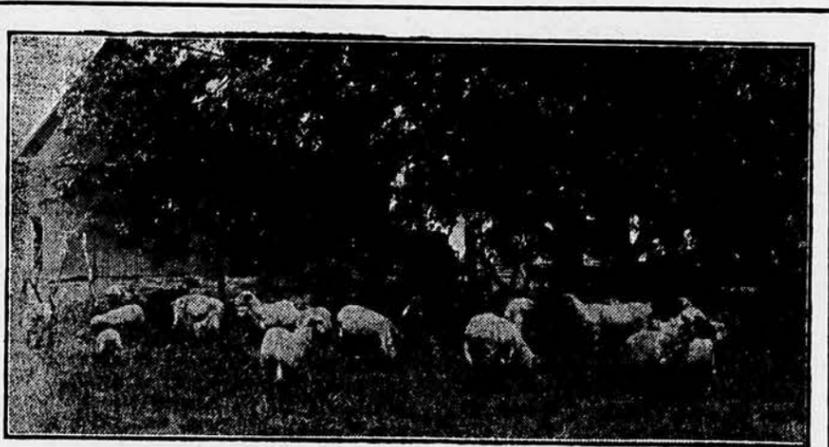
Permanent grass pastures can be used to good advantage for ewes nursing lambs, but there is always a serious danger of their becoming infected with stomach worms after a few seasons' use. It is possible to divide grass pastures in a way to prevent the lambs going over the same ground at too close intervals in spring or the flock can be pastured first on fall grains and later on early seedings of oats and peas, and in some cases rape can be started early enough to be of use to the lambs before they are marketed.

As lambs are marketed ewes can be returned to the grass pastures if necessary, or used in stubble fields or cattle pastures to good advantage.

PROFITABLE SIZE OF FLOCK

The small flock of ten or twenty ewes so often recommended for killing weeds and picking up waste grain is a snare and a delusion. The theory of this commonly offered advice is excellent, but in practice it falls down. It is this kind of a flock that is most frequently attacked by dogs, because their relation to the farm income is so small that often no one knows or cares very much just where they are or how they are getting along. The University of Illinois recommends one ewe to each two acres on farms on which all classes of stock are kept and eighty head as the minimum flock that can be economically handled. The amount of sheds and racks, and the labor required for this number is not very much more than for a flock of twenty head and the size of the business commands the respect and study necessary to insure the use of the best methods.

On land that is most valuable for pasture and not adapted for grain raising, farmers who understand the business can do well by specializing in sheep raising. Even on good grain producing land the economical distribution of labor, farm risks, and different classes of crops makes a good flock of ewes a necessity. This is more especially true now than formerly because of the uncertainty of more satisfactory returns



GROUP OF EWES AND LAMBS ON FARM OF A. M. DUNLAP, ALLEN COUNTY

for lambs and wool. In many of the states there has been a strong movement toward the establishment of new flocks during the past season. The question has already been raised as to the danger of over-production. With the existing popularity of lambs in the butchers' stalls and the curtailment of meat diet that has already taken place in many families in this country, there is abundant outlet for an increased production of meat so long as that production can be marketed at a price that the consumer can afford to pay. Lamb and mutton can be produced at a low cost and in many cases the adding of a flock of ewes to the farm will materially assist in lowering the cost and thereby increase the profits from the other stock.

It is significant to note the relation of sheep to cattle on the farms of England and Scotland. While not equal in average fertility to soils of the middle west, these countries show a system that has developed into a paramount one and which there best adjusts the matter of soil fertility, use of labor, cropping and profits. The larger farms have the highest proportion of cropped land and carry the most stock per acre. In England and Wales the number of ewes to each breeding cow is three, on the medium-sized farms, and seven on the largest holdings. In Scotland the farms of from fifty to 300 acres have four ewes per cow, while the largest farms with a larger proportion of crop land have thirteen ewes to a cow. These figures need not necessarily be expected to apply here, but they certainly teach that with older and better worked out farming systems and with the more stable conditions of the future, we will evidently increase the number and size of our farm flocks. The safe and profitable time to develop this branch of animal husbandry has arrived.

Baby Beef Production

The demand for small, high-quality cuts of meat and the increased cost of producing beef have combined to foster the rapid growth of the baby beef industry. Baby beefs may be described as well-fattened, finished animals, weighing from 900 to 1,200 pounds and marketed when between fourteen and twenty months old. It takes less food to produce a pound of flesh with them than with mature cattle, they sell as high as the best of other fat cattle, and markets for baby beefs have been very stable during the last ten years. The young heifers sell as well as the steers, and the returns from the money invested in the production of such cattle come quicker. On the other hand, it takes more experience to succeed with baby beefs than with mature cattle, a better grade of stock is required, and farm roughage can not be substituted for grain to the same extent.

In a new publication of the United States Department of Agriculture, devoted to this subject, Farmers' Bulletin 811, it is pointed out that the first necessity for the production of baby beef is a herd that has at least a fair amount of beef blood. The cows need not be pure-breds, but they should have at least two or three crosses of such blood in them. A preponderance of dairy blood will not give profitable results. The cows should, however, produce enough milk to keep the calves well and growing without much additional feed.

A good bull will do much to offset defects in the cow herd. A good beef form and a strong tendency toward earliness of maturity are essentials; the owner's success, in fact, depends to a great extent upon the bull's ability to transmit the latter characteristic to his offspring. Money spent in acquiring a bull that will do this is likely to prove a good investment, for the whole baby beef industry depends upon speed in finishing the animals for market.

It is desirable to have a herd at least large enough to produce a carload of calves a year. Shipping in carload lots is usually the only economical way of getting stock to market, from twenty to twenty-seven baby beefs constituting a carload. Such allowance must, of course, be made for loss and for calves that are not suited for treatment as baby beef. Since a well-matured bull can easily take

care of fifty or sixty cows, the bull charge per calf also will be greater when the breeding herd is small. On the other hand, great care must be taken not to crowd the pastures. Good bluegrass or clover should carry from fifty to a hundred cows on a hundred acres, other pastures from fifty to as low as five. The amount of available roughage is another important factor in determining the size of the breeding herd. Roughage should form the basal portion of the ration for the cows. It can not be bought with profit at the prevailing prices and no more cows should be kept, therefore, than the farmer can feed with home-grown roughage.

The feeding of the calves intended for market depends on a number of factors such as the season of the year they are

dropped, whether or not any other use is made of the mother's milk before weaning, and the age at which it is planned to sell the calves. Suggestive rations in which these points are considered are given in the bulletin already mentioned. These are made up of corn, cottonseed meal, corn silage, clover hay and oat straw. If barley, milo, kafir, or similar grains are substituted for corn, somewhat larger quantities should be used. Linseed meal may be used instead of cottonseed meal and if neither of these is available, a high-grade leguminous hay should be used for roughage.

Rape Good Feed for Hogs

Rape is a most valuable forage for hogs. It furnishes a palatable, nutri-

tious feed throughout the season if not pastured too closely. In an experiment at the Ohio Experiment Station lasting 119 days this crop had a value, as forage for hogs, of \$77.87 an acre in replacing concentrates in the ration, corn being valued at \$1.12 a bushel and tankage at \$60 a ton. In addition to this pasture the hogs received a daily ration amounting to 2.8 percent of their live weight.

The crop may be seeded from April to the middle of July, either broadcasted or drilled solid or in rows 24 to 28 inches apart. Five to eight pounds of seed are needed to broadcast an acre, and from two to three pounds if the rape is to be grown in rows. On good soil and with early cultivation the crop is ready to be pastured in six to ten weeks from planting.



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moth plant has been built and equipped to produce this one type economically. John W. Bate, the efficiency expert, has cut our factory cost in two. Even the Mitchell bodies are built here, under these up-to-date methods.

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Please see that car. See how it differs from other cars you know. Note its many unique attractions. You should know these things before you buy a car.

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Likewise the saving of time that is possible through a cream separator of ample capacity, that is easily turned and always in order.

There was never a summer in the history of the country when both these considerations were of as great importance to the nation as well as to the individual producer of cream and butter.

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This is true whether you have no separator or have an inferior or half-worn-out machine, even if it be an old De Laval model.

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**READ KANSAS FARMER'S CLASSIFIED
ADVERTISING PAGE FOR READY BARGAINS**

Kansas Farmer Dairy Club

Has Fifty-Pound Cow

A LITTLE over a year ago we helped Harvey Russell's father select a cow for Harvey to use in the Dairy Club work. Harvey had been corresponding with a man in Shawnee County about a cow, and his father, who had business in Wichita, was sufficiently interested to make a special trip to Topeka to see this cow. He asked the writer to go with him and we found the cow a very desirable animal and advised the purchase. This cow had all the indications of large capacity for milk production, and when we learned

that she did not give over thirty-six pounds a day when fresh we were very much disappointed. She had recently been shipped from Wisconsin, however, and was not in the best condition. It was a long, hard trip from Topeka to Scott City, and that did not improve her condition. Harvey has given her the best of care during the past year and was especially careful to feed her well during the time she was dry. She has recently freshened the second time and Harvey writes as follows:

"My cow freshened the morning of

Open Letter to Club Members

I AM SURE from the enthusiastic letters you write us that you are glad you joined the Kansas Farmer Dairy Club. I have met and talked with quite a good many members of the club, and wish I might meet all. I regret that I cannot write a personal letter to each and every one of you. As the year's work draws to a close, you are beginning to appreciate more fully what it means to milk a good dairy cow and dispose of her product. Many of you as a result of your work now own a cow or have her so nearly paid for that you can begin to see the end. Some not only have the original cow paid for, but one or more heifer calves.

In addition to earning a cow, you have learned a good many valuable lessons since you began the Dairy Club work. It is no small matter to keep accurate milk and feed records for a year so you can know exactly what your cow is producing, how much she has eaten, and what it has cost. Every one of you has kept such records and as a result can figure out exactly what a gallon of milk or a pound of butterfat has cost. This is one of the most important lessons in the dairy business. Those who have learned well this lesson have accomplished something well worth while. I feel sure that you who later take up dairying as a business will conduct it in a businesslike manner and will not handle a herd of cows without knowing positively that every cow is producing at a profit.

You have also learned how to feed and care for a milk cow so she will do her best. A good many have thought that all there was to success in dairying was to buy some cows of dairy breeding and begin to milk them. This is a mistake. A knowledge of how to feed and care for dairy cows is of the greatest importance. There are farmers in Kansas who have been very much disappointed because they failed to make greater successes in the dairy business, and the principal reason was that they did not know how to feed and care for their cows so as to give them a fair show.

I know you have had discouragements, and difficulties of various kinds have arisen in your work. These, however, have only tested your determination and your ability to overcome those things which have seemed to stand in the way of your success. You are having to pay exceptionally high prices for concentrated feeds, but you are also getting high prices for the butterfat you sell. The fact that grains and such feeds as you buy have been high in price has compelled you to pay more attention to using the farm feeds to the best possible advantage. After all the biggest opportunity dairying offers is that of converting into a finished product the various feeds, such as alfalfa and silage—feeds produced on the farm.

