

# KANSAS FARMER

For the improvement of the Farm and Home

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## ENORMOUS WASTE OF STRAW

### Straw Spreading Pays Big---Helps Maintain Wheat Yields

EVEN with the slump of seventy million bushels from the June estimate, the Kansas wheat crop represents an enormous amount of money. For weeks wheat has held the headlines in the newspapers and been the chief topic of conversation. We are excited just at present over the returns from the crop to give a thought to the straw upon which it grew. There never was such a crop of straw. Even the short grass country produced straw feet high. This has greatly increased the cost of harvesting and handling wheat this year. It has been estimated that threshed stacks will cover twenty thousand acres of land. What are we going to do about it? Is there no way to salvage the straw?

As ordinarily handled, straw represents one of the great by-product wastes of the country. Already the smoke of burning straw is beginning to rise in the wheat fields. Burning of straw after the harvest season is a common practice all through the Mississippi valley. Burning straw is a direct means of robbing the soil of rich plant food and means money loss, because a proper use of straw will aid materially in increasing wheat yields and in decreasing the amounts of commercial fertilizers required. Something must be done with the straw. Animal requirements will take a fourth of it, but straw burning certainly displays limited vision.

**Straw the Mother of Wheat**  
There is a superstition that straw is good, but it is only because of a man's limitations that his farm is littered with what seems to him rubbish. A well known writer in discussing the question of this great waste of straw, some day a ray of genius falls upon the dead heap of waste and turns it to gold. We discover that straw is the mother of the wheat. It nourishes and protects.

Right now amidst the shouting and tumult of the harvest should we not raise our voices and exert our influence against the burning of straw. Food-stuffs will be scarce for years, and there may never be any great surplus of wheat. Long before the war the great English philosopher, Sir Oliver Lodge, predicted the approach of a wheat famine. He had figures to show that there is not enough wheat land in the world and that the fields are falling off. In this country we are inclined to take a more optimistic view. We feel sure that the wheat lands of the United States and Canada have not reached their limit. The stimulus of a guaranteed good price for wheat and the call for large acreages in order to support our war program resulted in a greatly increased sowing the past year, but it does not seem beyond the possibilities that we can look forward to a billion-bushel yields for the United States provided fertility is maintained and some method is followed to over-

come the losses due to winter killing.

#### Great Need of Humus

Humus or organic matter is one of the prime needs of our wheat lands, and the mother plant, or the straw, is the most readily available source of supply. Because of the lack of humus, fields wash, and the running off of the water carries off the surface soil. There are parts of Kansas in which fields are worn out—not because crops have exhausted the fertility, but because the fertile surface soil has been carried off by washing. Humus acts as a binder. It not only absorbs water, but holds the soil together. Humus has the same effect on the soil as does hair in lime plaster. On rolling lands it is worth while to get humus and plenty of it into the soil as a means of keeping the soil on the field. Humus likewise holds the soil wind. The effect of humus, is two-fold—not only that it holds the soil together, but of keeping the soil moist, and in either event, blowing to a considerable extent.

A large part of Kansas farm land is short of humus. Fields are literally starving for the want of humus. Western Kansas soils have always been short of humus. Nature failed to supply them. And in addition, says Dr. C. G. Hopkins, a ton of straw contains more potash, phosphorus and nitrogen than a ton of ordinary barnyard manure. We are using all the powers of the law to prevent I. W. W.'s or others from burning our wheat in stacks, barns, or elevators, but what of the destruction of the potash, phosphorus, and nitrogen. If every farmer who applies a torch to his straw stack realized that for every ton of straw he burns he was deliberately depriving his soil of \$2.50 worth of fertility, it is probable he would at once take steps to stop this loss. Untold millions of tons of straw have been consigned to the flames each year. One of the principal reasons for this great waste

has been the amount of hard work necessary to scatter it over the field. Hundreds and hundreds of farmers who realized that their straw should be returned to the soil, burned it because there was only one way to handle it, the old back-breaking method of scattering it by hand.

#### Straw Serves as Protection

The straw should go back to the soil from which it came. Applied in the right way it protects the growing wheat from winter killing, keeps the snow from drifting, thus preventing bare spots. It will check alternate freezing and thawing, prevent the damage from ice sheets forming, and stop the soil drifting.

In many places straw can be used for the protection it affords. It will hold moisture in periods of dry weather. On

young wheat it will protect the young

#### Testimony of Experiment Stations

In what follows is given the condensed testimony from tests conducted at our various experiment stations. The Illinois station has carefully covered test plots with straw and raised seventeen and a half bushels more to the acre on the strawed plots than on adjoining plots left bare but otherwise fertilized in the same manner. The experiment station of Missouri covered test plots with strawy manure and got forty bushels to the acre, while other plots which were not covered were badly winter killed. Experimental tests in South Dakota resulted in saving winter wheat three years in succession by putting on a top dressing of three tons of straw to the acre. Other wheat fields in the neighborhood failed and the farmers were discouraged. The rust was making the growing of spring wheat unprofitable. They could have raised good crops of winter wheat if the practice of burning

the straw instead of spreading it had not prevailed. Thomas Cooper, formerly director of the North Dakota Experiment Station says: "The loss from blowing soil is cumulative. It is likely to grow greater from year to year rather than grow less. Some system must be adopted which will effectively stop blowing every spring. The simplest method of doing this is the application of either strawy manure or of straw. If straw can be applied to a field soon enough, blowing can be absolutely prevented." This use of straw has been demonstrated to be an almost positive means of stopping blowing on the Hays Experiment Station in Kansas. After spreading, the straw has been run over with a disk set straight to mash it into the ground and keep it from blowing away and piling up.

#### How to Spread Straw

Get the straw from spreading

use of the straw. L. E. Call of the Kansas Experiment Station makes the following statement about spreading straw as a top dressing for wheat: "One of the best ways of utilizing straw is to scatter it as a top dressing on wheat, but care should be taken to spread it evenly and thin. In my opinion it never is advisable to apply more than one ton of straw to the acre.

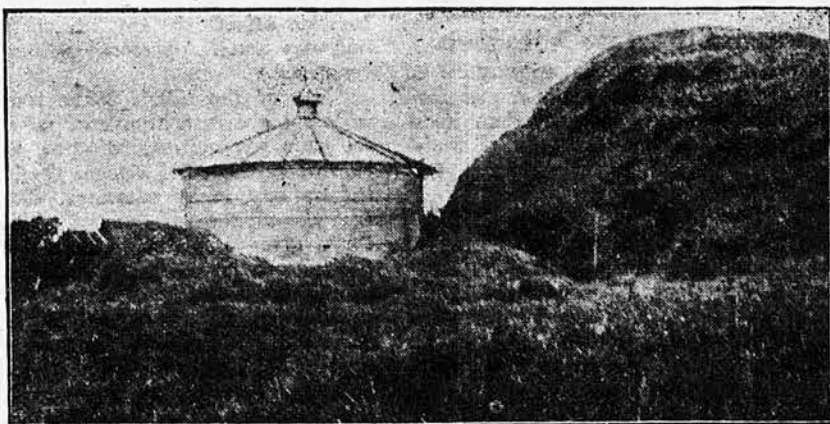
Experiments in Iowa have shown that the wheat receiving a mulch made a greater yield and graded higher than wheat not mulched. Most of the wheat from the mulched plots graded No. 2 and weighed from sixty to sixty-two pounds per bushel, while the wheat from the non-mulched plots graded No. 3 and weighed from fifty-six to fifty-eight pounds to the bushel.

The experiences of these many station tests teach that in using straw as a mulch it should be applied in the fall from November to December at the rate of one to three tons to the acre and that it must be spread in a thin, even coat and that partly rotted or well rotted straw is preferable to fresh straw. There is no need to fear the harboring of chinch bugs for these pests have already entered their winter quarters before the straw spreading season.

#### Confirming Experience of Farmers

The experience and results obtained by the experiment stations have been confirmed over and over again by farmers. Bert Garrison of Urbana, Illinois, raised nine bushels more to the acre on forty acres that were strawed than he did on thirty acres not mulched. Straw spreading made profits of over \$700 for him.

William Knop of Preston, Kansas, who operates a large farm, covered 160 acres of wheat with straw and compared it with another 160 in the same section (Continued on Page Nine)



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## MECHANICS ON THE FARM

Items of Interest About Automobiles, Engines, Tractors and Motorcycles

### Remove Real Causes

**A**UTOMOBILE drivers have come to accept certain common and persistent troubles as necessary evils. Instead of seeking for fundamental causes, they tolerate the trouble and get along without seeming to realize that many of them are the result of defective adjustment or errors in operation and are largely avoidable. Some of these troubles are so inevitable that drivers are led to seek innumerable methods for temporarily reducing or relieving their effects, failing, however, to remove the underlying causes which are actually responsible for the trouble. This is not the right method of handling these troubles. Removing the real cause is the only permanently effective remedy.

Automobile drivers by the thousands seem to believe that the fouling of spark plugs is an unavoidable evil and try to escape the results by using so-called soot proof plugs. As a matter of fact plugs will keep clean almost indefinitely in a well conditioned engine in which over-rich mixtures are avoided and having good oiling systems supplied with high quality oil and with the pistons and piston rings so adjusted as to keep oil from reaching combustion spaces.

If plugs foul, the only real remedy is to use lean fuel mixtures at all times and to secure oil tight action of the pistons in the cylinders, which latter may be difficult, but is always capable of approximate attainment. Sooner or later the inherent causes of the trouble will have to be removed in order to secure permanently satisfactory operation, and it will be better to do it sooner than later and to avoid "dilly dallying" with temporary palliatives.

The above remarks apply to carbonization. The opinion is general that a rapid rate of carbon formation is unavoidable and carbon preventing attachments and fuel "dopes" are resorted to, but the fact is that the removal of the causes of carbonization themselves, which are the same as those resulting in fouled plugs, will so reduce the evil as to render decarbonization necessary only at very long intervals.

Many users have been troubled so much by the failure of their batteries to keep charged, that they consider it a "part of the game" to have them recharged periodically from an external current source. This is not the right way to attack the evil for practically all electrical systems are or can be made self-sustaining and the annoyance of frequent outside charging can be eliminated by the removal of the causes which make it necessary. Increasing the generator charging rate, the reduction of useless current waste and the removal of internal or external leaks of battery current are the means for putting the system upon a basis of independence of outside charging sources.

### Repairs to Auto Windows

Nothing so mars the appearance of an auto top as cracked, broken, or torn out rear windows. If motorists knew how easily this condition could be remedied, there would be fewer tops appearing in such a shabby condition.

The work can be done by the car owner himself in an hour of his spare time and the necessary materials—sufficient transparent sheeting and a tube of pyroxylin cement—may be purchased at any auto supply store.

The windows are sewed in with a double row of stitches. First cut the inside row of stitching. Leave the second row. Then cut out the broken light leaving a strip about one-half inch wide all around and held in place by the stitching left intact. Cut the new pane

the right size and cement it to the edges left on the old pane.

This method makes the cost of the replacement less than a dollar.

The success of the method depends on using the right kind of cement; in short, one made on a pyroxylin base. This is because the cement and the transparent sheeting are both made of the same ingredients. Cotton is the base. A pyroxylin cement combines with the sheeting in such a way that the two pieces of sheeting become a practically homogeneous unit.

Glues, cements and pastes made on other bases do not combine with the sheeting; hence the joint cannot be made as securely with them.

### Ordinary Country Roads

Good roads promote self-respect in a community. They make possible social intercourse. They bring the benefits of churches and schools within the reach of all. They help to keep the boys on the farm. They cheapen the cost of transportation of farm products to the markets and thus add to the farm profits. They add to the value of farm lands much more than they cost. They mark the degree of civilization of the rural community.

Roads may be divided into three general classes, as regards construction—dirt roads, various kinds of macadams, and pavements such as brick, concrete, asphalt, etc.

When choosing the kind of material to be used, take into consideration the amount of traffic measured in tons, the size of the individual loads, the kinds of vehicles used for transportation purposes, the provision made for maintenance, the cost of available materials, and the amount of technical skill necessary in using such materials.

Some of the materials or combinations of materials which might enter into the construction of temporary country roads are earth, shale, slate, chert, gravel and rock, or sand mixed with clay or gumbo. For heavy traffic on through routes pavements may be required, but these are not ordinarily classed as "country roads."

Some of the things which determine the cost of road construction are: Cost of right of way; cost of clearing and grubbing; amount and kind of material to be excavated and amount of filling to be done; amount of ditching for surface drainage and tiling for sub-drainage; number and size of stream crossings necessitating culverts or bridges; cost of securing and placing material.

The three principal divisions of actual road making are location, construction, and maintenance. In planning a road it is necessary that we take into consideration all three of these steps, since proper location affects the cost of construction and may materially reduce cost of maintenance.

Some of the things to be considered in locating a road are easy grades, good drainage, exposure to sunshine, elimination of culverts and bridges by avoiding unnecessary creek crossings, directness and the number of farms to be served for a given length of road. Whenever possible to avoid it, a good location should not be rejected merely because a certain roadway has been in use for some time. If the location of a used road is bad it should be changed if possible. In relocating roads avoid railroad crossings at grades.—Missouri Agricultural College Circular.

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## INVESTING FARM MONEY

For weeks every industry in the country has been looking forward and making plans for separating the farmer from money obtained for this year's enormous wheat crop. While there will be many ways in which money can be spent to the advantage and comfort of the farm family, there will also be many opportunities to spend money foolishly in ways that will bring no benefit and perhaps ultimately result in harm. In spite of the falling off of the wheat crop from what was expected a month ago, there will be a vast amount of money paid to Kansas farmers this fall for the wheat crop, and the spending of this money constitutes a real problem. We must not fail to take into consideration that a dollar has greatly depreciated in purchasing power, possibly at least 100 per cent. We are on a high price level, and economists are at variance as to whether this is to be permanent or whether the dollar will shrink in value and purchasing power as conditions approach normal at some time in the future.

Cheap dollars are always good dollars with which to pay debts but a poor basis on which to accumulate additional assets for future payment. All over the great farming areas of the country land values have responded to the lower purchasing price of the dollar and farms are changing hands at great advances in price. We question the wisdom of buying land extensively under such conditions. Land must return a reasonable percentage of interest on the investment. Its ultimate value must be based on what it will produce. An investment in land made on the basis of a cheap dollar may be burdened with an excessive overhead in the way of interest when conditions get back to normal. One thing we can be sure of, and that is that the debt-paying capacity of the cheap dollar is as great as when the debt was incurred. Paying off debts might be settled upon as one of the first things to do with money received from the present crop.

In making purchases under the conditions, a safe rule to adopt is to buy things which increase the efficiency of the farm and make the living conditions more comfortable. Money spent to increase the ordinary creature comforts of the farm home too often is looked upon as unproductive. We feel that this is a mistaken idea. On the farm the whole family has some part in the work of production. A power washing machine, a complete water system, a modern heating plant or lighting system, vacuum cleaners and other electric appliances should be classed as productive investments on a par with the purchase of manure spreaders or straw spreaders, hay forks and loaders, barn cleaning equipment, and other labor-saving machinery of the farm. These things increase the efficiency of the farm worker and may be the means of keeping the boys and girls of the farm from going to the city at the first opportunity and working at some city job rather than staying on the farm and put up with the living conditions. The purchase of any equipment which adds to the productive capacity of the farm plant as a whole is in order.

