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The Kansas State Board of Agriculture

Thirty-first Annual Meeting Held in the State-house, January 8, 9, and 10, 1902.

The Proceedings.

President Taylor's Response to Addresses of Welcome.

I thank you gentlemen for your words of welcome addressed to this board. It is pleasant to receive your assurance that our coming together for this annual gathering is regarded with interest and anticipation by yourselves and those you represent.

The purpose of these annual meetings you no doubt understand. We are here to compare views and experiences, for the enjoyment of the program the Secretary has prepared, and, as our more serious duty, to review with the Secretary the work of the past year, then to elect his successor, and, with him, map out a program for the next year.

It is eminently proper, in my estimation, for you in your official capacity to recognize, as you are doing, the presence and proceedings of an organization, which directly and indirectly, has given to Kansas agriculture a spur and uplift everywhere acknowledged.

positive factor in the development of the State, are the lines which, in the main, are still followed. And it is a combination of the perfection of this system, taken together with the zeal and hard work and genius of the present Secretary, that have resulted in the series of publications put forth by the Secretary of the board in recent years, which are regarded by many as the first of their class in the United States

There is no dissenting voice among our own citizens as to the merits of the Coburn literature. In all our dairy-barns you will find "Cow Culture" hung up by a string like an almanac; no flock-master among us but looks upon "The Modern Sheep" as his vade mecum; every stableboy has a copy of "The Horse Useful" in his pocket; "The Helpful Hen" has furnished suggestions for thousands of chicken tyros, and has helped to lift many a mortgage

I mention thus in detail some of the more notable works of the present Secretary, both because I delight to do him honor, and because I desire to take advantage of the opportunity to call attention to the eminent success of a department of the State government which is divorced from politics. In both branches of the Legislature it has been stoutly contended that the "pie" in this office should be passed over to the faithful. If the office were political, whether elective or appointive, no man could expect to hold it long enough to become expert in it.

Agriculture is the basis of American life. Its first duty is to supply the Nation with food, and fiber for its cloth. This it does in such profusion that the over-plus feeds and clothes many millions beyond the seas.

growth for the young of our race who come within its sphere of influence as will secure the largest reserves of strength and endurance to be drawn upon in after life. For this purpose the farm is unexcelled. No gymnasium can match its exercises, as a physical training; no seminary so builds into character the habit of industry, the love of work, hatred of idleness, the attitude of persistence, perseverance, hope, and faith.

The prizes of life, as commonly considered, are found in towns. If so, then the farms are sending a constant stream of young men and young women to capture those prizes. As a rule, the distinguished citizen in America has been country-born. Investigation shows that a majority of our Presidents, captains of industry, senators, Governors, learned judges, have been able to look back upon a barefoot boyhood passed in the performance of rural tasks, where appetite waited at the plow-tail, and sleep came without rocking.

Whatever affects the agriculture of this country for good or ill is a matter for the statesmen as well as the agriculturist to consider. It augurs well for Kansas that her Governor and the mayor of her capital city thus show by their presence and emphatic expressions that they share in the solicitude for the welfare of the Kansas farms.

Secretary's Report.

The year 1901 has been auspicious for the Kansas Board of Agriculture, and its standing at home and abroad. With our legislators, our untitled citizens, and strangers as well, it has steadily improved. Evidence of this was given by the Legislature, when, unsolicited, it ordered a second edition of 7,500 copies of the board's Twelfth Biennial Report printed, and appropriated the funds therefor; when it specified that hereafter the regular editions of the Biennial should be 20,000 copies; when it provided that the board should have an Assistant Secretary and in that respect be on an equal footing with other State departments; when it increased the Secretary's salary 25 per cent, putting him in this important matter alongside the penitentiary warden and numerous other indispensable officials.

Further, the Governor, doubtless as a mark of respect to your board, appointed your Secretary a regent of the State Agricultural College, probably a mistake by the Governor, and a misfortune to the college, the board, and the Secretary. The Executive Council, and also its members who compose the committee on printing, have been extremely considerate of the board's interests, and and courteous at all times, and the newspaper men and the press are always kind.

The second edition of the Biennial has been published and placed in the hands of persons who seemed eager to secure it, as was the March quarterly, an illustrated work of 216 pages devoted to information upon the characteristics and merits of Shorthorn cattle. In recognition of this quarterly the American Shorthorn Breeders' Association, in its

recent annual meeting at Chicago, unanimously adopted a resolution, presented by a member from Indiana and seconded by members from various other States, saying among other things, "that we recognize this as a most important contribution to the literature of animal husbandry, for which we tender to the Kansas Board of Agriculture a unanimous vote of thanks for and appreciation of its invaluable efforts in behalf of advanced agriculture, better live stock, and a wider knowledge of the merits of Shorthorn cattle."

During the growing season crop bulletins were sent out to the press, as the occasion justified, but no especial effort was made to exploit any of the State's present, possible, or even probable misfortunes, whether from insect, frost, or too frequent freshet.

The December quarterly, a volume of 233 pages and 56 illustrations, is just now coming from the press and comprises an exposition of the merits and history of Hereford cattle as beef-makers. It contains also, in detail, the population, crop, and live-stock statistics of the year 1901.

The provision for an Assistant Secretary became effective July 1, and Mr. J. C. Mohler was appointed to the position. Some of the reasons why Mr. Mohler is deemed worthy and well qualified are that he is a native Kansan, a gentleman, has a natural aptitude for clerical work, has served ten years learning the duties of the office, is faithful and honest, as any man must be who achieves real success, and he never leaks.

The Secretary of this board is constantly besought to lend the use of the board's or his own name, supposingly representing the board, in favor of this or that scheme which, worthy or otherwise, is intended chiefly to further especially the fortunes of its promoters. Falling of endorsement through the office there is often suggestion that the matter can and will secure approval through the annual meeting, and in this way obtain use of the board's good name in furtherance of propositions that at best may be but remotely related to the duties of a board of agriculture. If not presuming too much, and my observation is of any worth, I would suggest that we as a board continue to pursue the conservative course which has heretofore marked our deliberations pertaining to irrelevant matters attempted to be thrust in by those with axes to grind, and which in no wise pertain to the board's legitimate work.

Gypsum as a Soil Fertilizer.

PROF. E. HAWORTH, STATE UNIVERSITY, LAWRENCE.

A year ago I had the honor and the pleasure of presenting a paper before this society on the subject of "Gypsum as a Soil Fertilizer." A considerable agitation on the subject sprang up, which resulted in my writing several hundred letters answering inquiries regarding it. Many farmers of the State wrote me they were going to experiment with gypsum during the past summer. Railroads were prevailed upon to give reduced freight-rates, and manufacturing companies, in some cases, even gave away samples for experiment. Each of the many farmers written to was particularly requested to report to me the results of his experiments, no matter whether they be good, bad, or indifferent. I am sorry to have to say that thus far but a single farmer has reported. A gentleman living at Wamego reported that he tried gypsum on a piece of corn with exceedingly beneficial results, but

just what the increase was he failed to state. So far as our experiments in Kansas are concerned, therefore, it seems that little information has been gained during the past year.

Some months ago I addressed a letter of inquiry to every agricultural experiment station in the United States asking whether or not they had published any results of experiments with gypsum, and if so, begging for a copy of such publications. The replies, variable as they were, form an interesting set of comments on the subject. More than one-half the stations, it seems, are not experimenting with gypsum in any form. Whether or not they consider the question of its value closed, I was unable to learn. Those who are conducting experiments obtained varied results.

For example, Kentucky has conducted an elaborate series of experiments with fertilizers on corn (Bulletin No. 26), gypsum being one that was used. But in every instance it was used alone, while the nitrogen, phosphorus, and potash fertilizers were mixed together in varying ways. The results were not very favorable to gypsum. More than half of the experiments gave entirely negative results, while others gave but a slight increase in quantity or quality. Similar experiments with hemp (Bulletin No. 27), gave like results, as did also experiments with potatoes (Bulletin No. 22). It should be noted, however, that in every instance gypsum was used alone, while the most beneficial results were obtained with other fertilizers by mixing two or more of them together. But the failure of gypsum in these experiments is not more marked than is the failure of either acid phosphate, or sodium nitrate in the potato experiments as expressed in the summary (Bulletin 22, page 20), which is as follows:

"1. That the yield of potatoes was largely increased by the sulphate of potash, either when used alone or in combination with nitrate of soda or acid phosphate, or both.

"2. It appears that neither acid phosphate nor nitrate of soda, when used separately, or in combination with each other, were of much value, but that when either was used with sulphate of potash the results were beneficial as to yield, the greater yield being produced when both were applied together with sulphate of potash."

It would seem, therefore, that failure of gypsum to give results is paralleled in these experiments by the failure of phosphoric acid and of nitrate of soda, when used alone. Yet every one knows that these substances are valuable fertilizers. The Kentucky experiments, therefore, hardly prove conclusively that gypsum is of no value.

Oregon has been experimenting with gypsum on clover and leguminous plants with quite satisfactory results, obtaining an increase in yield of from 25 per cent to 100 per cent, as reported in Bulletin 62.

It is generally understood that gypsum is more serviceable when mixed with other fertilizers, particularly organic fertilizers, such as barnyard manures.

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Here it seems to act as a preservative of the nitrogenous matter, permitting the soil to absorb the same in great quantities, holding it ready for the plant's use. Thus, the Ohio station reports they obtained negative results when using gypsum alone, but when using it in connection with other materials, and especially with barnyard manures, they found it very beneficial.

In a private communication, Director Thorne, in speaking of such experiments, says:

"The result of this test in brief is, that the gypsum apparently acts as a preservative of the nitrogen of the manure, and we would feel justified in using it extensively in our stables for this purpose, did not a parallel series of experiments with phosphoretic materials show that both the untreated phosphate rocks known as 'floats,' and the acidulated rock, known as 'acid phosphate,' produce effects sufficiently greater to more than justify the additional cost, thus indicating that the reinforcement of the manure with the phosphoric acid is, for our soils, as useful a point as the preservation of its ammonia, both of which objects are accomplished by the use of phosphoretic materials."

It seems that throughout those parts of America where chemical fertilizers are used to a considerable extent it is now considered most economical to purchase such fertilizers and trust to the gypsum contained within them for saving ammonia from barnyard manures, rather than to buy gypsum outright. All soils, in general, may be improved by the addition of potash, phosphorus, and nitrogen in some form. The great source of marketable phosphorus is the so-called phosphate rock of Florida, South Carolina, and Tennessee. In the manufacturing processes necessary to render the phosphates of this rock soluble, sulphuric acid is used, which unites with the lime present, producing calcium sulphate, or gypsum. The phosphate fertilizers, therefore, per force of manufacturing process, already have a considerable amount of gypsum which must be purchased in order to obtain the phosphorus.

To what extent this has decreased the use of gypsum it is difficult to determine, but as explained by Dr. Thorne, of Ohio, it certainly has very materially decreased its use, and that, too, without any reflections on its value. It is quite certain that the sale of land-plaster from Eastern mills during the last few years has appreciably declined, but by no means ceased, vast quantities of it still being sold annually in the East and South.

The value of gypsum as a means of decomposing silicate compounds present in soils, thereby rendering available both phosphorus and potash, it seems, can not be doubted.

Another very important value of gypsum in some localities, but perhaps not in Kansas, is in helping to destroy the injurious qualities of the so-called "black alkali," so prominent in many places where irrigation is practiced. It seems to be quite well established that the most injurious constituent of "black alkali" is carbonate of soda. Gypsum helps to decompose this, producing sulphate of sodium and carbonate of calcium. The sulphate of sodium, for some reason, has a less corrosive action on plant tissues, and therefore is less injurious.

To sum the whole matter up it may be stated:

First—Gypsum has an undoubted value as a fertilizer when applied to many soils, as has been proven by hundreds of years practice.

Second—Its value seems to depend upon three processes: (1) preservation of ammonia and perhaps other nitrogenous forms; (2) decomposing potash- and phosphorus-bearing silicates, liberating these two elements for plant-food; (3) affecting soils physically making them granulated, or loose and mellow.

Third—Also it has great value for soils where sodium carbonate exists, by decomposing this compound and thereby breaking up the so-called "black alkali."

The mere fact that in many parts of America phosphorus and potash must be purchased and thereby incidentally gypsum is purchased as a necessary accompaniment in no way argues against the value of gypsum. Its use should be continued for all soils that it will benefit just the same as though the other modes of purchasing it were nowhere in vogue.

The mode of application of gypsum varies greatly with the season, the crop, and the soil. In some instances 150 pounds per acre gives very beneficial results, while in the most extreme cases of "black alkali" land, as much as a ton to the acre may be used to advantage. Usually it is best to apply it in the

spring by sowing it broadcast in early spring on all kinds of grasses and small grain. It may be planted with the corn, or applied around the hills when the corn is a few inches high. In all cases it should be applied evenly so as to give the best opportunity to come in contact with all the soil immediately adjacent to the growing plant.

Kansas has such unlimited quantities of gypsum in such a pure form, and it can be obtained so cheaply that no farmer in the State need hesitate in using it on account of cost. If our farmers could be induced to give it fair and reasonable trials doubtless it would soon be shown that many of our soils could be greatly benefited by it, while others would scarcely lend themselves to its influence.

If it is prepared from rock-gypsum it should be ground into a rock-meal, or dust. The so-called gypsum earth, or "gyps erde" of the Germans, is already in suitable form for immediate application. Such deposits are found in many places in Kansas, and although largely consumed by manufacturers in the production of hard plaster, there will long remain large quantities of it a little too impure for making plaster, but in every way suitable as a fertilizer. Mills are in operation at Blue Rapids and at Hope grinding rock gypsum, any one of which could fill any order for land-plaster that may be sent in.

Three New Farm-hands.

JOHN M. STAHL, SECRETARY FARMERS' NATIONAL CONGRESS, CHICAGO, ILLINOIS.

I am something of a Kansan myself. In explanation of that let me for a moment ignore that good taste that excludes the capital I, to state that on the August day that I was 21 my father gave me for my start in life, some advice and \$3, which was at least \$3 more than I expected or had a right to expect; and I have always been thankful that it was not \$3,000, or \$30,000, or \$300,000. That August day and days following, I plowed from sun to sun for 75 cents per day and board, which was accounted good wage for that work in that neighborhood at that time. When I tell you further that that same fall I rented a big field and put it into wheat, and that for the first time in thirty years' history of that locality wheat was a failure, and that it took nearly all I could save for a year to pay the rent, and for the seed; and the hire of team and implements in preparing the ground, you can see that it was no easy thing for me to save some hundred dollars; and that when I had accomplished that, how to invest my enormous fortune became almost as great a task to decide as it had been to save the money; with this difference, that the task of saving the money helped to sound sleep, while how to invest it kept me awake more than have all other problems since.

Well, I put that money into land, and what is more, into Kansas land. It is there yet. I expect it to remain there. I have not tried to sell it. I could not sell it for what it has cost me to date. I would not sell it if I could, and I do not know that I ever will sell it, for I am such a good Kansan that I have great faith in this State; for its history, and its men and women; and am proud of and love truly the 160 acres of its gentle slopes that I can call my own. I believe to-day, as I believed when I invested those hard earnings, that it should be the first ambition as to material wealth of every man to own some land; having in mind then, to on some future happy day making thereon a home, that he may have the farm-home that has been so much lauded—ignorantly, most often—but which will soon merit all the laudation, and largely because of the work of "Three New Farm-hands" I propose to talk briefly to you about.

But before we get to that let us consider for a moment that we may well desire the farm-home for selfish reasons. It is the only self-supporting home, and it is that and more. Let us city man die and his fine home is farm-home the family; but from the farm home the family may live. Then one may well desire the farm-home for patriotic reasons. Land-owning is one of the best guarantees of good citizenship. In all the years of our history it has never been necessary to call out troops to suppress a riot or insurrection by farmers. The supports of constitutional liberty, embodied in an approach to just government, whatever its guise or disguise, have always rested on the land; and they have become insecure and have given way just as farming has decayed. Again, we may desire to have the farm-home for the yet higher reason of mental and spiritual growth and exaltation. Four-fifths



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of our men and women that achieve success that is worth while, the victories of the mind and the spirit, come from the farm-home, where motherhood is not considered even more than an inconvenience—a weakness and a disgrace, where religion reaches to the root of action and character like a fructifying rain, and where, at the knees of holy women, children are taught to trust in God, but to depend on their own persistent and insistent exertions. At times we may travel the wrong road for a season, but our liberties and beneficent institutions will never be destroyed as long as the Bible is read in our homes, our children trudge to free schools, and a goodly proportion of our people have the hunger, and can satisfy the hunger, to own land and homes.

Hence, anything that adds to the opportunities, the capacities, and the life of the farmer, may well challenge our consideration. My dictionary tells me that a "hand" is an agent, a laborer, a servant. Therefore I choose to class among that overworked, patient, most honorable class, the farm-hands, three agents or servants of the farmer that serve him well, indeed, but are yet of such recent birth that they are not well known by some—three servants that some of my wide, ultimate audience may be glad to know better, and of these three I shall first name

THE FARM TELEPHONE.

Of it, my friend, S. O. Witt, a strictly up-to-date business man, farmer, feeder, and shipper, who enjoys the farm-telephone by the simplest and least expensive system, that also lends itself to and receives the aid of more complicated systems, testifies:

"Ours is a party line. All can hear when there is a call made. We have about thirty 'phones on this individual line. Before we built this line I wrote up a contract and got a dozen or fifteen subscribers. The rate we made them was \$15 for the first year, \$10 for the second, and \$5 for the third. We have a three years' contract. After the three years expire we expect to run it right along at the \$5-a-year rate for rent of the 'phone. We built the line and keep everything in repair, hence the rate is certainly very low. We are directly connected with fifteen different companies on lines with which it takes only the turning of a switch to make connection, and on most of these lines the cost is only 2 cents per message for the operator to turn the switch and call the party wanted. The reason the charge is so low is that in almost all cases we agreed to make no charge against another line for a message coming over our line which originates on the other line. We have no 'central.' Every 'phone is hung directly on the line. Of course, in the little towns there is what might be termed a 'central,' where several lines make connections. We all aim to run into one place and there have a switchboard, so we can reach any line we want. If anything serious should happen it would be known by almost everyone for miles around in just a very few minutes, as

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one person transfers it to another, and one line to another. At the places of switching we have to pay the parties a percentage of their collections and the switch-fee for their services, and by so doing we get good, quick service. Anyone on a line that has free connection with another can talk from any phone on such line without any charge. So we, or any one on this line, can talk to or from anywhere without any charge for message; the 2 cents switch charge would be the only charge, and that only when one line was switched to another.

"The farmers' mutual lines are got in this way. Each stockholder builds his part of the line; that is, he furnishes his portion of the poles and sets them and then puts in his part of the money to buy phones, wire, insulators, brackets, etc. Or if any one does not wish to do any work or furnish any poles, he usually puts up about \$30, which gives him that amount of stock in the company. If there are any phones put in after the line is completed the charge is \$30 for each phone, and the money is put in the treasury of the company, to keep up the line and meet any expenses that may accrue. If any one that has no phone wishes to use the line, he puts up 15 cents at the place from where he talks, which also goes into the treasury of the company and which is used or held, like the other money, for necessary expenses."

"This telephone business," continues Mr. Witt, in a letter to me, "is one of the greatest things for the farmer that ever happened. It saves a great many miles of travel, and for any one in business, even no more extensively than we are, its value can hardly be told. We have bought hundreds of animals and all kinds of hay and grain over it. Almost every farmer or merchant in this part of the country can be reached by phone. You see we are able to reach parties miles and miles away by making more switches, connecting one line with another until the party wanted is reached. We get word from people all over two or three counties and even from Missouri, about stock for sale. We often buy hogs over the phone, which we never see before or after buying. At Mendon I bought a carload of hogs by phone last Thursday. When they were brought in I telephoned the parties to go to the bank and I also telephoned the bank to pay them so much per pound, and another man loaded them in the car for me. Consequently I never saw the hogs, and everything proved satisfactory; but, of course, might not in all cases. That is doing business at long range."

Let us have brief testimony, also, from another source and about a different system. I will put on the witness stand Mrs. L. G. Chapman, a farmer's wife, one of the most brilliant women in the State of Illinois. She writes me:

"It happened to be our good fortune to live in close proximity to two towns that an independent telephone line desired to connect by wire. In selecting the route for building the line the company chose the road along which the most farmers lived that would become subscribers. The requisite number for paying purposes, it was claimed, was two to the mile. The company places the telephones in the houses and keeps them in repair, and the farmer pays a rent of \$1.50 per month, payable quarterly. This line runs through a number of counties of northern Illinois, and no tolls are charged for use of this line through any of these counties. A few months after the first line was built another, a long-distance one, was built through the country, in many places running parallel with the first line, and this, too, chanced to run by our home, making it possible to have two telephones in the house if necessary. The farmer in this (La Salle) county that has no telephone in his house is the exception and not the rule. This kind of telephone is better for the tenant-farmer than the regular farm-telephone. The tenants are at no expense for building the line, and when they change farms they can notify the company and their names are stricken from the list of subscribers.

"There is nothing that eliminates isolation from farm life like the telephone. It brings one's neighbors very near, when by simply going to the phone one can converse with a friend miles away. A physician can be summoned by night or day, and time saved that in extreme cases is worth more than the rent of the phone. Although living several miles from a telegraph-office we knew of the assassination of President McKinley in less than an hour after it took place. At election time we receive news from the tele-

graph-office and are kept as well informed as the dwellers in cities. Market reports can be received direct from the board of trade and stock exchange, and the farmer on his farm may sell his grain or stock at any time by telephone. It is possible to save enough on one transaction, by keeping informed on prices, to pay the rent of a phone for a year. One can get the railway time any day and know of the arrival and departure of trains. Threshers and corn-shellers are engaged by phone, saving miles of travel. Memorandums may be telephoned to your grocer and the goods will be in readiness when you drive to the store. Recipes of all kinds are exchanged by telephone and methods of doing work discussed among the wives and daughters of the farmers. Invitations to dinners and parties are given by phone, and concerts are held miles away. The appearance of tramps, agents, and peddlers is generally heralded along the line among near neighbors and preparations for their reception have been made when they arrive. No one that has ever had a telephone in his house will want to be without one, and in buying or renting a farm this is considered. Land has raised in value in this county since the telephone-lines were built out into the country. Two years ago land was valued at \$80 to \$90 per acre. To-day but few are willing to sell for \$100, and farms are changing hands at \$120 and \$125 per acre. One sold for \$173 per acre. Two telephone-lines run by the farm; the house stands at the intersection of two gravelled roads. A free rural-delivery route goes by it; and there is talk of an electric-road being built by the farm. No doubt all these signs of progress are factors in setting the price of farm land."

The testimony of these two witnesses, and especially if we read between the lines, tell us enough about the farm-telephone for us to consider and digest at this time. Reverently may we say that the inventor is the priest of Almighty God, penetrating beyond the veil into the secret places, and revealing to the people the goodness of God in the things that he has made for their comfort, activities, and growth. And to me it seems that none has come nearer to the winning of the title of high priest than he who so far penetrated into the secret place that he has made it easily possible for man to speak to man miles away as if they talked face to face. We live amid great wonders and miracles, in the day of marvellous things, and we seem to know it not. Some day sit down alone and think, just think, what a marvellous thing it is and what it means, to talk to some one miles away as if he were so near you could touch his hand, and of all that must be bound up in that day, near at hand, when a man may toss his words into the air, and the winged forces that man yet scarcely dreams about, shall carry them through the hidden pathways of the ether to ears thousands of miles away—a day that will completely revolutionize, yes, completely revolutionize, our attitude towards this earth, matter, force, and the life that is, and possibly also that fuller life beyond whereof we hope and dream. My second farm-hand is

RURAL FREE-MAIL DELIVERY.

My paper is already long, and surely it is not necessary to urge farmers to avail themselves of the services, costing nothing and so valuable, of this hand when there are awaiting action, petitions for as many free-delivery routes as there are routes established. The first route was established October 1, 1896, from Charlestown, W. Va. In that month 15 routes were established and as many more in the following month. By May 1, 1897, the number of routes was 44, in twenty-six States and Territories. The results were so satisfactory that Congress made the appropriation for the fiscal year 1898, \$50,000, and during the year 1898 the number of routes was increased to 126. The appropriation for the fiscal year 1899 was \$150,000; for 1900, \$450,000; for 1901, \$1,750,000, and for the fiscal year 1902 \$3,500,000. On July 1, 1899, there had been established 391 routes; November 1, 1899, 634 routes, serving 452,735 people; on June 30, 1900, 1,214 routes, serving 879,127 people; on November 15, 1900, 2,614 routes, serving 1,801,534 people; on July 1, 1901, 4,298 routes, serving more than 2,500,000 people; and on December 1, 1901, 6,009 routes, serving about 4,000,000 people. Thus have I seen come to glorious fruition the agitation I began in January, 1885, and for which I won only ridicule and reproach, hard to bear, for four or five years. But as the eighties neared their close, friends for my hobby began to spring up, and when Postmaster-General Wan-

maker, whom the farmers should always remember with gratitude, sent to the Senate his letter of May 3, 1892, on his experiments in village delivery, it was found that near 500 leading periodicals had been won to favor rural free-mail delivery. My records show that until 1895 I had delivered more than 300 addresses, at Chautauqua assemblies, before chambers of commerce and the National Grange, in a majority of the States, paying out of my pocket \$4,000 for travelling expenses. At I might preach the free-delivery of mail to farmers. I got my articles in its favor in more than 12,000 periodicals, in the local papers, using "patent insides" or "plate-matter," to the largest metropolitan dailies, and the North American Review. And my reward is found in many letters of thanks from framers who enjoy all the advantages of the free-delivery of mail and who put it above even the farm-telephone and say it is the most potent influence that has ever touched American agriculture. And I believe it to be true that no other one thing that has ever influenced farming as a vocation and farm life has had such a wide influence, working in so many ways and in turn awakening so many other modifying or developing influences. Postmaster-General Smith said that the free delivery of mail to farmers "is a potent educational force; it brings agricultural life into far closer relations with the active business world; it keeps the farmer in daily touch with markets and prices; it advances general intelligence through the increased circulation of legitimate journals and periodicals, stimulates correspondence, quickens all interchanges, promotes good roads, enhances farm values, makes farm life less isolated, and more attractive, and unites with other wholesome influences in checking the hitherto prevailing current from country to city."

But, truly, no one but a farmer, who has enjoyed its manifold advantages, can form a proper estimate of all that the free-delivery of mail accomplishes. There is yet some opposition to the free-delivery of mail to farmers, but I feel safe in saying that it is unintelligent—it were not founded on ignorance it would not exist. I urge every farmer to get free-delivery of mail as soon as he can; and when he has it, let him use the services of this farm-hand to the utmost. He is a strong, willing, handy farm-hand, and Uncle Sam pays his wages. It is worth while to number him among your workmen, and also—and there is more ground to urge this matter—to get from him his full measure of service, for the up-to-date farmer must have the daily paper and will buy in the large city markets and sell there many things that only a short time ago the farmer was almost compelled to buy locally.

An effort will be made for 1-cent letter postage, but farmers should oppose that with all their might until mail is delivered every week-day to all people in this country except those living in the most out-of-the-way places. Our postage-rates are really marvellously cheap as they are. We must not make comparison with foreign countries unless we allow for the long distances in this country. Once a letter mailed in Los Angeles and forwarded from Paris and then to Geneva, reached me in the little village of Chamounix; and as I reflected what a long distance it had come, and for only 5 cents, I thought how remarkable it was. And then I thought that every day letters were carried within this country at as remarkable a rate—from Los Angeles to Boston, for example, for 2 cents; and I saw that we were so accustomed to our very low postage-rates that it requires something out of the ordinary to show us how cheap those rates are. Certainly farmers should oppose their further cheapening before farmers have their mail delivered to them.

I had thought that my third new farm-hand would be the teaching of agriculture in the country district-schools, but when I got the program of this meeting I found that there were to be two papers on school topics, so my third new farm-hand will be

THE TROLLEY ON COUNTRY ROADS.

There are already some thousands of miles of trolley-line in country districts, built, building, or soon to be built; and if each mile is not multiplied by a hundred within five years it will be because the farmers successfully oppose the grant of right-of-way along the sides of the public highways. I believe that the farmers will be very shortsighted and unwise if they do oppose such grants. The trolley may not be all that is claimed for it, it may not solve the good-roads problem—I do not think that it will altogether—but it will

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do so much for the farmer that when its promoters ask only for the right-of-way along the side of the public highway, farmers should say very emphatically, Give it. Our Illinois State Grange, at its annual meeting last month, adopted a resolution opposing the grant of right-of-way along highways. Commenting on this, the secretary of the State Grange says in the Farmer's Call, of Quincy: "May be this action was not wise. Those trolley-lines are of prime importance to farmers to give them cheap and ready access to their trading towns. They can be built much cheaper by occupying one side of the wagon-road, and from daily contact horses soon get used to the cars and do not mind them. It does not help the looks, or uses, or sale of a farm to have it cut in two by a railway, but it does help to have a car stop at the roadside any hour of the day that you wish a passage to the city." I think this is the correct view. In my own county the board of supervisors, which is our county legislative body, has just granted a trolley-line the right-of-way along highways through the county; and this action was taken after weeks of very full discussion in the press and in public meetings, at which the advantages and the drawbacks of the country trolley-line were presumably fully exposed. Now we farmers are working hard to get the line past our land. Likely something about rates and character of service should be made part of the bargain. On this head we may well profit from the experience of our city brethren, that have granted street-car franchises without due consideration. The best exposition of the advantages of the country trolley-line and what it will do for the American farmer that I have ever heard was brought to me by a peculiar circumstance. Those of my hearers that have visited the Lakes of Killarney will recall the Gap of Dunloe—that mountain-pass seven miles long. The day I went through the Gap the tourists numbered about 200. At Kate Kearney's cottage we hired ponies for the ride. I selected a smooth little mare that I soon found was, true to her sex, mighty contrary, but full of grit. When we reached the summit of the Gap, three Irish miles from the bridge, near Lord Brandon's cottage, there were about twenty-five ahead of me, the leader a full half mile away. The ponies started a race. It was a rather steep down-grade, with frequent short stretches of abrupt descent. The little mare started in the race, and I doubt if I could have stopped her if I would. I had a whip with a long lash, and swinging it around my head I made that lash sing over the ears of the little mare while I slapped her with my hat. How that little mare did run! She actually got too busy to kick, and that is saying all that could be said. The race was visible to the tourists behind us, of course, higher up on the narrow trail, and I could hear them cheering, cheering the American and his nag. We passed the other ponies one by one till only three were left. The little mare laid her ears closer to her head—we gained slowly—we passed another one. Only two were left to overtake, but I could hear the little mare breathing hard, and the end of the race was scarcely more than half a mile away. The way had grown steeper and a mis-step meant serious injury if not a broken neck to the rider. The man just ahead of us, alarmed, succeeded in pulling up on his pony. I made my long whip sing louder, my old hat beat a fiercer tattoo, and we passed another pony—and the little mare kicked at it as we passed. Only one remained ahead of us now. But it was good twenty yards in the lead, and, do her best, the little mare did not gain. It had been America against the world, the land of the free against all comers, and it seemed too bad not to win. Clearly the little mare realized all that as well as I did. She was doing her very best, and there was that leader twenty yards in the lead, and the bridge only

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a quarter of a mile away. The Irish guides, who had taken a short cut, were already at the goal, cheering and throwing their hats and sticks in the air. I called to the little mare, I talked to her, I sang to her (and if anything will make anything run it is my singing). I told her that my middle name was Meloy, I yelled, I laid down close to her neck, she was gaining, gaining, gaining, now we were even, and we dashed across the bridge almost a length in the lead. As always, in a fair race America had won. And as the crowd gathered, laughing, yelling, cheering, three Manchester lads sung lustily, "Three cheers for the red, white and blue." To my surprise they knew both the air and the words. And I took out of my pocket a little edition of Old Glory that had been given me by a patriotic American girl one day on Loch Lomond, and as I waved above the little mare the dearest and best flag in all the world, the boys sang all the louder and the crowd cheered all the harder, and a girl—and she was from Kansas—threw her arms around the neck of the little mare and laughed and cried and tried to sing, all at the same time. And some way I so choked up myself that I could neither cheer nor sing. Oh, my friends, we may not realize it here at home, but when we have wandered in foreign lands we know that in spite of all that is said about corruption in government, and the money power, and trusts, ours is the best Government, ours is the dearest country, ours in the holiest flag, in all the earth. Thank God for America. Thank God for Old Glory!

During the scene that I have just attempted to describe, I could not fail to notice that one individual, a beefy Englishman, had not shown any emotion whatever. And when the excitement had a little subsided he remarked that it had been apparent to him that I had won because of my greater skill in handling my nag on the rough road or trail and he said that this was doubtless due to the fact that we had no good roads in America. And then he talked about our highways and the solution of our highway problems in a way that bespoke unusual ability and intelligence, and much study of that particular topic. I was much surprised. Undoubtedly he was a very shrewd, successful business man. He pointed out the great distances that prevailed in America, our very great length of highway, of the enormous cost of the necessary bridges alone, of the scarcity of gravel and stone over wide areas, of the fact that we were about to become, what we now are, the leading steel nation of the world, of American inventive genius that would certainly cheapen the making and the manufacture of steel, and he said that before we had stone or even gravel roads in America we would have steel rails along our highways, for the use of electric-roads, and rails of such width and shape that they could be used by teamsters, as the rails of some street-car lines are now used in some of our cities. At no other time have I heard our road problem so intelligently discussed, and since hearing what that Englishman said I have dropped the advocacy of gravel- or stone-roads in our prairie regions and have waited for the coming of the day of the trolley-lines in the farming district. I believe that farmers should welcome these lines. I believe that the farmer should gladly avail himself of the services, valuable and many, of this third new farm-hand.