Even though you have had to pay high prices for some of the feeds you used, you have not been working in the dark as does the dairyman who keeps no record of his milk production or the feed eaten by his cows. You can figure out at any time just what your butterfat is costing, and you will find that even though feed is high you can afford to feed a good cow well. There is little profit in trying to handle a good dairy cow by giving her only a limited amount of feed. To produce milk to her fullest capacity she must have good, palatable feed, in abundance, and it has been your problem to study her needs and her appetite and see that she gets this feed. In looking over dairy cow records—not only those of the club members, but records in general—I have noticed that it is nearly always the cow that has a big feed bill charged against her that makes the most profit. Of course it would be very unbusinesslike to have a big feed bill charged to a cow without also having accurate figures on what she is eating and the amount of milk and butterfat she is returning for the feed consumed. You are all keeping accurate records and need not fear a big feed bill if these records show a good profit is being made over and above the cost of the feed.

I hope you consult frequently with the man who loaned you the money to buy your cow. It is worth a great deal to have the friendship and confidence of business men. You may have your cow almost paid for by this time, but the banker will still be interested in you and will be glad to have you talk with him about your work. It is a part of his business to be thoroughly familiar with what his customers are doing. The ability to gain the confidence of business men so that you can obtain money to use for productive purposes will mean a great deal in helping you to make a success of whatever business you may take up in later life.—G. C. WHEELER.

April 15. She had a fine heifer calf. It is sure nice and fat. I think Daisy is doing pretty well. She has given fifty pounds of milk for the last two days. If I can get her up to fifty-four pounds it will be fifty per cent better than she did on her best day last year, and I think that she will do it all right.

"I had to go fifteen miles south of town for my last load of hay. The pastures are getting pretty good so I won't need any more hay until they begin to cut the new alfalfa.

"I am going to start to run a Nilson tractor the last part of this week.

"What shall I do about my milk test? I did not send it in this month because Daisy freshened on the fifteenth and I did not think the milk would be good for a test.

"I would like to join the advanced class of the dairy club the first of June if it would be all right to start with Daisy then."

Cow Has Heifer Calf

My cow freshened April 17, 1917. She had a fine, dark red heifer calf weighing about a hundred pounds. My cow sure is a dandy. She paid for herself with interest on note in nine months and left me a profit of ten dollars in that time. I paid ten per cent interest on the note.—LELA MAE HAYNES, Rawlins County.

The members of the Dairy Club seem to be especially favored in getting heifer calves.

Dairymen who try to start a dairy herd by using one or two good cows as foundation stock are always disappointed when their cows present them with male calves.

Several of the cows belonging to Dairy Club members have dropped a second heifer calf since the work of the club began. These members will have dairy herds almost before they know it. Because of the possibility of starting a herd from a single cow, we would urge the importance of getting as good a producer as possible. A number have found as a result of the record work that the cows being milked are not as profitable as they should be.

Keeping books on a dairy cow is a profitable business and few dairymen make any great successes without production records.

Cost of Milk

A detailed study of the cost of producing milk on four farms, recently conducted by the United States Department of Agriculture, leads to the conclusions that on those farms feed accounts for one-half or more of the total cost, the remaining charges being divided about equally between labor and other items, such as shelter, use of equipment, use of bull, interest, depreciation, and overhead. The conclusions are based upon an exhaustive analysis of the business of the four farms, each of which is representative of a type of dairying. While the actual costs on the farms, as elsewhere, vary from year to year, the ratio between each item and the total remained nearly uniform when the same system of management was followed. It is believed, therefore, that milk producers throughout the country will find valuable suggestions in the report of this study, just published as Bulletin 501 of the Department of Agriculture, and entitled "The Cost of Producing Milk on Four Dairy Farms Located in Wisconsin, Michigan, Pennsylvania, and North Carolina," by Morton O. Cooper and C. M. Bennett.

The fact that the cost of feed is shown to be at least one-half of the total cost of producing milk on the farms is cited as evidence that the feed item is of great importance to the dairyman who seeks to reduce the cost of production. It is pointed out, however, that the greatest economy of production is not always attained by cutting down the feed cost, and that sometimes it is necessary to increase the feed bills in order to increase profits.

The question of feed supply is held to be one for individual solution. "Just how near the specialized dairyman should come to growing all the feed required by his dairy herd is a question of individual business management. One man may find it more profitable to grow all the

feed required, while another may increase his profits by supplementing the income from cows with crop sales and purchase part of the feed. In a few localities in the United States crops may be selected that will not only yield a product for which there is a ready sale at good prices but which also leave on the farm much feedable material. Sweet corn is an example of this type."

It is pointed out that when this practice of supplementing the dairy business with the production of cash crops is feasible, it is often good business for the dairyman to sell crops and buy concentrates, and that "if by the growing of a cash crop it is possible from the net receipts of one acre to buy a quantity of concentrates equivalent to that which could be raised on one and a half or two acres, it would be folly to grow the concentrates."

In a discussion of the dairy labor problem, special attention is directed to a system of winter dairying practiced on one of the four farms, where profitable employment for labor was offered at a season when otherwise there would be little to do and yet summer work on crops was not interrupted.

Of particular interest to the dairyman who is considering the question of building up his herd is the fact that though it was found to cost more to keep the cow that gives a high yield than one that gives a low yield, the unit cost of the milk produced fell in all cases as the production per cow rose. Of perhaps greater interest to the average dairyman, however, is the further fact that "the decrease in the cost of milk per pound was much greater in the step from the poor cow to the cow of fair quality than in the step from the fairly efficient cow to the good cow or the exceptional cow." This fact is cited as evidence that the first step in building up a poor dairy herd (that is, replacing scrubs with grades) is not merely the easiest step, but also the one which promises the most for a given expenditure of money and labor.

Treating Cows for Bloat

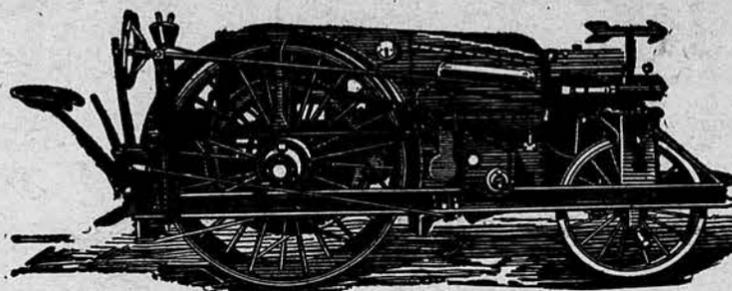
The most careful men cannot avoid having occasional cases of bloat, and those who habitually let stock graze on alfalfa or clover are sure to have considerable trouble and probably lose animals. When animals are bloated it has been found that moving them around and compelling them to exercise affords some relief. A dose of formalin, three tablespoonfuls for a mature steer or one-fourth this amount for a calf, is a remedy that has a specific effect in checking the formation of gas in the paunch. The formalin should be diluted in a half pint of water. Some run a piece of smooth rubber hose down the throat into the paunch and thus permit the gas to escape. Another remedy is a small teacupful of kerosene mixed with a half pint of sweet milk. Some add a small amount of turpentine to this mixture.

If the animal is so far gone as to stagger and be almost ready to fall when discovered, puncturing the paunch is about the only measure that will save it. This puncture should be made just below and in front of the hip bone, the proper location being about six inches from the bone measured in the direction of the lower point of the shoulder. It is always best to use the trocar and canula, but in an emergency when these instruments are not at hand a large-bladed pocket knife may be used. This remedy should always be considered as a last resort, since the wound will heal slowly and the stomach contents may be forced out into the abdominal cavity and cause infection.

A precaution to observe in allowing stock to graze on alfalfa or feeding them green alfalfa is to always keep them well filled. It is the very hungry animal that bloats. If they are always supplied with other feed before they are allowed to get to the green alfalfa or clover, there is much less danger of their eating enough to cause trouble.

W. J. Sayre, of Chase County, maintains a small breeding herd of Short-horn cows from which he sells each year as beef the entire calf crop with the exception of a few of the heifers. Six years out of seven he has topped the Kansas City market with these calves.

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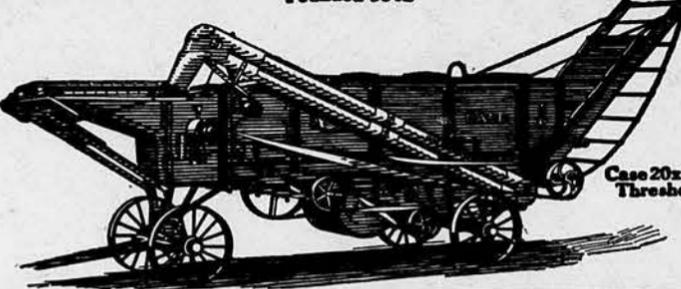
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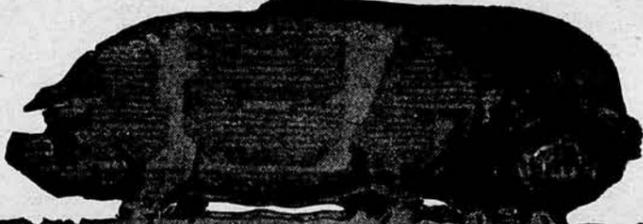
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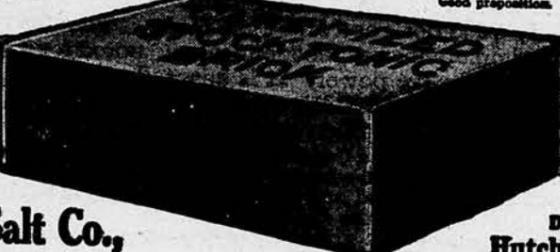
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SHOULD HE RE-PLANT?

SUBSCRIBER E. B. G., Chase County, writes relative to his efforts to secure a stand of kafir. He says: "I have been reading your article, 'Plant Sorghums Thin,' several times now as we are trying to get a stand of kafir. We thoroughly prepared our ground, plowed and harrowed all of it at least once and part of it we also disked and harrowed again and then planted with a corn planter, using about a bushel of seed for fifteen acres. The seed was hand-picked, threshed by hand and then cleaned with a good fanning mill. The planter did not do satisfactory work, dropping from three to six grains within a few inches and then leaving spaces of from twelve to eighteen inches without any seed. Measuring off a space of thirty feet it looks as if there was an average of a plant to every six inches, but put in irregularly as above stated. What do you think about letting such a stand go, or would you replant? I cannot see how to change the planter to make it put it in any better. I could change the sprocket on which the chain works and shorten the spaces perhaps four inches, but that would also increase the number of thick places so there would be a plant at least every five inches on an average.

"I have two other strong objections to replanting, if there is a chance that the present stand will do. First, I have no more of the hand-picked seed, and would have to take machine-threshed seed, which would not be nearly so good as the hand-picked. Second, there is the danger of the next planting not maturing before frost. The latter objection, though, I do not consider serious as yet. It is planted on good bottom land that has been in alfalfa within the past four or five years.

"You speak about heads weighing four ounces. Would it be safe to count on that being the average weight of the whole field, or would they have to be pretty carefully selected to weigh that? Please send me your 'Sorghums: Sure Money Crops,' and I will remit for same."

We heartily endorse the methods followed by our correspondent in saving and caring for his kafir seed. If every farmer attempting to grow kafir would follow this plan in selecting his seed and preparing it for planting, there would be a great improvement in this crop. There is probably no one thing that is doing more to prevent the grain sorghums from giving better results than neglect to pay proper attention to seed selection.