Too often when a considerable amount of money comes in, as from the selling of a crop of wheat, the tendency is to use a considerable portion of it for extravagant purchases and perhaps go without some much-needed improve-

ment in the farm house, or possibly a silo, better bred sires, or other equipment which might add to the comfort and earning capacity of the farm workers. Now when we are on a high price level, the permanency of which no one can accurately foretell, more than the usual thought might profitably be given to the subject of how best to spend our money.

## PACKING HOUSE LEGISLATION

Packing house control is an issue that has assumed equal importance in the public mind with the question of railroad management. We have been having a little experience in government operation of railroads and many enthusiastic advocates of government ownership are beginning to waver in their belief that this is the only solution of the railroad question. We have had federal trade commission investigations of the packing house business which seemed to get nowhere, and any amount of newspaper propaganda on one side or the other of the question.

The packing house with its highly developed organization forms a most important link in the great live stock industry of the country. The packers have been charged with jointly controlling the markets and making enormous profits at the expense of producers. Again and again have producers of live stock locked horns with the packing interests. We now have before Congress two bills, one known as the Kendrick bill and the other the Kenyon bill. These bills, of which the Kenyon bill is the more drastic of the two, have for their purpose the bringing of the packing house business under most rigid federal supervision.

Live stock men who in times past have been most active in fighting the packers, many of them are opposed to the bills in Congress and particularly the Kenyon bill. This is rather an anomalous situation. Live stock men have without doubt suffered losses which in some measure at least were chargeable to the systems under which packers operate. On the other hand when it comes to putting down in black and white a series of provisions to be enacted into law and which it seems may restrict and hamper packers in many of their legitimate functions, the live stock men all over the country are beginning to be outspoken against this legislation in its present form at least. Producers have little faith in government ownership or operation. Stockmen and producers generally are in favor of some sort of regulation of the packing business which has grown to such enormous proportions, but they fear the drastic provisions of these bills will actually work serious injury to the great industry of live stock production.

There are objectionable features in both bills. Depriving packers of their ownership of refrigerator cars is a feature of both bills looked upon with suspicion by many of the live stock men who have expressed themselves on the subject. They feel that the railroads in their present financial condition are in no shape to take on the added burden of supplying the refrigerator cars which are such a necessity in the packing business. The situation is most puzzling. With so many of the men directly concerned in live stock production speaking against the bills in Congress as now drafted, the ordinary citizen may well wonder if there is not the possibility of carrying restrictive and

repressive legislation too far. Perhaps after all there is a safe middle ground which while making it impossible for the packers to use in a dangerous way their great powers, will still leave them free to effectively perform their legitimate functions in the distribution of food products. Some sort of legislation is without doubt needed, but it certainly should not be so drastic as to throttle the packing business.

## PUT IN WATER SYSTEM

If you have any money at all available for making improvements about the farm or buildings this fall, why not consider first of all the installation of a good water system? No single improvement will mean more in saving steps and making for better living conditions than a complete water system, providing running water wherever needed not only about the barn and yards but in the house as well. We have long since passed that pioneer stage when such a thing as a water system on the farm was out of the question. The men of the farms should have the desire to make the farm home just as convenient, just as comfortable, and just as attractive as the city home. Probably the principal reason why such an improvement as a water system has not been installed on more farms is simply the matter of not getting at it and perhaps of failing to realize that there are now on the market complete water systems of various kinds specially designed for farm installation and in prices to fit almost any pocketbook. Why not make up your mind to invest some of this year's money in providing an ample supply of water available at the turn of a tap wherever needed?

## BUY HERD BULL NOW

Buying the needed herd bull is too often put off until spring in spite of the fact that as a rule bulls can be bought for from fifteen to twenty-five per cent less in summer or fall than in the spring. The basis for the delay is that the cost of wintering the animal will be saved by waiting until spring. The way good purebred beef bulls are selling now, the same animal is often costing from \$100 to \$150 more in the spring than he could have been purchased for the summer of fall preceding. Even a fattening ration for the winter season would not cost anywhere near this amount, and the extra labor to the man having a bunch of cows to winter is too small an item to even consider. In addition to the probable saving in money by purchasing in the fall instead of waiting till spring there is the advantage that the animal will become accustomed to his new home and can be put into the best breeding condition possible during the winter.

## HARRY W. DOYLE DIES

Harry W. Doyle, assistant secretary of the Kansas State Board of Agriculture, died suddenly last Friday after an illness of only a few days. He was but thirty-one years of age. His death was due to a complication of heart and kidney trouble.

Mr. Doyle began his work with the Board of Agriculture as a clerk nine years ago. He was an untiring worker, having as one of his special duties the preparation of the biennial reports of the Board and other special publications. He was eminently successful in the preparation of these reports and books. "Alfalfa in Kansas" and "Hogs in Kan-

sas," two publications upon which Mr. Doyle worked so untiringly, are without peers in their respective fields.

Harry Doyle was not so wrapped up in his work at the Board office that he could not find time for service along other lines. He was a friend and companion of the younger boys of the Oakland community where he lived until last year, directing their activities as scout master. He also was a popular teacher of a class in Sunday School and gave freely of his time and effort in leading the various war drives of Oakland. His untimely death will be mourned not only by his more intimate friends in Topeka, but by his numerous friends over the state. Readers of KANSAS FARMER have read with pleasure and profit his contributions to our columns and in many a farm library the "alfalfa book," the "hog book," and others of the books and reports prepared by Mr. Doyle for the State Board will long be used as reference works in helping to solve the agricultural problems of the farm.

Congress has again passed a bill repealing the daylight-saving law, this time as an independent bill. Both House and Senate have a strong majority in favor of repealing this law so obnoxious to the people of the open country, and if it is not repealed it will be because President Wilson continues to hold to the view that the law gives "all but universal satisfaction" and vetoes the bill when it comes to him for his approval, as he did the appropriation bill which contained the repeal of the daylight-saving law as a rider. It may not be possible in both the Senate and Congress to get the two-thirds majority necessary to pass the repeal over the President's veto. People of the farms who have found the new law both expensive and annoying must needs let the President know the true situation. There is no need of wasting additional effort in writing letters to members of Congress. Congress is already convinced. The appeal must go direct to the President.

The daily papers all over the country continue to mislead their readers with statements to the effect that official price-making on wheat is responsible for the present high price level. Consumers should not forget that in the very beginning government interference in wheat prices was primarily for the purpose of preventing wheat from going to prohibitive prices and to insure producers against loss in the future and thus stimulate a greater production. Wheat has been selling at a slight premium over government prices at our central markets since the new crop began to move. When open trading in wheat began in Winnipeg recently the prices established in the market as a result of unrestricted trading, both for current and future delivery, were above our government guaranteed price. If the price of flour is based on the government price of wheat, the consumer will be the one benefited most by official control.

Eight hundred million dollars is the annual loss to agriculture and forestry in the United States through the depredations of insect pests.

When farming prospers the world prospers; and conversely, when farming suffers everybody is unfavorably affected.



# CO-OPERATIVE ACTIVITIES

## Farmer Not Trying to Eliminate Needed Distribution Service

By ALFRED DOCKING

IT IS passing strange while many forces or bodies of men and women are clamoring for the right to bargain collectively that these same forces by their leaders and writers seek to belittle the efforts of the American farmer to do his business collectively where in his judgment he can better his condition. On the other hand, agriculture has never denied the right of a man or a woman to a living wage that shall afford all the opportunity possible to home and family, nor the right of a woman to receive the same wages or salary for the performance of any certain work that a man would in doing the same, nor the right to bargain collectively.

Over against this tendency let it be said that in other countries the labor forces are those which foster co-operative business and have blazed the trail for the farmers there. It was among flannel weavers that the Rochdale System was begun, twenty-eight of them forming a little organization to bargain collectively and to distribute among themselves the absolute necessities of their lives. Oatmeal, sugar, flour, and butter to the amount of about \$68 was the first stock. That little band raised the money to pay rent in advance, expense, and the first cost of these articles by saving each two pence, or four cents, per week, and a little later three pence, or six cents. Now the buyers of that co-operative organization, grown out of the weavers' experiment, purchase the wheat for their own roller mills in Manitoba and ship it over in their own ships to their own roller mills that are among the best and most efficiently managed in the world. Tea is grown in their own plantations in Ceylon, cured in their own plants, shipped by themselves to their own wholesale distributing points. A score of other things, even ladies' hats, etc., might be cited in this same category. With about three millions of members out of a population of forty-five millions and a capitalization of the "Wholesale Society" of forty-six millions of dollars and sales of more than \$250,000,000 in 1916, \$80,000,000 of which they manufactured in their own factories and mills, it is no longer an experiment.

America has not taken the same course altogether. Co-operation among the farmers has led. Fruit growers of California and Oregon, truck gardeners of the Gulf Coast and the South Atlantic shore line, men in general farming in Minnesota and Kansas, and others all over the land have worked out definite plans of organization today and employ thousands of expert helpers and managers who demonstrate every day that the highest of success attends the movement. Even the Co-operative League is ignorant of the figures that this business covers. No man has been able to keep pace with organization and development of fully capitalized concerns.

There is a queer delusion in the minds of people in general. They say, "How can men who know nothing of business undertake this intricate work of distribution, of buying and selling, of general marketing?" How is it that a thousand banks in the great West are owned by farmer stockholders in small shares, many owning each no more than the price of a good mule? They are successful because they employ men who can manage them. In a certain western town there met recently a large group of men for an efficiency conference. They represented the work of the state in their organization. A daily came out with the remark that the men were in business conference who would handle more than half the wheat of the whole state. The volume of the past year's business in all departments is upwards of \$175,000,000 and not so much of the wheat was handled during the past year. Some counties did as much as \$3,000,000 to

\$4,000,000 each, the business under one management. Is there another business organization that has this form of conference where men exchange ideas about the whole range of their business in all departments in order to get increased efficiency or its synonym that I like very much—to get right results? This was an organization of farmers, the Farmers' Union, and these conferees the business men employed by them.

A great advertising manager stated several years ago in a national meeting of managers that there were four forces arising that would revolutionize retail business and put most of the present advertising methods and devices on the scrap pile. These he rated in their importance as chains of stores, mail order houses, department stores, and co-operative concerns. The first was the only one that he considered as a menace to the wholesale and jobbing houses, the work of the other three, even though they were doing a lot of business, being negligible as to the elimination of these middle concerns between production and consumption.

The fact of the matter is that there is no elimination of necessary factors. What ever we name him, we cannot do

result in operation, but not the goal of the co-operator. Distribution service that really serves, and at living pay, is one of the efficiency engineer's aims. He knows that there is a "penny-saving" economy which is not economy, and he will not reduce the factors of right distribution below that.

One investigator says that great as are the co-operative activities of Great Britain, involving hundreds of millions of dollars of business annually, they have "not made a ripple on the surface of Britain's trade. The ordinary retailer and wholesaler still do business without concern." That is one of the greatest economies ever given co-operation. The writer of this personally investigated just before the war, the relations of co-operative and private business in Great Britain and other countries and found that there was no conflict, but that certain advantages accrue to the private concerns in a village where the co-operative store is in operation. The reduction of the business to a cash basis, the reduction of the overhead expense to what is necessary, and the elimination of the waste, the study and use of better selling methods, came in with the co-operative store. Prior to that time any



PARKED AUTOMOBILES AT A KANSAS SUMMER MEETING OF FARMERS' UNION

without the necessary man in the phase called distribution. He may be working for himself, or may be a salaried employee of an owner of private business, or he may be the salaried worker of a co-operative corporation. Good business says that there will be a sufficient number of capable men in this service. Good business says also that the sufficiency and efficiency shall go with the number of stores or concerns in any certain location. A city of fifty thousand people may have 150 groceries and they may agree upon a price upon commodities and a percentage of overhead that will give an adequate living to owners and employees of all the stores. The question for the community is whether there are not three times as many stores as would properly serve the population. It has the reverse effect to the unwarranted increase of producers of any commodity. If all farmers doubled and redoubled their potato production and others who had gardens went into potato production the price would inevitably drop to the consumer. In the case of too many distributive workers the consumer must pay more in order that they may make a living even if they are unnecessary.

A recent writer has said of the co-operative stores, "They accomplish no more in economy of operating expense than do the other efforts at 'eliminating the middleman.'" This latter phrase is a distortion of the objective. No organization makes that its major motive. That the unnecessary middleman, over and above the quota needed to a right distribution service, is eliminated is a

waste or unnecessary expense might safely be added to the price to consumer and by agreement the two or three stores could all increase. Co-operation asks, "Why?" In the matter of trade, society separates into three factors: the producer, the distributor service, the consumer. That the second of these can be reconstructed and readjusted in co-operative form and not "make a ripple" when one-fifth of the people are participants in the change is a tribute to equity and fairness of the operators. Neither the masses of consumers, the distributing people, or the government of Great Britain objected when the necessities of life were kept to reasonable price advances early in the war period by the co-operative management. Sugar was by manipulation to be advanced 100 per cent, but it was not because the Co-operative Wholesale owned the heaviest sugar stocks of any concern in the world.

I have before me the illustrated lists of factories and mills in European co-operative work. It covers every line of industry. As an investigator of such things and what they lead to in all phases of production and industry and hoping to be hospitably minded, the results cause me to wonder. Better pay for workers, better housing, better working conditions, best of insurance, opportunity for workers ill or incapacitated to be cared for in the country in places owned by "co-op." these and other things are proved in the growth and present activities of an organized effort of less than seventy-five years. Twenty millions of members in Russia causes sur-

prise, the immediate return of the co-operative bank at Moscow when seized by Bolshevik soldiers and the assurance to the co-operators that it would not be interfered with, the request to the American Government that it recognize the co-operative organizations of Russia as worthy of credit and with the municipal organizations the only two to be credited—a request made not by Russian co-operators but by the Russian-American Chamber of Commerce composed of a number of shrewd business men of this country too. Individualism preserved and initiative not sacrificed but collectivism utilized so that all may have right opportunity before them seems to be the argument of some of these leaders. I am no believer in Utopia now here or heaven realized at once, but what there be of good I am quite ready to discover whence-so-ever it come, and most certainly if the force that brings it about be as democratizing as that of co-operation. The Rochdale weavers builded better than they kenned. Expert auditing shows that a very much smaller percentage of these co-operative concerns fail than those of private business. Why? How is it done? What is the psychology of it? Is it because the social values and the educational values are aligned with this economic or material value and that the appeal is to men and women more thoughtful and more appreciative of cause and effect than ever before? Is it that upon the mental board lie the master plans of what is to be and that these earnest people in a plain everyday way are working toward them, building on in the hope to realize a more abundant life on the farm and in the country village? Take one instance—the rural or community high schools of the West were not projected by state authorities or the educator craft, but were planned in the legislation and in the organization by the bodies of farmers of two great orders, country co-operators. This in itself showed that the idea of co-operation or get together in their minds was not bounded by the milled edge of a silver dollar nor mummy-wrapped in a five. As soon as the drift of the demand was sensed there was the most cordial effort to line up to the desires of these bodies upon the part of educators, who realized that it was an entirely new type of school that was about to be born. Community libraries and community churches have received a great impetus wherever the true spirit of co-operation has been developed.

