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Established in 1863.

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A German investigator, Mr. G. Meier, has made a study of milk fever in cows. His explanation of the cures effected by pumping air or water into the udder is that this treatment forces the excessive quantity of blood out of the udder, and into the general circulation.

Great floods have been doing serious damage in Colorado and New Mexico. Late reports tell of washouts in West-

ern Kansas and in Oklahoma, resulting from the unusual precipitation in Colorado. This ought to be a good time to fill up the reservoirs designed to hold water for use in irrigation.

Mr. Chas. F. Martin, of Denver, Col., secretary of the National Live Stock Association, died at Greeley, Col., while on his way from Denver to Cheyenne on September 22. Mr. Martin was a very active man who was universally liked and who has left behind him a great monument of a useful life in the National Live Stock Association which he was so instrumental in building up and with which he was so long identified.

Major Henry E. Alvord, of the Dairy Division, United States Department of Agriculture, died at St. Louis, Mo., on October 1, after a very brief illness resulting from a stroke of paralysis. Major Alvord has long been identified with the dairy interests of the country and has been the means of aiding in its development until it was accorded its proper place in American agriculture. Many Kansas people will remember with pleasure the illustrated lecture delivered by Major Alvord before the Kansas Dairy Association at Manhattan some years ago upon the subject of "Dairying in Foreign Lands." He was a man whom it was good to know and his loss is a severe one.

We begin, in this number, the publication of a series of papers on "Farm Architecture," by L. M. Wood, of Topeka. Mr. Wood is an architect of large and varied experience. His firm had charge of the State work during much of the time of the construction of the capitol at Topeka. School buildings, business houses and residences in many parts of Kansas show Mr. Wood's taste and good judgment. In a series of articles, such as those prepared for the KANSAS FARMER, it is not possible to give the details of just the house that each reader, or indeed any reader, will build. But the consideration of the general principles to be observed will be found interesting and helpful. It is hoped that readers will accept Mr. Wood's invitation to write him during the continuance of the series of articles.

KANSAS DAY AT ST. LOUIS.

Friday, September 30, was Kansas Day at the World's Fair. It was the most gratifying and successful State function of the year. Never before in the history of the State has Kansas celebrated on so tremendous a scale outside of the State, as on this occasion. The World's Fair officials were jubilant over the event and felicitated the Kansas Commission on the success of the event. All last week was called Kansas week. It was estimated that 20,000 Kansans were present during the week. But Friday was Kansas Day and everywhere it was evident that Kansas was the feature. The sunflower badge and white satin Kansas ribbon furnished all Kansans was an emblem of honor. The day's interesting events were highly appro-

priate, celebrating the fiftieth anniversary of Kansas' admission to the Union.

A grand parade over a mile in length was the feature of the morning. It formed at the Kansas State building, Adjutant Kelsey being the marshal. In the line was the Washington band of Kansas, forty strong, which led the battalion of United States marines. Following the latter in three big automobiles came the band of the Philippine constabulary, the 3d battalion 52d Iowa National guards, and a carriage bearing Governor W. J. Bailey, President Francis and President Carpenter of the Kansas Commission. The Governor's staff, prominent Kansans, and lady guests, all in carriages, came next, with the lady band of Wellsville, Kans., eighteen strong, bringing up the rear of the parade and heading a large delegation of unofficial Kansas citizens.

In the East bandstand of the Plaza St. Louis, the line was reviewed by President Francis and Governor Bailey.

The exercises of the day opened shortly before 12 o'clock with an invocation by Right Rev. Bishop Mills-paugh, of Topeka.

President Francis of the World's Fair was next introduced by Col. J. C. Carpenter, president of the Kansas Commission, and congratulated the Governor and the commission heartily upon the participation of Kansas in the Exposition, saying that her exhibits were not surpassed by any exhibit of the kind at the World's Fair.

No State included in the Louisiana Purchase has done more than Kansas in patronizing the World's Fair, and in behalf of the management President Francis most cordially expressed thanks for the enterprize and liberal patronage of Kansas.

Governor Bailey, of Kansas, in his response made the speech of his life, and in the estimation of Kansans present, it was a masterpiece. In part, he said:

"The event of this great Exposition commemorates the acquisition by our Government of the vast territory known as the Louisiana Purchase, without the shedding of a drop of blood, makes it one of the epochs in the world's history. A century from then till now, a century great in enterprises undertaken, a century rich in things accomplished. But of all the splendid developments of one hundred years there is none more marked than the transformation of the Louisiana Purchase into the splendid civilization that is hers to-day.

"The geographies of our fathers marked all the vast area west of the Missouri as the great American desert. And it was believed that it was not fit for the habitation of civilized man. From that desert there has been formed a number of sovereign States, occupied by as prosperous, as happy and as loyal a people as claim protection beneath the Stars and Stripes.

"And not one of the States carved from this territory exceeds our own beloved Kansas in achievements already attained or in the splendid possibilities for the future. It is a coincidence

that Kansas celebrated this year her semi-centennial. Fifty years ago the territorial lines of Kansas were established and territorial government undertaken. Admitted to the Union as a State in 1861, she has had forty-three years of Statehood. Forty-three years in State building is but a prelude to the great consummation, yet a mighty commonwealth is there, and standing to-day upon the crest that tells of our growth and development, I wish to pay this tribute to the memory of the men and women who gave Kansas her character, for States have character as well as men."

The other addresses by Hon. Henry J. Allen, of Ottawa, and Hon. David Overmeyer, of Topeka, were particularly appropriate and patriotic and all Kansans present were proud and pleased with the day's events.

In the evening a grand reception was tendered to Governor Bailey and wife. It was one of the most beautiful functions ever given on the terrace of the States, and the scene presented was one that will live long in the memory of those fortunate enough to be present.

Long before any one came to the building it was evident that Kansas was celebrating, and in a style that the State of waving grain and sunflowers gay could be proud of. In the grass plots in front of the house were myriads of colored lights gleaming like fireflies of opalescent hue or like many-colored crocuses, and long strings of colored lights swung from the top of the building. The awning-covered porte cochere and the tented verandas, the lights and the music, made Kansas the center of attraction on the terrace.

The decorations of the building were most artistic and elaborate. The skylight was veiled in Southern smilax, and from it depended long strands of smilax, each tipped with a single American beauty rose; the electric light globes in ivory shades shed a soft light through the curtain of green thus formed. The balcony was outlined in palms and lemon trees, while large stands held tall vases filled with American beauties. The arched windows and doorways were covered with lightly arranged masses of smilax, American beauties adding to the picturesque effect. A band stationed in the upper corner of the balcony played popular airs.

The receiving line was on the south side of the reception room, the arched window which formed the background being artfully concealed by masses of palms and a tracery of Southern smilax, with masses of American beauties among the green.

In the line were: Mrs. Noble Prentiss, Governor Francis, Governor and Mrs. Bailey, Justice and Mrs. Brewer, Hon. John C. Carpenter, Mr. and Mrs. J. C. Morrow, Mr. and Mrs. R. T. Simons, Mr. and Mrs. C. H. Luling, Mr. and Mrs. W. P. Waggener, and Mrs. C. W. Dassler.

Colonel Woollard, as master of ceremonies, introduced the guests, and the Governor's aids and members of the staff acted as ushers and general assistants during the evening.

The porches were all inclosed in
(Continued on page 992.)

Agriculture

COMING EVENTS.

Will secretaries and those having the management of coming events, oblige the Kansas Farmer by sending dates?

October 17-22, 1904—American Royal Live-Stock Show and Sales, Kansas City, Mo.

November 26-December 3, 1904—International Live-Stock Exposition, Chicago, Ill.

Farmers' Institutes.

October 7-8, Farmers' Institute, Wakefield, Clay County. H. W. Avery. Professors Shoemith, Kinzer, and Dickens.

October 7-8, Farmers' Institute, Girard, Crawford County. Albert Cuthbertson. Professors TenEyck and Willard.

October 20, First District Federation of Women's Clubs, Leavenworth, Kans. Mrs. W. H. Smith, Seneca, Kans. Prof. Henrietta W. Calvin.

October 21, Farmers' Institute, Holton, Jackson County, Frank C. Pomeroy. Professors Dickens and Popenoe.

October 20-21, Farmers' Institute, Waverly, Coffey County. F. A. Dalrymple. Professors TenEyck and Roberts.

November 15, Farmers' Institute, Tampa, Marion County. D. D. Socolofsky. Profs. J. D. Walters and A. M. TenEyck.

November 18 and 19, Farmers' Institute, Altamont, Labette County, C. E. Hildreth, secretary.

November 21, Farmers' Institute, Jewell, Jewell County. C. A. Shinn. Professors TenEyck and Willard.

January 11-14, 1905, Farmers' Institute, Hiawatha, Brown County. E. A. Chase.

January 12, Women's Day, Miss Flora Rose; January 13, Assistant V. M. Shoemith.

Farm Architecture.

L. M. WOOD, ARCHITECT, TOPEKA, KANS.

The house and its dependencies being the headquarters of the family, the capital, as it were, of the farm, it is by far the most important object within the grounds, and as such the selection of its site must take precedence of all other matters, whether it be a castle or a cottage, and whatever be its form and construction.

While this ought to be the dominant principle in the formation of a country residence, and while the house should made the central point to which all operations connected with the farm should be referred, there are certain requirements belonging to it, as a comfortable dwelling, which must be allowed to modify the final choice of a site as the best upon the whole.

The general temperature and dryness of the air have a material influence upon the health and comfort of a family, and therefore must receive due consideration. The general climate of the locality then may be said to be the ruling one for the house, but there are often localities which have modifications peculiar to themselves. These variations, though inconsiderable on flat surfaces, are sufficiently marked on undulating and hilly ones. Southern slopes are decidedly superior in point of warmth to northern slopes or places lying toward the east or west. Good sites are found in the latter direction, but they are occasionally inclement. High and exposed situations are cold, but have a bracing atmosphere. Windy positions are to be avoided, as also those which are exposed to draughts of cold air, a peculiarity less apparent to slight inspection than the other, but not less disagreeable and injurious in effect. Aware of this, the inhabitants of hilly countries generally place the ends of their houses towards the length of the valleys as the winds for the most part sweep up and down them in whatever direction they run, and by this arrangement the houses are assailed by fewer cross draughts than when they are set down across the valley.

