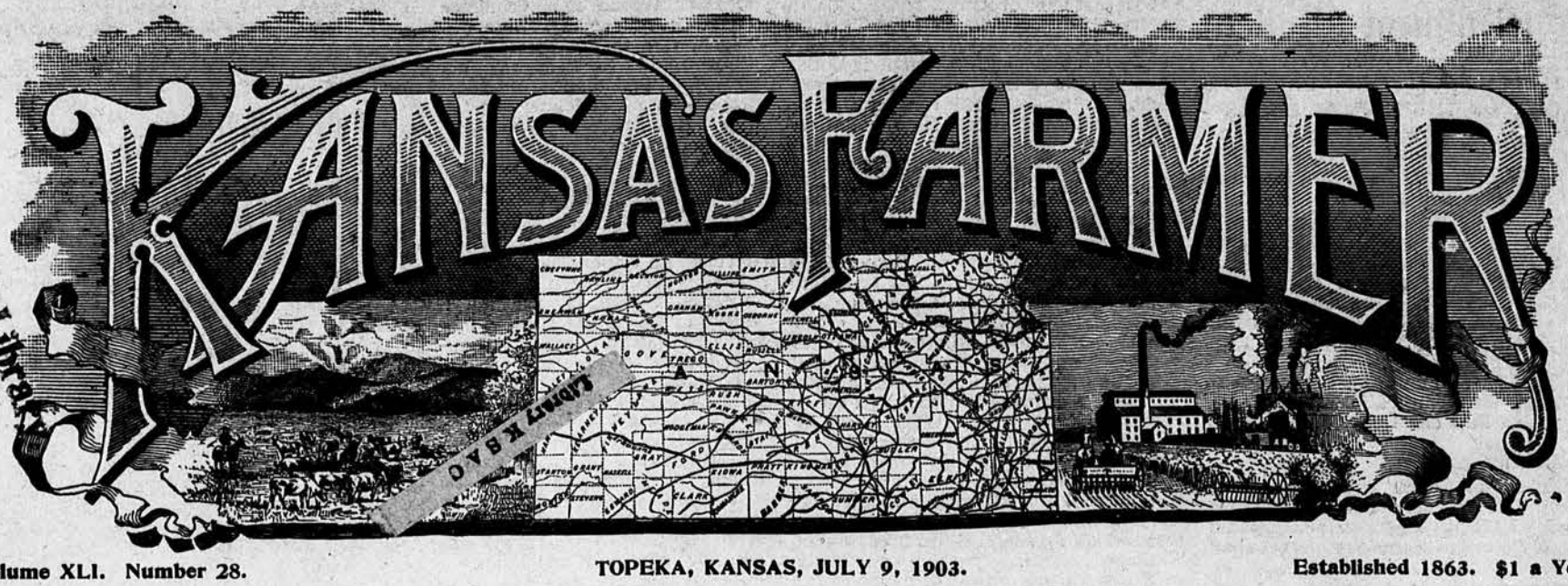

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KANSAS FARMER.

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The Iowa Agricultural College is making a searching investigation of smut in oats. Prof. W. H. Olin, formerly of Kansas, is conducting the work.

Representatives of the relief work in Kansas flood-stricken towns met in Topeka last Monday and resolved to issue an appeal for further contributions to the amount of $250,000 for the purpose of establishing flood-sufferers on a self-sustaining basis.

The Hammond Packing Company, of South St. Joseph, Mo., suffered a $2,000,000 loss by fire last Sunday afternoon. The main building was destroyed despite the efforts of the fire-fighters of the packing-house district, aided by those from St. Joseph.

BLOCKS OF TWO.

The regular subscription price for the KANSAS FARMER is one dollar a year. That it is worth the money is attested by the fact that thousands have for many years been paying the price and found it profitable. But the publishers have determined to make it possible to secure the paper at half price. While the subscription price will remain at one dollar a year, every old subscriber is authorized to send his own renewal for one year and one new subscription for one year with one dollar to pay for both. In like manner two new subscribers will be entered, both for one year, for one dollar. Address, Kansas Farmer Company, Topeka, Kans.

ONE MONTH LATER.

A trip to Kansas City over the Santa Fe Railroad from Topeka just about a month after the great flood descended the Kansas valley serves to confirm the belief that no true estimates of the damage that has been suffered by our citizens is yet possible. Evidences are everywhere of the terrific flood and great areas are covered with from six inches to three feet of clean sand which will utterly destroy the present usefulness of the farm land. Just below Spencer we noticed a wheat-field in which the standing grain had served to cause the sand to deposit, and the entire field is now covered with sand, while just beyond is another field which had no crops standing upon it and which now has no sand. At the east side of Lake View the strength of the current is shown by the erosion of the earth which is now cut into deep gullies and aroyas. East of Lawrence large tracts of lands several miles in extent are covered with water and the country has the appearance of a lake region as the wind rolls this water into whitecaps over what was once corn- and potato-fields.

On the south side of the river there are many stretches of country, some of which are of considerable extent, where the flood damage is at a minimum. Some fields are covered with fine black loam which will evidently enrich them for years to come. Alfalfa-fields are badly damaged though in some section the crop is sprouting again and will produce some hay. The farmers as a rule are busy at work plowing the dry spots and many of them have already replanted their fields as far as possible. Wrecks of buildings, bridges, fences, etc., are in evidence everywhere and many houses on the bottom are deserted although apparently not seriously damaged. At Argentine the small boy is happy in that he can row a boat through the streets at certain places. The bottom from Argentine into Kansas City is a mass of wrecked cars, railroad tracks, buildings, and bridges with sand over all. Just east of Chicago Junction there are hundreds of tons of baled prairie hay lying on the ground that have been been removed from cars on the adjacent side track. In the city and at the stock yards the loss has been enormous. The great wholesale houses in the west bottoms were flooded well toward the top of the first story and all merchandise stored in the basements and first floors is badly damaged or entirely destroyed. With that true Western spirit which has made Kansas City possible these men have risen to the occasion and the buildings are cleaned, the debris removed and everybody is on the jump filling accumulated orders. The great implement houses like the Eagle Manufacturing Co.; the Bradley Alderson Company; the J. G. Peppard Seed House; the Fairbanks, Morse Company, and hundreds of others are doing a vast volume of business under such difficulties as was never experienced before. At the stock yards the water stood two feet deep on the second floor of the Exchange Building and all offices on the first floor were completely submerged. The Transit House was submerged but is doing business at the old stand and with the old skill though the difficulties are enormous. A city which could rebuild its great Convention Hall in ninety days could be expected to do wonders but no such test has ever before fallen upon any city and the whole Nation may well feel proud of the marvels that have been accomplished in thirty days.

FOUGHT THE BRITISH ALL DAY.

Does the celebration of the Fourth of July need reforming? Persons who are on the down-hill side of life are given to referring to the celebrations of half a century or more ago as models. Recollections of the pleasant experiences of youth are always roseate. The old man of to-day says: "When I was a boy we hitched four horses to the wagon, put in a lot of hay, loaded the people on top of the hay, raised a flag on the front end of the wagon, drove four miles to the grove, had a big picnic dinner, a lot of singing, listened to the reading of the Declaration of Independence, and some patriotic speeches, etc., etc." He may also recall a neighborhood dance in the evening and a dazed, weary feeling on the morning of July 5. The big speaking may have been in town, in which case the long procession was the pride of the town and mentioned in the papers, and the display of fireworks in the evening was an event to be talked about for days to come.

The rather nervous old gentleman who calls up these memories has no distinct recollection of ear-splitting cannon-crackers nor of any of the twentieth century diabolisms for making a noise. Very few got killed or maimed on the old Fourth of July, and the news-gatherers were not so diligent as now in presenting these details.

The modern celebration consists largely in the explosion of much dynamite in small quantities but with much noise. The little "Jackson cracker" of fifty years ago is too tame for the boy of to-day, and as for declarations and speeches he has no time for these.

The old-fashioned "Fourth" had at least two merits. It was a revival of patriotism and it was a play spell.

The twentieth century "Fourth" is essentially a holiday, especially a small boys' holiday. The small boy appreciates it highly. The writer heard two boys discussing the Fourth of July and Christmas, and their conclusion was that these two are the greatest days of the year and that it is fortunate that they so nearly divide the years in halves. The little son of the preacher-author, Rev. Chas. M. Sheldon, while going to Sunday School with his father on the Sabbath before the last "Fourth" asked his father which he liked best, Fourth of July or Christmas. Evidently this was a close question in the estimation of the 6-year-old.

The boys of the writer's neighborhood began bombarding the British at 4 o'clock last Saturday morning, not to mention a large amount of picket firing on Friday evening. The battle raged all day Saturday. Some of the forces ran out of ammunition early in the day and fired off their night fireworks in broad daylight to let the enemy know that the Americans were not defeated.

Yes, all this racket had its elements of danger and doubtless annoyed some nervous people, but the writer, who is considerably past his 'teens, acknowledges to a whole lot of enjoyment of it all with the boys—and those of the girls who are full of the Fourth of July spirit.

These boys and girls who are old enough for school have recently com-

(Continued on page 722.)

Agricultural Matters.

REPLIES FROM THE AGRICULTURIST OF THE KANSAS EXPERIMENT STATION.

Does English Blue-grass turn to Cheat?—Rape.

Does English blue-grass turn to cheat? Some claim here that it does, and there are pieces here that look very much as if it does. If so, what is the outcome? Also, I have about two acres of rape with my hogs running on it and it is getting away from them. They like it very much and are living right well on it, but it grows faster than they can eat. Will it make seed, and how can I save it?

CHAS. N. FREIDLINE.

Seward County.

English blue-grass does not turn to cheat. Cheat, also called chess, belongs to the brome-grass family while English blue-grass, more properly called meadow fescue, is classed with the fescue grasses. The grasses are distinct species and are entirely different and there is no possibility of one turning into the other. If it is true that the chess is appearing in your blue-grass meadow it must be due to impure seed, that is, some cheat-seed was mixed with the English blue-grass seed when you first seeded the ground, or else the chess is common to your locality and being a very hardy grass which spreads by underground root-stems it is gradually running out the blue-grass in your field. The only remedy will be to break up these meadows and by thorough cultivation for a few years destroy the chess.

Rape does not seed in this climate, in fact it does not seed during its first year of growth. As far north as Kansas the crop can only be used as a pasture and green forage crop. If the rape grows faster than the hogs can eat it the only remedy will be to turn on more hogs or some other stock, as sheep or cattle. Or it may be more practicable for you to divide the field, pasturing part of it and cutting the other off allowing a new growth which may be used for pasture later when the hogs have eaten off the part on which they are feeding.

A. M. TENEYCK.

Cow-Peas for Pasture.

I saw an article in the KANSAS FARMER about two weeks ago concerning cow-peas sown in corn at last cultivation for sheep- and cattle-pasture. Please let me know if the peas are a good fat-producing feed, and how much to sow per acre in corn. Where can the seed be bought?

Harvey County. R. J. WOULFE.

Cow-peas are often used as a grazing crop in the Southern States and are always regarded as furnishing the best possible grazing for milch-cows, fattening animals, and hogs. At the Missouri Station it was found that cow-peas furnished more pasture and produced a greater amount of milk than any other crop tested. Cow-peas belong to the class of plants known as the legumes which are particularly noted for the large proportion of protein which they contain. Such crops make excellent feed for growing stock. Cow-peas do not bear continuous grazing but will give abundant feed for a month or six weeks and by dividing the field or arranging a succession of fields, good pasture may be provided for several months.

If the cow-peas are sown in the corn with the wheat-drill, it will require about one and one-half bushel of seed per acre. The seed can be bought of almost any Western seed company. Most of the local dealers handle cow-peas, or at least they will be able to get them for you very quickly.

A. M. TENEYCK.

Varieties of Alfalfa.

Will you please inform me if there is more than one variety of alfalfa? If so is one larger than the other? Are you prepared to furnish me the seed for the larger and what price?

Reno County. L. M. GRAHAM.

Besides the common alfalfa (Medicago sativa) there are two other forms "which are considered by some as varieties of alfalfa, while others regard them as distinct species. They are the intermediate Lucern (Medicago media) and the yellow or sand Lucern (Medicago falcata). Neither of them have much agricultural value, though the yellow Lucern is sometimes recommended for planting on very light sandy soils."

Recently a variety called Turkestan alfalfa has been introduced by the U. S. Department of Agriculture. This variety does not make a larger growth than the common alfalfa so far as I am acquainted with it, but it is doubtless hardier than the common alfalfa, being better adapted for growing in the Northern States. I do not know where you can obtain seed but am of the opinion that you might secure a small sample from the U. S. Department of Agriculture by writing to Prof. A. S. Hitchcock, head of the Division of Botany.

There may be some difference in the strains of alfalfa which are grown in different sections of the country, for instance, the fact has been established that Western alfalfa grows taller and ranker and resists drouth and freezing better than Eastern alfalfa. Perhaps, also, seed which is grown in certain sections of the West where alfalfa does best may be better adapted for planting than seed grown in localities which are not so well adapted to alfalfa growing. It may be said that very little has as yet been done in the way of seed selection or breeding of common alfalfa. There is practically only one variety grown throughout our Western States. A. M. TENEYCK.

Some Seed Questions.

Will you kindly answer the following questions:

1. Where can I get cow-peas and soy-beans for planting?

2. Where can I get the best book on the conservation of moisture? I expect to be in western Kansas in a short time.

3. Where can I purchase Turkestan alfalfa seed?

I would be pleased to receive bulletin No. 114. I would like to have my name recorded so I would get your bulltins when issued as I consider them valuable. F. E. GORDON.

Sumner County.

A copy of bulletin No. 114 has been mailed you under separate cover and your name has been placed upon the bulletin list so that you will receive the future publications of this Experiment Station.

You can buy soy-bean and cow-pea seed from almost any of the seed firms whose advertisements appear in the Kansas agricultural papers, and also, doubtless, from any of the local seed dealers. Any local dealer can supply you with these seeds on short notice.

The following are good books on the soil and the conservation of soil moisture: "The Soil," by King, published by McMillan & Co., New York; "Agricultural Physics," by King, published by the author, Madison, Wis.; "Fertility of the Land," by Roberts, published by the McMillan Company, New York; "The Principles of Agriculture," by Bailey, published by McMillan & Company, New York; "Soil Culture," by H. W. Campbell, published by the author, Holdredge, Neb.

Mr. Campbell is also publishing a paper on the subject of cultivation and soil moisture. The first copy is an excellent one and I advise you to secure it as well as a copy of Mr. Campbell's book.

It is a question whether you can get any true Turkestan alfalfa seed from any of the seedsmen of the United States. In a talk with Professor A. S. Hitchcock recently, he informed me that the department had not had good success with any of the so-called Turkestan alfalfa seed which they had purchased from the seedsmen. The United States Department of Agriculture however has secured the true Turkestan alfalfa seed from Turkestan. This seed has been distributed throughout the United States and this variety of alfalfa is being grown by many of the experiment stations and also by individual farmers. It is possible you may be able to secure a sample by writing to Prof. A. S. Hitchcock, Division of Botany, United States Department of Agriculture, Washington, D. C. Two years ago last spring while I was connected with the North Dakota Experiment Station we secured a sample of Turkestan alfalfa seed from Northrup-King & Co., Minneapolis, Minn., which made a splendid start on the station grounds and was apparently true to name. However I have given you Professor Hitchcock's opinion above that the seed sold by seedsmen is not reliable. A. M. TENEYCK.

Orchard-Grass or Timothy for Low, Wet Land.

Will you give light in regard to seeding about three acres of bottom land that overflows every spring? It does not get dry soon enough to plant corn only once in four or five years—water does not stand. Timothy is used here.

I see in bulletin 102, 1901, in report on grasses, that orchard-grass and meadow fescue are recommended as containing more digestible protein. I should like to try them if you think they would do well with conditions named. What plan would you suggest, when to plant and how much of each? I was intending to plow and harrow thoroughly, then seed this fall.

I tried some alfalfa on an acre of upland this spring; it came up well but does not appear to thrive as well as expected—leaves turn yellow and look spotted. The land has been grown to corn and I guess has never been fertilized. I have been cutting it every day and feeding it to pigs for two weeks in order to get rid of the weeds, thinking that perhaps it will do better.

Nemaha County. C. H. COPP.

I would not recommend orchard-grass (meadow fescue), or timothy for sowing on the low, wet land which you describe. Such land is well adapted to the growing of redtop and perhaps it may be well to mix a little Alsike clover with the redtop seed. Redtop is well adapted to low, wet lands, and of all the clovers Alsike will do better than any others on wet land.

If the land remains wet late in the summer it would doubtless be more practicable for you to seed in the fall. Prepare the land as soon as it is in condition or during the summer, plowing it before it becomes too dry. Thoroughly work the soil so as to prepare a good seed-bed, having the land mellow and free from weeds when seeded about the last of August or the first of September. Sow at the rate of about 20 pounds of redtop and 2 pounds of Alsike clover per acre. The seeding may be done by hand, sowing broadcast, or it is practicable to use a broadcast seeder. At this station we are using the Thompson Wheelbarrow Seeder, manufactured by C. E. Thompson, Ypsilanti, Mich. This seeder is cheap and convenient to use and does first-class work when new. I have not used it except for the one year but in sowing all kinds of grain last spring I was well pleased with its work. Cover the seed by harrowing once with a light harrow after seeding.

Alfalfa seldom makes much growth during the first season. You should hardly expect to get any crop from it the first season. It is my opinion that alfalfa should not be cut too close or too much the first year. If sown early in the spring it should be clipped two or three times during the season in order to keep down the weeds but it should not be cut too near the ground. We are clipping our new seeding this year three or four inches high. This does not check the growth of the young plants but will destroy most of the large weeds which tend to choke out the alfalfa.

The fact which you mentioned in regard to the leaves turning yellow and spotted would indicate that your crop is attacked by the "leaf-spot disease" which is becoming prevalent in some parts of the State. I have observed it on all the fields at this station this season. On one field of old alfalfa nearly a third of the leaves dropped off before the first cutting, because of this disease. The disease has seemed to receive little attention from the experiment station men up to this time. "In many of the portions of the Eastern and Southern States it has been observed that the leaves become infested with this leaf-spot disease which sometimes does considerable damage, and renders both the hay and the forage crop of inferior quality. The best remedy for the disease is said to be frequent cutting." A. M. TENEYCK.

Soy-Beans in Southern Kansas.

EDITOR KANSAS FARMER:—In 1900 we planted two acres of soy-beans using a drill planter with solid, concave wheels. A good rain followed, and a slight crusting of the wheel track resulted. We got only three-fourths of a stand on account of the crust. The jack-rabbits kept the beans down until we got after them with dog and gun. After that the beans did well. They were planted on the back part of our place, and on account of being very busy about ripening season, we did not watch them very closely. The result was, when we went to see if the crop was ready to harvest, we found it thrashed, as it were. The weather had been dry and windy and the beans had ripened and popped out, making the ground quite yellow.

That was our first crop—a total loss, except experience gained. In 1901 we again purchased a small amount of seed and when the drouth broke (about August 1) we plowed oat-stubble and planted with the same planter and again the planter track crusted with same result as to stand.

But we profited by our experience and pulled them before any were wasted. We saved fifteen bushels this time. In 1902 we planted eighteen acres after oats the first week in July. We got forty bushels of oats per acre and then we had one hundred and forty bushels of soy-beans from the eighteen acres. We were well pleased, considering they had to be planted and cultivated and harvested when the ground was too wet. We planted this crop with an open-wheel planter and got a good stand. We cut with the Miller bean-harvester, just below the surface, cutting two rows at a time. Then we bunched with a one-horse sulky rake, and stacked the crop in same stack-yard with the oats, which the thrashing-machine could not get to until in January when the ground was frozen.

This season we disked and planted the same land and four acres more, using a Deere No. 8 open-wheel planter, adjusted to highest speed with the small drill-corn plates, and the planter narrowed up to thirty-six inches. It is the best prospect we have had. The double crop last season left our land free of weeds, and when this crop is off we shall disk and seed to alfalfa, feeling that we have few weeds in the way, and the land in prime shape to get a catch.

Now, as to the use of the beans when we get them.

We profited by the information received from bulletins of the experiment station, and ground the beans with Kafir-corn. For cattle or hogs we would prefer this meal to Indian corn any time. We used a good deal of Kafir-meal on the farm. When we fed enough to fatten an animal, it soon got off its feed, but with the addition of one-fifth soy-beans that trouble is obviated and the fattening is rapid.

The soy-bean should be considered more of a grain than a forage crop. The crop comes very near ripening all at once, like wheat, and sheds its leaves and is dead in short order, and if not secured before dead dry, the beans are liable to all pop out. If we were buying a grain-drill we would get one to drill nine drills at a time; and when wanting to plant soy-beans, would close all but ends and center feed-holes, which would give three rows thirty-two inches apart. This leaves one-third of the drill open, but if it is desired to get at the amount of seed, figure the drill as covering ninety-six inches in width instead of seventy-two, and set the drill accordingly. We would call three or four gallons good seeding per acre. G. R. WHEELER.

Seward County.

Agriculture in the Public Schools.

EDITOR KANSAS FARMER:—There never was a time when so much attention was given by departments of education, by agricultural colleges, the agricultural press, and other agencies interested in country life, to the teaching of agriculture in the public schools. Arguments have been offered to show the great advantages which would follow the successful introduction of agriculture in the public schools, but results of actual instruction given to children in rural schools are not always easy to find. All are agreed that agriculture should be taught in the rural schools. The great difficulty is in outlining a plan which will induce teachers to begin this work and the patrons to recognize its value. Manifestly a teacher ignorant of all the principles and practices of agriculture can not teach this subject. The whole question is easy of solution when the rural school-teacher has received reliable instruction in agriculture, and by the aid of a library of agricultural books and bulletins becomes able not only to instruct pupils, but to impart useful and valuable information of the highest practical value to every patron of the school.

This is the aim and purpose of the Missouri plan for introducing agriculture in the public schools. It has so far succeeded beyond our highest expectations. It will be encouraging, therefore, to the friends of this move-

ment to learn what has been done at this institution and something of our plans for the future.

AGRICULTURAL INSTRUCTIONS FOR TEACHERS.

The Missouri Agricultural College enjoys the distinction of being the first institution in America to offer courses in agriculture and horticulture to teachers. President R. H. Jesse was the first to suggest and later to demonstrate the fact that the most important step in this movement was the training of teachers who were to give instruction in this work in the schools. In the summer school each year for the past six years, courses have been offered in agriculture and horticulture, and these courses have been largely elected by the teachers attending. As a result of the work done here, every State Normal in Missouri now has a professor of agriculture. More than 500 teachers have thus been trained in agriculture and horticulture by the educational institutions of Missouri. A conservative estimate shows that more than 5,000 Missouri children received some instruction during the past year in these two branches. It is to be noted in this connection that when we use the term agriculture we mean the elements of both agriculture and horticulture. All of the work given may be properly classified as nature study but is distinct from the general idea of nature study in that it is technical agriculture. The courses given to teachers at this institution are elementary courses in soils, farm crops, and horticulture. During the summer of 1903 two courses in horticulture are being given to teachers—one at Columbia and one at Joplin, Mo. A six-weeks' course in agriculture will be offered, beginning July 15. More than fifty teachers will thus receive instruction this year at the Missouri College of Agriculture. The work done in these courses is accepted by the superintendent of public instruction for State certificate.

AGRICULTURAL PUBLICATIONS FOR TEACHERS.

We have found it not only necessary to give this instruction to teachers at the college and in the normal schools, but in order to reach a larger number and to give definiteness to all the instruction offered in these courses, we have begun the publication of a series of bulletins which are intended to give the elements of agriculture and horticulture. In this series we have published two bulletins, one on "Plant Propagation," and the other on the "Principles of Plant Production: The Seed." It is our purpose to complete the series on the principles of horticulture and another on the principles of plant production, particularly as applied to soils and crops. Each of these series when completed will be an elementary text-book upon that subject, and will be recommended to teachers as reliable authority on the subjects treated.

The State Superintendent of Public Instruction in Missouri has recommended these bulletins and the outline prepared by the Missouri College of Agriculture for the public schools of Missouri, and a large number of teachers are successfully giving this work in rural and high schools.

It is impossible to measure the good which will certainly follow this successful eqort for the teaching of these important subjects to the children of a great agricultural State. The agricultural press has aided us greatly in this effort. The State Board of Agriculture has been more than enthusiastic in its support of our work, and all of these agencies working with the agricultural college must be given credit for whatever success we have so far attained.

Columbia, Mo. F. B. MUMFORD.

Flood Preventive.—Better Methods in Agriculture.

EDITOR KANSAS FARMER:—Irrigation in certain locations is practicable, but there are methods that may be utilized to benefit much larger areas of country. It is possible and profitable to so treat the soil and subsoil of a given area as to enable them to receive and retain even a rapid rainfall though continued for some time. By thus treating the soil and subsoil we will greatly lessen the destruction of life and property by floods in the valleys.

Pasture land may be treated before seeding and afterward in such manner as will facilitate the reception of moisture that comes to it in different forms. Agricultural stations would do well to experiment along this line, and all farmers do likewise.

MILTON JENNESS.

Gage County, Nebraska.

Farm Notes.

N. J. SHEPHERD, ELDON, MO.

Clover pasture is best for sheep.

The drier butter is made the better it keeps.

Good care counts almost as much as good food.

It takes a healthy tree to produce good, sound fruit.

Reject a horse which goes very close or very wide behind.

All sources of plant-food should be utilized by the farmer.

There is no profit in a standing-still system of feeding hogs.

A good horse poorly cared for rarely sells for all he is worth.

In feeding cattle for profit the first requisite is the right kind of cattle.

Comfortable quarters go a long way towards keeping stock in a good condition.

Good action is quite a consideration to be looked after in selecting a large horse.

It is an exceptional case when it is best to keep brood sows closely confined.

After the harvest work is finished up is one of the best times to do necessary draining.

With all classes of stock the value of good feed is wonderfully increased by close attention.

Valuable as clover is for hay and pasture its greatest value is as an improver of the soil.

It is often the case that the heaviest feeders have the worst looking and the most unhealthy stock.

Cull from the increase of the herds by holding fast to those that approach nearest to your model.

Much of the best and best paying farming is done upon small or at least a moderately sized farm.

Feeding and training have given a value to the herd and this value must be maintained by feeding and training.

In a dairy cow the cost of support is in proportion to the live weight, but the yield is generally not in such proportion.

Some hens lay four times as many eggs as others. How much more is the active hen worth than the indolent one?

While as ordinarily managed grain-raising depletes a farm of fertility, the dairy can be made a sure agency to replete it.

All kinds of feed possess two values, these are the nutritive value, or the value for feeding purposes and the fertilizing value.

It is the solids that are in one hundred pounds of milk that give it value instead of quarts that have an uncertain value.

Brittle and rotten hoofs are caused by horses standing in soft ammonia heating manures or continuously standing upon hard floors.

With farming as with everything else it is never a good plan to undertake more than can be done at the right time and in the right manner.

In addition to aiding in retaining moisture mulching mechanically breaks the force of the rains and prevents them from compacting the soil.

With farm products as with everything else profit is the selling-price plus the cost. When the cost is greater than the selling price there is a negative profit.

In a majority of cases when wheat is to be sown on land the sooner the land is plowed after harvesting is finished up the better. It is usually a safe rule to plow deeply and thoroughly.

Some men are like their horses. They go through life wearing blinders and receive what comes to them. Read the KANSAS FARMER and remove the blinders.

Horticulture.

Home Manufacture and Use of Unfermented Grape Juice.

FROM FARMERS' BULLETIN NO. 175, U. S. DEPARTMENT OF AGRICULTURE.

INTRODUCTION.

Unfermented grape juice has no doubt been used ever since wine has been made from the grape. The following practical suggestions will enable housewives to put up unfermented juice at the time of the fruit harvest, and thus to utilize much fruit that is now annually lost through inability to preserve it in the fresh state. In this form it is a pleasant, wholesome drink and food well adapted to home use. On some farms enough such preventable wastes occur almost every year to largely reduce the possible profits, or even to cause failure to meet the running expenses of the farm. By preventing these wastes an unprofitable farm may often be made profitable.

HISTORICAL NOTES.

Galenius, the Greek physician and writer, says (A. D. 131): "A good of a good article uncertain and expensive.

COMPOSITION OF THE GRAPE.

The grape contains from 12 to 28 per cent of sugar, about 2 to 3 per cent of nitrogenous substances, and some tartaric and malic acids. The skins contain tannin, cream of tartar and coloring matter. The seeds contain tannin, starchy matters, and fat. The stems contain tannin, diverse acids, and mucilaginous matter. The value of the juice made from any grape is determined by the relative proportion and composition of these various parts.

CAUSES OF FERMENTATION.

It is well known that grapes and other fruits when ripe have the invisible spores of various fungi, yeasts (ferments), and bacteria adhering to their skins and stems. When dry these spores are inert, but after the grapes are crushed and the spores are immersed in the juice they become active and begin to multiply. If the juice is warm, the changes take place rapidly; if, on the other hand, it is cool, the change is slower. But in either case, if left alone, the organisms increase until the juice ferments. The most favorable temperature for fermentation is between 65° F. and 88° F. Cold checks, but does not kill, the ferment. This fermentation, now commonly called the elliptic yeast, changes the sugar in the grape to alcohol and carbonic acid gas, and is the leading factor in converting must into wine. Hence it will be readily seen that to keep grape juice sweet fermentation must be prevented, and to be salable the product must be clear, bright, and attractive.

METHODS OF PREVENTING FERMENTATION.

Fermentation may be prevented in either of two ways:

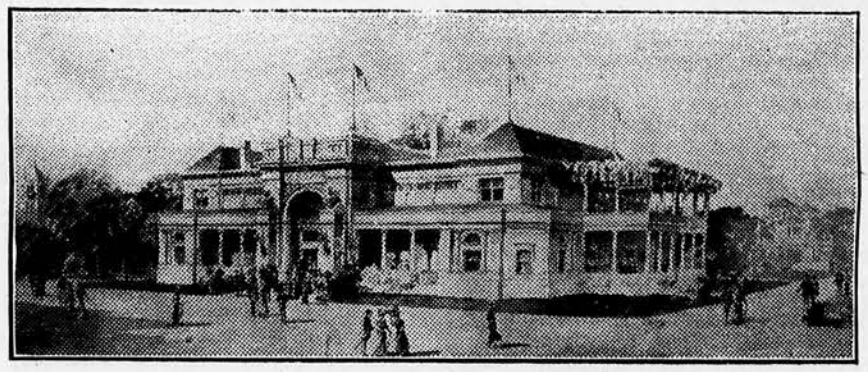
1. By chemical methods, which consist in the addition of germ poisons or antiseptics, which either kill the germs or prevent their growth. Of these the principal ones used are salicylic, sulfurous, boracic, and benzoic acids, formalin, fluorides, and saccharin. As these substances are generally regarded as adulterants and injurious, their use is not recommended.

2. Mechanical means are sometimes employed. The germs are either removed by some mechnical means, such as filtering or a centrifugal apparatus, or they are destroyed by heat, electricity, etc. Of these, heat has so far been found the most practical.

When a liquid is heated to a sufficiently high temperature all organisms in it are killed. The degree of heat required, however, differs not only with the particular kind of organism, but also with the liquid in which they are held. Time is also a factor. An organism may not be killed if heated to a high temperature and quickly cooled. If, however, the temperature is kept at the same high degree for some time, it will be killed. It must also be borne in mind that fungi, including yeasts, exist in the growing and the resting states, the latter being much more resistant than the former. A characteristic of the fungi and their spores is their great resistance to heat when dry. In this state they can be heated to 212° F. without being killed. The spores of the common mold are even more resistant. This should be well considered in sterilizing bottles and corks, which should be steamed to 240° F. for at least fifteen minutes.

Practical tests so far made indicate that grape juice can be safely sterilized at from 165° F. to 176° F. At this temperature the flavor is hardly changed, while at a temperature much above 200° F. it is. This is an important point, as the flavor and quality of the product depend on it.

This bulletin being intended for the farmer or the housewife only, the writer refers such readers as desire to go into the manufacture of grape juice in a systematic manner for commercial purposes to Bulletin 24, Bureau of Plant Industry, Department of Agricul-



Kansas Building at the World's Fair.

The Kansas Commissioners for the Louisiana Purchase Exposition are taking active and well-planned measures to secure and arrange exhibits from this State which shall be truly representative. The Kansas building will be a neat and imposing structure, as shown by the illustration herewith.

many Asiatic wines were stored in bottles which were hung in the corner of fireplaces, where, by evaporation, they became dry." This process was called "fumarium."

The Greeks had two kinds of wine, "protoplon," or first juice of the grape before pressing, and "denterion," or pressed juice. The Romans called them "vinum primarium" and "vinum secondarium." Some of them drank the juice before fermentation had started, and called it "mustum." After the must or juice had been through a heating process (called "reduction" nowadays), they called it "frutum," and when, after long heating, it had been reduced to one-half or one-third its original volume, they called it "sapa." This was used by the Romans on their bread and was equivalent to what we now call grape syrup.

In Europe physicians often send their patients to the wine-growing districts during vintage time to take daily rations of the fresh juice as it comes from the crusher. This, however, restricts its use to a brief season of the year and to the immediate vicinity of the vineyards, or to individuals who are yet strong enough to undertake the journey. Of late years repeated efforts have been made to prevent the juice from fermenting and to preserve it in vessels of such size and shape as can be easily transported, thus rendering its use possible at all times of the year. Until recently its use has been almost exclusively restricted to juice for medicinal or sacramental purposes. Unrestricted and general use has been retarded through lack of knowledge of the principles underlying the process of manufacture. This lack of knowledge and of the necessary skill in applying it has resulted in many failures, thus rendering the production

ture, on the same subject, this publication treating only of methods that can be applied in every home.

HOME MANUFACTURE.