With this progress there has grown up a very strong conviction in the minds of the men and women of the country that their progress and uplift with all the specialized aids in departments and in policies ought and must be initiated in the country and by the men and women of the life itself. The idea of a super-guardianship in which it is tacitly assumed that these people are not competent to manage their own affairs is most distasteful. One leader who had been directed to organize the farmers along certain lines and to correlate these groups into a new centralized body questioned the writer as to his opinion. He was told that existing organizations occupied the field and that any organization of the country community which was not born of the necessity and of the great desire in the minds of farmers would be unproductive of results. Six months later he came back with the same conclusion in his own mind, and showed that he was co-operating with the farmers' own organizations.

It is passing strange when organized labor has the right to ask and always gets its own choice of national administrative heads that the American farmer must permit those appointments to be "plums" for the politician. We are

(Continued on Page Nine)



# COMING HORSE SHORTAGE

## Field Survey Shows Scarcity of Colts and Young Stock

By WAYNE DINSMORE

**H**ORSES are indispensable to efficient farm operation. Inferior horses, or insufficient numbers of good ones, hamper work, increase labor costs, and not infrequently cut crop yields by reason of delay in planting. The most successful farmers are alive to these facts and insist on having ample team force to do work well, quickly and cheaply.

Horse breeding has been so greatly curtailed in the past four years that a scarcity of good drafters has been evident. The beginning of exportations brings general complaint from buyers over difficulty in finding suitable horses. With a view to determining exactly what the situation was in Illinois, Prof. J. L. Edmonds and the writer made a careful field survey in three leading counties on July 10, 11 and 12. A day was spent in La Salle County with Agricultural Agent Brooks; in Iroquois County with Agent Wise; and in Woodford County with Agent Mosher. These counties are decidedly above the average in horse production.

In La Salle Brooks reported but one colt per ten miles, as his observation for two months past. Leading horsemen stated that the county over would not average one foal per farm, and an equal number of yearlings. Ten farms, visited by the party that day, had twenty-four foals, twenty-eight yearlings, and twenty-five two-year-olds, and these were among the best farms in the county, operated by men who are really good horsemen. The greatest handicap at present is the lack of good sires. There are over 300 Percheron mares in the county, owned by men who have each from one to eight head. While three good sires could handle all the mares if bunched, they are so widely scattered that at least ten are needed to make them accessible to the mares, for these Percheron matrons are in the harness every day, and cannot be sent long distances to breed. There were 119 horses three years old or over on these ten farms, comprising 3,032 acres, or an average of twelve work horses per farm,

or one horse to each twenty-five acres in farm area.

In Iroquois County, Agricultural Agent Wise estimated that there was one foal to each five miles. Breeders reported few mares bred in 1917 and 1918, but thought farmers were breeding their mares a little better this season. This may have been due to the fact that there are three exceptional stallions in that part of the county studied. Two of them have been champions at the International and the third is a tried sire whose get has won high honors in leading shows.

Exact figures were obtained from three farms. On these there were six foals, twelve yearlings, nine two-year-olds and thirty-two horses three years old and over, on 680 acres. This gives an average of 10.66 work horses per farm, of one horse to each twenty-one acres in farm area. These farms were all handling Percherons and had much more young stock than the average. From the best information obtainable it is doubtful whether Iroquois County will average one foal, one yearling and one two-year-old per farm. The situation as to sires is decidedly better than in La Salle County.

A hard day's drive in Woodford

County with County Agent Mosher led the observers to the conclusion that there is still less young stuff in this county than in the other two visited. Complete data was secured from six farms which are much above the average. There were eighteen foals, eleven yearlings, ten two-year-olds, and sixty-three horses three years old or over on a total of 1,488 acres. This gives ten and one-half work horses per farm, or a little less than twenty-four acres per horse. Mosher was positive that there was not an average of one foal per farm, taking the county over, with yearlings no more numerous, and our observations indicated that he was correct. There is a shortage of good sires in this county and some in use that ought to be castrated. Against this, we found one excellent stallion that has not had half enough to do, though such colts as were seen are far above the average.

Summarizing the situation, we found on the nineteen farms where we obtained complete records, forty-six foals, fifty-one yearlings, forty-four two-year-olds, and 214 horses three years old or over on a total of 5,200 acres. This averages about two and one-half foals, yearlings and two-year-olds respectively, per farm, and eleven and one-fourth

work horses per farm, or an average of twenty-four and a third acres per horse in use. These were among the best farms in Illinois, and far above the average. We also found from inquiry and personal observation that there is not to exceed one foal and one yearling per farm in these counties. There are apparently a few more two-year-olds, but one and one-half per farm is probably full high. There are no more horses three years old and over than required to handle the farm work efficiently. The well managed farm of 240 acres will have five teams of mares of three, four, five, six and seven years of age respectively and enough young stuff coming on to permit of turning off one pair seven and one-half years old, each season, when harvest is over. This requires four head coming three each season on each such farm. The geldings will be worked till past four, then sold, and the best fillies kept to replace the old mares sold. As the situation now presents itself, there are not enough young horses coming on in three of the best counties in Illinois to take care of the usual replacement requirements on farms in 1920, 1921 and 1922; and when Illinois falls short on draft horses, the balance of our states are far worse off.

The farmer who takes any thought for the future will not sell work horses this fall until he has located and purchased enough twos and threes to take the place of the older ones he plans to dispose of. Export buyers will not take stuff under four and a half years of age and would rather have them over five. The demand for export horses, combined with the existing shortage, will send good big drafters very high within the next three years and the men who have held fast to good stock will reap the harvest to which they are entitled.

At the present prices of fertilizer it pays every farmer and poultryman to save the poultry manure.

The silo is a safety vault for dairy feed.



GROUP OF MARES SHOWN AT TOPEKA FREE FAIR

## Handling Stocker and Feeder Hogs

**I**N AN effort to protect the swine industry of the country against the possibility of introducing sick hogs into well herds, and at the same time to permit the shipment from stockyards of stocker and feeder hogs, the United States Department of Agriculture conducts a system of vaccination against cholera as a part of its inspection service at the various stockyard centers. More than 324,000 hogs were immunized for shipment as stockers and feeders from stockyards of 18 cities during the six months from July to December, 1918, inclusive. To accomplish this without spreading disease, in the face of all the attendant dangers required, of course, such close care that the wisdom of some phase of the inspection system may not have been always apparent to all concerned. A description of the conditions under which stocker and feeder cattle are inspected is contained in a statement recently issued by the Bureau of Animal Industry of the Department.

With swine moving by carloads and trainloads from producing areas into public stockyards of the country, says the statement, the pens of such yards are inevitably infected with the common swine diseases, of which cholera is the most important. Owing to this condition Federal regulations formerly required the slaughter of swine received, but after the serum and virus treatment against hog cholera was standardized,

the possibility of reshipping immature hogs for further feeding resulted in a modification of the rules. Under the plan now in force swine properly vaccinated and disinfected may be reshipped for any purpose including breeding.

### Purpose and Methods of Inspection

Immunizing hogs against cholera is a veterinary procedure, including the preventive-serum treatment, taking of temperatures, and observing the condition of the animal during the test period. Necessarily the official regulations are of technical character, and it has come to the attention of the Department of Agriculture that in some cases the rules have been misinterpreted, so as to make them appear responsible for fluctuations in the stock-hog market.

For the information of the public, the Bureau of Animal Industry outlines briefly the method of inspection:

All public stockyards are considered to be infected and swine are, therefore, exposed to the contagion from the time of their entry into the yards; consequently, it is important that they be immunized promptly after arrival at such yards to protect them against contracting the disease.

For that reason the department opposes the immunization of swine that have been so exposed for more than 5 days. Hogs, though they may not show physical symptoms of cholera, may in some instances be affected with the dis-

ease to such an extent that immunization will not protect them.

If the five-day limit were not applied, many animals in this condition might be shipped to the feed lots, which would result in serious financial loss to the buyer through a high percentage of mortality, besides creating a center of infection in that community.

It is not permissible to immunize swine for immediate shipment interstate if they show symptoms of contagious or infectious disease.

If a considerable percentage of the animals in a lot is found to have high temperatures, the possible presence of such disease is indicated, and the animals are not immunized or permitted to be shipped interstate. It is possible to have hogs with high temperatures as a result of conditions surrounding the shipment to market, in which case they will return to normal within a short time.

In these instances, the owner is permitted to present the animals for re-examination as frequently as desired within the five-day limit, and if, under such re-examination, they are found to be normal, their immunization is supervised, and after they are disinfected a certificate covering their interstate movement is issued. This provision is for the purpose of affording the owner every opportunity consistent with safety to the swine industry to market his shipment in the most profitable way.

The practice of shipping swine from one public stockyard to another before immunization is liable to reduce the protection afforded very considerably, because of the uncertainty as to the length of time the animals have been exposed. To permit the interstate movement of such lots would afford insufficient protection to the purchasers who are not familiar with these various phases.

Department inspectors, therefore, have instructions not to supervise the immunization of such lots unless it can be shown conclusively that not more than five days have elapsed since the animals were first unloaded in a public stockyard.

The widespread interest in the feeder and stocker trade is shown by the fact that the great majority of feeder hogs were sold in small lots. The figures for the Kansas City stockyards, where more than 100,000 hogs were immunized under Federal supervision during the last half of 1918 show that these animals were sold in about 600 different consignments, an average approximately of about 166 head per lot.

Briefly, it will be observed that the entire plan is to protect the swine industry against the introduction of sick hogs or those of doubtful health into well herds. Under the Federal regulations no hogs are held a longer time than is necessary to give them a clean bill of health.



# GENERAL FARM AND STOCK ITEMS

Something of Interest for All—Overflow from Other Departments

**U**NLESS active measures are taken to keep them in control, cabbage worms will do much damage in the cabbage patch. The fight begins the moment the plants are set out. If all the old cabbage leaves had been destroyed last fall there would have been little trouble with these worms. The remedy is to use a poisoned dust such as is successfully used in poisoning potato bugs in small patches. Put a tablespoonful of paris green or white arsenic into a quart of flour or air-slaked lime. This can be sprinkled on the plant from a can with a perforated lid. The flour has sticking qualities and will cause the powder to stick to the leaves and especially if the dusting is done when there is a little dew on the plants. They should be gone over every two or three days. There need be no fear of poisoning anyone as a result of eating cabbage so dusted. The cabbage head grows from the inside and the poison is always on the outside leaves, which are removed.

## Sowing Alfalfa

A Northeastern Kansas reader asks how early he should seed alfalfa this fall on an oat stubble field and whether it is necessary to plow the ground in preparing the seed bed.

The time for sowing alfalfa in the fall will depend somewhat upon the season. If moisture conditions are favorable it is sometimes safe to seed up toward the last of September, but as a rule these late seedings are much more apt to be unsuccessful than earlier seedings. On the other hand there is some risk in seeding too early. If the seed is sown, for example, in August, a period of dry weather may cause poor germination or may kill the tender plants that have germinated but have not been able to establish a sufficient root system to stand the hot dry weather. A good rule to follow is to prepare the seed bed as early as possible and then sow when moisture conditions are favorable to germinating the seed and giving the plant a start. It is not as a rule advisable to sow alfalfa in the fall unless the soil conditions are favorable for germinating the seed at once.

Alfalfa requires a well firmed seed bed underneath with a fine surface. A good seed bed can often be prepared on stubble land by plowing it immediately after harvest and harrowing and disking at intervals until seeding time. On clean oat stubble land it is often the best plan to disk in preference to plowing as soon as possible after harvest. Use the harrow and the disk as needed to get the seed bed in ideal condition. Millet stubble makes a better seed bed as a rule for alfalfa than oat stubble. Either millet or cow peas leave the surface in a fairly mellow condition. It never is safe to attempt fall seeding on land which has been plowed late unless there has been more than the usual amount of rainfall to settle it.

## Economy in Farm Building

There is some danger of making farm buildings too expensive. City-bred farmers are probably much more apt to spend too much money on their buildings and improvements than those who have always farmed. Misguided wealthy men who purchase farms often invest large amounts in farm buildings with the idea of having them serve as models for his neighbors. The buildings should, like all farm investments, pay interest on the investment and should be in keeping with the value of the land and the stock and grain which they are to shelter.

As a general thing there is more danger that farm buildings will be too cheap than too expensive. The present high cost of building materials will perhaps be responsible for the tendency to build too cheaply. Cheapness of construction, if it affects the strength or durability, is poor economy in farm

buildings. Strength and durability are essentials.

The demand or need is really increasing for better buildings on our farms. This is because of the increased prices of farm products, which encourages giving them better care and protection. In these times of high prices live stock must have better shelter, and hay and grain must be carefully protected from the weather, and last but by no means least, better living conditions for the farm family are necessary. During the war period we got along with the minimum of buildings and improvements. We are now entering a period in which much attention will be given to improved farm buildings of all kinds.

## Fly Repellent

The best time to swat the fly is before he is born, but as a rule there will be plenty of flies to fight no matter how much effort is put into preventative measures. Few of the fly repellants are altogether satisfactory in keeping flies away from the animals. Anything that will actually keep them away for longer than an hour or two must be of such an oily or tarry nature as to be objectionable. The following repellants are suggested by George H. Glover of the Colo-

vocational agriculture in the Labette County High School receives a salary of \$2,400, and the one at Arkansas City \$2,000.

## Daylight-Saving Repeal

The fight for the repeal of the daylight saving law has not been abandoned in spite of the President's veto, and the failure by a few votes of the House to override it. The farmers representatives in Washington point out that it would take a change of only eight votes to have passed the repeal over the veto, and that the vote was a hurried one on short notice; and that because of this there is reason to believe that another repeal measure, which can be easily passed over a veto even should the President have the temerity to again veto it after he hears from the country.

President Wilson has been in Paris, busy, and out of touch with the real sentiment of the American people. He is hearing things from the farmers and their representatives just now. He will continue to hear.

"President Wilson probably knows a lot of things that the American farmers do not know," said T. C. Atkeson, Washington representative of The National Grange, when asked about the repeal be-

grass, but which may produce a fair growth of other grasses, a mixture of five pounds of redtop, ten pounds of orchard grass and four pounds of alsike clover is recommended. If a cheaper mixture is wanted the redtop seed may be omitted.

On all types of untillable land the spring seeding of pastures almost invariably gives better results than fall seeding, unless the soil is so weedy that fall seeding is necessary to give the grass an early start in competition with the spring growth of weeds. No preparation of the soil is necessary, other than burning the leaves or other dead plant matter; but after the seed is sown it should by all means be harrowed or brushed into the soil, if the land is clay enough to allow the passage of the implement. It must be understood, however, that a pasture seeded in the spring will yield but little return the first season, unless the soil is very fertile and weather conditions are favorable. If it is necessary to begin grazing by early summer the grass should be seeded with rye or oats, which will furnish considerable pasturage during May and June.

The quicker growing grasses, timothy, rye grass, redtop and orchard grass, are seeded with bluegrass to furnish pasturage while the slow-growing bluegrass is developing. It is also wise to provide against a possible failure of the bluegrass by including other grasses which might prove themselves better adapted to the soil. Two to five years are required for bluegrass to fill the sod, depending upon the fertility of the land and the persistence of the other grass in the mixture. Under favorable natural conditions there seems to be no limit to its time endurance. But sometimes without any permanent change in natural conditions, the pasture becomes foul with weeds and brush and is thereby made much less productive.