The nature of the soil and subsoil of a place have a much greater influence on its climate than at first sight might be supposed. There are often remarkable differences of climate which can be assigned to no other cause. Those having light, dry soils and subsoils seem cheerful and agreeable during winter, while others in the same district with wet soils and retentive subsoils are damp, muddy and uncomfortable. A little observation only is required to note these peculiarities in the various localities. Invalids are very sensible to their influences. Those places to which light frosts are most easily attracted will always be found, if not with wet surface soils,

at least with cold, retentive, humid subsoils. These evils are best counteracted by thorough drainage; but this remedy is not always effectual, or to be so would need to be extended to a considerable range of country. It is important that the site should at least possess that moderate elevation which will facilitate the drainage not only of the immediate locality of the buildings, but the whole of their environs. The lower apartments of the house should be made perfectly free from the effects of surface water or neighboring springs. Easy and well-arranged sewerage from the house and dependencies is a matter worthy of careful attention. Indeed, the thorough drainage not only of the house and grounds, but of the whole farm, should be deemed indispensable. Suppose a house located upon a bank overlooking a flat, marshy country of many hundred acres in extent; nothing could be more dismal than the prospect in the first instance; and if it lies to the south of the house, nothing can be more unhealthy on account of the malaria which arises from it, and is borne upon the prevailing southerly winds of this part of the country.

Water in sufficient quantity and of good quality is another requisite which must receive due attention in determining the site of the house.

Sometimes an adequate supply of this necessity is by no means of easy attainment. Wells, tanks, reservoirs with pipes, and hydraulic rams have all been resorted to, according as the natural surface of the estate has allowed or compelled the employment of one or the other of these.

A fountain or reservoir above the level of the buildings certainly deserves the preference wherever it can be formed, though its original expense may be considerable. This plan affords the greatest facilities for the introduction of water into the various apartments of the house and dependencies, and for yielding a sufficient supply in case of fire, a matter of some importance in regard to the safety of the property.

In some gravelly subsoils, even when the surface is comparatively dry, a considerable quantity of water may sometimes be found at no great depth, and may be obtained by means of many of the various kinds of pumps in use; but the supply can hardly ever be so abundant as that yielded by the reservoir, and the labor required to raise it is very great.

A hydraulic ram is very useful where only a moderate quantity of water is needed. A small stream with a few feet of fall will keep it in operation and will enable it to raise the water to a tank, say on the top of the house or barn, whence it may be distributed as required.

It has already been remarked that situations exposed to high winds and cold draughts are ineligible for the site of a house. The proprietor, however, has some difficulty in making choice between magnificent distant views, which add so much to the cheerfulness of a residence, and that warmth resulting from sufficient protection and tending towards promoting its comfort. The house should, however, be placed on ground moderately elevated, of easy access and commanding some of the best views of the surrounding scenery. Upon undulating or hilly surfaces the site selected for the house should always be of sufficient extent, not only to contain the whole of its buildings, but also to afford ample space for the roads necessary for the handling of the teams.

THE HOUSE.

In the style and arrangement of the house, the fortune and also the taste of the proprietor are entitled to be considered, and to have their weight in its determination. Still, it is universally conceded by those who are versed in such matters, that the style of the house should have some adaptation to the site and to the character of the scenery by which it is surrounded. To the farmer, perhaps, more than to any other, a comfortably arranged interior is of more impor-

tance than the finest exterior can possibly be; yet a good external appearance should not form secondary consideration, nor is it incompatible with a well-arranged interior. A site should be chosen to fit the house rather than that an inconvenient site should be selected to suit a particular style of house. Good sense, and, consequently, good taste demands that the external appearance should suggest the internal arrangement. The principal rooms should have some external indication. The living apartments, or those most generally used, should be placed on the south and east sides.

No one should attempt to erect any kind of building without a well-digested plan. This is but a small consideration with those who build cheap houses or those simple in form. The proprietor generally has some idea of the size and form, and of the general relation of the rooms to each other, but the details of the arrangement and construction are almost entirely left to a perhaps incompetent builder. The consequences of this is inevitably a series of blunders and consequent reparations that cost no inconsiderable sum. It is an absolute waste of money to spend it in corrections and alterations that a prudent foresight would have rendered unnecessary.

A prudent man, in making an expenditure of this sort, always tries to get a clear conception of what he is going to have in return for his money.

All that comes under the head of convenience and comfort, together with the methods of construction, should be definitely fixed and clearly understood. The development of such an idea requires thought and care. Each part should be considered in connection with the whole, so that possible wants may be anticipated, and difficulties obviated. A building erected after such consideration is evidently superior to that begun without forethought and prosecuted at random. A farmer wants a house comfortable, roomy, convenient and above all substantial; a fit thing to leave to his posterity as a house, and one that will last for more than one generation. What hallowed memories cling around the ancestral roof; the firm, ivy-grown walls of our grandfathers.

No farmer should tolerate small, contracted rooms, or narrow halls with steep ladder-like stairs that squeak and tremble at every tread. The principles which govern the development of a suitable plan are clearly to be found in the purpose for which the building is intended, and reasons growing out of these determine not only the general design, but each particular feature. The question then is, not how John Smith built his house, but, what do I want? What will be best adapted to my needs and my mode of life? What do my habits require in a home for myself and family to produce the maximum amount of comfort?

The details of the arrangement of the rooms and small conveniences necessarily differ according to the notions and customs of different people, for Brown's coat hardly ever fits Smith comfortably. The principal requirements in a good farmhouse are these: Shelter from sun and storm in the shape of wellpitched roofs and wide projecting eaves, solid walls of whatever material as protection against heat and cold, proper provision for light and air, suitable rooms to live and sleep in, closets for clothing of all kinds, for food, and the various kitchen utensils, conveniences for cooking, washing and all of the manifold labors of the farmhouse; also a proper and convenient supply of good water. No properly arranged farmhouse can afford to omit an item of these. Strict attention should be given in the arrangement of the apartments to save labor. Let there be a cellar under the entire house at least seven feet deep, and start the wall on a "footing course" projecting six inches from the face of the wall upon each side; this gives the wall a better base and prevents the rats from digging through from the outside, as they al-

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ways dig next to the wall and will not turn until they pass it.

Dig the foundation one foot larger all around than the exact size required, then build both sides of the wall to a line, and point them well with mortar. If the site is damp, level off the wall when one foot above the established grade, and cover closely with a course of common roofing slate bedded in cement, then proceed with the walls as before to the required height; this effectually prevents the dampness from ascending to the apartments.

Now comes the question as to whether the building shall be of brick, stone or wood. A foundation wall of eighteen inches in thickness is heavy enough for a building of either of the former materials two stories in height, and no farmhouse should have more unless it is in the shape of a utilized attic; while if it is of frame, a sixteen-inch wall is heavy enough.

Suppose the building to be of wood as the cheapest material, there are several methods of construction that are commendable. First on the list is logs; these, properly treated, make perhaps the best and most substantial wooden farmhouse extant. Hew the first course of logs so that they lay firmly upon the stone foundation (no loghouse will last over fifteen years if not laid on stone foundation), cut the corners with the dovetail lap, making no allowance for the ends to pass by the surface of the house, as this is unnecessary, run the walls up to the square, or to the top of the story, before any of the doors or windows are cut; now cut the openings, whether exterior or interior, and support the ends of the logs by a rough piece of two-inch plank, firmly spiked to them; now nail on the outside of the logs strips 1 by 2 inches, placed vertically 16 inches apart, so that their outer surfaces are in a perfect plane; now set the window and door-frames, allowing one and an eighth inches to receive the siding upon the outside and three-quarter inches inside to receive plastering. It is understood that the logs may be laid true enough to avoid stripping the inside, so the lath may be laid upon the logs. A warmer and more substantial house may be secured by chinking between the logs with chips, stones and mud, although when the house is sided and plastered as this is, chinking may be omitted by simply placing a stone or block firmly between the logs at intervals of six feet, always placing them firmly and perpendicularly over each other to prevent the logs from sagging. The gables are now studded up so that the outer edges of the studding are fair with the surface of the stripping, sixteen inches apart. The exterior is now weather-boarded in the same manner as an ordinary frame-house. Joists in the first story are laid on the wall sixteen inches apart, and filled up to the top edge at the ends with stone, bridged with lattice bridging, 1 by 3, once in five feet. If the partitions are of logs, there will have to be a wall, or at least a pier, under them to sustain the weight. If they are of studding, lathed and plastered, the joists under them should be firmly spiked together and doubled, for spans less than fifteen feet. Spans greater than this should have a pier, and especially at an angle formed by the junction of two partitions. All floor joists above the main floor should be firmly seated between the logs, and these, together with the rafters, should be set in the same manner as for a frame-house. The ends of the rafters should be dressed and left exposed, projecting about two feet to form a cornice. It is not necessary to plaster the ceilings on the lower edge of the joists if the joists are neatly dressed, it makes a much more effective ceiling to leave them exposed, plastering between them up next to the floor.

If the house is of brick or stone, all of the exterior walls should be furred off, or at least those upon the north side. This makes the house much warmer and dryer in winter. The partitions are better of the same material

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as the exterior walls, although they may be of studding and at less cost. Sawed pine shingles laid tripple at the eaves exposing so much of each course to the weather, according to the length of the shingle, as to make the butts cover the tips of the third course below about 1½ inches. Let the joints be well broken, be open about ¼ inch and put at least two nails in each shingle. Chimneys can be made very effective if treated properly by placing them upon the outside. The living room and the kitchen should have open fireplaces, and the latter should have an independent flue for the cooking-stove. Let the chimney extend well above the roof and make no flue less than 9 by 13 inches. Let all chimney breasts and flues extend to the cellar. Plaster the flues well on the inside and on the outside where they pass timber-work. All floors above the main floor should be anchored to a stone or brick exterior wall each five feet in length with nail-rod iron, with hook and lug.