We would advise letting the present stand go. Having to use ordinary machine-threshed seed if the field is replanted is a serious objection. The plants already started from the carefully selected seed are sure to be better than plants started from ordinary seed. Even though such seed has sufficient vitality to germinate, much of it will produce weak plants that will make slow, puny growth.

A four-ounce head of kafir is not a large head by any means. O. W. Prather, of Jewell County, who is quoted in "Sorghums: Sure Money Crops," wrote in 1912 that his kafir that year made an average yield of sixty bushels to the acre on thin upland and that it was as good in 1911. He stated that the average weight of a field-cured head was one-half pound.

Our correspondent refers to one of the serious needs of the grain sorghum grower, and that is a planter that will put the seed in the ground as it should be planted. When a man knows he has good seed, carefully selected and handled as in this case, it is discouraging to be compelled to use a planter that is so poorly adapted to the work of planting the seed at the proper rate. This is a problem for the manufacturers of planting machinery to work out.

Large or Small Farm

Farming is a business and has its overhead expenses the same as any other business. Many who have had no experience in farming do not seem to realize this fact. The impression too often prevails that anyone can farm and that the reason greater successes are not made is that not enough labor is put in on a given amount of land. We believe the American farmer to be the best farmer in the world, although it is true that in acre yields farmers of other countries have done much better than the farmers of this country.

In taking up the farming business, careful consideration must be given to the size of the farm operated. In a recent issue the Iowa Agriculturist pointed out that as a result of the distribution of misinformation by "would-be agricultural reformers," the idea has been firmly implanted in the minds of many that the surest and easiest way to wealth and happiness is to be found in the proper cultivation of a few acres of land. Poets have aided this throng of so-called reformers by putting into verse the delights of a "little farm well tilled." Yet, in spite of the poetical sentiment attached to "Three Acres and Liberty," conclusive investigation has shown that economical production of crops, so essential in making the farm business a success, is very seldom possible on the small farm.

Economical producing of crops on the small farm is prevented by the decreased efficiency obtained from the use of labor, improved farm machinery, capital and economy in buying and selling. It has been found that many farm operations require two men, no matter how small the farm. As a farm must have at least 150 acres to justify the employment of an additional man by the year, small farms either suffer from a scarcity of labor when it is needed or the wasteful use of it when sufficient is kept to accomplish certain necessary operations. The same principle applies to the use of horse labor, as three or four mules or horses are the smallest number that can be used efficiently with modern machinery. On the small farm it is usually impossible to keep this number busy. Taking up each of the factors of production, we find economical handling is very difficult on the farm of less than 100 acres.

The argument is then advanced that yields to the acre are less on the larger farms. While this is true applied to very large farms, a comparison of small farms and good sized ones has shown little difference in yield. The advantage in yield to be obtained by the cultivation of a few acres is more than counterbalanced by the increased cost of producing the crop.

In the past the Belgian farmer produced two or three times as much on an acre as did the farmer of this country. However, the farmer in the United States received six or seven times as much per man. Which is to be preferred? Undoubtedly from the standpoint of the individual farmer's welfare, the small farm is a delusion to be avoided. The general farmer cultivating a few acres will very likely have a small income, narrow viewpoint and a great loss in productive power to the man. There may be more poetry attached to the "small farm well tilled," but there is a better living in the large farm well managed.

Cultivation of Corn

Every good corn grower knows that cultivation is of the greatest importance in the early growth of the crop. Corn cannot compete with weeds and grass, and there is nothing more discouraging to the corn grower than to have weather conditions so unfavorable as to prevent proper cultivation, thus giving the weeds and grass a start. This is one reason

why many prefer to delay the planting so that they can kill one or two crops of weeds before the seed is put into the ground. It can be done very rapidly before the corn is planted, and even after the corn is up and when the weeds and grass are just starting the harrow can often be used to good advantage both with listed and with surface-planted corn. A large acreage can be covered quickly with the harrow and if the ground is right and the sun is shining, nearly all the weeds just starting on the surface will be killed. It is not always safe to harrow corn just as it is coming through the ground. After it is two or three inches high there is very little danger of injuring the crop.

We now have lister cultivators that are admirably adapted to doing effective work in cultivating listed corn. Ordinarily these are used twice, once with the disks set to throw the soil away from the corn and once with the disks set so as to throw it toward the row. At this second cultivation the result to be accomplished is the complete covering of all the small weeds in the row. Weeds which escape cultivation are usually too well established to be destroyed later with any form of cultivator.

Shovel cultivators are commonly used with good success after corn is too large to harrow or after the lister furrows have been worked down with the lister cultivator. There can be no set rule as to the number of cultivations to give. It almost entirely depends on the character of the soil, the rainfall, and the weed growth. The primary purpose of all cultivation is to keep the crop free from weeds so the plants will have full use of the moisture and plant food available.

From three to six cultivations are as many as are usually practical. If the soil is in good tilth and reasonably free from weeds, little is gained by cultivating the crop after "laying by" time. Stirring the ground too frequently when it is dry may even do harm. The ideal condition is to keep the surface broken up into a mulch two or three inches deep, this mulch being composed of small lumps of soil mixed with small granules but not containing much fine dust.

Nearly all corn growers agree that the later cultivations should be shallow, as the roots of the crop will be seriously injured by deep cultivation. The time to do the deep stirring of the ground between the rows is while the corn is small. Getting the best of the weeds early in the season is always the aim of the most successful growers of corn, and what is true of corn is true of kafir and others of the grain sorghums.

No Improvement in Wheat

The condition of wheat in Kansas has not improved during the past month, according to the report issued last week by the State Board of agriculture. This report is based on the conditions existing May 19. According to the estimate of the various reporters, the prospective yield of winter wheat in Kansas this year will be 40 million bushels, or an average of about ten bushels an acre for the acreage of growing wheat reported a month ago. This estimate is approximately 16 per cent less than the state's crop of wheat last year.

Wheat acreage figures of this year are, of course, subject to revision later, when the official returns from assessors are received from all counties. Of the twenty-two counties thus far heard from assessors' returns show an acreage 12.5 per cent greater than was reported by the Board's correspondents last fall. Should this ratio be maintained in the other eighty-three counties, the official assessors' returns will show an acreage larger than any ever devoted to a single crop in Kansas, surpassing even the acreage of 9,448,000 sown in the fall of 1914.

In several of the west central counties wheat that was reported as alive a month ago has perished since. Where the prospect was the most promising in April, principally in the counties of the eastern third of the state south of the Kansas River and in some of the important wheat counties of the south central section, the wheat has deteriorated more or less during the past month.

From present reports it would appear that upwards of 50 per cent of the Kansas wheat crop this year will be in the

counties of the central and south central portion of the state, including the counties of Sumner, Harper, Reno, McPherson, Kingman, Sedgwick, Pratt, Stafford, Rice, Ford, Barber, Kiowa, Comanche, Harvey, Marion, and Cowley.

Little insect damage is reported. Hessian fly has been observed in a few localities in the central part of the state and some chinch bugs are present in the eastern and southeastern counties.

The Board's report indicates that there will probably be as much as nine million acres of corn planted in Kansas this year. On the date the correspondents reported, 84.2 per cent of this probable acreage had been planted. This is a somewhat larger percentage than was reported a year ago on the same date, when the total acreage of corn planted was somewhat less than seven million acres. While the weather conditions have not been especially favorable for the growth of the corn, favorable reports are made as to the condition of the crop in the principal corn growing sections, the soil conditions being especially favorable.

The condition of oats this year, of which crop one and three-fourths million acres was planted, is over 8 per cent higher than the condition reported a year ago. The general condition of this crop seems most promising in the greater portion of the state, the percentages ranging from 75 in Sumner and Sedgwick counties to 94 in Republic and Marshall.

It is estimated that approximately 500,000 acres have been sown to barley, or an increase of about 21 per cent over that of last year. The larger increases in acreage are reported in the north central and western counties, where wheat sown last fall was largely winter killed. The condition of the barley is estimated at 87 per cent, the most promising outlook existing in the northwest. Returns indicate that fourteen counties in the western third of the state have 70 per cent of the total barley acreage.

The pastures and meadows of the state are reported to be in good condition in all sections except the north central part of the state. Alfalfa has made a good growth and the first cutting is being harvested in many counties.

Milking Machine Experience

We use a Sharples milker and have used it about a year. We have two single units. I like the single units best because you can milk each cow separately and keep a record. I also think it is much easier to use the single unit, but of course this is something for everyone to decide for himself.

As to the time saved with the milker, I can take the two units and three buckets and milk our twenty-five cows at least as fast as three good hand milkers could do this work. The cows soon become used to the milker and they like it better than hand milking because the work is done faster and the same every time. The milk flow is also increased by the milker. We haven't had any trouble with spoiled udders caused by the use of the machine.

The milker is by far more sanitary than hand milking, as not a particle of dust can get into the milk. The machine is not hard to operate. With a little practice you can go right along, and by studying the directions it is easy to remedy anything that might go wrong with it.

The milker is not so hard to keep clean. As soon as we finish milking we draw a bucket of water through the teat all the milk. Then we wash the outside thoroughly and wash out the teat cups and hose with a brush, which isn't much of a job as the hose is only about two feet long. These are then put into a tub of fresh water where they are left until the next milking. This water should be changed at least once a day in the summer time. A disinfectant should be used in the water and each milker company recommends some particular kind. This treatment keeps the milker clean and sweet.

In operating a milker you should be sure there are no air leaks in the air line.

Regarding the number of cows one should have before he can afford a milking machine, I would say that a herd of

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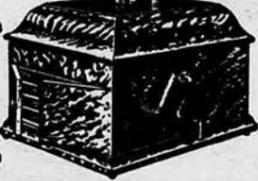
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Free Choice Fails on Alfalfa

IN THE "free choice" system of feeding pigs the feeds are placed separately in the different compartments of the self-feeder and the pigs balance their own rations. In the experiments conducted last summer and fall at the Kansas Experiment Station the free choice feeding in the dry lot was profitable as compared with self-feeding a mixture of the same feeds. On alfalfa pasture, however, it is doubtful whether the free choice system will give as good results as self-feeding the mixture. Results to this effect were secured in the extensive hog-feeding experiment referred to above. One of the objects of the experiment was to test the efficiency of the free choice system of feeding pigs under different conditions.

In this experiment twenty-four fifty-pound Duroc Jersey pigs were divided into four lots of six each and started on the experiment July 28. Two of the lots were fed on alfalfa pasture and the other two in dry lots. The rations fed are shown in the table on this page. The table also gives the detailed results of the test.

It will be noted that the free choice pigs in the dry lot made their average gain of 150 pounds at a cost of eighteen cents less per pig than the dry lot pigs fed the mixed ration. There was also a saving of eight days' time, the pigs in this lot making the 150 pounds of gain that many days earlier than did the pigs in the lot fed the mixed ration. This increased their selling value, due to the fact that on an average the market prices in the fall decline as the season progresses.

The results secured in the alfalfa pasture lots show a reverse of those in the dry lots. Evidently the pig's appetite is not the most efficient guide for balancing his ration when full-fed on alfalfa pasture. His appetite for alfalfa seems to dull his instinct as a dietitian when helping himself at the self-feeder. He naturally has a pig's appetite for corn and when this is satisfied on top of a good feed of alfalfa there isn't much room left for shorts and tankage. He leaves the feeder for a rest in the shade and before he gets to the feeder again he has done some grazing on the way. Not enough tankage is consumed to balance properly his ration and as a result his gains are more costly and he gets to market behind the pig which was forced to eat shorts and tankage with the corn. This, however, cannot be considered conclusive evidence of the relative values of the two methods of self-feeding on alfalfa pasture, as it is the result of only one trial, but it may be taken in the light of circumstantial evidence for the present time.—C. M. VESTAL, Kansas Agricultural College.