## Pasturing Orchard

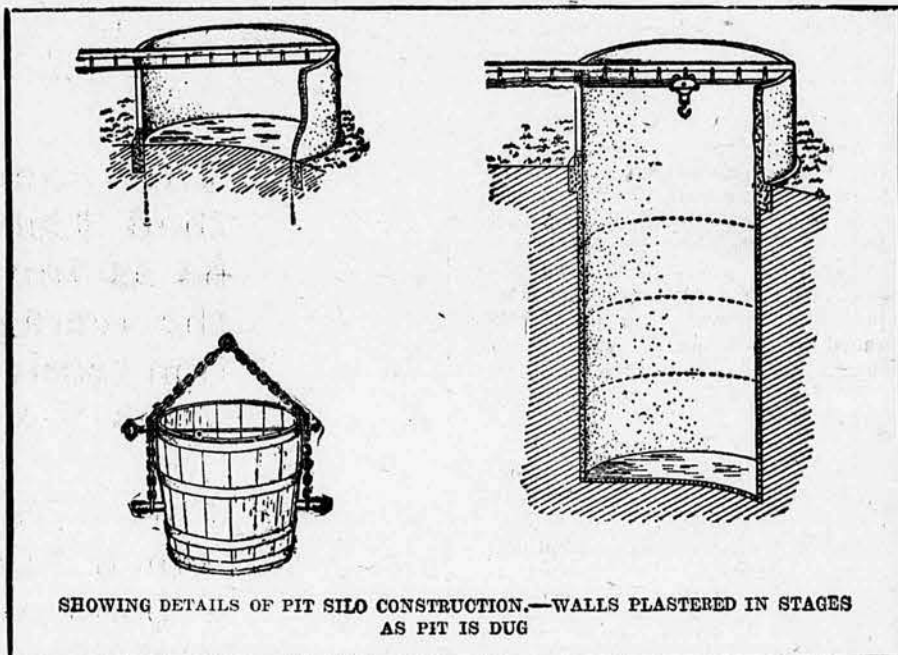
At a meeting of the Shawnee County Horticultural Society someone asked if an orchard should be used as a pasture. This is a very common practice with the ordinary farm orchard. O. F. Whitney, secretary of the State Horticultural Society, does not believe in using the orchard as a pasture. He said in reply to this question: "I do not believe that you can ever have live stock and an orchard on the same ground. There might be times when you could advantageously let the hogs run in the orchard to eat rotten apples, and I say this with a great deal of caution. The best thing for an orchard is a flock of chickens. They eat the insects and help to keep the weeds down, but don't use your orchard for a regular live-stock pasture."

## Collective Bargaining

The National Board of Farm Organizations, at whose request Senator Capper introduced the measure in the senate making it clearly legal for farmers to bargain collectively in selling the products of their labor, announces that a bill practically identical with the one introduced in the senate has been introduced in the house by Congressman H. S. Hersman and known as House Report 783. Farmers all over the country should be greatly interested in the passage of this legislation. Those in favor should make their wishes known by sending letters and telegrams to members of congress, urging the early passage of these measures.

## Tuberculosis Work for June

The tuberculosis eradication work for the United States is making good progress. During the month of June, twenty-seven herds were given the tuberculin test in Kansas, involving 1016 cattle, of which thirty-four reacted. There are three employees of the Bureau of Animal Industry working in the state in charge



rado Experiment Station: One pound of rancid lard mixed with one-half pint of kerosene and applied with the hand; three parts fish oil mixed with one part kerosene and applied with a hand spray pump. A mixture that will last longer and is very effective consists of two parts crude cottonseed oil or fish oil mixed with one part of pine tar. This can be applied with the brush. Crude petroleum is a very effective and lasting repellent, but makes the animals very dirty.

## Vocational Agriculture

Under the Smith-Hughes law approximately \$50,000 is available from state and national funds to pay teachers of vocational agriculture in Kansas high schools this year, but only twenty-five school boards have taken advantage of the funds available. The principal reason given is that they cannot find teachers qualified.

H. L. Kent, who has the supervision of the vocational instruction in Kansas under the Smith-Hughes law, reports that sixteen high schools offered courses in vocational agriculture last year, and in the coming year fifteen additional schools are planning for this work. A high school offering vocational agriculture is allowed \$1,500 from federal and state funds for a teacher to devote full time, and the school board usually makes an additional appropriation in order to get a well trained man. The teacher of

fore a Senate Committee yesterday, "but the American farmers know some things the President Wilson does not know and never will know."

Farm people who think this obnoxious law demands repeal now should keep up their courage and their fight, and keep writing Senators and Congressmen. Incidentally they might send a few letters to the President.

## Starting Bluegrass Pasture

"How may a bluegrass pasture be started on fertile, tillable land?" This question is often asked in Eastern Kansas or in Missouri. A good reply will be found in Extension Circular 66 of the Missouri Experiment Station, by W. C. Etheridge. He says:

Sow timothy and bluegrass with wheat in the fall, adding clover the following spring. After two years of clover and timothy for hay, the land is pastured and the bluegrass fills the sod as the timothy disappears. The acre rates of seeding should be about eight to ten pounds of timothy, six pounds of bluegrass, and six to eight pounds of clover, using high grade seed. If it should be desired to turn unusually clean, fertile land into pasture, a sod could be made somewhat more quickly by omitting the wheat and sowing the grasses and clover without a nurse crop. In this case ten to fifteen pounds of bluegrass seed would be sown to the acre.

On land too dry and poor for blue-



Dr. H. M. Graefe, and two state men under the direction of J. H. Mercer, livestock sanitary commissioner. It is of considerable advantage to a breeder to have his herd on the accredited list. It is now impossible to ship cattle in interstate commerce for breeding or dairy purposes unless they are properly tuberculin tested. Cattle from a herd on the officially accredited list, however, may be shipped interstate if accompanied by a certificate showing that they are from an accredited herd.

### Proposed Rate Advance

Government operation of railroads has been an expensive proposition. We are told that the railroads are in a deplorable state as a result of what happened to them during the war, and we are asked to pay still higher rates. The railroads were guaranteed a standard return based on the average of the three best years in their entire history, so there is no danger of their losing anything. If the government loses \$750,000,000 in the undertaking, the public must make good the deficit in some form or other. The injustice of covering the losses due to government operation by adding to the rates is apparent to the farmer who cannot pass the burden on to someone else. It does not matter so much to the manufacturer, for he simply transfers the increased cost due to advancing rates. But from everything the farmer raises someone deducts the freight. His principal products go to open markets so he pays what it costs to ship them and cannot add it to the price received. If the product moves fifty miles and pays twenty cents a hundred or five hundred miles and pays sixty cents a hundred pounds, it sells for the same price in both cases. If he sells on the farm, it is taken from the price in the same relative amounts. It gets him coming and going. It is added to the price of what he buys and deducted from the price of what he sells. He is the victim in both cases. He competes with himself all the time.

Who shall pay the railroad deficit? Ask the attorneys of the National Live-Stock Shippers' League, S. H. Cowan, Clifford Thorne, and Graddy Cary.

Shall the farmer and stockraiser pay it or shall what the war incurred be paid by the whole people like any other war debt, obligation or misfortune?

Even if the burden could be so distributed by passing the charge on to the consumer, he would be victimized, because of his remoteness from source of supply.

The inequality and rank discrimination from increasing the rates on the farmer and stockraiser to pay the debt of the people for the war is nothing less than robbery.

To increase rates on manufacturers for the same reasons is no less robbery, not of the manufacturers, who can pass the buck, but of the fellow who gets it. The point is that the farmer and the stockraiser or other consumer or manufacturers, are in both cases the victims. Having choked him some and seeing how obediently he stands it, they propose to choke him to death.

But the bonehead argues that the railroads must be self-supporting, and therefore the rates must be on a higher level. Both the premises and conclusions are wrong as applied to present conditions. It means unreasonable rates levied on a class. The proposition as to railroads efficiently and economically operated is correct. Boney must remember we have already submitted to 33 per cent increase to support them.

The Supreme Court firmly established it in *Smyth v. Ames* that the right of return is on reasonable rates. They now reverse this and propose to make unreasonable rates to pay an unreasonable return.

Where the bone in the head makes the mistake is that the proposition whether wholly sound or partly so, under normal conditions, has no application to making the shippers—part of the shippers—pay in rates what the Government owes as a whole, because of the war, or its mistake or misfortune.

This whole proposition is cleverly con-

cealed propaganda coming through an unthinking public, petitioning for themselves to be hung—for guaranteed returns to the railroads, fixed or proposed to be fixed—on some standard, say six per cent, on some value, that will always be too high, which will destroy all incentive to make money by efficiency.

It means that all incentive and striving to get the most business and do the most business and develop the country to make more business and make their men work or know the reason why, will be wiped out, and when they want more money, as they will with growing inefficiency, just ask the Commission to increase rates to make them self-supporting, that is to pay the guarantee, to pay the six per cent.

If there is a brain too stupid to see this, it is traceable only to this epidemic. The public is about to be torpedoed by submarines.

Not many of the law-making end of the burden-bearers load seem yet to stand boldly forth for a standard of reasonableness. What the public hears is the cry of distress from the railroads, which the Government guaranteed. Let the nation pay the national debt, let the shipper have reasonable rates.

The guaranty of a fixed return or a per cent standard for net earnings destroys efficiency, individual effort and uproots the foundation principal of reasonableness.

### "Daylight Losing Law"

I think the present time system is a bit of foolishness. If the convenience is supposed to be for the big industries in the east, I think they ought to draw the line about 500 miles east of us. I cannot see where the farmer can gain anything by getting out early in the morning and then "hanging around" until the sun is high before he can work in the hay and harvest fields, and then about the middle of the afternoon the hired man must quit for the day, because he thinks it is time to stop. Most likely he wants to go to town to spend the rest of the day with his town friends. I would call it a daylight losing law. I hope our congressmen are not so hollow headed as to let this law stand one day longer. It certainly needs a killing as it is all bad.—C. H. BIEHL, in Nebraska Farmer.

### Fattening Lambs on Forage

Fattening lambs on forage that often would be wasted unless so utilized, is a practice which has proved exceptionally profitable to many farmers. This practice has one big advantage over other systems of feeding in that the cost of production is extremely low because so much cheap forage is used. The advantage of turning weeds, grasses, and surplus forage into money and manure is evident. In order to furnish information concerning the method, the knowledge gained from the experience of a number of Missouri farmers who have been successful lamb feeders has been summarized and published as Extension Circular 56 of the Missouri College of Agriculture. The forage most commonly used is undergrowth in corn fields. In many cases special forages such as soybeans, cowpeas, or rape are sown with corn to provide a better class of forage than that afforded by the weeds and grasses that naturally spring up in corn fields.

A table of feeding results in this circular shows what return farmers can expect by following this plan of fattening lambs. Lambs bought on the market and sold on the market, using the weights at the two markets, showed an average gain of 15.3 pounds. These weights allow for the shrinkage in transportation.

Lamb and mutton is being extensively urged for popular human consumption and demand for this stock on the market should increase. Farmers who have grassy corn fields may find they can turn a carload of lambs to good advantage.

Keep dirt out of milk. Strain through cotton or filter cloth. Use only clean, sterile strainer cloths.

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It has been a potent factor in promoting the general efficiency of the Standard Oil Company (Indiana) and has enabled this organization to fulfill its obligation as a public servant in a manner satisfactory to the stockholder, the employee, and the public generally.

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**Kansas Farmer**

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

## Milk Requirements for Calves

**W**HOLE milk is nature's balanced ration for the young calf and should be fed during the first ten days or two weeks. Whole milk, however, contains the valuable constituent, butterfat, which goes into the manufacture of the most highly priced dairy products. When the selling price of butterfat is from fifty to sixty cents a pound it is not an economical practice to feed calves with whole milk over very long periods. Neither is it necessary to feed whole milk in large quantities for success in raising good calves. Skim-milk differs from whole milk only in its lack of butterfat. The food value of fat can be substituted in the form of grain at much less expense, and experience has shown that calves will make practically as good growth with skim-milk, hay, and grain, as with whole milk.

A calf that is equally as good as one nursed by the mother can be raised on skim-milk at a great saving in the cost of feed. Experimental work has shown that two pounds of grain will replace one pound of butter fat as an energy-producing food for the calf. Butterfat is worth fifty to sixty cents a pound while a grain mixture suitable for use as a substitute costs not more than three cents a pound. The economy of using skim-milk in place of whole milk is evident. To the farmer who makes butter or sells cream, the problem of calf raising then should be a comparatively simple one because of the available skim-milk which he has for feeding purposes.

It is readily recognized that at present prices of dairy products, dairy calves cannot be fed economically on whole milk over a long period. It is also true that approximately forty-five per cent of the dairy cows in the United States are found on farms producing whole milk for condenseries, cheese factories, powdered milk factories and for the market milk trade. On these farms the milk brings a high price; in many cases \$3 to \$4 a hundred pounds—sometimes much more.

A calf requires an average of about fifteen pounds of whole milk a day until four months old. This amounts to 1,800 pounds. If valued at even such a low price as three dollars a hundred, the milk alone costs fifty-four dollars. This does not include the cost of hay and grain consumed in addition to the milk.

Farmers making a business of selling whole milk do not have skim-milk for feeding purposes and the common practice is to kill the bull calves at once or sell them for veal. Unfortunately, too often the heifer calves are also disposed of in the same way. In such cases the herd must be replenished by buying mature cows.

The farmer selling whole milk cannot afford to raise calves entirely on whole milk. Neither does he have skim-milk for feeding purposes. How shall he feed his heifer calves to raise them economically?

A circular of the Missouri Experiment Station furnishes information on this question. It suggests that three general plans are open to the farmer who sells whole milk and at the same time raises his heifer calves. First, he may feed the calf a minimum amount of milk and some grain. Sufficient milk must be supplied to give the calf a good start. It has been found by experiment with a group of calves at the Illinois station that the minimum amount necessary is 152 pounds of whole milk and 435 pounds of skim-milk. Second, give the calves whole milk for a short time, after which they may be changed to a ration of calf-meal gruel or so-called "milk substitute." Fair success has followed this method. Third, give the calf a good start on milk, then take the milk away at the end of about two months and put the calf on a hay and grain ration. Fair success has been obtained with both the second and third methods.

The following treatment is recommended for keeping the milking machine thoroughly sanitary: Immediately after

milking and while the machine is still running, suck through the machine three pails of water, the first clean cold water, the second, hot sal soda water, and the third, clean hot water. Detach the test cups and rubber tubes and place them in an antiseptic solution until the next milking, rinsing with clean cold water before using. A good antiseptic solution may be made by mixing with one gallon of water in a covered glass jar, the contents of a twelve ounce can of chloride of lime. After settling, the clear solution on top should be added two or three times a week to the water in the tank or earthenware jar in which the tubes are kept at the rate of one quart to each twenty-five gallons of water. Add enough common salt to the water so that there is always a little salt on the bottom of the tank. Stir occasionally. Once a week clean all rubber parts thoroughly by brushes. The pails should be washed and scalded with boiling water daily.

### Better Cows

It has been said that at the end of the Civil War it required three hours of human labor to harvest a bushel of wheat, that by improved machinery it now takes only ten minutes of human labor to harvest a bushel of wheat.

Our scientific leaders tell us that every growing child should have about a quart of milk a day. There, therefore, rests on the dairyman not only the business of producing this milk at a profit to themselves, but something of a national moral obligation to furnish to the growing children of this nation a necessary food.