Porches should, for comfort's sake, be indulged in as far as possible. Floors may be of stone; if of wood, they should be of selected Oregon fir, heart boards and the joints laid in thick paint. They should always be wide enough to allow a table to be spread there in warm weather.

Our readers will understand, of course, that space will not permit any more than a general review of this subject. Our object is to secure a better class of buildings for farmers throughout the State, and to create in them some knowledge of what good work is and how it should be done, so that they may be protected from the trickery of a shystering machinic if they should chance to fall into the hands of such.

Any points in buildings that we may omit, that may be asked by the patrons of this paper in care of the editor, will be answered cheerfully

free of charge during the continuation of these articles. In the next article we will endeavor to give some idea concerning the arrangement of a farm house. (To be continued.)

Pasturing Volunteer Oats on Young Alfalfa.

About the middle of July we plowed thirty acres of land that had previously been in oats. Owing to a heavy rain- and wind-storm just before harvest, the oats were badly lodged when we cut them and the ground was pretty well covered when we plowed them under.

Toward the middle of August, as soon as we could after a big rain which ran the soil together, we harrowed the field thoroughly and then drilled in and broadcasted ten pounds each of Bromus inermis and alfalfa-seed and secured a good stand, especially of the alfalfa. Since then we have had several good rains and the volunteer oats have come up so as to almost mat the ground.

What I would like to know is whether these oats could be pastured off safely this fall as they will grow considerably yet and make good pasture. In the same field with the new seeding is ten acres of brome-grass seeded last spring which would also make good pasture.

Would stock be likely to injure the young alfalfa and brome-grass? I have heard that alfalfa was benefited by tramping, and on the other hand, injured by being pastured before it has sufficient root growth.

Chase County. ALBERT ROGLER.
I believe you can safely pasture the volunteer oats that have come up in the new seeding of Bromus inermis and alfalfa. In fact, it is my judgment that it will benefit the young grass and alfalfa to pasture off the oats, especially where the oats are thick and rank in growth. I observed at this station a year ago last fall that the

Bromus inermis seeded in the fall on grain land was thinned or killed out in spots where the volunteer grain was thickest. The volunteer oats will have a tendency to smother out the young grass and alfalfa, which may in a measure be prevented by pasturing the oats. Care should be taken not to pasture too closely and the cattle should not be allowed to run on the ground when it is so wet that it will poach by the tramping of the cattle. It seems to be true that in fields in which the ground is loose and mellow the tramping of the stock actually has a beneficial effect on the young alfalfa and grass. As a rule, however, I think it safest not to pasture new seeding; but by observing the suggestions given above you will be able to pasture the field in question without injuring the stand of grass and alfalfa.

A. M. TENEYOK.

Treating Seed Wheat for Rust.

We have had information from good authority that there is a treatment applied to seed-wheat with success for the purpose of preventing rust in the future crop. Inasmuch as the question has been raised among several of our farmers in this vicinity, who would like to know how seed-wheat is treated, we would be thankful for any information that you might be able to furnish.

Rice County. THEO. C. SEHLBERG.

There is no treatment for seed-wheat which will prevent wheat rust. Doubtless you have reference to the treatment for smut in wheat. The smut spores sprout on the wheat-kernel and the fungus develops in the wheat-plant; thus if the spores in the seed-wheat can be destroyed smut is largely prevented. The formaldehyde solution is used in treating wheat to prevent smut and is without doubt a very successful treatment.

Wheat rust develops from spores which are present in the air and lodge on the growing plant. Certain weath-

er conditions favor the development of this dust which is much more prevalent some seasons than others. It has been suggested by some writers that the continuous growing of grain on the same field may cause an accumulation of rust spores in that field or locality which makes succeeding crops more liable to rust than wheat grown on new land. A rotation of crops is, therefore, desirable. Also the rust has a more injurious effect on weak plants than on those that are strong and thrifty, thus good culture and keeping the soil in a good state of fertility are in a way preventive measures for reducing the damage from rust. On the other hand, it has been observed that on very fertile fields which produce a large growth of straw the rust is more apt to be injurious than on wheat of a less rank growth. The experiment-station men are studying the subject of rust and it is possible that some means may be discovered for preventing or reducing the great damage to grain from this disease. At present, however, the outlook is rather discouraging.

A. M. TENEYCK.

Clover Questions.

How much clover seed should be sown to the acre? What time is the best to sow it, how should the ground be prepared, and should it be sown broadcast or with drill?

Linn County. HOMER H. ADAMS.

I knew an old Scotch farmer in Wisconsin who made answer to the question as to how much clover-seed should be sown as follows: "Weal," he said, "in a gude season a very leetle will do and in a bad season it don't make much difference."

It is usual to sow about ten to fifteen pounds of common red clover per acre, while five to eight pounds of the Alsike clover per acre is sufficient.

Clover should be sown early in the spring on a well-prepared seed-bed. The ground should be mellow at the surface but not loosened too deeply; rather, the subsurface should be firm (not hard). A good seed-bed for clover may be prepared by disking and harrowing corn-stubble, or on early fall-plowed ground. As a rule, it is not best to spring-plow land for seeding clover, alfalfa, or any grass-seed. Ground freshly plowed is apt to be too loose and mellow, and in case the weather remains dry the seed will start poorly and the young plants may be destroyed by drouth. Clover may be sown broadcast and harrowed in. The seed-bed should be fully prepared before seeding and one harrowing after the seeding is sufficient to cover the seed. It may be safer in the average season to put the clover in with the drill. It will be necessary to have a grass-seeder attachment on the ordinary grain-drill in order to sow clover. An attachment in which the tubes from the grass-seeder-box join the spouts from the grain-box in order that the seed may be sown in the drill furrows is one of the best kind of implements to use for seeding clover.

Usually at this station we have had good success in sowing broadcast and this is the simplest method of seeding. The clover may be seeded by hand or a handy implement for seeding broadcast is the little wheelbarrow seeder. We use such a seeder, manufactured by C. E. Thompson & Sons, Ypsalanti, Mich. It is possible, also, to sow clover-seed with an ordinary grain-drill by mixing the seed with ground feed, bran, ashes, etc., in proper proportion so as to sow the required amount of clover-seed per acre. Care should be taken in seeding with the drill not to plant the seed too deep. In the early spring the seed should not be covered with more than an inch or so of mellow soil. There is some danger of clover being killed by hard frosts in the spring when it is sown too early, and it may be safer to prepare the seed-bed and sow when the danger from hard frosts is past, choosing a time for seeding when it will sprout and grow at once. As a rule, however, I prefer early spring seeding; as the season advances and the weather gets hot, the young plants are apt to be burned off by a few days of hot weather, whereas if the clover has

made some start it is able to withstand considerable drouth and adverse weather conditions.

At this station we have the best success in getting a stand of clover in seeding alone without a nurse crop. In a favorable season, however, it is possible to get a stand of clover by seeding with some early spring grain. Also I have known of instances where clover was seeded in the wheat early in the spring and harrowed in. The cultivation as a rule does not injure the wheat and in a favorable season it is possible to get a catch in this way. In case clover is seeded with early spring grain the clover should be seeded after the cultivation is finished and the grain is sown, and then harrowed in lightly, once harrowing after seeding being sufficient to cover the seed. When grain is used as a nurse-crop it is best to sow the grain thinner than is the usual practice when grain is grown alone.

A. M. TENEYCK.

Fertilizers for Leachy Soil.

I have about forty-five acres of rather coarse sand on this quarter section, that will not pass through July and August hot weather without burning. It does fairly well until July 15, and therefore I think I can raise wheat on this land and the wheat will miss this dry season. This land is leachy, with poor surface, needing annual treatment. I propose to use liquid treatment applied with a sprinkler, similar to the street sprinkler. What I wish to know is, what chemical can I mix with water and sprinkle on wheat and feed the crop. The land is very porous and the liquid will go right to the roots. I wish to apply in winter and spring. How would crude potash do for one part, and what proportion? Remember, the sandy land absorbs before evaporation takes place. This land is located between the Arkansas River and Cow-skin Creek, and has great sub-irrigation. J. G. HARRISON. Sedgwick County.

I am not able to give a positive answer to your question. It would seem to me necessary to make some experiments with fertilizers on the land which you describe. Probably the potash is not needed, although I would not be certain about this. It is more likely that the crop would be benefited by the application of fertilizers containing nitrogen and phosphoric acid or nitrogen alone. In this State bone-meal is often used as a fertilizer for wheat. Bone-meal is especially rich in phosphoric acid and contains some nitrogen. The nitrate of soda is used also as a fertilizer for supplying nitrogen. It would not be necessary and doubtless it would be inconvenient and perhaps expensive to apply these fertilizers in liquid form. The bone-meal is fine-ground bone and is usually applied by means of a fertilizer attachment on the grain-drill, or it may be spread by hand. The latter method may best be used when the fertilizer is applied in the spring on the growing grain. The nitrate of soda is a salt and can be applied in the manner stated above, or this fertilizer may be more readily applied in the liquid form as you have suggested, than the bone-meal, since the salt is soluble. There will be no special waste of the fertilizer, as a rule, applied in the dry form, since the rains will quickly carry the salts into the soil. Whether applied in the liquid or solid form, the fertilizer will only enter the soil after rains which cause leaching.

For information regarding the use of fertilizers and outlining plans for experimenting in order to learn what fertilizers are adapted for your land, I refer you to the last quarterly report of the Kansas State Board of Agriculture. I believe you can secure a copy of this report by writing to Secretary F. D. Coburn, Capitol Building, Topeka, Kans.