Hampshire Breeders Meet

On June 16 the breeders of pure-bred horses, cattle, swine and sheep of North-west Kansas will be the guests of the Valley Falls, Kansas, Commercial Club,

at a picnic to be held at Valley Falls on that date. The Kansas Hampshire Swine Breeders' Association will hold its summer meeting there on that date. Meetings will also be held by the Valley Falls Fair Association and by the Hampshire Pig Club organized by George W. Ela, of Valley Falls. An interesting and instructive program is being prepared and will be carried out in the forenoon. A big picnic dinner with barbecued Hampshire will be served. In the afternoon the various breeders' associations will hold their meetings and special programs for these meetings will be carried out. Prominent speakers will be on the program and it will be one of the interesting breeders' meetings that will be held this season. George W. Ela, Fount Hurst, and James Mitchell compose the executive committee in charge of the arrangements in conjunction with the Valley Falls Commercial Club.

Get Rid of Slackers

Every dairy herd contains "slackers," and it is important that they be located as soon as possible and treated as they deserve. The most effective way to accomplish this is through membership in a cow testing association. To cull wisely, it is absolutely necessary to know just what each cow is producing in terms of butterfat or milk. Where it is impossible to secure this information through membership in a cow testing association, the dairyman can weigh and test his milk himself, or at least weigh it often enough to be able to make fairly accurate estimates of what his cows are producing.

This getting rid of boarders is even more important at the present time, since feed is abnormally high and the cow that cannot produce enough milk and butterfat to pay some profit over and above the cost of feed is a losing proposition. The feed such animals consume had better be saved and fed to cows that can economically turn it into human food.

In culling animals from the herd, however, it is important at the present time that no mistakes be made. No cow should be sent to the block that is capable of producing at a reasonable profit. The dairy cow produces one of our nation's most important foods, and every profitable cow should be kept at the job. It would be a mistake to sell for meat a dairy animal that could supply many times her meat value in milk.

The matter of keeping production records is always important, but it has never been of greater importance than at the present time. This is one way of cutting down the cost of producing dairy products. In many herds the margin of profit could be widened by carefully culling out the animals that are barely paying their way or perhaps being kept at an actual loss.

Permitting bad roads to bar progress is poor patriotism.

Self-feeding Mixed Ration Versus "Free Choice" Self-Feeding

SIX PIGS FED IN EACH LOT.	DRY LOT		PASTURE	
	LOT 1 Mixed Corn Meal 70 Shorts 24 Tankage 6 Self-fed	LOT 2 Free Choice Corn Meal Shorts Tankage Bone Ash Self-fed	LOT 3 Free Choice Corn Meal Shorts Tankage Bone Ash Self-fed Alfalfa Past.	LOT 4 Mixed Corn Meal 80 Shorts 18 Tankage 4 Self-fed Alfalfa Past.
Average initial weight	48.6	49.1	48	48
Days to gain 150 pounds per pig	99	91	98	89
Average daily gain per pig	1.51	1.64	1.53	1.68
Concentrates consumed daily per pig	5.64	6.11	5.36	5.75
Concentrates consumed per 100 lbs. gain	373	369	350	342
Cost of concentrates per 100 pounds gain	\$6.04	\$5.92	\$5.56	\$5.51

PRICES OF FEEDS: Corn meal \$1.60, Shorts \$1.45, Tankage \$2.55.



Help For Hens and Chicks

Right now in midsummer all fowls are liable to be infested with lice. Day and night the torture goes on. Hens stop laying, chicks do not grow. Lice positively kill millions of chicks. Here's the way to help your fowls and chicks. Sprinkle

Dr. Hess Instant Louse Killer

into hens' feathers, about roosts and houses. Put it into the dust bath, both hens and chicks will work it all through the feathers, bringing the Louse Killer right home to the lice. You can do your poultry no better service. Don't neglect them.

Also destroys bugs on cucumber, squash and melon vines, cabbage worms, slugs on rose bushes. Sold in sifting-top cans.

Price, 1 lb. 25c; 3 lbs. 60c (except in Canada)
DR. HESS & CLARK, Ashland, Ohio

POWER FARMING INCREASES CROPS

the same as power manufacturing increases factory output. It enables one man to do work of three. Result: timely plowing, better start for crop, proper cultivation, tilling of more acres and a quicker, fuller harvest. The ever-ready power plant for all farm purposes is the

PLOW BOY \$995

10-20 All-Standard Kerosene Tractor average farm size—built right and priced right—a success everywhere used. Easy to operate, low fuel and upkeep cost. Plow Man 13-30 at \$1,195 is more powerful tractor. Write for book on Power Farming and details of our All-Standard construction.

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54th YEAR. Over 25,000 former Students. Our modern Building has 15 elegant rooms, including FREE GYMNASIUM and Auditorium, or experienced Teachers and Lecturers. Day and Night Schools all Year. Free Employment Bureau. Shorthand, Typewriting, Book-keeping and English Branches. Catalogue "K" Free. J. F. Spalding, A. M., Prest.



Patriotism From Poultry

If the poultry and eggs produced in Missouri and Kansas could be increased by one-half during the next few months, this increase would keep over 100,000 soldiers at the front. In this period of shortage and high prices of food products, this increase would supply food, clothing and the necessities of life for over 300,000 hungry people. See what it would mean if all states would make a huge proportional increase in their poultry products.

This is an hour when poultry raising combines patriotism and profit. Every poultryman has a duty to perform in the present crisis. The nation has called you. Every egg laid and every vigorous chicken, if intelligently produced, means victory for our flag and profit for the producer. The \$700,000,000 worth of table scraps which have been annually dumped into the American garbage can, and the inestimable waste in the shape of worms, insects, grains and grasses can be turned into gold and grub. If every poultry raiser will strive to do just a little bit better than he has done in previous years, he will add just that much to his own profits, will hasten peace and will satisfy a hungry world.

The American Poultry Association, through its president, E. E. Richards, called a meeting of prominent poultrymen, who recently assembled at Chicago. This was one of the wisest things ever done in the history of the Association. It called to the attention of the nation the fact that poultrymen are awake, that they represent an industry which can mature and produce meat in the shape of poultry and eggs in less time than any other kind of live stock. The nation begins to realize more than ever before that poultry raising is a vital and important business and not a plaything. Every prominent official—President, Secretary of Agriculture, Speaker of the House, and all Governors—have not failed to include poultry in the list of the products which they have mentioned in urging an increase. At this meeting James W. Bell, of Chicago, was made chairman of the publicity committee. Since that time headquarters have been established in Chicago with Theodore Hewes, of Indianapolis, in charge. They ask that 100,000,000 more pounds of poultry be produced in 1917 than in previous years.

The patriotic character of the movement, as well as the question of profit for the present and future, should insure the co-operation and backing of all who are interested in the industry. Money is needed in order to do this work well. This is your opportunity and mine to get this industry before the people as it has never been presented before, and if you cannot contribute but little, it is your duty to do that much. Such an act on your part would not only be an act of patriotism, but it would be a good business move as well, because it is certain to result in a greater impetus and growth to the business.

There are other things which all poultry raisers should seriously consider and which mean much to themselves and to the nation just at this time. They are in part as follows:

Hatch well into June this year. Many of the prize winners at our best shows are June-hatched birds. Keep your incubators going until you have reached your full capacity.

If you don't hatch throughout the season, begin hatching again in September and October. You will find that chicks hatched in those months are easily raised, feather out before winter, and make great layers, beginning in the early spring. In the northern states you can hatch in August.

Don't dispose of your breeding stock so closely that you will be crippled next season. Better keep the best of them for winter layers, or for breeders another season.

At the present prices of meat, broilers can be produced profitably throughout the year. The pullets from each hatch can be saved for layers.

Better caponize a lot of cockerels. They grow rapidly and put on fat and flesh at a little cost as most any other kind of poultry. Keep them out on range until toward winter and they can make most of their own living.

Hatch and raise ducks for quick money. Find a good market before attempting this on a large scale. Ducks can be hatched late and they mature for market very quickly. They are not so subject to diseases as other poultry. Once hatched, they are easily raised, and they do not require expensive housing or fencing.

Don't abandon plans for any poultry shows which you had in view. Local, county and state associations should endeavor to make their shows larger and better than ever this year. Nothing would injure the industry more than a lack of interest in this line.

Continue your advertising campaign and keep your name and your birds before the public. To drop out now would mean loss of prestige and future business.

Fight lice, mites and disease. Use good common sense and correct methods, and this crisis, instead of being an injury to the industry, will put the poultry business on a firmer basis than ever. —T. E. QUISENBERRY, Leavenworth.

The use of a self-feeder will help in the labor problem, but a self-feeder needs replenishing just the same as the feed bin.

Home Canning Outfits

Be Patriotic! Be Economical! You can be of great help to the country by doing your share toward conserving all food stuffs. Eliminate all waste. You can be economical, reduce the high cost of living and provide for the future welfare of yourself and family by storing surplus foods. Don't delay. Write today and investigate the Butler Home Canning Cookers.



Practical Economical Simple
They are just the thing for home use. Cook quicker, better, with less trouble than old style methods. Adapted to all fruits and vegetables. Cooked products have better color, flavor and shape, being cooked whole in the jar or can. Butler Cookers are strong, yet light in weight and easy to handle. Substantial enough to last for years. The low price for which you can get these great cookers and the wonderful work they do make them almost a necessity for every household.

Steam or Hot Water Bath Methods. Write today for free descriptive literature giving full information about different styles. Present prices not guaranteed. Steel market uncertain. Don't delay. Write today. Do your patriotic duty and help conserve the food supply.

BUTLER MFG. CO.
687 Butler Bldg., Kansas City, Mo.
Steel Tanks, Grain Bins, Truck Bodies,
Barn Ventilators, Culverts, Etc.

2⁸⁵ and up

Help Conserve the Nation's Food Stuffs



Canada's Liberal Offer of Wheat Land to Settlers

is open to you—to every farmer or farmer's son who is anxious to establish for himself a happy home and prosperity. Canada's hearty invitation this year is more attractive than ever. Wheat is much higher but her fertile farm land just as cheap, and in the provinces of Manitoba, Saskatchewan and Alberta
160 Acre Homesteads Are Actually Free to Settlers and Other Land Sold at from \$15 to \$20 Per Acre
The great demand for Canadian Wheat will keep up the price. Where a farmer can get over \$2 for wheat and raise 20 to 45 bushels to the acre he is bound to make money—that's what you can expect in Western Canada. Wonderful yields also of Oats, Barley and Flax. Mixed Farming in Western Canada is fully as profitable an industry as grain raising.
The excellent grasses, full of nutrition, are the only food required for beef or dairy purposes. Good schools, churches, markets convenient, climate excellent. There is now an unusual demand for farm laborers to replace the many young men who have volunteered for service in the war. Write for literature and particulars as to reduced railway rates to Supt. of Immigration, Ottawa, Can., or to
GEO. A. COOK
2012 Main St., Kansas City, Mo.
Canadian Gov't Agt.