The best measure of the civilization of a people is the use they make of outside agencies, is the extent to which they make natural forces serve them. This is also the best measure of economic and social advancement. Using it, we see that during the past quarter of a century no other class has advanced as have the farmers. Farm machinery and new methods have been employed until farming has little real relationship to what it was twenty-five years ago. The advantages of the city over the country are fast disappearing, because the country is getting those things formerly belonging exclusively to the city, that are worth the having, and yet the country is retaining those things that add so much to the fullness and value of life and that must always belong to the fields alone. The number of students at our agricultural colleges is multiplying and no longer does the student at an agricultural school feel that he is on the defensive when he announces that he is a student at an agricultural college. Let the three new farm-hands of which I have spoken do their full work and the movement from the farm to the city will be reversed and the problem of keeping the boys and girls on the farm will become the problem of keeping the farm for the

boys and girls. Farming already gives full play to all the faculties of the able business man and all the attainments of the student. It is a highly skilled employment, mounting to the altitude of the learned profession. Rightly conducted, it yields a handsome reward; and farm life is fast becoming the most attractive life to the serious, thoughtful man of culture. The attitude of legislative bodies and public officials has been changed and already no other interest or class receives greater consideration from legislative bodies or public officials than farming and farmers. The first bill introduced into Congress at the present session was an agricultural measure—a bill farmers have been demanding to regulate the sale of oleo. He need not be a great prophet to see in the immediate future of our beloved country that most pleasing of all conditions to the true statesman and patriot, because it must always be the foundation of real National greatness, progress, and happiness—a prosperous and contented husbandry.

Kansas Wheat and Its Products.

HERBERT HACKNEY, TOPEKA.

The able and energetic Secretary of Agriculture of the great State of Kansas requested me to read to this society a paper on Kansas hard wheat and its products.

I am glad he did not request me to produce an argument to prove to Secretary Wilson of the Agricultural Department of the United States that Kansas is not in the arid zone, because our Mr. Coburn has done that to the satisfaction of all, and Kansas hereafter will be classed with the agricultural States of the Union. Kansas, with her crops of eighty million bushels of hard winter wheat in 1900, ninety million bushels in 1901, and with good growing prospects for another good crop, need offer no apology to any State in this Union of great States. Since I am to speak of Kansas hard wheat and its products I will not diverge, so can not well say anything of the immense value of our other products; corn, cattle, hogs, and minerals, with Trego County still to be heard from in the matter of gold tonnage. Then, too, with an output of one hundred and seventy-two millions of manufactured products, Kansas is not an infant as a manufacturing State.

The earliest settlers of Kansas who raised wheat cultivated, quite naturally, the valleys, because, at that time, Kansas was considered to be more or less of a desert. The newcomers did not, as a rule, locate their farms far from streams or rivers. In those days the soft varieties of winter wheats were thought to be the best. Kansas wheats were, therefore, of the varieties now called red winter wheat, of which a very small amount is now raised in the State. Hard wheat planted on bottomlands produces a wheat which is softer than the original seed.

To my friend and collaborer in the milling business, Mr. Warkentine, of Newton, Kans, I am indebted for information concerning the introduction into Kansas of the hard red winter wheat which has since made Kansas a very important factor in the wheat and flour markets of the world. In the year 1874 a colony of Mennonites came from the Russian Crimea to settle in Kansas, attracted here, no doubt, by the fact that the prairies of Kansas resembled in many respects the steppes of Russia. The older settlers of Topeka will remember that many of these Mennonites were housed at different times in the then deserted buildings of the bridge-building company, and which buildings are now the busy shops of our great Santa Fe Railway, at Topeka.

These Mennonites brought with them a small amount of seed-wheat and when they settled in Marion County they planted it, and soon the hard red wheat called hard turkey wheat spread to adjoining counties, until, in 1880 or thereabouts, it became so plentiful in the country about Enterprice that C. Hoffman & Son found it necessary to remodel their mill to a hard-wheat mill. I may say right here that the firm of C. Hoffman & Son was instrumental in inducing the farmers of its section to plant the new hard red wheat instead of the soft wheat that had been sown prior to that time in that locality.

The pathway of the millers who first ground the Kansas hard wheat into flour was not carpeted with roses alone, as thorns predominated. Their patrons had been accustomed to the flour from soft wheat and no one who has not been a miller can appreciate the difficulty to be overcome when he tries to convince a woman, against her will, that anything new or different is as good as the old product with which she has been familiar. The miller does not

deal directly with the ladies who bake bread for domestic use, but through his customer, the grocer, he hears directly, if for any reason the flour he mills is imperfect or in any way different from the flour to which the aforesaid lady has been accustomed, even though his improved machinery and milling methods enables him to deliver a flour better in every way. If it works differently, requires more kneading, or even if when baked, turns out a sweeter, less chalk-white loaf of bread and one which will retain its freshness longer, the good woman is unconvinced. This prejudice nearly ruined the millers who first blazed the way for hard-wheat flours in sections where the people had been brought up on soft-wheat bread.

When in 1882, P. G. Noel, Geo. Hackney, and L. Z. Leiter built the mill now owned by the Topeka Milling Company, they consulted the well-known mill-building firm of E. P. Allis & Co., of Milwaukee, who strongly recommended the new milling company to grind Kansas hard wheat. The advice was followed, and as a result many cars of flour shipped to points in Kansas, Missouri, and Iowa were condemned and payment on the same refused because the flour was different from what the women had used. Fortunately wheat advanced at that particular time very much, so the grocers were induced to retain and work off the flour and ultimately the consumers learned to appreciate its good qualities and call for it. When the hard red wheat was first grown in McPherson County most of the millers rejected it for milling purposes, and even the farmers who raised it did not want the flour made from it. As a rule the millers began the use of hard red wheat by mixing a very small percentage of the hard with the soft wheat, gradually increasing the amount year after year, but woe befell the miller who grew impatient and increased the percentage of Kansas hard wheat too fast.

Kansas hard wheat was nameless in the world's great markets for years after it was first grown. It was used to mix with hard spring wheat and sold for such. As the output from the Sunflower State increased and became talked about, and the larger Kansas mills sought markets for their flour in foreign countries under Kansas brands, the eyes of the world were opened to the fact that a strong, well-developed, and very promising infant had been born to the family of hard wheat-growers, and this infant has now grown to vigorous manhood of such proportions that no estimate of the world's crop of wheat is complete until Kansas has been heard from, and as the crop prospect of Kansas soars or sinks, so rises or falls the price of wheat the world over.

The peculiar qualities of Kansas hard wheat are so well known in grain- and flour-importing countries of Europe that the value of their home-grown wheat is measured by the percentage of Kansas hard wheat admixture required to produce a good bread-making flour.

It can be said without fear of contradiction that the world does not, at present, produce a winter wheat which surpasses Kansas hard wheat in gluten, that chief virtue in wheat. It is true that the millers of Hungary make a flour that stands at a high point in the British markets. This is due to the fact that they export only a very small portion of their output and what they do ship to Great Britain is the creme de la creme of their product. Hungarian wheat contains much gluten, but there is not enough Hungarian wheat put upon the European markets to be worth mentioning. Southern Russia with her steppes resembling our Kansas prairies, and whose climate is not unlike our own, would be a strong competitor were it not for the fact that the methods of farming and harvesting the wheat in that country are very primitive. Weeds, seeds, and dirt are mixed with the wheat when received in foreign markets to such an extent as to impart to the wheat a strong taste. This strong taste and smell having been absorbed by the wheat berry is not eliminated entirely in milling, hence injures the value of the flour. Owing to the above defects the wheat from southern Russia is largely marketed in the Mediterranean countries where volume or weight appeals to the buyer with greater force than quality. The Kansas farmer can and does obtain the best farming implements known to agriculture. Kansas wheat is in most instances carefully stacked, and after being threshed is put into clean bins or hauled to the nearest mill or elevator, either of which is well prepared to receive and handle the grain in such a manner that, whether that particular

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wheat reaches the great markets in the form of wheat or flour, it is in excellent condition to meet the requirements of such markets.

The Pacific Coast wheat and the wheat from Argentine or from India are not calculated to produce good bread without some hard-wheat flour being mixed with the flour made from those wheats to supply the necessary gluten. The wheat known as Sheriff wheat of central Europe, which is raised in Germany, is so deficient in gluten that it can not be used by itself for bread-production but requires a heavy admixture of glutenous wheat. When Germany raises a good crop of wheat at home she has to export a good part of it so as to make room for large importations of glutenous wheat, the most popular of which is Kansas hard wheat. To illustrate the foregoing, it is not long since an old and well-established milling concern at Hamburg, Germany, issued a prospectus announcing a large increase of its capital-stock for the purpose of remodeling its mill so as to devote itself entirely to the grinding of Kansas hard wheat.

The reputation of Kansas hard wheat is so good that, whenever the spring wheat crop of the great Northwest is short, immense quantities of Kansas hard wheat are shipped to Minneapolis and ground into flour and sold as the best flour in the world. We have never heard that the much-vaunted quality of the Northwest flour has suffered on account of the introduction of a large percentage of Kansas hard wheat into its manufacture. The millers of the Northwest strenuously deny the use of Kansas hard wheat in their mills but the goods have been traced to their doors, and since those same men are called, and justly so, good business men, it would hardly seem probable that they paid for and shipped millions of bushels of Kansas hard wheat to Minneapolis for use as a curiosity in a museum, as a freak of nature would be exhibited.

However, Kansas with her almost limitless prairies and seemingly inexhaustible rich black soil must not presume too far on her natural advantages or her fame will fade as a quality-producer of wheat. Through repeatedly replanting wheat raised in the State the quality has already begun to show deterioration. Something must be done to avoid the exhaustion of the soil and the robbery of its gluten-producing qualities. Systematic rotation of crops and deep plowing are, among others, good preventive means. Kansas hard wheat must be kept up to its present standard by importations of fresh seed-wheat. This should be done by the State, as the benefits reach every man, woman, and child in the State. The larger millers of Kansas recently imported about 15,000 bushels of fresh seed-wheat from the Crimea, and a like amount should be brought into the State every three years, and the State should encourage its use as seed by all possible means. If the Constitution of Kansas stands in the way of legislation necessary to admit of the use of State funds for such a purpose, then the members of this society could not possibly find a better object upon which to expend their energies than to agitate the matter and keep it agitated until necessary laws can be enacted to place Kansas at the head of the list of wheat-producing States, not alone in quantity but in quality. The experience of the great Northwest should be a warning to Kansas farmers. The celebrated Scotch Fife wheat which gave to the American hard spring wheat its fame and prestige is rapidly losing that re-

now. If present methods of raising wheat year after year on the same ground are persisted in, the glorious reputation of that wheat will be a thing of the past. The premium of \$1 to \$2 per barrel enjoyed by Minneapolis flour in the years past has dwindled to insignificant proportions, and in many instances Kansas hard-wheat flour has the preference at equal prices. If the farmers of Kansas will profit by the experience of others the soil and climate of our State will do the rest.

By far the best means of exploiting Kansas hard wheat and enabling the farmer to realize the fruits of his labor is for the people of the State to assist the milling interest of the State by the enactment of laws which will effectively prevent discrimination against the millers of Kansas in the matter of freight-rates by the railroads. Whenever a sack of flour, made in Kansas, may go it carries with it the strongest kind of an advertisement for Kansas hard wheat. When Kansas hard wheat goes to the world's markets in its unground state it must of necessity pass through many elevators and is very liable to be mixed with inferior wheat, for profit, and yet the whole lot is sold as Kansas hard wheat, injuring the reputation of our wheat very much. But when the flour is milled in the State of Kansas from Kansas hard wheat and is protected by the miller's brand, it is not easily tampered with, because the courts of the land are not lenient with the law-breaker who uses a miller's well-known brand to work off inferior goods; therefore if the wheat crop of Kansas could be sent out of the State in the form of flour, all the credit for quality would remain to the State. Then, too, the manufacturing of the wheat into flour would leave the State would give employment to a great many people. The mills could use large quantities of coal for fuel, and in fact in every conceivable way it would be better for Kansas if all its products could leave the State in manufactured form. To bring this about it will be desirable for this board to disseminate information concerning freight-rates charged by our railways on the raw material and on manufactured products.

A superficial glance at the present situation will satisfy the casual observer that the rates of freight on grain from the interior of Kansas to the Missouri River gateways compared with the rates on the same products over like distances east of the Missouri River are entirely out of proportion. This excessive charge within the State leaves such a margin over cost to the railroads that they are enabled to make special rebates or concessions to certain shippers.

The proper remedy is to insist that the legislators reduce the rates on grain and its products within the State to a point where the roads must treat all shippers exactly alike or lose any rebates or concessions granted to favorites. If there are to be any favors extended to shippers by the railroads it surely should be to those who invest their capital within the State in permanent buildings, employ labor, purchase fuel from Kansas mines, and help pay the expenses of running the State. I think I can speak for the millers of the State and say that we ask no favors. We do not wish the rates of freight reduced below a profitable basis, but we do ask that the millers be treated as liberally as any shipper, and that is surely only fair.

If the carriers refuse to grant that reasonable request then we would ask for a reduction in rates which would make favored shippers such an expensive appendage that the railroads will be forced to detach them or suffer an actual loss proportionate to the amount of favor shown to such preferred shippers.


With the advent of the miller the profits of the farmer increase in many ways. Without the milling industry of Kansas the unparalleled growth of the now immense creamery interest of the State would have been impossible as the by-products of our mills, bran and shorts, are essential elements in the development of the creamery and its allied interests.

Before closing let me call your attention to a matter of the most vital importance to the State. There is now and has been for some time widespread dissatisfaction caused by the freight-rates charged in the State as compared with freight-rates charged for more arduous service from the Missouri River gateways to points in the East; it therefore occurred to the writer to call your attention to a few facts in connection therewith.

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western Kansas the trend of our rivers is eastward toward the Missouri and Mississippi. This indicates that the lay of the land is on a down grade from western Kansas to the Missouri River. Now the distance from Hutchinson, Kansas, over the shortest line to Kansas City, Kans., is 220 miles. The distance from Kansas City to Chicago over the shortest mileage is 458 miles. For the past year the freight-rates from Kansas City to Chicago has averaged between 8 and 10 cents per hundred-weight on wheat, while the tariff has been 12 cents per hundredweight. The rate charged from Hutchinson, Kans., to Kansas City on wheat has been 15½ cents per hundredweight. The distance from Salina, Kans., to Kansas City by the shortest line is 186 miles. The distance of the shortest mileage from Kansas City to Chicago is 458 miles. The rate of freight charged from Salina, Kans., to Kansas City is 15 cents.

Now to show you that there is a gradual decline from Kansas to Chicago I give you the distances above sea level of the following points: Hutchinson, 1,535 feet; Salina, 1,163 feet; Topeka, 885 feet; Kansas City, 750 feet; and Chicago, 532 feet above sea level. The distance from Hutchinson to Kansas City, shortest line, is 220 miles. The distance from Kansas City to St. Louis over the shortest line is 277 miles. The tariff rate open to everybody and printed on the different roads from Kansas City to St. Louis is 7 cents per hundred-weight. The rate from Hutchinson to Kansas City is 15½ cents. The rate from Salina to Kansas City is 15 cents. Now, if the railroads should get the same compensation for the same service in Kansas as they do between Kansas City and Chicago the rate on wheat from Hutchinson to Kansas City should be not over 5.76 cents per hundred-weight instead of 15½ cents.

The railroads will claim, and justly so, that they do not get as much back freight to points in Kansas from the East as they do to Kansas City from Eastern points, and consequently have more empty cars to haul west to be loaded for the East with wheat and other Kansas products, consequently they should be paid for that service in addition to the above. The average weight of an empty car is about one-third of the gross weight of a loaded car, so they should be paid one-third of the tariff for hauling back the empty cars to be loaded, or, say, 2 cents per hundredweight. This would make the total charge from Hutchinson to Kansas City 7.76 cents instead of 15½ cents, and the railroads would be getting better pay for their services than they get east of Kansas City on the tariff basis, but the freight east of Kansas City is so tempting an article for the railroads, and the railroads terminating at Kansas City want it so badly, that they very frequently cut the rate one-third, making the actual rate from Kansas City to Chicago 8 cents and to St. Louis 5 cents. This keen competition does not exist in Kansas, so the Kansas railroads would be really getting, on the above basis, 50 per cent more for their services than they are glad to accept between Kansas City and St. Louis or Chicago. The farmers at Solomon, Salina, McPherson, and several other points in Kansas have combined or are about to combine for the purpose of overcoming the difficulties under which they suffer by being forced to take a lower price for their wheat than they should receive. They claim, and the writer thinks justly so, that many of the railroads have what are called favorites. These consist of heavy wheat-buyers, whose main offices are at Chicago, St. Louis, and the seaboard, who receive from the railroads certain rebates on all grain they haul out of the State. These people are supposed to

get these rebates because they ship the grain to the most eastern point on the line on which they operate, thus obviating the necessity of meeting open competition at Kansas City and other Missouri River points by the railroads on which they operate. All of this works a hardship on the farmer of Kansas because he is not allowed to participate in the natural competition that does not come beyond Kansas City and other Missouri River points.

The writer feels that the railroads should have fair compensation for any services they perform, but when you take into account the fact that in 220 miles from Hutchinson to Kansas City there is a drop of 785 feet, or an average of 3.57 feet per mile, it should not cost as much per mile to haul freight from Hutchinson to Kansas City as it does from Kansas City to Chicago, where the drop is only 168 feet in 458 miles, or .367 foot per mile. We believe that for the good of the State and the good of all parties concerned that these rates should be reduced; if not as much as indicated above they should be reduced some, and if such reduction does not stop the favored shippers from getting the rates they now get then the rates should be further reduced to a point where the railroads of necessity are compelled to treat every shipper exactly alike.

The fact that they extend favors to a few heavy shippers is proof conclusive that the profit in the business will admit of it, whereas if their profits in the business are too small to admit of their doing such things the favored shipper would disappear.

In conclusion let me ask each and all of you to do all you can to educate the farmer to the importance of intelligent farming with a view to permanent results. Let me ask each of you to use your influence with your representatives in the Legislature to the end that they will not be niggardly in voting appropriations for the experimental farms of the State, and lastly induce them to look into the matter of importation of seed-wheat to be sold at cost to the farmers of the State.

Finally, let me ask you one and all to do all in your power to uphold and encourage our able Secretary of Agriculture for the State of Kansas in his efforts to defend the credit and fame of our commonwealth from any aspersions cast upon our agricultural supremacy. Incidentally, please do not forget to have a distinct and clear understanding with any and all candidates for legislative honors to the effect that the welfare of the people of Kansas must be looked after. The freight-rate situation needs a careful investigation and should be attended to by a fair and impartial committee, but such committee must not be under the domination of the railroad officials. The meetings of such committee should be public. It should call in as witnesses the shippers of the State as well as the traffic managers of the railroads. All the matter brought before that committee should be published. The report of the committee should also be published in full so you can decide for yourselves whether the candidate you voted for has properly done his duty by his constituents.

Breeding Farm Animals.

PROF. C. S. PLUMB, INDIANA EXPERIMENT STATION, LAFAYETTE, IND.

A few weeks ago it was my pleasure to visit a farm where 300 head of steers grazed on rich pastures. There were many fine specimens among them, but it would have been difficult to have found even one that could have been selected out and fed with a knowledge that it would prove a winner in a showing against picked individuals of his own kind and class. There were lit-

tle defects here and there among this bunch of really beautiful steers, that scored each individual below perfection. It might be a droopy back, or a slackness behind the shoulder, or not the best sort of a rump, or some other fault, but there was a fault.

Our last census, for June, 1900, reports almost sixty-nine million head of cattle in the United States. How many of these, think you, would do to go in the show-ring? Or going to the other extreme, how many of these, think you, ought never to have seen the light of day?

One familiar with our farm animals, who has carefully studied animal form and its relation to production, can not but feel and realize that an unfortunately large per cent of the animals on our farms are inferior in character and quality, and in far too many instances do not pay for their keep.

If one will but look with observing eyes, he will note two facts. First, that of the farm animals with which he comes in contact, but few are creditable or even good specimens of the breeder's art. Second, that the live-stock and agricultural press publish many contributions on feeding, and but few on breeding. There are men to-day in our experiment stations who have become famous for their investigations in feeding animals but there is not one name among them yet, where fame has been secured as a result of breeding experiments.

You will readily understand why this is so. It is apparently easy to feed, yet what time and patience and study are necessary to bred aright. Yet, I address you to-day on the assumption that a knowledge and application of the principles of breeding are as important and fundamental to success in producing farm animals, as is the necessity for a good foundation under the structure the architect is planning. Of the two things, breeding and feeding, the former is the more important, for it acts as the sub-structure upon which successful feeding rests. To the great breeders of the past are the breeders and feeders of to-day indebted for all the best that exists in our present flocks and herds.

What would our live stock of to-day signify, had not Bakewell, Collings, Eates, Booth, Cruickshank, Ellman, and Webb glorified the past with their achievements? Think for a moment of Bakewell, and his labors of over a century ago. Reared among a class of animals that did not impress him as either beautiful or profitable, he began a study of animal life and form that has had no parallel in our live-stock history. Careful selection, mating and breeding, were pursued with persistency, covering many years of time. Bakewell had his ideals. He sought individuals that approached those ideals as nearly as possible. He had learned that "like produces like." His methods were far-reaching. He studied not only the living forms, but history tells us that he made studies of the slaughtered animals, and preserved in pickle, parts of the carcasses for comparison in future years. Bakewell began his work a subject of ridicule. Yet he lived to see the day when mankind paid just tribute to his greatness as a breeder. The English cart-horse, Longhorn cattle, and Leicester sheep were improved and distributed widely by Bakewell. He introduced the system of letting out males for breeding purposes, and it is stated that his income from breeding males in 1789, which he let out to service, amounted to \$30,000 for the season. Bakewell was a remarkable man. He more nearly than any one else is the father of our modern live-stock husbandry. No such study of the influence of breeding had been attempted prior to his time, so far as history teaches

us. Others have followed Bakewell's lead, so that to-day, the influence and inspiration of these master breeders is beyond calculation. In writing of Jonas Webb, Elihu Burritt expresses well the significance of the work of such a breeder as he:

"But what higher honor can attach to human science or industry than that of taking such a visible and effective part in that creation? In sending out into the world successive generations of animal life, bearing each, through future ages and distant countries, the shaping impress of human fingers, long since gone back to the dust; features, forms, lines, curves, qualities, and characteristics which those fingers, working as it were, on the right wrist of Divine Providence, gave to the sheep and cattle upon a thousand hills in both hemispheres? There are flocks and herds now grazing upon the boundless prairies of America, the vast plains of Australia, the steppes of Russia, as well as on the smaller and greener pastures of England, France, and Germany, that bear these finger marks of Jonas Webb as mindless, but everlasting memories to his worth. If the owners of these 'well created things' value the joy and profit which they thus derive from his long and laborious years of devotion to their interests, let them see that these finger prints of his be not obliterated by their neglect, but be perpetuated forever, both for their own good and for an ever-living memorial to his name."

In the results of the work of the breeders during the past century, there is much that is not understood, but there is also much that is understood. The law that "like produces like," has a significance and an importance that only the most stupid could misunderstand. This may be fitly termed the one great law of breeding, through the application of which has resulted much of the best in our stock of to-day. Our knowledge of breeding is the result of constant observation, and the gathering together of facts from this breeding, the use of which has taught us how to more intelligently mate animals. To-day the wise breeder seeks to maintain animals in his herd, of uniform, superior qualities. A blocky, low down, broad backed, deep bodied, thick fleshed bull, mated to cows of this same sort produce offspring, as a rule, that resemble the parents, or are perhaps something of an improvement on them. This great law is well illustrated in many ways about us. The peculiar and uniform color-markings of the different breeds, the distinctive conformation or shape of certain classes of stock, and the temperament of others, all reproduce with great uniformity.

There is one interesting quality which comes within the action of this law, and that is what is known as prepotency. Certain animals have such superior strength of character that they reproduce in their offspring much of the same character seen in themselves. This is best seen in cases of males, where the offspring resembles the sire in a pronounced manner, and is usually due to the fact that he is somewhat better bred than the stock he is mated to. Many striking examples of this occur among great sires. The Hereford bull, "Lord Wilton," was very much given to impressing his special character to his offspring. A few years ago, when on a visit to Lexington, Ky., the stallion "Bermuda," was fetched out for my examination, and along with him were also brought four of his sons and grandsons. In conformation, style, and color, the descendants of the old horse all bore him a striking resemblance, and testified to his great prepotency.

But this great quality of prepotency is not limited to mere external things. It is seen in the swift speed of the race-horse, in the brimming milk-pail and pounds of butter, and in the thick loin of beef. From the loin of old Rysdyk's Hambletonian 10 has sprung a lineage of speed that has astonished the world, for his children and grandchildren and great grandchildren have performed phenomenal feats upon the race-course. The fastest trotters the world has known, trace their pedigrees back to that of Hambletonian 10. The blood of the Holstein bull Jacob traces down through generations of great milkers, while it is claimed that over sixty daughters of the Jersey bull Exile of St. Lambert have records of fourteen pounds or more of butter in seven days. And if we turn to flesh production, we find that through the blood of Mr. Cruickshank's Champion of England come some of the greatest Shorthorns of the last quarter of a century. These are simply illustrations to show that blood will tell, that individual merit and prepotency are qualities that continue

paying a rich reward down through the generations.

And so I wish to make a plea that our stockmen study the subject of breeding with more earnestness and make it play an important part in their business. This is not an appeal to breeders of pure-bred stock alone, but to all persons who find it a part of their business to breed horses, cattle, sheep, and swine. The question may be asked, is this a business proposition, and is there money in it? This I will endeavor to demonstrate in a further discussion of this subject.

What I wish to impress upon you right here are a few facts bearing upon the reproduction of animals. I have already stated that there is a well-established law that "like produces like." It is also true that if two animals are mated, that are very much alike in character, the offspring will more or less resemble each parent, but if one parent is inferior and the other superior and prepotent, the offspring will resemble the more prepotent of the two. While the males stamp themselves most on the progeny, because they are generally selected with more care than are the females, if an inferior male is mated with a superior female, the offspring will tend to resemble the dam. This is well illustrated in the case of Berry, who had for some years in his possession a breed of improved red pigs. His sows of this breed crossed with common boars, almost invariably produced litters of pigs of this reddish or sandy color.

As a rule, it is injurious to breed immature stock, and the best returns are not to be expected from weak or very old animals. Both observation and experience have convinced me that the use of a ram lamb, for example, as sire in a flock, results in lambs lacking in character, and of uncertain quality, while the use of a matured ram would have given satisfactory returns.

There is a general tendency, in the anxiety to secure results from breeding herds, to breed the females at too early an age, which too often injures the vitality and growth, and promotes reduced size and quality. Animals should not be required to take on themselves the burdens of motherhood until they have acquired fair maturity and development. The man who breeds his ewes to first lamb as long yearlings, to have his beef cows first drop calves at 30 months old, or his dairy cows at 24 or 26 months, or his sows to first farrow at 12 or 14 months of age, is on safer ground in building up his herd, than the man that will not wait for this maturity. In a measure, there is also objection in using very old or weak animals for breeding. Strength of character from such can not be expected to equal that from animals in the prime of age and condition.

The thoughtful breeder must consider carefully the inheritance of his stock. Animals of old, well-established breeds, reproduce themselves with more uniformity, and with less trouble to the breeder than do the breeds of more recent development. The Polled Durham of to-day must not be expected to reproduce polled heads with the uniform regularity of an old breed like the Aberdeen-Angus. This leads up to the point where it may happen that horns appear in the offspring from polled sire and dam. This peculiar quality of the occurrence of characters which existed no nearer than some grandparent or even still further back in the ancestry, is called atavism, or as the breeder sometimes expresses it, "throwing back." The scurs or horns which appear in the calf, have cropped out from some generation beyond the immediate parents. And this cropping out shows that the breed yet lacks stability of character. A good example of this same quality of atavism has come within my experience during the past few years, in breeding Buff Leghorn poultry. This is a recent breed and even though one uses Leghorns of good buff color down to the skin, white leathers or brownish black feathers will occur in the chicks hatched from this mating. But by breeding good typical buffs, with no off-colored feathers, each generation will prove an improvement on its parent stock in this respect. This quality of atavism has long been recognized, and the careful breeder will give heed to its warning. The man who deals in pure-bred polled cattle can not afford to use, in his herd, breeding-stock that have thrown horns, if he is working to intensify the polled habit.

Largely as a result of the studies of Darwin and the modern scientists, it has been shown that the various parts of the animal anatomy are more or less related to each other, and that the excessive development of one part is usual-

ly at the expense of another part or organ. Excessive milk production is at the expense of flesh production. The food of the dairy cow is converted into milk rather than into flesh and fat. The general-purpose cow need not be expected to be either a large milker or a quick flesh-producer, while in general experience, the thick-fleshed, meaty type of beef animal produces too often not enough milk for its own progeny. The two minute trotter carries just as little flesh as health and vigor will permit, while his every development is in the direction to produce speed, as shown in the lithe, muscular body, and the clean-cut, fine bone and limbs. The contrast between the fleshy form of the heavy draft and of the light weight of the trotter is very striking and shows to good advantage how one development, that of speed, is at the expense of another development, that of weight and flesh. Excessive wool production, as seen in the Merino sheep, seems to be at the expense of flesh production, although the wool of any breed, through careful selection, may be improved in length, and fineness of staple. These facts simply teach us that if we are wise we shall find it necessary, as a rule, to develop special qualities of animals, to meet special needs, rather than all needs. The general-purpose cow may be a profitable animal for you to keep, but you need not expect from her the intense beef habit, nor that of milk-production, although she may make a very creditable showing.

Another characteristic that some breeders should give more attention to is that of fecundity, or the ability of an animal to reproduce its kind. In the breeding herd the value of an animal largely lies in its worth as a breeder. The owner of a sow that farrows twelve pigs has much more cause for congratulation than the man who owns the sow that farrows three or four in a litter. The habit of being prolific seems more characteristic of some breeds and individuals than of others. Dorset sheep have for a century been famous for the number of lambs they drop in a year, often lambing twice, and this is recognized as a breed characteristic. The fatter, larger types of pigs usually produce small litters and the leaner types large ones. Still some of the fat breeds produce somewhat larger litters as a rule than do the other fat breeds. In a study of this subject among breeds of hogs Dr. Biting, of the Indiana Experiment Station, compared 400 litters of Berkshires, 1,083 litters of Poland-Chinas, and 600 litters of Chester Whites. These showed an average of 7.45 Poland-China pigs per litter, 8.22 Berkshires, and 8.96 Chester Whites. Dairy cows are perhaps more apt to breed frequently than are beefy ones, and as some families are much more prolific than others, it will pay the breeder to keep track of this characteristic in not only animals of his own breeding, but also in those which he may purchase for breeding purposes. In the London Live Stock Journal of 1892 of August 12, a number of interesting examples were given of cows that had given birth to many calves. The Aberdeen-Angus cow Mina 3d, at 18 years of age, had produced sixteen calves. John Rogers, of Swanington, England, gives a case of a Red Poll cow dropping twelve calves in 11½ years, she having her first at 2 years 5 months, and dropping twins twice. "The Shorthorn cow Lady Oxford Kirklevington," writes Evan Baillie, "only just turned 12 years of age, has had eleven calves, all singles, and is two months gone with her twelfth. Her dam, Kirklevington 8th, had five daughters in succession, and has handed down such a tendency to female produce that her youngest great granddaughter is the forty-seventh." William Tudge, the famous breeder of Herefords, at Ludlow, England, gives the case of "Belladonna," in his father's herd, producing sixteen calves in twelve years, twins being dropped four times, while one of her daughters, "Bracelet," in his own herd, dropped eight calves in five years, dropping twins three times, once on January 7, 1890, and again on December 31 of the same year. While this characteristic of producing many young may possibly go to an extreme in cases, it is more likely to be a lacking rather than a present quality. In any case it is not desirable that a dam should suckle more offspring than she can care for properly, whether lambs, pigs, or calves. It, however, is easier to kill off one or more weakly pigs of a good-sized litter, than it is to increase the number in the smaller litter. And it is better to have a sire from such an inheritance than from the more common sort.

As one travels about the United



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States, and become acquainted with our flocks and herds. The must of necessity, if observing, note the wide difference in the quality of the animals. But few of our breeders have a fixed type, and our herds present a mixture more often than that of widely different blood. Our stockyards show a vast number of inferior animals. Far too many of our breeders try a male of one breed for awhile and then change to some other breed. They think they are experimenting, but they are not familiar with much that they should know, and as a result their work is not conducted with intelligence. How many breeders think you, are there in a thousand, who before crossing breeds, or using new blood, investigate and study two most important characteristics, first, the general adaptability of the breed to be produced, and second, the principles involved in cross breeding? Yet, where much is involved, should not this be?

One of the interesting features of a trip to England or Scotland is the live stock to be seen on every hand. What one sees is in great contrast to our American conditions. There the farmer pursues a method that has a fixed character. For many years the English and Scotch have carefully studied the local stock conditions, and this resulted in the development of numerous fixed breeds over there, each well suited to certain localities. It is true that some of these breeds are more distributed than others, but there are other breeds quite restricted to an environment. In Ayreshire, one sees only Ayreshire cattle, in Lowland the breed of this name occupies all attention. In Herefordshire, England, the Hereford has long held its own as the only kind of cattle kept by the farmer. In Shropshire, the sheep of this name is preeminent, while in the Cheviot hills, Cheviot sheep cover the face of the earth. The British farmer has pursued a conservative, systematic, well-established policy, and this refers to registered as well as unregistered stock. There are many herds and flocks in Great Britain that are pure-bred to all intents and purposes, yet unregistered. The animals are kept up to this high standard simply because the British stockman has been taught well the lesson of the value of blood and uniformity of breeding. Here on the other hand, our American breeders use a free lance, and consequently one can hardly go to any section of the country and find large amounts of high-class animals, such as are in demand in the meat or breeding markets. Here and there are pure-bred herds and flocks that have a priceless value to our general stock interests, for to these must we turn if we are to give any standing to the character of American breeders and feeders. And so a proper debt of gratitude will never be paid to such men as Dunham, Holloway, the Robbins, Harris, Clark, Van Natta, Sotham, Riley, Barker, Lovejoy, Allen, McKerron, Davison, and a host of other great and true breeders, for the good they have done American live-stock interests.

If the stockmen of the United States would but follow out the British policy, in a measure, and would persistently breed one type, even though not absolutely pure, I am sure our live stock

intefests would be considerably promoted. But to cross dairy breeds with beef breeds, drafters with roadsters, or roadsters with fine wool breeds, only counterproductive things.