Use only clean, sound, well-ripened but not over-ripe grapes. If an ordinary cider mill is at hand, it may be used for crushing and pressing, or the grapes may be crushed and pressed with the hands. If a light colored juice is desired, put the crushed grapes in a cleanly washed cloth sack and tie up. Then either hang up securely and twist it or let two persons take hold, one on each end of the sack and twist until the greater part of the juice is expressed. Then gradually heat the juice in a double boiler or a large stone jar in a pan of hot water, so that the juice does not come in direct contact with the fire, at a temperature of 180° F. to 200° F.; never above 200° F. It is best to use a thermometer, but if there be none at hand heat the juice until it steams, but do not allow it to boil. Put in a glass or enameled vessel to settle for twenty-four hours; carefully drain the juice from the sediment, and run it through several thicknesses of clean flannel, or a conic filter made from woolen cloth or felt may be used. This filter is fixed to a hoop of iron, which can be suspended wherever necessary. After this fill into clean bottles. Do not fill entirely, but leave room for the liquid to expand when again heated. Fit a thin board over the bottom of an ordinary wash boiler, set the filled bottles (ordinary glass fruit jars are just as good) in it, fill in with water around the bottles to within about an inch of the tops, and gradually heat until it it about to simmer. Then take the bottles out and cork or seal immediately. It is a good idea to take the further precaution of sealing the corks over with sealing wax or paraffin to prevent mold germs from entering through the corks. Should it be desired to make a red juice, heat the crushed grapes to not above 200° F., strain through a clean cloth or drip bag (no pressure should be used), set away to cool and settle, and proceed the same as with light-colored juice. Many people do not even go to the trouble of letting the juice settle after straining it, but reheat and seal up immediately, simply setting the vessels away in a cool place in an upright position where they will be undisturbed. The juice is thus allowed to settle, and when wanted for use the clear juice is simply taken off the sediment. Any person familiar with the process of canning fruit can also preserve grape juice, for the principles involved are identical.

One of the leading defects so far found in unfermented juice is that much of it is not clear, a condition which very much detracts from its otherwise attractive appearance and due to two causes already alluded to. Either the final sterilization in bottles has been at a higher temperature than the preceding one, or the juice has not been properly filtered or has not been filtered at all. In other cases the juice has been sterilized at such a high temperature that it has a disagreeable, scorched taste. It should be remembered that attempts to sterilize at a temperature above 195° F. are dangerous, so far as the flavor of the finished product is concerned.

Another serious mistake is sometimes made by putting the juice into bottles so large that much of it becomes spoiled before it is used after the bottles are opened. Unfermented grape juice properly made and bottled will keep indefinitely, if it is not exposed to the atmosphere or mold germs; but when a bottle is once opened it should, like canned goods, be used as soon as possible, to keep it from spoiling.

MANUFACTURE OF LARGER QUANTITIES.

Another method of making unfermented grape juice, which is often resorted to where a sufficiently large quantity is made at one time, consists in this:

Take a clean keg or barrel (one that has previously been made sweet). Lay this upon a skid consisting of two scantlings or pieces of timber of perhaps 20 feet long, in such a manner as to make a runway. Then take a sulfur match, made by dipping strips of clean muslin about 1 inch wide and 10 inches long into melted brimstone, cool it and attach it to a piece of the wire fastened in the lower end of a bung and bent over at the end, so as to form a hook. Light the match and by means of the wire suspend it in the barrel, bung the barrel up tight, and allow it to burn as long as it will. Repeat this until fresh sulfur matches will no longer burn in the barrel.

Then take enough fresh grape juice to fill the barrel one-third full, bung up tight, and roll and agitate violently on the skid for a few minutes. Then burn more sulfur matches in it until no more will burn, fill in more juice until the barrel is about two-thirds full; agitate and roll again. Repeat the burning process as before, after which fill the barrel completely with grape juice and roll. The barrel should then be bunged tightly and stored in a cool place with the bung up, and so secured that the package can not be shaken. In the course of a few weeks the juice will have become clear and can then be racked off and filled into bottles or jars direct, sterilized, and corked or sealed up ready for use. By this method, however, unless skillfully handled, the juice is apt to have a slight taste of the sulphur.

COMPOSITION OF UNFERMENTED GRAPE JUICE.

Herewith are given the component parts of a California and a Concord unfermented grape juice, the former being analyzed by the California Experiment Station, the latter by the Bureau of Chemistry, United States Department of Agriculture:

	Concord. Per ct.	California. Per ct.
Solid contents	20.37	20.60
Total acids (as tartaric)	.663	.53
Volatile acids	.023	.03
Grape sugar	18.54	19.15
Free tartaric acids	.025	.07
Ash	.255	.19
Phosphoric acids	.027	.04
Cream of tartar	.55	.59

This table is interesting in so far that California unfermented grape juices are made from Viniferas or foreign varieties, whereas the Concord is a Labruska or one of our American sorts. The difference in taste and smell is even more pronounced than the analysis would indicate.

FLAVOR AND QUALITY IN GRAPE JUICE.

In the making of unfermented grape juice a great deal of judgment can be displayed and many variations produced so as to suit almost any taste by the careful selection of the varieties of grapes from which it is made. From the Mission grape, for instance, when fully ripe, a juice would be obtained that would be delicate and simply sweet, without any other taste; from the Muscat we would get that rich musky flavor found in our leading raisins; in the Concord that sprightly foxy taste so well known; in the Catawba or Isabella that fragrance so peculiarly their own, and in the Iona a pleasing, mild, yet just pronounced enough aroma and taste to strike the right spot. Thus we might continue along the list.

Equally as pronounced variations in color can be had, as, for instance, almost colorless, yellow, orange, light red, red, and a deep purple.

The writer has often been asked what kind of grapes should be used in making unfermented grape juice, when, as a matter of fact, it can be made from any grape; not only this, but unfermented juice is made from other fruits as well, for instance, apples, pears, cherries—and berries of different kinds yield excellent juices. It is really good judgment in selecting the right varieties when planting for fruit production. That also determines the quality of our unfermented juice. For instance, the richer, sweeter, and better in quality the fruit we use, the richer, sweeter, and better will be our unfermented juice. If, on the other hand, the fruit is sour, green, and insipid, the juice will be likewise. As stated before, the intention of this bulletin is to show how to avoid some wastes, and to increase income by utilizing those products of which there is a surplus, and instead of, as is usually done, letting them rot, convert them into something that can be kept, used, and disposed of at any time when desired, or when fresh fruit is not available.

USES OF UNFERMENTED GRAPE JUICE.

The uses are indeed many. It is used in sickness, convalescence, and good health; as a preventive, restorative, and cure; by the young, by persons in the prime of life, and by those in old age. It is used in churches for sacramental purposes; at soda fountains as a cool and refreshing drink; in homes, at hotels, and at restaurants as a food, as a beverage, as a dessert, and in many other ways. When people become accustomed to it they rarely give it up. When properly prepared, unfermented grape juice can be made to please the eye by its color and attractive appearance, the sense of smell by its aroma or fragrance, the palate by its pleasant flavor.

It is food and drink, refreshment and nourishment, all in one. Not a by product, but made from fruit going to waste—one of the blessings given us, that some are too careless, others too ignorant, to make use of.

FOOD VALUE OF UNFERMENTED GRAPE JUICE.

The effects of unfermented grape juice on the human system have been studied for a number of years, especially at the so-called grape cures so long in vogue in Europe. A smaller number of investigations have been made in laboratories.

It is quite generally claimed that using a reasonably large amount of unfermented grape juice with an otherwise suitable mixed diet is beneficial and that digestion is improved, intestinal fermentation diminished, and that gains in body weight result. It should not be forgotten that the abundant diet and hygienic methods of living practiced at the grape cures play an important part, but even taking all this into account it seems fair to conclude that some of the good results can be directly attributed to the unfermented grape juice.

Grape juice contains the same kinds of nutrients as other foods. The percentage of water is high, and thus it resembles liquid foods more closely than solid foods. It is sometimes compared with milk, the most common liquid food. It contains less water than milk, more carbohydrates, and less protein, fat, and ash. Carbohydrates, largely present in the form of sugar, are the principal nutritive ingredients. It is evident, therefore, that grape juice is essentially an energy-yielding food, and may help the body to become fatter, though it can not materially assist in building nitrogenous tissue. Sugars in moderate amounts are wholesome foods, and grape juice offers such material in a reasonably dilute as well as palatable form. Undoubtedly the agreeable flavor increases the appetite, a by no means unimportant consideration.

A FEW GOOD RECEIPTS.

Grape Nectar.—Take the juice of two lemons and 1 orange, 1 pint of grape juice, 1 small cup of sugar, and a pint of water. Serve ice cold. If served from punch bowl, sliced lemon and orange add to the appearance.

An Invalid Drink.—Put in the bottom of a wineglass 2 tablespoonfuls of grape juice; add to this the beaten white of 1 egg and a little chopped ice; sprinkle sugar over the top and serve. This is often served in sanitariums.

Grape Punch.—Boil together 1 pound of sugar and half a pint of water until it spins a thread; take from the fire and when cool add the juice of 6 lemons and a quart of grape juice. Stand aside overnight. Serve with plain water, apollinaris, or soda water.

Grape Sherbet.—For 8 persons mix 1 pint of grape juice (unfermented), juice of lemon and 1 heaping teaspoonful of gelatine, dissolved in boiling water; freeze quickly; add beaten white of 1 egg just before finish.

Grape Ice Cream.—One quart of unfermented grape juice, 1 quart of cream, 1 pound of sugar, and the juice of 1 lemon.

Syllabub.—One quart of fresh cream, whites of 4 eggs, 1 glass of unfermented grape juice, 2 small cups of powdered sugar; whip half the sugar with the cream, the balance with the eggs; mix well; add grape juice and pour over sweetened strawberries and pineapples, or oranges and bananas. Serve cold.

Bohemian Cream.—One pint thick cream, 1 pint grape-juice jelly; stir together; put in cups and set on ice. Serve with lady fingers.

Besides the recipes just given many more are enumerated, such as grape ice, grape lemonade, grape water ice, grape juice and egg, baked bananas, snow pudding, grape gelatine, junket and grape jelly, tutti-frutti jelly, grape float, grape jelly, grape juice plain, grape soda water, and scores of others.

Forest preservation and home building are hobbies—specialties of President Roosevelt. In his speech at Grand Canyon, Ariz., he delivered this sound advice: "Whether it is the forests, the water, the scenery, whatever it is, handle it so that your children's children will get the benefit. We have gotten past the stage when we are to be pardoned if we simply treat any part of our country as something to be skinned for two or three years for the use of the present generation. Apply irrigation under circumstances that will make it of benefit, not to the speculator who hopes to get profit out of it for two or three years, but so that it will be of use to the home makers—to the man who comes to live and have his children stay after him."

How He Got Even.

The son of a well known Philadelphia minister had misbehaved, and to punish him he was not allowed to eat at the family table. A small table was set for him in the corner of the dining room. When his dinner was placed before him the little fellow said very solemnly:

"Lord, I thank Thee that Thou hast spread a table before me in the presence of mine enemies."

Miscellany.

To Increase the Yield and Certainty of the Wheat Crop.

PROF. MARK A. CARLTON, OF KANSAS, CEREALIST OF THE U. S. DEPARTMENT OF AGRICULTURE.

The semi-arid section of the great plains where our largest crops of wheat are grown can easily be improved and the annual yield doubled. Crops are grown in this region without irrigation, and the conditions at times are very discouraging. They are characterized at times by great extremes, occasional harvests, and partial or entire failure following each other at intervals of two to five years. These occurrences are closely associated with corresponding periods of extremes in temperature and rainfall. Such extremes also often occur during the same season, so that the weather in a single season may be so favorable for one crop as to secure an excellent harvest, yet be exceedingly unfavorable for some other crop.

For example, in the Middle States of the plains it is seldom that large harvests of both wheat and corn are obtained in the same year. As the wheat harvests in this section are, with a good rainfall, always excellent compared witn those of other districts, any improvements that would insure conditions favorable to a good average harvest in all seasons are of the greatest importance.

There will not soon be more new lands to be opened to settlement that are suitable for wheat culture, consequently an increase in the average yield of such lands as these is one of the means which must be depended upon in order to increase the general supply of wheat. Moreover, it is a matter worthy of note that wheats grown in semi-arid districts possess a very high quality of grain. They are always hard-grained, and furnish a large amount of gluten of the best quality. The same climatic features that cause aridity—namely, extreme heat and drouth—are, fortunately, those which also produce an excellent quality of grain when acting in conjunction with a soil rich in nitrogen.

It is only in exceedingly small portions of the wheat-growing areas, especially in Utah, Idaho, and Colorado, that wheat has been grown by irrigation. It is the testimony of irrigation engineers and cultivators that the cost of irrigation is entirely too great to justify the practice. There are much cheaper ways to fight this drouth problem.

It may be noted by any careful observer that occasionally there are farmers in semi-arid districts who seem always to have a good crop of wheat whatever the season, even when there may be failures of the crop all about them. As other farmers in the vicinity have the same climate, and approximately the same kind of soil, such differences in the results can not be due to differences in these conditions. They are simply due to certain methods of agriculture adopted by these farmers by which they are able to overcome unfavorable conditions of the weather.

Russian farmers, who settled years ago in various portions of the great plains, have been especially successful in wheat-growing in these localities. Coming originally from regions of constantly recurring drouths and cold winters, they have long learned how best to combat such adverse conditions. Many of these farmers, including a large number of the Mennonites from the government of Thaurida, who settled in McPherson, Harvey, Ellis, Graham, and other counties of Kansas, have always grown wheat quite extensively and with comparatively few failures.

During the years of 1895 and 1896, when the wheat crop was almost an entire failure in large portions of the great plains, these farmers continued to have good harvests. In the autumn of 1896 I visited a number of these farms in McPherson County, when most of the thrashing had been done and much of the wheat was being hauled to the markets. The usual average yield was twenty-two to twenty-five bushels per acre, and occasionally there were yields of thirty to thirty-five bushels, the grain generally overweighing, reaching often sixty-two pounds to the bushel.

Great success has attended the practices of the Russian settlers in various localities of the great plains. These people have simply followed the method they learned in their native land. In the southern and eastern wheat districts of Russia the people have contended with extremes of climate even more severe than ours for long periods of time. They have learned to get the best results possible under adverse conditions. Even the peasants, crude as their methods and ignorant as they would doubtless seem to us, have long been familiar with certain principles of agriculture not yet very fully recognized in our own country.

There are many systems of crop rotation followed in the semi-arid districts of Russia, some of them having been practiced for many years. One system consists in planting melons as the first crop on new ground, followed by "kubanka" or "gharnoka" wheat (macaroni varieties), then a hard, red wheat, then a softer wheat or pasture crop. The land is then allowed to rest one or two years and a similar series of crops is afterward repeated.

There are often three, five, and seven-year systems, in which, by the use of several fields it is possible to grow several different crops each year without growing the same crop twice in succession on the same field, while a period of rest can be given regularly to each field also if desired. In any system it is always the aim to grow melons or macaroni wheat on new land. Summer fallowing is practiced considerably, but by no means in all cases. On the other hand, wheat is sometimes grown several years in succession on the same land, as is too often done in this country. But whatever the system of cropping, and whether summer fallowing is practiced or not, early plowing at first and thorough tillage thereafter until seeding time are never neglected.

The condition of soil and climate of our semi-arid districts are such as are adapted for the growth of the glutinous, hard-grained wheats. There are three general classes of wheats from which we should select varieties that are in various degrees more resistant to the adverse conditions of these districts than those now grown, and therefore able to produce larger average yields. These are the red spring wheat, the hardy winter wheats, and the macaroni varieties.

It would be supposed that many varieties of red spring wheats could be obtained better fitted for cultivation in the Dakotas than the well-known "fifes" and "bluestems," now grown in those States. Even these excellent varieties are seriously damaged by drouth and can not be depended upon every season. There are several Russian wheats which I would recommend to take the place of our red spring varieties that will stand the severest extremes of our climate. The best of the varieties is simply called "Russian." It is a bearded sort, very hard, and red grained, and is grown in eastern Russia. The next best is the "Spring Ghirka," which is without beards. This latter grain is the chief export variety of the Volga region.

The establishment of winter wheats is the most difficult problem in the entire work of securing wheats adapted to semi-arid conditions. The difficulty encountered is the question of both drouth and cold. Winter wheat is always the best to grow for many reasons. Winter varieties yield larger crops and grow better grain than spring wheats, and they particularly overcome effects of spring drouth on account of great reserve force in root growth attained the previous autumn. Besides, winter sorts are often more likely to escape certain diseases on account of their earlier maturity.

To show the value of the use of these hardy varieties of the Russian type one need only to call to mind the Crimean wheat, known under the misleading name of "Turkey," which has been grown for twenty-five years or more in Kansas, and is now grown extensively in Nebraska, Iowa, and Oklahoma, and to a lesser extent in other parts of the country. By its hardiness it has entirely revolutionized the winter wheat industry of the middle plain States. Fresh importations of seed from the Crimean or other parts of the government of Taurida have been made at different times, until now the variety is universally recognized as an indispensable component of the agriculture of these States.

By means of this single variety alone the winter-wheat flour of these States has risen in reputation to be a well-recognized rival in foreign markets of the output from Minneapolis and Budapest. Its cultivation has at the same time caused a very marked extension of the winter wheat area, which was not before possible because of the severity of the winters.

The best of the winter varieties to be obtained from Russia is the "Kharkov," winter wheat from the eastern part of Kharkov government, near Starobelsk. This district possesses a climate nearly as severe as that of South Dakota. Summer drouths are common, and in winter the effect of the cold is much increased by the dry, piercing winds and absence of snow. This wheat is, therefore, probably one of the hardiest of all winter varieties, and ought to be able to withstand the winters of South Dakota and Minnesota. It is bearded and has a white chaff and a very hard red grain.

At this point it may be noted that all of the most hardy winter wheats are bearded, and usually have a white chaff, though the grain is red. The Turkey, or Crimean, is of this kind. It is probable that all these Russian hardy winter wheats are of one common general type, but possess different degrees of hardiness, depending upon the climate of the locality in which they are grown.

The greatest endurance of drouth is exhibited by wheats called "macaroni" wheats. In eastern Russia, Turkestan, and Algeria these wheats flourish under decidedly extreme climatic conditions. Should this variety be grown in any of the States of the great plains, during seasons of unusual drouth, the yield would be from two to four times as great as that of the ordinary wheats. Besides, under such weather conditions, macaroni will yield an average of at least fifty bushels to the acre. In addition to drouth, this wheat has the advantage of being resistant to the attacks of leaf rust and other parasitic fungi. Including Nebraska, south, it can be grown as a winter wheat, while north of Nebraska it should be grown as a spring wheat.

Regarding the question of maintaining and improving the quality of wheats, the practice of the best methods of culture, with varieties most resistant to drouth and cold, should still be supplemented by constant selection of the best grain each year for seeding the next crop. Having once secured a variety as nearly as possible ideal for the locality, it is then necessary to maintain the standard of the variety. But it is possible to do more than that; the variety may be so improved that it will become much hardier and more prolific than the crop produced by the original seed.

The Turkey wheat, even with the crudest sort of seed selection, has shown much improvement in hardiness in recent years, and is now grown much farther north than formerly. In some instances it seems also to have improved in drouth resistance.

If we select the hardiest varieties at present at our command and practice the most rigid selection of seed from the hardiest plants each year, a still hardier crop will result, which can be successfully established in a new locality, with a climate still more severe, and the same process of selection can be repeated.

It is my belief that in this way the winter wheat area may be extended northward almost indefinitely. There is an especially good opportunity for making improvements in these ways in seasons of unusually severe weather, like the year 1898-9 in Nebraska, or in seasons of unusually severe drouth, if one is particular in such cases to select seed from the surviving portions of the crop in fields most exposed to the weather. Spring wheats may of course be improved in a similar way with respect to drouth resistance, yield and early maturity.

Uncle Sam's Finances.

Assistant Secretary of the U. S. Treasury Keep has made a summarized statement of the principal financial operations of the Government for the fiscal year closed June 30.

The revenues of the Government from all sources for the year ending June 30, 1903, are shown to have been $558,887,526.

The sources of revenue were as follows:

Customs, $283,891,719; internal revenue, $230,115,256; miscellaneous sources, $44,880,551.

The expenditures for the year were $506,176,590, as follows: Civil and miscellaneous, $125,018,312; war (including rivers and harbors), $118,549,683; navy, $82,696,803; Indians, $12,931,056; pensions, $138,425,618; interest, $28,556,618.

The surplus for the year is $52,710,936.

In comparison with the fiscal year ended June 30, 1902, the revenues showed a decrease of $5,500,707, and expenditures an increase of $34,985,732. The surplus shows a decrease of $38,576,439.

The revenues from the customs increased $29,477,010.

The internal revenue receipts decreased $41,764,866, due wholly to the operation of the war revenue repeal act.

The miscellaneous receipts increased $8,727,148. More than half of this increase is due to larger sales of public lands. The surplus for 1903 is $9,710,936 greater than was estimated.

These figures do not include the revenues and expenditures of the postal service.

The available cash in the treasury on June 30, 1903, was $231,545,012, an increase of $19,357,651 over the cash in the treasury at the corresponding date in 1902.

The total amount of gold in the treasury on June 30, 1903, was $631,639,898, an increase of $72,957,780 over the net amount in circulation at the beginning of the year.

The outstanding gold certificates, less the amount of same in the treasury on June 30, 1903, were $373,356,789, an increase of $71,439,598 over 1902.

The treasury notes of 1890, which amounted to $30,000,000 at the beginning of the fiscal year, have, by the coinage of silver bullion into standard silver dollars and subsidiary silver, been reduced to $19,243,000.

The amount of public moneys held by National bank depositories on June 30, 1902, was $123,983,067, and on June 30, 1903, $151,724,482, and increase for the year of $27,741,365. The number of depositories on June 30, 1903, is 710, an increase of 136 for the year.

Under the provisions of the secretary's offer of March 26, 1903, the amount of bonds refunded to June 30, 1903, was $74,202,400. In effecting this exchange, the Government has paid out $3,221,024 in cash for adjustment of premiums and accrued interest, and the annual interest charge on the interest-bearing debt of the United States has been reduced $1,339,962. Bonds to the amount of $16,529,600 have been purchased during the year for the sinking fund, reducing the annual interest charge by $661,437.

The total circulation of National banks on June 30, 1903, was $413,670,650. The increase for the year was $55,998,559.

The comptroller of the currency reports that during the fiscal year just closing, 537 new National banks have been organized. Of these new banks, 339 have capital of $25,000 each, approximately, and have been organized in places having a population of less than 3,000. Of these new $25,000 banks, about 42 per cent are not strictly new financial institutions, but are conversions or reorganizations, under the National bank laws, of State and private banks already in existence. Five National banks have failed during the last twelve months and seventy-two have gone into voluntary liquidation. During the year ended June 30, 1902, three banks failed and sixty-eight went into voluntary liquidation. The consolidation and absorption of smaller and weaker banks by larger institutions is reflected in a number of voluntary liquidations.

Lambs may gambol, but they also get fleeced. Don't depend upon the cheap mail order sheets when you want to buy. The KANSAS FARMER advertises nothing that is not reliable. Not if it knows it.

Every farmer in Kansas needs the KANSAS FARMER. Now is the time to subscribe. Take advantage of our "Blocks of Two" offer.

FOUGHT THE BRITISH ALL DAY.

(Continued from page 717.)

pleted a hard and confining year's work; and those who are not old enough for school have had just as strenuous a time learning to keep within the bounds of conduct insisted upon by their parents. The holiday, a day of real genuine mock fighting against an imaginary foe that couldn't fight back—how much good it did them. To every boy and to a good many girls their is joy in a big noise. "What makes a boy like to jump and holler?" was asked by one of those youngsters who will make a future for himself. When the nervous people answer this question and its companion, "How shall a quiet breed of boys be pro duced?" it will be time to consider the practicability of getting twentieth-century youngsters ranged in rows on benches and reading the declaration to them and keeping them still during the delivery of a Websterian oration or a sermon on the beauties of patriotism.

Speaking of patriotism, the writer is much inclined to agree with the boys that a big noise with dynamite, long continued, is the real thing.

And if young and old take a vigorous play spell occasionally and play hard from early morn to dewy eve we renew our youth and strength thereby.

CULTIVATION FOR CONSERVATION OF MOISTURE.

The more than liberal precipitation on Kansas cornfields during May and June can not be taken as a guaranty against want of moisture during July unless conserved by intelligent cultivation. The necessity for cultivation for the destruction of weeds and grass has assured the stirring of the soil—the breaking of the crust—to the great advantage of the corn crop in the protection of soil moisture from evaporation. Possibly the incentive to cultivate for the destruction of weeds will be present throughout the season even in corn that is too large for the cultivator, and at times when the alfalfa and other crops require immediate attention. But the purpose of this writing it to remind the corn-grower that the only available method to counteract the effects of such July weather as sometimes shortens the corn crop is to break the forming crust after every rain before it becomes a hard, dry mortar-bed. True, if the land has recently been in alfalfa or clover or has been repeatedly treated with manure during the last few years, the tendency to become hard and dry will be found to have been greatly reduced with corresponding immunity of the crop to dry weather; but in any case stirring the soil after rain, when it is in proper condition to work nicely, benefits the crop.

These suggestions are applicable more especially to the treatment of late-planted corn. The season may continue such that measures for preventing excessive evaporation will be unnecessary, but the crop can be made almost sure by judicious cultivation. It should be remembered that, to be effective in retaining moisture, the cultivation must not be deferred until after the moisture shall have been stolen by the sun and wind. True, there is usually moisture in the subsoil for a considerable time after it has disappeared from the surface. This lower moisture can be kept down by breaking the surface crust. Little, probably nothing, is gained by repeatedly stirring the dust mulch after it has been formed. Very little moisture rises through a dust mulch. But, when a shower occurs, followed by the formation of a crust, capillary action is at once established and the theft of the moisture from the subsoil proceeds with marvelous rapidity under the July or August sun, and the corn is soon seen to be in worse condition than before the shower. The evident remedy is to prevent the formation of the crust. The judicious expenditure of a moderate amount of labor, in this way, at the right time, may save from destruction the work of the season.

SOME GLIMPSES OF FARMING A GENERATION AGO.

It is interesting to look into the past and see what farmers and farm papers were saying a generation ago. From tne New England Farmer of July, 1857, we copy the following communication, which is signed "Agricola:"

"CHINESE NORTHERN SUGAR-CANE.

Mr. Editor:—It does not seem to be generally understood that the Chinese sugar-cane is even more valuable for fodder than for the production of sugar, as it can be cut repeatedly for the former purpose, and no kind of provender is equally fattening for cattle. As the past winter has been one of more than ordinary length, it has caused a great exhaustion of hay, and other feed suitable for cattle and horses, and as it has been followed by an extremely late spring, it is highly important that our farmers should avail themselves of this valuable addition to our agricultural products, in order to replace the deficiency of grass and other feed requisite for our cattle and horses.

"The Chinese sugar-cane, as a crop for fodder, may be planted with success so late as the middle of June, and there is consequently plenty of time for all agriculturists to avail themselves of the great advantages presented by this plant. Our citizens have also a large interest in this important culture, as the price of beef, butter, and various other articles of vast consumption, will be greatly enhanced, if the deficiency in the early grass crop is not replaced by the additional culture of the Chinese sugar-cane."

There was in those days much doubt about the success of the mowing-machine. Those who had experience with the earlier "mowing" machines alluded to in the article copied below thought the doubt well founded:

"MOWING-MACHINES.

"The time is near at hand when the value of these implements of farming is to be thoroughly tested. Thus far the impression has been decidedly in their favor. We have heard of no one who has tried their use, who have not thought them among the best labor-saving operations about the farm.

"Some object to the large expense in the first instance, as being disproportionate to the benefits derived. Wherever there are 100 acres of grass to be cut, the saving in one season would more than pay for a machine. There are few hay-growing neighborhoods, where there can not be found farmers enough to become joint owners of a machine, taking their chance to have it when their turn comes. But perhaps the best way would be for one to procure a machine and a team to move it; and then do the work for himself and others. Manny's machine we have known to work well, and Heath's we are assured may be expected to do better."

Practices in Crop Rotation.

BY GEORGE K. HOLMES, OF THE DIVISION OF STATISTICS, U. S. DEPARTMENT OF AGRICULTURE.

COURSES PURSUED IN THE PAST.

Since the early days of agriculture in every part of this country farmers first robbed the soil of its fertility and then resorted to various devices to get a paying crop. A favorite device was to run away from the problem and seek new land; another, to give the land a complete rest from production. In the meantime live stock increased, and barn manure, at first a farm nuisance, was more and more applied to the land, manures were composted, commercial fertilizers were employed, and sod was plowed under every few years. A true conception of the benefit, almost necessary, of rotating crops gained a foothold under the stress of hard conditions, and thus expanded into farm practice, even to the extent of raising manuring crops for the sake of plowing them into the soil.

The poverty of the soil and the want of a "money crop," before neighboring urban populations became important, and while farming communities were isolated for want of railroads and navigable rivers, early forced the New England farmers into a varied agriculture and dairying, and the long, inclement winter confined the live stock in yard, shed, and stable. New England is a region of high production per acre.

In proceeding Westward from the East, the rule is, the longer the occupation the more developed the crop rotation. A diminution in the degree of rotation hardly appears until Ohio is passed, and then the diminution is gradual until in the longitude of middle Kansas rotation is of the simplest, when existing at all. Agriculture in a great portion of the North Central States began with one-crop or two-crop production.

The one-crop cotton planters in the South followed the new land westward until they could find no more; then they let the land rest, and afterwards used commercial fertilizer for many years, and they have only just begun to enter a phase of simple and effective crop rotation without much aid from live stock.

In the rainy part of the Pacific Northwest the history of crop rotation is about the same as that of the middle and western parts of the North Central States. Little history has yet been made in this matter by the arid and semiarid regions; aside from the growing of alfalfa agriculture remains as it began, except that there is a gradual diminution of soil fertility, even under irrigation, where alfalfa is not grown.

GENERAL VIEW OF THE PRESENT.

The present paper has been prepared from reports made by thousands of correspondents of the Department of Agriculture, representing every agricultural county in the United States; the statements regarding customs and farm practices, including crop rotations, in the different sections of the country are summaries of these reports.

Little systematic rotation of crops is found in this country. One-crop farming is still practiced in some parts, as corn on bottom land or cotton in the South, corn or wheat in the North Central States and the Southwest, and wheat on the Pacific coast. The constant cropping of the "corn bottoms" of the South and of the North Central States is sustained to some extent by the annual deposit from freshets. The cotton land receives commercial fertilizers, and much of it is rested every few years, but is in a low condition of fertility. The continuity of wheat or corn in the North Central and Pacific States is broken by complete rest in many counties, and the soil is becoming less productive. Rest for the soil is not a common practice in the North Central States; the extension of crop rotation is preventing this.

Haphazard is a mild word to describe the impression given by the reports of correspondents with regard to the rotation of crops in many counties and parts of counties of the United States. Although there may be an annual change of crop on the same land, this change is so uncertain, so unsystematic, that at first it seems impossible to establish order out of the chaotic mass of particulars. Some fundamentals may be discerned, however, in a broadly general sense.

Throughout the region north of the cotton belt there is a three-crop rotation which may be regarded as a system with innumerable variations. These crops are corn, small grain (wheat, oats, barley, rye), and grass or legumes; and the period covered by the rotation in some of its variations is commonly four or five years and not infrequently extends to eight or ten or more years, the length of the period depending mostly upon the ability of the grass or legumes to remain productive. Sooner or later most of the tillable land that is not bottom land or is not devoted to one crop, fruit or vegetables, passes through this rotation, but often with interruptions or the admixture of other crops in the effort to adapt the products to markets, prices, soil, weather, and the special or general objects of farming.

In some regions which produce considerable tobacco, potatoes, or beans, a portion of the land that would otherwise be given to corn may be given to one of these crops in this general rotation.

This fundamental rotation north of the cotton belt will better be understood by noticing the variations presented in the list of leading rotations contained in this paper.

In the cotton belt, as far as any systematic rotation of crops is discoverable, it is cotton and corn, but this is subject to the repetition of cotton because of larger area than corn, to the resting of the soil for a year, to the inclusion of cow-peas, and of various small crops of sorghum, oats, sweet potatoes, etc., in the course of several years, during which the primary rotation may have occurred two or three times. Variations of the primary cotton rotation will be observed in the subsequent list of leading rotations.

In the arid and semiarid regions, which comprise that part of the country lying west of the one hundredth meridian, except a border on the Pacific Ocean, the crop rotation, outside of vegetable and fruit production, tends to maintain the growth of alfalfa as long as possible. In the reseeding year wheat or other small grain is sown. There is, however, considerable resting of land throughout this entire region as a poor substitute for renewing the fertility of the land by the use of alfalfa, for alfalfa is not grown where grain is the chief product. In western Oregon and Washington, where the rainfall permits the introduction of grasses, the rotation chiefly includes only small grains and grasses, and in some counties only the small grains.

For California, it is impossible to arrive at a fundamental crop rotation on account of radical differences in soil, water supply, and climate. The reports received show the practices to be almost as numerous as the counties, and indeed some counties have several practices in different parts. With regard to wheat and barley the general practice is that the land rests every second or third year, in which it produces nothing but weeds and wild oats. Some Pacific coast rotations are given in the list of leading rotations.

THE MORE GENERAL ROTATIONS IN WHICH SPECIFIED CROPS ARE GROWN.

In connection with the following rotations a few prominent counties are mentioned for illustration, and not because the rotations are confined to them. The States are leading or prominent ones in their geographical divisions. Grass, alfalfa, or the clovers, at the end of a rotation, generally continue as long as they are sufficiently productive.

CORN.

Pennsylvania.—Corn, small grain two years, grass two years (Bucks, Berks, Chester, York, etc.).

Illinois.—Corn indefinitely (Vermilion). Corn two years, small grain, grass (Champaign). Corn, oats, corn, oats, clover (Livingston, Peoria).

California.—Corn, wheat, oats (Napa).

Georgia.—Corn, oats, cotton (Thomas, Laurens). Corn, cotton two years (Burke). Cow-peas are frequent in either case, but are grown in the same year with either corn or oats.

Tennessee.—Corn, wheat, clover (Gibson, Obion, Giles). Corn two years, wheat cloves (Weakley). Corn with cow-peas, wheat (Lawrence).

WHEAT.