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I wish to buy \$ _____ of Liberty Bonds.
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Fill out this coupon and take it or mail it to any bank.

Pickens School of Millinery

Six weeks' training in our school will make a more efficient milliner of you than a year spent as an apprentice elsewhere, and nine weeks finishes our pupils for constructing, copying and trimming hats.

Classes beginning June 3, June 24, July 16.

WRITE FOR OUR TERMS

Pickens School of Millinery

809 KANSAS AVENUE

TOPEKA, KANSAS

WE NEED YOUR HELP

WE FEEL confident that there are thousands of KANSAS FARMER readers who will gladly respond to our appeal for help in the emergency now facing us. You do not want us to cut your name from our list, but by neglecting from day to day to send in your renewal you are seriously embarrassing us and causing us much unnecessary expense.

We are now confronted with a new order from the Post Office Department compelling us to stop sending KANSAS FARMER to a large number of our subscribers who are in arrears. We have in the past been allowed to give you several months in which to renew. The Post Office Department now says it will not carry at the second-class rate papers to those who are not paid up, and its word goes. We have no further recourse but to meet these requirements.

It has ever been the policy of KANSAS FARMER to keep close to the grass roots and under no circumstances to permit other than genuinely helpful material to appear in its columns. We, who are responsible for it editorially, have had real farm experience and keep in such intimate touch with farm conditions that we are able to give you the practical farm viewpoint of whatever appears.

In making this personal appeal to you we feel sure we can count on your loyalty to the cause which KANSAS FARMER represents. You can help us so easily and, what is more, we are going to make it financially worth your while to renew at once and send us in addition the renewals of your friends and neighbors.

You will find the date to which your subscription is paid on the label of the paper you are now reading. Turn to it now while it is fresh in your mind and register a vow to respond to this appeal for your help and co-operation. On page five you will find our special renewal and club offer. It is worth a careful reading, as it will save you money.

Do not fail us in this emergency. We need your help.

T. A. BORMAN, President and Editor.
G. C. WHEELER, Associate Editor.
W. J. CODY, Secretary-Treasurer.
C. C. YOUNGGREEN, General Manager.

Will Your Subscription Expire In June?

We have several thousand subscriptions expiring in June. It would be a saving of much time to us and avoid missing copies by the subscriber if the renewal could reach us before the expiration. The best way to do is to send in \$2 when you renew and have your subscription paid three years in advance.

**READ KANSAS FARMER'S CLASSIFIED
ADVERTISING PAGE FOR READY BARGAINS**



We desire to make this department just as helpful as possible, and believing that an exchange of experiences will add to its value, we hereby extend an invitation to our readers to use it in passing on to others experiences or suggestions by which you have profited. Any questions submitted will receive our careful attention and if we are unable to make satisfactory answer, we will endeavor to direct inquirer to reliable source of help. Address Editor of Home Department, Kansas Farmer, Topeka, Kansas.

Soot and ash-covered parts of the furnace should be cleaned thoroughly at the end of the firing season. It is well to keep the furnace doors open during the summer and if necessary a little unslaked lime in a bucket or box should be set in the bowl after the cleaning has been done. This care will prevent deterioration and the furnace will be ready for use next fall.

Food Study Valuable

In order that the meals for the family may be planned wisely and well, at least some knowledge of the value of the different kinds of food and their functions in repairing waste and supplying energy in the body is necessary.

The following substances are required for keeping the body in a healthful condition: Mineral substances, supplied by fruits and vegetables. Milk supplies a mineral substance needed particularly by children. Protein, as found in meat and meat substitutes such as milk, cheese, eggs, beans, peas, and nuts. Starch, supplied by the use of all cereals, and potatoes. Sugar, which may be taken into the body as sugar, or in the form of syrup, honey, or other sweets. Fat, as supplied by the use of butter, oil, fat meats, lard, or cream. In addition the body needs bulk to keep the machinery in good working order. Flavorings are useful because they make the food more palatable, which is necessary for the best results. Certain other substances, not finally classed as yet, have been found valuable in promoting health and growth in children. It is known that these are present in milk, meat, fruits, vegetables, and eggs.

For most housewives it would be a burden to figure out the exact amount of each of these substances she is giving each member of her family daily. This is not necessary as the body is made in such way that it will store a surplus of any one substance and draw upon this surplus when needed. However, a surplus of any one substance should not be taken into the body continually, as this would result in undermining some part of the body. This can be guarded

against by the thoughtful housewife. The family's health and appearance are a good index to the wholesomeness of the diet.

Two evils in eating habits which should be closely guarded against are food preference and prejudice. Every member of the family should learn to like all wholesome foods and should eat them in quantities sufficient to supply his bodily needs.

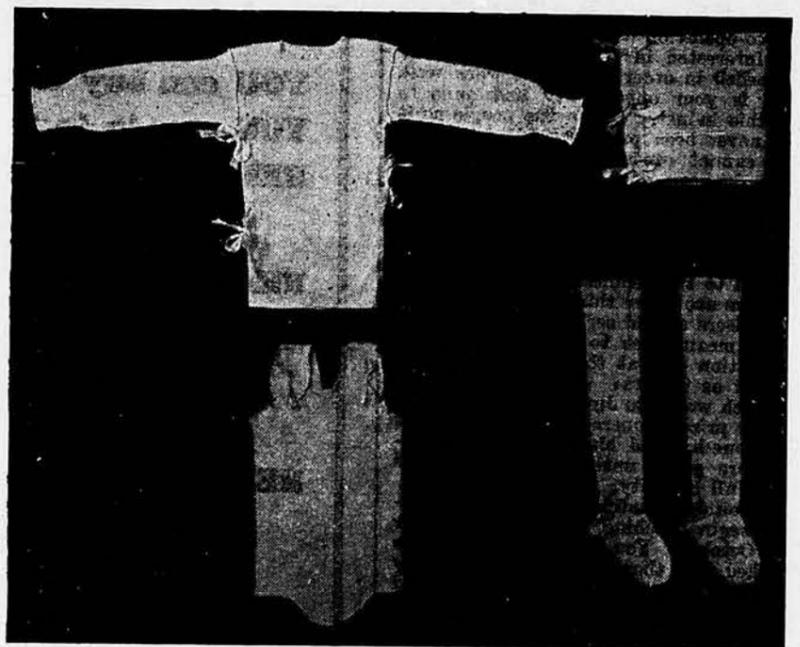
The housewife will find it not only interesting but valuable to her to know something about the composition of foods and their uses to the body. One of the shortest and most readable treatises on this subject that has come to our attention recently is Farmers' Bulletin No. 808 of the Federal Department of Agriculture, entitled "How to Select Foods." In the thirteen pages of this bulletin, to which we have referred before in these columns, will be found much usable information on food values. A study of this bulletin will enable the housewife to feed her family knowingly and it is not unlikely that it will help her to provide the needed food more economically.

Sign Your Inquiries

All questions submitted to the Home Department will receive careful attention, but we have a general rule that inquiries must be signed. This is not for the purpose of using the names in the paper, but simply as an evidence of good faith. A reader signing initials only asked recently about canning asparagus. A bulletin referred to in the Home Department of June 3 issue, which bulletin can be procured from the Extension Division of the Agricultural College at Manhattan, or the State Council of Defense, Topeka, will supply this information and also complete instructions for canning and preserving all kinds of fruit and vegetables.

Fun With a Vacuum

For this stunt you will need a burnt-out incandescent light bulb. The spur of glass on the big end is hollow. While



SOME OF BABY'S EARLY NEEDS—THE ABDOMINAL BAND GOING ONCE AND A HALF AROUND AND TYING AT THE SIDE, THE SMOOTH-FITTING SHIRT THAT DOES NOT WRINKLE, THE WARM STOCKINGS, AND THE KNITTED BAND WITH SHOULDER STRAPS FOR USE AFTER SECOND MONTH

you hold that part under the hottest water in which you can keep your hands, carefully file off the point of the bulb. When the water reaches the hollow part it will enter the bulb and immediately begin to boil. This is because the extremely rarified atmosphere inside lowers the boiling point to the temperature of the water. As soon as the space is filled with steam, the boiling ceases.

Still keeping the opening under water, or closing it securely with one moistened finger, hold the bulb under a stream of cold water. The water will begin to boil again immediately, because the cold water condenses the steam, and so leaves a partial vacuum.

If you close the opening securely with sealing wax when the bulb is about one-fifth full of water, you will have a very novel toy. As soon as the bulb has cooled you will have an apparatus similar to what is called in physics a water hammer. When the bulb is inverted, the water will be sent to the other end with a sharp click.—The American Boy.

Bread-Crumbed Noodles
The real name for this dish is "spatzle." Make the noodles as usual and cook in boiling water that has been salted. Brown bread crumbs in butter in a frying pan. When the noodles are cooked, lift out of the kettle with a perforated spoon or drain in colander, then place in dish and put the browned bread crumbs over them.

This is a Swabian dish and is to the German what macaroni is to the Italian.

A Handy Candlestick
An ingenious method of using a candlestick in the cellar, instead of the untidy method of sticking the burning candle to a shelf or ledge by melted wax, is to screw the candle into a heavy burr. Such an improvised candlestick prevents upsetting, and the candle can burn down and out without danger of fire.—The American Boy.

A nation is as weak as its roads.

Classified Advertising

Advertising "bargain counter." Thousands of people have surplus items of stock for sale—limited in amount or numbers hardly enough to justify extensive display advertising. Thousands of other people want to buy these same things. These intending buyers read the classified "ads"—looking for bargains. Your advertisement here reaches over 60,000 farmers for 5 cents a word per week. No "ad" taken for less than 60 cents. All "ads" set in uniform style, no display. Initials and numbers count as words. Address counted. Terms, always cash with order.
SITUATIONS WANTED ads, up to 25 words, including address, will be inserted free of charge for two weeks, for bona fide seekers of employment on farms.

HELP WANTED.

THOUSANDS GOVERNMENT JOBS OPEN to farmers, \$75 month. Write for free list of positions. Franklin Institute, Dept. D-82, Rochester, New York.

REAL ESTATE.

IF YOU WANT TO SELL OR EXCHANGE your property, write me. John J. Black, Desk C, Chippewa Falls, Wisconsin.

HORSES AND MULES.

JACK FOR SALE OR TRADE—FIVE years old, gray, 14 hands jack measure; excellent breeder. Sacrifice price. Harry Bilsen, Eureka, Kansas.

BUSINESS CHANCES

FREE FOR SIX MONTHS—MY SPECIAL offer to introduce my magazine, "Investing for Profit." It is worth \$10 a copy to any one who has not acquired sufficient money to provide necessities and comforts for self and loved ones. It shows how to become richer quickly and honestly. Investing for Profit is the only progressive financial journal and has the largest circulation in America. It shows how \$100 grows to \$2,200. Write now and I'll send it six months free. H. L. Barber, 431.28 W. Jackson Boulevard, Chicago.

CATTLE.

120 HEAD OF HIGH GRADE HOLSTEIN cows and helpers, priced for quick sale. H. F. McNutt, Oxford, Wisconsin.

HOLSTEIN CALVES FROM TESTED dams. Blue Label Stock Farm, Route 5, Whitewater, Wisconsin.

GUERNSEY COW COMING THREE years old, registered, well bred, good type, desirable. J. W. Marley, Oswego, Kansas.