The practice of cross-breeding is, excepting one generation, and that for the butcher, usually unsatisfactory. This policy seems to set free in succeeding generations, weaknesses and undesirable qualities that had apparently lain asleep in the well-established breed, qualities that the improvers had in the pure breed fairly suppressed. Under the nearest successful application of crossing lies in the use of the class males on grades of the general type. In this way herds are improved so that real herds are developed by discriminating breeders. At our fat stock shows provisions are made for showing two classes of fat steers, pure-bred, and grades or cross-breeds, and while numerous pure-breeds, and high grades are shown, it is not often that steers from pure bred parents crossed are shown. Yet high grades and cross breeds have won many a ribbon over the pure bred, though all such crosses are usually the result of mating animals of very harmonious qualities. When such crossing is done, the new blood for one generation, seem to give added vigor and strength to the feeder. And so authorities on breeding are very generally agreed, that the value of crossing lies mainly in producing for the butcher. On the Cheviot Hills of Scotland, a favorite type of sheep for the butcher has been produced from crossing border Leicester rams on Cheviot ewes. For a half century or more this cross has been conducted with as much uniformity as has been the pure breeding of the sheep in the hills. In fact, in the English and Scotch markets, the visiting stockman glances at a glance the source of blood of the butcher stock before him. Experimental crossing over there has long since been discontinued excepting in a very small way. As I have already stated, there are circumstances where crossing is justifiable, but this should not be to produce breeding animals. We have enough of a selection of good breeds to-day to answer all reasonable requirements. To the man who proposes to cross, I suggest that you improve and secure what you wish by the process of selection. The man with a dairy herd can in time work wonderful changes in the capacity and character of his animals by constantly selecting towards the end he has in view. He can increase or decrease size, increase milk flow and also improve the quality of his milk. In any case, however, the process of improvement is slow, and requires constant, intelligent study. Our improved breeds of to-day are the result of two great processes, that of crossing and selection. The former practice is now no longer necessary, while the latter so far as our American conditions are concerned, is most essential to our success as breeders. In fact it always must be so.

Another practice that has been extensively tried in the past, is that of in-and-in breeding, mating near relations, as sire and offspring, etc. The history of the greatest breeders the world has ever known has shown it to be an undesirable practice, resulting in lack of constitution, infertility, and weakness. Bakewell, Booth, the Collings, and even Cruickshank in a measure, resorted to in-and-in breeding with the hope that it would produce the ideal animals they desired. Yet in every case they found it necessary to introduce fresh blood into their herds in order to save them from ruin. The close inbreeding practised by Thomas Bates, resulted in placing a stain on the name of Bates cattle, that it has taken generations to overcome, notwithstanding that Bates was perhaps the most wonderful breeder of the nineteenth century. We must have fresh blood in our herds, otherwise there will result deterioration, lack of stamina, size, and general quality.

If one wishes to breed within certain family lines, then it is wiser to practice line-breeding, keeping as far from inbreeding as possible, and yet using the blood-relationship of animals within the same general family. There are St. Lambert Jerseys for example, and if one wishes, he can breed along a line, as indicated by this. One, however, can not be much in error, if he seeks to secure the very best blood of the breed or type, preferably well removed from the stock to which it is to be mated.

In connection with this whole subject of breeding, every stockman should make a study of animal form and its relation to production. What is the most perfect form to be sought for in this or that animal? If one breeds dairy

cows, does he understand what to look for in body form, in character and position of hind legs, in type of udder, in size and shape of milk veins, and other details which have to do with the development of these? If not, then he can not develop his herd intelligently, until he has learned some of the lessons associated with this stock. If he does, then by application of his knowledge he should develop a valuable and beautiful herd.

I wish to make a special plea in behalf of the use of superior sires. It is in the highest degree unfortunate that so many inferior males are to-day used on our American flocks and herds. This is a well acknowledged fact, so much so that some years ago the Holstein-Friesian Association of North America paid a bonus for a year or more for all pure-bred male calves that were steered. This was an effort made by the Holstein breeders to improve the average character of the sires to be used. Occasionally one sees a contribution in some live stock paper, urging greater discrimination in buying sires, but on the whole the matter receives little attention. Men who breed pure-bred stock do not use the knife freely enough among their surplus males, and so many poor individuals really get out for service on herds owned by the less particular ones. One of the most disappointing admissions ever made to me by a famous stockman, came from a man of my acquaintance known the length and breadth of the land as a breeder of swine. Once I remarked to him, "Mr. Blank, do you ever sell any pigs to the butcher that you do not think satisfactory for breeding stock?" to which he replied, "No, I never do." This man's ability as a breeder was great, but I do feel satisfied that he did produce at least some animals that ought never to have been used for breeding purposes. I considered it a reflection on the greatness of this man as a breeder, that he should have made this admission.

If it is important that the breeder should be particular about the class of stock that he breeds and sells, then he should also be very particular about the sort that he purchases. While but few can expect to buy great show-animals, one can have a standard below which he should not go in securing additions to the herd. He should seek animals that are strong where his are weak, and should gradually round up his herd into one of uniform high class. The male with strong constitution will be likely to transmit the thick, strong chest development desirable in all farm stock, and if his back be true and strong, with well-sprung ribs, even offspring from females with backs of weakly character, will be likely to inherit the sire's strength where it is wanted. The man who wishes to perpetuate the fine things in animal character, does not look for the inferior, but the superior individual for a breeder. If he wishes speed, then he mates his mares to a stallion rightly descended in speed lines. If he seeks for milk, then he considers the ancestry in the way of milk production. Individual merit should always be the first consideration, but ancestry or pedigree should be a close second. It is true that blood will tell, and that animal that lacks in richness of pedigree, in a large number of cases, may be considered of inferior merit. Too much emphasis can not be laid on this matter, even with the man who breeds grade stock. So long as all the qualities possessed by animals are inherited, and just so long as these are transmitted to future generations to a more or less degree, just so long should breeders take heed to their work and strive to build up rather than down. And so when one visits farmers and sees another using inferior or commonplace breeding males, only a sensation of disappointment and regret can be reasonably expected to follow. Too many men wish to settle the purchasing question by a certain financial standard, rather than that of first finding the individual suited to their needs and then talking cost afterwards. Too many men desire to buy stock at hardly above butcher's prices, and express no willingness to pay a premium to the man who is offering them animals that have been produced at great cost and effort. We all need educating, but such men need it a little more than the others.

One thing it will always be safe to recommend, and that is if at all possible, purchase no stock until you have first personally inspected it. It is an unsafe thing to rely on someone else to select that for you which is to be used to develop and improve your stock. We differ in our judgment, and each man should as much as possible rely on his own rather than on another's judgment

in buying stock. Do not buy animals because they are cheap. Buy because you need them and they will do you good. Pay for quality rather than quantity. Get a good thing rather than a poor one, and do not find fault if you get a poor animal when you have paid the price for that kind.

In concluding this subject, I would not in any sense underestimate the importance of the subject of feeds and feeding. You will agree with me that we should feed only those that will yield a suitable reward in profit, yet how are we to secure this reward, unless we first breed the animals to eat the feed. Then if we are to breed them, they should be bred right, or not at all. And if we are to purchase the results of some one else's labor, then we should be wise enough in our own conceit to select feeders that have been bred right. There is no doubt in my own mind that there are many men, this winter, who are studying economy of feeds, who have no idea whether the animals they are feeding are paying for their keep or not. And so while it is agreed that the subject of feed is a very important one, the matter of breeding is the foundation on which successful feeding must rest. This is my reason at this time for making this plea in behalf of better practices in breeding our farm animals.

Lessons From Live Stock Expositions.
HERBERT W. MUMFORD, PROFESSOR OF ANIMAL HUSBANDRY, ILLINOIS AGRICULTURAL COLLEGE.

Live-stock expositions, fairs, or shows are not new institutions. Throughout every country where live stock is one of the leading productive industries of the farm, these events have occurred with more or less regularity from year to year for more than a century. They have been looked forward to alike by breeders, feeders, and farmers as seasons of anticipated pleasure and profit. Perhaps before, but at any rate ever since, Robert and Charles Colling, Thomas Booth, and Thomas Bates, together with their contemporaries, came together at the Darlington Market Fair and discussed the merits of the old reds, whites, and roans at the beginning of the nineteenth century, live-stock exhibitions have been patronized by our most progressive breeders.

The progressive breeder should, and usually does, lead in thought and action the feeder and farmer. That breeders have found it worth their while to quite generally attend these expositions and make a careful study of the exhibits, indicates that farmers and feeders will do well to follow their example. We have but to take a hasty glance through the exhibits in the live-stock department of any of our leading district, State, National, or international expositions to become convinced that a very large per cent of the animals on exhibition are young animals—relatively speaking, very young. To make my point a little clearer, I would say that at the recent International Live-stock Exposition held in Chicago, there were on exhibition a total of 291 bulls belonging to the four leading beef breeds; viz.: Galloway, Aberdeen-Angus, Herefords, and Shorthorns. Of these 291 bulls, 78 were 2 years old or over; 231 were under 2 years; and 140 were under 1 year of age. In the female classes, out of a total of 365 cows, 98 were 2 years old or over; 267 were under 2 years old, and 151 were under 1 year old. Or, to put it in another way, of the 656 pure-bred beef cattle on exhibition, 176 were 2 years old or over, 480 were under 2 years old, and 291 were 1 year old.

In the cow classes, more especially, it would not be just to claim that any animal under 2 years old would be of breeding age, but yet we find that out of a total of 365 females on exhibition only 98 were 2 years old or over, or of the breeding age. We might go a step farther and say that undoubtedly of these 98 females only those 3 years old or over have produced, and possibly not all of them. There is a rule which requires that all cows, 3 years old or over, must either have dropped a calf within fifteen months previous to the opening of the exposition, or must show satisfactory evidence of being in calf. But, granting that all cows 3 years old or over are regular breeders, there were only 49 such on exhibition out of a total, as we have already said, of 365 females in the show. Is this a fair proportion of mature cows?

In one way or another we are having the truth forced upon us that the young, immature animal is not the safe one to tie to, but the mature one. A promising youngster is a good thing, but merit means immeasurably more in the mature and lordly head of the herd and



A Nightmare

Gives point to the fact that excessive or irregular eating disturbs the digestion. Nightmare or night hag has its day time correspondence in the undue fullness after eating, with the belchings and sour or bitter rising so often experienced after too hasty or too hearty eating.

Dr. Pierce's Golden Medical Discovery cures dyspepsia and other diseases of the stomach and its allied organs of digestion and nutrition. When these diseases are cured, the whole body shares in the increased strength derived from food properly digested and perfectly assimilated.

"Your 'Golden Medical Discovery' and Dr. Sage's Catarrh Remedy have been of great benefit to me," writes (Prof.) Pleasant A. Oliver, of Viola, Fulton Co., Ark. "Before I used the above mentioned remedies my sleep was not sound; digestion bad; a continued feeling of misery. I now feel like a new man. Any one in need of medical treatment for nasal catarrh could do no better than to take treatment of Dr. R. V. Pierce. I know his medicines are all right in this class of diseases."

Sometimes a dealer tempted by the little more profit paid on the sale of less meritorious medicines will offer the customer a substitute as being "just as good" as the "Discovery." It is better for him because it pays better, but it is not as good for you, if you want the medicine that has cured others, and which you believe will cure you.

Dr. Pierce's Pleasant Pellets cleanse the clogged system from accumulated impurities.

the stately matrons that constitute his harem. These gentlemen, not calves, constitute the backbone of the breeding herds of this country.

Why is it that we have such a small per cent of immature animals in our modern shows? Is it because more attractive prizes are offered in yearling and calf classes? Surely not this, for at the recent International, at Chicago, precisely the same premiums were offered in the classes for mature animals that were offered in the calf and yearling classes. In fact, the custom is quite general to offer smaller cash prizes in the classes for young animals than in the classes for mature stock. If this is not the reason then it must be due to the fact that there is not as large a number of mature animals of merit, or that there is something wrong with modern show yard standards that the real breeding cow has little chance of winning. Is it because it is necessary, if we hope to win a prize with a mature animal, to show that animal in such high condition that it impairs her usefulness as a breeding animal, thus leading the prudent breeder to hesitate before putting some of his most profitable breeding animals to the test? Often the calf or yearling comes out of the show apparently little injured by the strain, the mature animal much less frequently.

We believe the reason just stated is the most potent factor at work in keeping down the number of mature animals exhibited. We can not believe that it is because there are noticeably fewer mature beasts of merit than young things. If this were true, we would be obliged to admit that our herds of beef cattle are improving very rapidly—a position that could not be sustained by sufficient evidence. Admitting that our herds are improving, such improvement must necessarily be gradual and slow. It is but fair to state, what is already well known, that there will always be a large number of promising calves that will never mature into animals of pronounced or even satisfactory merit.

The scrub and the well-bred calf are both pleasing to look upon, when reared under like favorable conditions. It is only after these young things begin to mature that we appreciate the wide differences in their ability to mature into beasts of satisfactory merit. Naturally we shall always have promising calves, that it were best to sell while young. This accounts for part of the discrepancy. Whether we are breeders of pure-bred or market-cattle, it is the usefulness of an animal as a mature beast that concerns us. We are, therefore, especially interested in

the mature animal and we strongly believe that it is a subject worthy of the most careful consideration of our exposition managers and boards of control to evolve some plan which will influence breeders to exhibit a larger number of mature animals.

We believe it one of the disappointing things of the modern live-stock exposition that the animals shown by an exhibitor are not necessarily a criterion of that exhibitor's working herd. It is well that farmers, feeders, and breeders early learn this lesson, and it should be thoroughly learned.

The farmer and feeder attend the fair or exposition not so much to become acquainted with breeders as to familiarize themselves with the grade of animals produced by the various breeders. They can avoid deceiving themselves by careful inquiry. They will find that, as a rule, less than half of the animals exhibited by any given individual or firm were bred by the exhibitor. The farmer and feeder may observe that certain exhibitors are excellent judges of animals, having collected show herds of pleasing merit. If in addition to their ability as a judge, an exhibitor is fortunate in securing a herdsman that is at the same time competent and faithful, the owner of the show-herd will undoubtedly go home with his share of the ribbons. What we should bear in mind is that it does not necessarily follow that the man who selects and shows good cattle is a successful breeder unless the cattle exhibited by him are of his own breeding.

We have but to note that classes where "must be bred by exhibitor" is a factor of eligibility, there are few entries, and consequently less competition than in other classes. It is safe to say, too, that the average quality of the cattle presented in such classes is not up to the high standard set in other classes of the show. This but emphasizes the fact that being able to select good cattle does not always go along with the ability to breed good cattle. We would not underestimate the ability to judge cattle well, but we must say that we have a far higher regard for the man who has bred, and is breeding, good cattle, than for the one who simply knows good ones when he sees them. We believe it for the best interests of the live-stock industry of this country that breeders, as distinct from mere fitters and exhibitors, be encouraged at live-stock expositions and elsewhere. We would not have fewer classes open to the world, but we would have more classes for individual animals and herds bred by exhibitors.

No one can consistently say that there has not been a great service rendered the live-stock interests of America by the large amount of attention that has been devoted to giving instruction in stock-judging at our Agricultural Colleges. It has been a tangible and popular line of work among students and stockmen as well. There is great danger, however, at the present time, that this subject will receive too great prominence and consume too large a proportion of the time and energy of our animal husbandry departments. That this danger is at hand we have ample evidence. Students are becoming infected with the belief that, being able to place animals correctly in the show ring, and gives intelligent reasons therefor, they are prepared to meet the world's keenest competition. We, as instructors in animal husbandry, have been largely at fault in fostering such sentiments. In so far as we have been guilty, we deserve criticism. As we have already intimated, we grant that it is a valuable accomplishment to become a good judge of live stock, but to know the theory and practice of breeding and feeding good animals, along with securing for surplus stock the best market, is immeasurably more valuable and important. Without this knowledge our herds and flocks will not improve. May I be permitted to say that, however misled we may have been in the past, we shall make an honest effort in the future to so economize the time which our students have at their disposal to devote to the study of animal husbandry that the most important subjects of breeding, feeding, and judging shall each receive the time and attention their relative importance demands.

We have heard it stated that a reasonably bright young man can be taught to judge animals in eight weeks and give as good satisfaction in the showing as most experienced judges. Did you ever hear any man claim that a bright young man could learn in eight weeks how to breed and feed animals good enough to compete with animals brought out by experienced breeders?

It appears to me that if the classes in our modern live-stock expositions are so arranged that the bulk of the prize money can be won by exhibitors who may not necessarily be the breeders of fine stock they will be fostering and encouraging a state of affairs which makes it possible for the man without the eight weeks' training, or, in other words, the man who is simply a good judge of stock, have the advantage of the man who, to be a master of the art, must not only take advantage of all the help he can get from agricultural colleges and experiment stations, but also must needs spend the better part of his life in fitting himself for a successful breeder in the truest sense of the term.

While the exhibitor who breeds his show-animals is the man to encourage, he is also the man for the prospective buyer to tie to, and even then we would prefer to see his working herd and observe whether or not he has been successful in producing a goodly proportion of uniformly meritorious animals, and not simply a few extraordinary ones. The breeder's farm and herd is the place to learn these facts, not the show-ring. It may be necessary to see the few animals that the breeder may speak of in an indifferent manner as being "back of the woods."

It is no longer a secret among those who have taken the trouble to follow up the live-stock shows of the country for the past few years that, at the leading shows at least, animals must be in high flesh to win. It was not so long ago that we found numerous breeders rebelling against the necessity of showing animals in such high condition in order to win, but, judging from the lack of discussion on the subject, we take it that breeders have thought better of it and have plunged into the middle of the stream with the rest. Yet we can not forget that in the first instance we had animals too fat for the breeder, and now we have animals too fat for the butcher, as recent block tests prove. Here and there we find men trying to reconcile the present condition of affairs, but the majority stand quietly by and think softly that if it is so it must be so.

It all leads me to believe that for years we have paid too much attention to outward form and symmetry, and too little to parts where the animal really lives and manufactures its products. Goods of rich quality and great worth are often manufactured in rude, unsightly manufactories.

Fellow feeders and breeders, let us not be satisfied with very gently rolling up a piece of the bullock's skin in our hand; let us peel the hide off sleek and clean, and follow the carcass to the block, and over the counter if need be. This should not satisfy us. We must aim to produce a carcass that will meet the demands of the butcher and through him the customer. But until we know how to produce that best carcass at a profit to the feeder and breeder our work is but well begun.

One of the legitimate objects of the live stock department of our fairs is to bring the breeder and feeder or farmer into closer touch and sympathy. In so far as a live-stock exposition fails to do this, it fails to accomplish one of its most legitimate possibilities. Live-stock exhibitions serve well to bring breeders together, and this is good as far as it goes, but the mutual interests between the breeder and farmer are not generally recognized, and our live-stock expositions, save possibly the few fat-stock shows recently revived, have tended rather to widen the gap between breeder and feeder than to bring them together.

We are of the opinion that we need more fat-stock shows; one for each State is none too many. While we would not have fewer exhibitions of breeding stock, we would certainly make more of the exhibition of market grades of cattle, sheep, and swine at our State and district fairs, thus encouraging and giving an opportunity to the breeders and feeders of market-animals, together with the education that goes along with such events; because, after all, it is the feeder and the farmer who are the backbone of the trade in improved live stock. We need not only international, National, State, and district fairs, but we need local live-stock shows. We need them from the standpoint, both of encouraging more men to exhibit live stock and to give a larger number the benefit of the lessons to be learned from them. I know from experience that it is not until a breeder becomes an exhibitor that he really learns some of the most valuable lessons which the live-stock expositions afford. If you will pardon a personal reference on this point I will say that early in the nineties, having exhibited



Miss Marion Cunningham, the Popular Young Treasurer of the Young Woman's Club of Emporia, Kans., has This to Say of Lydia E. Pinkham's Vegetable Compound.

"DEAR MRS. PINKHAM:—Your Vegetable Compound cured me of womb trouble from which I had been a great sufferer for nearly three years. During that time I was very irregular and would often have intense pain in the small of my back, and blinding headaches and severe cramps. For three months I used **Lydia E. Pinkham's Vegetable Compound**, and aches and pains are as a past memory, while health and happiness is my daily experience now. You certainly have one grateful friend in Emporia, and I have praised your Vegetable Compound to a large number of my friends. You have my permission to publish my testimonial in connection with my picture. Yours sincerely, MISS MARION CUNNINGHAM, Emporia, Kans."

\$5000 FORFEIT IF THE ABOVE LETTER IS NOT GENUINE.

When women are troubled with irregular, suppressed or painful menstruation, weakness, leucorrhoea, displacement or ulceration of the womb, that bearing-down feeling, inflammation of the ovaries, backache, bloating (or flatulence), general debility, indigestion, and nervous prostration, or are beset with such symptoms as dizziness, faintness, lassitude, excitability, irritability, nervousness, sleeplessness, melancholy, "all-gone," and "want-to-be-left-alone" feelings, blues, and hopelessness, they should remember there is one tried and true remedy. **Lydia E. Pinkham's Vegetable Compound** at once removes such troubles. Refuse to buy any other medicine, for you need the best.

Mrs. Pinkham invites all sick women to write her for advice. She has guided thousands to health. Address, Lynn, Mass.

a pure-bred herd of swine at many of the local fairs and finally at the State fair in Michigan, with marked success, young and unsophisticated as I was, I hastily concluded I had the best herd in the world. In order to prove that my conclusions were correct, I decided to ship my herd to the Illinois State Fair and there vindicate my belief. The rest is briefly told. I went home a sadder and wiser man, without having won a single ribbon, or a dollar in prize money. You may be sure, however, that I learned more about the hog business in those six short days than I would have learned at home on my farm in as many years. It is no exaggeration to say that I learned more there than I ever learned from any live-stock exposition before or since. We say then, emphatically, that not until the farmer and feeder have better opportunities for exhibiting their products at local and near-by shows will the greatest good be meted out to the greatest number.

Our paper may appear to be a criticism of modern expositions. It was not intended as such, nor was it written in that spirit. It is our duty, as interested stockmen, to freely discuss these vital questions and aid in establishing right principles and correct standards. A suggestion here, a criticism there, and an occasional insistence with fair boards, if they come often enough, will do much to hasten the millennium for the stockmen.

The Country Schoolhouse.

MRS. LUCY B. JOHNSTON, TOPEKA.

The evolution of the country schoolhouse from the log cabin, with puncheon floors and seats, with oiled-paper windows and clapboard roofs, has been slow. Few of us, even though the frosts of many winters have whitened our heads, know from experience or observation anything about the pioneer schoolhouses that were hurriedly raised in the woods from the logs felled in the clearing. The "raising" was an opportunity for neighborhood sociability and conviviality, the demijohn and little brown jug taking a most conspicuous part. This was in the long ago, when schoolhouses were built for boys, and education for girls was considered not only a useless but a dangerous thing,

if it extended beyond the rule of three. It is no wonder that the mothers then took little interest in school matters beyond getting three substantial meals each day, and a soft bed at night for "the master," who "boarded round."

These are stories that have come down to us from the dear old grandmothers as we begged her to tell us of the times when she was a little girl; but the picture of the little log schoolhouse, with stick or stone chimney and its string-latched door, is as real in our mind as the later sod-house on the prairie or the more modern "weather-boarded" building, of box-like shape, with a brick chimney in the exact middle of the shingled roof, which was the standard during our own school days. In this schoolhouse three eight-by-ten paned windows were set with soldier-like precision in the sides, while the ends were reserved, one for the blackboard, with the bundle of hickory rods above it, and the other for the one place of entrance and exit. The adoption of this plan marked a long stride in the evolution of the country schoolhouse, and was so satisfactory to the average citizen that the self-satisfied board of directors really believed the ideal had been attained.

But God gives us better conditions and saves the world by placing a few restless souls in our midst, who will neither let us slumber nor sleep for long, and this uniformity of architecture is being broken by the addition of vestibules and halls, but the severely plain schoolhouse still prevails in the country. In our towns and cities, more attention is being paid to architecture, ventilation, decorations, and surroundings than ever before, and the same spirit is reaching out into the country, and we hope soon to see the rounded or bay-window corner, for the cultivation of plants and flowers, on every new schoolhouse. We have in mind now one such window, which we saw in the second or third grade of the Seneca school-building. It was filled with vines and flowering plants, which added very much to the beauty and cheerfulness of the room that winter afternoon, and the thought came, Why could not the country as well as the town school have the benefits of a beautiful window-garden? It would afford a means for the cultivation of observation, and if

the children are permitted to plant the seeds and care for the young plants, it will give them a pleasure beyond that of mere proprietorship, and the teacher will find it an easy step to interest her boys and girls in the economy of nature, as they are led to note how the perpetuation of each kind is arranged for by the storing of the food and life germs in little cases, which we call seeds or bulbs. Further inspection will reveal how intelligently these little germs of vegetable life are protected in parchment-like sheaths, hard and fibrous shells, or wooly coats; and the use of the microscope will open up a world of fairylke wonders.

The general condition of the country schoolhouse in Kansas is as good—yes, is better—than we find in many other States. This is especially true of the schoolhouses built in recent years; but there is room for improvement, and Kansas will not rest satisfied until her country school buildings stand in the front rank.

The sanitary conditions, as reported by our State Superintendent, are only fair. Members of school boards do not always seem to appreciate the value of good drainage for school-grounds, and clean and beautiful surroundings for the children during school-life.

The country school-yard should afford excellent opportunities for landscape gardening. It may be claimed that the country boys and girls have ample opportunity for nature studies in the fields and forests about them, but it is equally true that we may have eyes and see not. Through the wiser and pleasanter methods that are coming in vogue for child-guidance our children can be led into a closer observation of nature, which will not only render the natural sciences a delightful study, but will develop a love for the beautiful in their minds that otherwise might always remain dormant.

We should never sacrifice the opportunities for physical development for those of aesthetic development, but fortunately our country school-boards do not have to buy their school-grounds by the foot, and it is comparatively easy when selecting school-sites to provide ample grounds. The responsibilities of the country school-boards are greater because it is easier for them than for the town school-board to provide the foundation for nature studies, and because the country children have better opportunities to continue such studies.

There is already in many of our country schools enthusiasm for decorating yards and planting trees, and we are hopeful, for the spirit of altruism, especially among children, is a contagious one. This feature of educational work must necessarily depend largely for its beginning upon the sentiment of the community and the ideals of the teacher. However, the ebb is never so low in Kansas that an enthusiastic interest in tree-planting on Arbor Day can not be aroused, and the first requisite of every school-yard, after good drainage, should be shade-trees. The selecting, planting, and naming of the trees should be conducted with appropriate exercises and ceremony, in which the children have a conspicuous part. This will lead them to take a permanent interest in the care and protection of the trees.

Walks and beds for flowers and vegetables should next be laid out. This portion of the yard may not be large, but it should be made the most attractive part of it, and should be a place where practical and beautiful lessons may be learned and strong impressions made that will abide with the country boy and girl long after the rules for square and cube root are forgotten.

The part of this paper referring to the planting of seeds and trees has been written especially for the purpose of catching the attention of the agriculturalists in the audience; but I wish you all to come with me while we see if we can make better conditions inside the building. Besides the window-garden, every schoolroom should have a cabinet for the different collections that the children could be interested in, and make under the teachers' direction.

Happily, most of our country school districts realize the benefits that accrue from enlivening the schools with music, and have been provided either with pianos or organs.

The importance of a library for every school is acknowledged, but some of our schools are without them, and the children living in districts remote from cities are cut off from library privileges, and have little reading-matter beyond what is furnished by the weekly newspaper. The State Federation of Women's Clubs began a work several years

ago which has made it possible for the country schools of Kansas to have library privileges. We refer to the establishment of the traveling library. There are now 10,000 books in the State Library which may, upon certain conditions, be sent out into any part of the State. These 10,000 books are divided into sets of 50 each, and placed in cases which are suitable for traveling and for housing the books at the library-stations. These 200 libraries are all out most of the time. Some of them are used for reference in study-clubs, others supply reading-matter for country neighborhoods, but most of them are in country schools. Happily the 9,406 country schools do not all need them, some having established permanent libraries.

The purpose of the traveling library is not solely to supply good reading-matter, but rather to inculcate a taste for good reading and to create a desire for permanent libraries where they do not already exist. When this mission has been accomplished, the little traveling library should be given up, that it may go into other fields and work out the mission for which it was sent.

Our State laws provide means for establishing permanent libraries in school districts, and we hope the library-room

electing ideal school-boards of men and women who are progressive and willing to give their best thought and effort for the elevation of Kansas citizenship through the school, rests alike upon men and women; but while waiting, and working for the evolution of the ideal country schoolhouse we have pictured, we should lose no opportunity to make better the conditions of the one little room where so many of our boys and girls now gather each day. Do we not owe it to our young people who spend so large a portion of their waking hours in the schoolhouse, and who receive some of their most lasting impressions there, that the cold, dingy, barren walls should pass and give place to the beautifully-tinted or papered ones, with pictures thereon, that mean something and hold a lesson? Why should not the schoolroom be as clean, artistic, and beautiful as our best rooms in the home?

The work should begin with the school-board, but can be carried on by the people of the district. It gives the teacher and the mothers a common ground to stand on, and a common interest to work for, bringing them into closer relationship, and the wider influence reaching out into every home

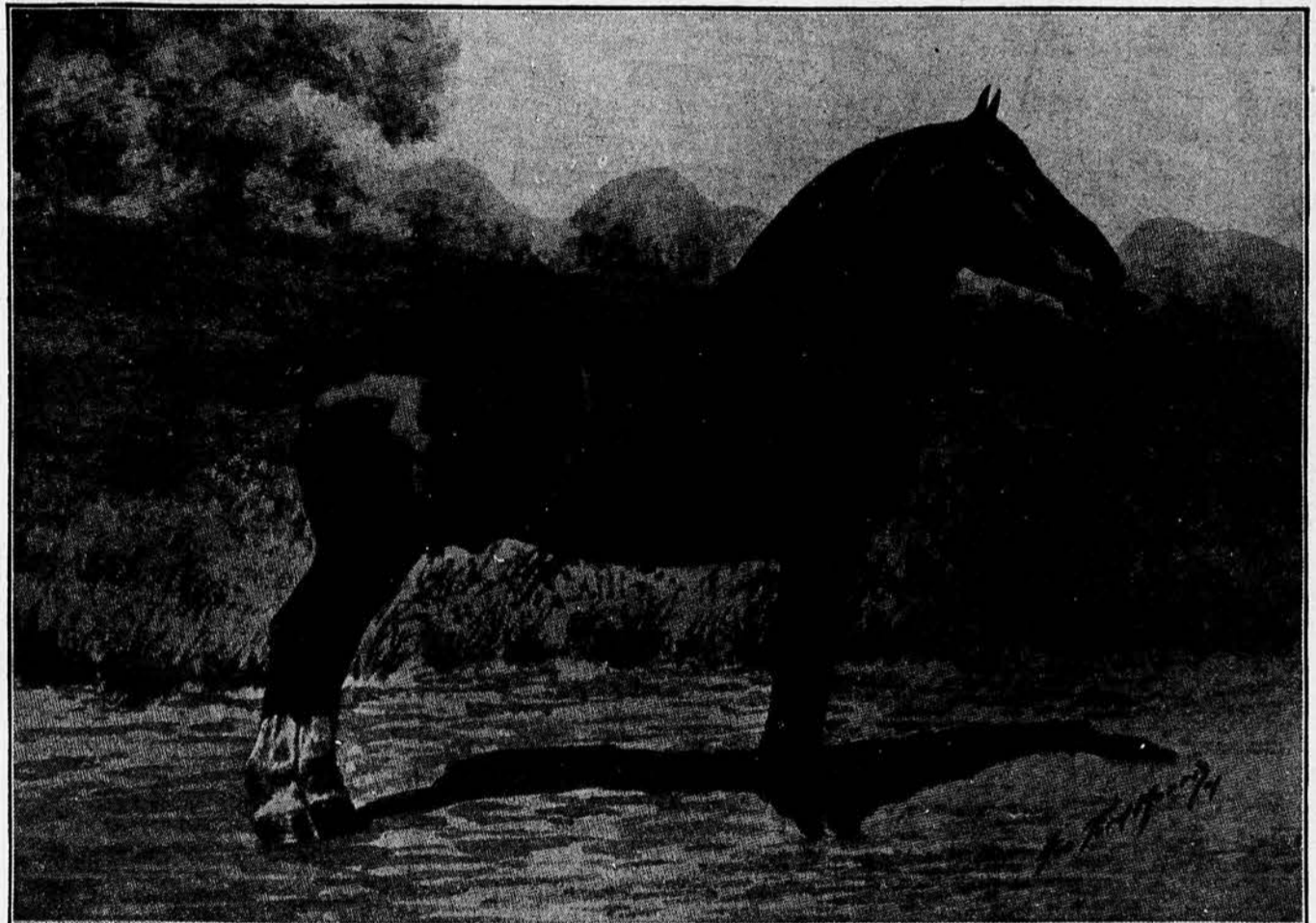
feeling of gladness, since we know some one else is to be helped by letting them go. As they leave us to-day, we will send with them a God-speed in the mission they are to perform."

Corn Culture and Breeding.

PROF. A. D. SHAMEL, ILLINOIS EXPERIMENT STATION.

THE IMPORTANCE OF FERTILE SOIL.

The important points under the farmer's control in the production of a profitable crop of corn are fertile soil, improved seed, and the best methods of culture. By farmer's control is meant that the corn-grower can influence the above conditions so that they may be made to produce the largest yield of corn per acre most economically. The fertility of the virgin soils seemed almost boundless to the pioneer-farmer. He planted crop of corn after crop of corn, or crop of wheat after crop of wheat, or rotated corn with wheat, producing large yields of both crops. Little attention was given to the application of the principles of plant-growth to our farm crops. In Indiana and Illinois such systems of farming have reduced the fertility of the soil to such an ex-



THE PERCHERON STALLION POURQUOI-PAS 27428 (44488).

Winner of Championship as best Percheron stallion of any age at International Live-Stock Exposition at Chicago, December, 1901. Prize winner at World's Exposition, Paris, 1900. Prize winner at the Show of the Societe Hippique Percheronne, Nogent, 1901. Imported by Dunham, Fletcher & Coleman, Oaklawn Farm, Wayne, Du Page County, Illinois.

will soon be considered a necessary adjunct of the country schoolhouse.

Another needed innovation is the introduction of industrial training in its simpler forms. Both our town and country schools should be equipped to educate and develop the whole child, body, mind, and soul. There is as much need of and demand for people who can do things as for people who know things. From the fifth grade on our girls and boys drop out of school to fit themselves to earn a livelihood. If we had industrial-training courses with diplomas at the end, fewer of them would drift away from the farms and into the cities to take up trades or to study the professions.

We realize that more has been suggested than could possibly be given a place in our country schools to-day, but we have been looking into the near future, when the consolidation of rural school districts shall be general, and we see beautiful, well-heated and ventilated buildings, with library- and music-room, with a model kitchen and sewing-room for the girls, and well-equipped shops for the boys. These several rooms could be thrown together for lectures, concerts, and social events, thus providing an audience-room, and forming a center for the intellectual and social life of the community.