Pennsylvania.—Corn, wheat two years, grass two years (York, Franklin, etc.). Corn, oats, wheat, grass three years (Chester, Westmoreland).

Minnesota.—Wheat two years, oats, wheat, flax (Marshall). Corn, wheat two years, oats (Lac qui Parle). Corn, wheat two years, grass two years (Ottertail, Todd, etc.).

Washington.—Wheat, rest (Adams).

California.—Wheat, rest (Solano, San Joaquin, etc.).

Maryland.—Corn, wheat two years, grass two years (Montgomery, Frederick, Talbot, etc.). The rotation on dairy and stock farms includes wheat for only one year.

Oklahoma.—Wheat without rotation (Grant, Garfield, Kingfisher, etc.). Wheat, corn (Dewey). Wheat three years, oats (Kay).

OATS.

New York.—Oats three years, hay three years (Jefferson). Corn, oats, rye, hay two years (Ontario). Corn, oats, hay two years (Steuben).

Iowa.—Corn, oats, hay two years (Butler ,Floyd, Kossuth, etc.). Corn, oats two years (Cerro Gordo). Corn two years, oats, hay two years (Franklin).

Oregon.—Wheat, oats, corn or rest (Marion). Wheat, oats two years, grass (Linn).

South Carolina.—Corn, oats, cotton (Darlington, Edgefield, Sumter). Corn, oats, grass (Marion, Saluda).

Oklahoma.—Oats, corn (Oklahoma).

BARLEY.

New York.—Corn or potatoes, barley, wheat, grass two years (Orleans, Seneca). Corn, barley, grass two years (Steuben).

Minnesota.—Barley two years, clover two years (Wabasha). Barley, corn, oats, corn, wheat (Rock).

California.—Barley, rest (San Luis Obispo, Monterey, etc.).

RYE.

Massachusetts.—Corn, rye, grass two years (Franklin). Corn, oats, rye, grass two years (Hampden).

New Jersey.—Corn, rye, grass (Morris). Corn, potatoes, rye, hay, grass (Monmouth).

Michigan.—Corn, rye two years, clover two years (Allegan). Corn, rye, clover (Gratiot).

Kentucky.—Corn, rye, clover two years (Clark). Tobacco, rye, clover (Grant).

Rye occupies the same place as wheat in usual rotations, but is adapted to lighter soils.

BUCKWHEAT.

Pennsylvania.—Buckwheat, oats, rye, grass two years (Bradford, Wyoming). Buckwheat, oats, grass three years (Tioga).

West Virginia.—Buckwheat, wheat, grass two years (Marshall, Hampshire, etc.). Buckwheat, corn, wheat (Tucker). Buckwheat up to six years without change (Preston).

Wisconsin.—Buckwheat, rye, grass two years (Juneau). Potatoes two years, buckwheat, rye, corn (Juneau).

Corn and rye in two-year rotation, occasionally with buckwheat (Adams).

POTATOES.

Maine.—Potatoes, oats or barley, grass several years (Kennebec, Lincoln).

New York.—Potatoes, small grain, grass two years (Steuben, Seneca). Corn, potatoes, oats, rye, clover (Ontario).

Wisconsin.—Potatoes, grain two years, grass two years (Columbia, Portage, Waupaca). Potatoes, corn, potatoes, grass two years (Waushara). Potatoes, wheat, clover two years (Adams).

Colorado.—Alfalfa, potatoes, wheat, potatoes, wheat (Larimer). Peas, potatoes, wheat, rest (Conejos).

Virginia.—Potatoes two crops in one year, sweet potatoes two years, corn (Accomac). Potatoes and corn the same year, oats plowed in and cow-peas the second year (Northampton).

Kentucky.—Potatoes planted on sod, preferably clover (Kenton).

HAY.

New York.—Corn, small grain, hay three years (St. Lawrence, Delaware). Corn, oats, wheat, hay two years (Chautauqua).

Iowa.—Corn two years, oats, hay two years or more (Dubuque, Ringgold, Johnson, Fayette, and many other counties).

California.—Largely native grasses mowed indefinitely (Siskiyou, Modoc, Orange, Contra Costa). Alfalfa five years (Los Angeles).

Virginia.—Corn, wheat, hay three years (Shenandoah, Loudoun). Corn, wheat two years, hay two years (Rockingham, Warren, Page, Frederick, Augusta). Corn, oats, wheat, hay two to nine years (Tazewell, Wythe).

Kentucky.—Corn, small grain, hay two years (Bourbon, Jefferson).

COTTON.

In all cotton States the crop is grown to a large extent indefinitely on the same land without rotation, but with a year of rest now and then. Cow-peas are often sown in standing cotton or in the corn which alternates with cotton or are grown after small grain in the same year. The following rotations also are more or less practiced:

North Carolina.—Cotton, corn, peanuts, or small grain with cow-peas (Edgecombe, Johnson). Corn, cotton two years, small grain (Robeson). Corn, cotton (Sampson).

South Carolina.—Cotton, corn, small grain with cow-peas (Laurens). Cotton three years, corn with cow-peas (Orangeburg).

Georgia.—Cotton two years, corn with cow-peas (Burke). Cotton three years, small grain, corn, small grain with cow-peas (Baldwin).

Florida.—Cotton, corn with peanuts (Madison). Corn, cotton, corn, cotton, oats (Jackson).

Tennessee.—Cotton three years, corn (Shelby). Cotton two years, corn with cow-peas (Madison). Cotton repeated until the land is abandoned (Fayette).

Alabama.—Cotton three years, oats with cow-peas (Wilcox). Cotton two years, corn with cow-peas (Covington). Cotton, corn with cow-peas, small grain (Pike).

Mississippi.—Cotton, corn (Yazoo). Cotton, corn with cow-peas (Holmes).

Louisiana.—Cotton, corn (Iberia). Cotton two years, corn with cow-peas (Grant, Natchitoches).

Oklahoma.—Cotton without rotation (Payne, Lincoln, Pottawatomie, Greer, etc.).

Arkansas.—Corn, cotton, oats with cow-peas (Lee, Jefferson, etc.). Cotton continuous on bottom lands.

TOBACCO.

Connecticut.—Tobacco without rotation (Hartford). Corn (rye sown), (rye plowed under) tobacco, grass (Litchfield). Tobacco two years, corn, tobacco, clover (Tolland).

Pennsylvania.—Tobacco, oats, wheat, hay, (Clinton). Tobacco without rotation (Tioga, Bradford).

Ohio.—Tobacco, wheat, grass two years (Montgomery, Brown, and quite general).

Wisconsin.—Corn, tobacco three years (Jefferson, Rock). Tobacco without rotation (Crawford, Vernon, Columbia).

Virginia.—Tobacco, wheat, clover two years (Pittsylvania, Halifax, Charlotte, Lunenburg, Bedford, Brunswick, Nottoway, Cumberland, etc.). Tobacco, wheat (Halifax). Bright tobacco, rest (Mecklenburg). New land grows two to five crops of tobacco, then wheat.

North Carolina.—Tobacco, wheat, corn (Stokes, Nash). Corn, tobacco, hay, or rest (Pitt).

Kentucky.—Tobacco, wheat, clover (Graves, Caldwell, Webster). Corn, tobacco, wheat, clover two years (Christian). On new land, corn, tobacco, wheat (Graves, Logan).

FLAX.

North Dakota.—Wheat, flax, oats, barley, rest (Benson). Flax three years, small grain (Ramsey). Corn, flax, wheat, oats (Cass). Flax three years in five (Wells). Wheat two years, flax, wheat, oats (Grand Forks). Flax comparatively new in Ramsey and Wells.

SUGAR CANE.

Louisiana.—Cane two years, corn (Avoyelles). Cane three years, corn with cow-peas (Plaquemines).

RICE.

Georgia.—Rice, potatoes, corn (Camden).

Louisiana.—Rice without rotation (Plaquemines). Rice three years, other crops one year to clear the land of red rice (Iberia, Calcasieu).

PEANUTS.

Virginia.—Corn, peanuts (Nansemond, Sussex, Surry, Isle of Wight). Crimson clover with peanuts, cotton (Southampton). Peanuts, corn, vegetables (Nansemond). The great bulk of the crop is produced with corn in two-year rotation, cow-peas or crimson clover often being sown in the corn.

North Carolina.—Corn, peanuts (Hertford, Bertie). Corn with cow-peas, peanuts, cotton two years (Bertie). Corn, peanuts, oats with cow-peas, peanuts (Northampton).

KAFIR-CORN.

Kansas.—Kafir, rye, corn, millet (Rooks). Kafir, corn (Osborne, Russell). Kafir, corn, sorghum (Geary). Kafir after wheat in the same year, as a catch crop (Dickinson). Rotations not systematic; Kafir is largely a catch crop.

Oklahoma.—Kafir without change (Woods). Corn, Kafir, sorghum (Greer). Wheat and Kafir in the same year without other rotation (Oklahoma).

DAIRY AND LIVE-STOCK FARMS.

[d, dairy; ls, live stock.]

New York.—(d) Ensilage corn, oats with peas, grass three years (Delaware). (ls) Hay and pasture nearly permanent (Steuben).

Iowa.—(d) Corn, oats, grass three years (Kossuth, Winneshiek). (ls) Corn, oats, clover (Greene).

Nebraska.—(d) Corn, millet, sorghum, oats, alfalfa permanent (Valley); corn, wheat, clover two years (Colfax). (ls) Corn, wheat, with permanent wild grass for hay and pasturage (Buffalo); corn two years, oats, corn, oats (Burt, Thurston).

California.—(d) Ensilage corn, oats for hay (Sonoma); small grain two years, grass two to six years (Humboldt). (ls) Natural grass exclusively (Santa Clara); natural grass pasture, alfalfa hay—no rotation (Kings).

Virginia.—(d) Corn, soiling crop, small grain, hay, pasturage (Loudoun, Fairfax). (ls) Corn, small grain, grass three years (Fauquier, Shenandoah, Wythe, Carroll, etc.).

Kentucky.—(d) Corn, wheat or oats, grass three years (Campbell, Kenton, Shelby).

Tennessee.—(ls) Oats, grass indefinitely (Davidson); corn with cow-peas, oats, grass two years (Knox).

MULTIPLE CROPPING.

Multiple cropping was reported by correspondents to an extent that permits of a wide survey of the field. For the guidance of correspondents multiple cropping was defined to be "two or more crops usually harvested from the same field in the same year; pasturage is a crop, even if after hay or grain in the same year, and every cutting of grass is a crop." Pasturage, as a second or third crop, is prevalent; two or more cuttings of grass or legumes are common, especially where alfalfa is grown, nine cuttings of this forage plant, making 14 tons of hay per acre, being the largest number reported for irrigated land. A double crop of small grain and clover is numerously reported. Aside from the regions producing alfalfa, triple cropping is more generally found in Florida than elsewhere.

A high degree of multiple cropping in rotation is reached in the hot-house production of vegetables where the soil never rests; the limit is generally four crops a year in rotation.

The development of multiple cropping has been carried further in China than in any other country. Chan Laisun, in an address in Massachusetts in 1873, gave the following as an example of soil utilization by Chinese farmers and gardeners: "The plains of the southern and middle provinces are made to yield two or three crops in rotation every year; at the north only two. But when patches are laid out for raising vegetables, five, six, seven, and even eight crops are realized."

PRACTICES IN SELECTED STATES.

New England and New York.—Hay twice; hay and pasture; small grain and pasture (little); early potatoes or garden peas and turnips or cabbage; to some extent late vegetables follow early ones. Corn and beans, pumpkins, or turnips, occupy land together. Maine reports two crops of potatoes; early hay and Hungarian grass. New Hampshire—early hay and field-pea hay or turnips; green rye and peas or oats. Vermont—early hay and fodder corn, beans, green barley, or cabbage. Massachusetts—early hay and millet, barley, or winter squash; oat hay and barley; green rye and corn, oats, or millet. Rhode Island—barley and potatoes; rye and clover; 2 crops of hay and pasturage. Connecticut—corn and rape; 3 crops of clover; hay and fodder corn; green rye and silo corn. New York—hay and buckwheat; clover, 2 crops and seed; potatoes and beans or winter squash.

Illinois.—All grain and grass fields pastured after harvest. Wheat and corn, clover hay, pasturage, clover seed, millet (followed by pasturage), Hungarian hay, peas, or beans. Rye and millet (followed by pasturage) or cow-peas. Winter rye pastured until June, followed by millet. Oats and hay, clover, or cow-peas. Timothy hay and corn or pasturage. Strawberries and corn. Potatoes and millet, turnips, or corn. Clover hay and seed, sometimes followed by pasturage. Clover hay and millet, cow-peas, or beans. Corn and rape or turnips.

Wisconsin and Minnesota.—Alfalfa, 3 crops; hay, 2 crops; hay and pasturage; clover hay and seed. Double plowing confined to small areas, largely for soiling crops, as rye hay and fodder corn, pasturage and turnips, oat hay and millet, corn and rape. Early cut small grain and rape, millet, buckwheat, or turnips. Early clover hay and potatoes, turnips, fodder corn, millet, or buckwheat.

Iowa.—Substantially the same double croppings as prevail in Wisconsin and Minnesota. The pasturing of hay and grain stubble is general and plowing of winter grain stubble for fodder corn, millet, or rape is rather more frequent. Potatoes and turnips or cabbage. Alfalfa to 4 cuttings. Corn and pumpkins, rape, or rye; the latter two, for fall pasturage, grow together.

Nebraska.—Winter grain and pasturage, rape, turnips, or buckwheat. Potatoes and millet, rape, or rye. It is common to pasture wheat and rye all winter and then secure a crop of grain. Hay, 2 cuttings, or 1 cutting and pasturage; alfalfa to 5 cuttings; 2 crops of millet, oat hay, and sorghum hay. Rape or rye grows in corn for fall pasture. No double cropping in the semi-arid region.

Idaho and Wyoming.—Double cropping mostly dependent upon irrigation. Potatoes and turnips. Wheat and alfalfa hay. Small grain and hay, followed by pasturage. Two crops of oat hay, rye hay, potatoes, red clover, and timothy; alfalfa, 3 crops and pasturage.

Washington.—Two cuttings of clover, mixed hay, or alfalfa. Hay or small grain and pasturage. Peas and oats, potatoes and turnips, turnips and cabbage. No double cropping in eastern Washington, except for irrigation.

California.—In rainy districts hay or grain and corn, oats, clover, rape, or buckwheat. Strawberries and hay; vetches and corn or turnips; clover and potatoes; clover hay, seed, and pasturage. Two or more cuttings of hay; 8 months' pasturage and hay. Irrigated alfalfa to 9 cuttings; clover and tame grasses, 2 or 3 cuttings. In southern California, small grain and corn, potatoes, beans, pumpkins, turnips, Egyptian corn, or celery. Two crops of peas, potatoes, rye, oat hay, and summer and winter vegetables. No double cropping without irrigation in dry regions, except pasturage on hay and small grain stubble.

South Carolina and Georgia.—Small grains (especially oats) or potatoes and corn, cotton, cow-peas, sweet potatoes, millet, peanuts, sorghum hay, potatoes, or watermelons. Potatoes and cabbage, turnips, or other truck crop. All cultivated crops and crab-grass hay or pasture. Corn and cow-peas, turnips, or beans grow together on the same land, and 3 crops are obtained by growing any of these combinations after oats or wheat.

Florida.—Small grain stubbles produce all the crops noted for Georgia, and double cropping is much more general. "A crop of hay grows after all early cultivated crops;" "two or more crops on nearly all land. Three crops are raised in the following combinations: Cabbage, beans, and hay; melons, sweet potatoes, and turnips; potatoes, melons, and peas; 2 crops of hay and cabbage; cabbage, beans, and hay. Peculiar to this region are rice after vegetables, beggar-weed hay after corn or cotton, or 2 crops of beggar-weed hay. Tobacco is followed by Irish or sweet potatoes, peas, turnips, etc.

Kentucky.—Corn and stubble pasture, cow-peas, rape, sorghum, or beans. Wheat and millet, Hungarian grass, crab grass, rape, turnips, corn, sorghum, buckwheat rarely, or cow-peas with clover or with crab-grass. Oats and hay, cow-peas millet, or clover. Rye and millet, soy-beans, clover, or cow-peas with rape. Clover hay and seed; blue-grass seed and pasture; millet and corn; clover and sorghum or sweet corn with cow-peas; timothy, redtop, and clover with cow-peas; hay and cane for fodder; cow-peas growing with corn. Potatoes and sweet corn, beans, corn, or turnips. Onions and potatoes with cabbage. Two crops of hay, cow-peas, sorghum, and vegetables; alfalfa 3 to 4 cuttings (little grown). All grain and hay fields are pastured.

Louisiana.—Corn with cow-peas and crab-grass hay or pasturage. Oats and hay, cow-peas, sweet potatoes, pasturage, millet, cotton, or June corn with cow-peas. Wheat and millet, potatoes, or sometimes corn. Potatoes and cotton, turnips, or corn with cow-peas. Two crops—hay, prairie grass, Bermuda grass, and potatoes.

CROPPING IN ORCHARDS.

In orchards there is some secondary cropping. During orchard growth, before fruit bearing, crops are raised in great variety, but after an orchard is five or six years old grass is generally the additional crop. Correspondents report the following crops in the earlier years: Cotton, sorghum, sugar-cane, corn, fodder corn, sweet corn, Kafir-corn, oats, wheat, rye, rape, tobacco, peas, cow-peas, berries, vetches, barley, buckwheat, beans, velvet beans, flax, castor beans, potatoes, sweet potatoes, turnips, and various vegetables.

The grasses and legumes found mostly in the older orchards are timothy, orchard-grass, red clover, alfalfa, Hungarian-grass, millet, crimson clover, scarlet clover, blue-grass, crab-grass, sedge-grass, wild grass.

It is a growing belief among farmers that orchards should not be cropped and that the grass in them should remain.

From some States it is reported that orchards are used as poultry yards, or swine, calf, and sheep pastures. In young orange groves in Florida all crops are raised, but little if anything after the trees begin to bear. In several States, especially in the South, the orchards are neglected and weeds are the chief growth between the trees. Some of the best fruit men in Missouri cut the grass and let it remain on the ground. In the dry orchards of Idaho the ground needs to be cultivated to hold moisture. While various practices may be found in California, the general rule is to avoid cropping orchard land, even when the trees are

(Continued on page 728.)

The Young Folks.

Conducted by Ruth Cowgill.

ADAM NEVER WAS A BOY.

We are very gateful to our friends who respond so readily to our requests for certain poems. Through the kindness of one of our readers, we are able, this week, to publish "Adam Never Was a Boy," for which request was made some weeks ago.

Of all the men the world has seen
Since time his rounds began,
There's one I pity every day—
Earth's first and foremost man;
And then I think what fun he missed
By failing to enjoy
The wild delights of youth-time, for
He never was a boy.

He never stubbed his naked toe
Against a root or stone;
He never with a pin-hook fished
Along the brook alone;
He never sought the bumblebee
Among the daisies coy,
Nor felt its business end, because
He never was a boy.

He never hookey played, nor tied
The ever-ready pail,
Down in the alley all alone,
To trusting Fido's tail.
And when he home from swimming came,
His happiness to cloy,
Nor slipper interfered, because
He never was a boy.

He might refer to splendid times
'Mong Eden's bowers, yet
He never acted Romeo
To a 6-year Juliet.
He never sent a valentine,
Intended to annoy
A good, but maiden aunt, because
He never was a boy.

He never cut a kite string, no!
Nor hid an Easter egg;
He never ruined his pantaloons
A-playing mumble-peg;
He never from the attic stole,
A coon-hunt to enjoy,
To find the "old man" watching, for
He never was a boy.

I pity him. Why should I not?
I even drop a tear;
He did not know how much he missed;
He never will, I fear.
And when the scenes of "other days"
My growing mind employ,
I think of him, earth's only man
Who never was a boy.

—T. C. Harbaugh.

Waking Up a Woodchuck.

Whether the ground hog saw his shadow or not when first he came out of his burrow this spring, I don't know, but I do know what he looks like when he first wakes up, because I woke him up to see.

Last autumn we took him home and put him into a large cage covered with new poultry netting. At first he threw himself back on his haunches and bared his long chisel teeth as though defying us to touch him; but in his heart he was afraid, for presently his teeth chattered violently. We left him alone, and soon he took courage and ate an apple or two.

That night we carried the cage into the kitchen, but in the morning we found that our captive had escaped. With his powerful incisors he had cut the netting as neatly as a man could have done with a wire-cutter, and made a hole just large enough to allow his body to pass. Of course, he was somewhere in the house, and at last we found him curled up in a bed of torn newspapers, which he had made for himself in a corner of the back entry, between a large box and the wall.

I decided to leave him there, and every day I left him food, which he came out to eat in the night. When I gave him whole ears of corn he stripped and ate the kernels, and added the cobs and the outer coverings to his nest. When I gave him clover, he often allowed it to dry and then carried that also to the corner behind the big box.

For some weeks his appetite was good, and apples, corn, carrots, or other vegetables left for him in the evening were gone the following morning. But as the cool weather came on he became less and less hungry, and one night in early November he ate nothing at all. From that time on his appetite began to fail, and when the cold weather set in in December his food would remain untouched for three or four days at a time.

But he did not stop eating entirely, as he would have done had he wintered out of doors, for after every three or four days of fasting he would come out and eat half a carrot or a small apple before returning to his nest. He never carried any food back with him, as a squirrel would have done; he ate what he wanted just where it lay and left what he could not eat. He evidently did not sleep very sound during the early part of the winter, for every time I closed the back door I could hear him start up, and if I peered over the top of the box I could sometimes see his gray nose poked out of the nest.

For the first four nights in February he came out every night, and his appetite had decidedly improved, but after that he seemed to sink into a sound sleep, and I neither saw nor heard anything of him until the first of March, when as he had eaten nothing for more than three weeks, I thought it only decent to make inquiries.

I pulled out the box and there lay the nest, composed of nearly a bushel of grass, corn-cobs, towels from the kitchen, torn newspapers, and other odds and ends which he had picked up in his nightly wanderings. With the point of an umbrella I pulled off the roof of the nest, and at once he responded by raising himself on his forelegs, stretching and yawning. The next instant he rolled over, drew a deep, sighing breath and was fast asleep.

Again I touched him gently with the umbrella, and again he turned over, gaping and weary, and without even opening his eyes, drew another long breath and went to sleep. I touched him two or three times with the same result, and then I carefully shoveled him up with as much of his nest as I could get on a snow shovel, and put him down on the floor near a sunny window.

He was still very sleepy, and no doubt would have dozed for some time longer, even in that warm room, had I let him alone. But I was anxious to examine him, and by doing so greatly incurred his displeasure. Presently he opened his eyes for the first time, and ground his teeth savagely. I offered him the toe of a shoe lying near me, and he fastened his teeth in it, and, holding this, allowed me to lift him from the floor.

Soon he took hold with his front claws and let go with hie teeth. He held on in this way for several seconds until I set him down. He was dreadfully thin and emaciated, and apparently very weak. Naturally, he was also very light in weight, and his body was surprisingly cold. The fleshy part of his nose was very dry, dull and somewhat wrinkled. The skin of his body, wherever it could be seen through the fur, was peeling up as though it had been sunburned. I saw at least one flea.

He gained strength very rapidly, but it was nearly an hour before he had any control of his hind limbs. In four or five hours, although he had eaten nothing in the meantime, he was fully as active as he was last fall. He refused to eat in the daylight, but that night he came out and nibbled a carrot.—Ernest Harold Baynes, in Massachusetts Ploughman.

Chimney Swallows in Swimming.

A crowd of chimney swallows gathered over the pond for a morning swim. Half a hundred of them were wheeling, looping and cutting about me in a perfect maze of orbits, as if so many little black shuttles had borrowed wings and gone crazy with freedom. They had come to wash—a very proper thing to do, for there are few birds or beasts that need it more. It was highly fitting for Kingsley's sooty little Tom, seeing he had to turn into something, to become a Water Baby. And if those smaller, winged sweeps of our American chimneys are contemplating a metamorphosis, it ought to be toward a similar life of soaking.

They must have been particularly sooty this morning. One plunge apiece, so far from sufficing, seemed hardly a beginning. They kept diving in over and over, continuing so long that finally I grew curious to know how many dips they were taking; and so, in order to count his dives, I singled one out, after most of the flock had done and gone off to the hawk. How many he had taken before I marked him, and how many more he took after I lost him among the other birds, I can not say; but, standing up in the skiff, I followed him around and around until he made his nineteenth splash—in less than half as many minutes—when I got so groggy that his twentieth splash I came near taking with him.—From "Raccoon Creek," by Dallas Lore Sharp, in July National Magazine.

NATURE STORY CONTEST.

Some Interesting Birds.

As our editor has asked for sketches on wild birds, animals, or insects, I will try and tell about the birds around Gladstone Heights. The one that I love best is the mocking-bird, which sings every night on the housetop. He comes every spring and builds his nest in the catalpa-tree, a few feet from our house. He knows almost every song of the birds around here. He can even peep like a chick. He can trill, warble, and mimic the sparrow and the meadowlark. Sometimes I whistle like a bob-white and he will answer me.

Next comes the martin. He has his nest under the eaves of the house. One day we found a martin under a cherry-tree. It had been hurt so that it could not fly. My brother put it in a cage and tried to get it to eat worms, but it would not. Then he took it out under the maple-tree and its mate came and fed it and took it away.

Out in the barn a swallow has built its nest of mud and fastened it to the joists. After the little birds are hatched, every time we go down to the barn they stick up their heads and open their mouths for something to eat, and look like a lot of yellow stars.

Down in the maple- and peach-trees we have the robin, scissortail, and meadowlark.

There is another bird that is not quite so welcome. It is the English sparrow. He makes us no end of trouple eating our grains and fruits. Sometimes he builds his nest in the spouting and we have to go out in the rain and dig it out so that the water can go into the cistern. It is funny to watch the sparrows sometimes. One day I was watching a couple build their nest; after they had worked a while one of them seemed to get tired carrying the material so far, so he would wait until the other bird was gone and then go and select out the nicest feathers and take them to his own nest. Finally the other bird's mate had to come and watch while she built her nest. GLADYS VAUGHAN.

Gladstone Heights, Arkansas City, Kans.

A Turtle.

Probably all who read this have seen a common land-turtle but how many have examined one carefully? How awkward they are! As we glance at one we note that like the snail it carries its house with it. Now let us take a specimen in our hands. Be careful! Don't get too near its head. His greenish eyes look at us wickedly. When we hold a twig near its mouth it snaps at it viciously, and if we let loose of Mr. Turtle he will retain his hold of the stick and remain suspended in mid air for some time. His legs are strong and we find five claws on each front foot and four on the hind feet. With these he can dig in the earth with considerable facility. The shell of the tortoise is very hard, and as there is a shell on its back and one beneath, it is well protected from most enemies.

After this strange creature has taken its head and legs within its castle it can close the shells nearly together, and as we look closely we find a slight crease in the lower shell at which it can be bent a trifle to aid in this defensive measure.

These are but a few of the interesting things I have noticed about turtles, and doubtless others would see some things that I have not. W. G. S.

The Snake.

The snake is an animal which, instead of walking on legs like most other animals, carries itself by a winding motion of its body, except when about ready to attack its prey, when it will raise its head and jump by the power of its tail and back.

There are many different kinds of snakes, but I'll only write about the snake as an animal and its peculiarities. This animal has a few teeth called fangs, which may be moved at will. These teeth are not used for chewing, but more for inflicting a wound in the body of its prey for the poison to enter, which is always kept in a small gland near the eye.

The snake lives on small animals, but instead of biting them to pieces swallows them. I have often seen a snake carrying a frog, a mouse, or a bird in its mouth. The snake has also another curious way of catching his prey. If a snake can catch a bird's eye, the bird will be so hypnotized that instead of flying, it will watch him until the snake, in making its last jump, catches the bird.

One day while bringing the cows up from the pasture I found a snake, which at first tried to get away, but after teasing it for some time, it became very angry and didn't allow me to come very near to it, when it would jump toward me to bite. This is its only means of protection.

This animal, like the ostrich, is very foolish in trying to hide. Instead of crawling into or under the object which it thinks will hide it, it places its head under it and leaves its body visible.

On the whole, the snake for its size and brain power is a very bright animal. E. S.

For the Little Ones

OUR HIRED GIRL.

Our hired girl, she's 'Lizabuth Ann;
An' she can cook best things to eat!
She ist puts dough in our pie-pan,
An' pours in somepin' 'at's good an' sweet,
An' nen she salts it all on top
With cinnamon; an' nen she'll stop
An' stoop, an' slide it, ist as slow,
In th' old cook-stove, so 's 't won't slop
An' git all spilled; nen bakes it—so
It's custard-pie, first thing you know!
An' nen she'll say:
"Clear out o' my way!
They's time fer work, an' time fer play.
Take yer dough an' run, child, run;
Er I cain't git no cookin' done!"
When our hired girl 'tends like she's mad,
An' says folks got to walk the chalk
When she's around, er wished they had!
I play out on our porch, an' talk
To th' Raggedy Man 'at mows our lawn;
An' he says "Whew!" an' nen leans on
His old crook-scythe, an' blinks his eyes
An' sniffs all round an' says, "I swawn!
Ef my old nose don't tell me lies,
It 'pears like I smel custard-pies!"
An' nen he'll say:
"'Clear out o' the way!
They's time fer work, an' time fer play.
Take yer dough an' run, child, run;
Er she cain't git no cookin' done!'"

—J. Whitcomb Riley.

A Robin Family.

Two robins built them a nest. They flew hither and yon, gathering string and grasses, scraps of paper and rags, to make it soft and strong; and when Mrs. Robin found a little cotton they were delighted, and used it for a lovely soft lining. They built their nest in a high tree-top, where they felt cozy and free, with the warm bright sun to guard them all day long, and the lady moon with a thousand starry children to keep watch at night.

When at last the nest was done, and four small eggs lay in the bottom, Mr. and Mrs. Robin were so happy they wanted to tell everybody all about it, and Mr. Robin did tell everybody, for he sat on a limb near the nest and sang with all his merry little heart, while Mrs. Robin sat quietly upon the eggs, waiting, oh, so patiently, for them to hatch.

At last, on a lovely spring day, there were four tiny birds instead of four eggs, and that day Mr. Robin's song was louder than ever, and he flew far and wide to find worms and other good things for them to eat.

The baby birdlings grew very fast, and they had big appetites, so that Mr. Robin was kept very busy hunting food for them. Sometimes when he had been gone a long time, and would be returning with a luscious fish-worm, he would see four big little bills wide open waiting for their meal, and he would drop it among them and hasten away for more. Mother Robin often found good things for them, too, so that they had plenty to eat and grew big and strong very fast.

It was a proud day when the biggest baby wanted to fly! But oh, he had a terrible time learning. He got up on the edge of the nest and lifted his little wings, but he was afraid to leave. Mr. Robin stood upon another branch and twittered excitedly, telling him not to be a coward, but strike out for himself, as a robin should. Mother Robin staid in the nest, and encouraged him. But still he would not go. At last she gave him a little push, and he flew straight down to the ground.

"Oh, oh!" he cried, "I'm lost! I'm lost! I never can get back to my mother!" and he fluttered around most pitifully, while his mother paid no attention to him, and his father flew away after food.

But after a while Mother Robin saw a big black cat. Then she began to be frightened. "Sonnie!" she called very quietly, so that the cat might not hear.

"Yes'm," said little robin.

"Come back home as quickly as you can!"

"I can't, mother," said the little fellow, "I'm afraid to try."

"Shame on you," scolded Mrs. Robin. "Come right up here, as I tell you, or I shall give you three pecks on the head."

Then little Robin tried a little, but he only fluttered up a little way, and dropped down again. And still the cat kept coming.

The little mother grew terribly frightened, and at last flew down to her oldest boy.

"Now, get right up and come along with me," she cried, pretending to be very cross, though she was so frightened she could hardly chirp. She gave little Robin a sharp peck on the head and said, "If you don't come you will be killed. That old cat is watching us and will jump upon us in a moment. Be a little man, now—come."

And with that they both flew upward and reached the nest safely. All the other little robins in the nest had been

peeping over the edge, and had been terribly excited, so when they were once more safely together, there was a great chattering and twittering.

And though they all had been so frightened, yet the next day every one of them, even the youngest, wanted to fly. And before many days they all could fly as well as their mother and father, could find their own food, too; and soon they all flew away and left the old nest for the leaves to drop into, for they were grown-up birds, and did not need it any more, but perched upon a limb when they went to sleep at night. But still their old friend, the bright sun, watched them all day, and the lady moon and her thousand stars guarded them at night.

The Home Circle.

Conducted by Ruth Cowgill.

LITTLE BESSIE.

[The following is an old song, which is not, we think, in publication at the present time. It has all the charm of the quaint old past.]

Hug me closer, closer, mother,
Put your arms around me tight,
I am cold and tired, mother,
And I feel so strange to-night,
Something hurts me here, dear mother,
Like a stone upon my breast,
Oh, I wonder, wonder mother,
Why it is I can not rest.

All the day while you were working,
As I lay upon my bed,
I was trying to be patient,
And to think of what you said—
How the kind and blessed Jesus,
Loves His lambs to watch and keep,
And I wished He'd come and take me
In His arms that I might sleep.

Just before the lamp was lighted,
Just before the children came,
While the room was very quiet,
I heard some one call my name,
All at once the window opened,
In a field were lambs and sheep,
Some from out a brook were drinking,
Some were lying fast asleep!

But I could not see the Savior,
Though I strained my eyes to see;
And I wondered if He saw me,
If He'd speak to such as me;
In a moment I was looking
On a world so bright and fair,
Which was full of little children,
And they seemed so happy there.

They were singing, oh, how sweetly!
Sweeter songs I never heard;
They were singing sweeter, mother,
Than can sing our yellow bird;
And while I my breath was holding,
One, so bright upon me smiled,
And I knew it must be Jesus,
When He said, "Come, here, my child.

"Come up here My little Bessie,
Come up here and live with Me,
Where the children nver suffer,,
But are happier than you see.,,
Then I thought of all you'd told me
Of that bright and happy land
I was going when you called me,
When you came and kissed my hand.