I believe what your land lacks as much as anything is vegetable matter or humus. Ordinarily the humus supplies the nitrogen for the use of the crop; also the humus is necessary in order to give a proper texture to the soil favorable to the growth of the plants. A soil poor in humus does not hold moisture, and in the case of a sandy soil, it is apt to be leachy and

unproductive. You can improve such soil by growing certain crops and plowing them under for green manure. For this purpose the annual legume crops, such as cow-peas, soy-beans, and vetches, may often be profitably used. Perhaps alfalfa may be made to grow successfully on this land after it has been improved by green-manuring with annual crops. The application of barnyard manure would doubtless have a beneficial effect. Care should be taken, however, in manuring for wheat not to apply too heavy a coat, and surface dressing is preferable to plowing manure under for wheat. Although it is possible for chemical fertilizers to be profitably used on the land which you describe, yet it is my judgment that a proper rotation of crops will bring more profit in farming and will put the land into a better condition of tilth and fertility and sooner than can be accomplished by the use of fertilizers. If such land could be made to grow grasses and alfalfa, it would be possible in a few years to build up the soil and make it more fertile and productive, and there is no method by which the fertility of the soil may be maintained and improved so cheaply and so quickly as by the use of grasses and legumes in rotation with other crops.

A. M. TENEYCK.

Farm Notes.

N. J. SHEPHERD, ELDON, MO.

Sow a variety of grasses on fields intended for pasture.

Potash should be applied to all kinds of stone fruits.

Good farming is almost impossible without good teams.

Animals will respond in a most practical way to kind treatment.

Generous treatment of the brood sow always pays in the increased thriftiness of the pigs.

Avoid selling hay, grain, and straw and convert them into meat, butter, and cheese.

The chances of good crops are always improved by thorough tillage and heavy fertilization.

The conditions of soil most favorable to growth of the plant are also most favorable for its improvement.

While it is not good management to be under-stocked, it is a good deal worse management to be over-stocked.

Horses which are given continuous work are less liable to be injured than those which are only required to do a day's work occasionally.

Excess of food weakens a working animal and disables it for work. It increases indigestion and is worse than a spare diet.

Many fields intended to be planted to corn or sown to oats next spring can be plowed to quite an advantage this fall.

Trees on which the leaves remain after the first frost sets in and which stick to the branches in the spring, may be regarded as not healthy.

Young hogs should be put in good condition now, so that they can be readily fattened in short time when full feeding commences.

The best seed-corn is that selected as soon as fully matured in the fall, and thoroughly dried and stored away, so as to be safe from vermin.

The best fleece will ever be the work of the best sheep, provided, of course, it has a good, thrifty form.

Properly managed crops fed on the farm leave a residuum of good manure to keep up the fertility of the land.

It is a good plan in dry, hot weather and whenever the horses' hoofs become hard and brittle, to oil them every day with sweet oil.

The more good feed the good dairy cow can be made to consume and turn into milk the greater will be the profit.

Clay land is the more retentive of water, and for this reason it is the more important that such land should be thoroughly drained.

When digging the potatoes be sure to sort out all the unmerchantable ones and save them to cook and feed to the poultry during the winter.

As far as it is possible it is the best plan to fatten stock that is to be sold or killed this fall before severe cold weather sets in, as it could be done so much more readily.



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principal beef-producing sections are those in which corn is grown most extensively.

WINTERING STOCKERS.

In buying stockers a common practice is to buy cattle during the fall and early winter that are thin in flesh and weigh from 500 to 800 pounds, winter them on a ration calculated merely to keep them from shrinking in weight, and either fatten with grain on grass during the summer or graze them through the pasturing season and finish on grain the following fall.



OVERTON HARRIS, HARRIS, MO. Winner of both premier championships for Herefords at the World's Fair.

these is that the cattle can be bought more cheaply at that time. Practically all of the remainder buy in the spring, and the statement is made in some instances that while the market is usually lower on stockers and feeders during the fall and early winter, the expense of wintering often brings the final cost per hundred weight to a point above the price commanded by the same cattle in the spring.

The experience of some of our correspondents indicates that stockers carried through the grazing season on pasture will yield larger returns during that time if previously maintained through the winter on roughage than if fed a liberal ration of grain for several months before pasturing.

SOURCES OF STOCKERS.

In reply to the question, "Where do you buy your stockers?" more than one-half of our correspondents replied that their cattle were bought in their own neighborhood, and practically all of the remainder in Chicago, Kansas City, St. Louis, or Omaha.

market affords a larger number from which to select, hence the kind wanted can more often be obtained and more uniformity in weight, quality and conditions can be secured;

A study of the replies to the above question leads to the conclusion that the differences of opinion which appear are largely dependent upon the number of cattle handled by the individual.

BREED, AGE, WEIGHT, AND CONDITION.

As to the breed most in favor as stockers and feeders, about 50 per cent of our correspondents state that Shorthorns have given the best returns; 20 per cent favor the Hereford breed, 18 per cent Angus, and the remainder are divided among other breeds and grades.

Almost 50 per cent of those who replied state that two years is the age preferred for stockers and feeders, the remainder being about equally divided above and below two years.

In regard to the weight of stockers and feeders which give best returns, 40 per cent of our correspondents favor weights from 800 to 1,000 pounds; 26 per cent favor less than 800; 20 per cent 1,000 pounds and 14 per cent more than 1,000 pounds.

With reference to the condition of flesh desired in stockers and feeders we find a great variety of replies. Thus out of 386 replies 147 answer "good"; 80, "medium;" 90, "fair;" 63, "thin;" 6, "fat."

"Do you ever feed spayed or open heifers?" Less than one-third of our correspondents reply affirmatively to this question.

CLASS OF BEEF PRODUCED.

"What class of beef do you attempt to produce?" was asked our correspondents with a view of ascertaining the prevalent use of terms relating to cattle-market classifications, as well as to secure data on the subject suggested by the question.

Table with 2 columns: Class and No. of replies. Rows include Best, Export, First class, Choice, Shipping steers, Dressed beef, Baby beef, Fat, Good, Fair to good, Fair, Medium, Second class, Third grade, Common, Butcher stuff.

It is apparent from the foregoing miscellaneous replies that greater precision and uniformity in the use of market terms would be not only desirable but also of tremendous advantage to the cattle-feeder, resulting in a clearer conception of market demands and thus a more definite aim in the production of beef.

be understood that the name of the class to which a beef animal belongs refers to the use to which the animal is put. The classes of cattle, are beef, butcher stock, cutters and canners, stockers and feeders, and veal calves.

We call particular attention to the Republic County Breeders' combination sale of Poland-Chinas to be held at Belleville, Kans., on Saturday, October 22, 1904.

Kansas Cattle Awards at the World's Fair.

Herewith are given the awards made to Kansas exhibitors of beef and dairy cattle at the World's Fair during the great cattle show that has just closed.

SHORTHORNS. Aged bull—Tenth to J. F. Stodder on Aylesbury Duke. Junior bull calf—Fifth to T. K. Tomson & Sons, Dover, on Graceful Knight; sixth to J. F. Stodder, Burden, on Aylesbury Boy.

HEREFORDS. Aged bull—Tenth to Steele Bros., Belvoir, on Majestic. Senior yearling—Fifth to Steele Bros. on Princes 8th.

ABERDEEN-ANGUS. Senior yearling—Fifth to Parker Parrish & Miller, Hudson, on Japanito. Junior bull calf—Second to Parker Parrish & Miller on Perfect Hale Lad.

RED POLLS. Aged bull—Sixth to Groenmiller & Son, Pomona, on Champion. Two-year-old bull—Second to Wilkie Blair, Girard, on Linwood Lad; sixth to Groenmiller & Son on Young Arch.

PURE-BRED STEERS—HEREFORDS. Yearlings—First to Mrs. K. W. Cross, Emporia, on Lydos. Calves over 6 and under 12 months—First to Mrs. K. W. Cross on Progress.

HOLSTEIN FRIESIANS. Aged bulls—Fourth to C. F. Stone, Peabody, on Wartena Pauline De Kol. Yearling bull—Fourth to C. F. Stone on Shadybrook Sir Gerben Hengerveld.

SHORTHORN. The following are the entries to date of Shorthorn breeding stock:

Table with 3 columns: Exhibitor, No. of head, and No. of head. Lists exhibitors from Thos. Andrews & Co. to W. R. Wilson, Arispe, Iowa.

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Aged herd—Seventh to C. F. Stone. Young herd—Second to Stone. Young herd, females bred by exhibitor—Second to Stone.

Cattle at the American Royal. It is the same old story with the American Royal Live Stock Show. It will be bigger and better this year than ever before.

In the swine department the Duroc-Jersey breeders are preparing to outdo all former efforts. In the department for draft and coach-horses the entries are double in number those of last year.

The American Royal will be held at the Kansas City stock yards October 17-22. Low rates have been made on all railroads. A stop-over of ten days will be allowed at Kansas City on all World's Fair tickets, either going or returning.

Following is a list of entries of breeding stock: SHORTHORN. The following are the entries to date of Shorthorn breeding stock:

Table with 3 columns: Exhibitor, No. of head, and No. of head. Lists exhibitors from Thos. Andrews & Co. to W. R. Wilson, Arispe, Iowa.

HEREFORDS.

Table listing Hereford breeders and their locations, including C. L. Browning, Laredo, Mo., and others.

Total.....230

ABERDEEN-ANGUS.

Table listing Aberdeen-Angus breeders and their locations, including H. H. Anderson, Laredo, Mo., and others.

Total.....139

American Royal Show and Sale of Aberdeen-Angus Cattle.

The American Aberdeen-Angus Breeders' Association, always liberal in the distribution of prize money, has in this great show year been exceedingly generous.

Galloway Sale at the American Royal.

Considerable interest is being evinced in the choice lot of Galloways which are to be sold by the American Galloway Breeders' Association during the week of the American Royal at Kansas City, Mo.

The Galloways have been making rapid strides into public favor the last few years, and their showing at the World's Fair, St. Louis, evoked words of praise from all sides.

many prize-winners which have been in evidence in recent show-rings. From Brookside Farm Company's herd comes a son of that great sire, Scottish Standard, while O. H. Swigart contributes three young imported bulls that are fit to head any herd.

Angus Show and Sale at Kansas City.

Those attending the American Royal this year should make their arrangements to be on hand early, as the Aberdeen-Angus sale cattle will be shown on Monday, October 17, and the sale will begin at one o'clock p. m. on Tuesday, October 18.

American Royal Shorthorn Sale.

No breed of cattle is so widely distributed and so popular as the Shorthorns. This extensive distribution is the result of more than a hundred years' trial and experiment that has fully demonstrated the superior merit of Shorthorns as beef cattle.