In Kansas there is no restriction of the suffrage on account of sex on school questions, and the responsibility of

and touching the life of every child can not be measured. I have been told that the interest created for good art in the schools of Topeka has very materially raised the standard of art in the homes of that city, as well as created an increased demand for it. Art decorations in the schoolroom build for the betterment of humanity, morally, intellectually, and spiritually. They make pleasanter surroundings and tasks lighter, and through the interest that is sure to follow latent talent may be discovered and cultivated; but no one of these things is of so much importance as a knowledge of art and artists among our young people—just as the study of literature is to give the student an acquaintance with writers and their best thought, rather than to make them authors.

Realizing how much had been accomplished through the decoration of the Topeka schools, the women of the Topeka Federation of Clubs wished to extend the work and have fitted up a traveling art-gallery, which is here for your inspection, and it is their desire to place it in some country school in this county. It has been returned from the Industrial School at Beloit, and in a letter of transmission the superintendent says, "The pictures have been a source of pleasure and profit to all us. The educational influence of a good picture is incalculable, and while we part with them reluctantly, yet there is a

tent that profitable crops can no longer be produced on the old haphazard manner of farming. The early settlers broke the prairie sod or cleared the timber fields and cropped them until they would no longer produce profitable crops. These farmers then moved into a new spot, broke the sod or cleared the timber, and farmed as before. Sooner or later in any State the new and unbroken fields will all be plowed and cultivated. In Illinois the children of the pioneers are being crowded back onto the exhausted fields, and it is their problem to find some practical way of restoring the fertility to the soils. Any farming community, which practices a one-crop system of farming, is bound to become eventually poverty stricken. The fertility of the soil is like a bank-account. By continued drafts without any deposits, the balance will sooner or later be found on the wrong side of the ledger. At the Illinois Experiment Station corn has been grown year after year on a field of the college-farm without any application of manure or fertilizer of any kind. This experiment was begun twenty-four years ago, and the best kind of cultivation and methods of preparing the seed-bed have been used in the growing of the crops. The crop has been carefully weighed from year to year. The yields have been kept since 1888, but previous to the establishment of the Experiment Station at this time

no authoritative records were kept. The records since 1888 are as follows:

	Ear corn. Bus. Per acre.	Stover. Tons Per acre.
1888.....	60.13	1.26
1889.....	47.15	1.21
1890.....	41.87	1.19
1891.....	28.67	1.23
1892.....	30.92	.75
1893.....	21.73	1.04
1894.....	34.83	1.26
1895.....	63.81	1.51
1896.....	62.31	1.74
1897.....	40.10	1.61
1898.....	18.11	1.39
1899.....	50.09	1.61
1900.....	48.03	1.29
1901.....	23.65	1.14

In other words, in 1901 it cost 50.6 cents per bushel to raise the crop. It is a noticeable fact that the yield per acre has decreased gradually on this field. The appearance of the soil has been changed. It is a clayish-white color compared to the rich black color of the adjoining rotated fields. The yield varies with the season, but is less than half that of rotated fields or the ordinary fields of the station-farm with similar original conditions of soil-fertility. There is a marked similarity between these results and the results of continuous wheat-growing for fifty years on the Broadbolk field of the Lawes and Gilbert experimental farm in England. Continuous cropping and taking the crop off the field exhausts the fertility of the soil, and it has been found that soils so treated are very difficult to bring back to their original state of fertility. The mechanical, as well as the chemical, condition of the soil is changed, and it requires many years of careful and expensive treatment to renew soil-productiveness.

This is found to be the case in ordinary practice, and the problem before every corn-grower is to keep up the fertility of the soil so that it will continue to produce profitable corn crops. Here are several practical methods for accomplishing the desired results, which will be treated briefly in this discussion:

One of the most important ways of getting the soil in good condition for the corn crop is by means of the leguminous or "cover crops;" e. g., cow-peas, soy-beans, clover, and alfalfa. The soy-bean and cow-pea crops have been found to be especially beneficial to the soil, valuable as feeds, and successfully grown under widely differing conditions. In Illinois and Missouri these crops grown in the fields for a single year have been found to increase the yield of corn from five to eighteen bushels per acre. The hay has been found to be at least as valuable as ordinary red clover hay and the crop is harvested in much the same way. As the land becomes more and more exhausted, it becomes more difficult and expensive to secure a stand of ordinary red clover. Where alfalfa can be grown, this crop is very valuable for preparing the soil for corn. In most seasons, cow-peas and soy-beans, drilled between the rows of corn just after the last cultivation, give good results. These crops will produce from one to two and one-half tons of hay per acre and will increase the fertility of the soil. Where the soil is a rich prairie loam the soy-bean is more successful than the cow-pea. On such rich soils the cow-pea runs to vines and does not mature a seed crop. It is in such soils that the soy-bean gives the best results. The rich soils stimulate the production of plant and seed, and the crop becomes increasingly valuable. The soy-bean is easily harvested, but great care must be taken to secure good seed.

If the clover crops are grown and rotated with corn and the crops taken from the fields, the soil will eventually become exhausted. These leguminous crops add to the supply of nitrogen in the soil, but they do not add the other elements of fertility, particularly potash and phosphorus. With continuous cropping of any kind, the fertility is bound to run out eventually. The only way by which corn-growers can continue to grow profitable crops is by feeding the corn and hay crops to live stock and returning the manure to the soil. There is no fertilizer so valuable as barnyard manure, and it is only by the careful conservation of this manure from the corn and other crops, and its judicious application to the fields, that the soils will continue to produce profitable corn crops.

IMPROVED SEED-CORN.

The second important feature of the growing of a corn crop is seed-corn. It has been found that corn can be bred like cattle. From the fact that we secure a complete crop in a single season, the results from corn-breeding are secured more quickly than from animal-breeding. It costs no more to grow a large crop upon the field than a small crop. The expense of cultivation, inter-

est on investment, and labor are the same in both cases. If by breeding the yield can be increased five bushels per acre, this increase is pure profit to the grower. Therefore any advantage from breeding is of very great importance to the farmer.

DEVELOPMENT OF CORN-BREEDING.

Previous to 1897 little was done in the way of systematically breeding corn. Some few men early in the past century realized the far-reaching importance from well-bred seed and began crude attempts at improving their strains of corn. One of these men, J. S. Leaming, of Wilmington, Ohio, through selection so changed and improved the type of corn grown on his farm that other farmers began to secure his seed-corn for their use. This work was begun, according to his son's account, about 1825, and as a result this type of corn was brought west to Illinois and rapidly became popular with Western corn-growers. In Ohio, the corn was a tapering, short-eared type with particularly large butts. When the corn was brought west, the ear was lengthened by careful selection, the shape changed from the undesirable tapering type to a cylindrical shape, and the enlarged butt bred out of the ears. The improved Leaming bears little or no resemblance to the original Leaming; the smooth kernels have been replaced by rough, deep kernels, and the whole type of the variety has been changed through less than fifteen years' selection by Western breeders. The valuable results from such a long period of attention to selection is found in the fact that in the comparative test of varieties at the Illinois Station, since its establishment in 1888, the Leaming variety stands at the head of the list of the many varieties tested, in yield per acre. Another pioneer in this work was James Riley, of Thorntown, Ind. Mr. Riley was a live-stock breeder of high standing, and applying the same principles to the production of corn, that he used so successfully in the improvement of his breeds of live stock, developed an improved variety of white corn. He began selecting seed from the ordinary white corn grown in Indiana at that time, and by giving particular attention to the weeding out of barren stalks and other undesirable types in his seed fields, succeeded in producing a type of improved corn which he called the Boone County White. This type was determined upon about 1875, and by continued selection from year to year it has been improved, until at the present time it is the most popular variety of white corn grown in Indiana and Illinois. At the Illinois Station the variety out-yielded all other varieties of white corn in the comparative tests.

The fact of the matter is, that careful breeding and selection results in more profitable types of corn. The valuable results from improved breeds of live stock have increased the wealth of the American farmer millions of dollars. The results from improved breeds of corn indicate that we may obtain equally valuable results from highly bred varieties of corn.

AMOUNT OF BARREN STALKS IN FIELDS.

By careful counts made in various counties in Illinois for the last three years, it was found by the farmers that almost one-third of the stalks in the field were barren. These barren stalks are weeds of little or no value to the farmer. They probably take nearly as much fertility from the soil as the stalks bearing ears, and they cost as much to grow as the fertile stalks. On the 137 farms of the Sibly estate, Ford County, Illinois, it was found that nearly 30 per cent of the stalks were barren. On this estate especial attention has been given to seed-selection, and the probabilities are that the corn on these farms is more free from this condition than the average farm.

By looking over the corn in the cribs in any of the corn-sections of the United States, a very small proportion of uniform perfect ears are found. The majority are very weak in some particular, as in shape of ear, filling out at butts and tips, depth and shape of kernel, purity of color, and other points. That the average quality of corn is very poor is shown by the average yield per acre. The average yield per acre in the great corn States according to Government statistics is about thirty bushels per acre. If every stalk in a hill produced a well-developed ear, at the average width of planting, three feet six inches by three feet six inches, with only two stalks in a hill, the yield would be about one hundred bushels per acre. As a matter of fact, the average number of stalks per hill is more than two. How can we account, then, for the difference between one hundred bushels



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ADDRESS

The Curtis Publishing Company, Philadelphia

per acre and the actual yield of about thirty bushels per acre? This difference must be due to the fact that every stalk does not produce an ear and that the majority of the ears that are produced do not become well-developed ears.

CORN-BREEDERS' ORGANIZATIONS.

In view of these facts a few extensive corn-growers organized the Illinois Seed-corn Breeders' Association in 1900. The object of this organization is to systematically improve, through cooperation with the State Experiment Station, the breeds of corn in this State. Following is presented the constitution of this organization, with the idea that it may be adapted to Kansas conditions and needs in the taking up of this important work in corn-breeding:

CONSTITUTION.

Article I.—Name and Object.

Section 1. The name of this organization shall be "Illinois Seed-Corn Breeders' Association."

Section 2. The object of this association shall be:

First—To establish distinct types and breeds of corn.

Second—To encourage and promote the growing of pure-bred corn for seed purposes throughout the State of Illinois.

Third—To establish a bureau of inspection of the product grown by corn-breeders, and furnish certificates of type and breed to the grower.

Fourth—To protect the farmer who shall desire to purchase pure-bred seed-corn by furnishing information such as will instruct him in distinguishing the breeds of corn and giving him the names of reliable growers.

Fifth—To aid in procuring of such legislation or in doing any other acts as shall protect the growers of pure-bred seed-corn in their efforts to furnish the farmer with seed-corn of the breed desired.

Sixth—To establish a score-card for each recognized standard variety of corn.

Article II.—Membership.

Section 1. The members of this association shall consist of those persons engaged in the growing of pure-bred corn on land worked by themselves, or under their control during the preparation of the soil, the planting, cultivating, and harvesting of the crop. All applicants for membership must have been growers of corn for at least three years.

Section 2. The members of this association shall be elected by the board of directors.

Section 3. No firm or corporation shall have more than one vote in the association on any subject.

Section 4. The initiation fee of this association shall be \$10, payable to the treasurer within thirty days after notification of acceptance of application for membership. The annual dues shall be \$5 per annum and shall be paid to the treasurer on or before the first day of September of each year.

When not so paid name of any such member shall be dropped from the roll of membership and can not be reinstated except by vote of the board of directors and payment of all arrears.

Article III.—Management of Officers.

Section 1. The affairs of this association shall be managed by a board of five directors. Such electors shall be elected by ballot at the annual meeting of the association to serve for the term of one year.

The dean of the College of Agriculture of the State of Illinois shall be an ex-officio member of the board of directors in addition to the five directors above provided.

Section 2. At the close of the annual meet-

ing the board of directors shall immediately convene and from their number shall elect by ballot one president, one vice-president, and one secretary-treasurer to serve for one year.

Section 3. The president shall preside at all meetings of the association and of the board of directors, shall appoint all special and standing committees to be approved by the board of directors. He shall make an annual report to the association at the annual meeting, which closes the term for which he was elected, and shall in said report make such recommendations to the association as may seem to be expedient.

The secretary shall attend the annual meeting and all meetings of the board of directors. All books, records, and certificates, and seals shall be in his custody and shall be open to inspection of any member of the association at any reasonable time. He shall give due notice of all meetings, both of the association and of the board of directors, shall notify all members of their election, shall conduct the correspondence of the association, and shall make an annual report.

The treasurer shall collect all initiation fees and dues and give receipts for same to members; he shall keep all such moneys safely and shall pay out such money only upon order of the board of directors, properly countersigned by the president, and shall make an annual report of his receipts and disbursements, and reports at other times, as may be required by the board of directors.

Section 4. The location of the office of the association shall be designated each year by the board of directors, and shall be announced at the closing session of the annual meeting for that year.

Section 5. The board of directors shall meet as often as the management of the affairs of the association may require, not to exceed four times each year, including the annual meeting. And the board of directors shall select a competent person as inspector of the breeding of corn, whose duty it shall be to carefully inspect and record the variety, the type and breed, and the number of bushels of the corn grown by each member of the association who desires to enter such corn for sale for seed. The compensation for such inspector to be determined by the board of directors and payment made out of the money received for initiation fees and dues in the hands of the treasurer. No officer of this association shall receive any salary; the actual outlays made by the secretary and treasurer for printing and postage shall be paid out of funds in the hands of the treasurer upon order only of the board of directors, countersigned by the president.

Article IV.—Annual Meeting.

Section 1. The annual meeting of this association shall be held at such time and place as may be determined by the board of directors. The arrangements and program of the annual meeting shall be in the hands of the board of directors. A majority of the board of directors present at any directors' meeting shall constitute a quorum for the transaction of business, and a lesser number in either case may adjourn to some subsequent named date.

Section 2. Vacancies in any office can be filled by a majority vote of the board of directors.

Section 3. This association may have an official seal and certificate which shall be in the custody of the secretary. The seal shall be in form thus: Each member shall be entitled to receive a certificate of membership bearing this seal and signed by the president and secretary. Members of the association shall be entitled to print or engrave upon their business stationery the words: "Member of Illinois Seed-Corn Breeders' Association."

Section 4. Every member of this association upon ceasing to be such member from any cause whatsoever shall forthwith surrender his certificate of membership to the association and shall discontinue to use or display upon his business stationery or else-

where the words: "Member of Illinois Seed-Corn Breeders' Association."

Article V.—Resignations and Expulsions. Sec. 1. Any member of this association may at any time resign therefrom in writing...

Article VI.—Rules and Regulations. Sec. 1. This association may adopt such rules and regulations to secure the objects of the association as it may deem fit.

Article VII.—Rules and Regulations. Rule 1. No member of this association shall sell or offer for sale any corn for seed purposes except on the ear only...

RESULTS FROM IMPROVED SEED-CORN. As a result of the work of the breeders of this association, improved and carefully selected seed has been sent to the farmers of various sections of the corn-belt.

STANDARD VARIETIES OF CORN. At present there are seven recognized varieties of corn—(white) Boone County White, Silver Mine, and White Superior...

METHODS OF CORN-BREEDING. The system of breeding is as follows: The variety must be kept pure and free from all mixture.

TESTING VITALITY OF SEED-CORN. The vitality of all seed-corn should be tested. A good, profitable stand can only be secured from vigorous seed.

SELECTION AND STORING OF SEED-CORN. The seed should be thoroughly dry in order to keep the vitality unimpaired.

should be carefully prepared according to the best methods of fitting the seed-bed in that locality. The plan is to plant each ear by itself in this field either in plots ten hills square or in a row.

Following is an outline of the above-described field: Ear No. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32.

SELECTION OF EARS OF SEED-CORN. In selecting the seed-ears the object is to select such ears as will produce the largest amount of shelled corn. The grower is after corn and it is with this idea in view that the seed must be selected.

STANDARDS FOR VARIETIES. The length of ear will vary with locality—the shorter the season the longer the ear, and vice versa.

Table with 4 columns: Variety, Length, Circumference, Per cent. Rows include Boone County White, Silvermine, White Superior, Leaming, Reid's Yellow Dent, Golden Eagle, Riley's Favorite.

Table with 4 columns: Name of variety, Date, Temperature, Number germinated, Per cent germinated. Rows include Boone County White, Leaming, White Superior, Riley's Favorite, Silvermine, Golden Eagle, Reid's Yellow Dent.

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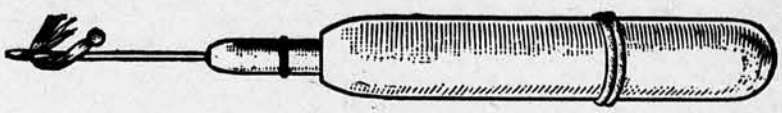
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second selection can be made at the corn-crib and the ears finally chosen for seed stored in boxes. These boxes should be thoroughly lined with screen wire drawn over the open top.

These standards will be changed in the process of development, but they tend to fix the characteristics at present. The roughness of kernel, color, etc., will vary with the variety.

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Large table with 6 columns: Name of variety, Ear Shape, Length, Circumference, Rows, Arrangement, Kernel Shape, Arrangement, Color, Indentation, Shank, Cob, Size, Color, Per cent corn. Rows include Boone County White, Leaming, White Superior, Riley's Favorite, Silvermine, Golden Eagle, Reid's Yellow Dent.

THE SCORE-CARD. In studying the seed-corn the score-card is a very useful helper, and the card adopted by the Illinois Corn Grow-

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ers' Association is given here as a suggestion in the studying of the various points in an ear of corn according to their relative importance:

Table with columns: Name, Perfect Score, Explanation. Lists 12 points for corn selection such as Uniformity, Shape of ears, Color of ears, etc.

UNIFORMITY.

In selecting seed-corn, the ears should be of uniform size, shape, color, and indentation. A uniform product is the result of good selection and breeding...

SHAPE OF EARS.

The shape of the ear should be cylindrical. This cylindrical shape carried from the butt to the tip of the ear means an even, regular, deep kernel...

COLOR OF EARS.

If a yellow corn, the cob should be a deep red, and a white corn, the cob should be pure white. In the present standard varieties, the color has not been given particular attention...

MARKET CONDITIONS.

The ear should be sound and firm. This indicates that the ear has fully matured and dried out in the season where it was grown.

TIPS OF EARS.

The tips should be filled with regular rows of kernels, so that no point of the cob projects beyond the kernels of corn. Poorly filled-out ears indicate a small proportion of corn to cob and poor selection.

BUTTS OF EARS.

The butt of the ear should be filled out about the shank so that a medium-sized shank will be produced. It has been possible to make the kernels in the butt fill out to such an extent that the shank has been crowded so small that it will not support the ear on the stalk.

UNIFORMITY OF KERNEL.

The kernels should be of the same shape, size, color, and should be of the type of the variety. To study kernels, take out two of the kernels from about one-third the distance from the butt to the tip and lay them beside the ear for close examination.

SHAPE OF KERNEL.

The best shape of kernel is that of a wedge. This shape will permit of the largest number of rows of kernels on cob. This shape is the result of breed-

ing and makes possible ears having twenty to twenty-four rows of kernels and with a large per cent of corn. The kernel is the unit of the ear and great

attention should be paid to the development of the kernel.

SPACE.

By space between rows is meant the furrow between the tops of the rows of kernels. It indicates a reversion to the original shallow-kernel type of corn, which is unprofitable to the present-day corn-grower.

LENGTH.

The length will vary with the variety. In general a good ear of corn is between ten and eleven inches in length. Measure the length from the extreme butt to tip.

CIRCUMFERENCE.

The circumference will vary with the variety. It should be measured at about one-third the distance from butt to tip of ear. In ordinary corn seven and one half to eight inches is the circumference proportional to the ordinary length of ear.

PER CENT CORN.

The corn-grower produces the corn for the actual amount of shelled corn produced. With the rough, deep-kernel type with a large number of rows of kernels on the ear, all available space being taken up with corn, the per cent is greatest. Hence such corn is the most profitable to grow.

SELECTION FOR QUALITY.

The composition of the corn-kernel is of great importance to the feeders, stockmen, and glucose-factories. If the per cent of protein can be increased by breeding, the corn becomes more valuable feed for live stock.

TABLE SHOWING INCREASE PROTEIN IN CORN-BREEDING EXPERIMENT.

Table with columns: Year, Protein in seed, Protein in crop. Shows data from 1896 to 1901.

TABLE SHOWING INCREASE OIL IN CORN-BREEDING EXPERIMENT.

Table with columns: Year, Oil in seed, Oil in crop. Shows data from 1896 to 1901.

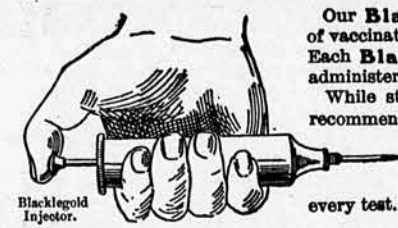
The analysis of corn, showing average composition, is as follows:

Table showing average composition: Ash 1.43, Fiber 2.66, Oil 4.70, Protein 10.92, Carbohydrates 80.35.

The composition of the kernel may be determined in part by simple mechanical examination. The proportion of hard, flinty part of kernel to soft starch at the top of kernel indicates per cent protein and starch.

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and starch may be varied by the corn-breeder, both to increase or decrease any one of these elements of composition. The development of milk in the dairy breeds or the per cent of sugar in the sugar-beet indicates what may be accomplished in corn-selection.

CULTURE.

The third important feature in the production of corn crop, is the culture, that is, the preparation of seed-bed, kind of planting and cultivation. The preparation of the seed-bed should be of such a nature as to furnish the requirements for germination of the seed-corn, moisture, warmth, and air.

DISTANCE APART OF HILLS.

In planting corn, the distance apart of the rows and the hills in the row is important. The general tendency is to bring the hills closer together and plant fewer kernels in the hill. Ten years ago, the ordinary width planter was at least 3 feet 10 inches, and varied to as wide as 4 feet 4 inches.

NUMBER OF STALKS IN HILL.

With improved seed and planters, it is not necessary to plant a large number of kernels in the hill. The latest improved planters are so arranged that if set to drop two kernels in a hill, about 90 per cent of the hills will be found to contain two kernels.

HILLING V. DRILLING.

In a new country, the usual practice is to drill corn. With few of the noxious weeds, with abundant soil-fertility, the farmer was able to put in more stalks in an acre than would be possible in hilled corn, and the results were generally satisfactory.

Many farmers contend that by stringing out the kernels in the row of drilled corn, the stalk would produce better ears than in the hills. With the idea of trying to ascertain the fact, the Illinois Station carried on a series of experiments for several years.

with different soils, varieties of corn, and season. As a result, we found in figuring up the average yields, there was less than a bushel difference in the yields of the drilled and hilled fields. Further experiments are in progress along this line, which will add to the interest of the experiment.

The depth of planting is another question, which varies with the soil condition. Corn can be planted deeper in a sandy soil, which drains out readily in the spring and warms up quickly, than in the heavier clay soil. The corn should be planted deep enough to secure sufficient moisture for the best germination, but not so deep that it will be placed in a cold, wet soil where the kernel is liable to rot and decay.

CULTIVATION OF CORN.

The cultivation of the corn crop must depend upon the condition of seasons, soil, and the amount of weeds in the field. The cultivation of the crop is for the purpose of destroying weeds, conserving soil-moisture, and aerating the soil.

AMOUNT OF MOISTURE PER GROWTH OF CORN CROP.

At the Wisconsin Experiment Station it has been found that it requires about 310 pounds of water to produce a single pound of dry matter. By figuring up the amount of dry matter in an eighty-acre field of corn, and multiplying by 310, the pounds of water required to produce the crop will be secured.

It does not seem possible that such an enormous quantity of moisture can be secured by the corn-plants during the growing season, and more important than all, this moisture in most part is used during June, July, and August, the months of least rainfall in the year, so it can easily be seen that the conservation of the moisture in the soil is a most important problem, and one



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which must be investigated by the corn-grower.

CONSERVATION OF SOIL-MOISTURE.

The Illinois Station conducted exhaustive tests of the comparative amount of moisture consumed by the different methods of cultivation. Two things we found to be true; first, that deep cultivation conserves soil-moisture, and second, that frequent cultivation conserves the moisture most effectively of all kinds of plans for cultivation. It was found that in the deep cultivation, despite the excess of moisture, the yield was very low, compared to shallow culture. To find the cause of this, an extensive series of experiments, with the pruning, or cutting off the root of corn-plant were conducted.

EFFECT OF ROOT-PRUNING.

In this root-pruning experiment, a field of corn was selected and one row was root-pruned two inches deep. This root-pruning was done with a broad, sharp spade. The spade was set down about six inches from the stalk of corn in the hill on every side of the hill. The spade was pushed down into the soil and a guard allowed it to penetrate just to the depth planned for in the experiment. The whole field was cultivated with a weeder and all weeds not removed in this way were cut out by hand. This was done so that the rows of corn would receive equal cultivation and be under like conditions. The pruning was done three times in the season at about the ordinary times of cultivation. The second row was not pruned and the third row was pruned four inches deep. The fourth row was not pruned, and the fifth row was pruned six inches deep. This was repeated until a large field was treated in this manner.

The resulting yields were as follows for three seasons:

	Bu. per Acre.
Not pruned.....	62
Pruned 2 inches deep.....	60
Pruned 4 inches deep.....	45
Pruned 6 inches deep.....	30

In fact, these and all other similar experiments simply prove that any injury to the roots of the plant reduce the yield. The amount of this reduction was about in proportion to the number of roots cut off. These experiments explain the reduction of the yield of deep cultivation.

FREQUENT CULTIVATION.

The best results of experiments and from practical experience are to the effect that continued cultivation, keeping a loose mulch on the surface of the soil, gives the best results. The general practice coming into vogue among the most progressive and successful corn-growers, is after the corn reaches a height to interfere in cultivating with the ordinary two-horse cultivator, to use a single horse with a five-tooth harrow or drag, and cultivate between the rows of corn during the setting of the ears on the stalks. The yields per acre of 100 bushels have been secured by this plan, and experience has proven it to be a practical and successful plan on a large scale. Of course, if there is plenty of rainfall, such precaution is not necessary.

METHODS OF CULTIVATION.

A test of a few of the different methods of cultivation in use at present resulted as follows:

	Bu. per Acre.
Weeds allowed to grow.....	58
Weeds cut out with hoe and a loose mulch made with hoe, "frequent cultivation".....	96
2-inches deep cultivation, small shovels.....	90
4-inches deep cultivation, small shovels.....	91
6-inches deep cultivation, small shovels.....	84
6-inches deep cultivation, large shovels.....	87
Golpher or blade cultivation.....	88
Deep-early and shallow-late.....	85
Shallow-early and deep-late.....	89
Mulch with grass.....	82

The weeds must be kept out at any cost and if they have not been removed before the crop appears, they must be destroyed. The kind of cultivation will depend on the local condition, but the implement that stirs the soil and leaves a loose mulch, destroys the weed, avoids root-pruning, will give the best results under all circumstances.

The Lister in Kansas Corn Economy. THEO. W. MORSE, MOUND CITY.

Twenty years ago the lister came to Kansas and applied for work in the corn-field. It brought no "character," and some of the neighbors had even "heard" it was "a makeshift" and "a lazy man's machine," but somehow it got a job. Like most good "hands," it had its peculiarities, and there were farms and families with which it could not "get along." Yet in spite of this, and notwithstanding the inverted pig trough and other clumsy baggage which it first brought along, the lister found its friends and it was only a matter of

a few years till a majority of the corn-growers in the State were treating it like "one of the family."

True, a few of its too zealous friends preached its merits in localities where it might have remained a respected stranger, but is now condemned. Kansas affords as much variation in soils and conditions, almost, as the breadth of the continent, and it is little wonder the lister has failed to fill the bill in all. Changing of methods of farming may yet help it live down its disrepute in some of these sections, and long ago, in three-thirds of our corn-growing area its reputation was good to glit edged. Secretary Coburn's published result of investigations made in 1895 gave forty-five correspondents out of seventy-five, writing from over fifty different counties, as declared friends of the lister. Fifteen had found it no advantage, or a detriment, and as many more were non-committal or without experience. I believe that a poll of the State taken next May would find many of the non-committal riding "go-devils" and three-fifths of the crop of 1902 will see its first daylight from the bottom of a furrow.

Yet long and widely as the lister has been used we do not yet just understand all the whys of its successes and failures. The business reason, that it "does things," has multiplied its friends. An explanation of how, and under what conditions it has "done things" should extend its usefulness and held in devising a better way where its use has failed. The time I have had to think of the subject I have put in looking for this explanation. In this I have gone only far enough to form some opinions, which I shall advance sparingly a little later. Just now I want to mention some points which are interesting to me; if not new, some possess the virtue of being facts. For these I am indebted mainly to practical farmers upon whose experience I have been privileged to draw and who are my best informants.

INTRODUCTION AND DISTRIBUTION.

Twenty years ago is the date usually given as the beginning of the lister's career in Kansas, although in several localities the machine has been in use twenty-two years. Although the introduction was general, varying with the enterprise of local implement men rather than with soil and climate, experience soon pointed out the fit and unfit localities. Enough corn-growers in nearly every section made careful tests to fairly settle the question of its adaptability. In general the lister gained foothold first (and is now used almost universally) in fairly sandy, or at least well drained, but not too hilly sections. Under-drainage cuts such a figure in its success that the introduction of tiling in rich but poorly drained ground, like that found in the Marias des Cygnes bottom, may yet permit listing where it has hitherto been out of the question.

ACREAGE.

Probably more corn (considerably more) is planted than would have been had the old method continued to be the only one. I am not saying this is a benefit. I have known of it helping a renter make money enough to buy a farm. I suppose it has helped other renters, not so worthy, to injure the farms they were on. We can only guess at the difference it has made. To some extent it corresponds to the reduction in the work of growing a crop. Some of the most careful growers say that an acre of listed corn costs, in the field, one-third less than corn grown by the older method. Others who double-list the ground and plant with a drill, find

it to be only slightly less. The average of estimates (and this, I find, agrees nearly with figures in Mr. Coburn's report already referred to) is about 15 per cent less. The introduction of sled-cultivators for two and three rows at a time, has made a big difference in some of the level and most easily tilled sections.

In this connection, I want to give the figures furnished me by Mr. J. W. Robison, whom we have learned to consider the richest private mine of information in the State. These figures are from carefully kept records covering a period of twenty-two years, during which his annual crop ranged from 1,000 to 2,000 acres. The totals do not really represent the entire cost of growing the corn, as they do not take account of house-rent and use of garden and pasture, all of which was given the men he employes. The comparison, however, is just as valuable. The figures for an acre of clean ground, handled by the two methods, follow:

FOR LISTED.	
Listing.....	\$.35
Twice harrowing.....	.20
Once with "godevil".....	.15
Three cultivatings.....	.75
Cutting weeds.....	.10
	\$1.55
FOR CHECKROWED.	
Plowing and harrowing.....	\$1.10
Checkrowing.....	.25
Harrowing once.....	.10
Three cultivatings.....	.75
Cutting weeds.....	.10
	\$2.30

In sections favorable for listing there is claimed nearly as much advantage from increased production as from a saving in work. Thirty per cent is about the widest margin and this is usually reached in dry years. Some good growers, in sections best adapted for listing, tell me that in seasons of considerable rain the listed corn exceeds that planted "on top" only slightly. I believe the difference between the width of listed corn-rows and the old planter width will account for nearly 10 per cent of increase, as the former width of 44 inches for a corn-row has been changed to about 40 inches in lister cultivation. One common claim is that listed corn contains fewer nubbins than corn grown in hills, and the added value on this account has been estimated for me at from 1 to 5 per cent.

EFFECT ON SOIL.

Constant cropping with corn is said to be more severe on the land where the lister is used unless a rotation of crops is practiced. To offset this, it is claimed that the lister, by emphasizing the need of rotation and facilitating its introduction by level cultivation, has been a benefit even from this point of view. The bad effects referred to are mainly mechanical—the hardening of a ridge between the rows and excessive washing. Double listing largely removes the former and seeding down the too-sloping ground is often the proper remedy for the latter.

WEEDS.

The weed question, which at first threatened to be the undoing of the lister, now furnishes one of its best arguments. Unquestionably the same amount of work applied according to the latest methods will keep listed corn more free from weeds than it will check-rowed corn. Some of the chief modifications in the lister have been made in deference to weeds. One was the narrowing of the lower part of the mold-board so it turned a full round shoulder, covering instead of exposing the weeds and seeds at the surface next to the furrow. Another serious fault I

know in some old makes is that the covering irons behind, supposed to pull a little fine dirt into the center of the furrow, were set wide enough to get weed-seed from that same source, and leave it where only a hoe would kill the weeds that grew therefrom. But these faults were remedied. The narrowing of the row did away with the foul "middles" and the introduction of cultivating machinery designed for listed corn did the rest. This brings up the question of

MACHINERY.

Nearly my only actual experience was with the first styles of lister. They were only fair, yet in sections better adapted than Linn County, they might have been adopted without question. In my section, where the lister will never be altogether satisfactory, the combination lister and drill was not the thing. Where the conditions are more favorable, as in the sandy Kaw bottom, I am told that unless one tries to plant rather early, separate drilling is very little advantage. However, some makes of the new high-wheel planter-drill are proving so attractive that they are being adopted by many who considered the combined lister and drill well nigh perfect before. Some others, who stuck to the old check-rower as a matter of religion, are glad to find they can check-row with these "high-wheels" on listed ground, and indeed there are places where it is a big advantage. One thing that must impress us all is the effort implement manufacturers have made to perfect the lister and the companion machinery. It has been a tribute to the importance of the corn industry at least. At the start, for cultivating, we had only the tools designed for corn planted in the usual way. As a Rice County friend expressed it, the first cultivation of double-listed ground usually nullified all the work of the winter camp meetings. Now a man can cultivate three rows with less effort than it used to cost me to keep my feet off the little inverted trough that dragged along the lister furrow, and those familiar by actual work each year, with the best up-to-date machinery, now say there is very little need for improvement.