FOR SALE—ONE THREE-YEAR-OLD registered Guernsey bull, well marked and a good breeder. G. D. Glidden & Sons, Homewood, Kansas.

THREE YOUNG, REGISTERED, BRED Red Poll females, two bull calves and one yearling bull. Tuberculin tested. Henry Murr, Tonganoxie, Kansas.

SOME GOOD SHORTHORN BULLS FROM eleven to twenty-three months, sired by Shilo Boy and backed by Silk Goods. Paul Cashatt, Oskaloosa, Kansas.

HIGHLY BRED HOLSTEIN CALVES, either sex, 15-16ths pure, crated and delivered to any station by express, charges all paid, for \$25 apiece. Frank M. Hawes, Whitewater, Wis.

FOR SALE—VERY CHOICE HIGH-grade Holstein calves, either sex, three to six weeks old, at \$20 per head, crated for shipment. Or if you want dairy cattle of any age, I will buy them at a commission from the best herds in Southern Wisconsin. Albert M. Hanson, Whitewater, Wisconsin.

LICE ON CHICKENS

IT IS LICE THAT KILLS THE LITTLE chickens. I make a lice powder that I will guarantee to take every louse off of little chickens in one minute or your money back. Two 50-cent boxes sent express prepaid for \$1. This ad will appear only once. The Pruitt Remedy Co., Hays, Kansas.

DOGS.

FOR SALE—THREE-FOURTHS COLLIE and fourth Mountain Shepherd puppies, prices \$3 and \$5. Earl Phillips, Route 9, Box 80, Emporia, Kansas.

FOR SALE—TWO BLOODHOUND PUPS three months old. Can furnish as good pedigrees as any in United States. Wm. Byrley, Onaga, Kansas.

AIRDALE—THE GREAT TWENTIETH century dog. Collies that are bred workers. We breed the best. Send for list. W. R. Watson, Box 128, Oakland, Iowa.

SITUATION WANTED.

SINGLE MAN WANTS FARM WORK. Age 25, Christian, do not use tobacco or booze, good references. Some experience. H. Barr, 1424 Wyandotte, Kansas City, Mo.

THE STRAY LIST.

TAKEN UP—BY E. H. WALKER, RESIDING two miles north and three miles west of Anthony, Harper County, Kansas, May 27, 1917, one dark red Durham bull. No marks or brands. Appraised at \$50. C. E. Kennedy, County Clerk, Harper County.

FARM AND HERD.

Fred B. Caldwell, of Howard, Kansas, is one of the progressive farmers and breeders of Elk County. He has just returned from Iowa, where he purchased fifty head of the best Poland China sows he could find for sale, and will breed them to Caldwell's Big Bob for fall litters. The show record of

Real Estate For Sale

360 ACRES CREEK BOTTOM FARM 160 acres fine alfalfa, wheat or corn land; 20 acres meadow; 180 acres pasture; \$5,000 worth of improvements. Splendid oil and gas prospect. Bargains. Act quick, only \$45 per acre.
M. T. SPONG - - FREDONIA, KAN.

WANTED

To trade first-class farm in Iowa or Minnesota for high-class herd of Shorthorns or Herefords. Nothing but top quality cattle considered. Give complete information concerning herd in first letter. Will give complete description of property and location of same in reply.
AMOS BURHANS - - Waterloo, Iowa

Government Red Sall Fruit Land can be located on Desert. Act near Delta under newly completed irrigation system. Easy payments. Thompson, 515 Denham Bldg., Denver, Colo.

Wheat and Stock Ranch

320 Acres, All Tillable, Dark Loam. On main auto, mail and telephone routes. House, barn, stable, sheds, garage, well, wind mill. All fenced. 140 acres cultivated. Near best town in Eastern Colorado. \$15.00 per acre.
Walker Glaister, Denver, Colo.
24 East Fourteenth Street

FOR INSIDE INFORMATION on all lands or poultry and vegetable tracts, write SOUTHERN REALTY CO., McAlester, Okla.

Caldwell's Big Bob has increased the demand for sows bred to him to such an extent that Mr. Caldwell has found that in order to supply the demand he would be compelled to buy from fifty to seventy-five head and breed for fall litters. He is also fitting a show herd and after the breeding season Caldwell's Big Bob will be fitted for the aged boar class. He now weighs in breeding condition 960 pounds, and would carry 200 pounds more flesh.

T. F. Danner, of Winfield, Kansas, is one of the successful Duroc breeders in Kansas. His herd sows are from the Good Enuff Again King blood lines and the herd boar now used is Gano Pride 2d by the great Gano Pride. Gano Pride 2d's dam was Bell Vera, by old Graduate, Col. Most Duroc breeders know that Graduate Col. was one of the leading Duroc boars of the Southwest and it was this hog that placed the Royal Scion farm on the map for famous Durocs. Good Enuff Again King was bred and owned by W. W. Otey and was made grand champion at the Kansas State Fair, and this great show hog was the sire of the herd sows used in starting Mr. Danner's herd. The herd now numbers about eighty head and a feature at this time is fifty head of March and April spring pigs that are coming along in good condition.

D. H. Stiles, of Garnett, Kansas, is the owner of a good herd of registered Holsteins. His herd carries the best blood lines of the Holstein breed. He has the breeding that is backed by production records. He also has a fine lot of high grades that are bred for production and are the kind that are profitable.

David Ballantyne & Son, of Herington, Kansas, are the owners of one of the oldest herds of Shorthorn cattle in Kansas. Mr. Ballantyne has been breeding Shorthorn cattle for over forty years on the same farm. They have sold cattle to start herds as far west as California, Oregon and Washington. A number of valuable herd bulls have been used in the herd that have left a splendid class of females of the right sort. Such bulls as Marshall Abbottsborn by Young Abbottsborn and out of Mary Abbottsborn 7th, one of the greatest show cows in America; Goldfinch 115705 out of 3d Linwood Wood Golden Drop from the late Col. Harris' herd at Linwood, Kansas. Others used were Collynie Pride by Imported Collynie, Dexter by Imported Scottish Chief. They have sixty-five head in their herd and a fine lot of spring calves.

Bert E. Hodson, of Ashland, Kansas, is building up a choice herd of Poland Chinas. He bought the top sows in several of the leading Poland China sales last spring. Mr. Hodson owns a 500-acre wheat and alfalfa farm adjoining the town of Ashland and five miles out from the city owns 160 acres of hog farm, all fenced and well equipped for hogs. A new barn has just been completed and a new residence and new hog house are now under construction. The farm is well supplied with water and alfalfa grows abundantly. The herd is headed by a massive two-year-old hog, McGath's Big Orphan by Big Orphan. The writer had the pleasure of weighing this hog and he tipped the scale beam at 945 pounds just past two years old. He is not fat, but will be fitted and showed at the fall fairs weighing 1,100 pounds or better. A feature of the herd at this time is the twenty-five spring boar pigs that are herd header prospects, sired by the following noted boars: Caldwell's Big Bob, Smooth Columbus, Big Hadley Junior, King Price Wonder, Columbus Defender, Big Bob Wonder and Fessey's Tim, and out of the best herd sows on the farm.

FASHION DEPARTMENT—ALL PATTERNS TEN CENTS

This department is prepared especially in New York City, for Kansas Farmer. We can supply our readers with high-grade, perfect-fitting, seam-allowing patterns at 10 cents each, postage prepaid. Full directions for making, as well as the amount of material required, accompanies each pattern. When ordering, all you have to do is to write your name and address plainly, give the correct number and size of each pattern you want, and enclose 10 cents for each number. We agree to fill all orders promptly and guarantee safe delivery. Special offer: To anyone ordering a pattern we will send the latest issue of our fashion book, "Every Woman Her Own Dress-maker," for only 2 cents; send 12 cents for pattern and book. Price of book if ordered without pattern, 5 cents. Address all orders for patterns or books to Kansas Farmer, Topeka, Kansas.



No. 8113—Ladies' Waist: Cut in sizes 36 to 42 inches bust measure. Real art shows in the design of this waist. It is a back-buttoned model, cut with drop shoulder yokes and having the upper edges of the fronts and back gathered where the yokes join. The roll collar with side flare, dainty tucker, and crown cuffs are of contrasting goods to match the yokes. No. 8109—Kozywrap: Cut in sizes 1/2, 1, 2 and 3 years. Just what many mothers have been wishing for—a kozywrap, so "hat Baby Bunting can sleep out of doors and defy Jack Frost. The body of this kozywrap is in one piece; the back extends over the front and buttons to it, protecting the feet, and a tab attached to the lower part of the sleeve and buttoned up on the arm protects the hands. No. 7748—Ladies' Waist: Cut in sizes 36 to 42 inches bust measure. This simple blouse, gathered at the shoulders, is made attractive by the use of two materials. The upper section is given a shield-shaped front below revers that are in contrasting goods, in harmony with the collar. No. 8134—Ladies' Dress: Cut in sizes 36, 38 and 40 inches bust measure. In the popular straight-line effect, with the front in panel form, diversity of style is produced in this model by adding side peplums. The dress has back closing with small buttons close together, button and loop decoration at front and embroidery on the peplums. No. 8121—Girls' Dress: Cut in sizes 6 to 14 years. Of course, the collar of this dress is a big feature, for it is stylish and of particularly becoming cut, but there are other attractions. The frock is made with a body lining and has the waist fullness gathered at the lower edge so that it blouses over the two-piece gathered skirt. No. 8100—Ladies' Dress: Cut in sizes 36 to 42 inches bust measure. Oddly but beautifully styled, this long-waisted dress with a two-piece gathered skirt shows one of the most successful in long-waisted effects. Although the basque is hinted at with the seamed body part, the Moyen-age effect is truly interpreted.

Reliable Poultry Breeders

PLYMOUTH ROCKS.

WHITE ROCK EGGS, \$4 PER HUNDRED. Nora Lamaster, Hallowell, Kansas.

PURE BARRED ROCK EGGS—FARM RANGE, \$1 per fifteen, \$5 per hundred. Mrs. H. Buchanan, Abilene, Kansas.

BARRED ROCK EGGS FOR HATCHING. Eighty-seven premiums. A. G. Hammond, Vinland, Kansas.

BARRED ROCKS—SEVENTY-THREE premiums. Breeders for sale. Eggs half price. Mattie A. Gillespie, Clay Center, Kansas.

BEAUTIFUL IMPERIAL "RINGLETS." Prices eggs reduced after May 10, No. 1 either mating, \$2, fifteen; \$3.50, thirty; \$10 hundred. Mrs. Iver Christenson, Jamestown, Kansas.

WARD'S BARRED ROCKS—FIVE YARDS both matings, from Chicago winners. Eggs, \$3 for fifteen. Send for catalog and list. W. H. Ward, Nickerson, Kansas.

RHODE ISLAND REDS.

SINGLE COMB RED EGGS, GOOD FARM RANGE, \$4 per hundred; \$1.50 per thirty. Mrs. Rosa Janzen, Box 242, Geneseo, Kansas.

SIX GRAND PENS, ROSE COMB RHODE Island Reds that have shape, size and color. Mated to roosters costing \$15 to \$50. Fifteen eggs, \$2.50; thirty eggs, \$4; fifty eggs, \$6. Fine pure-bred range flock, \$5 per hundred. Baby chicks. Send for catalog. W. R. Huston, Red Specialist, Americus, Kan.