How much of a cow's time does it take to produce a quart of milk, one day's supply for a growing child? The average cow in the United States produces about fourteen pounds of milk a day, at which rate it would take her about 206 minutes to produce one day's supply of milk for a child. A good cow, on the other hand, yielding 6,000 pounds of milk per year, would require only 144 minutes, while the kind of cows that a progressive, successful dairyman ought to have would only require 96 minutes to produce this same amount of milk. Boiled down, the question is, which kind of cows have you?

The most outstanding sign of today is that we must reduce the cost of production to insure satisfactory profits. One of the greatest factors in this reduced cost of production is more efficient cows. It takes just as much human labor to feed ten poor cows as to feed ten good ones. It takes almost as much human labor to milk the poor ones as the good ones. It takes just as long to deliver their product to the creamery or shipping station. Therefore, there is a tremendous saving in the actual cost of production when the cows average 9,000 pounds of milk per year as compared with those that average only 3,000 or 4,000 pounds. The outsider cannot tell the cow owner how to run his business, but no cow owner can visit the National Dairy Show, or any live stock exposition where dairy cattle are shown and see the wonderful cows, see the devices which have been developed for saving human labor, see the results that have been accomplished by thousands of other dairymen, and not secure for himself innumerable helpful pointers in the problem of securing better cows and reducing the cost of producing milk and therefore increasing profits.—H. E. VAN NORMAN, California.

Canned goods are going higher, canners tell us, without giving reasons, and it will pay every housewife to can or preserve every bit of fruit or vegetables it is possible to obtain.

Sprinkling the garden a little while in the evening does little good. If you are going to water it, give it a thorough soaking and as soon as the ground is dry enough to work, get in with a hoe and help hold the moisture for the plants.



### Co-operative Activities

(Continued from Page Four)

"dead easy," "an easy mark!" a score of states the real estate agent has charge of the selection of the statistician of the farm production and consequence prices are raised and covered by a system of guesswork that takes from the farmer his hard-earned dollars and puts them in the speculator's pockets. There is absolutely no sense in having these erroneous facts and figures foisted upon the public. Do banks gather their data that way? Absolutely not! When have these statisticians ever drawn the line fully and figures foisted upon the public. Do you know that goes on in the market? When have they realized that it is the average maintenance that all the communities of the zone may be supplied with, upkeep, feeds and products which must be deducted from the total before anybody can possibly know what that one or state has to sell? "Robert," said an aged aunt to my father, "it is not the total of sales that determines that business you are doing and how well you are getting along, but what you have left after the expenses and all the upkeep are paid; it is the net that shows your success or failure." President Henry Jackson Waters, when at the head of the Agricultural College of Kansas never said a truer word than when speaking to an audience mostly from the city he told them that it was of greater concern to them that the farmer could succeed than it was to the farmer himself, for he would manage to live somehow but with more scarcity and advanced prices it was a question what the city dweller could do to live at all. In his co-operative work the western farmer has these problems in mind and earnestly seeking to solve them. It is simply justice and equity he wants and he has a warm-hearted sympathy with all struggling toilers and a spirit of co-operation that embraces them and their opportunities. It is after all the struggle of a great spirit for self determination and the possession of inalienable opportunity.

all killed, while on the remainder of the field there was a good stand. It was a good proof to me that a straw spreader pays." N. E. Rash, Sulphur Springs, Texas, says: "I scattered fourteen loads of straw on a few acres of land in February, 1917, then put it in cotton and the yield doubled that on the other land. Last year I had the same ground in oats and you could tell to a line where the straw was spread. The strawed land made twenty bushels more to the acre than the unstrawed. David Williams of Oaktown, Indiana, tested two fields side by side and the one not covered with straw was frozen out entirely, while the other, covered with straw, made a good stand.

#### Prevention of Winter-killing

In the wheat-growing sections of Kansas there is probably no one thing that causes more loss from year to year than winter killing. It has now been so thoroughly proven that the spreading of straw prevents winter killing that it would seem the part of wisdom to plan to spread wheat fields each year with straw if for no other reason, and in addition to this it should be borne in mind that the returning of straw to the soil year after year will become a most important factor in maintaining soil fertility. Burning straw year after year robs the soil.

To properly spread straw and cover any considerable area a machine designed for the purpose is necessary. The limitations of the pitchfork is perhaps one of the reasons we have been maintaining our wavering attitude on the value of straw spreading. To give proper results, the straw must be shredded or torn apart and spread very thin, never in bunches, and it must be possible to cover large areas with a limited amount of hand labor. With a machine, two men can cover ten to twenty acres a day. The work can be done after seeding at a time when other work is not pressing. It has been estimated that fifty cents an acre will pay the labor cost, and the machines themselves are not expensive in view of the returns from increased yields as a result of straw spreading.

#### Build Ice House this Summer

That the use of ice is the most important single factor in keeping milk cool and sweet is pointed out in a circular letter issued by the food and dairy department of the Kansas City Board of Health. This is of special importance during the summer months when the water used for cooling is too warm to bring the milk to a sufficiently low temperature.

At the prevailing high prices of ice, dairymen find this cost to be the greatest item in their expense accounts. In this region of natural ice, it is often possible, where there is a lake or pond on the place, for persons to put up their own ice and eliminate the necessity of buying.

C. H. Witthar, a prominent dairyman of Jackson County, Missouri, has had an ice house for thirty-four years, and has filled it from his pond for thirty-two winters. The original cost of this house was \$250 complete, and Mr. Witthar estimates that he saved \$200 the first year above the cost of the building. At the present price of ice, he probably saves \$800 a year besides the cost of hauling. Then, too, three families get their ice supply from this house. Mr. Witthar puts up about 100 tons each year.

In this region ice usually varies from seven to ten inches in thickness, and if cut in the proper sizes, can be handled and stored with but little trouble and expense. If there is no pond on the place conditions are often such that a small one can be made at a minimum cost. One ice house will pay for itself the first or second year, and there is practically no expense afterward, except the labor. Sawdust can be bought for fifty cents to one dollar a load.

To anyone who is so situated that natural ice can be put up, it has been proved that this method is a great saving and enables one to cool milk to a lower temperature during the summer months.

#### Enormous Waste of Straw

(Continued from Page One)

that he did not protect. There was a marked difference in the quality of the wheat and the quarter section spread with straw beat the other quarter by an average of five bushels to the acre, yielding eight hundred bushels more wheat, which at present prices for wheat would make a cash profit well worth considering, and this came from so simple a procedure as spreading straw. Many other farmers in Kansas have had similar experiences. A man in Reno county bought a straw spreader the fall of 1912 and spread the accumulation of two seasons' straw on one field of 160 acres. He asked whether or not it paid him, he said: "Yes, and at a pretty good rate too. I raised twenty-four bushels an acre of No. 2 wheat, while my neighbor only raised sixteen bushels an acre and it graded No. 3. My land was no better than his before I spread the straw—but it is now. My seed was no better, and our methods of cultivation are the same. The difference was that my land held the moisture and his did not. When the hot winds started in early May my land had reserve moisture and it did not evaporate so fast. I regard my straw spreader as a mighty good investment, in fact a money maker." This man was \$500 ahead because he spread his straw, besides his farm is hundreds of dollars more valuable than it was before.

F. J. Freeouf of Nebraska made a trial on a little ten-acre field which proves the value of straw spreading very conclusively. In describing the results he says: "On a field eighty rods long and twenty rods wide, sloping to the northwest, I spread straw on both north and south ends, but because of the lack of straw I did not cover about two acres in the middle of the field. The wheat on that belt not covered with straw, was

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# THE HOME-MAKER'S FORUM

ETHEL WHIPPLE, Editor

Letters from readers are always welcome. You are urged to send in helpful suggestions, to give your experiences, or to ask questions. Address the Editor of this Department.

## The Art of Jelly Making

**A** GOOD jelly, we will all agree, should be bright and sparkling, of good color, and clear. It should be firm enough to retain the shape of the mold when removed from the glass, and yet tender enough to quiver without breaking. When cut, it should retain the angles and not run down into a shapeless mass.

The following directions for making jelly of just the right consistency from different kinds of fruit juice are taken from farmers' bulletin 853 of the United States Department of Agriculture. This bulletin is written from the standpoint of the household chemist, and even the experienced jelly maker will find some of the suggestions helpful, as different fruit juices or the same fruit juice at varying stages of ripeness must be handled so differently.

### Extracting the Juice

Wash such fruit as berries, grapes, and currants in running water and add one cup of water for each pound of fruit. For apples, quinces, and such hard fruits, wash, slice, and add three cups water to each pound of fruit. The fruit should be cooked until tender, a small quantity of water being added to help extract the juice. The fruit juice will flow more freely when heated than when cold, and the cooking develops the pectin. As soon as the fruit is tender the liquid should be squeezed through a cheesecloth and then be allowed to drip, without pressure, through a flannel jelly bag. Overcooking of the fruit is apt to result in a cloudy jelly. After cooling the juice to room temperature, test it to determine the amount of pectin present. This test gives some idea of the proper proportion of sugar to juice. Add one tablespoon of 95 per cent grain alcohol to an equal volume of cooled fruit juice and shake gently. The effect of the alcohol is to bring together the pectin in a jelly-like mass. If a large quantity of pectin is present it will appear in one mass or clot when poured from the glass. This indicates that equal quantities of sugar and juice may be used. If the pectin does not slip from the glass in one mass, less sugar will be required. A fair proportion is three-fourths cup of sugar to one cup of juice. If the pectin is thin and much separated, one-half cup of sugar allowed for each cup of juice will be sufficient.

### Quantity of Juice to Cook

The quantity of juice to be cooked at one time will depend upon the size of the vessel and the methods of heating available. The capacity of the vessel used should be four times as great as the volume of juice to be cooked. If the attempt is made to cook a large quantity of juice at one time over a slow flame, crease in the yield, partly due to the decrease in the yield, partly due to the destruction of the pectin.

### When to Add the Sugar

When the proportion of sugar to juice has been determined, measure the fruit juice and place over the fire to cook. When the juice begins to boil, add the sugar immediately and stir until the sugar is dissolved. By adding the sugar when the juice begins to boil, more time is given for the inversion of the sugar by the acids of the fruit and there is less danger of crystallization.

### Cooking the Jelly

After the sugar has dissolved, the cooking should be as rapid as possible. Finished jelly can be obtained more quickly by rapid cooking. Long cooking will tend to darken the product and destroy the pectin, which will cause the finished jelly to be less firm.

A thermometer can be used to great

advantage to show when the jelling point is almost reached. With jams, preserves, and jellies, it is advisable to use a chemical thermometer. The Centigrade reading ranges from 0 degrees to 110 degrees, and having fewer figures than a Fahrenheit instrument, is more easily read. The stem of this instrument should be twelve or fourteen inches long, so that the reading will appear far enough above the surface to be easily seen. No exact temperature can be given for jelly making, because the jelling point differs with different fruits, with the quantity of sugar used, and with the same fruits at different seasons. In using a thermometer for cooking apple jelly it has been noted that the temperature is seldom less than 105 degrees Centigrade, or 221 degrees Fahrenheit, or more than 106 degrees Centigrade, or 223 degrees Fahrenheit. With grape and current jelly, between 106 and 107 degrees Centigrade, or 223 and 224 degrees Fahrenheit, will give the best results.

Since no definite temperature can be given for the finished jelly, the most convenient means of determining when it is finished is to test it with a spoon or paddle. Dip a spoon or wooden paddle in the boiling mass. Remove and cool by moving it back and forth for a few seconds and then allow the jelly to drop from it. As long as there is syrup present it will run or drop from the spoon. When the jelling point is reached, it will break from the spoon in flakes or sheets. When this jelly stage is reached, remove from the fire immediately and skim. Skimming at this point saves waste.

After skimming the jelly, pour at once into hot sterilized glasses and set aside to cool.

### Cooling and Sealing

Cool as rapidly as possible, avoiding dust which will give contamination with mold. When the jelly is cold, cover it with melted paraffin. By running a pointed stick around the edge of the glass while the paraffin is still hot, a better seal can be obtained.

Jelly should be stored in a cool, dark, dry place. If stored for a long period of time, it will deteriorate in texture, color, and flavor.

### Mistakes to Avoid

**Soft Jelly**—Jellies sometimes are syrupy because more sugar has been used than the fruit juices require or because boiling after the addition of sugar was not continued long enough to drive off excessive water.

Jelly is tough or stringy because too small an amount of sugar was used for the quantity of fruit juice taken or because the boiling was continued after the jelling point had been reached.

Crystals appear throughout the jelly because of an excess of sugar. When sugar is boiled with an acid for a sufficient length of time, it is changed into a form which does not crystallize. Crystals are found in jelly sometimes because the juice is boiled to too great concentration before the addition of sugar, or in boiling the syrup spatters on the side of the pan, dries, and in pouring the finished product these crystals are carried into the glasses of jelly, and in that way the jelly becomes seeded with crystals.

Cloudy jellies may be the result of having cooked the fruit too long before straining off the juice or to not having used sufficient care in straining the juice. Sometimes it is noticed in apple and crab-apple jelly that although it is clear when first made, the jelly becomes cloudy after a time. In these cases it usually

is due to the use of partly green fruit, the starch in this fruit probably causing the cloudy appearance.

## Trenches for Nurses

Just back from two years service as a Red Cross nurse in France, dressed for the first time in "civies," was Miss Myrtle Nash of Kansas City, Missouri, when the home department editor crossed her path a few days ago. Slight, dainty, with a merry twinkle in her eye, it was hard to realize that she had so recently been through the horrors of a first aid hospital at Rouen, near the front line trenches.

"Yes, it was a wonderful experience," she said, "but I am glad to be home again. When I first got to New York, I felt like a foreigner, but I feel quite at home now except that I miss the khaki."

"No, I didn't get homesick at all. I don't know whether I was frightened or not. We were usually too busy. Rouen was about twenty-five miles from the firing line. Fritz flew around our hospital, but did not bomb us. However, we kept a tin helmet always at the head of our bed and a pair of rubber boots at the foot ready for instant use if Fritz should decide he would like to come over, which he did. When the sirens blew first in Rouen we were warned that he was in the distance. And then we would hear the whistle for the ambulances to hold themselves in readiness to start their engines and be ready for any emergency. Last but not least was our bugle alarm. That meant every nurse up and ready to leave the hut at once. Each hut had its own trench, just a long, straight trench four or five feet deep. We ran to the trenches for safety, and here we remained until the bugle sounded "Clear." That might happen once or twice during the week or several times, whether it was moonlight or not. All night nurses of course stayed at their posts of duty. We were not so frightened, but we were so angry at Fritz because he would not let us sleep after we had worked so hard all day."

"We landed in France June 5, 1917, at Rouen, and our unit took over British hospital No. 12. The British were more than glad to see us because they had been in the war three years and their nurses had worked all that time and they were badly in need of nurses. That did not mean that the English nurses rested, though. They took the work in other hospitals. This was one of the first six units sent over by the United States. I was with the English twenty months, then went to Coblenz. We were at Rouen more than a year before we had any American patients. Our hospitals were all in tents the first year except two. One of those two was the major surgeon's hut and the other was the theater hut, or operating room. A year from the next July our hospitals began to get ready. My work was mostly surgical."