Necessity has certainly been the mother of invention in these cultivating tools, the nature and effect of which could hardly have been anticipated in the invention of the lister itself. And this thought introduces the one opinion I shall presume to offer, which is, that the greatest good the lister has done has been accidental. Our old way of planting was not half so much at fault as was our method of cultivating. One time, unless I had kept my cultivator shovels their full depth in the ground all day (at no matter what cost to the corn roots) I did not feel respectably honest when night came. The corn was check-rowed and after we had cut off all the roots on two sides of the hills we could plow crosswise and shave the other two sides. If the weeds got started in a field the corn needed to develop tap-roots in order to withstand the onslaught, and if wet weather gave the weeds too big a start, they were turned under with a stirring plow. The lister, where its use was found practical, forced us to begin cultivating at the right time and do it rationally. It brought into existence, and then into use, cultivators that stirred the top soil but did not go deep, and by use we learned their superiority. Because we could not plow so deep and fiercely we plowed oftener, which was better by far. The mechanical support—the butt end of the stalk—of listed corn is deeper in the ground and is an advantage in keeping the corn up and preventing the

BACKACHE

When accompanied by impaired digestion, nervousness, constipation or occasional trouble in the urinary organs indicates a dangerous condition in the kidneys; if you have any of these symptoms the sensible course is to stop the progress of the disease before it eats away the vitality.

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This remedy is not only valuable as a kidney tonic, but contains the necessary properties for cleansing and strengthening the stomach, liver and bowels. Thus it restores healthful conditions and harmony of action in the entire system while carrying out the important object of ridding the kidneys of disease. It prevents the appearance of Bright's Disease or Diabetes, and under its great restorative influence the kidneys become well and strong again.

SOLD AT DRUGGISTS. Price, \$1.00 Per Bottle.

breaking of feeding roots, which always takes place when corn is badly blown down, but so far as the position of food and water gathering roots is concerned, the cultivating makes the main difference with that. Roots must have some air and the depth at which they are put out depends largely on how much the air can penetrate the soil above. Frequent shallow stirring lets the air in and the roots will be found a little further down. If a crust forms and is allowed to stand, the roots must come close up to the surface for air, and thereby become liable to injury from cultivation when that comes, and also from further drying of the ground. There is a world of study in this subject (which I am not nearly competent to handle) and it is intensely interesting, but I must stop with the thought I advanced. The lister has done what plenty of good advice and instruction seemed unable to do—set us to cultivating more frequently and less deeply, so that, while killing the weeds, we have preserved the moisture for the corn roots and spared the corn roots for gathering the moisture.

Alfalfa and Its Significance to Kansas.

SENATOR E. V. PETERSON, NORTON.

Were I called upon to say what single product of the soil would probably assume the greatest importance in our State in the near future, I would say alfalfa. As Beecher said about the strawberry, doubtless God could make a better forage plant than alfalfa, but in my opinion He never has. As a forage plant for general use, so far as I know, it has no equal. This may be said not only in regard to the ease with which it can be grown, its hardiness under trying circumstances, its productiveness, its power of improving the soil, but as well in regard to its excellence as a feed for all kinds of farm animals, and especially its value in fattening cattle and hogs for market. It is as near a perfect forage plant as it is possible to obtain.

On the semi-arid regions of western Kansas this kind of vegetation has come to stay, and it is a boon whose value can not be estimated. You can not put it too strong. It is the only one of the tame grasses that can be grown in that section, and so far as my observation goes the only one that can be successfully grown over a very large portion of our State. At the present time there is not a crop raised as a farm crop that will pay better returns in cash per acre. It is not a new plant in our country. Fifty years ago it was introduced in California; it has gradually spread eastward across the Rocky Mountains and is now cultivated to the exclusion of other forage crops where irrigation is practical, and in those States where there is a shortage of rainfall and where irrigation is not practical it has been successfully established. There is scarcely a State or Territory in the Union in which at some time or other it has not been tried with more or less success. The conditions best suited to its growth and development are in the arid and semi-arid regions of the West. It is essentially a dry-climate plant. It will defy the hottest suns, the hottest winds, and the greatest variations of temperature. In fact, it keeps fresh and green while other plants dry up and die around it. Its area in Kansas has increased from about 34,000 acres in 1891 to 276,000 acres in 1900, and no other plant is held in such high esteem by our farmers who have experience in raising and feeding it.

Alfalfa is a perennial plant and once well established it will last for years if properly treated. John Bieber, one of the pioneers of alfalfa-raising in Norton County, has a piece that was seeded eighteen years ago. It never produced better than now and shows no signs of failure. It is a deep feeder—extends its roots to a depth of ten or twelve feet under favorable conditions, and is often able to adapt itself to soils where the roots can not extend deeply. It is one of the hardest forage plants known and will adapt itself to widely differing conditions. When a stand has been once secured it resists drouth remarkably. It will stand more heat and cold than other cultivated grasses, and will last longer under continuous cropping than our best native meadows.

Alfalfa grows well in different kinds of soil provided the subsoil is open and porous. It flourishes best in a rich, loamy soil with a deep and loose or gravelly subsoil. The plant is a heavy feeder and will not thrive on soils deficient in plant-food. Although alfalfa will survive periods of excessive dryness common to western Kansas, it is a fact that it must have a large supply of water from some source to produce good crops. The soil must be such that

large quantities of moisture are available for the growing plants. It is successfully grown on the creek-bottom lands of western Kansas. These lands are well adapted to it. This fact is established by the thousands of acres now under successful cultivation. These bottom-lands are known as first and second bottoms. Generally speaking the second bottoms are as good as the first.

Charles Hillsinger, living about three miles east of the city of Norton, has a piece of about thirty-five acres of second bottom about forty-five feet to water that is the best alfalfa I know of. In 1900 it produced about 100 tons of hay, worth \$5 per ton, and 200 bushels of seed, which sold for \$4.50 a bushel. The yield last year was better and prices better.

Peterson & Ames, on their ranch at Dellvale, Norton County, have low-bottom alfalfa, about ten feet to water, that does not produce as well as their second bottoms, forty-five feet to water. Their second bottoms are the more fertile. My observation leads me to believe that alfalfa can not be grown successfully on our uplands. This is not due to their lack of fertility (our uplands produce as good if not better crops of grain than our valley lands), but to want of an available water-supply to the roots. Alfalfa on our uplands will produce fair hay crops only in the most favorable seasons. Some of our upland farmers claim it to be their most profitable crop; that one year with another they average one ton of hay and one bushel of seed to the acre.

Our State Agricultural College recommends disking in the spring before the grass starts and even after each mowing, that by actual trial they have increased the yield of alfalfa one-half and are of the opinion that our uplands and are of the opinion that our uplands by disking can be made to produce profitable crops. I have tried disking pretty thoroughly on our bottom lands—sometimes disking alternate plats of ground, and it resulted in no appreciable increase in the yield. My observation also confirms this. I would recommend disking, however; it will destroy the native grasses and weeds that frequently threaten the plants. Where seed is sown upon sod—"new breaking"—the native grasses will generally crowd out the alfalfa and reclaim the soil. Disking will split the crowns of the plants and thicken the stand and where this is desirable will increase the yield. Disking the ground in the winter or spring, as the ground becomes tillable after frost, will destroy grasshopper eggs by exposing them to climatic and other influences. I did not find it had any effect on the alfalfa-worm. This is a small, dark-green, striped worm resembling the army-worm, quite common in western Kansas and Colorado, and which some years does considerable damage to the second and third crops. We recommend mowing as soon as the worm appears. It will not live when exposed to the sun. The most thorough disking will not injure alfalfa after it is 2 years old.

There is great latitude of opinion and practice in preparation of the soil for seeding. The opinion very generally prevails that very deep plowing or subsoiling is very important. I would stir the soil about as deep as for corn. I formerly owned a half interest in a 560-acre ranch in Morgan County, Colorado, under irrigation, all of which we seeded to alfalfa. In the spring of 1893 we seeded sixty-five acres of this land. On six acres of this at one side of the field we failed to get a stand. It was what we called gumbo soil, "as hard as the road." The following spring, by advice of an old resident, we sowed alfalfa on this land without plowing or any preparation whatever. We attempted to cover the seed with a harrow. It did not make much impression. We promptly irrigated the piece, got a good stand, and it proved to be a fine piece of alfalfa. Such treatment would do only under irrigation.

Last summer we had an eight-acre piece in Norton County covered with a very heavy growth of weeds. About the middle of August we had the weeds cut and hauled off, and with no other preparation seeded it on August 20, covering it with a harrow indifferently well. It came up promptly, and by the first of November the ground was covered with a thick, heavy growth sufficient to insure it against damage by subsequent frosts.

Last August was an ideal time in our section to sow alfalfa. We had in that month over four inches of rainfall, followed by good rains in September and October. With such conditions August would be the best month to seed in any part of the State; the young plants would not be destroyed by grasshoppers or choked out by weeds.

An alfalfa-field is practically permanent and will well repay the expense of carefully and thoroughly preparing the soil, which is very important, as a rule, to secure a good stand. It should never be sown on freshly plowed land. My experience is, it will generally fail. I have had it come up and make a good growth in the spring, but the first hot, dry spell it will wither and die. I prefer fall plowing; this allows the soil to settle before seeding. Also the soil exposed to the weather during the winter has more available plant-food in it than soil not so exposed, and the seed will start and grow on fall plowing for this reason. Early spring plowing will answer if followed by sufficient rainfall to pack the soil. I have found it of great advantage to compact the soil before seeding.

In the spring of 1898 we seeded a fresh-plowed field. Across one side of this field a flock of sheep was driven several times. The alfalfa over the whole field made a good start and a good growth during May. In June it all died except on the strip where the sheep were driven. Here we succeeded in getting a good and permanent stand. In two other cases when, after several trials, we failed to get a stand we finally succeeded by corralling cattle on the land during the winter. The following spring the ground broke up very lumpy and it was impossible to get a good seed-bed, but one seeding resulted in a good and permanent stand. The land was a light sandy loam.

Seed is frequently broadcasted from a farm-wagon. We have often noticed that where the wagon-wheels run there is the best stand and the best growth. Our State Experiment Station recommends the use of the Campbell subsoil packer on freshly plowed land before seeding. Good results are almost sure to follow a proper packing of the soil by artificial means.

The press-drill is the best implement for seeding. The advantages are a uniform depth and quantity of seed, and the press-wheels are good packers of the soil. An objection to the use of the drill is frequently urged that if a dashing rain comes and runs the soil down in the drill rows, before the plants are well started, they will not have sufficient force to push through the soil that has washed down and settled over them, especially after a crust has formed. Under such circumstances I once succeeded in getting a good stand by running a light harrow over the ground. The harrow did not injure the plants in the least. A brush would probably be better for this purpose.

Secretary Coburn in his book on alfalfa says: "Spring sowing should not be done until the season is well advanced and there is no danger of a cold, wet period or of frosts; a slight frost is death to the very young plants."

In our section we prefer to take the risk of frosts and sow early. In western Kansas I would recommend sowing the last of March or first of April. I have never known alfalfa sown in the spring (no matter how early) killed by frost, though I have heard of it being so killed. Seed scattered by feeding alfalfa-chaff to animals during the winter will come up very early. I have never known "self-seeded" alfalfa killed by frost. By early sowing the plants become well rooted and will better stand the hot, dry spells which generally come in June.

Solomon Reece, of Decatur County, last year seeded in February and March and got a stand and growth that was much talked about. Last March and April were unusually wet and cold. In eastern Kansas on account of more rainfall it would be better to prepare the ground in the spring and summer and sow in August or early September if the weather is favorable. The young plants would escape the weeds which are almost sure to injure spring seeding in that section.

The amount of seed sown is not a matter of so great importance as the time and manner of sowing and covering it. In the spring of 1895 we seeded one piece of forty-five acres on our Colorado ranch; commenced with a drill and so seeded about four acres, when we found we could not set the drill to sow less than thirty pounds to the acre. We broadcasted the balance with a patent seeder attached to and operated by a farm-wagon. When we had finished we had sown only eleven-pounds to the acre. After it came up no one could have told the difference. It was all abundantly thick. If the seed would all germinate and grow, seven to eight pounds to the acre would be sufficient. Generally I would drill from twelve to fifteen pounds or broadcast sixteen to twenty pounds of seed to the acre, de-

IN MODERN DAYS

Ways of Doing Things Have Vastly Changed--The Science of Medicine, Especially, Has Made Rapid Advances.

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"In the old days symptoms were treated and the blood disregarded. Now it is the root of the disease that is attacked, and the most important development of modern medical science has been in discovering that, in most diseases, this lies in the condition of the blood. If the blood is thin or poor, the nerves can not receive their proper nourishment, the system becomes run down and in a condition to invite disease. Build up the blood, restore the worn-out nerves and you remove the cause. And when the cause is gone, the disease will follow."

An instance of the truth of this is the case of the little son of Mrs. Minnie Parrish, living at Donora, Washington County, Pa. In an interview the mother says:

"Our little boy was terribly afflicted with boils on his back, legs, and feet. He was pale and sallow and his system was completely run down. He had no appetite and his stomach caused him great distress. We had him treated by good doctors at St. Louis and Indianapolis, but their efforts did him little good. Then we took him to Pittsburg, hoping the change would help him. While there a doctor refused to vaccinate him, because his blood was in bad condition and gave us a certificate to that effect. We tried various remedies, but without avail. He grew worse, instead of better, and I am sure he could not have lived long if he had not been relieved."

"A friend from Dubuque, Iowa, advised us to give him Dr. Williams' Pink Pills for Pale People. In June, 1900, one year after his trouble commenced, he began to take Dr. Williams' Pink Pills for Pale People, and half of the first box caused improvement. He began to eat and play and was so much better that we kept on giving them to him until he had taken three boxes and was cured. He has no more sores and to-day is perfectly well and the happiest boy on the street."

At all druggists, or direct from Dr. Williams Medicine Company, Schenectady, N. Y., fifty cents per box; six boxes for two dollars and fifty cents.

pending a good deal upon the soil and weather as to moisture.

The making of alfalfa hay requires considerable skill, to produce a first-class article. The art is to be acquired by practice and observation, rather than following directions.

Great care should be taken to cut promptly when the alfalfa has reached a proper state for making first-class hay. We differ widely as to what is the proper state. Secretary Coburn in his book says for best results it should be cut for hay when the first one-fourth or one-fifth of the blossoms have appeared. The weight of authority is substantially with him. There are those who want it to stand longer—they say it has more substance and makes better feed. If allowed to stand till in full bloom or after, the stems become stiff and woody and are not so fit for stock to eat.

The United States Department of Agriculture says: "The percentage of nitrogenous compounds in the plant varies considerably; the maximum being in the early stages of its growth and the minimum about the time the seed commences to ripen. Hence hay cut early, especially before the plant begins to bloom, is more nutritious than that cut after it begins to bloom."

The reports of all the State experiment stations on this question, that I have examined, recommend cutting when it commences to bloom. It should be cut every time it commences to blossom no matter how short it may be. It does not grow any taller after it begins to bloom, and if allowed to form seed-bolls, the stems will be woody and it will drop its leaves—the most valuable part.

If alfalfa is allowed to get too ripe, there is a loss in the feeding value; there is a mechanical loss through shedding of the leaves, through breaking of

(Continued on page 97.)

COMBINATION SALE

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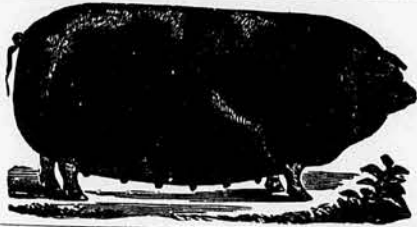
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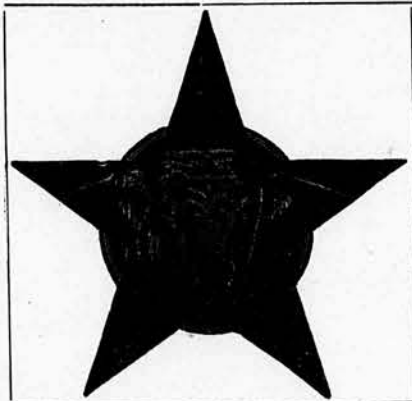
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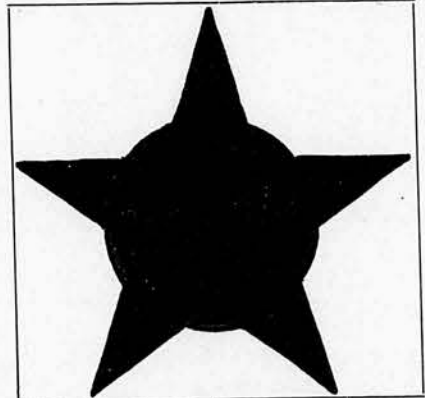
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Special evening entertainments apropos to the occasion will be provided, seasonable, new, instructive, and enjoyable features for all who attend. Come and participate, enjoy and learn about the Hereford whether you desire to buy or not. Catalogues now ready. Wishing all lovers of pure-bred stock a prosperous New Year. Yours faithfully,

T. F. B. SOTHAM,
CHILLICOTHE, MO.

On and after January 1, 1902, copies of my Treatise and Hand-book on Herefords will be priced \$1 for paper covers and \$2 for Morocco binding. The edition of 10,000 being about exhausted prohibits further free copies after that date. Catalogues and other literature free as usual. T. F. B. S.



THE KANSAS STATE BOARD OF AGRICULTURE.

(Continued from page 94.)

the heads in curing, and in palatability; which causes more or less of it to be rejected by stock. Our practice is to commence cutting when the bloom first appears fully. This gives us the greatest feeding value and the least loss from handling. The earlier it is cut the better it is for subsequent crops. Mowing early stimulates the growth of the following crop.

The value of the hay depends much on the method or care used in curing it. It can not be cured the way hay is usually handled. To cure the hay so that it will keep well in the stack, without becoming so dry that it will shed its leaves in the handling, requires considerable experience and care. Curing a heavy crop of alfalfa, especially in seasons of much humidity, is attended with much difficulty. After cutting it should be allowed to lie in swath only long enough to become well wilted; it should then be raked in windrows, when it may be left a few hours before putting in cocks. It should be put in cocks by hand and not bunched with a rake. When the crop is light and the weather hot and dry, we start the rake immediately after the mower and put in cocks as soon as possible. We like to let it stand in good-sized cocks until a sweat has taken place and the whole is tough and pliable, so that little may be lost in handling. The principal part of the curing should be done in the cock, and when well done the hay does not lose its leaves and will not mold or spoil in the stack. Alfalfa hay rained upon is worth about half as much as if not so exposed. Letting it lie two or three days in the swath in a hot, drying sun is as bad as exposure to rain. No other hay bleaches so quickly or badly in the sun. After twelve years' experience I am satisfied that the first crop of alfalfa is damaged one-half by putting in the stack or mow before properly cured. More than half of the stacks of first cutting that I have seen opened, both in Colorado and Kansas, were burnt and musty. Oftentimes the dust that rises from handling such hay is as great as that from a threshing-machine. In such cases the loss in feeding value is very great. I would emphasize the statement that it requires much experience and good judgment to properly harvest and stack alfalfa hay.

The best way to feed alfalfa is as hay. It makes a very superior pasture for horses and hogs. In pasturing cattle and sheep the danger from bloat is very great and death from this cause is often very sudden. Alfalfa should never be used as a pasture for stock-cattle unless a man is with them with some instrument to puncture the stomach in case of bloat to let out the accumulated gas. In bad cases of bloat—cases that need any treatment—puncturing the stomach is the only sure remedy. Compared with alfalfa, red clover is a safe grass to pasture. I often hear of farmers and cattlemen getting onto a system of pasturing cattle on alfalfa with safety, but like the Irishman who trained his ass to live on thistles, when they get used to it, they "up and die." All perfect preventives fail to protect. I have known cattle to die from bloat when eating alfalfa hay. In case of bloat from hay or grass, cattle should be kept off of water. I refer more especially to stock-cattle. I have run corn-fed cattle on alfalfa grass without loss. For four seasons we so pastured corn-fed cattle, ranging from 15 to 225 head, and did not lose one of these animals from bloat. We turned on the grass when in full bloom. They do not eat greedily or much at a time, and yet I do not regard alfalfa an absolutely safe pasture for fattening cattle. It will pay to take some risk, for corn and alfalfa-grass are the cheapest and best feeds for fattening cattle for market.

It is an ideal hog pasture. Mr. Coburn says: "It is doubtful whether as large returns can otherwise be secured from land with as little outlay as by pasturing with young hogs." It will furnish more and better pasture for hogs than any other grass. Alfalfa hay is a very valuable hog-feed. Fed with corn to fattening hogs good alfalfa hay is worth as much as corn, "pound for pound." No hog-raiser can afford to be without it. Some of our experiment stations say that for fattening cattle alfalfa hay is worth by weight as much as corn and in some proportions we think this is true. It takes the place of such high-priced feeds as cottonseed and linseed-meal and bran. One of the largest and most successful feeders in eastern Kansas told me he considered alfalfa hay worth \$8 a ton, and he shipped it in at that cost when corn was worth 25 cents a bushel; that he

fed linseed-meal with corn only when he could not get alfalfa hay. Jacob Porter, near Oronoque, Norton County, fattened 100 yearling steers during the winter of 1900-1901. Their daily ration was fifteen bushels of corn and all the alfalfa hay they would "clean up." They were on feed six months; the last month they were fed twenty-five bushels of corn a day. They made an average gain of 460 pounds and sold on the market near the top price for cattle of their class.

Alfalfa one year with another is the most profitable of all our crops, and it is most profitable in dry years when all other crops fail. The statements of exceptional yields and profits seem almost incredible. Some of our daily papers reported yields last year in hay and seed at \$68 an acre; others reported \$94 per acre, and still others reported \$5,800 from fifty-eight acres. The best yield I have known of was about \$40 to the acre. Charles Hillsinger's price, referred to above, will average about this amount one year with another. In western Kansas the profits of even \$40 an acre are among the few exceptions. The yearly average of our bottom lands is about two and one-half tons of hay per acre, or if one crop is sowed for seed, one and one-half tons of hay and two bushels of seed worth from \$12 to \$15 an acre.

The Rock Island Railroad has one of the best pieces of low-bottom alfalfa in Norton County. Its average yield is about three tons per acre. Peterson & Ames harvested last year from forty acres of good low bottom a little over 100 tons of hay, and the grass on this land grows so rank that it will not produce good seed. On another piece of twenty-five acres they pastured 300 hogs from May till December; mowed the whole piece once for hay, getting about twenty tons, and later mowed part of the piece for seed and got twelve bushels.

Irrigated lands in Morgan County, Colorado, are among the best alfalfa lands in the West. Their average yield is not over four tons. When the statement is made that eight or ten tons of alfalfa hay are harvested in a single season from an acre of Kansas land not irrigated, we are apt to think the land has not been carefully measured or the hay not accurately weighed. We may at least fairly claim that alfalfa, where successfully grown, is the most profitable of all our farm crops.

Grass is king. Ingalls eloquently said: "It yields no fruit in earth or air, yet should its harvest fail for a single year, famine would depopulate the world." Illinois is one of the greatest, if not the greatest, agricultural State in the Union. Its greatest crop is grass. If Kansas is to maintain her present proud position among the great grain, hog, and cattle-producing States, she must produce some of the tame grasses reliably and well. Our hope is in alfalfa. Even as late as 1894 Norton County was pronounced a failure for cultivated crops—fit only for grazing. That year she shipped in hay from Colorado and eastern Kansas to carry her live stock through the winter. To-day, with her 14,000 acres and better, she is the third alfalfa county in the State. It is estimated that this was increased last year by 5,000 acres of new seeding. Even the short-grass country knows a good thing when they see it. Our crops last year, considering the amount in cultivation, were surpassed by few counties in the State. This winter Norton County is shipping out hundreds of tons of prime alfalfa hay to the drought-stricken counties of eastern Kansas and western Missouri, and we predict that Norton in a few years will be one of our leading agricultural counties.

The severe and wide-extended drouth last year has proven that alfalfa is the best crop that the State has attempted to produce, the best friend to the stockman, the most profitable to the farmer. Well may we say: Alfalfa is a great boon to Kansas whose future value and importance no man can estimate.

Some Insect-enemies of Wheat in Kansas.

E. A. POPENOE, MANHATTAN, ENTOMOLOGIST OF THE BOARD.

Of the three principal sources of agricultural wealth in Kansas, preeminently and for all time an agricultural State, wheat, with its annual average product of thirty-nine million bushels, adding to our wealth in the annual sum of twenty-seven million dollars, takes the third place, exceeded only by corn, with a product annually of about forty million dollars, and live stock, with an annual value of forty-six millions. These three sources of the income of the Kansas farmer stand far ahead of all others, and where either one of them is serious-

ly reduced in value by any circumstance, the loss is evident in many directions, not only in a lessened cash return, but more vitally in lessened prosperity and home comfort.

To protect our farming population from such losses by intelligent discussion of the causes of failure and success, and by education in the methods of advanced and profitable agriculture is the chief function, the reason for being, of the State Board of Agriculture. With this premise, the discussion of the insect-enemies of wheat in Kansas must remain a duty incumbent upon us, until there shall follow a general appreciation of the habits of these individually insignificant but collectively very important obstacles to our complete success in agricultural enterprise.

The estimate of loss incurred in field crops by reason of insect attack has always been an attractive exercise to the entomologist statistically inclined, and many of the results of his studies may seem far-fetched and hardly demanding serious consideration to one not familiar with the argument leading thereto. But when drawn from trustworthy data, gathered from the growers themselves, I believe these results are of great value, if only in bringing before the people the enormous aggregate of losses possibly suffered from these tiny foes, and in awakening the grower to the advantage of precautionary measures, even in a season of comparative immunity. The statement, for example, that the losses due to the Hessian fly aggregate a minimum annual tax of 10 per cent of the product, and that an injury varying from a loss of half to the whole crop, in certain localities, is not unusual; must be accepted as fact, and much corroborative experience may be gathered from the wheat-growers of our State. Bearing on this consideration are statements of Professor Slingerland, for New York, that the loss for 1901 exceeded half the crop, approximating a value of three million dollars; of Professor Lochhead, that the loss in Ontario for the same year was two and one-half millions; of Professor Webster, for Ohio, that the loss for 1900 was 80 per cent of the average crop, equalling a money loss of about seventeen million dollars. While these are perhaps to be taken as exceptional losses, they serve as significant reminders of what we in Kansas suffer, or may suffer, in any season especially favorable to the multiplication of this insect. And when to this consideration is joined that of several other important wheat-enemies the conclusion is inevitable that it will pay to know the habits of these insects and to put into practise every available method of preventive treatment.

THE HESSIAN FLY.

Whether by long familiarity the chinch-bug has ceased to attract the chief attention of the wheat-grower or not, I do not know, but it is a fact that correspondence coming to my table has had for its main theme the Hessian fly among wheat insects, and for this reason I shall give it first place in this discussion.

It is evident that many farmers are unacquainted with the character of this insect, and with its mode of attack. I have received for determination numerous widely different insects, sent on suspicion, and none of them were the Hessian fly. But in samples of unhealthy wheat plants from various localities I have found the true enemy in sufficient numbers to warrant the belief that it now very generally found in the eastern half of the State, and in some localities in considerable strength at this time.

The adult Hessian fly will scarcely attract the attention of the ordinary observer, and to recognize it in the field even when comparatively abundant will require the use of a sweeping-net for its capture, and a careful discrimination of this minute insect from a number of others, most of them of no importance, that will be taken at the same time. The grower who desires to see the adult should gather some of the infested wheat, with a quantity of earth about the roots, and place it in a box with a glass, or screen of fine mesh, for a cover. If life conditions are observed, the flies will in due time escape from the wheat, and will be seen to be small, slender, very delicate two-winged gnats of smoky-black color, the legs and feelers long and slender, the wings narrow, dusky with lighter bases. The females are distinguished, aside from minute structural characters, by the heavier abdomen, which shows lighter color in the incisions and underneath.

It is with the destructive larval stage of the insect, however, that the grower is concerned, and during the period of larval existence the insect may be found under the sheath of the leaf, in the fall, near the crown of the plant,

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and in the spring, next the stalk at a joint above ground, where it has made its way in each case from eggs deposited by the female on the blade of the leaf above. In the autumn attack, if the plant be early infested, the result may be the death of the seedling before stooling; if the attack be later, the plant may form the stool before the death of the central crown, and under favorable circumstances the laterals will maintain the stand in the field. But as seems to be shown in many plants examined the past fall, if the stooling be checked by the weakening of the main stalk, a weak and finally dying stool is formed, in the laterals of which no evidence of attack, save browning leaves, can be distinguished. This seems to be the only explanation of the condition of numerous samples of dying wheat-plants that I have received within the last two months from different parts of the State. The spring attack occurs as the plants throw up stalks, and if enough of the larvæ are present many stalks are weakened at the point of attack and fall over as they grow.

The flaxseed or pupæ stage, into which the larva changes when full grown, is the state in which the insect is most familiar. The so-called flaxseed is a brown oblong body, pointed at one end, and found next the stem, under the leaf sheath, where the larva made its growth. In this stage the insect is harmless, so far as action on the plant is concerned. This flaxseed contains the true pupa, or resting insect, and from it comes in the spring, if the of the winter brood, or in late summer, if of the summer brood, the adult flies or their parasites.

It will be observed that there are two distinct broods of the insect, the first of which, numbered as to its relation to the individual plant, attacks the newly-grown plants in fall, the second the stalling plant the following spring. The insects of the second brood remain during summer as flaxseeds in the stalk or the stubble. Especially favorable circumstances produce in some localities even a third brood. I have found no evidence of a third brood in our State, though I have no doubt of the possibility of its maturing with moist summer weather and sufficient volunteer wheat.

The life history may thus be summed up about as follows: adults flying in late August through September to the middle of October; eggs for a few days at any time during the same dates; larvæ through September, October, November; flaxseeds from November and December to end of March or middle of April; adults and eggs again through latter part of April to end of May; larvæ till wheat begins to ripen; then flaxseeds or pupæ till August again.

For a time in fall the attacked plant takes on a richer green; afterwards, however, the leaves age, and not being replaced by new growth through the death of the heart, they soon show brown and the plant dies before the following spring. After attack, there is no particularly useful remedy, and attention must therefore be directed largely to preventive or destructive measures.

REMEDIAL.

The fall pasturing of infested wheat is by some considered beneficial, the belief being that the eggs or newly-hatched larvæ will be destroyed by the grazing off of the leaves upon which they occur. There may be reason for this belief where animals thus pastured are numerous and at work early enough in the season to take care of the growth as it appears. It must be observed, however, that pasturing can do little injury to the fly larvæ after these

have gone down the leaf into the crown, where they will no doubt stand tramping without injury. Hence to be of use, the cattle must be on the field at the time of egg deposit, and I believe that this is rarely the case, the fields being opened to cattle too late in the growth of the plant to make much difference with the insect. On the benefit of this treatment more decisive and comparative experiment is desirable, as the practice is quite popular for other reasons, and needs only the added advantage of destroying the fly larvæ to become general.

As the success of the crop, in case of late fall attack, destroying the central shoot, depends upon the ability of the laterals to root vigorously and live through the winter, the application of fertilizers is recommended by authorities. For such use commercial fertilizers or even barn-yard manure are recommended. So far as I am aware no trials of this method are on record from Kansas growers. It has been observed here, however, as elsewhere, that the immediate destruction of the plant is always greater in poor or thin soils than in strong moist ones which favor a vigorous growth.

PREVENTIVES.

It is in the line of prevention that the chief treatment should be made with us, and primarily, in my opinion, should attention be paid to late seeding, thus bringing the plants above ground after the death of the mass of the flies. It is difficult to establish a date after which the young plants will escape attack, since meteorological conditions cause a considerable variation; not only in the maturity and flight of the fly, but in the growth and condition of the wheat as well. As a rule, rains in August, if sufficient to cause the growth of volunteer wheat, also cause the maturity of the pupa, and bring about the correspondingly early escape of the flies. These will then proceed to lay eggs on the volunteer wheat and then die. If such maturity of the insect be general, as is likely to be the case in a season of favorable weather, the chances are largely in favor of the escape of the wheat sown later. If, however, August and September be so dry as to interfere with the sprouting of the newly-sown wheat, or of scattered grain in the stubble the development of the fly is also retarded, and is not likely to take place until a week or so after a good rain, which will likely also put the wheat fields in condition to receive the eggs of the mother fly as soon as she is ready to deposit them. The lateness of successful seeding on the other hand is limited to the date, beyond which a strong stand, able to pass the winter safely, can not be had. This consideration also has relation to the condition of the soil, strong moist soils producing a better and more rapid growth after germination.

The usually abundant attack suffered by volunteer wheat points to the possibility of advantage in strips of wheat sown early and serving as trap-crops, inviting the egg deposit of the flies, which will mass upon it. These strips are then to be plowed deeply under and the ground thoroughly harrowed above them, to bury the included larvæ beyond the possibility of escape as flies, after which the main crop may be sown with greater certainty of its escape.

BURNING THE STUBBLE.

Since the insect passes from one crop season to another mainly in the flaxseed state in the stubble of spring-infested fields, the practice of burning the stubble soon after harvest has its advantages, though only under the general adoption of this means in a given locality. If only a few growers burn the stubble their fields are likely to be infested from neighboring areas. If all burn their fields over early, however, the result is a corresponding diminution of the August-September brood of flies and a relative if not complete immunity of the fall growth from attack. All writers have called attention to the fact that this treatment likewise results in the destruction of the parasites of the fly, which in ordinary seasons are a vast assistance in the reduction of the pest.

It will not do to say with reference to this fact that by attending to preventive work ourselves we may dispense with the assistance of these parasites. Such has not proven to be the

result of interference with nature's equilibrium of forces in other cases, and man has in several well-known instances been forced to recognize these natural aids and at considerable expense to call in their assistance after exercising in vain his own methods of destruction of the pest.