And at first I felt so sorry,
You had called me. I would go
Oh! to sleep and never suffer
Mother don't be crying so.
Hug me closer, closer, mother,
Put your arms around me tight,
Oh, how much I love you, mother!
But I can not rest to-night.

So that mother hugged her tighter
To that overburdened breast
On the heart so near to breaking
Lay the heart so near to rest.
In the solemn hour of midnight,
In the darkness cold and deep,
Laying on her mother's bosom
Little Bessie fell asleep.

A Model Primary Sunday School.

Mrs. Hardy, who speaks through the Club Department this week, is one whose wide and successful experience in kindergarten and primary Sunday school makes her words doubly valuable. She is superintendent of the primary department of the Sunday school in the church of which Rev. Chas. M. Sheldon is pastor, and a visit to her department for only one Sunday is, in itself, a liberal education to mothers and teachers. There are, upon an average, one hundred children, from the age of eight to the merest toddling infants.

They are divided according to age into classes of about eight, which she considers the largest number that one teacher can handle to good advantage. For the opening and closing of the school, the children sit in two circles, a smaller within a larger one. The exercises are songs, simple and childlike, yet each teaching its own important lesson; a little prayer, which the little ones repeat after her, phrase by phrase, with heads reverently bowed and eyes closed; a story of nature or childhood's experiences told so simply that the youngest can understand, yet so beautifully that parents and teachers listen, absorbed; and a general march around the circle during which the children drop their pennies into a bright little tin pan which stands ready upon a table. The lesson time occupies only ten or fifteen minutes—ample time for small minds, as any one knows who has attempted to keep them interested longer. The teachers are selected very carefully with regard to their ability to understand and interest the children. After the lesson, the children take their chairs—small ones which they can easily carry—back into the larger circles again, and with a song and a prayer and a little review of the lesson and Golden Text, the school is closed, and the happy children march out.

The children absorb lessons here which are of value incalculable, and the practical effects of their teaching are shown right in the room, where a spirit of kindness and cordiality is readily observed. The older boys and girls help the little ones and the regular attendants take great care of the newcomers and visitors. It is no uncommon thing to see one experienced little man of five summers, or thereabouts, carrying two of the little red chairs, one for himself and one for a little toddler of three years, while another directs the wandering footsteps of one who does not understand what all this marching is about or where it leads to. A loving spirit and a tenderness for the helpless is conspicuous among these tiny folk.

In her paper, Mrs. Hardy refers to the Cradle Roll which perhaps calls for some explanation, it being something of an innovation and rather a new departure. Whenever a baby comes to a family in the church or parish, the primary superintendent calls upon it, learns its name, and enrolls it upon the Cradle Roll. When the child is old enough, she invites the mother to bring it into the Sunday school some bright day, and this little song is sung to it by the children:

"Another dear baby we welcome to-day,
To him a new name has been given,
We'll give him a place in the dear cradle roll:
For of such is the Kingdom of Heaven."

In a few years the baby is old enough to take his place in the circle, and other babies take his place on the Cradle Roll.

More About Yellow-Spotted Blackbirds.

In a recent issue was an inquiry as to the blackbird having yellow spots on his wings. One of our readers obligingly contributes this information, the result of her own observations:

"I think the blackbird having yellow spots on its wings is the immature male blackbird, red-wing, of course, while those having the entire heads bright yellow are a distinct species and come around our pond in large flocks. The one with white on its wings, I think is not a blackbird at all, but a much smaller bird called dark bunting. The male is jet black with a light-colored or white bill and a white bar across its wings; the female is dark gray, having the white bar also. They have a very pretty song.

"MARJORY LESTER."

Kinsley, Kans.

At the Home of the Queen of England.

No doubt much of the sweet simplicity and tact which so characterize the Queen of England were learned in the delightful home life of the Gules Palace from the example of her parents. When the Prince of Glucksburg became king he did not change any of his customs. His friends were admitted as freely as before, and Queen Louise made the tea herself. A little anecdote will show the democratic nature of King Christian, and the good fellowship which prevails between ruler and subjects. The king mingles with his people, and it is his daily custom to walk out unattended, except by his large Danish hound. One day as he was walking through the streets of Copenhagen he met a crowd of strikers who were discussing something in an excited manner. Recognizing the king, they became silent at his approach.

"Go on," he said, and stood listening while they presented their grievances. They wished an increase in wages. The king assured them that their employers could not do this without damage to themselves. The men, while moving a vote of thanks to the king, decided to continue the strike. The monarch shortly afterward entered the palace, not in the least offended because his advice had not been accepted.

"It is a pity that I could not succeed in stopping the strike," he remarked, "but, after all, I suppose they understand their own interests better than I do." . . .

A lady in Copenhagen told me an incident about the family which illustrates the love and sympathy which has ever prevailed among them. A few years ago, when Queen Alexandra was still the Princess of Wales, and Alexander III was living, they were spending the month of September at Fredensborg. The princess was often late for breakfast, and her husband reproved her for keeping the czar waiting, as he was of much higher rank. This reached the ears of the Russian emperor. The next morning, when he was dressed, instead of going to the drawing-room, he went to the princess's door, and asked if she were ready for breakfast.

"Not quite," was the reply.

He returned to his own room and patiently waited till she appeared, when he gave her his arm and they entered the drawing-room together.—From "The Queen of England at Home," by Felicia Buttz Clark, in The Chautauquan.

Club Department.

Our Club Roll.

Mutual Improvement Club, Carbondale, Shawnee County (1895).
Give and Get Good Club, Berryton (1902).
Osborne Woman's Literary Club (1902).
The Ladies Reading Club of Darlington Township (1902).
Woman's Club, Logan (1902).
Domestic Science Club, Osage, Osage County (1888).
Ladies' Crescent Club, Tully (1902).
Ladies' Social Society No. 1, Minneapolis (1888).
Ladies' Social Society No. 2, Minneapolist (1889).
Ladies' Social Society No. 3, Minneapolis (1891).
Ladies' Social Society No. 4, Minneapolis (1897).
Chilitso Club, Highland Park (1902).
Cultus Club, Phillipsburg (1902).
Literatae Club, Ford (1903).
Sabean Club (188).
Star Valley Woman's Club, Iola (1902).
[If mistakes are made in the above roll, please inform us at once. Let each club look for its name, and see that all information concerning it be correctly given.]

The Sunday School and the Clubs.

MRS. LIDA HARDY, FORMERLY PRESIDENT NATIONAL LEAGUE OF AMERICAN MOTHERS.

For the past several months I have been much interested in reading from your columns, accounts from time to time of the club work which is being done by the country women of Kansas.

Particularly interesting to me was Mrs. S. Q. Adams' account of the Iola Country Woman's Club. She says: "The very next Sunday after the club was organized we met at the schoolhouse and organized a Sunday school. We have fostered and planned for the Sunday school at the club meetings, and it is in a good, healthy condition and will be continued."

I believe this dear little school will continue. I believe it will grow and prosper because it is built upon the firm, sure foundation of Christ love through mother love. That these blessed mothers possess the Christ love is clearly demonstrated by the fact that nearest their hearts is the maturing of the spiritual natures of their children. When the truth is generally understood that the greatest power for good in the world may come through mother's organizations, a mother's organization will form the foundation of every Sunday school, kindergarten, primary school and in fact every institution where children are taught. No work on earth is more grand and holy than that of the mother, and no work carries with it greater responsibilities. The wise mother realizes this truth. She it is who looks well to the threefold development of her child. She sees him advancing along physical and intellectual lines. She sees too that his spiritual development is not keeping pace with the other two sides and that it will be almost entirely neglected unless the mother joins hands with the primary Sunday school teacher.

What more uplifting and elevating work could any mother's club take up than the "fostering and planning" for the spiritual welfare of their children? One of God's best earthly gifts is the little child who comes into the world helpless and weak and is entrusted to parents and teachers to be brought up by them in a manner befitting the highest and noblest of God's creations. Unless those to whom this blessed privilege is accorded are well prepared for it, much will be left undone which should be done. Between mothers and primary Sunday school teachers should exist the strongest bonds of love and sympathy, for their mission is one and the same. They should meet together. They should work and study together. The mother can not afford to be without the cooperation of the primary Sunday school teacher. And without the interest and love of the mother the work of the primary Sunday school teacher can not be a success.

If these Iola mothers have not done so I hope they will introduce into their Sunday school "The Little Beginners' Course of Lessons." This course is prepared by the International Lesson Committee and is intended for children under the age of six. These lessons seem to be exactly what is required for children just commencing their Sunday school life, many of them right from the "Cradle Roll."

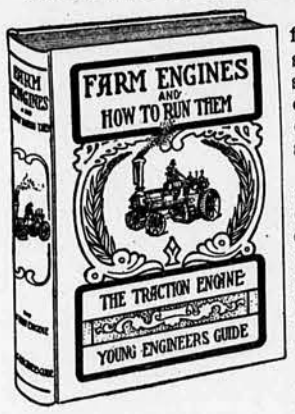
Those who have tested the course have readily seen, that it brings to the child that quality of spiritual food which the little mind can understandingly grasp, because it reaches the soul of the child, through his own natural activities. The teacher of "Little Beginners" is engaged not in superstructure but in foundation work. She helps the child to practice christianity from the first by pointing out the reasons why he should love the Christ child and why he should try to follow in His steps. Mothers and primary workers must learn to think as children and to be as children if they would leave impressions on the little minds which will endure forever and help to keep the little feet in ways of righteousness and paths of peace. To do this is to succeed and in success we win not only the knowledge that we have helped to build the character of a little child, but that in so doing we have built up and added to the strength of our own character.

Please allow me to extend to the Iola Country Woman's Club good cheer and God speed in the glorious work they are just commencing. May many other mother's clubs follow their example.

FARM ENGINES AND HOW TO RUN THEM.

The Young Engineer's Guide.

By Stephenson, Maggard & Cody, Expert Engineers. Fully illustrated with about seventy-five beautiful woodcuts. A complete instructor for the operator or amateur.



The book first gives a simple description of every part of a boiler and traction or simple stationary engine, with definitions of all the technical terms commonly used. This is followed by over 80 test questions covering every point that precedes. Then come simple and plain directions to the young engineer as to how to set up and operate his engine and boiler, followed by questions and answers to what should be done in every conceivable difficulty that may arise, covering such subjects as scale in the boiler, economical firing, sparks, pressure, low water and danger of explosions, lining and gearing the engine, setting the valves, oiling, working injector and pump, lacing and putting on belts, etc. There are two chapters on farm engine economy, giving the theory of the steam engine, especially in its practical applications to securing economy of operation. Chapter XII describes "Different Types of Engines," including stationary, compound, Corliss and high speed engines, and all the leading makes of traction engines with an illustration of each. Also chapter on gasoline engines and how to run them, and another on how to run a thrashing-machine. The book closes with a variety of useful recipes and practical suggestions and tables, and 175 questions and answers often given in examinations for engineer's license. Beautifully illustrated with plans, etc 12mo cloth. Price $1.

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The Stock Interest.

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Dates claimed only for sales which are advertised or are to be advertised in this paper.

July 28, 29, 1903—Geo.. H. Adams, Linwood, Herefords.
September 1, 1903—Horses and jacks, L. M. Monsees & Son, Smithton, Mo.
September 1 and 2, 1903—100 head of Herefords, at Hamline, Minn. C. R. Thomas, Secretary.
September 3, 1903—Central Missouri Hereford Breeders' Association, Macon, Mo.
October 2, 1903—Poland-Chinas, J. R. Killough & Sons, Ottawa, Kans.
October 6, 1903—A. E. Burleigh, Kansas City, dispersion sale Polled Durham.
October 7 and 8, 1903—Combination sale of Poland-Chinas and Shorthorns. Poland-Chinas on the 7th, Shorthorns on the 8th. James P. Lahr, Sabetha, Kans., Manager.
October 9, 1903—Sabetha Combination Sale Co., Sabetha, Duroc-Jerseys.
October 12, 1903—C. O. Hoag, Centerville, Kans., Poland-China hogs.
October 15, 1903—Central Missouri Hereford Breeders' Association.
October 16, 1903—W. S. Wilson, Manager, Shorthorns and Herefords, at Monroe City, Mo.
October 19, 1903—Oak Grove, Mo., Poland-Chinas. E. E. Axline.
October 19-24, 1903—American Royal, Kansas City, sale by Galloway Breeders' Association.
October 22, 1903—100 head of Herefords, at Kansas City, Mo. C. R. Thomas, Secretary.
October 27, 1903—Duroc-Jerseys, Peter Blocher, Richland, Kans.
November 3, 1903.—O. B. Smith & Son, Cuba, Kans., Poland-Chinas.
November 10-11, 1903—Marshall County Hereford breeders' annual sale at Blue Rapids, Kans.
November 13, 1903 —Central Missouri Hereford Breeders' Association, animal sale; S. L. Brock, Macon, Mo., Secretary.
November 17, 18, 19, 1903—Armour Funkhouser, Herefords, at Kans. s City, Mo.
December 3, 1903—100 head of Herefords, at Chicago, Ill. C. R. Thomas, Secretary.
February 4, 5, 6, 7, 1904—Percherons, Shorthorns, Herefords, and Poland-Chinas, at Wichita, Kans., J. C. Robison, Towanda, Kans., Manager.

Coburn's Work in the Interest of Live Stock at the World's Fair.

F. D. Coburn, chief of the department of live stock of the Louisiana Purchase Exposition, has arranged for a total of over 26,000 prizes in the classifications for horses, cattle, sheep, swine, poultry, etc., for the World's Fair shows next year. These are unprecedented in amount and are divided among twelve breeds of beef and dual-purpose cattle with 2,352 prizes; four breeds of dairy cattle, 560 prizes; nineteen breeds of horses, 3,458 prizes; eleven breeds of swine, 2,772 prizes; fourteen breeds of sheep, 2,548 prizes; 375 varieties of poultry and pigeons, 10,300 prizes; fifty-seven breeds of dogs, 2,604 prizes. There are 32 additional prizes for single cows and herds entered in the dairy demonstration; 5 for oxen; 55 for mules, and 1,310 for the estimated displays of pet stock, etc.

Provision has been made for five cash prizes and two honorable mention awards in most sections except poultry. The final arrangements of the classifications may still further enlarge the number of prizes offered.

Up to the present time that feature of the World's Fair at St. Louis pertaining to live stock has been designated as a "section," a title which erroneously seemed to indicate that it was a branch or subordinate feature of some other department.

This has now been changed by the management and Mr. Coburn will hereafter be officially known as the chief of the "Department of Live Stock." The exposition has added must to its popularity in making live stock an independent department and giving it a separate chief with a prize fund of $250,000. This substantial recognition will do much to attract attention to the great St. Louis enterprise and secure the hearty co-operation of stockmen, fanciers, and others interested. This is the first world's fair to give live stock the prestige and rank of a department with an independent chief, and the great extent and high character of the live-stock exhibits already assured the World's Fair confirm the wisdom of this liberal policy.

The general desire of the live-stock breeders to have public sales made a feature of the live-stock shows at the World's Fair has met with hearty approval by Chief Coburn, and the leading National breeders' associations have already filed requests for dates and have commenced preparations for holding such sales. A representative of a number of leading poultry fanciers has applied for dates for public sales during the poultry displays.

The Louisiana Purchase Exposition will be the first World's Fair to provide for the holding of public sales of pure-bred stock, which are assured of crowds of appreciative buyers and good prices. Complete plans have been made for a ring for public sales apart from the main live-stock amphitheater, so that sales may be held without interfering with the judging or other features of the exhibition. Public sales of prize-winners and other choicely bred animals have come to be a very attractive feature of fat-stock shows at the leading State fairs, but no opportunity for this popular method of selling stock to the highest bidder has ever been offered at a world's fair.

The sales will be under the auspices of the breeders' associations interested and within the period in which the breed will be on exhibition. The following associations have already asked for assignments of sale dates:

Cattle—American Shorthorn Breeders' Association, American Hereford Breeders' Association, American Aberdeen-Angus Breeders' Association, American Galloway Breeders Association; horses—American Percheron Horse Breeders' and Importers' Association; swine—American Poland-China Record Company, National Duroc-Jersey Swine-Breeders' Association, American Berkshire Association.

An entirely new departure decided upon as a leading feature of the live-stock awards at the Louisiana Purchase Exposition is the premier or sweepskakes championships for each breed. These are intended as grand prizes to recognize both the skill of the breeder and the enterprise of the exhibitor. It is proposed to give a premier championship award to the breeder making the best showing in each class, the showing to be determined by the largest aggregate amount awarded to animals bred by the breeders represented in that class. The premier award to the exhibitor in each class will be made on the same basis.

The large amount to be offered for prizes and the consequent breadth of the classifications and the world-wide character of the shows will make the premier championships at St. Louis an exceptional honor, certain to be strongly competed for and highly appreciated by the exhibitors as well as breeders of the prize animals.

NOTES OF LIVE STOCK AT THE WORLD'S FAIR.

Warner M. Van Norden, a prominent stock-raiser and financier of New York, has written to Chief of Live Stock Coburn that he will probably make a large entry from his herd of Highland cattle at the World's Fair next year. Mr. Van Norden's cattle are now at his place at Rye, N. Y. With the exception of one steer shown at Chicago, Highland cattle have not been on public exhibition in America, and the first display of any size of this attractive breed is promised for the World's Fair at St. Louis. Mr. Van Norden's herd is headed by a bull which twice has won first prize at the Highland and Agricultural Society Show in Scotland.

Live-stock exhibitors in each breed class at the World's Fair will receive a senior champion prize and a junior champion prize for males and females, and a reserve champion award will follow in the four classes. Competition for the senior championships will be limited to mature animals, and young males and females only will compete for the junior champion prizes. Prospective exhibitors express themselves as highly pleased with the plan of Chief Coburn of providing for a more equitable method of awarding championship prizes and thus increasing the number of honors.

W. M. Springer, president, and C. E. Stubbs, secretary of the Oldenburg Coach Horse Society of America, have sailed for Germany to increase the interest among breeders of Oldenburg Coach horses in making a representative exhibit at the World's Fair. Mr. Springer, who bears a special commission for the purpose from the Louisiana Purchase Exposition Company, will spend considerable time in calling the attention of German breeders and exporters of horses to the many advantages of large exhibits at St. Louis next year.

The department of live stock is working on preliminary plans for the World's Fair dog-show, for which October 24 to November 5 are the dates contemplated. Assurances are being received from the many specialty clubs and secretaries of leading dog-shows of their cooperation and participation.

The World's Fair live-stock shows of 1904 will be the first in which the classifications will be uniformly divided by age periods of six months instead of one year for beef cattle, swine, and sheep, thus giving proper recognition to the general method of feeding for early maturity.

The Kansas Improved Stock-Breeders' Association has appointed a committee of three for each of the various breeds of live stock to work for a representative exhibit of Kansas live stock at the World's Fair.

One of the most prominent poultry-breeders of England has signified his intention of making a large display of Old English Game fowls and Dorkings in the poultry exhibits at the World's Fair.

Bacon Hog Questions.

Why does not the bacon hog come into the Western primary markets in greater numbers? I could answer that question a year or so ago, but it is impossible for me to answer that question this minute. A year or more ago, corn—the great low-priced staple—was worth, as it always has been, a very low price, and, secondly, the opinion was general that the bacon hog, so called, was a hard and expensive feeder; and as the primary markets offered no premium over the thick fats, it was easy to see why more bacon hogs did not come to those markets. Now, however, conditions have changed.

Corn is no longer the great, cheap staple pork-producing food that it was, and, in all probability, will never be again. Corn now approaches the price of oats, middlings, barley, and other bacon-producing foods. Clover and the newer alfalfa are rapidly coming into greater favor with the pork-producers. Forty-five cent corn does not mean shoveling it to the hogs, as of yore, any more than oats or middlings could be economically shoveled to the hogs. Corn is corn now, and, in all probability, will be for the future, and why? All the available corn ground of the West has been taken up for some time past.

While stock animals are increasing in numbers corn is not. Consumption in this great staple has overtaken production. The days of cheap, 15 cent to 25 cent corn are past. The grower will now get a paying price for his corn, whether sold by the bushel or on the hoof. I am sure this fact is patent to any unbiased observer of the course of events.

Again, the second proposition; that "bacon hogs" were necessarily hard feeders is pretty well exploded. Recent testimony by Western experiment stations has shown conclusively that the bacon type of hog can be fatted for market, as cheaply, if not more cheaply, than the lard hog. All unbiased observers will grant this now. Then why do the Western farmers not breed and feed bacon hogs more largely? There can be no reason, unless the apparent fact that the Western farmers do not possess the essential bacon type of hog. There can, in the light of recent developments, be no other reason. The food that enters into the consumption of the lard hog is every bit as dear as the food that the bacon hog eats. The market quotations show this, and the trend of events show this condition to be a positive and permanent one. The price paid for the lard hog is no higher than the price paid for the bacon hog. Occasionally the price paid for bacon hogs is higher in the great primary markets of the West; it is seldom lower. Then why are there not more bacon hogs on those markets? Is it prejudice? or, is it ignorance of the present moment conditions? or is it, as already said, the fact that there are no bacon hogs in the country? The bacon hog is born, not made, and can not be evolved in a day. The reason why more bacon hogs are not offered on the Western markets is, then, prejudice, ignorance, and the paucity of hogs of the bacon type. There can be no other reasons, coupled with the fact that farmers are a conservative class, and are slow to believe or to change methods. Old notions die hard. There is no reason in nature why the bacon hog should be bringing only the price of the lard hog. Pound for pound the bacon hog is worth more than the lard hog. All will admit this. Then why does not the bacon hog bring his full value? That's a question for the packers to explain to an intelligent public. It is not of much consequence to the farmer just now though, when the bacon hog may be grown and fitted for market at a cost per pound equal to the lard hog. Conditions have changed wonderfully in the past year or so. Who can tell what the next year will bring forth—on this hog question?—J. A. Macdonald, Hermanville, P. E. I., Canada, in the Cincinnati Price Current.

The Transportation Progress.

The progress of a hundred years has made wonderful changes in all transportation facilities in all countries. Early in the last century two-wheel carts and four-wheel wagons and carriages and coaches were introduced. In 1840 to 1850 our ancestors emigrated in wagons from the Eastern States to the Mississippi Valley States, while some came by water around the Atlantic coast to New Orleans and up the Mississippi River, there being no railroad transportation. Many rode horse back from New England, New York, Virginia, out West through Pennsylvania, Ohio, Indiana, to Illinois, Missouri, and Iowa, and many came in ox-wagons.

Through the '50s hundreds of wagons crossed the plains to California, seeking gold. Since the war railroads have spanned the country and almost every county has a railroad through it. Traveling now by railroad is a luxury, and but for the railroads America could not market the live stock, grain, and produce of the farm. The steam railroads are now being supplemented by the electric trolley lines, connecting many towns, villages, and cities, while the cities have trolley lines, elevated roads, cable roads, and the mechanical traction. Automobiles afford a new transportation.

With each step of progress the horse has increased in popularity. The railroads have wonderfully increased the demand for horses. The trolley

lines, that replaced thousands of mules and cheap, street-car horses, have increased the use of horses to haul supplies to the growing city suburbs. The prosperity of our country has enabled thousands of business men to drive horses, and our prosperous merchants and manufacturers are using the best draft-horses to be had, regardless of the high prices, and there is every encouragement to breeders to raise high-class draft and coach horses.—The Live Stock Journal.

Tests of Different Aged Cattle for Feedlots and Market. Also Tests With Corn Ensilage, Alfalfa, Kafir-Corn Stover, and Alfalfa Compared.

CONDUCTED BY THE KANSAS STATE AGRICULTURAL COLLEGE, MANHATTAN, KANS.

Last fall the Kansas Experiment Station at Manhattan, Kans., placed in the feedlots 20 head of 3-year-old steers, 20 head of 2-year-old steers, 20 head of yearlings, and 20 head of calves. These were fed chopped alfalfa for roughness and equal parts ground corn and Kafir-corn for grain.

In addition to these, 10 head of 2-year-olds were fed the above ration, with the addition of corn ensilage; another lot of 10 2-year-olds received chopped Kafir for roughness, with the same grain ration as above.

The results obtained in feeding these cattle from November 10, 1902, to June 8, 1903, a period of 209 days, are as follows:

Lot.	Age.	No. steers in lot.	Total gain per lot.	Grain consumed per 100 pounds gain.	Roughness consumed per 100 pounds gain.
1.	2-year-olds. ..	10	4,468	715	*800
2.	Calves..... ..	20	6,704	610	401
3.	Yearlings... ..	20	8,544	630	411
4.	2-year-olds. ..	20	8,359	733	483
5.	3-year-olds.. .	20	8,604	794	532
6.	2-year-olds. ..	10	3,611	1005	818

*About 500 pounds of ensilage, 300 pounds chopped alfalfa.

The cattle were shipped to Kansas City on the morning of June 23, and sold by McIntosh & Peters Commission Company, at the following prices:

Lot.	Selling price, per cwt.
1. Ensilage..	$4.95
2. Calves.....	4.25
3. Yearlings.....	4.55
4. 2-year-olds.....	4.70
5. 3-year-olds.....	4.95
6. Kafir-corn stover.....	4.50

It will be noticed that the ensilage lot (2-year-olds) sold at the same price as the 3-year-olds lot, which is 25 cents per hundredweight higher than the 2-year-olds which were the same class and quality of cattle when placed in the feedlots; 45 cents per hundredweight higher than the lot receiving Kafir-corn stover. The ensilage cattle were pronounced very nice cattle and fat enough for the ordinary trade.

Note again in the first table that the amount of grain required to produce 100 pounds of gain was 610 pounds for the calves, and the amount gradually increased with the yearlings, 2-year-olds, and 3-year-olds, the latter requiring 794 pounds of grain per 100 pounds of gain. The 2-year-olds receiving the Kafir-corn fodder in place of alfalfa required 1,005 pounds of grain per 100 pounds of gain. A similar increase is noticed in the roughness consumed per 100 pounds of gain.

The cattle were bought by the Armour Packing Company, who very kindly gave the results of the slaughtering, which are as follows:

Lot.	Per cent dressed.	Per cent tallow.
1. Ensilage....	60.5	7.3
2. Calves.....	56.1	6.6
3. Yearlings.....	59.6	5.3
4. 2-year-olds.....	59.3	6.9
5. 3-year-olds.....	60.7	6.8
6. Kafir-corn stover.....	58.5	5.5

It will be noticed that the ensilage lot contained the largest amount of fat. Armour & Co. pronounced this the most desirable per cent of fat wanted by the packers. Since ensilage produces such excellent results both in feedlots and on the butcher's block, and can be produced very economically on the farm, it promises to be one of the leading factors in successful steer-feeding.

Complete and detailed results will be published in bulletin form in a few weeks, which may be obtained by sending a request to the Animal Husbandry Department of the Kansas Experiment Station.

Our Balky Horse.

A few days ago the writer was walking down Court Street, Boston, about one o'clock, and found a small blockade opposite Court Square. It was occasioned by a balky horse hitched to a covered express wagon. At either side of the street on the sidewalks stood a deep line of silent, interested spectators.

The driver appeared to have given up the contest temporarily, but the horse was being encouraged (?) by a ruddy-faced hackdriver, who, taking the bridle in one hand, struck him repeatedly on the inside of his forelegs near the kneejoint with a stick or whip held in the other hand. As the animal steadily refused to budge, except either backwards or sideways, the man presently gave it up.

After a moment's wait another spectator stepped out of the crowd, walked up to the horse, kindly stroked his nose, patted him, and tried to move him a bit one side for a fresh start. But the horse was in no frame of mind to accept mere blandishments of this sort, and the second comer also retired discomfited.

The crowd is still silent, watching and waiting for the right person to appear and solve the difficulty. The jam increases, but finally good sense and feeling step forward in the shape of a young man who is eating a handsome red Baldwin apple for a luncheon finish. Perhaps the horse is tired and thirsty, and it is past his regular dinner hour; at all events the sight and smell of this red apple held about six inches from his nose is evidently an agreeable surprise. He pricks up his ears, accepts the proffered apple and shows his gratitude by at once moving forward at the request of his new friend, and the jam is over. The crowd melts away, but many a spectator takes the lesson to heart, and will profit by it.

Nine times out of ten a horse becomes balky through harsh handling. The driver could do nothing. The two men who tried to assist him failed because they did nothing for the horse—the one thought that force would do it; the other tried blandishment. The block will continue so long as we see fit to employ such men to handle our business.

Our Philippine horse is balky, and we have made him so by ill-treatment.

When we send seventy-five thousand barrels of handsome Baldwin apples to the Philippinos as proof of our good will and desire to trade, instead of seventy-five thousand Mauser rifle-barrels as evidence of our intention to pound the life out of them, our business wagon is likely to move on again. —James H. Bowditch, in Boston Evening Transcript.

Machinery Building.

The Machinery Building for the St. Louis World's Fair cost about $500,000. The building's main dimensions are 525 feet by 1,000 feet. It is served by a gigantic traveling crane, and by two tracks of railway running through the building from east to west.

The ground allotted for the building is of peculiar shape, viz., a large parallelogram with a huge corner piece cut out of the southeast angle. Widmann, Walsh & Boisselier, of St. Louis, the architects, have furnished the following statement in regard to the structure:

"In a building of this immense magnitude it behooves the designer to apply symmetrical treatment whenever feasible, and we have, therefore, designed the four facades subservient to this principle. In the south front towards the hill, the main entrance shows a triple arcade with flanking pavilions in the center. The north front of 1,000 feet has an arcade of seven arches as a center feature. The two axes of these central features are 160 feet apart, and in our ground plan we have formed on each of these axes a cross-aisle and nave of eighty feet in width. These two aisles are connected by a lower room, with lantern light above.

"The east facade shows a comparatively low building centered by two gables and smaller entrance feature. The re-entering angle on the southwest corner is very interesting in its development. The other corner features are each made with a triumphal arch entrance taken from the principal motif, with two of the principal pavilions in the line of the facades. As a landmark we have used two large towers, raised in the center of the immense main aisle of the structure, and immediately back of the large arcade feature of the north facade. The towers are safely built upon massive piers and form a magnificent corner turning feature in the general complex of exposition buildings, the Machinery Building being the end one of the main group.

"The plan has been arranged with special reference to the admission of daylight, which enters, through clerestory windows, all the principal aisles. These windows afford ample ventilation and are intended to be readily accessible for opening.

"The axial measurement of unit in the building is 20 feet, and the width of the various aisles are multiples of this unit, being 40, 60, and 80 feet wide, respectively. The main aisles are 65 feet in height, and the secondary aisles 30 feet, affording an abundance of clerestory light. The construction of the building is of the simplest and least expensive kind, and is to be covered on the outer side with staff, with enriched spandrels and other ornamental features, and surmounted by occasional scultpure groups where desired."

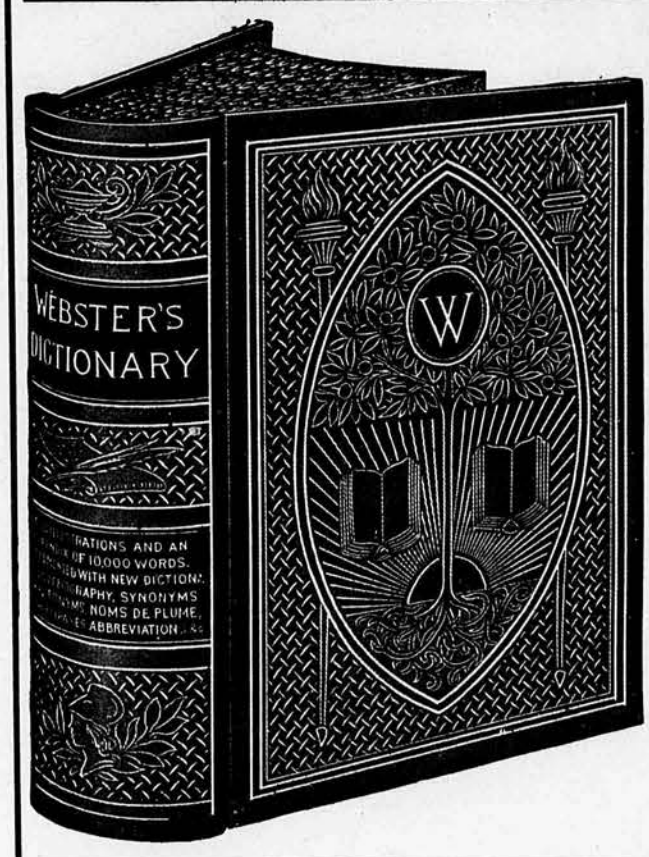
This building houses the exposition power plant, the largest power plant ever shown as an exhibit, and just west of it is the boiler house. The structure was erected by the Smith & Tastman Company.

The Machinery Building will contain exhibits collected by the department of machinery of which Mr. Thomas Moore is the chief.

Agricultural Education.

The Rural New Yorker seems to think, page 424, that an agricultural education is better than a classical education for the farmer. That will shock the classical fellows, of course, but we don't care for that; you didn't shock 'em hard enough. Now I think it is easily demonstrable that an agricultural education is better than a classical education for anybody! Can't a man sharpen his wits just as well on the live sciences as on the dead languages? Is it not equally as strengthening to a man, educationally, to know what happens to-day in his own cornfield as to know what happened 2,000 years ago on the field of Marathon? Why can a man learn more from something that has been dead and buried for thousands of years, and has lost its form and substance, its environment and its meaning, than from some practical fact of his present daily experience? Which will help a man most to cultivate his moral courage—to reflect on the beautiful ideals of the Spartans, or to get up at four o'clock to do the milking?

The classical education is fundamentally wrong in theory and, considering the marvelous "pull" it has, a comparative failure in its results. I know dozens of doctors, lawyers, and preachers who are graduates of agricultural colleges, and they can beat the classical men at their own games. I have had considerable opportunities to watch classical and agricultural men working side by side. At certain times I have had men of both trainings together in my class rooms; and in all cases the men who have got their education by the agricultural method are immeasurably better, in point of mental training, than the classical chaps. Don't ever apologize to anybody for the agricultural education. It is not perfect. It will be greatly improved. But even now, in its present crude state, it is away ahead of the thousand-year-old classical education. —Prof. F. A. Waugh, in Rural New Yorker.