"How many patients did you care for at one time, just with your orderly help?" she was asked. "It varied. Sometimes 130 to 150. Our huts averaged about forty each—that is of the worst cases—and sometimes we had charge of two huts at night. I had forty at night with the help of one boy. We didn't keep them long. They came directly from the field and were given first aid and sent either to 'Blighty' or to the morgue, others taking their places. The first thing they all asked was, 'Does this get me a Blighty?' because they knew that a severe wound would send them back to England for treatment, and they were all anxious to go."

"It was really funny the way the English helped us with our Fourth of July celebration. We told them we were celebrating the time when we gave them their 'Blighty.' English and American flags were hoisted together and they made a holiday of it too."

"The English soldiers were more reserved than our boys, but I never met a British or Canadian or Australian soldier who was not a perfect gentleman."

"The thing we missed most over there was the American kiddies. The boys missed them, too."

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## FASHION DEPARTMENT



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The pattern is cut in four sizes: small, 32-34; medium, 36-38; large, 40-42; extra large, 44-46 inches bust measure. The medium size will require two and one-half yards of 36-inch material. A pattern of this illustration mailed to any address on receipt of 10 cents in silver or stamps.



Trim Costume for General Wear

Comprising Waist Pattern 2805 and Skirt Pattern 2820. Mixed suiting was used for the skirt, which is also attractive in gingham, satin, silk, linen or sport's materials. The waist could be of crepe, linen, washable satin, taffeta or madras. The waist is cut in seven sizes—34, 36, 38, 40, 42, 44 and 46 inches bust measure. The skirt is in seven sizes—waist measure 22, 24, 26, 28, 30, 32 and 34 inches. For the waist in a medium size two and three-fourths yards of 36-inch material is required. For the skirt, three yards. Width of skirt at lower edge is about one and five-eighths yards.

This illustration calls for two separate patterns, which will be mailed to any address on receipt of 10 cents for each pattern in silver or stamps.

## To Remove Common Stains

**Blood and Meat Juice**—Use cold water, soap and water, or starch paste.

**Bluing**—Use boiling water.

**Chocolate and Cocoa**—Use borax and cold water; bleach if necessary.

**Coffee and Tea (Clear)**—Use boiling water; bleach if necessary. (With cream) Use cold water, then boiling water; bleach if necessary.

**Cream and Milk**—Use cold water, then soap and cold water.

**Egg**—Use cold water.

**Fruit and Fruit Juices**—Use boiling water. Bleach if necessary.

**Grass**—Use cold water, soap and cold water, alcohol, or a bleaching agent.

**Grease and Oils**—Use French chalk, blotting paper or other absorbent, or warm water and soap, or gasoline, benzine, or carbon tetrachloride.

**Iodine**—Use warm water and soap, alcohol, or ammonia.

**Ink**—Try cold water, then use an acid or bleach if necessary.

**Iron**—Use oxalic acid, hydrochloric acid, salts of lemon, or lemon juice and salt. Caution: Never use hydrochloric acid on silk.

**Kerosene**—Use warm water and soap.

**Lampblack and Soot**—Use kerosene, benzine, chloroform, ether, gasoline, or carbon tetrachloride.

**Medicine**—Use alcohol.

**Mildew**—If fresh, use cold water. Otherwise try to bleach with Javelle water or potassium permanganate.

**Paint and Varnish**—Use alcohol, carbon tetrachloride, chloroform, or turpentine.

**Perspiration**—Use soap and warm water, bleach in the sun or with Javelle water or potassium permanganate.

**Pitch, Tar and Wheel Grease**—Rub with fat, then use soap and warm water or benzine, gasoline, or carbon tetrachloride.

**Scorch**—Bleach in the sunshine or with Javelle water.

**Shot Polish (Black)**—Use soap and water, or turpentine. (Tan) Use alcohol.

**Syrup**—Use water.

**Stove Polish**—Use cold water and soap, or kerosene, benzine, or gasoline.

**Vaseline**—Use kerosene or turpentine.

**Water**—Steam or sponge the entire surface of water-spotted materials.

**Wax**—Scrape off as much as possible. Use French chalk, blotting paper or other absorbent with a warm iron, or use benzine or gasoline. If color remains, use alcohol or bleach.

**General Rules**—Treat promptly. A fresh stain comes out more easily than an old one. Find out what made the stain. Some stains are set by treatment that would remove others. Consider the material. White and colored goods, cotton, linen, silk, and wool should not always be treated in the same way. Try simple methods. They often do the work and are not likely to harm the material. Work carefully. Experiment on a sample. Rub gently. Haste makes waste in taking out spots. Keep all stain removers in a special place and properly labeled. Mark "Poison" on poisonous ones.—Thrift Leaflet No. 6, U. S. Department of Agriculture and Treasury Department.

## Salad Oils

Until recently olive oil has been the only well known salad oil. Now there are other oils on the market under a variety of commercial names. The two best known are cottonseed oil and corn oil. While native olive oil retails at from 80 cents to \$1.50 a pint with imported very much more expensive, these other oils range from 40 cents to 50 cents a pint.

Many people like the peculiar flavor of an olive oil and for them there can be no satisfactory substitute. For those who desire an oil without the flavor either the corn or cottonseed oil will give satisfaction. These two oils are practically devoid of any individual flavor. The two are equally good for all purposes and about the same price. A salad dressing from either oil cannot be distinguished in regard to texture or color

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from one made with olive oil. In regard to thickening power and quantity necessary no differences can be noted—Marjorie Shutt, Colorado Agricultural College.

## Fruit Butters

Cook juicy fruits in small amount of water. When the fruit has come to the boiling point mash with paddle or wooden masher. Pour into a jelly bag of flannel or double thickness of cheesecloth and let it drain for jelly. If the juice is squeezed out the jelly will be cloudy. If simply allowed to drain a very clear jelly can be made.

The pulp which remains may be forced through a colander to remove seeds and skins and made into a fruit butter. To do this, measure out about one-half as much sugar as there is pulp and add spice such as cinnamon or cloves if desired. Cook all together until thick, stirring constantly. Two fruits may be combined for butter. Grape and apple or apple and apricot are good combinations, and there are many others equally good.

## Chili Sauce

Take the following ingredients:

- 2 quarts ripe tomatoes—peeled
- 4 green sweet peppers
- 4 tablespoons brown sugar
- 1 hot pepper
- 4 onions
- 1 tablespoon ginger and 1 tea-
- spoon cinnamon
- 1/2 teaspoon nutmeg
- 2 tablespoons salt

Chop the vegetables, add the other ingredients and cook till tender—one and one-half hours. Then add three cups of vinegar, boil five minutes, and seal hot in jars.—Agricultural Extension Service, University of Missouri.

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**GUERNSEYS FOR SALE—ONE REGISTERED** bull four months old, three extra good high grade cows to freshen soon, two 2-year-old heifers to freshen, three heifer calves and two extra good high grade Guernsey bulls, one 6 months old, the other past year old. Write Dr. E. G. L. Harbour, Box 113, Lawrence, Kansas.

### HOGS.

**BIG-TYPE POLAND CHINAS—L. J. Hilly,** Enterprise, Kan., will sell at public sale August 21, 1919, at 1 p. m., seventy head of registered and cholera immune hogs, twenty-three bred sows and gilts, also April and May pigs. Herd boar, "Smooth," one of the best, stands 40 inches high, 7 feet 8 inches long, and 11-inch bone.

**"SAPPHIRE" SWINE (BLUE HOGS),** actually blue in color. The blue hogs are no longer an experiment. We have bred them successfully for twelve years before offering any for sale. They mature quickly, grow very large, and the females are the most prolific breeders on earth. Write for information. Mention this paper. The Blue Hog Breeding Company, Wilmington, Mass.

### SEEDS

**KANRED SEED WHEAT, \$3.00 PER bushel,** sacks extra. J. H. Taylor & Sons, Chapman, Kansas.

**INSPECTED KANRED SEED WHEAT** for sale. Write for a list of members of the Kansas Crop Improvement Association having Kanred seed for sale. B. S. Wilson, Secretary-Treasurer, Manhattan, Kansas.

### DOGS.

**RABBIT HOUNDS, FOX HOUNDS, COON,** opossum, skunk, squirrel dogs. Setters. Pointers. Brown's Kennels, York, Pa.

**BEAUTIFUL WHITE ESKIMO SPITZ** puppies, males \$6, females \$5 each. Earl Scott, Belvidere, Kansas.

**AIREDALES, COLLIES, AND OLD ENGLISH Shepherd dogs.** Trained male dogs, brood matrons, pups all ages. Flemish Giant, New Zealand, and Rufus Red Belgian rabbits. Send 6c for large instructive list of what you want. W. R. Watson, Box 128, Oakland, Iowa.

### REAL ESTATE.

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### FARM LANDS—TEXAS.

**BIG CROPS IN NORTHWEST TEXAS** on the new line of the Santa Fe. The Federal Railroad Administration has authorized the completion of the new Shattuck branch of the Santa Fe Railroad to take care of this year's big crops—wheat, oats and sorghums. This will open for immediate settlement and development a large block of my land in a wheat and stock farming section of Ochiltree and Hansford counties in Northwest Texas near Oklahoma state line, where the first crop has in a number of cases paid for the land, and where cattle and hogs can be raised at low cost. Land is of a prairie character ready for the plow, no stone, stumps, no brush to be cleared, at attractive prices on easy terms. Climate healthful, rain falls during growing season. Write for free illustrated folder, giving experience and results settlers have secured in short time on small capital. T. C. Spearman, 927 Railway Exchange, Chicago, Ill.

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**TAKEN UP—BY JASPER COCHRAN, OF** Windom, McPherson County, Kansas, on the 29th day of June, 1919, one sow, weight 300 pounds; color black with white spots, white feet and stripe in face, silt in right ear. A. J. Cedarholm, County Clerk.

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### Long Distance Egg Record

A thousand eggs is the total recorded production of Missouri Queen, a Single Comb White Leghorn hen at the Mountain Grove Poultry Experiment Station of Missouri. This phenomenal production was reached early in April, her sixth year's production record beginning January 1. Her complete record by years follows: First year, 22 eggs; second, 187; third, 217; fourth, 149; fifth, 177, and in January of the present year eight eggs, in February 16, in March 19, and five eggs in the first ten days of April, which completed the thousand-egg production. This hen weighs four and a half pounds and has produced 121.8 pounds of eggs, or twenty-seven times her own weight. Her average yearly production is 189.48 eggs. She has never been broody, and has never been sick a day. T. W. Nolan, director of the Experiment station, states that Missouri Queen embodies many of the physical characteristics of high production capacity such as deep abdomen, broad back, thin pelvic bones, bright eye and alertness. He states that the average Missouri hen lays approximately ninety eggs a year, and that he believes the record of Missouri Queen to be the best in this length of time for any hen in the state and perhaps the United States.

Poultry profits are based on the number of hens that lay. Where trap-nests have been used it was found that some hens lay 200 eggs to others 40 or 50 eggs a year. Culling out the poor layers should begin early and continue through the summer and fall.

## HELPFUL POULTRY HINTS

Practical Ideas on How to Fill the Egg Basket and Increase Profits

**T**HERE are people who have the right variety of fowls, who house and feed them properly, and yet who can not obtain eggs early in the winter because their fowls are too old. It is seldom that it pays to keep hens for laying after they are two and a half years old; not that they will not give a profit, but that younger fowls will give a greater profit.

There are two systems in use for the feeding of fowls, in one of which all the feed is given dry and in the other of which one or more of the daily feeds consists of a moistened mash. For convenience they may be termed the "dry-feed" and the "mash" systems, although in the dry-feed system a dry mash is often fed. Dry feeding is used by many where it is not convenient to make and feed a moistened mash. The greatest advantages to be derived from the dry system are the saving of labor and the lessened danger of bowel trouble resulting from sloppy or soured mash.

### Timely Poultry Notes

Every individual in the home poultry flock should show vigor and strength. Size (not fat), erectness, activity, bright eye and red comb are favorable points, indicating good constitution. Drooping tail or wing, weakened legs, head and neck not erect denote weakness. Pullets bred from good layers are preferable. A good layer will be a hearty feeder and usually a vigorous worker. Pullets hatched early will prove better winter layers.

Do not overlook the fact that the chicks must have shade. If there is no natural shade for them to stay under during the heated part of the day, be sure and provide sufficient for their needs.

One of the most important factors in keeping young chicks growing is good, clean, fresh water in vessels. As the days get warmer care should be taken to change the water as often as required to keep it clean and fresh.

Avoid overcrowding growing chicks. A coop, brooder, or colony house that was large enough to hold the baby chicks is not large enough after two or more months, depending on the breed and growth. It is absolutely necessary that growing chicks have plenty of room to grow. Cockerels that are sufficiently large should be disposed of. Chicks that have not shown proper growth should also be separated and leg or wing banded. Many of these chicks, even the pullets, should be marketed. Only the good, strong, vigorous specimens should be retained as breeders and layers, as these are the only ones that can return a profit.

Growing chicks that are kept closely confined need much greater attention along all lines than those that have range. See that they have plenty of green feeds that have not wilted down to almost the decaying point and that the yards are kept sweet. Culling also is more essential when chicks are closely confined.

Do not forget to look over the young chicks from time to time for lice and mites. Hot weather is the paradise for lice and mites. So be careful, be sure, don't be sorry. Look out for lice.

Slow-growing weak chicks should be culled out early in the summer. All males, except those needed for breeding purposes, should be gotten rid of as soon as possible.—U. S. Department of Agriculture.

### Laying Contest Report

The following is from the official report of the egg laying contest being conducted by the American Poultry School, Leavenworth:

During June the hens in the contest

continued with good records. The totals and averages were not as great as in May, but this could not have been expected, considering the warm season and the several extra hot sultry days. During some of those unusual hot days, the humidity of the air was great, causing some hens to suffer a great deal from the heat.

In spite of the fact that the trap-nests are run and all layers removed once every hour during these warm months, we were unfortunate in losing a total of seven good layers during June on account of the intense heat and humidity on those few days.

The pen of five S. C. Brown Leghorn hens from Indiana which produced 137 eggs in the thirty-one days of May broke a world's record, to the best of our knowledge and belief. We hesitated making this statement until we checked up reports on all contests held in any part of the world as we wanted to be sure of its correctness.

This is truly a remarkable record. No doubt if it will ever be beaten in an official contest. It makes this pen highly valuable exhibition hens for any one month. This remarkable pen may not make a great record for the year of this contest which ends October 31 as they came into the contest on the first of last November, somewhat young and they seemed slow to acclimate themselves and become accustomed to their new quarters and doubtless the method of feeding. The result was they really did not tune up to a laying condition until long after other pens were well along toward a good yearly record.

Once started, this pen has been very consistent performer. Following the world's breaking record of May, they came right on and in June have produced 137 eggs, which in itself would have been a world's record two years ago.

During June, thirty eight of the six three pens contesting produced 100 eggs or more. Eleven pens produced from 125 up to 137 eggs. The same pen S. C. Brown Leghorns which led the contest in May and made the grand world's record was also the high pen here in June.

Seventy hens each produced twenty five or more eggs during the thirty days of June. One hundred and eighty hens produced less than twenty eggs each, while eleven different hens did not lay an egg.

The general average production for the thirty days for all hens of all varieties was 20.9 eggs or almost seventy per cent daily production from them as a flock. These figures should clearly answer the question: Does well bred stock, properly fed, housed and cared for, outlay on nary hit and miss bred stock?