Upon this point Professor Webster writes as follows (Bulletin 107, Ohio Experiment Station, page 286):

Referring to these natural enemies Professor Osborn states that their importance is probably difficult to overestimate, and that there is abundant reason for a careful consideration of the various species of insects known as attacking Hessian fly, owing to the fact that fully nine-tenths of these insects are destroyed by these parasites. I need hardly say that my own studies fully substantiate these statements, and I am satisfied that but for its natural enemies the Hessian fly would render it impossible to grow wheat, successfully, in any sections of the United States. I might call attention to the fact that it is very often a curious experience with farmers that the fly will be excessively abundant during one season, while the next it will seem to have entirely disappeared. Careful studies of the fly, at such times, reveal the fact that so very few of them escape the attacks of their natural enemies that the insect is in reality reduced in numbers, almost to the point of extermination; but, at this point, a reduction in the number of natural enemies must necessarily take place, on account of the lack of flies for their support, so that both host and parasite come to the bottom in point of numbers, and the fly, the following year, being relieved from its enemies, which will die out for want of food, again starts in its progress upward in point of numbers, to be followed later by its enemies. These gradually work upward, until there comes a time when there is an excessive abundance of flies, and these afford ample food for the parasites until the two are again forced to the bottom to start again anew. This has given rise to the oft-repeated explanation by the unscientific, that it matters not what insect appears it will only be a question of time when something will occur to destroy it. However, the fact that the insect pest must get to be very abundant, and work serious injury, before its natural enemies can increase sufficiently to destroy it is entirely lost sight of. What is really needed here is man's interference, to prevent the destructive insect from becoming abundant enough to destroy his crops. If we get at this in the right way, we shall be able to keep the Hessian fly so reduced in numbers that its natural enemies will take care of it. But these natural enemies are susceptible to weather conditions, and frequently parasites can not be relied upon to, always, hold the destructive species in check; but if the farmers could only understand the habits of the Hessian fly and its enemies, they would be far better able so to manipulate their crops, in time of plowing and sowing, that the fly would be unable to breed in such overwhelming numbers, and the farmer's insect friends would thus be enabled to hold the depredator in check.

RECOMMENDED TREATMENT.

1. Late fall sowing of wheat, determined by the occurrence of good rains, sufficient to bring out the flies that have summered in stubble, allowing at least two weeks, or if possible, more, after these rains for the general crop.
2. Along with this the early sowing of limited areas or strips in infested fields, to serve as trap-crops, these to be turned deeply under and harrowed down well, to destroy the larvæ of flax-seeds.
3. The thorough destruction of volunteer wheat in the same manner.
4. Secure the best practical literature upon the subject, and enlist the cooperation of your neighbors in the adoption of what seems the most suitable practice, especially preventive practice, for your locality and farm conditions. For condensed information procure and study Farmer's Bulletin No. 132, and Bulletin No. 16, new series, Entomological Division, of the U. S. Department of Agriculture.

THE WHEAT-STRAW WORM.

During the past summer, as in previous years, specimens of the wheat-straw worm (*Isosoma grande* Riley) have been sent me from various localities, especially from central and western wheat-growing counties, and the insect is without doubt an inhabitant of the greater part of our western wheat region.

The first determination of this insect from Kansas wheat fields seems to have been made by Professor F. H. Snow, in whose notes, published in the month-

THE MODERN STORE.

It Has One Department Little Known to Customers.

The great department store of our time has one department usually unvisited by customers, and yet very essential to the good of the store. It is the hospital department. The hospital is a feature of the equipment of the great modern department stores, because experience has proved its advantages. It is not more a mark of humanitarian progress than of commercial sagacity. It is not there for the benefit of customers, though its use would not be denied them. It is there for the benefit of the clerks, a majority of whom are women, and these women are those who almost exclusively use the hospital. It is not an uncommon thing for the young woman employee of the store to sink down exhausted, or to drop fainting to



the floor. Her shop-mates promptly care for her, and she is assisted to the store hospital, where she may rest and have the needed restoratives.

WOMEN THE SUFFERERS.

While the existence of the store hospital points to the sympathy of the management with its employees, it also emphasizes the weakness of the women for whom the hospital is established. Women who work must be prompt and regular in their duties or they are not wanted. The back may ache, every step may jar along the spine until the head throbs pitifully. The reaching up for a box of gloves or the stooping to pick something from the floor may cause acute pain, but the woman behind the counter must hold on until she drops, and she generally does. Then comes the hospital, a brief rest, and some palliative for her present pain. Next month she may repeat the same experience; for it is noted that this liability to physical collapse among women is much greater at certain periods. The hospital is good in its place. But what these women need is health, sound health. And sound health for them means the cure of those womanly diseases which are the primary cause of the physical weakness such women feel.

There is a cure for womanly diseases which has the testimony of tens of thousands of women to its perfect and permanent nature. It is Dr. Pierce's Favorite Prescription, the medicine which makes weak women strong and sick women well.

"A heart overflowing with gratitude as well as a sense of duty urges me to write to you and tell you of my wonderful recovery," says Miss Corinne C. Hook, of Orangeburg, Orangeburg Co., South Carolina, (care of J. H. Hook). "By the use of Dr. Pierce's Favorite Prescription I am entirely a new being compared to the poor, miserable sufferer

ly report of the State Board of Agriculture for June 1885 (page 7) the following statement occurs: "Dr. Hawkins of Galva, McPherson County, sends specimens of the wheat-straw worm—the first that have been identified in Kansas." Since that time, however, notices of the work of this insect have been frequent, probably because of its increasing abundance, as prevalent farm practice in the wheat region is directly calculated to breed this pest.

LIFE HISTORY.

The wheat-straw worm is the grub

who wrote you four months ago. I remark to my parents almost every day that it seems almost an impossibility for medicine to do a person so much good. During the whole summer I could scarcely keep up to walk about the house, and yesterday I walked four miles and felt better from the exercise. I now weigh 125 pounds. I read in your book of testimonials where a lady said Dr. Pierce's medicines were a "Thousand pounds of comfort;" please let me add one thousand pounds more to it. Mine was a case of complicated female disease in its worst form."

THE BEST MEDICINE FOR WOMEN.

Dr. Pierce's Favorite Prescription can lay claim to being the best medicine for women without fear of contradiction. It is best because it contains no alcohol, and is entirely free from opium, cocaine and all other narcotics, which give only temporary relief from pain. It is the best medicine for women because its cures are radical, going to the root of disease and establishing perfect and permanent health. To these claims the women themselves are the witnesses,

who have tried in vain other medicines, have found in "Favorite Prescription" a complete and lasting cure.

"I feel more than grateful to you for the benefit I have received from Dr. Pierce's Favorite Prescription and 'Golden Medical Discovery,'" writes Mrs. Ervile E. Woodin, of Milerton, Dutchess Co., N. Y., care of Box No. 1. "For a number of years I had been troubled with female weakness, nervous headache, irregularity, restlessness at night, and, in fact, was all run down, but after taking three bottles of 'Favorite Prescription' and one of 'Golden Medical Discovery' feel that I am entirely cured. Have no more nervous headaches, and rest very good at night; in fact, feel like a different person, thanks to your kind advice and

wonderful medicine. I earnestly advise all who suffer from any similar troubles to write to Dr. Pierce at once. They will not regret it."

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For the majority of women there is no need to be sick with womanly diseases. The figures show that out of every fifty women suffering from diseases peculiar to their sex forty-nine are cured by the use of Dr. Pierce's Favorite Prescription. Even the one woman in fifty for whom no perfect cure is possible is benefited by a lessening of pain, and an increase of strength through the use of this great medicine for womanly ills.

"Favorite Prescription" establishes regularity, dries weakening drains, heals inflammation and ulceration, and cures female weakness. It is the best tonic and nerve for weak, worn-out and run-down women. It quiets the nerves, encourages the appetite and induces refreshing sleep. It is a purely vegetable preparation, and cannot disagree with the weakest constitution.

Weak and sick women are invited to consult Dr. Pierce by letter, free. All correspondence is held as strictly private and sacredly confidential. Address Dr. R. V. Pierce, Buffalo, N. Y.

"Favorite Prescription" makes weak women strong, sick women well. Accept no substitute for the medicine which works wonders for weak women.

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or larva of a minute, black, four-winged fly, belonging by a strange association of insects of widely different habits, to the extensive family of useful parasitic forms, the chalcids flies, of the order of which bees, wasps, ants, and ichneumon flies pertain.

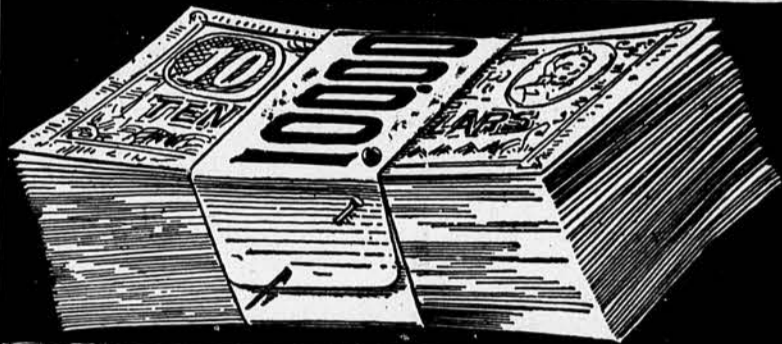
The species is thought by some observers to do greater injury to the wheat crop than even the Hessian fly, with which it is confused by many growers in the western part of the State. Within the last few months specimens of straw infested by this in-

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so that the cash each patron or customer receives will be clear gain. One answer only is allowed. **Try and Win.** Brains and Energy can Help. This is a free contest and contains no elements of chance, and we positively guarantee to pay all patrons Cash for correct solutions. Your right to a cash prize rests entirely with yourself. Send us your solution, and if correct you will hear from us by return mail. Address **CURALINE CHEMICAL CO. 18 Spruce St., New York City.**

COUPON No. 143
CUT OUT THIS COUPON AND FILL OR PASTE IT TO YOUR ANSWER.

sect have been sent me under the impression that the insect was the Hessian fly. The two insects, however, need not be confused. The wheat-straw worm occurs within the straw, above an upper joint as a rule, while the larva of the Hessian fly occurs outside the straw, but under the leaf sheath, and as a rule, at the lower joint, or at least not higher than the second or third from the ground. Again, the most important work of the Hessian fly is done in the fall, in the stooling wheat plant; while the injury done by the wheat-straw worm is noticed only in the heading or stalking wheat.

The insect passes through the winter in its dormant or pupal state in the straw or stubble, appears in March and April as the adult which lays eggs in the stalking wheat producing grubs that in May or June mature into adults again. These lay eggs in the full-grown wheat stalks which, before ripening, allow for the complete growth of the second brood of grubs. These changing to pupae, pass the winter as previously noted, in the straw; and so on for successive years.

The adults of the April brood and of the June brood are so dissimilar that they were considered different species until the succession of forms was shown through the investigations of Professor Webster. Moreover the June brood is composed only of females, four-winged, and much larger than the wingless April females. It is the June females that by their ample wings and greater strength accomplish the spread of the species from field to field. It is their immediate progeny, also, that, pupating in the stubble or straw, maintain the existence of the species from one year to the next.

Those curious to see the adult may do so with little trouble by putting into an ample glass jar or bottle a small handful of the infested straws, which must not be allowed either to mould or to become too dry. The minute flies will duly escape and may be seen crawling about in the jar. They are black, compact, with shining thorax and oval, pointed abdomen. The antennae are of moderate length, slightly thickened at tip, and elbowed near the point of attachment to the head.

EFFECT OF THE ATTACK.

The presence of the grubs in the straw, feeding on the sap and thus diverting the strength of the plant from its proper channel, causes at the least a feeble growth of the stalk and incomplete formation and maturity of the grain. More often the straw is weakened so that the grain falls over, the accompanying loss in the condition of the grain being usually complete.

PREVENTIVE MEASURES.

With respect to preventive measures there seems to be unanimity in the recommendation of the destruction of the pupae, wintering in the straw or stubble, by burning. Whether it is most important to burn the straw in stack after threshing, or the stubble after harvesting, will depend, it will be seen, upon the height at which the wheat is cut. An examination of the position of the larvae in infested stalks, as reported by several observers, shows 40 per cent above the first joint from the head, 50 per cent above the second, and the remainder lower down. With a short growth of straw the header, generally used in harvesting in our western counties, will leave the greater number of insects in the stubble, which should accordingly be burned soon after harvest to destroy the included pupae. On the other hand, where the binder is used it is the threshed straw that must be burned, or fed out, to kill the pest in its winter quarters. This method is scarcely open to the objection, made in the case of the Hessian fly, that thereby the efficient parasites are also destroyed, as in the straw worm, parasites are much less abundant and effective, and are not to be depended upon for the reduction of the insect. Locality will be somewhat of a guide as to the practice of burning, it being apparently the wheat-straw worm that is to be fought in western counties, while in the middle and eastern wheat regions the Hessian fly is the more injurious species. But upon the exact range of the two forms in our State, much additional information is desired.

MINOR INJURIOUS SPECIES.

Other forms capable of decided in-

jury to the wheat plant occur in our fields, but with either local or occasional attacks, and these have usually attracted little attention.

One of these is the wheat-midge, to which are probably referable some minute reddish larvae which I found in wheat heads from a central county in the wheat belt; a second is the wheat-bulb worm, or stem-maggot, the adult of which I have frequently taken with the sweeping-net from growing wheat and the larvae of which is no doubt responsible for the white heads often seen in numbers; a third is the fall army-worm which has been determined from several localities, notably from northern central counties, during the past two years; a fourth, the grain aphid, which for several years past has attracted much attention by its abundance in the filling wheat heads, followed sometimes by serious depreciation in the weight of the grain; and lastly the grain-weevils and grain-moths, which have attracted special attention the past fall by their attacks upon the precious store of corn which farmers are now endeavoring to carry over. But to discuss them in full would demand much more time than that allowed me on this occasion, and their treatment must be presented at some future opportunity.

Constipation leads to liver trouble and torpid liver to Bright's disease. Prickly Ash Bitters is a certain cure at any stage of the disorder.

Have You Hogs?

All our subscribers who own hogs should read Blooded Stock, Oxford, Pa. It is a first-class swine paper. Send stamp for sample.

Honey for Kansas, Missouri, and Oklahoma.

Two cans, 120 pounds net, amber \$7.80, whitest (more from alfalfa bloom) \$9.00, comb honey in one pound sections, 10 to 13 cents. Also small cans, all sizes. See price list. Nothing but genuine bees' honey. Reference, Kansas Farmer Co. Address, Arkansas Valley Apiaries, Oliver Foster, Proprietor, Las Animas, Col.

DIP MOORE'S HOG REMEDY

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SHORT FEED, None Better Made. In a season like this, may be made to go very much farther by grinding. The best way to grind it is with our **BUCKEYE** Feed Mill and Power Combined. Grinds corn, and cob, and all other grains, especially wheat. Supplies power for shelling, cutting, sawing, pumping, etc. Write for free catalog W. STAYER GARRIAGE CO., 70th & Wallace Sts., Chicago.

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KANSAS FARMER.

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To insure prompt publication of an advertisement, send cash with the order; however, monthly or quarterly payments may be arranged by parties who are well known to the publishers, or when acceptable references are given.

All advertising intended for the current week should reach this office not later than Monday.

Every advertiser will receive a copy of the paper free, during the publication of the advertisement.

Address all orders:
KANSAS FARMER CO.,
116 West Sixth Ave., Topeka, Kans.

Although the KANSAS FARMER consists of 32 pages this week and last, we are not able to present quite all of the proceedings of the two great annual meetings of the Improved Stock-Breeders, and the State Board of Agriculture. We hope to bring up the remainder next week. In the issue of February 6 will be presented the full proceedings of the annual meeting of the Kansas State Grange.

The Kansas State Editorial Association will hold its next annual meeting at Manhattan, February 3 and 4. This will give the opinion-formers of Kansas a chance to get a little acquainted with the largest agricultural college in the world. It will be impossible to see this great institution more than superficially in the brief time at the command of the editors, but to see the outside of the buildings is better than not to see at all.

Mr. Geo. L. Clothier, now at Yale College, contributes an appreciative paper on "Kansas" to this week's KANSAS FARMER. Mr. Clothier has written other articles for the KANSAS FARMER (see files for 1893, 1899, and 1900) which were appreciated by the people of Kansas. He inaugurated the plant-breeding experiments at the Kansas Experiment Station. He believes that the Experiment Station should be conducted on practical lines, and that the station funds should be inviolably devoted to advancing the interests of agriculture. He has been employed by the Department of Agriculture for the past year and a half and is competent to make authoritative statements regarding the agricultural possibilities of Kansas.

JOHNSON GRASS.

EDITOR KANSAS FARMER:—Having become interested in Johnson grass, I should like to know where seed can be obtained.
G. L. WRIGHT.
Seward, Kans.

The editor does not know of any Johnson grass seed that is produced in Kansas. If any reader has such seed for sale he should announce the fact in the exchange of the KANSAS FARMER. Should there be no response to this request, it will be well for our correspondent to write to some of the seedsmen who advertise in this paper.

WHEAT AND RYE.

The Statistician of the United States Department of Agriculture estimates the average yield per acre of wheat in the United States in 1901 at 14.8 bushels, as compared with 12.3 bushels in 1900, 12.3 bushels in 1899, 15.3 bushels in 1898, and 13.3 bushels, the mean of the averages of the last ten years.

The newly seeded area of winter-wheat is provisionally estimated at thirty-two million acres, an increase of 5.6 per cent upon the area estimated to have been sown in the fall of 1900.

The newly seeded area of winter-rye is provisionally estimated at 1,250,000 acres, an increase of 2.9 per cent upon

the area estimated to have been sown in the fall of 1900.

The department has no reports as to the condition of winter-wheat later than December 1. At that date it was 86.7 per cent of the normal, as compared with 97.1 in 1900, 97.1 in 1899, and 92.0 in 1898.

BROWN COUNTY FARMERS' INSTITUTE.

The first permanent farmers' institute association formed in Kansas was that of Brown County, which has just held its twentieth annual session. The advantages derived from the institute were so appreciated that whether with or without outside help the meetings were held and the program was full. A corn show was, several years ago, made a part of the institute. Valuable prizes are offered, and they are eagerly competed for.

The fame of this institute has long been abroad in the land, and the editor of the KANSAS FARMER has made several attempts to attend it for the sake of what may be learned by contact with the wide-awake farmers of Brown. Last week he succeeded.

The program was filled with home-talent with the exception of three numbers, and one of these three failed to appear. All of the "foreigners" might have staid away and still there would have been a rich feast and full houses. There is a peculiarity about the Brown County program that is worthy the attention of institute officials elsewhere. To each subject two to four, generally three, persons are assigned. These do not come up with random talks, but with carefully prepared papers embodying thought and reasearch. The KANSAS FARMER has the promise of the papers read at the last meeting, for publication at an early date, and will not anticipate by attempting a recapitulation here.

How much the influence of these institute gatherings may have had to do with it may never be known, but it is the fact Brown County farms are about the highest-priced farms in Kansas. One farmer told of the efforts of himself and son-in-law to buy a farm. They drove up to a house and after a little conversation inquired of the farmer what he asked for his quarter-section.

"I have been holding it at \$12,000."
"That's a good stiff price, but how soon can you have the deed ready? We'll take it."

The man turned on his heel, ran into the house, and bolted the door. They afterwards succeeded in buying a quarter for \$14,000.

But why should a Brown County farmer sell an acre of land for less than \$100? In what can he invest the money where it will be at once as safe and yield as good returns? Brown County is a land of corn and wheat, of timothy, clover, and blue-grass, of horses, cattle, and swine, of farm homes and good society. Even the county seat, Hiawatha, is without a joint, or a whisky-selling drug-store.

In going to Hiawatha we went via St. Joseph, Mo. At this point the Missouri River has manifested an intention to change the State line by cutting across the "ox-bow" in Doniphan County, Kansas, and adding its territory to Missouri. The "big muddy" has to face two influential parties in opposition to this political scheme. The first of these is the city of St. Joseph, which does not relish the idea of being placed several miles in the interior. The second party is the State of Kansas, which has no notion of disposing of those several square miles of fertile valley land, and that without compensation.

As the train passed into the rolling country of Doniphan County the fine apple orchards on the hill slopes raised the inquiry, Why not plant all of these hills with apple trees? The orchards of Doniphan are almost without breaks in the stand and the trees look extremely thrifty.

As the train progressed, freshly plowed fields and the "plow in the furrow" were passed.

All the way from St. Joe to Hiawatha the wheat is a good stand. The warm weather had not started it to growing. With surprise it was noticed that most of the wheat fields were still being pastured.

A good many blue-grass pastures were seen. These were showing the effects of the warm weather.

Stock water seemed abundant in all small streams along the railroad.

All animals looked well. They were in more than good condition; most of them were fat.

The general opinion was that the dry winter had not injured the wheat, but there was some anxiety as to the future should the dry weather continue. No doubt the fall of the "beautiful snow" has brought relief to many minds.

Pork Packing and Provisions.

There is a decided decrease in offerings of hogs, although still exceeding the current supply of a year ago. Total Western packing was 440,000, compared with 655,000 the preceding week, and 725,000 two weeks ago. For the corresponding time last year the number was 380,000, and two years ago 425,000. From November 1 the total is 5,710,000, against 4,695,000 a year ago—an increase of 1,015,000. The indications as to quality suggest little or no change. Prices are decidedly higher, averaging at the close for prominent markets \$6.25 per 100 pounds, compared with \$6.05 the preceding week, \$5 a year ago, and \$4.35 two years ago.

The speculative provision market has been fairly active the past week. Values have tended upward and at the close show a gain as compared with the closing prices of a week ago. The falling off in the receipts of hogs together with reports of reduced average weights was the principal feature of strength, but added to this came reports of firmer foreign markets for meats and higher prices for lard. Trading was mainly in the May option. Domestic markets ruled quiet and steady. The export movement of product was fair, showing a slight increase over the preceding week and some gain as compared with corresponding week last year.

The following shows the lowest, highest, and closing prices of leading articles at Chicago for the week, for deliveries indicated, and also the closing a week ago and a year ago:

	Jan. 17-18	Jan. 10-11	Jan. 3-4
Lowest.....	\$18.55	\$ 9.82 1/2	\$ 8.45
Highest.....	16.37 1/2	10.17 1/2	8.05
Closing.....	16.80	9.95	8.52 1/2
Week ago.....	16.45	9.75	8.40
Year ago.....	12.57 1/2	6.90	6.50

For current delivery, green hams 16 pounds selling at \$9.37 1/2 to \$9.50, green shoulders \$7 to \$7.25 per 100 pounds. Sweet pickled hams 16 pounds \$9.75 to \$9.81 1/2, shoulders \$7.37 1/2 to \$7.62 1/2—at Chicago.

The week's export clearances of hog product compare with the corresponding time last year:

	Past week.	Last year.
Pork, pounds.....	851,000	738,000
Bacon, pounds.....	15,330,000	12,176,000
Total meats.....	16,181,000	22,914,000
Lard pounds.....	9,528,000	9,796,000
Total product.....	25,709,000	22,710,000

Special reports to the Cincinnati Price Current show the number of hogs packed since November 1 at undermentioned place compared with last year, as follows:

	1901-02	1900-01
Nov. 1 to Jan. 1—		
Chicago.....	1,830,000	1,490,000
Kansas City.....	735,000	550,000
Omaha.....	485,000	385,000
St. Louis.....	350,000	350,000
St. Joseph, Mo.....	330,000	265,000
Indianapolis.....	61,000	65,000
Milwaukee, Wis.....	155,000	128,000
Cudahy, Wis.....	140,000	140,000
Cincinnati.....	134,000	125,000
Ottumwa, Iowa.....	114,000	97,000
Cedar Rapids, Iowa.....	190,000	137,000
St. Paul, Minn.....	170,000	123,000
Louisville, Ky.....	94,000	95,000
Cleveland, Ohio.....	90,000	85,000
Detroit, Mich.....	45,000	45,000
Wichita, Kans.....	32,000	28,000
Nebraska City, Neb.....	40,000
Bloomington, Ill.....	25,800	20,900
Above and all other.....	5,710,000	4,695,000

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.

The stenographer must know how to read, write, and spell. She must have quick ears and eyes. She must concentrate her attention. She needs a good memory, and some general information does not come amiss. The more intelligent the person, the better will the work be done. On the whole, the stenographer needs brains.—January Ladies' Home Journal.

The Humboldt Grain Exchange, of Humboldt, Kans., is offering a large lot of choice seed-corn. In 1901 they shipped seed to thirty-five States. A large number of their customers are ordering twice, and some three times. The manager, J. S. Lehman, has had thirty years' experience in growing and selecting seed-corn. Only hand-picked, tried and tested, both butted and tipped seed, is put on the market. Seed-corn is in special demand this year and they are receiving orders early. Order your seed early in order to be sure of your corn.

The Veterinarian.

We cordially invite our readers to consult us whenever they desire any information in regard to sick or lame animals, and thus assist us in making this department one of the interesting features of the Kansas Farmer. Give age, color, and sex of animal, stating symptoms accurately, of how long standing, and what treatment, if any, has been resorted to. All replies through this column are free. In order to receive a prompt reply, all letters for this department should give the enquirer's postoffice, should be signed with his full name, and should be addressed to the Veterinary Department, Kansas Farmer, Topeka, Kans.

Scours.—I have a black horse 10 years old that was fed whole wheat this fall. He wants to eat and drink all the time, and seems stiff in the hind legs. I have not treated him at all and I am now feeding him oats and Kaffir-corn.
W. H. BRILL.
Clay Center, Kans.

Answer.—Give a quart of bran in each feed with two quarts of oats three times a day, leaving out the Kaffir-corn. Give good prairie hay or alfalfa. Have his teeth carefully examined by a qualified veterinary surgeon. There is probably some irregularity there that causes him to bolt his food.

Ergotism.—I have a heifer that has swollen legs and is lame. The hair is coming off her back and nose. She slobbers continuously and is very thin in flesh. What ails her?
Milan, Kans. D. M. GREEN.

Answer.—Change the feed, especially hay, and give plenty of good corn. Give her 4 ounces of tincture of nux vomica, 1 ounce of fluid extract of digitalis, and sufficient brandy to make 1 pint. Mix and give 2 ounces three times a day in a teacup of warm water. Give a half-pint of raw linseed-oil once a day. Apply to her legs, once a day, 1 ounce of carbolic acid in 8 ounces of glycerine. Keep her in a warm stable with a good bedding.

(1) **Callosities.**—I have a mare 8 years old that has a lump on her shoulder. Inside this lump was a smaller one. I used liniment and the lump disappeared, but whenever she works the outer skin peels off and the spot bleeds.

Answer.—Have a qualified veterinary surgeon dissect them out and then treat as a healthy wound.

(2) **Diseased Membrana Nictitans.**—I also have a horse that has a growth in the lower corner of his eye, that runs up pretty well into the sight. This growth has been there quite awhile. The neighbors say it is the Hooks.
Ellsworth, Kans. J. D. GRUBB.

Answer.—Have it removed carefully with a pair of blunt pointed scissors.

Aching in the small of the back is an indication of Bright's disease. The proper course in such cases is to take a few doses of Prickly Ash Bitters. It is an effective kidney remedy and bowel regulator.

Alfalfa With English Blue-grass.

EDITOR KANSAS FARMER:—It is often claimed by some that English blue-grass mixed with alfalfa for pasture will prevent cattle from bloating. My experience would lead me to think that this is true. Please give through your paper all the information you can on this subject. My field is not mixed but the alfalfa and the English blue-grass are side by side. I have had no trouble so far.
E. R. KNAPP.
Maple Hill, Kans.

Mr. Knapp's experience is valuable. One of the objectionable qualities of alfalfa is its tendency to bloat. If this can be obviated, much will be added to its value as a pasture plant. Mr. J. B. McAfee, of Topeka, has a pasture composed of alfalfa, English blue-grass, and orchard-grass. Animals have never bloated on it.

The KANSAS FARMER will be glad to have the experience of every farmer who has experimented along these lines.

True it is, and always has been, that cheerfulness is riches that can not be taxed.—January Ladies' Home Journal.

State of Ohio, City of Toledo, Lucas County, ss.
Frank J. Cheney makes oath that he is the senior partner of the firm of F. J. Cheney & Co., doing business in the City of Toledo, County and State aforesaid, and that said firm will pay the sum of ONE HUNDRED DOLLARS for each and every case of Catarrh that can not be cured by the use of Hall's Catarrh Cure.
FRANK J. CHENEY.

Sworn to before me and subscribed in my presence, this 6th day of December, A. D. 1898.

SEAL. A. W. GLEASON, Notary Public.
Hall's Catarrh Cure is taken internally and acts directly on the blood and mucous surfaces of the system. Send for testimonials, free.
F. J. CHENEY & CO., Toledo, O.
Sold by Druggists, 75c.
Halls Family Pills are the best.

Gossip About Stock.

WANTED.—An experienced handler of hogs, and an experienced cattleman. Address, with full information, R. O. Deming, Oswego, Kans.

Sioux City, Iowa, is agitating a live-stock show to be held some time during the fall. The idea is to interest the business people of the city as well as the live-stock interests of Iowa, Nebraska, and elsewhere, and to formulate an exhibit on an elaborate scale.

The next auction sale of Berkshire swine will be held at the Kansas City Stock Yards sale pavilion, on Friday, February 21, 1902. The offering will consist of sixty head, consigned by three of the leading breeders of Missouri. Catalogues may be obtained from Col. Chas. F. Mills, secretary of the American Berkshire Association, Springfield, Ill.

Chas. E. Sutton's consignment of Berkshires to be sold at Kansas City, February 14, 1902, are up on their feet all right, they have good heads, good backs, and heavy hams. They are well covered with nice, soft coats of hair. While not over fat, they are, considering age, growthy and in the best of breeding condition. In breeding and individual merit, the offering will be equal to any in America.

WHO CAN BEAT IT?—W. T. Pence, of North Topeka, has a pure-bred Percheron mare which now weighs 1,960 pounds. She is only in medium flesh. He also has a number of young animals that are beauties. They are all jet black. He sold six head of young mares last season to J. C. Robison, of Towanda, Kans., that would be a credit to any breeding establishment in any State of the Union. Why do not more of our farmers raise that kind?

Garrett Hurst, Zyba, Kans., a breeder of Percheron horses and Aberdeen-Angus cattle, has recently added to his foundation stock of cattle by a purchase of John Coulter, Excello, Mo., consisting of eight head, which brings his breeding herd up to twenty head, with more increase soon. The quality of the produce is very promising from the fact that the herd is headed by a grandson of Heather Lad 2d, who has proven a magnificent breeder. Some young bulls of his get are now for sale.

Col. R. L. Harriman, Bunceton, Mo., live-stock auctioneer, since placing his card in the Kansas Farmer reports as follows: "I will be very busy from now on to July. I have three times as much work booked as I ever had before at this season. I have nearly every good cattle sale booked that is in sight both in Kansas and Texas, besides about twenty-five cattle sales in Iowa and Illinois." Evidently the Colonel is getting there in good form. We are glad to know of his success.

James A. Funkhouser, Plattsburg, Mo., is one of the recognized stalwart breeders of Hereford cattle. He has achieved signal success and the enviable reputation of being one of the foremost men of the "white-face" fraternity in America. As a business man and a breeder he enjoys the confidence of all who know him. It has been said of him that he seldom errs in his judgment of cattle or in matters of business, therefore it is gratifying to announce that his breeder's card will appear regularly in the Kansas Farmer.

We call attention to the new advertisement of mammoth-bred jacks and jennets for sale by F. W. Poos, Potter, Kans. Mr. Poos has a lot of young jacks of good size which were sired by Black John, a sixteen-hand standard jack of great conformation and style. The jennets offered are a good lot and compare with the best that can be found anywhere. They are mostly fifteen hands high and of good color and style. Mr. Poos also offers a young Percheron sired by Brilliant 1271, who has proven an extra good sire. The prices are reasonable and those desiring stock in these lines will find it to their advantage to write at once.

Many prominent local horsemen invested in aristocratic horseflesh at the Splan sale of trotting stock at the Coliseum, Chicago, on the 15th inst. No sensational prices were paid for any of the offerings, seventy head changing hands for \$22,000, an average of over \$300. The top price of the day was paid by P. J. O'Neill, of Lexington, for the 10-year-old stallion, Red King, 2:20 1/4, by King Red, out of Roan Fanny, by Mambrinus King. Dartmore, 2:11 1/4, was knocked down for \$975, and the California pacer, Goshen Jim, realized \$750. Twenty-two of the offerings were purchased by Chicagoans, the stock yards horsemen, M. H. Tichenor & Co., Louis M. Newgass, and Samuel Cozzens, being leading buyers. Hector Vervecke, London, and P. Miller, Liverpool, England, paid up to \$775 for high steppers for exportation.

D. A. Kramer, Washington, Kans., has been receiving a very satisfactory trade in Poland-China swine from Kansas Farmer readers. He also breeds Pekin ducks of very excellent quality. At the Washington outh Rocks were winners of first and second prizes on his ducks, which scored as high as 98 1/2, and also his Barred Plymouth Rocks were winners of first and second prizes in hot competition. Mr. Kramer says he still has four Poland-China boars old enough for service that he will sell at farmers' prices. The bred gilts which he is offering are quite fancy for the reason that they were sired by Little Mc. They have fancy heads and ears, great backs, and good feet. Among the recent sales Mr. Kramer reports the following: Boars were sold to A. Shearer, Frankfort; Nave Rhodes, Wellsville; and Jo Auderly, Hanover; and D. M. Boyer, Linn. Gilts were sold to J. H. Drake, Phoenix, Ore.; W. E. Johnson, Sabetha, Kans.; G. M. Gilliford, Olsburg; and J. P. Esslinger, Clay Center.

The American Chester-White Record Association held the eighteenth annual meeting at Columbus, Ohio, January 15. A large number of members were present. Result of election of officers for 1902 was as follows: President, I. T. Cummins, Killean, Texas; vice-president, F. P. Hardin, Lima, Ohio; secretary-treasurer, Carl Freigau, Dayton, Ohio. Board of trustees, J. L. Beringer, Marion, Ohio; A. L. Glover, Delaware, Ohio; N. P. Kershner, Ansonia,

Ohio; W. H. Pool, Delaware, Ohio; F. P. Hardin, Lima, Ohio; C. Hintz, Fremont, Ohio. Executive committee: J. L. Beringer, A. L. Glover, W. H. Pool. Resolutions adopted and kept in force were, That a breeder may become a member of the association by sending in pedigree and one dollar fee, each, until thus 20 pedigrees and \$20 have been sent, when a certificate of membership will be issued. That members may record the pedigrees of pigs that they sell, for 50 cents each; provided that the pedigree is sent in for record within sixty days after date of sale. Send all pedigrees and fees to Carl Freigau, Dayton, Ohio.