A representative lot of this cosmopolitan breed will be offered for sale at Kansas City, Mo., Wednesday, October 19, under the management of the American Shorthorn Breeders' Association.

The following breeders have consigned to the sale: Teba Land and Cattle Company; Hanna & Co., Howard, Kans.; T. K. Tomson & Sons, T. P. Babst, J. F. Stodder, Alex. Frazer, F. M. Marshall, Powell Bros., W. A. Forsythe, J. R. Peak & Son, W. F. Christian & Son, W. R. Wilson, D. T. Bronaugh & Son, Joseph Duncan, McConnel Bros., H. M. Griffith, Sanford McSmith, W. E. Gates, J. W. Baker, and Daniel Donohue.

This sale will comprise a very useful lot of cattle and they will be sold without reserve at auction, and will thus afford an excellent opportunity for stockmen to buy at their own price cattle that will greatly improve their herds.

The catalogue is a departure from the usual form of Shorthorn pedigrees, since it has tabulated pedigrees, but a certified pedigree in full, with the seal of the association, will be given with each lot sold. The sale will be Wednesday, October 19, at 1 p. m.

For a catalogue write B. O. Cowan, assistant secretary, 17 Exchange Avenue, Chicago, Ill.

McPherson's Sale of Horses.

C. D. McPherson, of Fairfield, Iowa, whose interesting article on "Breeding and Feeding Fine Stock" appeared in the last issue of the Kansas Farmer, is a well-known breeder of Galloway cattle and several classes of horses.

Topped the Market Fifteen Cents.

M. O. Sullivan, the veteran feeder of Waveland, Ind., had on the Chicago market Monday of last week a consignment of beeves which showed the usual prime quality of the product of the above gentleman's feed-lots.

Advertisement for American Royal Cattle Sales. Includes text: 'Do Not Forget the AMERICAN ROYAL CATTLE SALES During Royal Show at Kansas City, Mo., Oct. 17-22, 1904'. Lists sales for Aberdeen-Angus, Shorthorns, Galloways, and Herefords.

Advertisement for Axline's Annual Poland-China Sale. Includes text: 'AXLINE'S Annual Poland-China Sale Oak Grove, Mo., Monday, Oct. 17, 1904. 75 Head Poland-Chinas 10 Fall Gilts, all open; 35 Early Spring Gilts; 30 Early Spring Boars.'

to handle only the best grade of feeders, and favors the Hereford-Shorthorn cross as it gives the finished beeves both size and quality. It is hardly necessary to state that he was highly pleased with the sale, although topping the market is no new experience with him, as his cattle have realized top-notch prices on the Chicago market every year for the past ten.

tion E. L., and Perfect Tecumseh. Every provision has been made for the comfort of visiting buyers and every Poland-China man is invited to be present. The sale will begin at 1 o'clock sharp and we urge our readers to send for a free copy of the illustrated catalogue and be present if possible.

American Royal Herefords.

Attention is called to the Royal sale of Hereford cattle, to be held in the livestock pavilion at the stock yards, Kansas City, Mo., Friday afternoon, October 21. This sale will be held under the auspices of the American Hereford Cattle Breeders' Association and will be conducted upon the same plan as the other sales conducted by the association at the Royal shows held in the past.

The animals contributed to this sale come from some of the very best herds in the United States, and the animals themselves will be in the pink of condition.

When pure-bred cattle of all breeds are (Continued on page 998.)

lock, one pound of powder, some bullets, tobacco, a hatchet, a knife, a Bible and his mathematical instruments and books.

Four years and four months later, when Selkirk—now safely on board the Duke—told the story of his adventures, the misery of those first hours on the island were still clear in his memory. As the ship disappeared he sat upon his seaman's chest in utter dejection. He ate nothing for many hours. His greatest fear was that with the coming of night he would be attacked by wild animals. In his own words, "I went to sleep when I could watch no longer." For a long time he remained in such low spirits that he could eat only at rare intervals. His first food was the flesh of seals and the coarse food picked up along the beach.—St. Nicholas.

Punctuation Counts.

Punctuation marks are small things, but they do make meanings plain when properly used, as appears from the following:

"The old gentleman then entered the drawing room on his head, a white hat on his feet, finely polished boots on his nose, gold-rimmed spectacles in his hand, a silver-headed cane was carried in the manner of a sword."

This is ridiculous, but may be made sensible by slight changes in the punctuation, as follows:

"The old gentleman then entered the drawing room; on his head, a white hat; on his feet, finely polished boots; on his nose, gold-rimmed spectacles; in his hand, a silver-headed cane was carried in the manner of a sword."

Making Fire Indian Fashion.

"How do the Indians make a fire without matches?" asked a boy who loved to "play Indian." Most of us have heard the answer to this: "The Indians used a flint and steel, as our own fathers and mothers did one hundred years ago, and before they had flint and steel they used rubbing sticks." We have all read about bringing fire out of two sticks by rubbing them together, but I find that most persons look upon this as a sort of fairy tale, or if they believe it to be true, they think it so difficult as to be worth no second thought. All woodcrafters, I find, are surprised and greatly interested to learn that not only is it possible, it is easy to make a friction fire if you know how. I have taught many boys and men to do it, and some have grown so expert that they make it nearly as quickly as with an old-fashioned sulfur match. When I first learned from Mr. Walter Hough, who learned from the Indians, it took me from five to ten minutes to get a blazing fire—not half an hour, as some books have it. But later I got it down to a minute, then to thirty-one seconds; from the time of taking up the rubbing sticks to having a fine blaze, the time in getting the first spark being about six seconds.—Ernest Thompson Seton, in *Country Life in America*.

How Ants Sleep.

During sleep the ant's body is quite still. Occasionally may be noted a regular lifting up and setting down of the fore feet, one leg after another, with almost rhythmic motion. The antennæ also have a gentle quivering, apparently involuntary movement, almost like breathing. The soundness of slumber was frequently proved by applying the feather end of a quill. The feather tip is lightly drawn along the back, stroking "with the fur." There is no motion. Again and again this action is repeated, the stroke being made gradually heavier. Still there is no change. The strokes are directed upon the head, with the same result. Then the feather is applied to the neck with a waving motion intended to tickle it. The ant remains motionless.

Finally the sleeper is aroused by a sharp touch of the quill. She stretches out her head; then her legs, which she shakes also; steps nearer to the light, yawns, and begins to comb her antennæ and brush her head and

mouth. Then she clambers over her sleeping comrades, dives into an open gangway, and soon has said "Good morning" to another tour of duty. Be it well noted, however, that she has gone to work, as she and all her fellows always do, not only rested, but with her person perfectly clean.—Harper's Magazine.

For the Little Ones

TALKING BOOKS.

The little toy shepherdess looked up where the books stood in a row "I wish I could hear them talk," she said, "For it must be fine, I know."

"Ah, yes," the wooden soldier said, "They are quiet enough all day; But I've heard when the children are all abed They talk in a wonderful way."

And now it was twilight in the room; And on the bookcase shelves The books began to stretch their backs And to talk among themselves.

"I wish," cried a peevish little book, "That you would not crowd me so; You're always poking me in the back Because I am small, I know."

"It's not my fault," said a fat, thick voice, "I'm crowded so myself I can hardly breathe. You little books Should be kept off the shelf."

"Ah, yes," the wooden soldier said, "Keep buzzing so inside That I hardly get a wink of sleep Last night, though I tried and tried."

"O, go to sleep," cried a lesson book; "It's enough to work all day Without your quarreling, too, at night, So go to sleep, I say."

"Ah," the shepherdess sighed, "they are going to sleep! How lovely their dreams must be! I wish that I were a book to live Up there on the shelf," said she. —Katharine Pyle, in *Ex.*

The Wanderings of a Venturesome Katydid.

There was once a handsome young Katydid who decided that he would see the world. He was green as grass—just exactly. I don't mean especially that he did not know much, though it was true that he did not—but he was really green in color. His large, handsome wings came together over his back, and they were just the shape and color of a leaf from the tree which was his home.

This Katydid could not say much—only two words—but that was more than most of the insects could say in the language of human beings, so that he felt proud of his education. "Katydid, Katydid," he would say over and over again.

But as I said, he decided to see the world. So one bright morning he spread his handsome wings and flew away. He soon alighted, however, upon some grass which he thought remarkably pretty, because it just matched his green coat. He looked about him to see what this part of the world had to show him, and there, right before him, was a big black spider. Now it may be that you, little boy or girl, have never thought that a spider was worth studying, but the Katydid had never seen a spider, and he thought he would see what he could learn from this strange creature. The spider was making him a house. He never said a word to the Katydid, though he kept his very bright eyes upon him. The spider worked away industriously, spinning a marvelous web from a lump of dirt to some tall dry grass.

"Pray, what are you making?" Katydid asked at length.

"I am building a beautiful house, sir," said the spider, politely, "in which to entertain my friends. Will you not walk in and try my soft new carpet?"

"Why, thank you, perhaps I shall presently," said our friend. "But I will watch you at your work a few moments longer. I may decide to make a home for myself like it some day."

"Pooh!" the spider suddenly lost her fine courtesy and spoke with an evil sneer. "Pooh! you will not be smart enough for that."

Katydid was a good-natured fellow and did not wish to get into any quarrel, so he said nothing in reply but sat quietly watching.

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Pretty soon he noticed the old spider looking very amiable again, and herd her say sweetly, "Why, my dear Mrs. Fly, how do you do? Do come in and see me. I am so lonesome now with my children all gone and my husband away all day. Do come in and sit with me awhile."

The fly was a timid little creature and he hesitated.

"Better not go, better not," said the Katydid, warningly; but the fly did not understand him.

"Tell me, what is that great green creature out there by your doorway?" the fly asked the spider.

"Oh, said the spider, in a tone of great fear. "Oh, do come in quick! He will eat you! He is a great bear who is only waiting to make a meal of a tender little fly."

The fly was frightened almost to death, and flew as quick as a flash into the spider's web. Then Mrs. Spider changed her tune.