SEVERAL BREEDS.

BUFF DUCKS—DARK CORNISH CHICKENS. Sunnyslope Farm, Stillwater, Okla.

BARRED AND BUFF ROCKS—SINGLE Comb White Leghorns, Fawn and Penciled Runner Ducks. Eggs—Fifteen, \$1; hundred, \$6, from range flocks. J. T. Rickman, Kiowa, Kansas.

FIVE LARGE FLOCKS UNDER ONE sale management, R. C. Reds, Barred Rocks, Silver Wyandottes, White Wyandottes and White Leghorns, all on separate farms and specially bred by experts. Prize winners in all breeds. Eggs, \$5 per hundred, \$1.50 per setting. Order from ad. Address: E. H. Hartenberger, Route 4, Box 1, Newton, Kan.

BRAHMAS.

HIGH SCORING LIGHT BRAHMA EGGS \$1.00 per fifteen, parcel post prepaid. Geo. Pratt, Route 2, Topeka, Kansas.

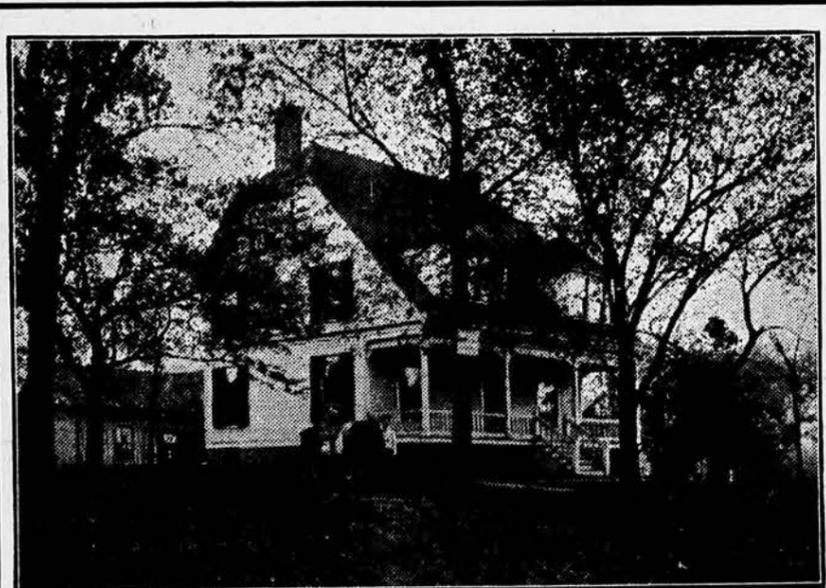
PHEASANTS.

PHEASANTS—DEMAND UNLIMITED for Ringnecks this spring at \$6 to \$8 pair. Try them. Eggs from these, \$4 dozen, 24 for \$7. Harper Lake Poultry Farm, Jamestown, Kansas.

DUCKS AND GESE.

BUFF DUCK EGGS, DOZEN \$1. ROBERT Webster, Canton, Kansas.

H. H. Holmes, of Topeka, Kansas, owner of the famous Alysdale herd of Scotch Shorthorns, reports a fine lot of spring calves coming along in fine condition. Mr. Holmes owns one of the good show herds of Kansas, headed by the great show bull, Prince Valentine 4th and Clipper Brawith. The herd cows are from some of the best families of Scotch cattle, representing the Orange Blossoms, Butterflies, Queen of Beautys and Violets. A strong feature of the herd at this time is a choice lot of young stock bulls ready for service.



This beautiful home and four lots on Topeka Avenue for sale, or will exchange for good farm land in Eastern Kansas.

O. W. DEVINE, 201 Topeka Avenue, TOPEKA, KANSAS

MINORCAS.

S. C. WHITE MINORCAS—EGGS FROM pure-bred birds, \$3 and \$2 per setting. Correspondence solicited. A. Goodwyn, Minneapolis, Kansas.

WYANDOTTES.

WHITE WYANDOTTE EGGS—STOCK from (Fishes World Best Direct) \$2.50 for 48, prepaid. S. Peitler, Concordia, Kansas.

SHUFF'S "BEAUTILITY" SILVER WYANDOTTES. Eggs reduced to fifteen, \$1; fifty, \$2.75; hundred, \$5. Mrs. Edwin Shuff, Plevna, Kansas.

IF YOU WANT THE BEST SILVER Wyandottes, Barred Rocks or White Crested Black Polish breeding stock or eggs, write to William Nellers, Box T, Cascade, Iowa.

LEGHORNS.

PURE-BRED SINGLE COMB WHITE Leghorn eggs, 100, \$5. Chas. McFadden, Morland, Kansas.

S. C. BROWN LEGHORNS—HAVE BEEN raising them 21 years, the 222 to 266 egg record kind. Under hens the fertility runs 95%. Eggs—Fifteen, \$1.25; 100, \$5. Safe arrival guaranteed. Gorsuch, Stilwell, Kan.

TURKEYS.

BOURBON RED TURKEY EGGS—TWO-year-old hen, 40-pound tom. \$3 setting. S. Peitler, Concordia, Kansas.

FEATURING THE MUCH WANTED "Goldbank" Mammoth Bronze turkeys. Eggs, \$1 each after April 1. Will book orders. Mrs. Iver Christenson, Jamestown, Kansas.

FARM AND HERD.

H. E. Anderson, owner of Clover Valley Holstein Farm, Whitewater, Wisconsin, reports his herd making a good record this year. Mr. Anderson owns a very large herd of registered Holsteins. He has record breeding and at present he is breeding purebreds exclusively. He reports a very heavy demand from Kansas and the Southwest for high-class Holsteins.

F. B. Wempe, of Frankfort, Kansas, owner of one of the good herds of pure-bred Hampshire hogs in Kansas, reports that he has saved a large number of spring pigs and they are growing out fine. These pigs were sired by a great son of Paulsen's Model, one of the great sires of the breed. Sows by this \$800 boar averaged more than \$200 in Mr. Paulsen's sale. Other pigs in Mr. Wempe's herd were sired by Gano's Model by Manley's Duke, junior champion boar at the San Francisco Exposition. Mr. Wempe also has a fine lot of fall boars and gilts in his herd.

Walter B. Brown, of Perry, Kansas, owner of one of the outstanding herds of Poland Chinas, has announced October 17 as the date of his annual fall sale. This year Mr. Brown saved fifty head of spring pigs sired by such boars as Miami Chief, now at the head of his herd and one of the great breeding boars now in service. Of the spring litters sired by this boar there was only one with less than ten pigs, and they numbered as high as fourteen to the litter. In addition to the pigs sired by this boar there will be litters sired by Model Big Bone, the \$1,500 boar; King Joe, the highest priced big-type boar ever sold at public auction; Iowa King, grand champion of Missouri in 1915 and a noted son of the grand champion Long Big Bone. Mr. Brown is one of the progressive breeders and he develops his young Polands along lines that insure profitable breeding stock.

FARM AND HERD NEWS NOTES

G. C. Wheeler, Live Stock Editor
W. J. Cody, Manager Stock Advertising,
O. W. Devine, Representative

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CLAIM SALE DATES.

Jerseys.
June 26—Dr. J. H. Lomax, St. Joseph, Mo.
Sale at farm near Leona, Kansas.

Double Standard Polled Durhams,
June 8—Ed Stegell, Straight Creek, Kan.

Shorthorns.
June 22—Park E. Salter, Wichita, Kansas.
Sale at farm.

Poland Chinas.
Aug. 15—H. L. Faulkner, Jamesport, Mo.
Oct. 4—Dr. J. H. Lomax, St. Joseph, Mo.
Sale at farm near Leona, Kansas.
Oct. 5—U. S. Byrne, Saxton, Mo.
Oct. 16—H. B. Walter & Son, Effingham, Kansas.
Oct. 17—Walter B. Brown, Perry, Kansas.

The dispersion sale of Jersey cattle held by R. J. Linscott, of Holton, Kansas, on May 31, was attended by Jersey breeders from a number of states. The 110 head sold for \$23,060, or an average of \$210; 118 head sold for \$23,225, average \$196. These figures include a number of calves only a few days old, all sold separately.

H. W. Haynes, of Grantville, Kansas, who owns one of the outstanding herds of O. I. C. hogs in Kansas, reports his herd doing well and the young stock growing out fine. By years of careful mating Mr. Haynes has developed a herd of O. I. C. hogs of remarkably good type. He has the combination of size and quality so much desired for profitable feeders. He has the best blood lines of the breed and at this time the choice lot of spring pigs is an outstanding feature of his herd. He also has a very choice lot of gilts bred for fall litters.

James W. Magee, of Magee's Dairy, Chanute, Kansas, and owner of one of the heavy producing herds of Holsteins in this state, reports his herd making a fine record this year. This is one of the Holstein herds that is noted for consistent production since its foundation. It is also one of the large herds in Kansas.

John D. Henry, of Lecompton, Kansas, reports his herd of big-type Polands doing fine. Mr. Henry owns one of the choice strictly big-type herds in this state. This year he has saved fifty head of big high-quality pigs sired by such boars as Mammoth Orange, King Price, a half brother to the \$1,250 King Joe, and Big Wonder, a 600-pound yearling by Big Bob.

Park E. Salter, Wichita, Kansas, has announced a public sale of fifty head of imported Canada Shorthorn cows and heifers at his farm near Augusta, Kansas, on Friday, June 22. Mr. Salter now owns 200 head of breeding Shorthorns and is selling an offering of breeding cows that will do a lot of good in other herds for foundation stock.

Catalogs are out for the Jersey sale to be held by Dr. J. H. Lomax, St. Joseph, Mo. The sale will be held at his farm near Leona, Kansas, and will be under the management of B. C. Settles, of Palmyra, Mo. Doctor Lomax has selected fifty head of choice Jerseys for this sale. His herd is one of the heavy producing herds of Jerseys now assembled and he has catalogued an offering of producers backed by breeding and a long line of records.

H. H. Hoffman, of Abilene, Kansas, reports his herd of pure-bred Ayrshires doing fine. Mr. Hoffman commenced breeding Ayrshires five years ago. His first herd bull was from the Kansas Agricultural College herd at Manhattan. Later he dispersed his grades and purchased a herd of registered cows, all backed by records, and he now has a heavy producing herd of this excellent breed of dairy cattle. Mr. Hoffman has found the Ayrshires consistent producers with very ordinary care and they have proven very profitable on his farm even under unfavorable conditions. He has a fine line of record breeding in his herd and a feature of the herd at this time is the choice lot of cows and heifers bred to his good herd bull to freshen in October.

HAMPSHIRE HOGS

High Quality Hampshires Sold on Approval. Fall boars and gilts; weanling pigs, either sex, not related, by a son of Paulsen's Model. F. B. Wempe, Frankfort, Kansas.

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

SMITH'S HAMPSHIRE Bred gilts and choice boars, October farrow. Prize winning breeding. Also herd boar, priced to sell. S. E. SMITH Lyons, Kansas.

AUCTIONEERS.

Jas. T. McCulloch Live Stock Auctioneer. 1 Write for date. CLAY CENTER, KANSAS

LESTER R. HAMILTON Live Stock Auctioneer Write for terms and date. Clarksdale, Mo.

SHORTHORN CATTLE.