Another point: We are not prepared at this writing to give the exact figures of feed and labor cost for the past six months compared with the exact cost of income from the eggs marketed, but we can safely say that though we purchase all food and hire all labor, the production of these hens sold at the high average egg prices of the past eight months has shown a larger margin of profit than in any past year when feed was low in price. This proves the good hen, properly fed, can now be made a great money maker. But with present prices of feed, the caretaker must know how when and what to feed, otherwise he is sure to follow.

China and Japan are shipping eggs to the Pacific coast states. The Chinese eggs are small and brown, resembling guinea egg. Japanese eggs are larger, size, white and brown, with the color separated and the cases marked as to color.



# Practical Books for Progressive Farmers

Every farm home ought to contain one or all of the practical books on agricultural subjects described on this page. All of these books have had large sales and many will be found in Kansas farm homes. Read the descriptions of the books and if there are any here which you do not already possess, order it now at the bargain price. Do not delay ordering, even if you are too busy to read now. We have only a small supply of these books, especially the best ones. After our present stock is exhausted we will not be able to offer the books at these prices, and some of them we will not be able to get at all. Therefore, take our advice and order now.



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## Farming and Gardening

Here is another valuable book containing rare information on field crops, vegetable and trucking crops, fruit culture, forestry, injurious insects and diseases and how to combat them. It also contains a chapter on The Silo and a chapter on Making Poultry Pay. This is a large book containing over 500 pages. It is profusely illustrated, printed on excellent quality book paper.

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## Profitable Stock Feeding

By H. R. Smith

Any farmer or stockman can get valuable hints out of this book. It is not written for the beginner, but for the farmer and stockman who already has had successful experience in stock feeding. It covers feeding for milk production, feeding for beef production, feeding sheep, feeding hogs, feeding poultry and feeding horses. This book contains 412 pages printed in clear type on heavy book paper, illustrated.

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## Handy Book of Facts

This is a book of general information, not about farms and farming, but business, law, medicine, history, etc. It contains information of every day use on almost every subject. The book contains over 250 large pages, every page crammed full of information and statistics, things you are likely to want to know any day.

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This book is a short cut in arithmetic. It contains grain tables, interest tables, discount tables, weights, measurements, etc., so that by simply referring to the tables you can get the answer to your problems without figuring them out.

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## Cement Workers' Handbook

This book is written not for the professional cement worker, but for the man who intends to do his own cement work at home. It covers more than fifty subjects on cement and its uses in construction, including posts, floors, ceilings, walls, silos, and many others. This little book is nicely gotten up, is printed on good book paper and bound in cloth. It contains 100 pages.

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## ATLAS OF THE WORLD'S WAR

This is a large 64-page paper-covered book full of information, maps, charts and diagrams about the late war. This atlas was published just before the close of the war and while the maps and information are accurate, it does not contain information as to happenings after November, 1918, and for this reason we were able to purchase them at a bargain and can offer them at the price of 25 cents each.

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Town..... State.....



## HOLSTEIN CATTLE.

## HOLSTEIN CALVES

## Dispersal Sale of Holstein Cattle

We have sold our farm and are offering for sale our entire herd of Holstein cattle, as follows: A 25-pound grandson of Pontiac Korndyke, fifteen months old; one ten-months-old bull sired by a grandson of Johanna McKinley Segis; one A. R. O. cow five years old with a nineteen-pound three-year-old record; two female calves from this cow, one a yearling and one six months old; two A. R. O. cows, one four and one five; two pure-bred cows five years old, untested; one pure-bred cow three years old, untested; one pure-bred heifer calf six months old; eight head grade heifer calves seven months old; five head grade heifers, four of them in breeding; eighteen head grade cows from three to seven years old. All the mature cows were raised and selected for our own use, part of them have been tested and they are all producers and bred to a grandson of a forty-pound bull. Fifteen of the cows will freshen in September and October and the rest of them early in the winter. The heifers and calves have been carefully developed and are fine heavy-bone individuals. We will sell these cattle in lots to suit the purchaser.

H. H. DOWD - - - - CLEARWATER, KANSAS

## CHOICE HOLSTEIN COWS FOR SALE

One carload fresh Holstein Cows—One carload heavy Springers

These cattle are extra good. A few choice registered bulls.

HOPE HOLSTEIN FARMS - - - - HOPE, KANSAS

## SAND SPRING HOLSTEIN FARM

FEDERAL AND STATE TUBERCULIN TESTED.

The first fourteen cows to finish the A. R. O. yearly test on our farm averaged 13,329.6 pounds milk, 522.6 pounds butter fat, in 343 days, and eight were first calf heifers, and we are breeding them better. Our last bull calf went to St. Joseph Orphanage, Abilene, Kan. The man who buys a bull from our herd finds us working for him all the time. Our Aim—Production, Individuality and Breeding.

FARMERS! MILK HOLSTEINS. SUPREME DAIRY BREED OF THE WORLD.

E. S. ENGLE & SON - - - - ABILENE, KANSAS

## 40 - CHOICE HOLSTEIN SPRINGERS - 40

We have on hand forty very choice Holstein springers due September 1. They are the large heavy-milking kind. Come and see them.

CLOVER VALLEY HOLSTEIN FARM, WHITEWATER, WIS.

## HOLSTEIN CATTLE SALE

At Farm Near Hutchinson, Kansas,  
August 27, 1919

## 100 Head Cows and Heifers

Consisting of thirty head pure-bred registered cows and heifers; seventy head high-grade heifers, 2's and 3's. All will freshen this fall and all bred to registered bulls. All in good condition. I am selling some valuable cattle. Please send for catalog and come to my sale.

F. L. MARTIN  
Hutchinson - - - - Kansas

## HOLSTEINS!

We are offering a choice selection of both registered and high grade springer cows and heifers. Also pure-bred bulls and young females. All reasonably priced. Come and see them or write.

T. R. Maurer & Co.  
EMPORIA - - - - KANSAS

## Collins Farm Holsteins

A chance to purchase 40-pound breeding. We have choice sons of the great 40-pound bull, Vanderkamp Segis Pontiac, for sale. The dams of these bulls have creditable A. R. O. records. Price reasonable. Write or come and see our herd.

Collins Farms Co., Sabetha, Ks.

SEGRIST & STEPHENSON, MOLTON, KANSAS  
Breeding exclusively of pure-bred prize-winning record-breaking Holsteins. Correspondence solicited.

## BRAEBURN HOLSTEINS

Looking for a bull? I can generally offer you choice of half a dozen, by two different sires. That saves time and travel.

H. B. COWLES  
608 Kansas Avenue Topeka, Kansas

## BUTTER-BRED HOLSTEINS

Three choice registered Holstein bulls, ready for light service, and some bred heifers to a 32-pound sire.

J. P. MAST. - SCRANTON, KANSAS

## SHROPSHIRE SHEEP

## FOR SALE

A bunch of registered Shropshire rams ready for service, priced worth the money.  
HODARD CHANDLER,  
Chariton, Iowa.

## HAMPSHIRE HOGS

Registered Hampshire Hogs—Sows and Spring Glts, bred or open. Choice spring boars. Double treated. Geo. W. Ela, Valley Falls, Kansas

## SHORTHORN CATTLE.

WANT SHORTHORNS THAT COMBINE  
BEEF AND MILK



We receive many inquiries for Shorthorns that combine beef and milk. We urge that all who are hand-milking Shorthorn cows join the Milking Shorthorn Cattle Club of America, J. L. Tormey, Secretary, 13 Dexter Park Avenue, Chicago. Grass-fat Shorthorn steers have topped the Chicago market. In the Record of Merit there are listed 830 Shorthorn cows of all ages whose records average over 8,000 pounds of milk annually. Send for literature.

AMERICAN SHORTHORN BREEDERS ASSN  
13 Dexter Park Avenue Chicago, Illinois

## ALL SCOTCH SHORTHORNS

Herd headed by Walnut Type, a grand son of White Hall Sultan, and Silver Plate, a son of Imp. Bapton Corporal. A few young bulls for sale. Robert Russell, Muscotah, Ks.

## SHORTHORN CATTLE

For Sale—Five young Scotch bulls and ten head of females, bred or calves at foot.  
H. H. HOLMES, R. F. D. 28, Topeka, Kan.

## HORSES AND MULES.



Percherons--Belgians--Shires  
Some choice stallions and mares for sale. All registered. Terms.  
Fred Chandler, Route 7, Chariton, Iowa. Above Kansas City.

## PERCHERON SALE

I will sell twenty registered Percheron horses, stallions, mares and colts, serviceable and well bred, at public sale, October 15, 1919.  
PERCY E. LILL, MOUNT HOPE, KANSAS

## RED POLLED CATTLE.

## RED POLLED BULLS

Twelve head coming two-year-olds and twenty head of coming yearling bulls. This is an extra nice and well colored bunch of bulls sired by ton sires. Inspection invited.  
E. E. FRIZELL & SONS, FRIZELL, KAN.

RED POLLS, BOTH SEXES, BEST OF BREEDING.  
Charles Morrison & Son, Phillipsburg, Kan.

## AUCTIONEERS.

LIVE STOCK AUCTIONEER—Fifteen years' experience. Wire for date.  
JOHN D. SNYDER, HUTCHINSON, KAN.

## BREEDERS' DIRECTORY

ANGUS CATTLE.  
Geo. Dietrich, Carbondale, Kansas.  
RED POLLED CATTLE  
Mahlon Groenmiller, Pomona, Kansas.  
Horn Dorset Sheep  
H. O. LaTourette, Rte. 2, Oberlin, Kan.

## POLAND CHINAS

## CLINTON HERD

## BIG TYPE POLAND CHINAS

Is ready to ship you a spring boar that will make you a real herd boar, sired by Giant Buster's Equal. Will sell a few trios not related. We have satisfied customers in 25 different states and can satisfy you. Everything immune and we record them.

P. M. Anderson, Holt, Missouri

SPOTTED POLANDS—SHROPSHIRE  
Choice fall boars. Registered ram lambs by Broughton 2434 and Senator Bibby VI.  
R. W. SONNENMOSER, WESTON, MO.

Big-Type Poland Weanling Boar Pigs  
Bargain prices. Satisfaction guaranteed.  
Isaacs Stock Farm, Peabody, Kansas.

CHOICE LOT OF POLAND CHINA BRED  
SOWS AND GILTS FOR SALE.

A Few Fall Pigs.  
CHAS. E. GREENE  
Townview Farm Peabody, Kansas

## MYERS' POLAND CHINAS

Large spring pigs in pairs or trios, priced to sell. Write your wants. Annual fall sale October 14.  
H. E. MYERS - GARDNER, KANSAS

## POLAND CHINA BOARS

For Sale—25 Spring Boars by Giant Lunger by Dishers' Giant and out of Old Lady Lunger, from my best herd sows. These pigs are good, the tops from 80 head, priced reasonable.

H. R. Wenrich, Oxford, Kan.

## SPOTTED POLAND CHINAS.

SPOTTED POLANDS.  
Last call for early boars. Order gilts early.  
T. T. Langford & Sons, Jamesport, Mo.

## DUROC JERSEYS.

## Woodell's Durocs

A choice lot of extra well bred gilts bred for late farrow. Few fall boars.  
G. B. WOODDELL, WINFIELD, KANSAS.

## OTEY'S DUROCS

One spring yearling sire, fall boars by Pathfinder Chief 2d, "the mighty sire." Real herd headers. Priced right. Would exchange for good gilts.  
W. W. OTEY & SON, WINFIELD, KANSAS

## HIGHVIEW DUROCS

FOR SALE—TWENTY FALL BOARS  
By Repeater, Golden Reaper and Pathfinder. Guaranteed and priced to sell quick.  
F. J. MOSER - SABBETHA, KANSAS

## MULEFOOT HOGS.

## REGISTERED MULEFOOTS

Twenty choice weaned gilts; ten fall gilts; a few bred sows. Boars no kin. Catalog and prices on request.

KNOX KNOLL STOCK FARM  
Humboldt - - - - Kansas

## JERSEY CATTLE.

## DORNWOOD JERSEYS

Our registered Jersey bulls cannot be surpassed for quality and price. Come and see them or write for description.

Route 1 DORNWOOD FARM Topeka, Kansas

The Dairy Cattle Congress this year will be held September 22 to 28 at Waterloo, Iowa. This date follows the more important state fairs and immediately precedes the National Dairy Show. For the past nine years this show has attracted dairy cattle exhibitors and it is ready to accommodate more cattle than ever this year. The new judging pavilion, a portion of which was constructed last year, will be completed, giving a seating capacity of 6,500. It will have a show ring 100 x 200 feet. In addition to the regular premiums offered by the show the national breed associations and clubs are offering liberal prizes.

## FARM AND HERD.

Large Ela, of Valley Falls, Kansas, the owner of Halcyon herd of pure-bred Hampshire hogs, has purchased from H. L. Peppmyer the great show boar, Halcyon King. This boar is a grandson of the famous Cherokee Lad and also of Blythedale Jim, another famous Hampshire sire. Halcyon King won first and junior championship in under six months class at Topeka in 1918 and first in junior yearling class at Topeka in 1917, and will be shown again this year at the big fairs with Mr. Ela's show herd. Mr. Ela has sold his farm near Valley Falls and has announced a sale of his live stock to be held August 23. His offering will include twenty head of mules, a lot of horses and cattle, about fifty head of pure-bred Hampshire hogs, and a lot of farming implements.

## FARM AND HERD NEWS NOTES

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

Address All Communications to  
Kansas Farmer, and Not to  
Individuals

Personal mail may have to be held for several days, or be delayed in forwarding, and Kansas Farmer cannot assume any responsibility for mistakes occurring thereby

## CLAIM SALE DATES.

Percheron Horses,  
Oct. 15—P. E. Lill, Mt. Hope, Kansas.

Red Polled Cattle,  
Aug. 20—I. W. Poulton, Medora, Kan.

Holsteins.  
Nov. 14—Holstein Calf Club Sale, Topeka, Kan. W. J. O'Brien, manager.  
Nov. 15—Breeders' Holstein Sale, Topeka, Kan. W. J. O'Brien, manager.

Poland Chinas.  
Aug. 21—Earl Bower, McLouth, Kan.  
Sept. 27—Ketter Bros., Seneca, Kan.  
Oct. 3—Ezra T. Warren, Clearwater, Kan.  
Oct. 4—Geo. Morton, Oxford, Kan.  
Oct. 7—Jones Bros., Hiawatha, Kan.  
Oct. 8—Dr. J. H. Lomax, Leona, Kan.  
Oct. 9—Herman Groninger & Son, Benders, Kan.  
Oct. 10—Ross & Vincent, Sterling, Kan.  
Oct. 13—H. L. Glover, Grandview, Mo.  
Oct. 23—C. M. Hettick & Sons, Corning, Kan.  
Oct. 14—H. E. Myers, Gardner, Kan.  
Oct. 15—H. B. Walter & Son, Effingham, Kan.  
Oct. 16—A. J. Erhart & Son, Ness City, Kan.  
Oct. 17—Adams & Mason, Gypsum, Kan.  
Oct. 20—P. M. Anderson, Holt, Mo.  
Oct. 22—Fred G. Laptad, Lawrence, Kan.  
Oct. 23—McClelland & Sons, Blair, Kan.  
Oct. 24—Dubauch Bros., Wathena, Kan.  
Feb. 11—Ross & Vincent, Sterling, Kan.