Practices in Crop Rotation.

(Continued from page 722.)

young; the ground is left entirely free from weeds and grass by constant cultivation with plow or harrow. In young walnut orchards corn is sometimes grown for a few years.

USE OF FERTILIZERS.

Correspondents reported fully concerning the use of fertilizers as an incident in crop rotation. There are still extensive regions in the United States where barn manure is considered a farm nuisance. In a county of Oregon the neighbor is welcome to haul away this manure, and that neighbor is likely to be a thrifty German with a large garden; in other Oregon counties the manure is burned. In a California county the manure is dumped into ravines; it goes to the creek in Oklahoma; it is hauled to a hole in the ground or put on one side of the field in Kansas;* South Dakota farmers burn it to be rid of it, and sometimes burn it for fuel. In North Dakota farmers haul barn manure in piles and leave it there until it disappears; farmers in Missouri deposit it by the roadside, and in Idaho scrapers are used, and it is "often seen piled as high as a barn."

In many counties between the Mississippi River and the Pacific Ocean farmers not only find barn manure a nuisance, but they have a grievance against it, claiming in South Dakota that it produces dog fennel, elsewhere that it produces other weeds, and in various counties that it has such an effect of "poisoning" the soil that farmers are afraid of it. The owner of a large California wheat ranch required a tenant last year to spread the barn manure of the ranch upon the wheat land, but the tenant, after doing so, set fire to the stubble, and burned the manure.

In semiarid regions barn manure needs to be used cautiously on unirrigated land; in the wheat lands of Calofornia it is more or less visible for four or five years after its application to the land. The practice of two hundred years ago survives in some parts of the South; cattle are penned upon the land to increase its fertility, and the pen is shifted as the owner desires.

In a large portion of the North Central States barn manure is removed to prevent accumulation and deposited upon the fields throughout the winter, to be plowed under in the spring. In the East it is allowed to accumulate until spring, when it is deposited upon the land just before plowing. The use of this fertilizer for top dressing grass land is very common throughout the principal portion of the United States wherever it is used in considerable quantities.

Barn manure is more generally applied to corn than to any other crop, although a liberal application of it is made to tobacco, potatoes, and vegetables. Commercial fertilizer is liberally used in cotton production, in the more extensive agriculture of fruit and vegetable raising, and in growing small grains, to which it is applied with a seeder at time of seeding. The use of barn manure is greatest in the East, while commercial fertilizers have the greatest use in the cotton belt. The use of any kind of barn or commercial fertilizer is more and more sporadic westward from Indiana and commercial fertilizer is hardly anywhere seen west of the Mississippi River except on vegetable and fruit farms. The Southern farmers are not sufficiently supplied with live stock, especially that which is stabled, to have much barn manure, and their chief reliance to supply fertility to the soil is upon commercial fertilizer and cowpeas. Farmers plow under green manuring crops; especially alfalfa and other legumes, in all parts of the United States, and the farmers who do not do so are relying upon what they regard as an inexhaustible fertility or soil, or are cultivating a partly worn-out soil without understanding the cause of their hard conditions.

EFFECTS OF TENANCY.

Farm tenancy is a distinct damage to crop rotation, particularly in the South. This is not entirely due to one-year tenancies, but is partly hue to the character or poverty, or both, of the tenant; to the indifference and, also, in a degree, to the poverty of the landlord. These conditions are more especially found in the cotton belt, which often presents the worst situation for crop rotation. Given absentee landlords residing in town and paying little attention to their plantations, living very likely on credit until their cotton can be grown and sold; given tenants who do not know how to rotate crops without constant supervision, and who, like the landlord, are living on the future crop; and still further, given merchants who advance supplies and demand that the security shall be ample to pay the prospective debt by the production of cotton, which is a ready cash crop—given all of these conditions, and it can hardly be expected that the rotation of crops will make any progress. Yet, this is the situation throughout a considerable portion of the cotton belt. Hence, the dependence for fertility upon rest from production and upon commercial fertilizers; hence, washed-out and gullied fields, and only one-third of a bale of cotton to the acre.

In the East tenancy has a less effect upon rotation than in other parts of the country, because the landlords more commonly require the customary practice of a change of crops, but the landlords of the North Central States are less careful to protect their farms. The best tenants are found in the North Central States and Pacific Northwest. A Wisconsin correspondent writes that some tenants are well educated and follow a rotation better than the owners. West of the one hundredth meridian tenancy seems to make little difference with rotation. A general observation, gathered from the reports, for the whole country is that while tenancy is bad for rotation, its practices are generally only a degree worse than those of the owners in the same region who cultivate their own farms. As is the landlord, so is the tenant, only worse.

ATTITUDE OF THE FARMERS.

Why do not farmers more generally rotate their crops? The answers of correspondents are varied, and may be thus condensed:

(1) New land; (2) old land still regarded as inexhaustible; (3) reliance upon commercial fertilizer for land without humus; (4) the credit system in the South; (5) the poverty of the farmer, preventing an advancement of soil enrichers; (6) tenancy, with the features of short term, absent landlord, credit, poverty, indifference, and incapable tenant; (7) special inducement to raise one money crop, as corn near distilleries in Kentucky and Ohio, and near lumber camps in Michigan; (8) the limitations of the semiarid region; (9) contempt for "book farming," and preference for grandfather's "rule o' thumb;" (10) keeping a small number of live stock; (11) when the soil is sick with overcropping, the farmer is not well enough informed to know the nature and cause of the malady; (12) the farmer is in a rut, lacks initiative, and needs help to get out; (13) the cash and cotton rents are so high that the tenant can not get a start in rotation.

Among obstacles to rotation of another sort, which make it more or less incomplete, are drouth, insects, fungous diseases, a hard freeze at the wrong time, a bad winter, failure of clover or grass-seed to grow, and a change in market demand from one crop to another. Then again in extensive agriculture the small farm is at a disadvantage in rotating crops as compared with the medium or large farm.

The reports of correspondents indicate that there is nearly everywhere in the regions where crop rotation is little practiced at least a fraction of farmers who know the consequence of single cropping, or what substantially amounts to that. They report worn-out pastures, land with its chemical elements not well proportioned and deficient in humus, land uncovered by sod for many years, with its fertility washed into the creek, and with its surface "so gullied that a coon couldn't cross it." They report cockleburs, moss, wild grass, and weeds, with such a foothold that they can not be eradicated without rotation of crops; the ground infested with noxious worms and insects.

To avoid such waste, progressive farmers rotate crops; and there are other motives—the distribution of farm work throughout a longer period, the retention of moisture in the soil, and, as reported from Kansas, four crops for as many years from one plowing, namely, corn, wheat, grass, and grass.

Notwithstanding many a gloomy neighborhood view presented by correspondents, crop rotation is steadily extending and progressing. The South has made remarkable advance within a few years, owing to the cowpea. Among the many thousands of reports of correspondents one great fact stands out prominently, and that is the influence of the experiment stations and farmers' institutes. These are mentioned in almost every State, and with gratitude with the exception of one State, where general agriculture is at a low ebb and the farmers are inert.

The expansion of dairying appears in every direction; it is pushing into the Northwest and taking the place of wheat and other small grains; it has developed rapidly in the humid and semi-humid districts of the Pacific coast; it is making a perceptible advance throughout the South; and the dense population of the East is stimulating its growth faster than in any other division of States except the Rocky Mountain and Pacific.

The country never before saw such demand, and such growing demand, for leguminous seeds for sowing—the clovers, alfalfa, the vetches, peas, and cow-peas, and soy-beans and velvet beans. Numerous reports state that the farmers have just been awakened as from a long sleep, and that they are feeling their way with rotations in which a part is generally taken by a legume, and the awakening is often referred to as beginning at a farmers' institute.

The impression derived from the many reports is that crop rotation is progressing faster in many parts of the South and in western Oregon than elsewhere; and that next in order is that region in the North Central States that lies between the old and the new, but within this region Missouri appears to be making the least progress. Unirrigated lands in the arid and semiarid regions labor under such limitations that they can not be compared with other parts of the country in such a matter as crop rotation. As hopeless as farming operations seem to be in some regions in rotating crops, a general view of the whole country can not help but give one a hopeful impression, because progress preponderates and has never before been so rapid.

[*It would be interesting to know who furnished this "information" from Kansas.—Editor Kansas Farmer.]

Floods in the Prairie Region Can Be Prevented.

EDITOR KANSAS FARMER:—A conflagration or a flood is absolutely unmanageable, but a small fire or a small rivulet is easily controlled. It would have required levees 100 feet high the whole length of the Kaw River, and well up all its tributaries, to restrain the recent flood. Unless they were of solid masonry and went down to bed rock, they would not stand a week in that sort of a flood. The levee remedy is impracticable, aside from the fact pointed out by the FARMER that it would ultimately raise the river above the valley.

To control a flood after it reaches the river being impracticable, the only thing that remains is to prevent its reaching the river. This can be done. Damming the draws is the solution, and it is not so formidable or expensive an undertaking that nothing can be done till we find some way to evade the constitution so as to make it a public enterprise.

Nearly the entire quarter section on which I live drains through one ravine. For the last eight years I have had a dam across it, and for several years I have had three. This has given me almost absolute control of the water that falls on the drainage area above the dams. For example, with some twenty rainy days in May and an aggregate rainfall exceeding eight inches, no water left my lower pond until Thursday, May 28.

The best time to build ponds is fall or early winter, when farmers' teams are doing little. An ordinary dirt dam is sufficient. There should be an outlet pipe through the dam, some six inches in diameter and preferably of iron. One or two feet above this, and on unmoved dirt, there should be a wide outlet for freshets. Let the dam extend at least two feet above this outlet, and there may be a three- or four-foot rise before the water reaches the top of the dam. Both dam and outlet should be seeded to some deep-rooting grass, and then there is very little repair required, and little danger of the dam washing out. In fact the freshet outlet will be but rarely called into use, for the lower outlet will release the water fast enough so that no ordinary shower will raise the level more than a foot or two unless the drainage area is exceptionally large. The double outlet has the additional advantage that after the rainy season one may plug the pipe and let the water stand at the level of the freshet outlet, taking care to open it again if heavy rain threatens before leakage and evaporation have lowered the water enough to leave a margin for safety.

If the amount of water to be held is very large, or if it comes from cultivated ground, it is well worth while to construct a second dam higher up, and put the outlet pipe well toward the bottom of it. This will hold back a part of its water for a day or two, and so possibly prevent an overflow below, and at the same time precipitate the silt and prevent the filling of the main pond with mud.

If a man puts in a little dam and makes a mud hole instead of a pond, it is an eyesore and a mosquito-breeder, and it is quite certain to wash out the first season. Unless the situation is very favorable, it will take one team and two men two weeks to make much of a dam, and it will usually be advisable to put on more force or spend more time. A pond of an acre or more has waves enough to keep it from stagnating. It adds to the landscape, furnishes water for stock and irrigation, provides a place for swimming, fishing, and skating, and yields an ice crop. When a man gets one built so that it will stay, he values it more highly than any other part of the farm of like extent.

These are private advantages. Aside from the prevention of flood damage, I am satisfied that a general damming of the draws would yield another public advantage in this climate even more important. This is the prevention of hot winds; or rather, the evaporation from the ponds would wet up the winds sufficiently to render them harmless. Presumably, also, any considerable local additions to the moisture in the air would bring it to the point of saturation and give us many a rain that we now miss in the season when crops are maturing. One needs only to stand on the lee side of such a pond on a hot day and see what a refreshing breeze comes from it to realize what a transformation would be worked in the air if it traversed a series of such ponds on every quarter section.

Such considerations abundantly justify public aid, but it is difficult to apply it practically, and it is not necessary except for the purpose of convincing individuals that the work pays for itself. If the press will keep up the agitation until the Legislature passes some of the proposed measures for rebating taxes temporarily to landowners who construct ponds of a specified size, and authorizes the road overseer to lend the township's wheel-scrapers to pond-builders, and directs the fish commissioner to stock the ponds, farmers enough will take hold to show the rest how it is done and what the benefits are; and then the rest will go ahead without any abatement of taxes.

This is written from the standpoint of the moister, better settled, more agricultural part of the State. Obviously, in the western part of the State, where holding back the water would most benefit the State at large, it will not be held on every quarter section by private enterprise, but we do not know how to spend public money advantageously to meet the difficulty. If the farmers generally in the portion of the State which furnishes most of the run off water would arrange to hold a large part of it permanently on their farms, and let the surplus go to the rivers gradually, flood danger in Kansas would be past, the humidity of the atmosphere, if not the rainfall, would be greatly increased, the sediment would be on the farms instead of in the rivers, and in addition the individual farmer would be abundantly repaid for his trouble by the incidental advantages. H. B. COWLES.

Shawnee County.

Dr. F. W. Cragin, formerly for nine years professor of natural history in Washburn College, Topeka, and who for the past twelve years has been professor of geology in Colorado College, Colorado Springs, has resigned his position in the latter institution, laying aside the profession of teaching. Though not permanently relinquishing the field of geology, he will now devote himself to literary and historical work, and especially for the next two or three years to the preparation of a Topical History of the Early Far West. Dr. Cragin has been engaged upon this work at intervals for several years past, and expects to make it now the principal object of his time and research. It will be a sort of dictionary, cyclopædia, or alphabetically arranged handbook, of American, French, and Spanish pioneer (also Indian) people, places, and events in that part of the United States which is west of the Mississippi River. It will be illustrated with many authentic pioneer and aboriginal portraits, and with maps, views, plans, or restorations of old landmarks. Altogether, it promises to be such a work of reference as the West has long needed.

The World's Fair Commission.

EDITOR KANSAS FARMER:—Who are the commissioners and what are they doing to insure Kansas a representation at the great St. Louis Fair?

I remember the Kansas exhibit in Philadelphia in '76—she did herself proud at that time, taking the lead and sending to Kansas at least 30,000 homeseekers. It was estimated at the time that the investment was a good one and that each dollar spent by the State was equivalent to an immigrant.

What a show of agriculture and horticulture it was!

Now a word to the commissioners: If you are going to render a stewardship to the State it is time you get a move on you. In both agriculture and horticulture it is too late to secure many things essential to our products.

The commission is, I take it, made up from a political standpoint. The representative farmers are not in it. This is a great mistake. There are no Coburns or Wellhouses in sight. It was my fortune to have an audience with the committee on 26th ult., in connection with the State Horticultural Society. We told them "Delay was fatal, or would be," and how we thought horticulture should be represented. We succeeded in getting an audience after long importuning. We gave them the advice of the best horticulturists, there being present at that time the executive board which embraced every Congressional District in the State.

We informed the committee that we were ready to help, providing we were wanted; but that to make a show commensurate with our resources we must have some of the funds; we even insisted that a representative fruit man should have charge of the fruit exhibit. If anything was gained by this audience, I confess I do not see it.

It seems to me the committee are under a misapprehension. One expressed himself that the people would be glad to contribute of their best fruits—will they? I wish they would! Let me say that while I believe this is true of the great orchardists of the State, any of whom will say, "You are welcome to anything you can find," you will also find one who has but few specimens will wish to keep them or have value received for the same. Now this I know to be the case, having more than a quarter of a century's experience. They will tell you "They are not in it—they are not seen in it—that the committee are junketing on their sweat"—and the fact that their business is ignored in the very inception, i. e., the formation of the committee, all of whom are politicians, having no other qualifications, will cause them to hesitate when asked for contributions of their best.

The plan of the committee to have competitive shows to bring out the best products is chimerical. First, if these competitions are complete they must be at some central point. To do this, think of the expense to the several counties. One estimates that of the fifty-one counties having organized societies all would be glad to exhibit—I think I am safe in saying five would be nearer the mark.

Then again, the stuff shown would be unfit for showing at the World's Fair.

No, gentlemen! If a creditable show is made, you will have to "shell out," appoint good men to canvass for the kind of material necessary and pay for it, packing the same as soon as selected and placing in cold storage against the time of need.

Gentlemen of the committee, the time is fast passing. If Kansas is to have a show, be up and doing! Notwithstanding conditions are against us we can yet make a creditable horticultural show if the opportunity is offered. If not, a thousand times better were it that the large amount appropriated were given to the flood sufferers and that no show were attempted.

FRANK HOLSINGER.

Wyandotte County.

A new process cereal company is now operating near Washington, D. C. It employs what is known as the "steel-cut" method. Instead of grain being crushed and mashed as in all other processes of grinding, the berries or kernels are flaked or cut off with steel knives. This it is claimed gives the product a great advantage over other processes. For instance, by the ordinary method of grinding corn, much of the meal is in the form of dust which packs in between the larger particles and soon causes the meal to heat and spoil. For this reason corn is always kiln-dried and this destroys much of its sweetness and lightness. The corn-meal made by the steel-cut process is something on the order of a very fine granulated sugar; there is no powder or dust in it, and it aerates itself and therefore needs no kiln-drying.—Exchange.

Milking Machines.

Every once in awhile we see something in some exchange, generally foreign, about milking-machines. But it is seldom more than a rumor—nothing definite. The fact that the makers do not get more definite statements before the public is good evidence that the machines are so far from being perfect that the manufacturers do not care for much attention. As far back as 1860 the dairy public was startled by the reports of milking-machines about to take the place of human milkers. The first machine was constructed with the idea of allowing the milk to run out of the udders inserted for that purpose. In 1862 a one-cow milking-machine was exhibited in London, suction being the method depended upon for drawing the milk. Later machines were produced that milked as high as half a dozen cows at a time. They worked well, but were abandoned, probably for two reasons: The cows fell off in their milk supply, and the rubber tubes of the machines became foul. It is easy enough to milk cows by machinery; the problem lies in keeping the machines perfectly clean and in keeping up the milk flow. As yet these two problems appear not to have been solved.

Some years ago the writer saw at Ames, Iowa, a machine that milked eight cows at once. One central metal chamber was exhausted of air to produce the pressure on the teats, which were set into glass cups the shape of the teats. Those glass cups were connected with the long rubber tubes through which the milk must pass after it was drawn from the teats. The manager was asked how he kept the rubber tubes clean. He replied that he ran cold water through them as the milking was done each time, as hot-water or chemicals would injure the rubber. It is only natural to believe that these tubes would become rancid in a short time.

Later pulsating machines were made, in the attempt to reproduce the action of the hand of the human milker. It would seem more natural, however, to reproduce the action of the calf in sucking, whatever that may be. If we ever do get an effective milking machine it will probably be constructed on the simplest possible principle.—Prairie Farmer.

Changes in England's Butter Supply.

Some interesting figures relative to the changing sources of supply of butter for the British markets have recently been compiled by the English papers. It seems that the Russian and Siberian product instead of coming forward in such overwhelming quantities as was predicted has actually fallen off nearly 43 per cent during the past three months. The receipts during that period were only 83,651 hundredweights as compared with 145,641 hundredweights for the same time in 1902. It is safe to presume that in view of the larger make in both Russia and Siberia much of the butter has been stored at convenient points, shippers being unwilling to accept the rates ruling in the English markets.

The statement of the arrivals from the Antipodes is equally interesting. In 1900 the receipts from Australia and New Zealand for the first five months of the year were 632,717 boxes. Since then Australia has fallen from 418,017 boxes to 37,312 boxes and while New Zealand has increased about 50 per cent in the four years the gain has not been sufficient to offset the loss from Australia, the total receipts for the five months this year being 365,034 boxes, a shrinkage since 1900 of 267,683 boxes, or more than 42 per cent.

In the meantime there has been a steady growth in the business with Argentine Republic. Importations for January, February, March, April and May, 1900, into the four main entry ports of England were 32,242 boxes, and for the same period this year they were 106,298 boxes.—New York Produce Review.

Comfort in Hot Weather.

Hot weather is here again and we must look after the needs of the poultry and make suitable changes for them. If the yards and runs are not supplied with plenty of shade, then try to make different arrangements and make room for them in the orchard or a grove near the house. Not only will the trees benefit the fowls, but the fowls will benefit the trees and fruit by thinning out insects. Some poultrymen say if the fowls want shade they can go into the poultry-house; this generally is the hottest place to be found. I have often noticed that the fowls will sit in the shade of the fence, of a building, in fact almost any place before going indoors. They seem to enjoy outdoor life the best. Fruit-trees, vines, and bushes of various kinds may be planted for shade. Grape vines will supply an abundance of shade after the first year. If bushes are planted the fowls will get all the benefit from them, both fruit and shade. When we speak of shady yards we do not mean yards that the sun never shines upon; in such places the ground is damp continually and this is very unhealthy. It should be a dry place where the chickens may have shade and moisture and sunshine combined.

The poultry-house must be well ventilated in summer so that the chickens breathe pure, fresh air all the time. They need not be expected to lay well if kept in close quarters on hot, sultry nights. It is very weakening to the entire system. Fowls suffer as much as persons in this respect.

In many places, we find confinement to be an unhealthy condition for fowls, simply because it is an unnatural one. Avoid crowding too many together as disease is liable to attack a flock of this kind. If you have enough space. it is a good idea to have two yards for each flock. When the grass gets short in one yard change them to the second, then the grass in No. 1 will have a chance to grow again. By this plan one may have green grass growing in the yards the entire summer. Cleanliness is the most essential thing in caring for fowls that are confined. Keep the floors free from all filth and trash and well covered with scratching material. Set the drinking vessels in the shade and do not neglect to keep them filled with clean, fresh water. Put a small piece of copperas or a few drops of turpentine in the drinking water occasionally, to help ward off disease.—P. W. H., in Prairie Farmer.

KANSAS FARMER'S NEW WALL ATLAS.

The KANSAS FARMER has arranged with the leading publisher of maps and atlases to prepare especially for us a New Wall Atlas, showing colored reference maps of Kansas, Oklahoma, Indian Territory, the United States, and the world, with the census of 1900. The size of the New Wall Atlas is 22 by 28 inches and it is decorated on the outer cover with a handsome design composed of the flags of all Nations.

Tables showing products of the United States and the world, with their values, the growth of our country for the last three decades, and a complete map of the greater United States are given. This is an excellent educational work and should be in every home. The retail price of this New Wall Atlas is $1.

Every one of our old subscribers who will send us $1 for two new trial subscriptions for one year will receive as a present a copy of this splendid New Wall Atlas postpaid, free.

Any one not now a subscriber who will send us 50 cents at once will receive the KANSAS FARMER for five months and will be given a copy of our New Wall Atlas free and postpaid.

The center of the mother-of-pearl industry is Singapore. The shell oyster is six to ten inches long, the larger ones weighing as much as ten pounds. It is found on hard-bottom channels between islands, where the current is strong. In gathering it a diver takes with him a bag of coir rope one-fourth of an inch in diameter, made in large meshes, which, while suited for holding the shell, does not impede his traveling along the bottom. The apparatus for diving has not been introduced in the Philippines, although Manila shell brings the high price of a dollar a pound.

T. K. Adams, a mine inspector of Mercer County, Pa., says that the last lump of coal will be mined in the United States in the year 2052. He said there is about enough coal in the United States to last seven hundred years at the present rate of consumption, but points out that the demand doubles every sixteen years, and should the ratio be continued, the coal will be exhausted within the next 150 years.

Attaining Success.

Success affords us the means of securing additional success, as the possession of capital enables us to increase our pecuniary gains.—Stanislaus.

Every one likes to succeed, no matter what the undertaking may be. The merchant strives to build up a large business, the scholar seeks to perfect himself in his studies, and the farmer is tireless in his efforts to increase the yield of his crops. Some succeed in their efforts, while others fail to attain success. Washington, Lincoln, and Grant are splendid examples of what properly directed effort will accomplish, even though one is compelled to overcome seemingly insurmountable obstacles. Success on the farm to-day is secured largely by the proper selection and use of machines. It is impossible to save all of the corn crop without using machines, and the McCormick corn machines enable the corn-grower to double the value of his crop. They are the machines to buy if you wish to attain success.

A New Piano Contest.

The official market report paper of Kansas City, the Daily Telegram, is conducting a vote contest which is open to both ladies and gentlemen. The prizes offered are six in number; the first is a $475 piano, the other five prizes are proportionately valuable. Any lady or gentleman can try for one of the six prizes without a dollar of expense to themselves by writing the Contest Editor, Daily Drovers' Telegram, Kansas City, Mo., for admission blank and illustrated circular showing prizes, rules, etc. As there are only five condidates entered so far, and contest does not close until September 5, 1903, the readers of this paper should have an excellent opportunity of winning one of the prizes.

Low Summer Tourist Rates Via Chicago Great Western Railway.

$15 to St. Paul and Minneapolis and return; $19 to Duluth, Superior, and Ashland; $13 to Madison Lake, Waterville, Faribault, and other Minnesota resorts. Tickets on sale daily to September 30. Good to return October 31. For further information apply to any Great Western Agent, J. P. Elmer, Chicago, Ill.

An officially engraved announcement just received states that Mr. W. M. Walker, late of the Planters' Hotel, of St. Louis, has been appointed manager of the great Crescent Hotel at Eureka Springs, Ark. This splendid institution is managed by the Frisco Railroad System and is located on top of one of the Ozark mountains whence it is connected by trolley line with the adjacent city and mineral springs. It is one of the few resorts which are wholly satisfying at any season of the year, being north to the Southerner and south to the Northman. It is surrounded by pine forests and rounded peaks of the Ozarks and leaves nothing to be desired by those searching for a nearby resort for rest and recreation.

Nearly every reader of the Kansas Farmer is interested in having a good crop of turnips, and therefore we call special attention to the advertisement of the Rocky Ford Seed House of D. V. Burrell, Rocky Ford, Col.., in this issue of the Kansas Farmer, a well-established house which makes a specialty of choice seeds of all kinds, being extensive growers of the same.

"We have used Zenoleum exclusively the past two years and find it a very satisfactory sheep-dip and cattle- and hog-wash, killing all ticks and lice and leaving the fleece or hair, as the case may be, in a satisfactory condition. I take pleasure in recommending Zenoleum."
FRANK HARDING, of Geo. H. Harding & Son, Waukesha, Wis.

Notice to Epworth Leaguers.

For the accommodation of Leaguers who will attend the International Convention, Epworth League, Detroit, Mich., July 16 to 19, 1903, the

Rock Island System

will operate modern 16-section Pullman Tourist sleeping cars from Wichita to Detroit, to run through via Chicago and the Wabash Railroad, leaving Wichita at 9.50 a. m. on July 14. Diagrams now open. Make reservations through nearest Rock Island Agent, or

A. E. COOPER,
Division Passenger Agent,
Topeka, Kans.

In the Dairy.

Conducted by George C. Wheeler, Kansas Experiment Station, Manhattan, Kans., to whom all correspondence with this department should be addressed.

The Dual-Purpose Cow.

Professor Otis's reply to the query of C. B. V. as to how he should proceed to get together a herd that would yield 7 to 10 pounds of butter a week per head and raise calves worth $15 at 6 months of age, was doubtless the correct answer to the question as asked. But in all probability it would have been a better service to tell him the question did not need answering; that he was on the wrong track.

Theoretically it does look as if conditions may be such that dividing attention between dairying and feeding will increase profits. But if this is so, it does not follow that one is to use dual-purpose cows any more than that a mechanic who would follow both brick-laying and plastering should "split the difference" on his trowel. Certainly it must be conceded that the dual-purpose cow will not produce either butter or beef to the best advantage and therefore at the lowest cost, and one needs to figure very carefully to make sure that the compensations he thinks he finds turn the two losses into a gain.

The beefman who can get the milking and separating and delivering out of the women and children and counts that clear gain, would naturally like to have the cows give a little more milk, and does not quite realize that the increased profit here is at the expense of his feeding operations. But the man who is sure enough dairying and expects labor in that direction to pay, very quickly learns that one of his main tasks is to keep clear of cows that use his high-priced feed to make beef instead of butter.

I have been working with dairy grades for a dozen years. I have a cow of this class whose milk I weighed for thirty days last year. She gave almost an even 1,800 pounds. She is now past 10 years old. Most of her calves have been heifers, and I have raised them all. She has produced just one cow of exceptional quality. The dual-purpose breeds may produce their like more certainly than grades, but where the avowed purpose is to keep the dairy proclivity and the beef proclivity in equipoise, beefy animals are sure to be more common than in the dairy breeds, and they are over plenty there. I am turning to thoroughbreds largely to see if I can not get along without keeping so many heifers four or five years only to find that I can not afford to have them on the place.

Dual-purpose cows that will average 7 to 10 pounds of butter a week, are extremely good cows. Dairy cows of corresponding quality will yield from 14 to 20 pounds. Even if the dual-purpose cows would reproduce themselves with certainty, one might much better use the dairy animal, and take the extra profit she yields every year to buy a good steer all ready for the feet-lot.

The dual-purpose fallacy is so plausible but so mischievous that for the good of Kansas dairying it ought not to receive any countenance from those who are recognized as dairy leaders.

Topeka, Kans. A. M. COWLES.

Development of the Dairy Form.

The development of the dairy form in cattle, as many other subjects in stock-breeding, is not well understood. Domestic stock have been bred since time immemorial, and the subject of breeding has been studied in times as remote as those of Jacob, the founder of the tribe of Israel, who was able to control the color of his cattle's progeny by controlling their environment. We have no evidence, however, that dairy qualities were ever sought for in those days.

History tells us that butter was made by peoples of western Asia, by shaking the milk in a goat-skin pouch as early as the first Roman invasion. It may have been possible, even in that early time, that cattle were bred for dairy purposes and it is barely possible that in the interval between that time and the rise of the modern Nations these same cattle may have been pushed westward and have become the ancestors of our modern cattle.

Holland was famous for its dairy products as early as the ninth century, and it is probable that the cattle of the country were bred for the special purpose of the large production of milk even at that time. It is probable that these cattle were bred up from the same aboriginal wild race as all of the domestic cattle of to-day. Dairy breeds and beef breeds had a common origin.

All the difference in form between our dairy breeds and beef breeds has come about through selection and breeding. Selection has been going on from very early times to the present in developing our dairy breeds.

It is entirely improbable that form had any influence in the selection in the earliest periods. Cattle were selected for utility and it would naturally be some time before the relation of form to production would be discovered. Breeders were doubtless familiar with the law that like produces like and the best producers were probably selected as breeding stock. Yet all these years of selection even in the Holstein-Friesian breed have failed to eliminate poorly formed animals. Of course intelligent methods of selection were probably not always followed by breeders, and different breeders had different ideals. To-day we consider form as an index to quality. Breeders prefer a good milk and butter record to any excellence of form. Form is looked upon as an evidence of productivity, and is of use only in case of animals in which no record of production has been kept.

Form is influenced by heredity and also to some extent by feed. As to whether form is a result of productivity or whether productivity is the result of form is a question which can hardly be answered satisfactorily. At any rate, we do not breed for form but for productivity. It seems reasonable to suppose that if cows are milked from generation to generation, and are fed and cared for in the proper way to produce milk that the secretion of milk might be increased, and the form influenced also. In fact, dairymen do feed their calves intended for the dairy a different ration from that fed the other calves.

Dairy form and production also may be pushed to the maximum in from three to five generations by crossing good dairy sires and common cows. This has been demonstrated on thousands of farms and at some of the experiment stations.

It seems that selection and breeding have been the principal factors in producing the dairy form and must also be the means of maintaining and improving it. E. W. MCCRONE.

The Kansas Dairy Cow, What She Is and What She Ought to Be.

Kansas dairying is of recent origin, so of course the Kansas dairy cow has not had time to reach the zenith of development. And though doubtless bettered greatly since she was first vitalized for the purpose there is still room for vast improvement. A majority of the cows milked in our State are cows that have been bred primarily for beef purposes, their owner taking to milking because he has seen others milking with profit. Without ever regarding the amount of butter-fat his cows are yielding he goes on with his business totally ignorant of its yield of loss or gain.

Unfortunately the dairy cow most frequently met with in our State is one that has no special ability for any purpose when viewed from the standpoint of the specialist, and she has a very restricted sphere of usefulness from the standpoint of economy. This accounts for the unsatisfactory status of the dairy business in a region thrice blessed by nature for its unlimited and profitable development. Why such a cow should hold such a prominent place in the affections of the farmer is hard to understand, but most likely he has never thought enough about his cows to know why. The order she represents is long in leg and body, has a very undesirable style of udder and a heavy head. She has some of the defects of all types and few of the desirable qualities of any. She does more to retard the growth of animal industry and the economical production of beef and milk than all other influences combined. Her reproduction is something to be strenuously avoided. She does not produce enough milk to pay for her feed and makes a very inferior quality of meat when subjected to the slaughter test, and her offspring, inheriting her defects do not perpetuate any of the qualities that must be sought where economical production is hoped for.

The last United States census estimates the average quantity of milk per cow annually at 2,883 pounds, which it would be fair to suppose would make 130 pounds of butter. Is this profitable? There are a great many cows milked in our State that do not yield over a thousand or fifteen hundred pounds of milk during their whole lactation period. Supposing this tests 3.8 per cent, we get from 50 to 100 pounds of butter per year. If the price of this will average 20 cents per pound we have from $10 to $20 per year from the cow's milk. Of course to get the total income of the cow for the year there must be added the value of the skim-milk and that of the calf. Skim-milk is valued at 15 cents per hundred, and suppose the calf be valued at $10, this makes from $22 to $32 the whole income of the cow. After the price of feed and labor is subtracted where is the profit? These are actually the circumstances. Many farmers there are who have twelve or fifteen milch-cows, and sell the butter-fat to creameries and for no month of the year get a check of over $25 and for some months considerably less. Is such a man getting rich? In fact, does his dairying pay him? If not, where is the trouble? Is it with the man, the feed, or the cow? We think it is with the cow. As said before she was originally bred for beef or at the best for dual-purpose. Is it to be expected that she should be profitable in the dairy?

These are the existing circumstances, and to change our State to a strictly dairy one, radical renovation is necessary. There are few farmers who have the ready capital to buy a completely new herd of a dairy breed, but positively there is no farmer who can afford to milk a cow that is not yielding him a profit. We may as well expect to make a good race-horse out of a Norman as to expect a beef cow to make a good milker. Usually such a cow may be recognized by her close, compact form, thick shoulder and neck, thick, meaty thigh, close, well-sprung ribs, straight, smooth back. Such cows are found in nearly every breed, that is, to a greater or less extent. No particular breed can be recommended for our State. It is a recognized fact that the best of any breed are better than the poorest of all others. Nor is it necessary to have thoroughbreds of any kind. Experiments have demonstrated that grade cows of three-fourths or seven-eighths are as good at the milk-pail as the full-bloods themselves.