15 Shorthorn Bulls

Reds and roans. Pure Scotch and Scotch-topped yearling bulls, 10 to 18 months old, at farmer prices. Farm at Pearl. Ship over Rock Island, Santa Fe, Union Pacific and Missouri Pacific. Come and see me.

C. W. TAYLOR, Abilene, Kan.
Dickinson County.

Sycamore Springs Shorthorns

Master of Dale by the great Avondale heads herd. A few young Scotch bulls and bred heifers for sale.

H. M. HILL - LAFONTAINE, KANSAS

SPRING CREEK SHORTHORNS Headed by the great sire, Orange Gooda. Best families represented in herd, good individuals. Choice young stock for sale. THOS. MURPHY & SONS, Corbin, Kansas.

TWO SHORTHORN BULLS. One herd boar. Fall gilts, bred or open. February and March pigs, pair or trio, no relation. S. C. White Leghorn eggs. R. C. WATSON - ALTOONA, KANSAS

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

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

SHORTHORN BULLS

A two-year-old herd bull, dark red, fine individual. Also six-months-old bulls for sale. H. W. ESTES, SITKA, CLARK CO., KAN.

ANGUS CATTLE

Aberdeen-Angus Bargains

Fourteen richly-bred heifers, good individuals, low down, blocky, easy-feeding kind. Very best blood lines. Bargain price, \$1,600 for the lot, 2 o.b. Salisbury, if taken at once. Also two young bulls priced right. Thirteen years a breeder.

V. E. LAWRENCE, SALISBURY, MISSOURI

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

POLAND CHINAS

POLAND CHINA HOGS 150 HEAD IN HERD

Breeding stock for sale. Immune. Satisfaction guaranteed. Come and see me. V. O. JOHNSON - AULNE, 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.

Langford's Spotted Polands. Gilts bred for fall farrow. Future herd boars. Satisfaction guaranteed. T. T. LANGFORD & SONS, Jamesport, Missouri

POLAND CHINA BOARS

Twenty-five choice spring boar pigs sired by Caldwell's Big Bob, Big Hadley Jr., King Price Wonder, Columbus Defender, Big Bob Wonder and Fessey's Tim. Some fine prospects and priced reasonable. Immune.

BERT E. HODSON, ASHLAND, KANSAS.

BEAVER'S POLANDS

Good stretchy Poland China spring boars, sired by Kansas Giant by the 1,135-pound The Giant. Others by a good son of the 1,125-pound Big Tim, out of Expansion sows. Choice, \$25.

ED BEAVERS Junction City, Kansas

Bazant's Famous Spotted Polands

Choice Fall Gilts Out of Big Mature Sows. Two hundred March pigs for sale on approval. All to be recorded free in the S. P. C. Record Association. Average in litter, nine. Can sell boar and four gilts not related. Sired by three of the best boars in the West. I can start you in the business.

R. J. Bazant, Narka, Kansas (Republic County.)

Ship over the Rock Island and Burlington Railroads.

OLD ORIGINAL SPOTTED POLANDS

Have only a few of last fall's litters left. Write your wants to THE CEDAR ROW STOCK FARM

A. S. Alexander, Prop. R. 2, Burlington, Kan.

Henry's Big-Type Polands

Spring pigs, either sex. June delivery. Sired by Mammoth Orange, King Price Wonder, Big Wonder. Choice of lot, \$35. Trio, \$100. Others, \$25. First check, first choice. JOHN D. HENRY, LECOMPTON, KANSAS

Park Place Shorthorn Sale

At Farm Friday, June 22, 1917

50 - Head Imported Cows and Heifers - 50



The cows are the large type, imported from Canada, and will be bred to my three great herd bulls. I am selecting this offering from my herd of over two hundred head, and they are a splendid lot of foundation cattle for parties wanting new blood or starting herds.

Sale will be held at farm near Augusta, Kansas, fifteen miles east of Wichita, Kansas. Nicely illustrated catalogs are ready to mail out. Write

PARK E. SALTER, - WICHITA, KANS.

BUY JERSEYS

SHE'S THE MONEY COW

50 - Head Pure Bred Jerseys - 50

OWNED BY J. H. LOMAX

LEONA, KANSAS, TUESDAY, JUNE 26, 1917

At the farm, on Grand Island Railroad, 28 miles from St. Joseph, Mo. Popular sires and best blood lines. This is one of the best herds in the West, and the quality is unusually good. Heavy milking cows and many promising young things. Write today for catalogue, mailed only on request, to

B. C. SETTLES, Sales Manager, PALMYRA, MO.
Col. P. M. Gross, Auctioneer, Macon, Missouri.

EDGEWOOD FARM

REGISTERED ANGUS BULLS. HAVE FIFTEEN STRONG YEARLING BULLS FOR SALE.
D. J. White, Clements, Kansas

DUROC JERSEYS.

MAPLEWOOD DUROCS

Fifteen serviceable boars for sale, sired by Geimon's Good-E-Nuff. First choice, \$35, f.o.b. Herington, Kansas.
MOTT & SEABORN, HERINGTON, KAN.

LONE TREE DUROC FARM
Herd Boar Graduate Prince by Graduate Col. Sows, Ohio Chief, Tatarrax, Model Top and Good Enough Again King blood lines. Spring pigs, two for \$35.00, three for \$45.00; not related.
GEO. J. BURKE, LITTLE RIVER, KANSAS

IMMUNE DUROC-JERSEYS

Forty-five head spring boars and gilts, March and April farrow, by Gano Pride 2d by Gano Pride, out of a Graduate Col. sow. Herd sows best of breeding. Write for prices. **T. F. DANER, Winfield, Kansas.**

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GUERNSEY CATTLE.

Choice Guernsey Calves—Ten heifers, 15-16ths pure, beautifully marked, from heavy-producing dams. \$20 each. Satisfaction guaranteed. **L. Terwilliger, Wauwatosa, Wis.**

AYRSHIRE CATTLE.

RIVERSIDE AYRSHIRES
Most profitable dairy cow. Herd headed by a son of August Lassie, the 4-year-old champion. Young animals, both sexes, for sale. **J. F. Converse & Co., Woodville, N. Y.**

AYRSHIRE COWS.
For Sale—Heavy producing registered Ayrshire cows and heifers, bred to freshen in October. Also a few young bulls.
H. H. HOFFMAN - ABILENE, KANSAS

LINDDALE FARM AYRSHIRES
Three choice bull calves for sale. Their dams are on A. R. test. Write for particulars. Visitors always welcome.
JOHN LINN & SON, MANHATTAN, KAN.

HOLSTEIN CATTLE.

MAURER'S HOLSTEIN FARM

Is offering a number of choice young pure-bred cows with good A. R. O. records; also yearlings and heifer calves and a select lot of young bull calves with world's record backing. Write for pedigrees and bargain prices. Also grade cows, heifers and heifer calves.
T. E. MAURER & CO. - EMPORIA, KANSAS

PECK'S HOLSTEINS We have a choice lot of extra large high-grade Holsteins, including fresh cows, heavy springing cows and heifers, and young calves. Registered bulls. Come and see our herd. We meet you at train and guarantee satisfaction.
M. E. PECK & SON, SALINA, 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.

HOLSTEINS FOR SALE

No culls. No seconds. REGISTERED COWS, HEIFERS AND BULLS.
Nice lot of grade cows and heifers.
D. H. Stiles, Garnett, Kansas.

HOLSTEINS FOR SALE
On account of being overstocked, am forced to reduce by dairy herd. I will sell your choice of

My Entire Holstein Herd
consisting of
35 High-Grade Heavy-Producing Cows, 8 Registered Cows, mostly with A. R. O. records; 50 high-grade two-year-old Heifers safe in calf and due to freshen this fall; 40 choice Yearling Heifers, and 15 highly-bred Heifer Calves from three weeks to three months old; three registered Bulls from one to five months old.
Entire herd is growthy, beautifully marked and of splendid dairy type; are healthy, vigorous, and persistent producers.
Emperor Segis Del Korndyke 167620, one of the best sons of King Segis Pontiac, heads my herd.

For detailed information and prices write to **MAGEE DAIRY - CHANUTE, KANSAS**

TREDICO HOLSTEIN BULLS

A. R. O. dams. A tested bull. One cow even made it 12 months after calving.
GEO. C. TREDICK
Route 2 Kingman, Kansas

HOLSTEIN CALVES

Very high grade heifer calves, five weeks old, nicely marked, \$23 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.

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Choice bull calves, heifers, cows. Registered and best breeding. Herd tuberculin tested. We are breeders, not dealers.
MAX J. KENNEDY, FREDONIA, KANSAS

BERKSHIRE HOGS.

KING'S BERKSHIRES—Twenty good Berkshire fall boars. One good yearling boar. **E. D. KING, Burlington, Kansas.**

Breeders' Directory

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Mahlon Groenmiller, Pomona, Kansas.
JERSEY CATTLE.
J. B. Porter & Son, Mayetta, Kan.
DORSET HORN SHEEP
H. C. LaTourette, Route 2, Oberlin, Kan.

CHESTER WHITE HOGS

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.**

O. I. C. SPRING PIGS, BOTH SEXES.
Bred gilts.
HARRY W. HAYNES, GRANTVILLE, KAN.

POLLED DURHAM CATTLE.

FOR SALE—Two red and white bull calves, 10 months old, sired by Chief, a son of True Sultan. Priced to sell.
D. C. VAN NICE - RICHLAND, KANSAS
(On Mo. Pac. Ry., 17 miles S. E. of Topeka)

ALBRIGHT'S POLLED DURHAMS.
For Sale—Choice double standard Polled Durham bulls, serviceable age, by Belle's Hero by Roan Hero.
C. M. ALBRIGHT, OVERBROOK, KANSAS

HORSES AND MULES.

PERCHERONS, BELGIANS, SHIRES.
Ton stallions ready for heavy stand; also yearlings and twos. Young fillies, also mares with colt by side and bred again. All registered. One hundred individuals of first rank for sale.
FRED CHANDLER, R. 7, Chariton, Iowa
Just above Kansas City

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

HOLSTEIN CATTLE.

Purebred Registered HOLSTEIN CATTLE

A Holstein owner knows that he holds an asset something more than size, weight, individuality, breeding and the highest standard of productiveness. He knows that he is a partner, directly and indirectly, in all of the progressive efforts of the Holstein-Friesian Association, and also in its financial soundness and mighty prestige. He benefits from its annual prize offerings of \$22,500, and its yearly educational publicity campaign costing \$25,000. The official records of its Advanced Registry Office establish for his cows positive and relatively high market values. Since 1908 the average auction price of Holsteins has increased to \$255 per head. There's big money in the big "Black and White" Holsteins. Send for FREE Illustrated Descriptive Booklets. The Holstein-Friesian Association of America
F. L. Houghton, Sec'y. Box 114, Brattleboro, Vt.

Butter Bred Holsteins

Buy your next bull calf from a herd that won the butter test over all breeds.
J. P. MAST - SCRANTON, KANSAS

CEDAR LANE HOLSTEIN HERD

We are making very low prices on a few young bull calves. It will pay you to buy them of us while young. Sired by our 29.4-pound grandson of Pontiac Korndyke.
T. M. EWING, INDEPENDENCE, KANSAS

High Grade Holstein Calves 12 heifers bred, 4 to 6 weeks old, beautifully marked, \$20 each. Safe delivery and satisfaction guaranteed.
FERWOOD FARMS, WAUWATOSA, WISCONSIN

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