T. K. Tomson & Sons, Dover, Kans., write: "Our cattle are going through the winter in good shape considering the scarcity of grain. Trade has been much better than we had expected it to be. Among recent sales we mention the sale of a yearling to Mr. Abbott, Pavillion, Kans.; a yearling and a calf to Mr. Chas. Mitchell, Dallas, Texas; an extra good blocky yearling to Mr. Francis Johnson, Lindsborg, Kans.; and the following to head pure-bred herds: To Mr. P. P. Lorimore, a son of Gallant Knight named Rambler, who comes of our Rose Sterne family, which is a branch of the Belinas and has produced us more show-yard material than any other in our herd, and this yearling is a credit to the family and should do Mr. Lorimore good service. To Mr. J. H. Riebhoff we sold another Rose Sterne bull by Gallant Knight. He is on the shortest of legs and we can say nothing better for him than that he closely resembles the old bull when at the same age. To Mr. C. W. Taylor for use in his Pearl Herd, at Pearl, Kans., we sold the grand bull calf, Bold Knight, sired by Gallant Knight, and out of a dam by Imp. Thistle Top. This calf we think one of the best in the country, and we will be fooled if he does not give a good account of himself in Mr. Taylor's herd. We still have have several sons of Gallant Knight that are fit to head good herds which we will price right."

Publishers' Paragraphs.

Look into the Jack of all Trades advertised by Fairbanks, Morse & Company, of Chicago. We think it will pay you.

Western Normal College, Shenandoah, Iowa, is the school for young men and women grown up on Western farms. See President Hussey's interesting announcement.

Look at the land roller advertised by the Topeka Foundry this week. It has proved a sure winner in raising corn during the past very dry season. Write the foundry and get the names of farmers who have raised excellent corn crops in 1901 by aid of this harrow; not one failure reported.

M. H. Smith & Son, De Soto, Neb., want you to see their seed-corn price and samples of corn. A 2-cent stamp gets you a volume of information about the corn that won four-fifths of all Nebraska State fair first premiums for a period of nineteen years. See the advertisement "Seed-corn and Wheat," and write to-day.

The easy pump governor, sold by the Pump Governor Company, 23 S. Canal St., Chicago, can be applied to any pump in ten minutes and will make the hardest working pump work easy. It only weighs three and one-half pounds, is light to carry and easy to sell. This is a golden opportunity for agents. Read the company's advertisement in another column.

Ross & Ferrell, proprietors of the Southwestern Iowa Seed House at Farragut, Iowa, are admirably fixed for sending out good seed-corn to their customers this coming spring. They have the leading varieties in both yellow and white sorts, and their shipments will be true to samples. Samples are sent to all who ask, and no better corn is grown than that they have in stock of the 1901 crop, as developed and matured in the famous Nishua Valley country of southwestern Iowa. Get orders in early and avoid the rush six weeks hence. See the advertisement in Kansas Farmer.

W. W. Cadwallader, Nebraska City, Neb., wants Kansas Farmer readers to ship all their raw furs, hides, wool, tallow, and pelts to his address. He guarantees better prices than by shipping elsewhere, and he gives prompt service to all customers. If you have anything whatever in these lines to dispose of it will be good policy to write for tags and price list, mentioning Kansas Farmer in so doing. Mr. Cadwallader is an old dealer in hides, at this point, and will hereafter reach out for a fuller line of trade from Kansas. See his announcement.

In this issue of this paper appears a neat display advertisement of "Noxem," a preparation for preventing horns from growing on calves. No cattle-raiser doubts the wisdom of dehorning cattle. The only question is, How can it be done the most effectively and the most humanely? "Noxem" fills the bill perfectly. It is sure, safe from accident, does not retard the growth of the calf, and is very economical. "Noxem" prevents the horns from even starting to grow. The animal never knowing what horns are, grows up gentle, quiet, and easily fattened. "Noxem" is very popular among stockmen who know its merit. Mr. Nickols, the manufacturer, is thoroughly reliable and his "Noxem" knocks horns.

Probably very few of our readers have ever thought what an expense it requires to publish the seed catalogues, which are so freely offered at this season of the year. The Iowa Seed Company, of Des Moines, Iowa, writes us that the main edition of its catalogue this year cost it the enormous sum of over \$22,000 for engraving, printing, lithographing, etc. Of course the company publishes an immense number of them so that it makes the cost of each book small. Our readers can each of them have the benefit of all that outlay of money, as a copy will be mailed free in answer to a postal-card request. Better write for it to-day and see what a large, beautiful, instructive, and valuable book \$22,000 will make. The company also publishes a catalogue in the German language.

The Roderick Lean Manufacturing Com-

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pany, Mansfield, Ohio, has again found it necessary to build a large addition to its works, due to the wonderful increase in business within the last year. For over a quarter of a century it has been concentrating its efforts upon the manufacture of steel harrows, and to-day its reputation is world-wide. This company's harrows, both spring and spike-toothed are the most efficient and lightest draft tools on the market. They are made from specially forged steel, and so constructed that lightness of weight and draft are combined with greatness of strength and durability. This company also manufactures steel land rollers, which are equally as famous as the harrows. An illustrated catalogue will be sent on request to all interested persons.

When writing Advertisers mention Kansas Farmer.

Feed Your Cattle Right
It pays to feed a variety of feeds. Make a grain ration of ground corn with
Gluten Feed and Germ Oil Meal
These digestible feeds are nutritious, easily assimilated and cattle, hogs, calves, etc. eat them with a relish. Write for samples and letters of recommendation, addressing Department K F.
The Glucose Sugar Refining Co., The Rookery, Chicago.

Northern Seed Corn
ADDRESS
F. W. FRASIUS, Topeka, Kans

Seed Oats
We offer you Red Texas Rust-proof Oats in any quantity. Write for samples and prices.
ROBISON-WALLACE COMMISSION CO., 30th and Fairmount Avenue, KANSAS CITY, MO.

GREAT CROPS OF STRAWBERRIES AND HOW TO GROW THEM
A book which has worked a revolution in Strawberry Growing and caused two big berries to grow where one little one grew before. It will be sent to you FREE if you mention the paper in which you saw this notice. The only thoroughbred and perfectly developed plants for spring planting. Send for book at once.
R. M. KELLOGG, Three Rivers, Mich.

Northern Grown Seeds.
WE OFFER Any Farmer
50 packets of Seeds (his selection) from our catalog, or his choice of 30 elegant premiums—including suits, watches, etc.—if he (or she) will first sell 50 packages for us at 50c each. No money in advance, and we help sell by offering prizes to customers. Write postal and we will mail the 50 packets to be sold for us.—Price Tickets, Premium List and full information, T. J. King Co., Richmond, Va.
10,000 Prizes and Premiums Offered.

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A positive and thorough cure easily accomplished. Latest scientific treatment, inexpensive and harmless. NO CURE, NO PAY. Our method fully explained on receipt of postal.
Chas. E. Bartlett, Columbus, Kans.

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FURS, HIDES, PELTS, WOOL, ETC.
To McMillan Fur & Wool Co. Minneapolis, Minn.
WRITE FOR CIRCULARS

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SHIP YOUR SKUNK
and other raw furs to me. A trial shipment will convince you that you can get better prices for them here than by shipping elsewhere. Prompt returns and full value guaranteed. Write for tags and prices on Furs, Hides, Wool, Tallow, and Pelts
W. W. CADWALLADER, Nebraska City, Neb.

FOX AND WOLF HOUNDS
Of the best English strains in America; 33 years' experience in breeding these fine dogs for my own sport; I now offer them for sale. Send stamp for circular.
T. B. HUDSPETH, Sibley, - Jackson County, - Missouri.

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Our hand knitting-machine for home use is simple and perfect. We supply you with YARN FREE and purchase all your knitting; \$15 a week easily earned. Those in need of steady work, address
BUFFALO KNITTING CO., 121 Franklin St., Buffalo, N. Y.

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Trained to Hunt..... RATS, RABBITS, ETC. Prices Low.....
FARNSWORTH BROS., Elk Falls, Kas.

3 CENTS PER QUART FOR ALL YOUR MILK
Learn how you can make large profits per quart.
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727 KANSAS AVENUE, TOPEKA, KANSAS.
Specialties: Chronic, and Obsolete Diseases Heart and Lungs

In the Dairy.

Conducted by D. H. Otis, Professor of Dairy Husbandry, Kansas Experiment Station, Manhattan, Kans. to whom all correspondence with this department should be addressed.

The Weakest Link.

ED. H. WEBSTER.

We are all familiar with the saying that a chain is no stronger than its weakest link. There seems to be a good many weak links in the dairy business. Some of them are in the creamery where the butter is made and some on the farms where the milk is produced. The weak links in the creamery are usually more easily repaired.

The buttermaker, knowing his weak points, if he is a wise one, will hasten to the nearest dairy school and strengthen his knowledge, thus repairing links in his part of the chain. This is not so easily accomplished on the farm, as there may be ten or twenty or thirty of these places needing repairs in a list of 100 patrons. It would be practically impossible to get all these men to go to the dairy school, though right there they would get the very thing they required to place them in position as one of the strong parts of the chain. If the farmers who patronize the creamery or skimming-station could all feel that the responsibility for success depends upon them, it would be money in their pocket, for then they would study to furnish the best milk and lots of it. As an illustration of what a poor batch of cream will do, the Agricultural College secured a can of cream from a distant point which was so poor that it was necessary to take three-fourth cent per pound less for the butter of that churning than would have otherwise been received. This was the weak link in that day's work.

Every creamery patron who persists in furnishing poor milk to his creamery is welding in these links for the ultimate destruction of his business. It means less profits and more discontent. One can of poor milk may upset the buttermakers' calculation for the day and result in a case similar to the one above mentioned of the Agricultural College experience.

An Enterprising Dairy Student.

Two years ago Mr. Fred Schaaf, Bern, Kans., entered the Kansas Agricultural College as a dairy student. After completing the short course Mr. Schaaf operated a skimming-station at Irving, Kans. After operating the station a few months he was offered a position as buttermaker at \$60 a month but refused it because he thought he could do even better on a dairy farm. The following letter from Mr. Schaaf shows that he is pushing things and knows what he is doing:

"On November 6 we turned our cows on rye pasture and the effect it had on the milk flow may interest you. We are making cheese, and the following figures represent the milk that was made into cheese only. We used about sixty pounds daily for the calves and for family use:

"Total yield of milk for two weeks before turning on rye, 2,314 pounds; cheese, 245 pounds. The first week after turning on rye, milk, 1,561 pounds; cheese, 183 pounds. Second week, milk, 1,839 pounds; cheese, 236 pounds. Total for the two weeks, milk, 3,400 pounds; cheese, 419 pounds. Increase on rye, milk, 1,086 pounds; cheese, 174 pounds.

"Figuring green cheese at 10 cents per pound (for comparison only) the increase would amount to \$17.40. One cow in the herd is giving more than she did last summer on oats pasture. Others are giving very nearly as much. Comparing this to selling butter-fat to the creamery at 17 cents (19 cents if you haul it yourself) the increase would amount to \$6.97, leaving \$10.43 in favor of private dairyman in two weeks."

A Good Monthly Record.

F. S. COWLES.

Statement of cows for December: Number of cows milked, 11½ cows; milk sent to creamery 7,670 pounds; milk for house use 300 pounds; total, 7,970 pounds; monthly test 4.85 per cent; total butter-fat 386.5 pounds; average per cow 33.5 pounds; price per pound, butter-fat, 20 cents; income for butter-fat \$77.30; 6,000 pounds of skim-milk, at 30 cents per hundredweight,



\$18.; total income, \$95.30; income per cow, \$8.28; cost of feed, \$62; net profit, \$33.30; net profit per cow, \$2.89.

The feed consist of clover and oat hay with some corn-fodder and cane, the grain was corn-chop and bran, mixed half and half by weight. Four cows were fresh last spring, the rest since September 1, and one in the middle of December.

Experience With Alfalfa.

WILLIAM UHLRIG.

I had twenty-two acres of alfalfa that made two tons per acre the first cutting, and one ton per acre the second cutting, and the third time there was only one strip of ten acres in the twenty-two acres that grew up big enough to cut, the difference being in the land. Twelve acres had a hard subsoil. The ten acres I let go to seed and when it had turned brown I cut it and threshed 105 bushels of clean seed. By this time we had several showers of rain that started a new crop on the whole field which I pastured in November by turning on cattle after the dew was off in the morning.

The Drouth of 1901 and Its Effects.

WHAT WE SHOULD LEARN FROM IT.

G. W. PRIEST, BEFORE FARMERS' INSTITUTE, MERIDEN, KANS., NOVEMBER 23, 1901.

The drouth of 1901 will go down in history as the greatest educator of the farmer, of modern times, and also the cause of the greatest scare—much greater than that produced by the drouth of 1860, because there were so many more of us to get scared. The dry, hot weather, from about the middle of July to July 27, scared the people of Missouri and Kansas until they could almost see, in the near future, their horses, cattle, and hogs starving, and themselves and families on the verge of the same calamity. But I need not tell you anything more about the drouth. You were here and were scared as badly as I was.

On the night of July 26, it rained and also on July 28 and 29. Oh, what a change! A change in all nature, and especially in human nature. Fear of the future gave way to confidence in the future, and farmers took to the fields again and commenced plowing and sowing, to try to raise something upon which to winter their stock. Women all over this part of Kansas made garden again, as they had in the spring. Apples and peaches that looked as though they could not make anything, made a crop. Grass that had been cut for hay made another light crop and was cut again for hay. Corn that looked almost dead in some places revived and made some corn and good fodder. Cane and Kaffir-corn sowed or planted in rows after the rains, made good feed. In fact we had another spring—a little late, of course, but it helped us out wonderfully. But what have we learned, or will we learn anything from this drouth?

To my mind the very first thing we at least should learn from it is, our utter inability to do anything or even to live in this old world without the help of nature. Suppose those rains in July had not come, and there had been none since? What kind of shape would we be in to-day? And then suppose it should still stay dry for one year from this time, what would become of us? But thanks to the God of nature it did not do that, and we are here and there is not much danger of any of us suffering.

But there are other things we ought to learn from it that will benefit ourselves and the country we live in. First, we should learn not to depend on one crop, but to diversify our farming. Instead of raising eighty acres of corn, raise fifty acres of corn and thirty acres of Kaffir-corn and cane. Plant the cane and Kaffir-corn in rows and work it like corn, and let it get ripe. Don't raise it for a kind of second or catch-crop, but make it part of your first crop and plant it in season. You know some of these plants will make a crop when corn will not, and they are bound to make a crop when corn does. Had I planted half of my seventy acres that I planted to corn last spring in Kaffir-corn, I would probably have had grain enough to take all my stock through the winter, and until I made another crop. To have done that the Kaffir-corn should have been planted about the time the corn was, or possibly a little later. The trouble with the most of us is that we only plant Kaffir and cane for roughness, and then we sow it, or don't plant early enough to mature the seed. But let us plant it for a crop just as we do corn or wheat. We can get it cut with a binder and have it run through a shredder, one with plenty of screen room, and our seed will be threshed and our coarse fodder will be shredded.

★ ★ ★ ★

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in Every Country in the World.

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103 & 105 MISSION ST., SAN FRANCISCO. 74 CORTLANDT STREET, NEW YORK. 327 COMMISSIONERS ST., MONTREAL.

★ ★ ★ ★

Then there is the cow-pea, a legume that will stand more drouth than anything. Plant it in rows and work like corn, or sow for hog or cow pasture. The soy-bean, though it won't stand as much drouth as the cow-pea, will stand much more dry, hot weather than corn. Sow rape for your hog pasture. Some people will tell you that hogs won't eat it, and I guess they won't for that kind of people, for they won't sow it. If it don't furnish more feed for your hogs than the same ground sown to anything else, then tell me I don't know anything about it. Don't sow anything else in the same field or hog-lot, because if it should be something the hogs like better than rape, then they will stay on that and will not eat the rape. Don't forget that corn will be scarce and dear next summer, and that you will need something to feed your hogs while you are waiting for your corn to mature. Plant a piece of cane near your hog-lots and from the time it is in blossom (and before, if you want to) commence hauling it into your yards for your hogs. The seed and sugar in the stalk will be much better for your young hogs and brood sows, than so much corn. You

need not stop with the green cane, but cut it up and shock it, and feed it all through the first part of the winter. And if you have alfalfa, feed it to the hogs, too. Put up a small manger or rack in your hog-yards, and feed the alfalfa in it. I know you have not been in the habit of feeding hay to your hogs, but try it and you will be surprised at the amount they will eat.

(To be continued.)

Notice to Dairymen

If you are thinking of buying a Cream Separator, write us or catalogue and information. We manufacture the best machine on the market.

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ARE PIONEERS OF THE FARM SEPARATOR SYSTEM.

They know this system is right. They know this system is right because it enables them to pay right now

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Write to them for particulars. Ask them about a Separator; they handle the best one on the market. Commence shipping your cream to the best market in the West. Add your name to the long list of patrons already doing so. They refer you to any bank in St. Joseph.

23 CENTS A POUND FOR BUTTER FAT

The Young Folks.

Conducted by Ruth Cowgill.

THE BEE AND THE FLOWER.

The bee buzzed up in the heat. "I am faint for your honey, my sweet..."

What is Needed.

Mr. Conwell, the noted lecturer, once said that if you want to make a fortune, find out what the world needs, and then supply the need.

AN AGRICULTURAL INVENTION NEEDED.

Very many post-hole augers have considerable merit and are quite generally conceded, where nothing interferes, to do the work with greater ease and rapidity than can be done with a spade.

Considerable experimental work would be necessary, no doubt, to perfect an auger of real practical worth.

I would suggest that the bit, possibly an extensible one, be set in a framework similar in construction to the framework supporting the carpenter's mortising auger.

An Incident of Slave Times.

One bright day, in Ohio, two horsemen came clanking up the lonely road, disturbing the summer stillness with their harsh voices.

"An' they must o' come down this road," one was saying, "so we're sure o' gettin' the money."

"You bet! There's an ol' farm-house—let's stop an' see what we can find out there—jest like some of these ol' Quaker farmers to help 'em on. Hey! you there, run tell your dad we want to speak to 'im."

The boy thus addressed ran toward the house, his baggy trousers flapping around his thin little legs. He soon returned followed by a hale old man

who saluted them in the quiet, friendly fashion of the Quakers.

"Y'aint seen anything of a couple o' runaway niggers, have ye?"

"Yes," answered the old man. "Which way'd they go?" eagerly. "That is for thee to find out," politely.

This provoked an angry duet from the two horsemen, during which the old Quaker gazed serenely at nothing on the distant horizon; while the small boy dug his bare toes in the ground and took in every detail of their appearance with round, inquisitive eyes, after the manner of the small boy of all time.

"But you've hid 'em in that there coal-bank o' yours," pointing toward the black opening in the side of the hill which rose at the back of the house.

"Thee may look and see," was the permission courteously given.

They rode around and, dismounting, peered into the grimy labyrinth, dark as midnight, which they saw it would be folly to attempt to explore.

Within the cave, not a hundred feet from them, two creatures, black as the midnight around them, crouched in abject terror. They heard the oaths of their pursuers and the question, addressed to the negro who was working there, "Got any niggers hidin' round in them there mines?"

"No," came the ready lie. "Seen 'em pass here?"

"Yas. Seen two black fellows goin' along the road about 5 this mornin'—pretty nigh ti'ed out, they was, but they was agettin' the'e pretty spry."

The men looked into the negro's stupid, simple-looking face and then into the fine, fearless eyes of the old farmer; "These old Quakers are sly old fellows. They'll lie any day to help a runaway. The nigger aint smart enough to lie." And so they rode away on their fruitless search.

"Gran'father," says the little boy, as the horsemen disappeared down the road, "is there some black men in there?"

For answer, the old man picked up a lantern and taking him by the hand, led him into the dark cave, where the faint light showed him dimly the two terror-stricken faces of the two refugees.

(The above incident is a true one; the small boy being the writer's own father, and the staunch old Quaker her great-grandfather.)

Love Stories of Old Ladies.

AUNT RACHEL.

Aunt Rachel is, without exception, the dearest and sweetest old lady I know. She has the prettiest dimples in the world, and her eyes are the eyes we read about, but so seldom see, dark, deep-set behind heavy brows and long lashes, varying in color from dusky black to soft and peaceful gray, according to the mood of their possessor.

One eventful night they went to a wedding where she was to be the bridesmaid and he, best man. But when they reached the house and he stood face to face with the ordeal of standing up before the assembled multitude—it was almost as bad as being married himself, don't you know?—his courage failed him and he told Rachel, confidentially, that he could not and would not do it.

This threw the whole bridal party into consternation, for what is a wedding without the best man. But happily there chanced that there was a man in the company who was not afraid. This was a young widower, a physician, handsome, dashing, and what, now-a-days, we call "swell"; and when he was asked to take the place

of the timid Reuben he was most happy to accommodate them.

It seems that this young physician was the very young man who was destined to be Reuben's successful rival, for, after his first bold look into the soft dark eyes, Dr. Harrington was over head and ears in love.

After the ceremony had been performed, and the friends were starting to their homes, Dr. Harrington intercepted Rachel as she was moving toward the door where Reuben awaited her, and asked in low tones, yet loud enough for Reuben's jealous ears to catch it, "Miss Rachel, may I have the pleasure of calling upon you during my short stay in this neighborhood?"

Aunt Rachel blushed and showed her pretty dimples in her smiling assent; I can see the same laugh at his impetuous gallantry in the depths of those wonderful eyes now, as she tells me about it.

Dr. Harrington called, and called again, and soon Rachel had to ask Reuben to give her her freedom and to take his heart back again, which I fear he did with an ill grace, his poor broken heart not being of very great value to him just at that time.

Aunt Rachel told her lover that she did not wish to marry for several years yet, for she was then very young and not at all anxious to leave her happy home; but he told her that he could not live without her and that he could not answer for the consequences if she refused to marry him at once.

Of the stormy winds of sorrow that met her in later years, I can not tell, but this I know, that they have left her sweet and gentle as ever. It seems to be true that one must meet many troubles and losses in this world before old age is reached, and whether they come as blessings or curses in the end, depends entirely upon how we take them.

Seeing Things Out of Doors.

We all might have much more of interest and enjoyment in our lives if we but knew how to look for it. Nature does many marvelous things which would call forth exclamations of wonder, were they not so common that we do not even see them when they are taking place before our very eyes.

One of these winter days, as you walk along a country road after a frosty night you can see how Nature's plowman is at work. Jack Frost is loosening up the top layers of the soil and making them porous and airy. Nature plows when the plants are asleep and will not be hurt by the process.

Advertisement for Enameline. Includes image of the product and text: "BIGGER BOX SAME PRICE", "Enameline THE MODERN STOVE POLISH", "Brilliant, Clean, Easily Applied, Absolutely Odorless", "LIQUID-BETTER YET! FIRE PROOF!!"

Any housewife who has left uncapped the lamp beneath her chafing-dish knows how soon the alcohol will have evaporated. If the top of the wick were more loosely braided and had larger air spaces in it this work would be slower.

Question Box.

Should a young lady extend her hand when she is introduced to a gentleman. LUCY SMITH.

It is not customary for a young lady to shake hands after an introduction. However, customs vary in different places, and it is as well to do as one's neighbors do in a case of this sort.

Can you tell me through the Question Box, how to trap wild ducks? There is a large pond on our place and the ducks, in flying over, often alight there. I want to catch some of them alive, but I do not know exactly how to go at it. HARRY LEONARD.

We must confess our ignorance and appeal to our readers. If any one has successfully trapped the birds, we shall esteem it a very great favor to receive an answer to this question.

To make cows pay, use Sharples Cream Separators. Book "Business Dairying" and Catalogue 237 free. West Chester, Pa.

Advertisement for Kneeland Omega Cream Separator. Includes image of the separator and text: "The Easiest to Operate, the Closest Skimmer, Simplest and most Durable, is the KNEELAND OMEGA Cream Separator."

\$15 000.00 IN PREMIUMS ON BUTTER

Our "would-be competitors" jump about quicker than a flea—corner them on one statement and they jump to another.

We keep to our original statements and proposition. We offer Fifteen Thousand Dollars to be divided equally between the five State Dairy Men's Associations—Wisconsin, Minnesota, Ohio, New York, and Vermont—on the same conditions we have offered for Vermont, provided our "would-be competitors" will within ten days deposit this amount with Hon. Charles Richard Dodge, the Director of Agriculture of the United States to the Paris Exposition, 1900, who was in Paris in his official capacity through the entire time of the Exposition.

For Thoroughness of Separation, Greatest Wearing Qualities THE UNITED STATES SEPARATOR STANDS AT THE HEAD WITHOUT A PEER.

VERMONT FARM MACHINE CO., Bellows Falls, Vt. Jan. 6, 1902.

Advertisement for Lion Coffee. Includes image of a man and text: "The Grocer who neither sands his sugar nor waters his milk—who believes in the best, and is particular to please his patrons. That's the grocer who recommends and sells Lion Coffee. Coffee that is coffee—unglazed—unadulterated."

One Hundred and Seventy-three Herefords Average \$229.

The Hereford breeders' combination sale held at the Kansas City stock yards sale pavilion, January 14-16, was a successful event as an opening sale for the year 1902.

The offering was a uniform lot throughout and in every way creditable to the breeders contributing the same. The stock was mostly young and was in good breeding condition.

The top price of the sale was reached in \$715, paid by George Tuttle, of Kansas City, for the bull, Beau Donovan, from the herd of Gudgell & Simpson, of Independence, Mo.

BULL SALES.

- Armour Renown 104932, R. L. McDonald, Randall, Kans., \$180.
Columbus 35th 114728, E. Shea & Co., \$240.
Leo 2d 112111, Geo. Chandler, \$125.

- Highland Dean 2d 123821, Estate of K. B. Armour, \$100.
Brewster 102927, Wm. Paul, Newberg, Iowa, \$180.
Prosper 132788, Samuel Drybread, \$105.

FEMALE SALES.

- Corsica 90650, O. B. Clark, Colorado Springs, Col., \$310.
Edna 108556, R. L. McDonald, \$175.
Nelle 103714, Chas. Owens, \$155.

- Lady Columbus 18th 100924, J. A. Funkhouser, \$610.
Token 124163, J. P. Sands, \$220.
Beauty 105696, J. W. Peters, Eskridge, Kans., \$225.

Sotham's "Kriterion" Sale of Herefords.

The next big sale of Hereford cattle scheduled for sale at Kansas City on January 23, 29, and 30, is Sotham's Kansas City Kriterion sale of Hereford cattle.

On Tuesday evening, January 23, 1902, a banquet (no liquors) will be given at the Midland Hotel, Kansas City, at which toasts will be given and discussed relating to the history and achievement of Hereford cattle.

On Wednesday evening, January 29, an illustrated lecture on "Beef Cattle" will be given in the fine stock sale pavilion by Messrs. John Gosling, George F. Morgan, Prof. C. F. Curtis, F. B. Sotham, and others.

FORTHCOMING BERKSHIRE SALES.

- The secretary of the American Berkshire Association announces the following public sales of Berkshire swine:
February 4, 1902, Blitmore Farms, Blitmore, N. C.

Free to Ladies

One Full-sized \$5.00 Package of Dr. Mary Lock's Wonderful Home Treatment Given Free to Every Lady.

Cures every form of Female Weakness, Displacement, Leucorrhoea, Suppressed or Painful Menses, Falling of the Womb, Change of Life, etc.



TWO OF AMERICA'S GREATEST LADY SPECIALISTS. every suffering woman in order to quickly introduce their most wonderful remedy in every city, town and hamlet in the U. S.

October 23, 1902, Geo. W. Jessup, Rockville, Ind.
December 3, 1902, Combination Sale Berkshires, Manager A. J. Lovejoy, Roscoe, Ill.

Notable Live Stock Events, at Wichita, Kans., February 10-14.

Wichita, Kans., will be favored with a series of notable live-stock events, the greatest of the kind ever held in Kansas, during the week of February 11, 12, 13, and 14, 1902.

The occasion for this series of events is that the Oklahoma Live Stock Association has now expanded into the Southwestern Cattlemen's Association, and will hold its annual meeting at Wichita, Kans., February 11, 12, and 13, which will bring together one of the largest gatherings of live stock ever held in the Southwest.

During the week, pursuant to requests of the association, there will be held the greatest sale of pure-bred stock ever held in Kansas, consisting of pure-bred Poland-China swine, Shorthorn cattle, registered draft horses of the Percheron, Clydesdale, and Shire classes of stallions and mares.

On Tuesday, February 11, eighty-five pure-bred Poland-China swine, mostly bred sows and gilts, also choice males, will be sold at auction from the well-known herds of Snyder Bros., Winfield, Kans., and Harry E. Lunt, Burden, Kans.

On Wednesday, February 12, at Wichita, sixty-five pure-bred Shorthorn males and females will be sold at auction, by J. F. Stodder, of Burden, Kans.

On Thursday, February 13, J. W. & J. C. Robison, of Towanda, Kans., and Snyder Bros., of Winfield, Kans., will sell at auction at Wichita, forty-five Percheron, Clydesdale, and Shire stallions and mares.

JANUARY 23, 1902.

G. PEPPARD, MILLET OANE SEEDS
 1101 to 1117 West 8th St.
 (Near Santa Fe St.)
 KANSAS CITY, MO. CLOVERS TIMOTHY GRASS SEEDS.

SEEDS Clover, Timothy, Blue Grass, Rye, Barley, Millet, Cane Seed, and Garden Seeds. Bale Ties, Garden Tools, Seed Sowers. Send for Catalogue.
TRUMBULL & CO.
 1426 ST. LOUIS AVE.,
 KANSAS CITY, MISSOURI.

ALFALFA SEED OUR SPECIALTY. We are headquarters for this kind of drouth resisting plants, and can furnish pure, plump, vigorous seed crop 1901 in car or one-bushel lots. Also all other kinds of field seeds. Write us for prices.
MOBETH & KINNISON, Garden City, Kansas.

KENTUCKY BLUE GRASS SEED.
 For a beautiful as well as a most profitable pasture sow BLUE GRASS. The genuine Kentucky seed is what you want, and from September until June is the proper time to sow. For pure seed of our own raising, and full particulars, write MT. AIRY SEED FARM, Paris, Kentucky.

SEED 1000 bushels Select Seed from 1901 Crop Pure Golden Cap field-corn, grown continuously on my rich Platte Valley lands for 12 years. Above 50 bushels per acre last season. A 100 day corn, bright golden yellow, small cob, deep grain, yielding abundantly always. Tipped, sacked, f. o. b. cars, \$1.25 per bushel. Write for sample, descriptive circular and price-list.
J. M. MAHER, Fremont, Neb.

SOUTHWESTERN IOWA SEED HOUSE
 Best varieties Field-corn a specialty. We handle nothing but best of pure seed and want your orders. Samples free. Write for circular and price-list to-day.
ROSS & FERRELL, Prop's,
 Farragut, Iowa.

"Western Seeds for Western Planters."
KANSAS SEED HOUSE.
 We keep everything in the line of SEEDS for Farm, Field, and Garden—Fresh, Pure, and True. Alfalfa and Grass Seeds our specialty. Champion Beardless Barley and Russian Speltz—two Grand Novelties for dry soils. Bromus Inermis—the new drouth-proof grass. Limited quantity of Macaroni wheat for those who wish to try it. Send for descriptive circular and elegant new catalogue for 1902, and learn all about them. Free to all.
F. BARTEDES & CO., SEEDSMEN, 804 Mass. St., Lawrence, Kas

Seed Corn and Wheat
 We have won four-fifths of the first prizes at the Nebraska State Fair for the past 19 years. At our 1901 State Fair we won 11 firsts and 9 of the seconds—all the prizes offered on corn. Swedish spring wheat, a week earlier than Velvet, Chaff, or Blue Stem. It won first prize at our State Fair this year. For price list and samples, address with 2-cent stamp,
M. H. SMITH & SON, DeSoto, Washington County, Nebraska.

FINE SEED CORN CATTLE KING, medium early, from 60 to 100 bus. per acre, is one of the best cattle corns grown. EARLY REED, light yellow, ears from 9 to 12 in. long, deep grain, small cob, matures in 100 days, will yield more than any other early variety. MAMMOTH WHITE—We think this variety the very best for those wanting white corn, medium early, ears from 9 to 14 in. long, white cob. Our corn is all selected, tipped, shelled, sacked, and f. o. b. cars. Price \$1.25 per bushel. Write for samples.
W. W. VANSANT & SONS, Farragut, Iowa.

SEED CORN If you need Seed Corn, write for my Descriptive Circular and Price-List. I have a good quantity of the best-grown pure seed, hand-picked, and dried, of following standard varieties: Legal Tender (yellow), White Pearl, and Iowa Gold Mine. Also Early Amber Cane-seed. Secure samples, etc. Write
FRED ECHTENKAMP,
 Arlington, Nebraska.

HENRY BROS., FAIRFIELD, IOWA,
 ...Announce to their trade they are offering their...
 BLACK DIAMOND SEED OATS, 100 lbs., \$3; or 500 lbs., \$13. IOWA'S PREMIUM WHITE OATS, 100 lbs., \$2.75; or 500 lbs., \$12. YELLOW DENT SEED CORN, \$1.50 per bu.; or 6 bu., \$7.50. CHOICE WHITE CORN, \$1.50 per bu.; or 6 bu., \$7.50.
 Write for prices of Choice Clover, Timothy, and Millet Seed.

SEED CORN NEBRASKA GROWN
 WHITE AND YELLOW PRIZE
 Large Medium Early, hand picked, dry, tipped, and well matured, at \$1.25 per bushel. Same corn not tipped, \$1.00 per bushel. Buy it now as seed corn is getting scarce and is sure to advance. Sacked and shelled on cars free. Sample ear by mail, 15 cents. Catalogue free.
Griswold Seed Co.
 P. O. Box A. LINCOLN, NEB.

J. I. REYNOLDS, President. (Formerly of Trumbull, Reynolds & Allen.)
KANSAS CITY GRAIN & SEED CO.
 BUY AND SELL Millet, Cane, Kafir, Alfalfa, Red Clover, Timothy, Pop Corn, Seed Corn, Cottonseed Meal, Linseed Meal, Corn, Oats, Rye, Barley, Etc.
 KANSAS CITY, MISSOURI

FOR SALE... SEED CORN.
 Large Stock, Choice Quality, Hand Picked, A number of varieties.
 All new corn. We make Seed Corn a specialty, and put nothing but choice seed on the market. Address
HUMBOLDT GRAIN EXCHANGE, Humboldt, Kans.

Southwestern Iowa BLUE GRASS SEED LEADS THE WORLD
 Grown on lands never touched with the plow. Can contain no Weed Seed. Absolutely Pure and Highest Germinating Power. Why wait years to get a thick Pasture or Meadow? Sow our Blue Grass and Mixtures of Clover, Alsike, Alfalfa, Bromus Grass, Timothy, Meadow, Tall and Sheep Fescues, Orchard Rye and Oat Grass, Water and Floating Grass, all Natural Grasses for all kinds and conditions of soil. We are strong on all Field, Garden and Flower Seeds, and sell to you at Wholesale Dealers' Prices. Good Seeds for Little Money. Our Catalogue tells all about it. It's free. Only Ask through a Postal Card.
A. A. BERRY SEED CO., BOX 50, CLARINDA, IOWA.