The Kansas dairy cow ought to be the paying kind. Authentic sources give it as their opinion that a cow to pay for herself must give 175 pounds of butter annually. If this is true then a cow that gives 225 pounds of butter-fat is worth twice as much as the 200-pound cow, providing she consumes the same amount of feed. A cow that gives 300 pounds of butter is worth five 200-pound cows. It is by no means impossible to get cows that will yield annually 300 pounds of butter. There are records of cows that have made 778 pounds of butter in one year. It is true that if the standard yield is to be raised, a number of milch-cows must be gotten rid of; and why not? They are yielding no profit, simply eating up what the rest of the herd is making, and if the farmer would knock every

cow in the head that is not netting him a gain he would be several dollars wealthier by spring. There is no reason in the world why by selection and breeding we can not have cows that will give us 300 pounds of butter each year.

In selecting, it is not necessary to judge altogether from the external appearance. Especially is this true in weeding out the poor cows of the herd. We have their record to go by. If every farmer in the State could be induced to discard everything less than 200-pound cows we would in a few years have the best and greatest wealth-producing dairy system in the world and with it land would increase in value, thus making it worth while to beautify the home and improve the farm. Let us by all means seek to better the yield of the Kansas dairy cow.

J. NYGARD.

Lessons Learned by Watching the Milk Record.

When we observe the various degrees of success attained by different farmers, we are sometimes prone to think that a great deal of modern success is simply the result of "good luck." Yet a more thorough study of the methods of the successful farmer reveals in him an essential qualification not possessed by those who are less prosperous. He allows himself to be governed by his previous experience. He observes the work done by various makes of machinery and under all circumstances. He seeds his ground with that seed which has produced the highest yield and best quality of grain. When his crop is ready to harvest he promptly harvests it and as promptly places it where it will be protected from damp weather. Thus by his close observation and by possessing the faculty of putting into practice that which experience has taught him was best, he has prospered where others have failed.

The dairyman, too, must if he is to be successful, adhere to certain fixed methods. He, too, like the farmer, must be a close observer. He must necessarily weigh and record separately the milk of each individual cow. Further, he must test and record separately the test of each cow at least once per month. These records form a basis of study by which the dairyman is enabled to ascertain which of his cows are yielding him a profit, and at the same time to determine the unprofitable ones. A single month is not sufficient time to test the milking qualities of his cows. He must make a thorough investigation. His cows like the machines of different makes may show different results under different circumstances. One cow may give a large quantity of milk immediately after calving while another may prove a more persistent milker. One may produce the largest quantity of milk during the year while the milk of another may be found to contain a higher per cent of butter-fat. Again, one cow may produce more butter-fat during the year while another may produce it more cheaply and thus show a greater profit.

In choosing calves for the purpose of raising dairy cows a study of the milk record may again be found beneficial. Careful investigations have shown that the milk-producing qualities of the cow are to a great extent hereditary, and therefore can be influenced by careful breeding. To obtain the best results, the dairyman should select the female progeny of those cows whose records for producing butter-fat have been the best.

Again, by a close observation of the milk record the milk-producing values of the different feeds have been determined. Cows are no longer "fed for beef and milk alike," but, as nearly as practicable, are fed a balanced ration which has proven to give the best results. The results of any excitement among the dairy cows can be noted by a glance at the milk record. The use of a dog in driving, or even the loud and boisterous manner of the milkman is followed by a noticeable decrease in the flow of milk. Any sudden change in feed, in milkers, shelter, or care, results in a corresponding decrease in the amount of milk produced.

Half a century ago commercial dairying was practically unknown. To-day we find dairying one of the most important and most profitable of industries. Doubtless the milk record occupies no small place as a factor in bringing about this marvelous change. Scientific investigations have been made for the purpose of establishing new and better methods of feeding and caring for the dairy cow. The success or failure of these experiments depended upon their influence on the milk record. If they proved to have the desired effect on the flow of milk they were put into practice, if not they were cast aside. Thus by adopting the best and rejecting all other systems the yield of milk from the average dairy cow has been more than doubled. And yet progress in the dairy industry has not ceased. Increased efforts are being put forth for further advancement and it is generally believed that many lessons are yet to be learned by watching the milk record.

J. B. THOMPSON.

A Machine for Milking Cows.

[FROM THE NEW ENGLAND FARMER, JULY, 1856.]

There is no work about a farm that is so universally considered drudgery, and avoided and dreaded by all the inmates of the farmhouse, as the constantly recurring labor of milking. It is always the first thing in the morning and the last thing at night. And after a day's hard work at the washtub, or in the hay-field, through a long, hot day in July or August,—to be obliged to sit down and milk three or four cows is certainly no very trifling or attractive affair. To be able to perform this work easily and rapidly by machinery is therefore one of the most desirable steps to be made in the process of labor-saving inventions, in agricultural improvement. And when it is considered that in the United States alone, there were in 1850 6,385,000 milch cows, each one to be milked by hand twice every day for about three hundred days in the year; that the amount of the butter and cheese for that year, as shown by the census, was 418,881,000 pounds, in addition to $7,000,000 worth of milk sold, we get some idea of the magnitude of the labor to be annually performed in milking.

But it is not a difficult matter to perform all this unpleasant drudgery by machinery. The only wonder is that so simple a thing had not been discovered and used years ago. Just look at a calf while he is sucking, and consider how rapidly, easily, and perfectly he will perform the operation of drawing the milk from the cow's udder, as if he had four mouths instead of one. And every one will see that it is no very difficult affair to construct a machine with four mouths, that will do the same thing in the same way, quite as easily, rapidly and perfectly as a calf could do it, drawing all the milk into a pail or vessel, free from every impurity, and with very little exertion.

Acting on this idea, I have been devoting the leisure moments of some two or three years to experiments, with a view to perfecting a machine for milking cows; and I am happy to say that I have succeeded beyond my most sanguine expectations. My application for a patent is now under examination in the Patent Office, and the machine will soon be presented to the public.

It is somewhat difficult to describe even the most simple piece of mechanism, without diagrams or illustrations, so as to make one's self understood; but this little machine is so simple, and its action is so easily comprehended, that I will venture to describe it without cuts or figures.

In the first place, I take a large size pail, either of tin or wood, and fit on it a cover so as to make it air tight; then I construct a small pump in some compact form, so as to exhaust a part of the air from the pail. The pump made for my experiment (and which is described in the application for a patent) is a part of the cover to the pail, and being flat and thin, works rapidly and without friction, and does not wear so as to leak. It is only necessary to produce a slight vacuum, such as a calf might make with his mouth—I then connect four small rubber tubes, about eighteen inches long with the top of the pail; and on the other end of each of these tubes, I fix a little cup of tin, glass, or any other convenient material, about two inches in diameter and three inches deep. Over the top of each of these cups is drawn a cap of thin, flexible rubber, having a sack or mouth in the center, of sufficient size to receive the end of the cow's teat, with a small hole in the bottom for the milk to pass through. The cap fits to the top of the cup, air tight, by its own construction, and also hangs around the end of the teat, but by its flexibility permits a free flow of milk into the cup and through the rubber tube into the pail.

Having got the machine in readiness, I slip each of the cow's teats into one of the soft, flexible sacks or mouths, which can be done in an instant with the end of the thumb—the rubber clings around the teats and holds the teats in place. I then commence pumping slowly and easily, and the milk flows in a large, steady stream from each teat, through tubes into the pail. The cow meantime, is quietly chewing her cud, hardly knowing that anything is going on; so perfectly is the teat sustained by the rubber sack, that the suction hardly affects it all, and there is no pulling, flinching, or squeezing in any direction. All the while the milk is flowing at the rate of about two quarts per minute; at any rate, I have milked eight quarts of milk from my cow in four minutes, with a machine by no means perfect; because being the first and only one ever made, and got up only to experiment with, it has suggested improvements which will be embodied hereafter. I am entirely satisfied that a child or woman can milk with this machine with perfect ease, faster than four milkers either man or woman, can milk by hand.

But the chiefest recommendation of the machine still remains to be mentioned. The common method of milking by hand necessarily exposes the milk to more or less dust, drippings from the hands, and other filth, which often spoils its taste, and always gives one the idea that he has been swallowing a disagreable amount of unmentionable materials. Even the best and most careful milkers can not avoid getting something into the pail that should not go there; this is proved by the universal custom of straining the milk immediately after milking, in all cases, and by whomsoever it may have been milked. But straining will not take out the drippings from the hands of careless, filthy milkers; and the result is a very general complaint among consumers, of a bad taste of milk, too often attributed to the adulteration or dishonesty of milkmen.

This machine entirely obviates this unpleasant difficulty. The milk is drawn directly from the udder into a covered pail, where no dust or drippings or filth can fall or be thrown by carelessness. The Irish girls can not dip their hands into the pail to moisten the teats, as is a common practice, nor can the cow step into the pail, or kick it over, so as to spill the milk.

In short, I think the milking machine will be great labor-saving improvement for the agricultural community, and a genuine comfort to both the cows and the consumers. Immediate efforts will be made, after obtaining a patent, to introduce the machine to the notice of the public, and to supply the market demand for them. It is not possible at present to say at what price they can be afforded, but probably they will not cost far from $5 apiece.

JOHN W. KINGSMAN.

Dover, N. H., July 21, 1856.

Oklahoma Dairying.

In a press despatch from Guthrie, O. T., Dairy Agent Ed. H. Webster has been interviewed as follows: "Oklahoma has the possibilities of becoming a great dairy country. Wherever alfalfa is grown, it is possible to produce butter at a profit, and alfalfa certainly can be grown with success in Oklahoma. The fact of it is, the dairying interests are being so neglected that a great source of profit to farmers is cut off. We hope to get them sufficiently interested, however, that they may take up with the idea of improving this condition until Oklahoma will equal Kansas in its reputation as a butter-producing country.

"In Kansas I find that the skimming station is being rapidly done away with. A few years ago it was the plan for the farmer to haul his fresh milk to town in cans and at the station have it run through the separator, but now that condition is changing. Instead, the farmers are buying their own small separators and furnishing to the creamery companies direct the butter-fat. One Kansas company since the first of the year has furnished to its patrons over 3,000 separating machines and a Nebraska corporation also has disposed of about 2,500 separators to its patrons since January 1. In a few years Oklahoma farmers will be operating separators on their own farms and sending their butter-fat direct to the creameries.

"The butter-producing industry is only in its infancy in Oklahoma. That is accountable from the fact that the first settlers came here with little if any stock except their horses. It was impossible to bring many cows at that time, but the farmers have been gradually importing them and from now on I look for the interests of this class to develop."

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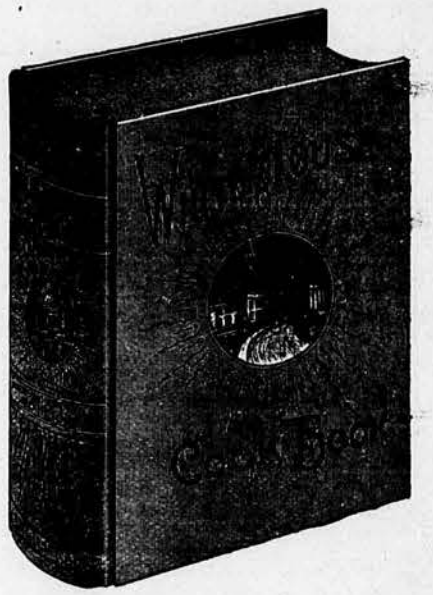

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The Poultry Yard.

To Earn $100 More a Year.

In a recent number of Our Grange Homes is a report of a meting of Penobscot County (Maine) Pomona Grange, at which meeting the question assigned for the afternoon discussion was "How can the average Penobscot County farmer earn $100 more this year than last?" One speaker advocated stock-raising and stated that the average farmer at small expense would earn the money in that way. Another speaker said that he planned to make extra money with the potato crop. Another said he would not specialize but would extend his work in all branches; would work harder and have his wife work harder; would raise more farm stock, pigs, hens, and potatoes. Another said he would add to his income by raising fifty pigs. One sister advocated the raising of small fruits. Another farmer said he would make this $100 by employing a better hired man. Another farmer advocated raising all the stock possible and was supported by a neighbor who added the advice to raise the crops which the stock was fed upon. The master of the grange in summing up, said: "The talk indicates that we must work, and that with interest, if we are to succeed. I am somewhat interested in pigs; I have eleven. Last year I kept eight at a net profit of $21. I think I failed last year by not feeding enough when they were young. I intend to give them more pasture room this year. Potatoes are sure money at the present price; pork will pay if the price holds high; there is money in poultry. I believe in specializing along the line for which one seems best adapted. We should experiment a little, not run in the same ruts as, perchance, our grandfathers did before us, else we are not progressive."

It is a constant surprise to us that these intelligent, and in a way, progressive, farmers find it so difficult to realize the profitableness of poultry-raising, and the great pecuniary advantage it is to the farmer to increase his poultry work. One farmer at this same grange meeting stated that he had a flock of ten Plymouth Rock hens last year, and when the year came around they had paid a profit of $22.32. This is a profit of $2.23 apiece, and it is surprising that those farmers can not see that by simply multiplying those ten hens by ten they can get $223 profit. We know it is comparatively easy to do this in Maine, because we have the figures of men who are doing it year after year, and when we read the statement made by Ex-President Cushman, of the Maine Poultry Association, before the Agricultural Committee of the Legislature, to the effect that Maine imports two and a half million dollars' worth of eggs and poultry every year, it certainly is cause for surprise that these intelligent Maine farmers do not open their eyes to the opportunity they have right there at their door. We do not overlook the fact that probably the bulk of this two and a half million dollars is paid out for poultry, meat and eggs for the hundreds of thousands of summer visitors that flock to Maine every year. Why do not the Maine farmers raise the poultry and eggs to meet that demand right there at home, and keep that large sum of money in the State?

We recently told of the case of a Maine farmer who wanted extra money to help his boys to an education, bought two incubators and a half dozen brooders, and by increasing his poultry to about 100 head and raising 300 or 400 chickens each year, he has cleaned up an average of $300 cash profit each year for the last ten years. There is absolutely nothing favorable in his situation. He lives on one of the large islands in Penobscot Bay, lives four miles from the steamboat landing, and has to haul all of the purchased food over four miles of hard, hilly road, and has to haul his eggs and dressed poultry over the same hard, hilly road to the steamboat landing to send them to market. Every one of the farmers who attended that Penobscot Pomona Grange is doubtless more favorably situated than this farmer of whom we wrote. We know of another case of a farmer in Maine who is eleven miles from the railroad and has to haul all of the grain that he buys over that eleven miles; but he sends his eggs to market by the mail stage, which takes his cases of eggs to the express office at the railway station for the moderate charge of 25 cents per case. This man makes egg-farming the principal part of his business, keeps about 400 hens, and clears $700 to $800 a year in cool cash profits from eggs only. Why can not our Maine friends get that additional $100 easier by keeping fifty hens than by any other work they can do on the farm? We know something of farming conditions in Maine and know that fifty good Plymouth Rock hens would give them that desired $100. Indeed fifty good Plymouth Rock hens would be worth $40 to sell in the market alive, to-day. The last quotations of live poultry in Boston market were 13 and 13½ cents, and good Plymouth Rock hens will average to weigh 6½ to 7 pounds apiece; 7 pounds of hen at 13 cents a pound is 91 cents, and fifty hens of that weight would sell alive in the Boston market for $45.50. When in Chicago a few weeks ago we were told of an Illinois farmer who sent some Plymouth Rock hens to that city at a time when they were selling at 15 cents a pound alive, and the hens actually netted him $1.07 apiece after freight and commission were paid. Surely with such prices as poultry are bringing to-day, and the constant demand there is for "strictly fresh" eggs, our Maine friends need not work so very hard to get an additional $100 a year!—Ex.

Not All Poetry.

EDITOR KANSAS FARMER:—From a careful reading of the poultry papers I think a new hand in the business of raising chickens might judge that poetry predominates in his chosen calling and that perspiration and profanity are wholly unknown. I notice that in the choice of a name for their poultry farms most people settle upon something suggestively sweet or shady, betokening a life of ease and enjoyment. The labor-saving devices that the journals so highly praise and the profits of the industry so plainly proven are apt to urge many who are afflicted with that tired feling to embark in a business that may not fulfill their expectations. No professional poultry writer has ever attempted to give an unvarnished pen picture of the incidents connected with just a plain, ordinary sitting hen, yet it is a fact that when a poultryman pretends to tell the true story of his life and leaves out reference to sitting hens, the half—and far the worst—has not been told. Agreeable to the saying that "Hope springs eternal in the human breast" time after time hens are set and not a chick results. High-priced eggs are prayerfully introduced to a biddy of tried and true antecedents and a day later she is found calmly warming an unfeeling door-knob in an adjoining nest and the prized eggs are left out in the cold world, No one has fathomed the depths of the human soul who has not experienced the feelings of an average man at such a time. To grasp the offending fowl by the neck and lift her back to her rightful charge is the first step in the downward path. If she persists in returning to the orphaned door-knob her next lesson is more vigorously given and is usually received with some squawks. Pressure is applied to her neck and a look of desperation is cast into her startled eyes. Having finally learned where she belongs she varies her demand for instruction by beginning to break the eggs and new duties thereby devolve upon her unhappy master. Poetry has little part in the process of purifying a nestful of bedaubed eggs toward the closing days of an unpromising hatch. When at last two puny chicks come out as a reward to virtue the ungrateful poultryman is tempted to put them to death and begin anew, and when they succumb naturally after lingering a week or so, he wishes he had. No, all is not rhythmic joy on a poultry ranch. There are some untoward circumstances and not the least of these is the sitting hen. J. B.

Bourbon County.

Dosing a Fowl.

Pills are a convenient form, and for poultry they never need be larger than four or five grains; but better than these pills are gelatine capsules, which my own poultry will pick up off the ground. If I want to give one of my fowls a dose of medicine, I have only to get it into a corner by itself and throw down a raspberry-colored capsule, and the bird will pick it up of its own accord, and swallow it whole. This is really far better than having to get a fowl and force a pill down its throat, and I want to emphasize the importance of treating a sick fowl as you would treat a sick child—do not make it worse by having a struggle every time a dose of medicine is necessary. Failing a capsule, a small pill will generally be taken without difficulty by a fowl if it is placed in the middle of a little piece of moist bread.

There is another point. Most people seem to have very crude ideas as to what constitutes a "dose" for a fowl. I come across people sometimes who think nothing of giving a large pinch of cayenne pepper to a fowl. I have known as much as a quarter of a teaspoonful to be given to one unfortunate bird. When the farmer is tempted to give cayenne papper to his birds let him remember that one grain of cayenne pepper makes eight doses for a full-grown fowl. The use of cayenne pepper is an occasional—a very occasional—internal irritant, the object of which is to act slightly upon the liver or to excite the digestive organs and make them a little more sensitive than usual. The folly of overdosing must be one which causes more suffering to poultry than to any other members of the animal kingdom. I can give another instance. I hear of people giving a tablespoonful of cod-liver oil to a fowl, and I always tell them that if they would give a full-grown fowl fifteen drops (that is to say, just exactly one-sixteenth of a tablespoonful), three times a day it would do a great deal more good; for the system of a fowl can only assimilate a small quantity of the chlorides and the bromides and the phosphate and the iodides in cod-liver oil, and what is given beyond that is waste, or worse than waste, for it tends to cause hypertrophy of the liver. Small doses of medicine given frequently and regularly are infinitely better than big doses given unsystematically and spasmodically.—W. M. Freeman, in exchange.

Turkeys Laying In Coops.

Since one of the drawbacks to successful turkey-raising is the loss of eggs due to turkeys making their nests a long distance from home, the possibility of inducing them to lay when confined in runs has been studied at the South Carolina Station, with two lots, each containing two hens and one male bird. Bronze birds 2 years old in one case and 3-year-old White Hollands in the other were used. Each lot was confined in a run 80 by 100 feet, two nests covered at the top to keep out the rain and partly hidden behind some bush being provided in each case. The turkeys were fed in the morning to a mash of wheat bran and cornmeal 1.1, with whole corn and wheat on alternate nights. Twice a week they were given ground bone and meat scrap and always had access to oyster shells. The Bronze turkeys laid forty-two eggs from March 26 to April 22 and the White Holland thirty-six eggs from March 24 to May 4. At the end of the tenth day examination showed that thirty-eight of the former and twenty-seven of the latter eggs were fertile. Twenty-seven of the Bronze turkey eggs and sixteen of the White Holland eggs hatched. During incubation the Bronze hens broke four eggs and the White Holland six, all of which were fertile. It is stated that all the eggs which failed to hatch were laid during the first two weeks of the test.—Massachusetts Ploughman.

Why Do the Chicks Die?

EDITOR KANSAS FARMER:—Will you please tell me through the poultry columns in your paper what is the matter with my young chicks? They die when from 3 to 5 days old. I can see nothing the matter only they get weaker and weaker until they die. I hear of their dying all over this part of the county just the same as mine.

Cloud County. M. M. V.

Northern Dutchess County, N. Y., has discovered a veritable Eldorado in the violet industry, and so substantial have been the profits in the last year that farmers are devoting their time to raising the flower instead of the crops to which the fields have been accustomed for generations. Carpenters are constantly busy building violet houses. It was only a few years ago that the discovery was made that the soil in the towns of Red Hook and Rhinebeck was peculiarly adapted to violet culture, but now the finest violets sold in New York come from there. More than 125 violet houses, nearly all built within two years, are already being operated, and dozens more the being built. It is estimated that the sale of violets in the two towns in the season just ended exceeded $200,000.—Exchange.

How to Keep Turkeys from Trespassing.

There is so much to learn about turkeys. The first thing is, how to mate for best results. A great many have spent much time at this one problem, and then failed. Another is how to raise them. This seems like an easy task when one has so much valuable information given through our poultry papers, and yet no information imparted through this medium can excel one's own experience. I can not tell you how to raise turkeys and insure perfect success. One has to learn it himself. Another is how to keep our turkeys at home, or from tresspassing on our neighbor, which we know is wrong. In fact, I have often heard honest people remark that they "Quit raising turkeys because of this one trouble. They were always bothering somebody."

Now I am going to give you my plan, which proved most successful last season. I raised a very fine flock of young fowls. They gave me very little trouble about roving until September. They went in three different droves of fifty, fifty, and sixty each, in different directions, but had never failed to come home at night. Once a week I would count them. One evening on counting them I found the bunch which roved eastward were missing, so we went to a neighbor's living in this direction, and found them perched up in the trees with his turkeys.

We drove them home that evening and every evening for a week or more. Still they would persist in staying there. They had taken up with his turkeys and were as well satisfied there as at home.

We soon decided that some other means must be used to break up their range. After we were sure we had them all at home, about four members of the family drove them all together, early one morning, in an opposite direction to a nice stream of water and plenty of gravel. And there we fed them all the corn they would eat. They were driven about a quarter of a mile from the house, but still on our own farm. They seemed to enjoy their drive after they learned where to go. Of course, they gave us some trouble about keeping them there for a few days. But they know the route now so well that only one person is required to take them each morning and feed them all they will eat. About noon they begin their stroll homeward, coming in one and two at a time, looking as well satisfied and contented as they did when roving in our neighbor's corn-field all day, and stopping to roost with him at night.

I hope if any of the readers of the Journal have ever had such experience as this, that they will try my plan of changing their course. I keep my turkeys very gentle. Talk to them whenever I am with them. Can pick them up whenever I care to do so. This is another very important matter as a turkey that is wild is hard to conquer, but conquer I have and so can you. This year I intend to commence training them earlier in the season to range exactly where I choose for them to go, and thus avoid last season's trouble.—Mrs. J. C. Baker, in American Poultry Journal.

Miscellany.

The Evolution of the Silo.

Our first experience with the silo was in the very expensively constructed pits under ground in which hundreds of barrels of Portland cement were used. We had not then struck even the proper proportions for the silo, and the pits were made as wide as deep. They had square corners, too, and the rule was to sow the corn thickly so that it made few ears, and to cut this immature product as rapidly as possible into the pits, tramp it down as tight as possible, and when full, to cover it with boards, and then pile rocks on to give pressure. Pressure was considered very important and many were the screw contrivances invented for the purpose of putting extra pressure on it. All this great pressure on very green corn resulted in a slower fermentation and the production of a very sour article, the smell of which pervaded the entire premises. It was not to be wondered at that the creameries and the condensed milk factories refused to take the milk impregnated with the sour odors of the ensilage. Then, while it was easy to cut the corn into the pits, the getting of it out was a serious job. The first directions were to cut the mass down perpendicularly in taking it out. I soon saw that this would not do, for the leaving of a great wall of silage simply resulted in the exposed edges getting deeply molded, and I soon stopped this plan and raked off a portion of the whole surface daily, which was a great improvement. Then I found that on taking off the great mass of rocks and the board cover I had a black, stinking mass right at the surface, which had to be removed. I argued that this must be wrong, and that the tight cover, shutting down the hot vapor from the silage, was responsible for it. In the meantime we had gotten to planting the corn thinner and making a more matured product with an abundance of ears, and I then determined to make a radical change. So one season when my corn was extra fine I cut it a day ahead of the machine and shocked it in the field and hauled it to the cutter the following day. I went more leisurely about the work and let the mass settle a day before cutting again, tramping only enough to get it well into the corners. But the radical change was in leaving off the board cover and the rocks, and simply putting a layer of cut straw a foot deep over the top. That season I had my first ensilage that could be called sweet as distinguished from the rank, sour stuff we had been making, and that was the last of the board cover and the rock weights. That same season a neighbor, who had built an expensive stone silo, piled rocks on it until he burst the silo wide open. This same season I visited a large Shorthorn breeding establishment in southwest Virginia, where I found that they were putting up thousands of tons of silage in simple wooden buildings with tall posts set in the ground, and I saw, too, that they had far less loss from damaged silage than I had in the cement pits, while their silos did not cost a tithe of what mine did. I found that the cold cement walls under ground kept up a constant condensation and there was invariably a loss alongside the walls. The first I visited, too, had cut off the corners of their square silos and thus reduced the amount of loss. On coming to North Carolina I no longer was personally concerned with silage making, having turned my attention to horticultural matters. But the college was making silage, and had square, wooden silos in the station barn. When the new barn on the college farm was built I was much interested in the construction of the new silos. The owner of a manufacturing establishment had suggested the making of silos like a railroad water tank, but with perpendicular sides, and they contemplated making them and putting them on the market. The college silos were made of staves held together with iron hoops. They were set on brick foundations, had a roof and a hood opening into the barn, where the cutting machinery stood. Doors were made from bottom to top for taking out the silage. These silos, built by students, have been a perfect success, and were among the first of the stave silos. The round silo is the final evolution of silo construction so far as shape is concerned, and American ingenuity has devised many modifications, substituting built-up wooden hoops for the iron ones, and cheapened the construction till any one with a saw and hatchet can make his own silo at a cost of less than $1 for each ton capacity. With the expensively constructed pits I formerly used the difficulty was to get the farmers to see that they could make ensilage, for the cost of the pits scared them off, and I had difficulty in persuading them that a creap wooden box above ground was not only cheaper, but far better than the costly pits under ground. The final evolution comes with the finding that even a roof is entirely needless, and that an open tub will keep the silage just as well. I think, however, that a well-ventilated roof is better. The corn will make its own air-tight cover if simply left alone, as the mould runs through the tops and closes it up. But it is better to use some cheaper material for a cover, and in most places cut straw is the best to be had. In the South, where cottonseed hulls can be gotten cheaply from the oil mills they make the best of all covers for the silo. When the silage has become sterilized by its own heat, the cover of the cottonseed hulls and lint will prevent the access of germs of mould from the outside. In the biological laboratory it has long been known that no germs can pass through cotton wool, and in making pure cultures we always stop the test tubes with a wad of sterilized cotton. The cover of six inches of cottonseed hulls on the silo perfectly protects the silage, and on taking it off there will not be found a particle of mould on the silage. Where this material is accessible there is nothing equal to it.

Ensilage making is no longer a hurried matter, for it is found that slower filling and settling are better than so much tramping, and all that is needed in filling is to keep the mass leveled down uniformly. In the early days of ensilage-making many intelligent farmers prophesied that abandonment of what they considered a mere fad, and the farmers from abroad, who had been raised to consider root crops the only true means of getting succulent food in winter for stock, hooted at the idea of feeding cattle on what they called "sour kraut." But real advances in agriculture never go backward, and today the stock-feeder who has not a silo is far behind the times. Root crops are good, but cost three tmes as much to grow, harvest and feed as the silage, while their feeding value is no greater. In our sunny climate the Indian corn plant will always surpass in feeding value any root crop that can be grown, and if English farmers could make corn silage there would soon be less of root crop growing there.—Prof. W. F. Massey, in Practical Farmer.

UNIVERSAL DUST-SPRAYER.

The Latest and the Best.—The Haseltine Universal Dust-Sprayer.

It is light, only weighing six pounds; simple, has no machinery to get out of order or break; durable, if properly cared for will last for years, and it is

the easiest operated of any dust-sprayer made; it is operated under the arm, like a Scotch bag-pipe, and is the cheapest sprayer on the market for the amount of work it will do.

The Universal Sprayer will use any composition for insects or fungus, or will apply a mixture of both at one time.

The Universal Sprayer can be used as an all-purpose sprayer, for orchards, vineyards, gardens, flowers, cotton, tobacco, peas, potatoes, poultry, etc.

CONSTRUCTION THE SIMPLEST AND BEST.

Mr. S. A. Haseltine, the inventor, is one of the largest orchardists in the Ozarks, and has for twenty years practiced patent law, which has enabled him in this invention to apply the scientific principles of physics to get the greatest force and volume of spray from the least amount of labor exerted. He also utilizes the principle that the arm can operate a bellows easier than the hand, with less fatigue to the operator, and gives greater force.

ADJUSTMENT.

The Universal Sprayer can be adjusted to throw a mere trace, or a strong blast with a dense cloud of dust, as desired.

The Universal is the most economical sprayer, no waste of material, no lost motion, no cog wheels nor chains slow in getting started. No heavy machinery to be carried by the operator.

The Universal will hold enough material to spray across forty acres and back again, and not weigh as much as other machines do when empty. One man can spray ten or fifteen acres in three hours with the Universal Sprayer.

DIRECTIONS.

Full directions for compounds accompany each sprayer, with directions for using the same.

EXPENSE.

The expense of spraying with the Universal Dust Sprayer is about one-eighth (⅛) of the expense of the liquid spray to apply the material, and uses less than half the material required for liquid spray to cover the same surface.

EFFECTUAL.

The Universal Dust Sprayer will supply the dust in a cloud under and above the leaves and fruit when covered with dew or rain, or when dry if no wind, and it sticks to the moisture and the plants and fruit hold the spray material, and it does not run off, as liquid spray. Also the surplus, after covering one tree, floats to another and will spray three or four rows at a time. It thus saves material that would be wasted in the liquid by falling on the ground.

MIXING.

The mixing of the compound for the Universal Dust Sprayer, under the directions given, is simple, easy, and most effective. Not strong enough to burn nor too weak to be of value. Try the Universal Dust Sprayer and be convinced.

OPERATION.

The Universal Dust Sprayer is alone in its ease and simplicity of operation, in that it utilizes the bag-pipe principles of placing the bellows under the arm, so it can be operated by the arm instead of by the hand, and reversed from one side to the other. The feed and stirring mechanism is operated automatically by the action of the bellows.

PRICES.

The Universal Dust Sprayer is intended for all purposes. Sent to any freight or express office in the United States prepaid for $10.

Agents wanted everywhere. For agents' terms, etc., address S. A. Haseltine, Mfg., Springfield, Mo.. Send all orders for sprayers to Kansas Farmer Company, Topeka, Kans.

It is extravagant economy to buy a grade bull or boar. Instead of improving the herd he makes it deteriorate. Bad blood always shows in the calf or pig.

Gossip About Stock.

The catalogue of the National Shorthorn shows and sales for 1903, has been received. The dates claimed are August 31 to September 5, at Hamline, Minn.; October 19-24, at the American Royal at Kansas City; November 28 to December 5, at the International at Chicago. A card to John W. Groves, Live Stock Record Building, Union Stock Yards, Chicago, will bring a copy of this catalogue.

The first car-load of Kansas wheat of the crop of 1903 was shipped from Arkansas City to the Kansas City market and tested 61½ pounds No. 2 red. It was dry, hard, and in prime condition and brought 78 cents per bushel at auction. The first car-load of Oklahoma wheat was shipped from Stillwater on June 29, and was started for Liverpool by way of Galveston. It showed a well-developed berry which tested 60 pounds.

One of the handsomest catalogues that has been received recently is that issued by the Belle City Manufacturing Company, Racine Junction, Wis., descriptive of their thrashers, feed- and ensilage-cutters, sweep and tread powers, truck- and barrel-carts, root-cutters, and saw-frames. This catalogue is accompanied by a small pamphlet containing letters from pleased customers, and interested parties may receive the catalogue by writing as per their card on page 740.

Few stock remedies have achieved so much deserved popularity as has the Rex Conditioner for all kinds of farm stock. It is manufactured by the Rex Stock Food Company, of Omaha, Neb. For run-down or wormy stock it has no equal in restoring healthy conditions. It increases appetite, makes the coat glossy and not only improves the appearance but puts them in a healthy natural condition. Write the Rex Stock Food Company, Omaha, for further information.

We call special attention to the announcement of the American Percheron Horse Breeders' and Importers' Association. This association claims to be the only Percheron association in America recognized by the United States Government. It is desired by the association to have its stock scattered as widely as possible in order that the Percheron interests of the whole country may be represented in its membership. For detailed information or entry blanks apply to Geo. W. Stubblefield, secretary, Bloomington, Ill.