"Oh, little fly! now I have you! Indeed you will make a good sweet meal. And it is just my dinner time, too. I will wind you, and bind you, and fix your wings fast." And she went to work with a will. The Katydid flew away from the horrid sight, and the last thing he heard was the terrified buzz of the foolish fly, and the sing-song of the spider, "I will beat you, and eat you, and have a square meal." (To be continued.)

Examination Answers.

A Brooklyn school-teacher sends some answers given by boys in her class in a recent examination:

- "What are zones?"
- "Zones are belts running around the earth giving out heat as they run."
- "What do we import from Italy?"
- "Italians."
- "Of what is the earth composed?"
- "Sand, water, air, and human beans."
- "What causes a fog?"
- "The night before."
- "Name two things we import from Africa?"
- "Ivory and ivory soap."

A Tough World.

Flossie is six years old. "Mamma," she called one day, "if I get married will I have to have a husband like pa?"

"Yes," replied the mother, with an amused smile.

"And if I don't get married will I have to be an old maid like Aunt Kate?"

"Yes."

"Mamma"—after a pause—"it's a tough world for us women, ain't it?"

Let nothing that is divine be left out of my faith, let nothing that is human be left out of my fellowship.—Henry Doty Maxson.

"The rich are not always godly, but the godly are always rich."

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HIGHLAND MARY.

Ye banks, and braes, and streams around
The Castle o' Montgomery,
Green be your woods, and fair your
flowers,
Your waters never drumle!
There simmer first unfauld her robes,
And there the longest tarry;
For there I took the last farewell
O' my sweet Highland Mary.

How sweetly bloomed the gay green birk,
How rich the hawthorne's blossom,
As underneath their fragrant shade
I clasped her to my bosom!
The golden hours, on angel wings,
Flew o'er me and my dearie;
For dear to me, as light and life,
Was my sweet Highland Mary.

W! many a vow, and locked embrace,
Our parting was fu' tender;
And, pleading oft to meet again,
We tore ourselves asunder;
But oh! fell death's untimely frost,
That nipt my flower sae early!
Now green's the sod, and cauld's the clay,
That wraps my Highland Mary.

O pale, pale now those rosy lips
I oft hae kissed sae fondly!
And closed for ay the sprakling glance
That doted on me sae kindly!
And mouldering now in silent dust,
That heart that lo'ed me dearly—
But still within my bosom's core
Shall live my Highland Mary.
—Robert Burns.

Roadside Adornment.

READ AT THE FARMERS' INSTITUTE AT
HESPER, SEPTEMBER 10, 1904, BY
LUCRETIA E. LEVETT.

I do not propose to discuss the grading, draining, and working of roads. I will leave that to the men (and they are of late doing it thoroughly), but will speak of some things that may be done to beautify and make sightly what is often an eyesore as well as a harbor of noxious weeds. Where there are hedges let them be kept trimmed; if not square at the top have them trimmed at the sides so that one may see through them and so that the breezes may pass. Have the roadside beveled and sown to grass and mowed, thus beautifying the highway as well as keeping down the weeds.

It is really surprising to find school grounds containing no trees, while nearby is found the finest clipped Osage orange hedge with square top, and well-kept blue-grass the whole length of the most beautiful hedge to be found in the County of Douglas. Why can not all our hedges be kept like this and our school-grounds beautified as well, thus adding to the financial as well as to the esthetic value of the adjoining farms?

When we plant a tree by the highway, we are doing what we can to make the traveler who comes that way happier. Our forefathers, who ruthlessly fell the virgin forest, doubtless never dreamed that their children would one day be most grateful for these noblest children of the earth, so independent in their beauty. Set them by the wayside; they adorn and need no adornment.

"What do we plant when we plant the tree?
We plant the shade from the hot sun free."

The tree not only shades the highway but the farmer's property, often protecting from the wind and sun his cattle and other stock. One of the best examples of the use of growing trees for sunbreaks can be seen along the line of the Santa Fe out of Dodge City, and for a distance of about seventeen miles to the eastward. A triple row of trees reaches almost the entire distance, and for several seasons has presented a snow blockade along one of the worst pieces of track on the railroad.

The principal varieties of trees best adapted to the climate of Kansas are the black and honey locust, oak, elm, white and red maple, soft sugar maple, Norway pine, white ash, Osage orange, and cottonwood. The list can be extended, and there is an endless variety of ornamental trees and shrubs from which selections could be made. There ought to be no difficulty in making a satisfactory choice, that would comprise a rare collection of uncommon interest and attractiveness.

Within the memory of the middle-aged men of Kansas, with the exception of that section which borders the

river, Kansas had hardly a stick of timber on its soil. To-day its homes are beautiful. Year by year trees are planted and already many reap the joys and fruits of planting. The treeless prairie has been transformed into homes and enriched by all that is fairest and sweetest in the realm of nature. Why do we not plant trees beside the highway connecting these towns and homes? In France the roads are like boulevards, well-shaded, wide, and so perfectly drained that they are dry in an hour after a heavy shower. Many of the trees are fruit-bearing, as they are also in Germany and in other countries. No more charming idea can be imagined than driving on a good road with cherry-trees in full bloom on either side.

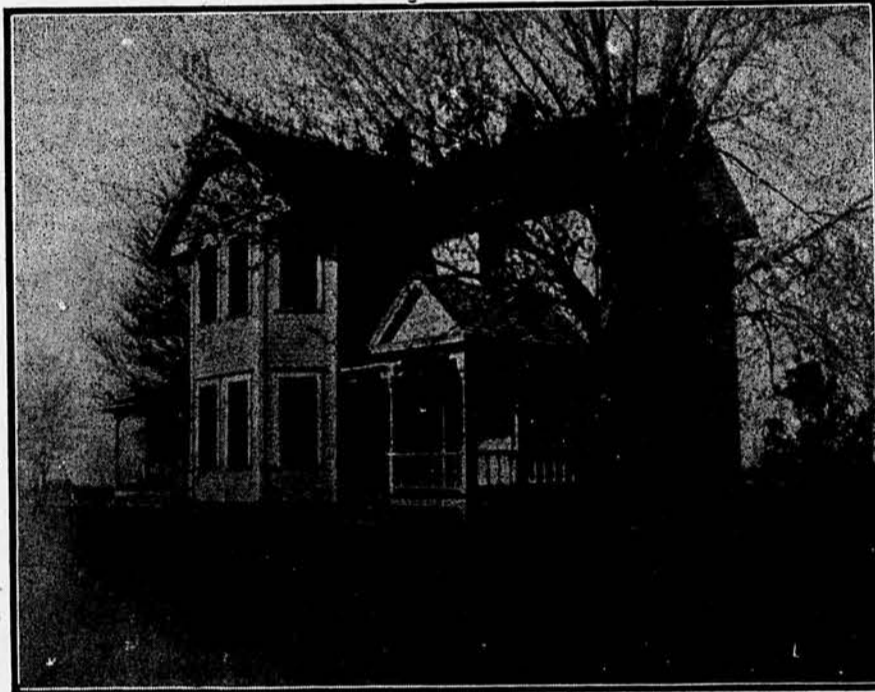
Among the most notable societies with the purely tree-planting motive are those of Brooklyn, Manhattan, and New York (1896), the former being probably the best known in this country. Others are to be found in Buffalo (1896), Indianapolis, Rochester and Kansas City; all having made remarkable achievements. In different cases 4,000 to 7,000 trees have been set through the efforts of a single society in one year. These societies instruct as to what varieties of trees are suitable for a given locality, where ob-

whether selective breeding of such artificially stained caterpillars would not result in a race in which the coloration became permanent. The fact is clearly established that the digestive tube has a marked influence on the silk. As a French writer declares, in green silks it is the chlorophyll of the leaves that we observe, and in yellow silks the pigment comes directly from the mulberry leaves, with which it is identical.—N. H. Paper.

How to Test Coffee.

Genuine roasted coffee, of no matter what quality, will not impart its color to cold water, nor will the bean lose its smooth surface or hard, tough consistency when subjected to a soaking of any duration; whereas chicory and other imitations become soft and spongy when soaked and render the water muddy, so that it is only necessary to give the suspect a bath to determine its genuineness. Of course, the bean must be tried before grinding, and the water must be cold, otherwise the test will not be conclusive.

To one who is a lover of the steaming beverage that invigorates without intoxicating, or, on the other hand, one experienced in handling coffee, the nostrils and palate are sufficient to de-



The above is the residence of Mr. Allan Wheeler, of Osage Township, Bourbon County, Kansas. The house has an east and north front, the octagon window facing east. There is an open lawn to the north, and a driveway lined on each side with maple trees, leading from the road to the house. The view of the surrounding country is magnificent.

tained, the cost, tree-planting, and the care of trees. They have obtained legislative measures against advertisements on trees, and have enlisted the help of children in their nurture.

Besides these societies, organized with the direct purpose of decorating highways and of promoting tree interests, associations formed for other purposes have taken it up. Why should not farmers' institutes have such a department? He who plants a tree by the highway plants a hope.

Breed Colored Silkworms.

Some audacious experimenters have been endeavoring to make the silkworm spin colored silks. Primarily they were endeavoring to ascertain if the green color of some natural silks is produced in any way by the leaves upon which the worms feed, but the work suggests the possibility of securing beautifully tinted raw silks.

Several lots of caterpillars were fed from their birth upon leaves impregnated with a red dye. They ate their livid meals without any show of repugnance, and soon began to take on a reddish tint throughout the body. When allowed to spin on freshly collected natural branches these worms produced a red-tinted silk, the whole cocoon presenting a beautiful red coloration. Certain colors, notably blue, were not as apparent in their effects and the worms did not seem to relish the blue leaves as well as the red ones.

One of the questions that naturally presents itself to the inquiring mind is

to detect the spurious bean; for human ingenuity, while successful to a high degree in simulating the appearance of the real bean, fails when it comes to producing the aroma and flavor; and it is for this reason that the artificial product can not stand alone.—Good Housekeeping.

How Much Sleep is Necessary.