SALZER'S SEEDS Produce
 It is a fact that SALZER'S SEEDS are grown in more gardens and planted on more farms in America than any other. There is no reason for this. Salzer's Seeds always produce—they never fail, no matter how poor the soil or inclement the weather. We are the largest growers of vegetable and farm seeds, operating over 5000 acres, and hence make the following unprecedented offer:—
150 Kinds for 16 Cents Postpaid.
 20 kinds of rarest Luscious Radishes; 12 magnificent earliest Melons; 10 sorts glorious Tomatoes; 25 peerless Lettuce varieties; 12 splendid Beet sorts; 65 gorgeously beautiful Flower Seeds.
 Above 150 sorts, which will furnish you bushel baskets full of magnificent flowers and lots and lots of rare vegetables, together with our great catalog telling all about the rarest kind of fruits and flowers and best vegetables, is mailed you, all for but 16 cents in stamps.
FARM SEEDS. We are the largest farm seed growers in the world. Our catalog is brim full of pedigreed stock with tremendous yielding records, such as 100 bus. barley, 400 bus. corn, 42 bus. spring wheat, 300 bus. oats, 6 tons of hay, 80 tons teatine, etc., etc., per acre. It is mailed to you upon receipt of 5c postage; or for 10c we will mail you catalog and many farm seed samples.
JOHN A. SALZER SEED CO., La Crosse, Wis.

Get Good Prices
 For Plants Early Flat Dutch Cabbage
 St. Louis a good Market last Year.
 Nearly 14,000,000 cabbages were handled in St. Louis last year, and still we ran short. The 14,000,000 brought big prices. This year should be better, for the city will be filled with busy workers. Chicago was a better market the year before their World's Fair than during it. A successful, big hardy variety of cabbage, specially successful in past years in the Southwest, is Plant's Early Flat Dutch.
 Our "Trucker's Catalog" of seeds tells all about the most profitable kinds of cabbages to grow in this section, gives 128 p. valuable information about everything for our market; tells you all about our seeds for other varieties of money makers. Write for it. It is free.
PLANT SEED CO., 810 N. Fourth St., ST. LOUIS.
Everything in Seeds

MONEY IN GOOD CABBAGE
 My elegant new book for seed growers is a store house of rare seed information. Tells about my famous varieties of money making cabbage.
WRITE TO-DAY and I will send you a package of **Buckbee's Gold Coin Cabbage**, the best growing variety on earth together with a copy of my great Seed Book.
H. W. BUCKBEE
 Dept. L-78, Rockford Seed Farms, Rockford, Ills.

GARDEN SEEDS.
 All the best and most practical Garden and Vegetable Seeds, all new. Every pound of our Seeds grown in 1901. Don't buy seed 10 years old, when you can get new, fresh seed at same price. Write for FREE Catalog of all best and leading Farm and Garden Seeds; also our "Book on Corn Growing." Address
J. R. RATEKIN & SON, Shenandoah, Iowa.

CONSCIENCE SEED
 "Don't quite like the sound of it." But doesn't our 2,000 careful annual tests for vitality and quality and the great care in selecting stock have lots of conscience thrown earnestly into it? "Yes!" Well then, I will take the liberty of the heading and submit the propriety of it to the experience of many hundreds of thousands of my old customers. Seed catalogue free.
J. J. H. GREGORY & SON,
 Marblehead, Mass.

SPELTZ - Greatest GRAIN of the AGE
 Neither wheat, oats or barley, but yields more than either. You're not in it if you don't raise some. Be sure to get our price.
BROMUS INERMIS Greatest GRASS of the AGE
 Really meritorious. Experimental stations and thousands of best farmers say so. Best new crop seed cheaper than anyone else can sell it.
 We are large growers of FARM and GARDEN SEEDS and careful dealers in SEEDS of ALL KINDS. We sell direct to farmers at WHOLESALE PRICES and can SAVE YOU MONEY.
 FREE Catalogue tells all about it, or send two cent stamp for postage on Free Sample of Speltz and Bromus and catalogue.
A. A. BERRY SEED CO., Box 50, Clarinda, Iowa.

SEED BOOK FREE
 Do you want one? Handsomely illustrated with photographic reproductions from nature. Contains many colored plates, and is filled with bargains that will surprise you. No other seed book like it.
140 Varieties, 12 Cents.
 5 kinds of Best Beets, 10 of the Grandest Cabbages, 12 of the choicest kinds of Lettuce, 8 of the Greatest Onions, 7 Grand New Tomatoes, 100 kinds of Gorgeous Flower Seeds, making in all 140 sorts, which will produce bushels of choice vegetables and immense quantities of lovely flowers, all for 12 cents and addresses of three friends who buy seeds and plants. Seed book free. Write to-day.
F. B. MILLS, Seedsman, Box 60, Rose Hill, N. Y.

SEED CORN.
 Our Iowa grown Seed Corn is thoroughly well matured, hand selected, tested, and of best quality. Our improved varieties yield 20 to 50 bu. per acre more than other sorts, under ordinary conditions—have yielded 215 bu. per acre by special culture. Choice seed corn \$1.00 per bu. and upwards.
SEED OATS. Sow some of the newer varieties this year. They are harder, more vigorous, and more productive. Iowa grown, new crop, tested seed at low prices. Large descriptive catalog of Seed Corn, Oats and other farm and garden seeds free, if you mention this paper.
IOWA SEED CO., DES MOINES, IOWA.

THE MARKETS.

Kansas City Live Stock.

Owing to a perceptible increase in the cattle supplies at the leading Western markets last week, values fell off 30 to 40c from the close of the previous week. The supply at the local market was liberal at 33,700 head, compared with 29,700 the corresponding time a year ago. Good corn cattle were discriminated against the worst, while the medium grades were held in the best favor by the killers, and in many cases did not show the loss to the same extent as the heavier cattle. Prime 1,600-pound steers sold up to \$6.70. They were as good as anything seen here for many weeks. There is a general feeling throughout the country that corn cattle have not yet reached the top limit, that that the spring months will see prime steers selling much higher than at present. This explains in a great measure the strong demand for feeding cattle. The movement to the country continues brisk and shows an increase over the past few weeks. At the close of the week, feeders broke in sympathy with the decline on fat cattle, extreme cases showing a loss of 25c. The hog market has been a continual skirmish between the buyers and the sellers all week, with the close in favor of the latter. On Monday of this week, further strength was gained, the market closing 10 to 20c higher than the same time the previous week. Top last week was \$6.50, which was increased to \$6.65 on Monday. The general market was characterized by an improved activity. Buyers were loath to accede to the demands of the salesmen, however, and did not give in without a fight. The heavy proportion of pigs and light hogs among the receipts continues, and this causes a wide variation in the bulk of the sales at a weight less than 150 pounds.

Sheep continued on the upward movement all week. Runs in the East were about normal and consequently held down an advance, but the local supply was below the needs of the killers, and all week they paid higher prices than did Chicago. Native ewes sold here on Friday at \$5, while export stock in Chicago was bringing from \$4.25 to \$4.50. On Monday, Colorado yearling wethers sold at the highest point of the season, bringing \$5.60. Receipts for the week were 10,400 head. Twice that number could have been used to advantage. Sheepmen claim the market is going still higher.

Horses sold off \$5 to \$7.50 during the week, on account of the increased supplies. More fed chunks came in from Kansas points than the trade had looked for, and consequently buyers from the East took advantage of their opportunity and knifed prices. On Monday of this week, the market started out in a bearish manner, and \$5 more was taken off the bulk of the offerings, making the loss in two weeks run from \$10 to \$12.50.

Wheat declined sharply during the week, but recovered part of the loss, and closed Monday at 77% for the May option, against 66% a week ago. Corn closed at 66% against 66% a week ago. The big supply of wheat in the country and the recent snows throughout the drouthy portions of the West are given as the chief bear factors in that cereal. Corn is still pretty nearly holding its own, though both country and town interests are trying to bear the grain. Oats closed steady with a week ago at 48%.

Grain Markets.

Topeka, Kan., Jan. 20. Last week showed another loss in values of grain; especially wheat. The bearish Government report had its influence throughout the week and foreign markets being weak the manipulators had no trouble in forcing down the price of wheat. But this does not change the real situation; wheat throughout the winter-wheat region is being firmly held, at least until such time as another crop can be assured. Farmers everywhere are feeding wheat, even in the far Northwest wheat feeding is reported. Of course, the Government figures credit us with the largest crop of wheat on record; but when the increased exports are considered, it seems to us wheat at present prices is cheap enough. Exports since July 1 for twenty-nine weeks amount to 158,943,000 bushels, nearly fifty-five million bushels more than for the same time a year ago.

Exports for last week were 4,690,000 bushels, that is, figuring wheat and flour together—flour reduced to wheat. But our corn exports on account of crop failure are down to the minimum, only 22,000,000 bushels since July last, or less than 20 per cent of usual exports, this shows a very light corn business.

The Argentine government crop report issued last Saturday estimates the Argentine wheat crop at 73,600,000 bushels, a slightly larger total than last year. From these figures an exportable surplus of about thirty million bushels of wheat may be expected.

Stocks of wheat everywhere in the winter-wheat belt are decreasing. St. Louis lost over 300,000 bushels of her available supply last week. But the spring-wheat territory is still shipping wheat with a vengeance. Minneapolis had over 500 cars to-day, against only 58 cars in Chicago, and 29 cars in Kansas City. On the whole the outlook for higher prices is not very flattering just now.

Under these conditions it is not surprising that prices have gone down considerably since our last report, and closed as follows, to-day:

Chicago.—No. 2 red wheat, 82% @ 85% c; No. 2 Kansas hard wheat, 76 @ 78% c; No. 2 corn, 64 @ 66 c; No. 2 oats, 45 @ 46 c.

Kansas City.—No. 2 red wheat, 87% @ 88% c; No. 2 hard wheat, 76 @ 77% c; No. 2 corn, 65 @ 66% c; No. 2 oats, 47 @ 48% c.

F. W. FRASIUS.

Do You Make Kansas City? ...MIDLAND... HOTEL. KANSAS CITY, MISSOURI. Stockmen's Headquarters. Street Cars direct from Depot or Stock Yards

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!

SPECIAL.—Until further notice, orders from our subscribers will be received at 1 cent a word or 7 cents a line, cash with order. Stamps taken.

CATTLE.

HOLSTEIN BULL CALF FOR SALE—A good one; or will trade on a registered heifer, bred. H. B. Cowles, Topeka, Kans.

I HAVE 15 head of high-grade Aberdeen-Angus heifers for sale. Prices reasonable. Address J. R. Jones, Bendena, Doniphan Co., Kans.

FOR SALE—Hereford bull, registry No. 77681, sure breeder. For further information, address Chas. Almsworth, Garnett, Kans.

FOR SALE—Jersey bull, UJI Stoke Pops 57621. Dropped December 29, 1894, dam's test 13 pounds, his taken first premium at two different fairs. Marie's Perfection 152-52, dropped March 14, 1900, due to calf March 3, 1902 to above bull. Also heifer calf, dropped September 8, 1901. They have fine, large, well placed teats. For pedigrees and price, address Edward Hunkicker, Lock Box 205, Colony, Kans.

FOR SALE—Two registered yearling Red Polled bulls; good individuals, best breeding. Address Chas. Morrison, Phillipsburg, Kans.

D. P. NORTON—Dunlap, Kans., will sell long and short yearling Shorthorn bulls at prices of calves.

FOR SALE—Three registered Hereford bulls; also a few high-grades. Inspection of four-dation stock invited. A. Johnson, Clearwater, Sedgwick Co., Kans.

FOR SALE—One registered English Red Polled bull, 4 years old. John Rosenberger, Belvidere, Kans.

FOR SALE—Registered Shorthorns; four cows, two heifers, three heifer calves, three bull calves calved January and February, 1901, herd bull calved January, 1900. Catherine Anderson, Admx., 153 North 9th St., Salina, Kans.

FOR SALE—One dark red, registered Shorthorn bull; a sure breeder. Brookover Bros., Eureka, Kans.

FOR SALE—Five high-grade Shorthorn bulls, 10 to 12 months old, selected, good form, thrifty, dark red. Address Martin Ruffner, Hoyt, Kans.

FOR SALE OR EXCHANGE—For another as good, one red Shorthorn bull, registered, with good pedigree; can't use him any longer. For particulars, address J. P. Klamm, Fairmount, Kans.

HEREFORDS FOR SALE—Five heifers and 8 young bulls, sired by Imp. True Britton. Address J. M. Foster & Co., Topeka, Kans.

FOR SALE—3 pure Cruickshank-Shorthorn bulls. H. W. McAfee, Topeka, Kans.

SHORTHORN CATTLE SALE—I will offer at public sale, 1 1/2 miles south of Marysville, at 2 o'clock p. m., on Tuesday, October 15, 17 registered Shorthorns, 19 high grade Shorthorns, and 5 thoroughbred Jerseys. Lewis Scott, Marysville, Kans.

SWINE.

PEDIGREED Duroc-bred sows. \$12 for a few weeks only. C. Dorr, Peterton, Kans.

FOR SALE—Herd boar, sired by Missouri's Black Chief 18999. He is a good one. Also the choice of 14 March boars, by Kanwaha Chief 23880. Address W. B. Van Horn, Lone Star, Douglas Co., Kans.

POLAND-CHINA PIGS CHEAP—Four to 8 months old. Address G. W. Hauman, Ridge, Kans.

FOR SALE—Large English Berkshire boars and gilts. E. C. Stratton, Pavilion, Kans.

PURE BERKSHIRE BOARS—A few spring boars of Baron Duke 27th breeding, and my herd boar Ridgeview Silverlight, for sale. Can deliver at once. E. J. Hutley, St. Marys, Kans.

FOR SALE—Ten good boars, one large herd boar, also one sired by Chief Eclipse 22499; will make a show hog. Bred by E. E. Axline. J. R. Killough & Sons, R. R. No. 6, Ottawa, Kans.

NOW READY—Six young Duroc-Jersey males—weight 125 pounds up. Young gilts bred, September and October pigs, either sex. Prices reasonable. M. H. Alberty, Cherokee, Kans.

FOR SALE—Berkshire boar, 2 years old, registered. Write W. H. S. Phillips, Carbondale, Kans.

FOR SALE—Berkshire boars and gilts. O. P. Updegraff, Topeka, Kans.

PIGS RIGHT—Prices right. Duroc-Jerseys and Poland-Chinas, all sizes. Write D. Trot, Abilene, Kans.

PEDIGREED POLAND-CHINAS—\$5 each; registered Shorthorns cheap. Send for my Pig Booklet, FREE. M. C. Homenway, Hope, Kans.

FARMS AND RANCHES.

FREE 300 printed farm and ranch descriptions in 5 counties, 55 m. from K. C. Prices, maps, statistical book. Write G. Winders, Ottawa, Kans.

FOR TRADE—Paying, clear city property in small houses, for farms near Topeka; will assume small mortgage. 2016 Clay Street, Topeka, Kans.

240-ACRE WHEAT FARM—For sale, cheap, on easy terms. H. B. Hudson, Leland, Kans.

FOR SALE—Fine alfalfa or fruit land, 140 acres level bottom on Arkansas river, 1 1/2 miles from railroad town, especially adapted for hay, alfalfa, or fruit, water only 5 to 7 feet, 100 acres in grass, part fenced; 40 for spring crop, meadow mowed twice last year. \$25 an acre; reasonable terms. Address C. W. Newby, Lyons, Kans.

FOR SALE—Stock farm—in Jewell Co., Kans., 640 acres, all under 3- and 4-wire fence, 125 acres in cultivation, 50 acres in alfalfa, 12 acres in hog lots, remainder in grass, 2 houses, plenty of water, wind pump, stables, sheds for 200 head of cattle, 9 miles from Mankato on C. R. I. P., and Mo. Pac. Railroads. Price \$10 per acre. This is a bargain for some stock man. O. L. Rice, Mankato, Kans.

FARM TO RENT—For cash, in Wabunsee Co., Kans. 240 acres at \$2 per acre. House, orchard, etc. Address W. B., Kansas Farmer office, Topeka, Kans.

120 ACRES—Improved, Osage County. \$1,500. Rents \$100. Buckeye Agency, Agricola, Kans.

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160-ACRE IMPROVED FARM—in Marion County, Kans., for sale or trade; a bargain. Full particulars by return mail. Address John Fox Jr., New Cambria, Kans.

FARMS AND RANCHES.

FOR SALE, Vanderver stock farm, 400 acres, 10 miles from T. p. ka, adjoins T. v. station. Is well improved. Farm consists of bottom slope and upland. Vanderver creek runs through farm and has numerous springs. Orchard and small fruits. Two large barns, 3-room house, and other outbuildings. For further information, address owner, J. P. Hell, T. v. ka, Kans.

80-ACRE FRUIT FARM—For sale. Address S. H. Mitchell, Longton, Kans.

FOR SALE—150 acres Kaw Valley bottom near Lawrence. Address D. S. Lawrence, Kans.

FOR SALE—Several 10-, 15-, and 20-acre tracts of land with good houses on West 6th and 10th Sts., Topeka, close in. Bargains on good terms. Better see these before they are sold. F. J. Brown, 17 Columbian Bldg., Topeka, Kans.

HORSES AND MULES.

FOR SALE—A dark brown Percheron stallion, 11 years old, 17 1/2 hands high, weight 1,700 pounds, in fair flesh, a good breeder; price moderate. Write to S. Lehman, Newton, Kans.

FOR SALE OR TRADE—Two large, black jacks, mealy points, 3 and 4 years old. E. E. Potter, Sterling, Kans.

FOR SALE—One 6-year-old jack—for sale or trade. Write at once. James A. Carpenter, Carbondale, Kans.

FOR SALE—One draft stallion and one standard-bred, and three colts. A show horse; will sell or trade for land. D. Ross, Jefferson, Montgomery Co., Kans.

TO TRADE—For good jack—black Percheron stallion, coming 3 years old; also Oxford ram for sale, or trade for another. J. C. Strong, Moran, Kans.

REGISTERED CLYDESDALE STALLION for sale; will be 2 years old the coming spring; also an extra large, well-developed colt. Address J. B. Osburn, Erie, Kans.

FOR SALE—At a bargain—young draft stallions. A. I. Hakes, Eskridge, Kans.

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

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WANTED—Every farmer and teamster in the United States to receive one of our handsome catalogues of buggies and harness. You should have one to save money. Send 1 dime to pay for mailing, etc. We refund your dime on first order sent us from catalogue. M. Kohler & Son, Brownstown, Ind.

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ONE HUNDRED THOUSAND—First-class apple, peach, cherry, plum, and pear trees, and plants at Wholesale Prices. List free. S. J. Baldwin, Nurseryman, Seneca, Kans.

BOOKKEEPING OUTFIT FREE—We will give a three month's course in bookkeeping by mail for \$5 and furnish complete outfit free. Ten years' experience in teaching; excellent satisfaction. Our outfits are prepared by an up-to-date commercial school. We really instruct. Course worth ten times the cost. Try us. For particulars, address Prof. W. O. T. Adams, Ph. D., principal, Hunter, North Dakota.

WANTED—Man and wife—w/ hunt children, on stock ranch. Man to do general farm work, and woman to do housework and cooking for family. Geo. E. Mathews, Coolidge, Kans.

FOR SALE—81 orfan millet seed, re-cleaned; 190 pounds of seed and sack \$2.50. H. Baughman, Wymore, Neb.

VISITORS TO TOPEKA—Rooms for rent for transient, northwest corner 19th and Polk Streets, Topeka, Kans. Meals served. Mrs. E. Porter.

SEED CORN—Irrigation grown, not stunted or half developed. Also some fine spring rye and cane seed. Clarence L. Gerrard, Columbus, Neb.

ALFALFA SEED—None better than I have. Buy direct from a grower. Quantities to suit. Write for samples and prices. V. S. Jones, Syracuse, Kans.

WANTED—Good pasture with plenty of water, for 40 or 50 head of cattle, for season of 1902. State price. Address Frank Label, Wymore, Neb.

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WANTED—If you wish to buy or sell corn, oats, hay, cane seed, kaffir-corn, corn chop, or anything in the feed line, correspond with us. Western Grain & Storage Co., Wichita, Kans.

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WANTED—Alfalfa, millet, cane seed, kaffir-corn, milo maize, and pop corn. If any to offer please correspond with us. Kansas Seed House, F. Barteldes & Co., Lawrence, Kans.

WOOL WANTED—We have just completed our New Woolen Mill in North Topeka and want at once 200,000 pounds of wool for which we will pay the market price. Write us if you have wool for sale. Western Woolen Mill Co., North Topeka, Kans.

BALMOLINE—Nature's Wonderful Healing Salve. Man or Beast. Drugists, 25 and 50 cents. Trial size 4 cents from B. H. De Hay, Ph. D., Abilene, Kans.

FOR SALE—Feed mills and scales. We have 2 No. 1 Blue Valley mills, one 600-pound platform scale, one family scale, and 15 Clover Leaf house scales, which we wish to close out cheap. Call on P. W. Griggs & Co., 206 West Sixth Street, Topeka, Kans.

When writing advertisers mention Kansas Farmer.

The Stray List.

Week Ending January 9.

Coffey County—W. M. Palen, Clerk. STEER—Taken up by S. F. Rolston, in Pottawatomie tp., (P. O. Mineral Point), November 25, 1901, one red steer, white face, weight 850 pounds; valued at \$30.

Coffey County—W. M. Palen, Clerk. HEIFER—Taken up by Godfrey Engel, in Avon tp., (P. O. Alceville), about December 3, 1901, one red heifer, 2 years old, no horns, white spot in forehead, two white spots on right shoulder, white on belly, switch of tail white, some white on right hind foot, top of right ear bit off; valued at \$20.

Greenwood County. STEER—Taken up by William Rilson, in Eureka tp., November 1, 1901, one red steer, some white in face, 3 years old, dehorned; valued at \$30.

Pottawatomie County—A. P. Scritchfield, Clerk. CALF—Taken up by Robert J. Fienl'ng, in Green tp., December 24, 1901, one red bull calf, 1 year old; valued at \$15.

Lincoln County—J. S. Stover, Clerk. STEER—Taken up by Louis Block, in Madison tp., (P. O. Beverly), December 7, 1901, one red and yellow steer, with white feet, 4 feet 6 inches high.

Shawnee County—Jno. M. Wright, Clerk. CATTLE—Taken up by W. J. Gillespie, in Auburn tp., on his premises, December 23, 1901, one large 2-year-old heifer, some white on belly, white spot on ear, some white on both flanks, tip of left ear gone, branded G on right shoulder; valued at \$20.

Week Ending January 16.

Lyon County—H. E. Peach, Clerk. CALF—Taken up by Charles V. Gall, in Center tp., one blackish brown bull calf, white face, brown around the eyes, tip of tail white, about 9 months old.

Clay County—J. H. Kerby, Clerk. STEER—Taken up by John Schweizer, in Gill tp., one yearling steer, dehorned; valued at \$14.

Greenwood County. STEER—Taken up by P. A. Rmestrom, in Pleasant Grove tp., January 7, 1902, one brindle steer, 2 years old, silt in under side of left ear, branded J on left hip.

Wabunsee County—B. Buckli, Clerk. GELDING—Taken up by A. Norlin, in Alma tp., (P. O. Alma), November 23, 1901, one black gelding, white in forehead, one hind foot white, coming 3 years old; valued at \$15.

Pratt County—John Mawdsley, Clerk. STEER—Taken up by C. C. Bales, in McClellan tp., January 1, 1902, one red steer, 1 year old; valued at \$10.

Week Ending January 23.

Barber County—J. E. Holems, Clerk. MARE—Taken up by Samuel Detwiler, in Sharon tp. (P. O. Sharon), Dec. 19, 1901, one dark bay mare, 15 hands high, white spot in forehead; valued at \$15.

MARE—Taken up by same, one light bay mare, 15 hands high, white spot in forehead, brand on right thigh, (L) cross on left side of neck; valued at \$15.

MARE—Taken up by C. W. Kritzmore, in Medicine Lodge tp. (P. O. Medicine Lodge), Jan. 1, 1902, one bay mare, star in forehead, branded T on left shoulder.

MARE—Taken up by same, one roan mare, dim blaze in face, branded 78 on left shoulder, 8 on thigh.

Marion County—Ira S. Sterling, Clerk. HEIFER—Taken up by Jacob Propp, Sr., in Clear Creek tp. (P. O. Marion), Oct. 15, 1901, one black and white heifer, about 2 years old, branded O on left hip.

Jackson County—J. W. Atwater, Clerk. STEER—Taken up by W. A. Douglass, in Garfield tp. (P. O. Denison), Dec. 1, 1901, one red yearling steer, branded W on right hip.

COLT—Taken up by A. J. Thompson, in Garfield tp. (P. O. Denison), Dec. 24, 1901, one buckskin or dun yearling horse colt.

Osage County—Chas. F. Hobbs, Clerk. COW—Taken up by John C. Fedguy, in Olivet tp. (P. O. Osage City), Dec. 19, 1901, one red yearling cow; valued at \$15. Also one red yearling cow, white line on back; valued at \$15.

Greenwood County—C. D. Pritchard, Clerk. HEIFER—Taken up by V. L. Jamison, in Pleasant Grove tp. (P. O. Toronto), Jan. 16, 1902, one red heifer, 3 years old, white face, short switch.

PATENTS.

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WANTED—Indian Game rooster, some Belgian hares, and a Shepherd pup. State prices. H. Baughman, Wymore, Neb.

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FOR SALE—White Holland tms., \$2 each; also Barred Plymouth Rocks. Mrs. Porter Moore, R. R. No. 4, Parsons, Kans.

WHITE WYANDOTTE CHICKENS—\$1 each; White Holland turkeys \$1.50 each. Satisfaction guaranteed or money refunded. Darby Fruit Farm, Amoret, Bates Co., Mo.

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WE WILL GIVE the exclusive agency of our specialty to one canvassing agent in every town; up-to-date article and big profits. Daisy Mfg. Co., Seymour, Iowa.

AGENTS! A New Money Maker; a household necessity, costs you 5 cents—sells for 25 cents. Agents mak'ng \$5 to \$10 a day. Millions will be sold. You show what it will do and it sells itself. Beats everything else. Sample free. SUNDRY NOVELTY CO., St. Louis, Mo

JANUARY 23, 1902.

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Head for this year's trade; all eligible to record.

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Write for prices on what you want in February, March, April, Glits open or bred to order. A few extra June and July pigs, \$10 each.

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For sale 25 head of choice glits, bred for March and April farrow. Prices right.

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15 April and May boars, 1 yearling boar by Chief Perfection and. Good fall and spring glits bred to our GREAT HERD BOARS.

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Young stock for sale at all times. Prices reasonable.

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Has some extra fine glits bred; also some fall boars. Will sell Sen. I know, he by Perfect I know. Address

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DEVOTED TO BREEDING HIGH-CLASS POLAND-CHINAS.

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We now have for sale some extra good young boars, and a lot of glits 8 to 10 months old. All good. Glits will be bred or sold open as desired. This is a choice lot of young stuff that will be priced cheap, quality considered.

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...THOROUGHbred... Poland-China Hogs.

Special drive on 10 spring boars, weighing from 180 to 225 pounds, at prices to move them; they are large, lusty fellows, 3 of them good enough to head any pedigree herd; also 20 choice glits that I will breed to Star Perfection, by L's Perfection, Black Perfection—grand Perfection, by L's Perfection, Black Perfection, and son of Missouri's Black Chief and L's Perfection, and Corwin's Improver. 100 head in herd. Write for anything you want in Poland-China hogs. John Bollin, KICKAPOO CITY, KAS. (Express Office, Leavenworth.)

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FOR SALE: Boars old enough for service. Ten strictly fancy glits bred to a son of Ideal Black Chief by Missouri's Black Chief. One extra fall yearling sow, bred. All stock sold on a positive guarantee to be as represented. Pekin ducks for sale. Address—

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25 Boars and 25 Glits of late winter farrow, sired by Searchlight 25518, and Look No Further. Dams of the Black U. S., Wilkes, Corwin, and Teumseh strains. Prices low to early buyers.

Remember the three days' Combination Sale at Wichita, Kans: February 11, 1902, Poland-Chinas by Snyder Bros. and H. E. Lunt; February 12, 1902, Short-horns by J. F. Stodder, and February 13, 1902, Draft horses by J. C. Robison and Snyder Bros.

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The prize-winning herd of the Great West. Seven prizes at the World's Fair. The home of the greatest breeding and prize-winning boars in the West, such as Banner Boy 2841, Black Joe 2808, World Beater, and King Hadley. FOR SALE—An extra choice lot of richly-bred, well-marked pigs by these noted sires and out of thirty-five extra-large, richly-bred sows. Inspection or correspondence invited.

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For Sale: 12 head of the best early boars that I ever produced; large, heavy-boned, and smooth. Ten head of May, June, and July boars that are fancy; also one last fall's boar that is a show pig.

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Have for sale—spring pigs of quality, at reasonable figures. Write us before buying.

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ENGLISH RED POLLED CATTLE—Pure-bred

Young Stock For Sale. Your orders solicited. Address L. K. HASELTINE, DOXONESTON, GANNON Co., Mo. Mention this paper when writing.

MEADOW BROOK SHORTHORNS—Ten fine young

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POLLED DURHAMS. Single and double stand-

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The leading herd west of the Mississippi river. 25 head of both sexes for sale. Foundation stock sold to Kansas and Washington Agricultural Colleges the past year.

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Ten extra good bulls, 7 to 12 months old; 8 are sired by Klondike 72001, and 2 by Young Autocrat 101417. Will sell cheap.

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Alfalfa Meadow Stock Farm,

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Lavender's Best No. 151699 in service. Herd contains a strong infusion of St. Valentine blood, through St. Valentine 12th, one of his best sons. Stock always for sale. Inspection and correspondence invited.

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I have registered Galloway bulls for sale. O. E. MATSON, Furley, Sedgwick Co. Kans

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Herd headed by Dandy Dolan 102828 full brother to famous Dandy Rex.

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Bulls in service, Sempstress Valentine 187069, and Mayor 129229. A fine string of young bulls and a few heifers for sale.

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Herd Bulls, Sir Knight 124403, and The Baron 121327. Herd Boars, Black U. S. 2d 25582 S, and Missouri's Best On Earth 19836 S.

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Also German Coach, Saddle, and trotting-bred horses. World's Fair prize Oldenburg Coach stallion Babbo, and the saddle stallion Rosewood, a 16-hand 1,100-pound son of Montrose in service. Visitors always welcome.

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Herd Headed by the Cruickshank Bull Imp. Nonpareil Victor 132573

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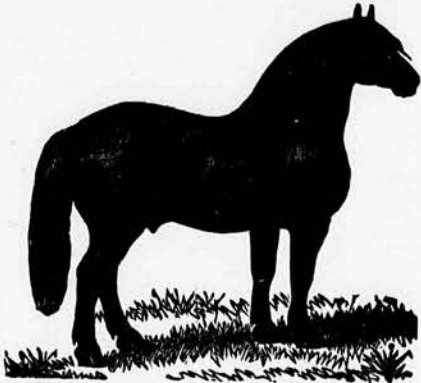


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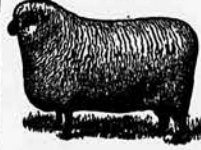
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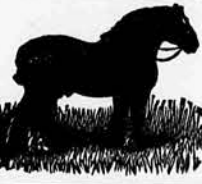
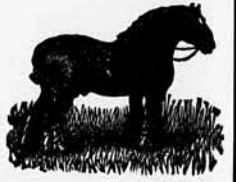
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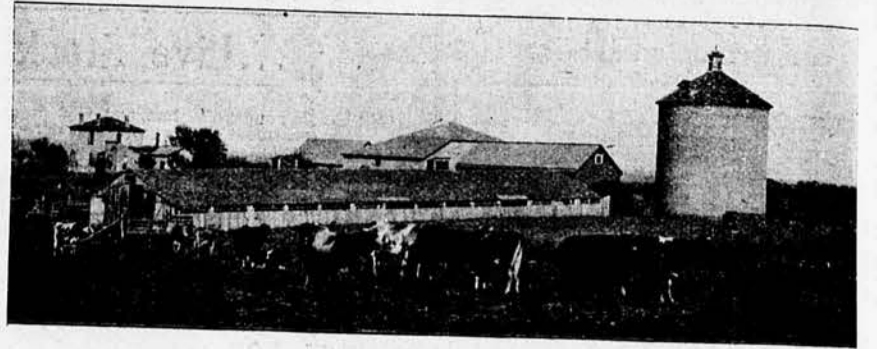
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Sale commences promptly at 10 o'clock a. m., when 60-HEAD OF BERKSHIRES OF THE KIND THAT WIN-60 will be sold to the highest bidder. This grand lot of tops is contributed by Harris & Mahan, Lamie, Mo.; June K. King, Marshall, Mo.; J. T. Pollard, Fulton, Mo.

The Best of Quality--The Best of Breeding will be a marked characteristic of the very superior lot of Berkshires selected from the three noted herds for the annual brood sow sale to be held in the new sale pavilion of the Kansas City Stock Yards, Friday, Feb. 21, 1902.

This sale will consist largely of a very superior lot of sows bred to the best boars at the head of the noted herds named above. Every animal will be sold on its merits. The buyer will find in this sale Berkshires of the most popular lines of breeding with quality to suit the most critical, either for the show ring or to enable the purchaser to breed prize winners. The high character of the consignors to the above sale gives unquestioned assurance of the best quality of stock and entire satisfaction to purchasers.

Auctioneers: Col. J. W. SPARKS, and Col. R. L. HARRIMAN. Send mail or wire bids to the Clerk, Auctioneer, or the Consignors. For Catalogue, address Clerk of the Sale--CHARLES F. MILLS, Secretary American Berkshire Association, Springfield, Illinois.

MAINS' HERD OF POLAND-CHINAS.

Pigs by Anderson's Perfect, Harris' Black U. S. (the champion sweepstakes boar at the Iowa State Fair of 1900), Kemp's Perfection (the highest priced pig by Chief Perfection 2d sold last year). Stock of all ages for sale, including three yearling boars.

JAMES MAINS, Oskaloosa, Kansas.

WHEN WRITING ADVERTISERS MENTION KANSAS FARMER.