The International Stock Food Company, of Minneapolis, Minn., who are the owners of one of the greatest stables of standard-bred and thoroughbred horses in the United States and who have Directum 2.05¼ and Dan Patch 1.59 1-5 at the head of their herds, have just received a letter from Schoombie, Cape Colony, South Africa, asking them to price a Directum colt out of a first-class dam. Mr. Geo. E. Stevens is the writer and announces his intention to go into the breeding of standard-bred horses because of his belief that the climatic and food conditions of Cape Colony will produce record-breakers.

In a recent business letter Mr. Chas. Morrison, Phillipsburg, Kans., proprietor of the Phillips County herd of Red Polled cattle and Poland-China hogs, says: "Crops of all kinds are booming here. We are commencing to cut wheat, which promises to yield heavily. Second crop of alfalfa about ready to cut. The Red Polls are in fine condition with plenty of good pasture. Have six fine bull calves ready to ship; also some fine young cows and heifers. Red Polls are growing in favor every day. They are the cattle for the general farmer who wants milk and beef. I am having good success with my pigs; have plenty to the litter and will have some handsome ones to ship out this year. They are all of good size with plenty of length, style, and finish."

The Kansas Farmer is just in receipt of the first copy of a beautifully illustrated magazine called "Gas Power." This paper is published for those who make, sell, or use gas or gasoline engines. The contents of the first number include articles of value upon high-speed engines, hot-tube ignition, alcohol motors, suggestions of the selection of a new gasoline engine, what gasoline engines are doing, and the steam vs. the gasoline engine, gas-jet and insulation troubles, oil cooled engines, and installing a gasoline engine. These with minor articles and abundant illustrations make up a very interesting magazine which is well worth the subscription price of 50 cents per year. The magazine is published by the "Gas Power" Publishing Company, St. Joseph, Mich., to whom subscriptions may be sent.

The State of Kentucky has long been famous for its fine cattle and good horses and these, with the other products of the State, have made her State fair equally famous. This year the Kentucky State Fair will be under the control of the Kentucky Live Stock-Breeders' Association, and will be held at Owensboro on September 21-26, immediately following the Illinois State Fair. Kansas has the largest live stock-breeders' association in the world and no more capable body of men could be found within the State limits to manage a State fair than the breeders who compose the Kansas Live Stock-Breeders' Association. We hope the time is not distant when a State fair for Kansas will be an accomplished fact.

A good Shorthorn is always an object lesson. Moreover it is a work of art whose breeder is entitled to such credit as belongs to other artists. When one can visit a large herd of good Shorthorns he can experience the same thrill of pleasurable satisfaction which might come to another who visits a famous picture gallery. Such herds are the result of careful and judicious breeding and are the product of proper blending of blood lines as represented in typical individuals. About eight miles from Atchison, Kans., is a herd of good Shorthorns that produce these pleasurable sensations to the visitor and that are the result of the use of first-class bulls. The herd belongs to H. Kumpf and was formerly headed by the 20th Duke of Twin spring, sired by Golden Lad 115691 out of Rose of Idlewild 2d, Vol. 41. This bull was bred by M. C. Vansell, of Muscotah, and reflects credit on the herd from which he came. Mr. Kumpf's present herd-bull is the 29th Duke of Twin Spring 178710 by Kirklevington Duke of Wooddale 112760, bred by N. H. Gentry, and out of Miss Mason, Vol. 43. The 29th Duke was bred by June K. King, of Marshall, Mo. If one were searching for a combination of the best Cruickshank and Bates blood he would hardly know where to turn to be more successful than has Mr. Kumpf, and the results of the use of these bulls are shown by the younger individuals now in his herd. Such Shorthorns are all too uncommon.

One of the heaviest losers by the recent flood was the Moore Chemical Company, Stock Yards, Kansas City, Mo. The large amount of Car Sul Cattle Dip stored in their warehouse was carried away with the exception of about three barrels. They lost about four hundred empty barrels and all of the movable property, while their manufacturing retorts and tanks were filled with mud and sand. Perhaps the worse loss they suffered was that of the list of names and postoffices of their 400,000 correspondents. Within the thirty days since the flood they have cleaned out the two feet of mud which covered everything, cleansed and started their manufacturing machinery and are now shipping their Car Sul Dip to the ranges and breeding farms all over the West. The abundant energy of the genial Colonel Moore, whom everybody knows and likes, coupled with the shrewd business acumen of Dr. Whittier, makes a combination that even the greatest flood in Western history can not down.

Perhaps no breed of cattle has made such great progress in the affections of the Western farmer as the Galloway has done in the last few years. Of an ideal beef type, strong in the valuable cuts, easy keepers and fatteners, great rustlers and well able to withstand the sudden changes of weather, the Galloways have won for themselves a place that is being rapidly increased. When securing animals of any beef breed it is always best to get the purest bred and best individuals. It will be remembered that Geo. M. Kellam, of Richland, Kans., made a showing of a few individuals only from his herd at the Topeka State Fair last fall and won first on yearling bull calf, Don of Cloverhill, and first on 2-year-old cow, Isabel. These were the only two animals exhibited and the latter won sweepstakes as well, and this in keen competition. Mr. Kellam has since sold the bull but has others that he thinks are even better now on his farm for sale. His card has been placed on page 739.

Some weeks ago we were interested in an inspection of the results obtained in an attempt at an entirely new line of breeding. About thirteen years ago Mr. W. W. Guthrie, of Atchison, conceived the idea of originating a herd of Polled Hereford cattle. He worked assiduously along this line during his lifetime and has been succeeded in this effort by his son, W. W. Guthrie, Jr. Some idea of the difficulties encountered may be realized when it is known that it was first necessary to secure parent stock that were not only polled individuals but that would produce polled progeny. This was almost an insurmountable difficulty but was finally accomplished. It was then necessary to have animals that were true to type, having all of the characteristic markings of the Hereford breed except the horns, and thirdly, it was necessary to breed and raise animals of such quality as would make them sought for by other breeders. Perhaps no greater enthusiast has engaged in the breeding business than young Mr. Guthrie and he now has a herd of some fifty head for which there is a demand all over the United States. His father was successful in the organization of a National Polled Hereford Breeders' Association, of which he was made the first president. There are now breeders in eight different States who hold membership in this association, and the difficulty experienced by its members is in meeting the demand for their output. While the difficulties encountered in the attempt to establish this new breed have at first seemed insurmountable, a long step towards its accomplishment has been made and we think that a few years more will find a regularly established demand for this new breed of cattle.

A Profitable Crop.

General Passenger Agent George Morton, of the "Katy," St. Louis, received the following letter from one of the company's land and immigration agents at Rock Island, Texas:

"I send you by express a box of cigars manufactured from Tobacco grown at Halletsville, Texas, on Post Oak sandy land, by one W. B. Hawkins. Mr. Hawkins raised 800 pounds per acre. It takes 15 pounds to make 1,000 cigars selling at $30 per thousand. The cost of manufacture and sale is about $13 per thousand, leaving net profit per 1,000 cigars (or 15 pounds of tobacco) of $17. There are in this (Altair) county thousands of acres of the same kind of land which can be purchased at $4 to $6 per acre.

A Chance to Make Money.

I have been selling perfumes for the past six months. I make them myself at home and sell to friends and neighbors. Have made $710. Everybody buys a bottle.

I first made it for my own use only, but the curiosity of friends as to where I procured such exquisite odors, prompted me to sell it. I clear from $25 to $35 per week. I do not canvass; people come and send to me for the perfumes. Any intelligent person can do as well as I do. For 42 cents in stamps I will send you the formula for making all kinds of perfumes and a sample bottle prepaid. I will also help you to get started in business.

MARTHA FRANCIS,
11 South Vandeventer Ave., St. Louis, Mo.

"Do It Now!"

Don't wait until your friends tell of these things, but write us for pamphlets entitled "Business Chances," "Beautiful Indian Territory," "The House that Jack Built," "Texas," "Old Mexico," and other Katy publications, and post yourself on opportunities for making money at points along the line of the Katy. Address

"KATY,"
600 Wainwright Bldg., St. Louis, Mo.

WEEKLY WEATHER-CROP BULLETIN.

Weekly weather-crop bulletin for the Kansas Weather Service for the week ending July 7, 1903, prepared by T. B. Jennings, Station Director.

GENERAL CONDITIONS.

The temperature averages closely to the normal this week being slightly below in the western counties and slightly above in the extreme eastern. There were several quite warm nights. Good harvest weather obtained until the last days of the week when very good rains spread over the larger part of the State with heavy rains in the northwestern counties and in some of the southeastern.

RESULTS.

EASTERN DIVISION.

Wheat harvest has ended in the south, is well along in the central, and has begun in the northern counties. Thrashing has begun in the south showing a good yield of a good berry. No spring wheat reported in this division. Corn has made rapid progress this week, being greatly benefited by the warmer nights, and the cultivation given it. The early corn is being laid by in the central and southern counties, and in Woodson is beginning to silk and tassel. Oats generally are fine, though the crop is badly rusted in Montgomery and the central part of Anderson and many fields are badly damaged by rust in the northern part of Jackson; in Atchison there was some damage by rain and wind. The early oats are being harvested in the south and are about ready in the central. The oat yield promises to be unusually large in the central and northern counties. Prairie grass is good, and in the central and northern counties made the best growth of the season during this week, and with favorable weather haying will begin in the Kaw river counties in ten days or sooner; will be a good crop. Timothy and clover haying have progressed in some counties, but are retarded in others by wet weather. The second crop of alfalfa is ready to cut for hay but much of it will be left for seed. Early apples are ripe in Woodson; some apples are falling in Coffey; in southern part of Shawnee the apple crop is in good condition and doing well, in the northeastern part they are few and poor. Grapes are making a good showing for fruit. Early potatoes are damaged by too much wet in Atchison.

Anderson.—Good rains have greatly improved corn prospects and insured a good stand of forage crops; wheat is cut and shocked; oats are rusting badly; pastures and hay crop fine.

Atchison.—Corn and oats blown down by high wind accompanying a heavy rain; early potatoes damaged in many places by the wet weather of May and the fore part of June; clover haying still delayed by wet weather.

Bourbon.—Corn is growing well; will be but little more than half a crop in acreage; hay crop will be good; oats are turning; crop is not as good as was promised earlier.

Brown.—Crops are in fine condition and are making good progress; winter wheat is being harvested and is a good crop; no spring wheat sown.

Chase.—Corn growing rapidly and cultivation well advanced; wheat harvest about over; oats very fine and about ready to harvest; many will leave the second cutting of alfalfa for seed; the second cutting for hay will not be as good as the first; much corn will be laid by next week.

Chautauqua.—Wheat is harvested and well put up, and thrashing has begun; second crop of alfalfa ready to cut; a good crop of early oats are being harvested; corn is growing finely, and much of it is laid by.

Cherokee.—Corn is being rapidly cleaned and looks much better, the late planting growing very rapidly; no thrashing done yet.

Coffey.—Wheat all cut and thrashing begun; the recent rains will greatly help the late corn; apples dropping some.

Doniphan.—Winter wheat will be a little more than half a crop, and will mostly grade No. 3; no spring wheat raised here; corn in good condition; about three-fourths of the oats are good.

Elk.—Thrashing was stopped by a much needed rain on Friday and Saturday; the wheat that has been thrashed is a fair yield.

Greenwood.—The recent rains have put corn in fine condition and freshened the pastures and meadows; fine conditions for all growing crops.

Jackson.—Many fields of oats are reported greatly damaged by rust; wheat harvest well advanced; corn is being cleaned; some early has been laid by, but some of the late planting has not been touched.

Jefferson.—A fine crop of oats is ready for the binder; pastures fine; corn very weedy.

Johnson.—Good week for corn; all other crops in fine condition.

Leavenworth.—Wheat nearly ready, for harvest; oats looking fine; corn small, but growing well; first cutting of alfalfa in the stack; pastures very fine; stock in fine condition.

Linn.—Favorable week for all crops; corn has made good growth during the week and looks well; oats doing well; wheat mostly cut and shocked, but none thrashed.

Marshall.—Corn backward, but growing rapidly now, the recent rains proving very beneficitl; winter wheat harvest has begun, and the crop is very fine; no spring wheat raised here; oats promise a large crop.

Montgomery.—Cultivation of corn has been general this week, and the corn has made a fine growth; a large acreage of oats has been harvested this week; much of it is badly rusted and the yield will be light; wheat thrashing was stopped by the rains; quality of wheat good but the yield light; pastures fine.

Morris.—Fine weather for corn; some has been laid by; wheat cutting in progress; early wheat has a good berry; early cut alfalfa ready for the second cutting, and is a good crop; grapes promise fairly well for fruit, with an extra growth of vine.

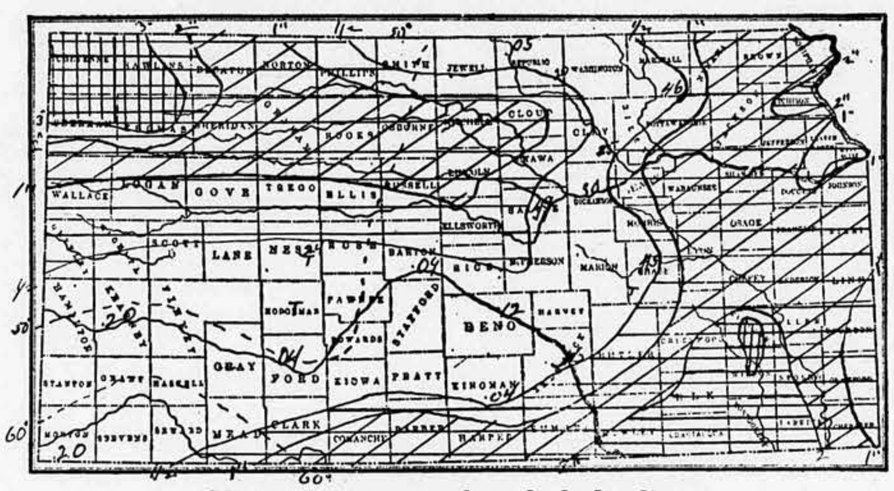
Pottawatomie.—A fine week for the growing crops, and everything has been favorable for securing the wheat and alfalfa crops; oats are nearly ready to cut and the crop good.

Riley.—Ground in fine shaps for cultivation; splendid growing weather; all crops looking fine.

Shawnee.—The tending of corn was delayed the latter part of the week by rain; most of the corn needs cultivating badly; prospects for corn are not very good; prospects for oats unusually good; newly sown alfalfa is not doing well; prairie-grass, timothy, and clover are good; the few apples that remain are poor and scrawny.

Woodson.—Corn is clean and growing very rapidly, some of the early planting being tasseled and in silk; wheat harvest is about finished; oats are unusually fine and are ready to cut; early apples are on market; most of them are small, but some are much better.

Rainfall for Week Ending July 4, 1903.



Minimum temperature shown by broken lines.

SCALE IN INCHES. Less than ½. ½ to 1. 1 to 2. 2 to 3. Over 3. T, trace.

MIDDLE DIVISION.

Wheat harvest is progressing as far north as Clay and Ottawa and some has been cut in Cloud, Phillips, and Washington; much has lodged in Lincoln and some in Pratt and Kingman. Republic is the only county reporting spring wheat and reports not much there. Corn has grown rapidly this week, except in a few counties where rain was badly needed, and has been cleaned; the early corn is tasseling in Kingman and Pratt. Oats have been greatly helped by the showers this week and promise a large crop except in a few counties where it has been damaged by rust or dry weather. Oats harvest has begun in a few counties and is about ready in several. Grass is very good. The second crop of alfalfa is growing well, and in Barton is beginning to bloom. Rye harvest is progressing in the north, being finished in Republic. Barley has been cut in Barton. Apples are in good condition in Dickinson. Early peaches, apricots, and plums are ripe in Barber. Raspberries and early blackberries are ripe in Reno, and tomatoes are being marketed in Barber.

Barber.—Another good week for harvest; all growing crops, including fruit, were greatly benefited by a heavy rain on the 3d; early peaches, apricots, and plums are ripening, but are only small crops; grapes that were but little injured by the late frost will produce a good crop; tomatoes are on market; cattle on range are in fine condition; water is plentiful.

Barton.—Wheat harvest in progress; barley cut; oats fine; corn is clean and doing well; new potatoes are being used; second crop of alfalfa beginning to bloom; meadows and pastures good and cattle doing well.

Clay.—Wheat harvest is in progress, yield and quality good; considerable damage done by hail in the south part of the county July 1; oats ripening; corn growing more rapidly; plenty of moisture.

Cloud.—Some wheat is being cut, but the most is still too green; oats ready for harvest; corn growing rapidly.

Cowley.—Fine week for harvesting; wheat turning out well; oats somewhat rusty but a heavy yield; corn doing finely with plenty of

rain so far; grass very fine; fruits plentiful.

Dickinson.—Oats that were not flooded are in fine condition; wheat is in fair condition on most of the uplands, although the fly has injured it in some places; apples are in pretty fair condition.

Edwards.—Some grain has been ripened by the hot weather, but some is still green; harvest hands are very scarce; those who sowed oats will have a big crop; corn is rather small but has a fine color and is clean.

Harper.—Harvest is well advanced; oats are being cut; have been damaged more or less by rust during the past week; corn is doing well since the rain.

Jewell.—Warm and dry, a fine growing week; corn generally clean and doing well; wheat is a good crop and is ready to harvest.

Kingman.—Harvesting about half done; grain blown down to some extent; oats promise unusually well; wheat is good; grass fine; corn growing rapidly and the early planted is beginning to tassel out.

Lincoln.—Good growing week for all crops; harvest is being pushed; the recent high winds have lodged considerable grain; most of it is being cut with binders owing to the scarcity of help to run headers.

McPherson.—Wheat is nearly all in shock; oats are ripening and cutting has begun; corn is doing very well; more rain is needed, but nothing is suffering.

Phillips.—Winter wheat is in good condition and promises a good yield; some rye and a little wheat cut; there is no spring wheat; oats are good.

Pratt.—Wheat harvest is in progress; high winds during the week retarded work and lodged the grain; oats have dried up and fallen down, very materially diminishing the yield; corn continues in good condition notwithstanding the dry weather, but tasseling very low.

Republic.—Good growing week; corn is being cultivated, and is recovering from the damage done by hail; rye is cut and shocked; winter wheat ripening very rapidly with more than an average crop; not much of any spring wheat here; oats below the average.

Reno.—Hot, dry, windy week; wheat nearly all cut and shocked in good condition; a fair crop; oats fine and nearly ready to harvest; corn growing well, but needs rain; raspberries and early blackberries ripe.

Saline.—Hot and dry the first of the week, cool and moist the latter part; wheat harvest progressing rapidly; oats a good crop; corn growing well; slight damage by hail near Mentor on the 1st.

Sedgwick.—Corn is looking fine; oats, alfalfa, and hay are very good; wheat harvest is in full blast; wheat crop good.

Washington.—A fine week for all growing crops; corn is growing rapidly, some being cultvated the last time; wheat and rye harvest have begun, wheat a good quality; oats good; the second crop of alfalfa making a rap-

WESTERN DIVISION.

Winter wheat harvest has begun in Ford, Ness, Sheridan, and Decatur, and is ready to begin in other counties and is showing an unusually good yield. Some damage has been done by hail and wind in Decatur, Norton, Thomas, and Trego. Spring wheat is reported in Wallace, Thomas, and Sheridan; it is headed and will be greatly benefited by the rains. Decatur reports none. Corn has grown rapidly this week but in several counties is beginning to need rain. Grass is fine in the southern and northern counties but is curing in Ness. The second crop of alfalfa is growing rapidly in Kearny, is being cut in Ford, and is nearly ready to cut in Wallace. Oats are quite promising; they are heading well in Kearny and filling nicely in Ford. The oat crop was damaged by hail and wind in Decatur. Rye harvest is in progress in Ness and the crop is in good condition in Wallace. Barley is filling nicely and is quite promising in Ford; it is heading well in Kearny, and is promising in the northern counties. Forage crops and grass are in fine condition and growing rapidly in Morton, and stock is improving. Potatoes are in very good condition except in Ness, where they need rain.

Decatur.—Small grain considerably damaged by hail and high winds; harvest begun; no spring wheat reported in this county; weather favorable for corn, which is growing rapidly.

Ford.—Wheat harvest has begun under favorable conditions, and the yield will be large and of good quality; oats and barley filled nicely and very promising; corn has a good color and is growing though the ground is dry on the surface; large second crop of alfalfa is being cut; grass very fine; good potatoes coming to market.

Hodgeman.—Hot winds the past week have dried things up generally; grain is beginning to ripen rapidly and is nearly ready to harvest.

Kearny.—Very good growing weather; wheat is ripening; oats and barley heading well; first crop of alfalfa in the stack, and second crop coming on rapidly; a good rain would be beneficial, though nothing is suffering yet.

Morton.—Fodder crops and grass growing rapidly; cattle are improving rapidly; wheat is ripening and promises well; very little rye, oats, or barley.

Ness.—A hot, dry week with high winds; late grain and feed crops need rain badly; gardens and potatoes are drying up; rye harvest is in progress; grass is curing and some hay is cut; wheat harvest will be general next week; small grains generally promise a good yield; corn begins to need rain; stock not doing so well.

Norton.—Good growing week; wheat is ready to harvest; some grain destroyed by hail; plenty of moisture; much corn is weedy, but looks well; potatoes a fine crop.

Sheridan.—Wheat and rye harvest begun; good crops; the rains will fill the spring wheat nicely; corn late but doing well; all crops fine.

Thomas.—Early winter wheat is very good and ready to harvest; spring wheat all headed and will be benefited by the late rains; barley promises a large yield; corn is making a fair growth now; early potatoes are fine; some damage by hail on the 2d.

Trego.—Wheat has begun to ripen rapidly, and is about ready to harvest; oats are very promising; harvest hands are scarce; some grain damaged by wind and hail.

Wallace.—Winter wheat is of good quality and a fair yield, though some fields are weedy; spring wheat promises a fair crop; rye, oats, and barley are good; corn is looking well; second crop of alfalfa is about ready to cut.

Safety Appliances on Ensilage- and Feed-Cutters.

So many accidents have been reported in connection with the operation of ensilage-blowers that too much care can not be taken to see that every precaution has been observed by the manufacturers of these machines to ensure their safe operation. Experienced operators would no more think of running a cutter unprovided with safety appliances than an eggine without a governor or a boiler without a safety valve.

The Smalley Blowers, made by the Smalley Manufacturing Company, Manitowoc, Wis., are built with safety flywheel and pulley, just the same as when carriers were used. The driving device is new. There is no wasted power and belt will not slip. All parts are made of best materials, frame is strong and the strain is no greater with blower attachment than when the ordinary carrier is used.

The largest sized machines will easily handle ten tons of ensilage in an hour, cut one-half inch, and elevate into any silo. Self-feed machines are made in six sizes and hand-feed in twelve sizes. An interesting catalogue telling all about these machines and full line of drag and circle saws, sweep tread powers., etc., will be sent free on request to the manufacturers.

Notice to Epworth Leaguers.

For the accommodation of Leaguers who will attend the International Convention, Epworth League, Detroit, Mich., July 16 to 19, 1903, the

will operate modern 16-section Pullman Tourist sleeping cars from Wichita to Detroit, to run through via Chicago and the Wabash Railroad, leaving Wichita at 9.50 a. m. on July 14. Diagrams now open. Make reservations through nearest Rock Island Agent, or

A. E. COOPER,
Division Passenger Agent,
Topeka, Kans.

THE MARKETS.

Kansas City Live Stock and Grain Markets.

Kansas City, Mo., July 6, 1903.

After a break of 15@20c here last week, the beef-steer market showed strength to-day, and in some instances put back a dime of the loss. Receipts were liberal at 5,500 head, but the supply at five points totaled only 37,000 head, compared with 44,000 head last Monday, and this helped the sellers. Tops sold up to $4.80 and the better grade of beeves brought $4.50@4.75. A drove of handyweight steers and heifers mixed, belonging to Joe McCormick, of Zeandale, Kans., brought $4.75, a pretty stiff price for 850-pound stock. Cow and heifer stuff showed more life than during the dull close last week and prices looked firm. Compared with a week ago to-day, however, values averaged 15@25c lower. Very good heifers brought $3.50@3.75, and nice killing cows sold for $3@3.25. The supply in the quarantine division aggregated 82 cars, the biggest single day's receipts of the year. Trade was dully with values averaging little more than steady. The hog market held very nearly steady in the face of a run of only 51,000 head at five points, compared with 64,000 head a week ago. Receipts here were right at 10,000 head. Tops brought $5.75 and the bulk of sales ranged $5.65@5.70. Sheep receipts were 1,700 head with the demand lively. Muttons sold steady with last week's 50@75c decline, while lambs were a trifle stronger. Top lambs brought $5 and muttons $3.50. Cattle receipts at this point last week amounted to 22,600 head, hogs 42,900 head, and sheep 11,600 head.

Among the good cattle sold here last week were: I. L. Inskeep, Manhattan, Kans., $5.05; R. G. Campbell, Clayton, Mo., $5; Ed. Monday, Piedmont, Kans., $5; W. M. Armstead, Dunavant, Kans., $5.10; S. B. Wilfey, Golden City, Mo., $4.75; C. W. Cassell, Hartford, Kans., steers and heifers, $4.70; Ed. Harrison, Piedmont, Kans., $5.15; P. F. Dunn, Higgins, Texas, calves, $5; J. P. Williams, Miami County, Kansas, $4.80; Ed. Orris, Winterset, Iowa, $4.77½; J. Dever, Blue Mound, Kans., $4.85; J. N. Aldrich, Strasburg, Mo., $4.70; W. Doman, Winchester, Kans., $4.80; J. H. Geer, Vilas, Kans., $4.70; T. J. Grace, Cheney, Kans., $4.85; H. A. Moon, Rose Hill, Kans., $4.70; E. Brining, Clay County, Missouri, $4.80; Walter Douglass, Buckner, Mo., $4.85; W. Shirley, Milo, Kans., $5.

After a bad start, the hog market braced up last week and closed steady with values current in our last report. Receipts were 42,900 head, a gain of 60 per cent over the same period last year. Other markets showed heavier runs than in 1902 and this proved a bearish feature to trade. Considering the runs, the reaction of the market at the close of the week is quite remarkable. Tops for the week brought $5.85, compared with $7.92½ a year ago. A feature of the market was the abnormal demand for light hogs. Receipts of late have been running largely to heavy swine and consequently the trade has suffered from what was almost a dearth of pig weights. This is the season of the year when the Eastern trade demands neat weight swine and to meet the emergency the packers paid high prices in order to secure light-weight stock. On each day of the week hogs weighing under 200 pounds topped the market and in several instances 105- to 140-pound pigs brought the best price of the day. This condition may keep up for the next few weeks, but it is certain that a fair supply of light-weight swine will see heavy hogs resume their normal position of being the best sellers.

A distressing break took place in sheep last week. Receipts here and at other markets were anything but abnormal, but this is the season of the year when killers begin to bear down on sheep values in anticipation of heavy runs from the far West. In the space of two days, from Wednesday morning until Friday, the market declined 50@75c per cwt. on both sheep and lambs. The close saw no reaction in the market and values quit for the week averaging 40@50c lower with bad cases showing a decline amounting to 75c@$1. It is natural to suppose that next week will see some of this loss put back, for a decline of the magnitude of this week's loss should not take place when the market is in such apparently healthy condition as at present. Stock and feeding sheep held in firm request throughout the entire week and closed strong to a little higher. Good to choice lambs are now quoted at $4.75@5.25; fair to good kinds $4@4.50; mixed sheep $3.25@3.75; best wethers $3.75@4; ewes $3.25@3.40; stockers $2.50@3; and bucks $2@2.50.

The horse market was weak to lower during the past six days. Receipts of natives were moderate and of Westerns liberal. The first range horse auction of the season saw about 600 Arizonas, weighing 600 to 700 pounds each, bring $15@18 per head by the carload lot. Big mules are in firm request and shippers will make no mistake sending in their best mules the coming week. Magnificent harvest returns coupled with optimistic crop reports everywhere served to break all grains from 2@5c per bushel last week, corn, wheat, and oats going down together. The market reacted to some extent to-day, however, and put back part of the loss. Cash quotations at Kansas City are: No. 2 wheat, 71@73c; No. 4, 63@65c; No. 2 corn, 46½@47½c; No. 4, 43@44½c; No. 2 oats, 35@38c; No. 4, 33@35c; flax, 88c; tame hay, $5.50@11.50; prairie, $4@12.50; alfalfa, $5@11; and straw, $5@6.

In the produce market potatoes took a tumble last week and good new stock is now selling for 50@60c per bushel. Tomatoes also declined with the advent of larger supplies, selling at 35@40c per crate. Berries are advancing under the stimulus of lighter receipts and are now commanding $1@3.50 per crate. Eggs and poultry hold firm. Eggs are worth 12@12½c; hens, 8c; broilers, 14c; turkeys, 8½c; geese, 8c.

H. A. POWELL.

New York Butter Market.

Average for week of June 29 to July 3, 20.51c.

Special Want Column

"Wanted," "For Sale," "For Exchange," and small or special advertisements for short time will be inserted in this column without display for 10 cents per line of seven words or less per week. Initials or a number counted as one word. Cash with the order. It will pay. Try it.

CATTLE.

AT BEULAH-LAND FARM—Red Polled bulls, 8 months old, $75; 5 months old, $60. Fat and fine; choice and cheap. A litter of handsomely marked fox terrier pups, 3 months old; males, $5; females, $3. Wilkie Blair, R. R. 1, Girard, Kans.

FOR SALE—Registered Aberdeen-Angus cattle Fifteen bulls of serviceable age, 9 from 18 to 24 months old, also my herd bull for sale or exchange, and a number of young cows with calves at side. I am making special prices to reduce herd on account of shortage in pasture. A. L. Wynkoop, Bendena, Kans.

FOR SALE—Five head of pure bred Hereford bulls of serviceable age. Address, A. Jonhson, Clearwater Kans., breeder of high-class Herefords.

FOR SALE—A few choice Shorthorn heifers and young bulls. M. C. Hemenway, Hope, Kans.

FOR SALE—Guernsey bulls from best registered stock. J. W. Perkins, 423 Altman Building, Kansas City, Mo.

SWINE.

DUROC-JERSEY PIGS—Recorded; also herd boar, Victor Chief. L. L. Vrooman, Hope, Kans.

FOR SALE—Duroc-Jersey boar, ready for service. He is from the famous Blocher-Burton stock. February pigs now ready for sale. J. P. Lucas, 113 West 23rd St., Topeka, Kans.

FOR SALE—A few nice young boars of October farrow, sired by Kansas Chief, a son of Chief Tecumseh 3d. C. M. Garver & Son, Abilene, Kansas.

SEEDS AND PLANTS.

MILLET SEED—Siberian, $1 per bushel, f. o. b. Omaha. D. C. Patterson, Omaha.

FOR SALE—Golden Yellow popcorn, very productive, excellent for popping, very tender. Packet 6 cents; 7 pounds 50 cents. J. P. Overlander, Highland, Kans.

200,000 FRUIT TREES! Wholesale prices; new catalogue. Baldwin, Nurseryman, Seneca, Kans.

FARMS AND RANCHES.

FREE Farm list, information; Sales, trades. State map 10c. Buckeye Agency, Agricola, Kans.

FOR SALE—160 acre farm. A good 7 room house. A good barn that will stable 16 head of horses, and double grainer and all necessary building that are needed. A very fine orchard. All kinds of fruit. Fifteen acres of corn, 10 acres of alfalfa and 100 acres for wheat this fall. The balance in pasture. One and one-half miles from Mitchell Kans. Price $5,250. Address, J. W. Piehler, R. R. 6, Lyons, Rice Co., Kans.

5,000 ACRES VIRGIN TIMBER LAND in Lamar county, Texas, in the Red river valley near the "Frisco System." Soil very rich and never overflows. Fine saw mill and tie proposition. Black, White, Red and Post Oak, Ash, Hickory, Walnut and Bou D'Arc. Will sell in small tracts to suit purchaser. Address, Chas. Lee Requa, Eureka Springs, Ark.

DO YOU WANT THIS—320 acres; 120 acres cultivated, balance pasture in good condition, good unfailing water, nice, improvements. Cost $5,000, and they are in good condition. Price $6,000, your own terms. Any sized farm cheap. Try us. Garrison & Studebaker, Florence, Kans.

FOR SALE—A 39-acre suburban tract two miles from state capitol building, near electric car line, Topeka. Surrounded with good homes. Frank J Brown, 17 Columbian Bldg., Topeka, Kans.

RANCH FOR SALE—1360 acres, 1120 acres of creek bottom, with model improvements, 140 acres alfalfa, 600 acres pasture, balance number one farm land. For further information address G. L. Gregg, Real Estate Dealer and Auctioneer, Clyde, Kans.

SOME BARGAINS in farm lands in Anderson County, Kansas, in farms ranging from 80 acres up. S. B. Hamilton, Welda, Kans.

FOR SALE—Farms and ranches in central and western Kansas. We have some great bargains in western ranches. Write us. R. F. Meek, Hutchinson, Kans.

NO FLOODS, no failure of crops, seldom a drouth, in the Northern and Central counties of Wisconsin. Clay and clay loam top soil, clay sub-soil. Fine crops. Fuel cheap. Water plentiful. These cut-over hardwood timber lands make the best of farms. Hiles & Myers, A60 Matthews Bldg., Milwaukee, Wis.

HORSES AND MULES.

FOR SALE—Spotted Shetland stallion, 5 years old weight 400 pounds. 90 per cent colts in 1902 breeding, kind and gentle, broken. Address Jas. M. Stehley Woodston, Kans.

MULES FOR SALE—A car-lot of 1- and 2-year-olds; willing to take part pay in trotting-bred stallions. Address Otto D. Stallard, Sedan, Kans.

WANTED—To buy or trade, a Clydesdale stallion for a span of good mules. H. W. McAfee, Topeka, Kans.

PROSPECT FARM—CLYDESDALE STALLIONS, SHORTHORN CATTLE and POLAND-CHINA HOGS. Write for prices of finest animals in Kansas. H. W. McAfee, Topeka, Kans.

PATENTS.

J. A. ROSEN, PATENT ATTORNEY
418 Kansas Avenue, Topeka, Kansas.

MISCELLANEOUS.

WANTED—Position as agriculturalist or farm foreman. 25 years experience. Address W. A. Kimble, 1019 Seward Ave., Topeka, Kans.