A proper amount of sleep is, of course, absolutely essential to continued good health, but, if dietetic habits are correct, it is a matter which will regulate itself. If a rule is needed, one will follow naturally from the fact that almost every one feels languid on waking, and is disposed to take another nap, no matter how long he has been sleeping. This is a morbid sensation which it would take too long to explain here. It is enough to say that lack of sleep should be made up, if possible, at the beginning and not at the end. The best general rule is to rise at a given hour every morning, whether tired or not, and go to bed when sleepy.—Century.

"Heaven's gate is shut to him who comes alone," sings Whittier. We must lend a hand to others before we can enter into its glories. When I was a child, a dear old servant of ours used to say, when I had given her any help in my small way, "Ah, my dear, a little help is worth a deal o' pity." And that proverb has often "pointed the way" ever since.—Marian Pritchard.

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 Ladies' Crescent Club, Tully, Rawlins County (1902).
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 Sabbath Club, Mission Center, Shawnee County, Route 2 (1899).
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 Taka Embroidery Club, Madison, Greenwood County (1902).
 [All communications for the Club Department should be directed to Miss Ruth Cowgill, Editor Club Department.]

Kansas History Program—October 27.

- Some Famous Border Ruffians.
- Roll Call—Quotations from Kansas poets.
- I. Sketch of the Typical Border Ruffian Character.
- II. The More Notorious Border Ruffians.
 1. Gen. David R. Atchison.
 2. The Two Stringfellows.
 3. Sheriff Jones.
 4. Marshal Donaldson.
- III. The Blue Lodges.
- IV. The Attitude of Missouri as a Whole.
- V. Quantrell and His Raid.

For this program, a great deal of information can be obtained from almost any history of Kansas, especially if it is one that deals particularly with the earliest times. Mrs. Robinson's History will be extremely helpful, and if there are any early settlers within visiting distance, they will tell you more than you can write, for the Border Ruffian is a subject which will call forth the eloquence of any one who had to do with them.

Topic I will be an interesting one, though it should not be too long.

Topic II can be divided among four members, each to give a two-minute paper, or if material is scarce and hard to get, it may be given to one, who will tell briefly the parts taken by these better-known Pro-slavery advocates.

The Blue Lodge was a secret organization of Missourians, whose workings were shrouded in the deepest secrecy. Whatever can be learned and told of their affairs will be interesting in the extreme.

It is not true, as is so often supposed, that all Missouri was inhabited by such men as the Border Ruffians. It was filled with all kinds of people, just as any State is to-day. But the general sentiment of the State was Pro-slavery. The different kinds of people, and the way in which they were affected by the strife, will form the gist of Topic IV.

Quantrell's Raid came later than the times of which we have been studying so far, but it was nevertheless most truly—Border Ruffian Invasion. It was the most tragic and bloody event in Kansas history and stories of that time are rife in all the histories and among all the early settlers.

Household Program, October 27.

- Our Growing Sons and Daughters.
 - Roll Call—Current Events.
 - I. Debate—Resolved that it pays to give our children the higher education.
 - II. Amusements.
 - III. Teaching the Value and Use of Money.
 - IV. The Choice of a Life Work.
- Topic I is a subject upon which there is constant discussion and it will be easy to find members who will

be glad to say their say on one side or the other.

Topic II should take up the matter of the social life of the young people, on the farm, a matter which, if rightly handled in practice, would do much to solve the problem of how to make them contented in the country.

It is a sad thing, and the result of a mistaken idea, that many young people are not taught the use and value of money by the handling of it. Some mother, who has thought out the matter for herself, or who will do so, should take this topic and make it an extremely practical one.

Whether the young man should be urged to follow his father's profession, regardless of natural inclination and ability, or should be helped wisely to choose that life-work for which he is best fitted—this is one of the questions that will be treated by the one who takes Topic IV. The son's or daughter's choice of life-work is a matter of the utmost importance, and the greatest wisdom and unselfishness is necessary in that parent who would truly help them.

The subjects touched upon in this program are only a few of the many that are important to the mothers of children growing up. It may be varied and changed according to the wish and inclination of the club.

Miscellany

Good Roads Material.

ERASMUS HAWORTH, BEFORE THE KANSAS GOOD ROADS ASSOCIATION.

During the short time allowed me for this paper I wish to mention four different classes of road material available for different parts of the State, which material I consider very desirable for making permanent roadbeds.

I. GALENA FLINTS.

In the mining operations at Galena and Joplin, vast quantities of hard, fresh flint rock are brought to the surface and have accumulated in great piles on the surface. Some of this material is now found in boulders from 100 pounds in weight down to a few inches in diameter. Other masses of it have been run through crushers and sieves and may be had of almost any degree of fineness. This flint is almost pure silica, is the hardest rock-mass known as a constituent part of the earth, and the most durable of any earth material known to the geologist. It is not acted upon to any great extent by atmospheric agents and, therefore, will not decay. It is so hard that it will be crushed very slowly by the grinding action of wheels, and in every way is the most durable, and probably the best road material known in the world. The coarser material could be placed in the bottom and top dressing made with the fine sand. The sand top-dressing will not adhere together by itself, but if a little clay is mixed with it, or a little asphaltum, or any other welding material, it will be held in a very satisfactory manner.

These materials exist in such great abundance that there is no danger that the supply will ever become exhausted. All the railroads passing through the mining district have shipped it out for ballast along their lines to a distance of 100 to 150 miles without having any appreciable effect upon the supply. There is brought to the surface by each year's mining operations many times as much as has ever been shipped out in one year. It lies there, and in most cases can be had for the asking absolutely free and easily loaded onto freight cars. In many instances railroad switches pass immediately at the foot of these mounds of material so that cars could be loaded at a nominal cost. Again, many of the mills are constructed in such a way that cars could be loaded direct from the mills as the material comes from the steam jigs, and such mills doubtless could be prevailed upon to load the material into the cars at a cost not exceeding \$1 per car.

How far such material could be shipped with advantage is not known,

and can only be determined by trial. The finer material certainly could be shipped with advantage a distance of 200 miles as top dressing to cover the local material. I strongly recommend that persons contemplating the construction of permanent roads give this material a most careful investigation.

II. GRAVEL.

In many places throughout the eastern quarter of the State gravel-beds of varying extent are found at or near the surface. These gravel-beds have attracted a great deal of attention during the last twenty-four years, and many pages of description have been published here and there throughout the State. They may be found in every county south of the Kansas River and east of Range 14, east. Usually the gravel is mixed more or less with soil or clay. In most instances a cheap separator could be made which would separate the clay from the gravel with little expense, leaving the latter in a pure form. Where water is abundant and easily handled a washing process might be employed, but in most cases a coarse wooden screen could be made, a sort of cylinder with longitudinal slats fastened on so as to leave cracks the proper size, depending upon the gravel-beds. Dry gravel might be put in such a rotary cylinder and with sand be separated from the clay by revolving the cylinder.

This gravel is flint rock, similar to that above described, but is generally yellowish in color, due to the iron stainings. It is as durable as other flint, and in most instances is rounded by weathering or water action. It is as serviceable as any other gravel anywhere in the world and is certainly worthy of your careful consideration.

III. LIMESTONE.

The eastern third of Kansas is well supplied with hard limestone which may readily be obtained in almost any part of the area mentioned. In some places it carries large quantities of flint, notably at Strong City, where it is crushed so extensively for railroad ballast, White City, Fort Riley and other places. This limestone when properly crushed and sieved is as good road material as limestone from other parts of the world. It is so abundant that it can be had practically anywhere over the area mentioned should parties desire to crush it for road material. I do not think it necessary or desirable to go into details regarding the location of such limestone, as every citizen in that part of the State knows of its whereabouts, often much to his sorrow, as it frequently interferes with agriculture.

IV. CLAY.

Recently my attention has been called to clay as a valuable road-building material. In the vicinity of our extensive coal mines here and there throughout the State mining operations are conducted in such a manner that large masses of clay and other refuse collect around the mine. In other instances sufficient carbonaceous material occurs in the clay to produce considerable heat upon burning. These "dump piles" often take fire spontaneously and continue burning for years with a result that the clay-like material assumes a brick-red color and takes on the physical properties of vitrified clay.

I chanced to be at Springfield, Ill., a few weeks ago and was greatly interested in noticing that many miles of streets have been covered with this material during the last few years,—material hauled from the "dump piles" of near-by coal mines where spontaneous combustion did all the firing necessary to change the clay into vitrified material so that nice drives were made, which probably will have great durability. Such material can be obtained practically everywhere in Eastern Kansas. The Union Pacific and other railroads for years have been burning the black "gumbo" along the river valleys and using the burnt material for ballast. Such material can be produced at very low figures, probably 75 cents a cubic yard, and should be tried where neither of the other materials mentioned above can be had at equally low figures.

In my opinion Eastern Kansas has



Mrs. Fairbanks tells how neglect of warning symptoms will soon prostrate a woman. She thinks woman's safeguard is Lydia E. Pinkham's Vegetable Compound.

"DEAR MRS. PINKHAM:—Ignorance and neglect are the cause of untold female suffering, not only with the laws of health but with the chance of a cure. I did not heed the warnings of headaches, organic pains, and general weariness, until I was well nigh prostrated. I knew I had to do something. Happily I did the right thing. I took Lydia E. Pinkham's Vegetable Compound faithfully, according to directions, and was rewarded in a few weeks to find that my aches and pains disappeared, and I again felt the glow of health through my body. Since I have been well I have been more careful, I have also advised a number of my sick friends to take Lydia E. Pinkham's Vegetable Compound, and they have never had reason to be sorry. Yours very truly, MRS. MAX FAIRBANKS, 216 South 7th St., Minneapolis, Minn." (Mrs. Fairbanks is one of the most successful and highest salaried travelling saleswomen in the West.)—\$5000 forfeit if original of above letter proving genuineness cannot be produced.

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

\$43.75 CREAM SEPARATOR.

FOR \$43.75 we furnish the highest grade hand cream separator made. A big separator with a capacity of 500 pounds or 140 quarts per hour, ample for any dairy of ten cows or less. Larger sizes of 400 or 500 pounds per hour capacity, for large dairies, only slightly higher in price. Guaranteed the cleanest skimmer, easiest to clean, strongest, most convenient, easiest cleaned, greatest capacity and least liable to get out of order of any cream separator made. **20-YEAR GUARANTEE.** Every separator is covered by a 20-year written binding guarantee, GUARANTEEING EVERY PIECE AND PART OF THE MACHINE.