Durocs.  
Aug. 20—W. T. McBride, Parker, Kan.  
Oct. 22—Fred G. Laptad, Lawrence, Kan.  
Nov. 7—Kempin Bros., Corning, Kan.  
Feb. 14—John W. Pettford, Saffordville, Kan.

Spotted Poland Chinas.  
Feb. 14—R. W. Sonnenmoser, Weston, Mo.  
Oct. 11—R. W. Sonnenmoser, Weston, Mo.

Chester Whites.  
Oct. 21—Chester White Pig Club Sale, Topeka, Kan. W. J. O'Brien, manager.

Hampshire Hogs.  
Aug. 23—Geo. Ela, Valley Falls, Kan.

Kempin Bros., the well known breeders of Duroc Jersey swine, of Corning, Kansas, have announced November 7 for their annual fall sale of Durocs. They have raised 150 head of spring pigs, mostly by the herd boar, King's Sensation I Am, he is King's Sensation. This young hog is well fitted for the Topeka Free Fair and for the Kansas State Fair at Hutchinson. He is splendid type and will probably show well up in the money if properly fitted. The sale offering will be selected from the spring crop of pigs and will consist of twenty-five spring boars and twenty-five choice spring gilts. From the way the herd is coming along now the offering promises to be one of the best lots to be sold in any sale this year.

T. T. Langford & Sons, of Jamesport, Missouri, owners of one of the famous herds of Spotted Polands, report their herd of well bred spring pigs weighing from 125 to 125 pounds. They also report a good demand for Spotted Poland breeding stock. This firm raises a large number of Spotted Polands every year and sell all stock at private sale.

L. H. Glover, the well known Poland China breeder of Grandview, Missouri, has sold to E. A. Wiggins, of Evansville, Indiana, the great herd boar prospect, Pioneer, for \$5,000. This young hog is a full brother to Liberator. Mr. Glover's present herd boar, Mr. Glover's herd is now being well known as headquarters for herd boars. Mr. Glover has claimed number 13 as the date for his fall sale, at which time he will offer twenty-five head of choice boars that are real herd boar prospects.

C. M. Hettick & Sons, of Corning, Kansas, have announced October 29 for their annual fall sale of Poland Chinas. On that date they will offer a draft of twenty spring boars that are the pick from the herd; fifteen large fall yearling gilts, several of which will be bred for fall litters and fifteen choice bred sows all bred by early spring litters to Surprise Wonder, a Surprise Wonder by Big Bob Porter, out of Long Beauty, and Big Bob Porter by Big Price. Hettick & Sons have been breeding Poland Chinas for twenty years and have furnished herds for fairs to start herds in several states. The fall sale offering will be selected from the number.

C. S. Nevius & Sons, of Chiles, Kansas, made the Tomson Bros. of Dover and Carbondale, Kansas, a short Mayflower calf to assist their herd bull, Golden Searchlight. This firm will show a few herd of Shorthorns at the Topeka Free Fair and the Kansas State Fair at Hutchinson this year and will hold a sale of choice June and offer about fifty head of registered breeding cattle to the public. The new numbers over 125 head of registered cattle of choice Scotch breeding.

The catalogs are out announcing the sale of Poland Chinas of Earl Bower, McLouth, Kansas, on August 21, 1919. The good lot is a very attractive lot of extra good yearling gilts and a few trios of good sows of the most popular breeding, Orphan Jumbo Wonder, a Wonder, one spring pig and Model Big Timm; also one spring pig and two boars by Halford's Alax, a boar in the offering are by Powers, Rob. by the champion, Caldwell's Big Bob. The sale offering will be safe offering to be insured against death from any cause except cholera for one-half the selling price for one year from sale date.



# POLAND CHINA REDUCTION SALE

At My Farm Near

## McLouth, Kansas, August 21, 1919

FORTY-FIVE HEAD OF SELECT POLAND CHINAS

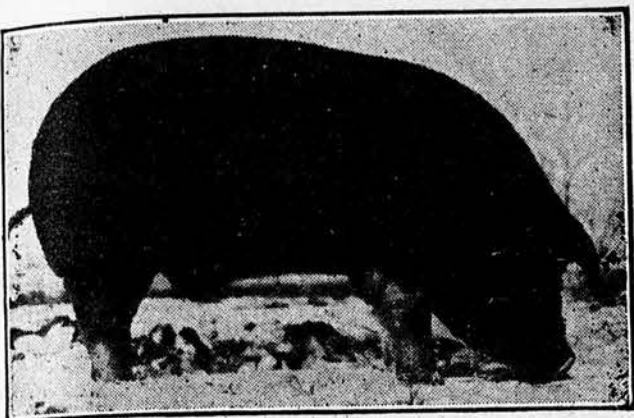
Twenty head large fall yearling gilts, several bred for fall litters; five spring gilts sold open; five tried brood sows bred for September litters, and fifteen choice spring boars.

I am changing locations and have sold the farm I now live on and am selling a choice lot of breeding stock that I would not sell if I was not moving to a new place. Everything is guaranteed right in every way. Please send for catalog and come to my sale.

ALL IMMUNED and insured for one-half selling price for one year from date of sale.

EARL BOWER - - - - - McLOUTH, KANSAS

Auctioneers—Col. J. C. Price, Col. H. Metzger

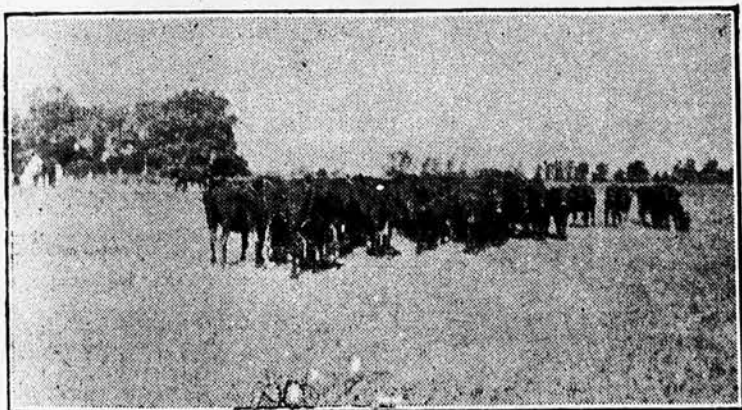


Bower's Bob, by the Champion, Caldwell's Big BSB

# RED POLLED CATTLE SALE

At My Farm Near Medora, Kansas

## WEDNESDAY, AUGUST 20th, 1919



I have sold my farm and will change locations and am obliged to sell thirty-two head of my cattle, consisting of

**FIFTEEN MATURE COWS BRED, AND SEVEN COWS WITH CALVES AT FOOT (ALL HEIFER CALVES)**

**Four 2-Year-Old Heifers Bred, Five Yearling Heifers Sold Open, and One Extra Good 2-Year-Old Bull**

All the cattle are registered and guaranteed right in every way. They are a useful lot of farmers' cattle and are of the milking kind of Red Polled cattle. They will make money for any farmer who will give them a little care and feed. Please send for catalog and come to my sale.

**I. W. POULTON, MEDORA, KANSAS**

Ten miles north of Hutchinson, Kansas, on the Rock Island and Frisco Railways.

Auctioneers: Col. John D. Snyder, Col. R. E. Talbert

## Weeds in the Pasture

In traveling over the farms and through the pastures of this part of the state—Leavenworth County—one can't help but be struck by great amount of waste land, or land from which no revenue is derived. I mean by that the pasture land that has been allowed to grow to weeds and buck brush. This land, mixed in with the more productive and, sells for \$100 to \$200 an acre, when it is often really a dead loss so far as pasture or anything else is concerned. Rank weeds and brush have crowded out everything else, making a tangle that not even stock find it worth while to penetrate. These lands, though often sloping and stony are the finest kind of blue grass soil when the grass has a chance to grow. They are filled with lime stone and glacial gravel and boulders, and will grow sweet clover equal to the best. As badly as the farmers need the pasture for their dairy cows it would seem that an effort to

keep these pastures clean and productive would be worth while.

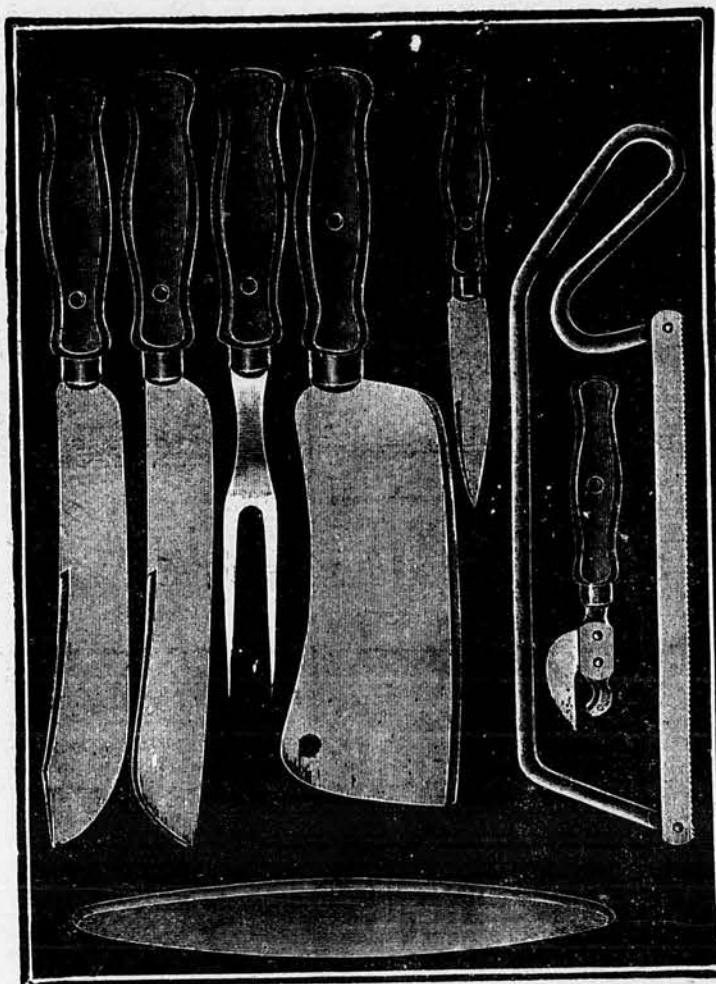
I recently walked through the corner of one pasture where without any special effort I counted thirty-seven kinds of noxious weeds, not one of which was of any value for stock feed. It was an ideal corner for blue grass, a patch of about ten acres, but there was not enough grass on it all to feed a rabbit. Twice over it with a mower during the season would have made it a beautiful little meadow. While many of these waste spots are on side hills and are not so easily accessible, yet this is a type of hundreds of little patches and corners that I could pick out right here in one of the best dairy regions of the state.

—R. B., Leavenworth County.

All the little odds and ends of fruit juice or tomato juice and the rinsing from the sauce pan in which you have made jelly or fruit butter should go into your vinegar which is in the making.

# Eight Piece Kitchen Set

## FREE



This fine and useful eight-piece Kitchen Set, consisting of bread knife, carving knife and fork, meat cleaver, meat saw, paring knife, can opener and sharpening stone, is a practical necessity in every household. The bread knife and carving knife have eight-inch blades, the cleaver a five-inch blade, and the other articles are in proportion as shown in illustration. Every article in the set is guaranteed and will be replaced if found defective. It is a genuinely good kitchen outfit. Send for yours today.

**SPECIAL OFFER.**—Send us two yearly subscriptions to Kansas Farmer at \$1.00 each—\$2.00 in all—and we will send you FREE and POSTPAID one of these eight-piece Kitchen Sets. Use order blank below.

## ORDER BLANK

KANSAS FARMER, Topeka, Kansas.

Gentlemen: Enclosed find \$2.00 to pay for one year's subscription for each of the following:

Name .....

Address .....

Name .....

Address .....

Please send .....to

Name .....

Address .....



# TWO CHARTS

Study them both. They show how to protect your new engine from the start

**L**ARGE production of automobiles is resumed. Tractor production expands. The farmer's growing needs will bring hundreds of thousands of new tractors and automobiles to the farms of America.



## Correct AUTOMOBILE Lubrication

### How to read the Chart

The four grades of Gargoyle Mobiloils, for engine lubrication, purified to remove free carbon, are:

- Gargoyle Mobiloil "A"
- Gargoyle Mobiloil "B"
- Gargoyle Mobiloil "E"
- Gargoyle Mobiloil Arctic

In the Chart below, the letter opposite the car indicates the grade of Gargoyle Mobiloil that should be used. For example, "A" means Gargoyle Mobiloil "A". "Arc" means Gargoyle Mobiloil Arctic, etc. The recommendations cover all models of both passenger and commercial vehicles unless otherwise noted.

This Chart is compiled by the Vacuum Oil Company's Board of Engineers and represents our professional advice on Correct Automobile Lubrication.

AUTOMOBILES	1916 Models		1917 Models		1918 Models		1919 Models		1920 Models	
	Summer	Winter	Summer	Winter	Summer	Winter	Summer	Winter	Summer	Winter
Abbott	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Abbott-Dodge	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (8-10 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (10-12 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (12-15 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (15-20 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (20-25 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (25-30 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (30-35 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (35-40 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (40-45 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (45-50 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (50-55 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (55-60 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (60-65 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (65-70 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (70-75 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (75-80 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (80-85 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (85-90 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (90-95 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (95-100 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (100-105 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (105-110 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (110-115 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (115-120 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (120-125 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (125-130 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (130-135 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (135-140 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (140-145 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (145-150 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (150-155 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (155-160 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (160-165 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (165-170 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (170-175 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (175-180 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (180-185 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (185-190 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (190-195 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (195-200 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (200-205 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (205-210 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (210-215 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (215-220 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (220-225 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (225-230 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (230-235 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (235-240 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (240-245 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (245-250 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (250-255 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (255-260 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (260-265 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (265-270 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (270-275 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (275-280 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (280-285 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (285-290 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (290-295 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (295-300 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (300-305 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (305-310 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (310-315 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (315-320 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (320-325 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (325-330 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (330-335 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (335-340 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (340-345 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (345-350 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (350-355 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (355-360 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (360-365 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (365-370 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (370-375 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (375-380 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (380-385 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (385-390 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (390-395 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (395-400 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (400-405 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (405-410 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (410-415 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (415-420 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (420-425 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (425-430 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (430-435 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (435-440 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (440-445 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (445-450 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (450-455 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (455-460 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (460-465 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (465-470 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (470-475 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (475-480 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (480-485 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (485-490 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (490-495 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (495-500 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (500-505 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (505-510 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (510-515 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (515-520 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (520-525 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (525-530 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (530-535 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (535-540 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (540-545 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (545-550 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (550-555 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (555-560 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (560-565 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (565-570 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (570-575 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (575-580 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (580-585 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (585-590 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (590-595 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (595-600 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (600-605 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (605-610 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (610-615 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (615-620 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (620-625 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (625-630 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (630-635 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (635-640 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (640-645 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (645-650 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (650-655 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (655-660 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (660-665 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (665-670 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (670-675 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (675-680 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (680-685 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (685-690 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (690-695 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (695-700 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (700-705 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (705-710 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (710-715 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (715-720 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (720-725 c.v.)	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc	Arc
Albion (725-730 c.v.)	Arc									