50,000 Choice White Oak Fence Posts for sale in car-lots only. Write for special price giving number desired. M. D. Henderson, Topeka, Kans.

AGENTS—One good, industrious man in each county to sell Medicines, Stock and Poultry remedies, Flavoring Extracts, Ground Spices, etc., to farmers for cash or credit. Pay for goods by sending us one-half of your cash collections each week. Can make from $600 to $1500 each year. This is the best season to commence work. Don't answer this unless you mean business and can give personal bond and reference. Marshall Medicine Co., Kansas City, Mo.

TWO more litters of those high-bred Scotch Collie pups, only one week old, but you will have to book your order quick if you want one. Walnut Grove Farm, H. D. Nutting, Propr., Emporia, Kans.

WANTED WOOL—Send us samples of your whole clip, we will pay market price. Topeka Woolen Mills, Topeka, Kans.

CREAM Separators Repaired at Gerdom's Machine Shop 820 Kansas Ave., Topeka, Kans.

WANTED—Money to get patent on a quick-selling toy. Will give 25 per cent of what it sells for. Henry Bolte, Webster, S. Dakota.

The Stray List

Week Ending June 25.

Wilson County—J. E. Brown, Clerk.

MULE—Taken up by E. C. Richardson in Center tp., May 27, 1903, one brown mare mule, slit in left ear; valued at $50.

Jackson County

HEIFER—Taken up by John Carter, in Cedar tp., one red heifer, about 2 years old, a little white on belly and in bush of tail, crop off right ear and slit in same; no horns.

Week Ending July 2.

Ford County—S. P. Reynolds, Clerk.

BULL—Taken up by F. L. Roberts, in Ford tp, (P. O. Ford), Dec. 1, 1902, one red bull, 6 years old, dim brand on right jaw, valued at $25.

Johnson County—J. G. Rudy, Clerk.

CALVES—Taken up by S. C. Clinkscale, 3½ mile south of Morse, in Aubry tp. May 8, 1903, two heifers and one steer, yearlings, red, steer has white face, valued at $30.

Ness County—Lorin Ferrell, Clerk.

HORSE—Taken up by Cleopatra Borsh, in Bazine tp. May 13, 1903, one sorrel female horse, blaze face, valued at $40.

Coffey County—Wm. Palen, Clerk.

CALF—Taken up by J. Cunningham, in Ottumwa tp. May 26, 1903, one red yearling steer, with white on belly, underbit on both ears and tip of left ear cropped, valued at $12.

Cherokee County—W. H. Shaffer, Clerk.

MARE AND COLT—Taken up by George W. Wallas, in Baxter Springs, in Garden tp. (P. O. Baxter), May 29, 1903, one strawberry roan mare, 15 hands, wt. 850, branded with half circle on both hips, large half circle with heart in center on right hip, wire cut on left hind foot, had on small bell, valued at $15. Also one iron gray colt, 1 year old, branded with letter P. on right hip, valued at $25.

Week Ending July 9.

Cherokee County—W. H. Shaffer, Clerk.

HORSE—Taken up by Oliver McIntire, in Empire City, in Shawnee tp. June 15, 1903, one bay horse, 13½ hands, weight about 850, fresh wire cut on left hind foot, a healed wire cut on left front foot, little white on both hind feet, shod all round small collar and hock brand marks; valued at $35.

200 Per Cent Per Year.

Enormous profit is'nt it?

In parts of Kansas one crop pays 100 per cent on land values.

The land will increase in value 100 per cent more this year.

You can buy land that will do this at $7 to $15 per acre.

Near town, good schools and markets, smooth, black soil.

This is the twentieth century, the age of progress; progressive men are buying land and making fortunes.

Cheap land has made more men rich than any other investment.

The cheap land won't last forever.

An investigation by you means a sale for me.

Send for my land buyers guide which contains letters from *farmers living on the land*, who went there with nothing and who are now worth from $5,000 to $25,000 each, read sworn statement showing yield of 55 bu. of wheat per acre, and giving full information about crops, prices, etc., its free to all.

HILAND P. LOCKWOOD,
Kansas City, Mo.

East Reno Berkshire Herd.

Best Imported and American Blood. My herd is headed by Elma King 66056, a son of the high prices sow Imp. Elma Lady 4th 44668. Choice spring pigs by three grand boars for sale. Also bred sows and gilts. Send for free circular.

G. D. Willems, R. F. D. 3, Inman, Kans.

Grange Department.

"For the good of our order, our country, and mankind."

Conducted by E. W. Westgate, Manhattan, to whom all correspondence for this department should be addressed. Papers from Kansas Granges are especially solicited.

NATIONAL GRANGE.

Master.....Aaron Jones, South Bend, Ind.
Lecturer.....N. J. Bachelder, Concord, N. H.
Secretary, John Trimble, 514 F St., Washington, D.C.

KANSAS STATE GRANGE.

Master.....E. W. Westgate, Manhattan
Overseer.....J. C. Lovett, Bucyrus
Lecturer.....Ole Hibner, Olathe
Steward.....R. C. Post, Spring Hill
Assistant Steward.....W. H. Coultis, Richland
Chaplain.....Mrs. M. J. Ramage, Arkansas City
Treasurer.....Wm. Henry, Olathe
Secretary.....Geo. Black, Olathe
Gate Keeper.....G. F. Kyner, Lone Elm
Ceres.....Mrs. M. J. Allison, Lyndon
Pomona.....Mrs. Ida E. Filer, Madison
Flora.....Mrs. L. J. Lovett, Larned
L. A. S.....Mrs. Lola Radcliff, Overbrook

EXECUTIVE COMMITTEE.

Henry Rhoades.....Gardner
J. T. Lincoln.....Olpe
A. P. Reardon.....McLouth

Recognition of the Grange.

Following the endorsement of the Grange by the Hon. F. D. Coburn, secretary of the Kansas State Board of Agriculture, by giving the Grange a very important place in the program at the meeting of the board in January last and partly as a result of that session, the Kansas State Fair and Exposition Company last Thursday requested the executive committee of the State Grange to appoint a superintendent from their order to take charge of the exhibition of farm products at the State fair to be held in Topeka next September.

E. W. Westgate and A. P. Reardon, master and past master, respectively, of the State Grange, were present at the meeting of the State Fair Company by special invitation.

The invitation extended will probably be cheerfully accepted.

Field Meetings.

Hon. Aaron Jones, master of the National Grange, has accepted invitations to address meetings arranged by the masters of the respective State Granges, as follows:

Kentucky, July 15, 16, 17, 18.
South Carolina, July 21, 22, 23, 24, 25.
West Virginia, July 29, 30, 31, and August 1.
Massachusetts, August 4, 5, 6, 7.
New Hampshire, August 13, 14, 15.
New York, August 17, 18, 19, 20.
Indiana, August 24, 25, 26, 27, 28, 29, 31.
Ohio, September 1, 2, 3, 4.

Patrons and others desiring to write to him can save time by addressing as follows:

July 14 to 18, Liberty Hill, South Carolina, care Hon. W. K. Thompson, master South Carolina State Grange.

July 18 to 28, Morgantown, West Virginia, care Hon. T. C. Atkeson, master West Virginia State Grange.

July 28 to August 2, Sturbridge, Massachusetts, care Hon. Geo. S. Ladd, master Massachusetts State Grange.

August 2 to 8, Concord, New Hampshire, care Gov. Bachelder, master N. H. State Grange.

August 8 to 16, Sodus, New York, care Hon. E. B. Norris, Master New York State Grange.

Grange Field Meetings or Picnics.

These meetings afford rare opportunity to disseminate Grange principles. Permit me to suggest to those having local charge of these meetings that no effort be spared to make them of as great value to the order and the public as possible. The meetings should promote social and fraternal greetings and extend the acquaintance of members and others with all the good people in a radius of twenty or twenty-five miles of each meeting. To secure large attendance and the best people, system must be employed. The Pomona or subordinate grange having the meeting in charge should appoint active and energetic committees on program, arrangements and grounds, music, advertising, invitation, printing, and reception.

Every detail of the meeting should be thought out and provision made to make the meeting pleasing, entertaining, enjoyable, and profitable to all who may attend.

If the committee on invitation should have printed a circular letter cordially inviting those to whom it may be addressed and their families to attend, and mail or deliver to every family whom you would like to be present, it would add largely to the attendance.

All members of the Grange as well as the committees should exert themselves in the matter of invitations, and to make it pleasant to all.

Large supplies of Grange literature should be judiciously distributed with the letters of invitation and at the meetings. This will afford members on opportunity to inquire after the meeting as to the impressions made by the literature, or at the meeting, and secure a good many applications. Patrons of Husbandry should remember, when those not members of the order are favorably impressed with the objects, purposes, and work of the order, is a good time to secure their active cooperation and membership.

The public press before and after the meetings should be used, first, to advertise the meetings and secure a large attendance, and second, to review the incidents and arguments presented, of the benefit of the Grange to its members and the public generally. In many parts of our country the local press has been of great advantage in popularizing the Grange. The Grange press has and is doing much for the order, and should have full reports of the thousands of field meetings to be held during the coming summer, thus keeping the membership advised of the activity and effort throughout the entire country to educate the people to the necessity of farmers' organization to advance the cause of agriculture and good citizenship.

In the past, members of the Grange have not fully realized how much our order is indebted to the Grange press, and to the local press of the country, to promulgate the Grange principles and advance the cause of our fraternity. Our members should not only contribute interesting articles for their columns, but should subscribe for and be active in extending their circulation that they may be of greater service to our order, and have greater influence in educating and moulding public thought in the interest of the common people of the country. Now that free rural mail delivery is so general, farmers ought to have a daily Grange paper come to them each day, chronicling all Grange news and market reports, with a synopsis of the news of the world.

Patrons, permit me to remind you, "Whatever we do, strive to do well." Make your field meetings this year the best ever held in your county, always keeping in mind our motto, "In essentials, Unity: in non-essentials, Liberty: in all things, Charity."—Aaron Jones, Master National Grange, in Grange Bulletin.

The Grange a Power.

FROM ANNUAL ADDRESS OF B. G. LEEDY AT RECENT SESSION OF OREGON STATE GRANGE.

At the close of another eventful year in the history of our order we are convened to-day for the purpose of holding the thirtieth annual session of the Oregon State Grange.

By a careful study of its history during the long period of its existence and noting the grand and valuable work accomplished, and the important victories won, we have every reason to be encouraged with the future prospect of our beloved order.

The Grange to-day is wielding a vast influence and is recognized as the greatest agricultural organization in the land, and is holding an advanced position among other organizations. It is a recognized leader upon questions of legislation that concern the general welfare of our country and its advancement as a nation.

The eyes of the world are upon us and our every act in National, State, and subordinate Grange is closely scrutinized by those outside our gates.

Let us assemble in peace and harmony about the altar of this, the thirtieth annual session and join hands and hearts in our best efforts to advance the interests of our beloved order.

We should be ever mindful of the great responsibilities resting upon us as the legislators of the order in our State, and we should each labor zealously to devise ways and means to most effectively advance the best interests and promote the general welfare of our members.

It is indeed very gratifying to have the privilege of reporting to this body of the great growth and prosperity of the order generally throughout our grand country.

More new granges have been organized than during any year in the past quarter of a century and the membership is increasing very rapidly.

The financial standing and the moral and political influence are being recognized more generally than before.

The condition of our order in this State is very satisfactory. Our growth has been steady and the increase in membership and influence is gratifying. With a few exceptions our subordinate granges have added materially to their membership, and much more interest and enthusiasm prevail than formerly.

The work being accomplished is of a much higher standard than ever before and the results are very advantageous to the order.

I am pleased to note that in many of our granges more attention is given to the ritualistic work of the order and stricter disipline is being maintained.

One of the most important departments of our work as an organization is along legislative lines, and in furthering the interests of the farmer by the law, the Grange stands out preeminent.

The crowning event for the good of the order in the history of the Grange in the State has transpired during the past year.

Through the cooperative efforts of the representatives of California, Washington, and Oregon, we succeeded in securing an official visit of Worthy National Master Aaron Jones to the several States.

On March 10 and 11 there was held in the city of Portland an Interstate Grange Institute, which was addressed by a number of able and prominent speakers of this State and Washington. Worthy Master Jones made several addresses during the sessions, which were well received. The attendance was very satisfactory and the results of the meeting will prove very beneficial to the order.

This new departure in our work should be encouraged and is well worthy of our future consideration.

Immediately following were held a series of meetings in different parts of the State that had been previously arranged and advertised which were with few exceptions fairly well attended and our Patrons were highly pleased and agreeably entertained by Bro. Jones' earnest and forcible arguments in behalf of the farmers and the great necessity of their organizing to protect and promote the welfare of the agricultural interests.

It is impossible to estimate at this time the vast amount of good that may eventually result from these meetings in our State.

Several new granges have been organized and many others have added materially to their membership as a direct result of Bro. Jones' efforts. We have every reason to feel encouraged and predict still greater prosperity.

The people who are maintaining that the Desert Land Law and the Commutation Clause of the Homestead Law should be repealed because they are in the interests of the speculator and the land monopolists, to give the description a political twist, are much encouraged by the utterances of President Roosevelt at various points on his Western trip. The President iterates and reiterates at almost every opportunity that the great land areas of the West, which belong to the whole people of the United States, must be free from the possibility of speculative acquirement, and that title must pass from the Government only to people who propose to make homes and live upon them. The clause contained in President Roosevelt's first message to Congress, that "Throughout our history the success of the homemaker has been but another name for the upbuilding of the Nation," has become a classic.—Selected.

The Apiary.

Conducted by A. H. Duff, Larned, Kans., to whom all inquiries concerning this department should be addressed.

Putting Supers on New Swarms.

EDITOR KANSAS FARMER:—Will you kindly answer the following questions concerning bees in your valuable paper? How long after hiving a swarm of bees should the super be left off, or should it be put on at once? I hived a swarm of bees a month ago and now they are killing and carrying out the young brood and do not seem to be doing any work; what do you think it the matter with them? Would you advise sowing buckwheat for bees, and at what time should it be sown for the best results in honey? Should there be a cloth placed over the super, or should there be a bee space left between super and roof of hive?

Sumner County. L. C. HOPPES.

The time at which the supers should be placed on new swarms depends somewhat on the size of the swarm, and also on the honey flow. If the swarm is exceedingly large and the honey flow is on, I would place the super on the next day after hiving the swarm or if the brood-chamber is well equipped with foundation or comb, the super may be placed on at once. The idea is this: that no time should be lost in placing supers if the honey flow is on, and the colony is strong, and the hive furnished with comb or foundation. If the swarm is hived on empty frames alone, then it is not necessary to put on supers until the brood chamber is pretty well filled up, and ordinarily this will take a good swarm ten days in a good honey flow. This is about the difference between using foundation and not using it.

The swarm you speak of as being hived a month ago is evidently starving, for in order to exist, they will thus dispose of their brood. A little feeding will immediately remedy the trouble. If on the other hand you are having a honey flow, and your other colonies are gathering honey while this particular one is acting thus, then we are unable to tell the trouble without knowing more of the symptoms and condition of the colony. Frequently moth-worms will get into the combs, and the bees in order to dispose of them will destroy the young brood around the infested part of the combs and thus throw it out of the hive, and if the combs are badly infested with worms of course the colony will do no good. Moth-worms frequently get the best of the old native black bees, but if you have pure Italian bees I should say that the moths are not giving them any trouble, for Italian bees are proof against moth-worms.

It does not pay to sow buckwheat for bees in any locality. Alfalfa beats all, and Bokhara is next for your locality. Give your attention to these two plants exclusively, and you will have both profit and pleasure from the bees.

There should be a cloth placed over the supers under the lid of the hive, certainly.

Swarming Bees.

EDITOR KANSAS FARMER:—Will you have the kindness to reply through your valuable paper and tell me the best plan to use when two swarms of bees come out and go together. I suppose you will say, "Hunt out the queens and divide them," but what I wish to get at is the best way to find the queens. To try to find them when they are rushing into the hive, is not easy; it is a mere chance if you see them. I had a stand that had thrown off a swarm this spring and was still a strong stand with some brood. I was away a few days and when I looked at them they were all dead in the bottom of the hive; enough for a strong stand, but they had no honey. What do you suppose was the matter with them, was it starvation or robbing? It occurred about the first of June, and would they have starved at that time of the year? Has this season been favorable for honey? With me they seemingly made hardly enough to live on. What is the best way to keep moths out of the hives? W. W. WICKS.

Sumner County.

When two swarms come at the same time and go together which they most frequently do, I would hive them all together, unless both are exceedingly strong ones. In case of very strong ones I would divide them, or give them two stories at once. The best way to find the queens is to spread down a white sheet and empty the swarm from your swarming box some distance from the hive, say a foot or two; but first put a few bees in at the entrance, enough to give the swarm the home call, and then empty the remainder some distance away thus, and as they travel to the hive over the white cloth, you will scarcely miss seeing the queens. By hiving both swarms together, the bees will manage the queens and one will be disposed of. One of the queens will kill the other. There is always some risk to run in losing both queens for the bees do not like strange queens, and may kill them, but ordinarily in swarming they do not do so, and it will be exceptional only if they do not retain one queen and thus settle down to one good colony. It is always best to find the queens if possible, or even find one queen and put her in a cage and thus keep her if anything happens to the other one, so she can be replaced. If the queens are found, and the swarm is to be divided, just cut the cluster of bees in two and give each a queen, but it is best to keep the queens thus caged for a day or so in the hive until the bees become reconciled to them.

Your colony that died evidently starved to death. Yes, indeed, bees will frequently starve the first of June in many localities in Kansas, and elsewhere. To keep the moths from your empty combs fumigate them with burning sulphur two or three times during summer. To keep the moths from your hives of bees, get Italian bees.

Kansas Fairs for 1903.

Following is a list of fairs to be held in Kansas in 1903, their dates, locations and secretaries, as reported to the State Board of Agriculture and compiled by Secretary F. D. Coburn:

Allen County Agricultural Society: J. T. Tredway, Secretary, LaHarpe, September 22-25.

Barton County Fair Association: Jas. W. Clarke, Secretary, Great Bend; August 25-28.

Brown County—Hiawatha Fair Association: Elliott Irvin, Secretary, Hiawatha; September 8-11.

Butler County Fair Association: J. W. Robison, Secretary, El Dorado; October 5-9.

Chautauqua County—Hewins Park and Fair Association: P. N. Whitney, Secretary, Cedar Vale.

Clay County Fair Association: E. E. Hoopes, Secretary, Clay Center; September 8-11.

Coffey County Agricultural Fair Association: J. E. Woodford, Secretary, Burlington; September 8-11.

Cowley County—Eastern Cowley Fair Association: Ed. E. Reed, Secretary, Burden; September 16-18.

Coowley County Agricultural and Stock Show Association: W. J. Wilson, Secretary, Winfield; September 8-11.

Finney County Agricultural Society: A. H. Warner, Secretary, Garden City; August 5-7.

Franklin County Agricultural Society: Carey M. Porter, Secretary, Ottawa; September 15-18.

Harvey County Agricultural Society: J. C. Nicholson, Secretary, Newton; September 22-25.

Jackson County Agricultural and Fair Association: S. B. McGrew, Secretary, Holton; September 1-4.

Jefferson County Agricultural and Mechanical Association: Geo. A. Patterson, Secretary, Oskaloosa; September 1-4.

Jewell County Agricultural Association: H. R. Honey, Secretary, Mankato; September 14-17.

Marshall County—Frankfort Fair Association: J. D. Gregg, Secretary, Frankfort; September 1-4.

Marshall County Fair Association: E. L. Miller, Secretary, Marysville; September 15-18.

Miami County Agricultural and Mechanical Fair Association: W. H. Bradbury, Secretary, Paola; September 8-11.

Mitchell County Agricultural Association: H. A. Phelps, Secretary, Beloit; September 30-October 3.

Morris County Exposition Co.: M. F. Amrine, Secretary, Council Grove; September 22-25.

Nemaha County Fair Association: W. R. Graham, Secretary, Seneca; September 1-4.

Neosho County Fair Association: H. Lodge, Secretary, Erie; September 29 to October 2.

Neosho County—Chanute Agricultural Fair, Park and Driving Association: A. E. Timpane, Secretary, Chanute; September 1-4.

Ness County Agricultural Association: I. B. Pember, Secretary, Ness City; September 2-4.

Norton County Agricultural Association: C. J. Shimeall, Secretary, Norton; September 1-4.

Osage County Fair Association: E. T. Price, Secretary, Burlingame; September 1-4.

Reno County—Central Kansas Fair Association: Ed. M. Moore, Secretary. Hutchinson; September 14-19.

Rice Agricultural Fair and Live-Stock Association: W. T. Brown, Secretary, Sterling; September 1-4.

Riley County Agricultural Society: E. C. Newby, Secretary, Riley; September 1-4.

Rooks County Fair Association: Olmer Adams, Secretary, Stockton; September 8-11.

Saline County Agricultural, Horticultural and Mechanical Association: H. B. Wallace, Secretary, Salina; September 8-11.

Sedgwick County—Southern Kansas Fair: H. L. Resing, Secretary, Wichita.

Smith County Fair Association: E. S. Rice, Secretary, Smith Center; August 18-21.

Stafford County Fair Association: Geo. E. Mooore, Secretary, St. John; August 19-21.

Sumner County—Mulvane Agricultural Association: Newton Shoup, Secretary, Mulvane.

Wilson County—Fredonia Agricultural Association: J. T. Cooper, Secretary, Fredonia; August 25-28.

DUROC-JERSEY SWINE.

D. M. TROTT ABILENE, KAS., famous Duroc-Jerseys, Poland-Chinas.

Maplewood Herd, DUROC-JERSEYS, contains breeders of the leading strains.
E. B. SAWYER, CHERRYVALE, KANSAS.

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DUROC-JERSEYS.
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Farm 2 miles west of city on Maple Ave.

FAIRVIEW HERD DUROC-JERSEYS
No stock for sale at present.
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Duroc-Jerseys For Sale—Choice July, August and September pigs for sale, both sexes. Prices reasonable. Newton Bros., Whiting, Kans.

DUCK CREEK HERD OF
Duroc-Jersey Swine.
200 head to choose from. Write us your wants.
Mitchell Bros., Buxton, Wilson Co., Kans.

ROCKDALE HERD OF
Duroo-Jersey Swine.
Everything is sold except a few pigs of September farrow. Am also offering one of my herd boar for sale. J. F. Chandler, Frankfort, Kans.

...Maplewood Herd of...
DUROC-JERSEYS
--HEADED BY OUR FINE HERD BOAR--
MISSOURI CHAMPION 16349.
Have on hand some extra fine pigs of this spring's farrow, for which we are booking orders. Write for what you want.
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R. F. D. No. 4, - - - - - - - - - - Sedalia, Mo.

Standard Herd of Registered
Duroc-Jersey Swine, Red Polled Cattle, and Angora Goats.
Swine herd headed by Big Joe 7363 and Ohio Chief. Cattle herd headed by Kansas 9808. All stock reserved for October sale.
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East Side Herd Poland-Chinas
Combines the best strains of blood in the breed. 24 spring litters. Royal Blue 27642 by Big Chief Tecumseh 2d, first boar in service. Write for list of sires and dams in herd. W. H. BARR, ELLIOTT, IOWA.

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A few choicely bred Poland-China Boars for sale; also fine B. P. Rock poultry.

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Elmdale Herd of High-Class
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Shawnee Chief 28502 at head of herd. A few choice fall boars for sale.
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POLAND-CHINAS.
I keep constantly on hand all sizes and ages of high-class Poland-China pigs. Quality high, prices low. Write for description and price to
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Will you want a few Bred Sows or Gilts for fall farrow, bred to Model Tecumseh or American Royal? Also fall Boars, sired by Model Tecumseh 64133.
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...THOROUGHBRED...
Poland-China Hogs.
I am cleaned up on boars and bred gilts. I have some nice open June gilts and can spare a few yearling bred sows. Orders booked for spring pigs by Keep On 61015, Imperial Chief 3d 28978, Black Perfection 27133, and Corwin Improver 25768. On Missouri Pacific R. R., one mile west of Kickapoo, Kans. JOHN BOLLIN,
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OF PURE-BRED
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For Sale—A few choice Boars and 50 Gilts, some bred for early spring farrow. Write, or come and see . . . . . .
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FOR SALE Poland-China Hogs, Holstein-Friesian Cattle; either sex. Best strains represented. H. N. HOLDEMAN, Rural Route No. 2, Girard, Kansas.

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...OF...
Poland-Chinas
With Black Tecumseh 25116 at head, he by Big Tecumseh 24429, a grand individual and sire of large, strong, growthy fellows, nearly perfect in color, coat, and markings. Large M. B. turkeys and B. P. chickens for sale. Correspond with me at Wamego, Pottawatomie County, Kansas. C. J. HUGGINS.

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Correct by Corrector, Perfection Chief 2d by Chief Perfection 2d, Jewell's Silver Chief, and Kron Prinz Wilhelm, herd boars. Up-to-date breeding, feeding qualities, and large, even litters in this herd. Young stock for sale.
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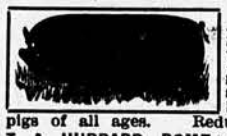
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PLEASANT VALLEY HERD
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The kind that raises large litters of strong healthy pigs. Sows have no trouble at farrowing time. Young stock of both sexes for sale. Pedigrees with every sale. A. F. Raynolds, R. R. 4, Winfield, Kans.


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Improved Chester Whites
Stock For Sale.
Farm is 2 miles northwest of Reform School.

The Crescent Herd
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Bred Gilts all sold. A few choice boars large enough for service left. The best crop of springs we ever raised for sale. B. P. Rock and Pekin Duck eggs for sale, and prices right. Write today for catalogue prices. JOHN W. ROAT & CO.,
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Large English Berkshires
Sold out of bred gilts; only a few fall pigs. Orders booked for spring farrow.
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BLUE BLOODED
BIG BONED
ROAD BACKED
BERKSHIRES . . .
A Fancy Lot of Spring Pigs.
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...EAST LYNN...
Champion Berkshires.
Our herd won the Kansas State prize at the American Royal Show at Kansas City in 1902.
ONLY THE BEST.
Imported and American-bred stock for sale. A few choice sows bred, at prices that will move them. Inspection invited six days in the week.
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...THE...
WILLOWDALE
Berkshires
ROYAL BARON 58846, the Greatest Show Boar in the World, at head of herd. Home of the Winners.
SPECIAL OFFER FOR 30 DAYS—Fall pigs, both sex sired by Royal Baron, Baron Lee 8th, and Baron Duke by Lord Premier, the boar that headed the sweepstakes herd at Kansas City last October. Special prices to make room for big spring crop.
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Tamworth Hogs
I own one of the largest and most representative herds of Tamworths in the West. The most prolific and hardy breed of swine. An ideal cross with other breeds. Litters farrowed in April, one of 16 pigs, five of 69, and ten of 121. Stock for sale. Send me an order. For full information about the breed and prices, address C. W. Freelove, Clyde, Kans.

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Mulberry Grove Herefords.
Five Yearling Registered Bulls For Sale.
Best of breeding. Prices reasonable. Correspondence solicited. Address Ira D. Brougher, Great Bend, Kansas

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Five bulls from 12 to 20 months old, nine 2-year-old heifers bred, and 16 yearling heifers old enough to breed.

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Registered Herefords.
200 Head in Herd. Herd Bulls now in use are sons of Don Carlos 83734. Twenty-four Young Bulls ready for service for sale.
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Herd headed by the young show bull, Protocol 2d 91715, assisted by Major Beau Real 71621, a nephew of Wild Tom. Females largely the get of Bernadotte 2d 71634. A few choice young bulls for sale.
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100 REGISTERED CATTLE FOR SALE
WE BREED, BUY, AND SELL
Our individuals are low, blocky, dark red, with drooping horns mostly. Their ancestry is the richest: Lord Wilton, The Grove 3d Anxiety, Earl of Shadeland 22d, and Hesiod
Three extra yearling Bulls and 7 good.
Twenty yearling Heifers.
Seventy Cows and Calves.

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Choice Registered Stock of both sexes for sale.
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"ANXIETY WILTONS." Bulls in service are Printer 66684, March On 14th 106676, and Good Sign 140387. Next public offering at Sioux City, Iowa. Watch for date. You had better get some Printer heifers while you can. They will be higher than a cat's back after this year. Paste this in your hat. Savey? W. W. GRAY, FAYETTE, MO.

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SERVICE BULLS:
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Columbus 17th 91364, Elvina's Archibald 75996, Jack Hayes 2d 119761, Jack Hayes 3d 124109.
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Jubilee Stamp 126017, Orange Dudding 149469.
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Scotch Emperor 133646, Ottawa Star 113109.
Herds consist of 500 head of the various fashionable families. Can suit any buyer. Visitors welcome except Sundays. Address
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Anxiety 4th females with Weston Stamp 9th at head.
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Boatman 56011 and Lord Albert 131557 head of herd.
Choice young stock of both sexes for sale.
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BULLS in Service: HESIOD 29th, Imp. RODERICK, GILTEDGE —son of Dale and Expansion.
A car-load of Heifers bred to our best bulls, and a car-load of choice Bulls, 18 to 24 months old at private treaty.

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MEADOW BROOK SHORTHORNS—Ten fine young bulls for sale—all red. Red Laird, by Laird of Linwood, at head of herd.
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An extra good lot, reds and roans, sired by Lord Mayor 112727 and Knight's Valentine 157068.
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Sempstress Valentine 157771 and Mayor 129229 head of herd. Larkin's Duluth and Kansas King at head of Saddle Horse Herd
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For immediate sale, 12 bulls ready for service, and 12 bull calves. Also 20 cows and heifers, 1 to 7 years old. Give me a call, or ..... Address .....
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Shorthorns
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Giltspur's Knight 171691, at head of herd. Young bulls ready for service, for sale.

HERD BULL
FOR SALE OR TRADE.
Having used my herd bull on my small herd of Shorthorn cows as long as practical I offer him for sale or trade. He is out of a pure Duchess cow and by a pure-bred Cruickshank bull. Guaranteed a breeder and all right. For particulars, address DR. C. M. COE,
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Pearl Shorthorn Herd.
BARON URY 2d 124970 and SUNFLOWER'S BOY 127337 Head the Herd.

25 Non-Registered 1-Year-Old Shorthorn Heifers of best quality and in extra condition, sired by such bulls as Marquis, King Pearl, and Dora's Knight.
Can ship via Rock Island, Union Pacific, Santa Fe, or Missouri Pacific Railways.
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Young stock for sale.

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VICTOR OF WILDWOOD 126054, a pure Cruickshank-Orange Blossom in service. Females of high quality, pure Scotch and Scotch-topped; choice bulls for sale; also females.
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Young stock by the roan champion bull John Ward 159491 and by the present herd bull Barmpton Knight 148795. Choice breeding, good individuals, and square dealing. Address E. D. LUDWIG,
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BREEDERS OF
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BERKSHIRE SWINE,
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Great constitution and lung capacity gained in high altitudes. A few select young swine and sheep for sale. ED. GREEN, MORRISON, COLORADO.

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CHOICE SCOTCH SHORTHORNS sired by 22d Earl of Valley Grove 142569. Herd headed by Gloster's Best 178044 Young bulls for sale. Also breeders of Percheron and French Coach horses. Address
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Pure Scotch and Scotch-topped....
Shorthorns
Imported Scottish Knight 136371 heads the herd.
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Formerly of Sutherland, Iowa. Westphalia, Kas

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SHORTHORNS
Herd Bull For Sale—Acomb Duke 18th 142177, is worth looking after; also 13 young Bulls ready for service, and eight young Cows with calves by Acomb Duke 18th.
Inspection invited.
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SCOTCH and SCOTCH-TOPPED
Shorthorn Cattle, Poland-China Swine.
Two Scotch bulls in service. Representative stock for sale. Address
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Imp. Prince Lovely 155860 and Scotland's Charm 127264 in service. Fifteen young, serviceable bulls for sale. One extra good young Scotch bull, sired by Imp. Royal Favorite 140612, dam Imp. Pavonia. Also 50 heifers and young cows mostly bred, some with calves by side.
Visitors always welcome.
Long distance phone at farm.

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Shorthorns
The Scotch bull, Gwendoline's Prince 130913, in service. Also the imported Scotch Missie bull, Aylesbury Duke. 100 head of the best Scotch, Bates, and American families.
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Farm is 2 miles south of Rock Island depot.
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I have a few good Shorthorn cows and heifer calves for sale, also a few young bulls from 6 to 8 months old, the best lot I ever bred. Herd headed by my fine Scotch bull, Minister 2d 150171.
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Headed by GALLANT KNIGHT and Imp. Tilly Cairn
Bulls, Cows, and Heifers, for sale at bargain prices Can supply females in car-load lots if desired. Some show yard material.
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ABERDEEN-ANGUS CATTLE AND PERCHERON HORSES
FOR SALE. All stock recorded.
GARRET HURST, PECK, KANSAS.

Sutton's Doddies.
40 Bulls For Sale.
Every one a good one and at farmers' prices. Elegant breeding and quality. The kind that sire my champion steers.
Chas. E. Sutton, Russell, Kansas.

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Aberdeen-Angus Cattle.
The Oldest and Largest in the United States.
Splendid recently imported bulls at head of herd. Registered animals on hand for sale at reasonable prices at all times. Inspect herd at Allendale, near Iola and La Harpe; address Thos. J. Anderson Manager, Iola, Allen Co., Kans., R. R. 2, or—
ANDERSON & FINDLAY, Proprietors, Lake Forest, Ill

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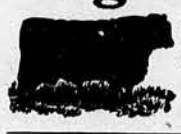
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Regnal Doon 32728 and Gardner Mine 32240 at head of herd. 100 head of splendid bulls, 11 to 23 months old, weighing up to 1250 pounds, for sale. Prime condition, not registered. Guaranteed breeders and a snap in prices. Address
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Anoka Flocks
Cotswolds and Rambouillets. Foundation for flocks a specialty. Correspondence and inspection invited.
GEO. HARDING & SON, WAUKESHA, WIS.

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Announce Following Very Low Round Trip
EXCURSION RATES
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