PROVEN BY COMPETITIVE TESTS. concurred by experts and dairy authorities everywhere, and declared by thousands of users to be in every way superior to any other separator made. Guaranteed to save the 25 per cent to 30 per cent cream that you now lose in the skimmed milk by the old style of skimming from the pan and besides you have the sweet skimmed milk for your calves; saves all the cream, all the sweet milk; makes more and better butter. With this separator you will get 110.00 to 120.00 per year more from every cow, you will get more income from seven cows than you are now getting from ten, and all with one-half the labor. Our \$43.75 Separator is needed by every farmer, whether you milk two cows or ten. You will save the cost of the separator in a few months. **A BOY CAN HANDLE IT.** So simple that anyone can operate it, no experience necessary; if you have never seen a separator, no matter, any 15-year old boy can handle and run it, the ideal machine for boy, girl, woman or man to run, none of the complicated, hard to handle parts found in other machines. Combines all the good qualities of all other high grade separators with the defects of none. **30 DAYS' FREE TRIAL.** We send our SEPARATOR TO ANY ADDRESS ON 30 days' trial, to convince you it is the BEST SEPARATOR MADE IN THE WORLD. **OUR FREE OFFER AND FREE CATALOGUE.** Cut this ad out and send to us and we will send you, free by return mail, postpaid, our Free Separator Catalogue with large illustrations (pictures), of all our separators, parts, etc., full description, special inside prices. We will send you Our 30 Days' Free Trial Offer. We will explain our Guarantee, our Quality Challenge. We will explain why our machine is the best. You will get our latest and most marvelously liberal Cream Separator Offer, an offer and price never before known. Don't buy a separator of any make, at any price, on time, on installment or for cash until you cut this ad out and send to us and get all we will send you by return mail, POSTPAID, FREE. If you own two or more cows, write us at once. Address, **SEARS, ROEBUCK & CO., CHICAGO.**

Cherry Valley Breeding Farm Duroc-Jersey Swine.

The prize-winning Gem's Victor 16017 and Gold Coin 19005 at head of herd. Choice bred gilts and spring pigs of both sexes for sale. 230 head in herd.

BUFF COCHIN CHICKENS. Eggs in Season.
Mr. & Mrs. W. R. CROW, Hutchinson, Kans.
Telephone 735.

BERKSHIRES AT BARGAINS

OVER 100 HEAD—All go at Farmers Prices while they last. Owing to my ill health I will close out my entire herd, consisting of herd boars, brood sows, yearling boars and gilts, early spring pigs, and fall pigs. Write to-day for prices. Also 500 fine chickens.

T. J. PUGH, Fullerton, Neb.

all the good road material that can be desired. The absence of permanent roads in the State certainly can not be attributed to a lack of material.

KANSAS DAY AT ST. LOUIS.

(Continued from page 981.)

white canvas and the floors covered with it. On the upper porches the scheme of floral decoration was very pretty, gladioli, dahlias and golden glow characterizing the different tables.

A fine musical program was given, which included numbers by the Washburn College Glee Club, solos by Mme. Weist, Emma Dent Jones, of Emporia, Mrs. H. Whiteside, of Hutchinson, and the barytone, Mr. H. Willets, of Chicago.

W. F. Shell, of Wichita, superintendent of the horticultural display at the World's Fair, celebrated Kansas Day in a unique and effective manner by giving away sixty-five bushels of apples, one to each visitor, impressing the essential fact that Kansas was the biggest and best fruit State in the Union, and the delighted visitors will certainly carry the glad tidings to all parts of the Union.

In the comments of the Globe-Democrat on Kansas Day, the echoes of the outer world's view of the event were expressed, as follows:

"Although 300 miles away from St. Louis, enough of Kansas was present on the fair grounds yesterday to give a general G. A. R. reunion appearance to the whole 1,200 acres which it covers. Kansas is a State of great assemblages; these either take the form of soldiers' reunions or 'fall festivals,' and frequently the two are combined. When times are good the people pay their fare and when they are not so good the railroads are coaxed into carrying them where they want to go or very near to it, on passes. In Kansas the railroads and the people are close together, notwithstanding what the Populists have said, and it is a very small community indeed that hasn't part of the flower of its youth 'working in the Santa Fe offices,' or on the Rock Island or the Missouri Pacific; so the railroads are rather a family affair. They are always hauling the Kansas people around and everybody in Kansas knows at least five or six conductors by their first names. For this reason, when a Kansas man said yesterday that he counted 6,000 actual Kansans surrounding the stand on the Plaza St. Louis, where the Kansas Day celebration was held, he ought not to be doubted. It was not necessary to discern their huge white badges to know them as Kansans. That singular air of alertness, that argumentative eye, that countenance of pugnacity with its unmistakable expression of a desire to take the matter up with you at once and thrash the philosophy out of it, of prying into it for the wherefores, of dissecting it physically, mentally, and morally, and especially politically, and arriving at eternal truth; and having found it, to stick by it though fiery darts be hurled, especially so, if the fiery darts are extraordinarily numerous and exasperating—all these form the identificatory testimony which needs no badge of any kind for the Kansas man. No Kansan was ever known to say, 'Why, yes, certainly,' to a postulate or doctrine of any other man, not until he had examined it with his own reason—except when that man is praising Kansas. And since in all the addresses made in the Kansas Day celebration not one so much as trod on a hair's breadth of Kansas' garment, all those thousands of countenances beamed as broadly and gratefully as a happy Kansas sunflower. There are many States that might envy Kansas the matchless affection all her citizens bear toward her.

"In all the previous State parades given at the fair the citizenry of the State which is conducting the celebration have been amply contented with standing by the roadway and cheering the procession as it goes by. Quite contrary of the Kansas Day celebration, of course. Stand quietly by while the procession of their State moves along its predestined course! Every one of them put forth his right foot,

then his left, and walked in line; old men, young men, aged women, some with canes; children, and, not the least, one man on crutches. Carrying grips they had brought from home, umbrellas, overcoats, lunch boxes, souvenirs and miscellaneous bundles, those for whom there were no carriages, to the number of several thousand, enthusiastically constituted themselves a part of the parade, the most extraordinary ever seen at the fair. Each wore a white satin badge a half foot in length, lettered 'Kansas' in gold, pinned on with a sunflower at the top. The unexpected interpolation of all these marchers must have somewhat disarranged the plan of the demonstration, for the parade was made so large that one section of it reached the plaza by another route than the other. Iowa, as a sister State, helped Kansas prepare for her celebration and assisted in the conduct of it. When the Kansas building overflowed, long before the procession started, Iowa, decked with flags for the occasion, opened her doors, and in a very few minutes found her own precincts crowded with Kansans. All the intermediate space between the two buildings became thronged, and Minnesota and New York surrendered their porticos. It was quite the most generously attended State celebration of any held on the plateau of States."

INOCULATING THE SOIL.

It is becoming fashionable to write for the magazines about the progress of agriculture as applied science. A generation ago the knowledge that chemical fertilizers possessed real value, and the further knowledge that the soil might be subjected to chemical analysis by which to determine the quantities of the several elements of fertility possessed, led to sanguine anticipations of an immediate revolution in agricultural methods whereby the chemist would become master of the situation. It was even suggested that the educated farmer would determine the wants of his crops, and, strolling over his fields, would take from his vest pocket a pinch of the needed chemical, cast it upon his soil and confidently await the transformation of a poor, dwindling crop into a luxuriant, profitable one. Some writers of the present day are almost as optimistic as were their predecessors of a generation ago. Just now their enthusiasm is kindled over some recent excellent work done in the U. S. Department of Agriculture in the preparation of "cultures" of the bacteria which, when they exist in the soil, cooperate with leguminous plants to utilize portions of the free nitrogen of the air and transform it into fertility.

With due allowance for the exuberance of the presentation, it is worth any farmer's while to procure the October Century Magazine and read the discussion of "Inoculating the Soil," by Gilbert H. Grosvenor. It is well that magazine writers are able to interest the general reader in the advancement of agriculture along scientific lines. Following are some excerpts from the "Century Magazine" article:

One of the most important elements of the food of a plant is nitrogen, which it absorbs from the soil mainly through its roots; successive crops of grain soon drain the soil of its plant-food, and in process of time make the richest land poor and worthless.

A good farmer partly balances the drain of his soil by using plentiful quantities of manure and fertilizer, and thus puts back much of the nitrogen which his crops remove.

We send to Chile, thousands of miles away, for help, and at much expense import from her thousands of tons of costly nitrate, though we have all about us—in the air we breathe—exhaustless stores of fertilizer. Free nitrogen forms seven-tenths of the atmosphere. If we could tap and use this sea of nitrogen, we could fertilize the whole earth and keep it rich; but it has been of no use to us hitherto because we have had no means of capturing it and of putting it into the ground. Its simplicity has baffled us. Like the plenty that tormented Tan-talus, it has ever eluded our grasp.

We are taking the nitrogen from the soil so much faster than we can put it back that some persons have predicted a "nitrogen famine" at no distant day, and have luridly described the horrors that will fall upon us when the soil becomes so poverty-stricken that our crops of wheat and grain and rice will fail to feed the Nations. While this view is of course partly imaginative, and exaggerates the nearness of the danger, the fact remains that many areas in England and Europe and the Eastern United States, formerly fertile, are now unproductive because the nitrogen in the soil has been exhausted.

But now man has captured a tiny germ, invisible to the naked eye, which can take from the boundless store of nitrogen he has coveted, and put it into the earth for him.

Ever since the time of Pliny, farmers have noticed that after a crop of peas, alfalfa, or any of the leguminous plants, a heavier yield of wheat can be obtained; thus has arisen the old profitable rule of rotation of crops.

But the reason certain plants enrich the ground while others exhaust it remained a mystery until an inquiring German discovered some years ago that peas, beans, etc., obtained their nitrogen food not from the nitrates in the soil, but from the free supply in the air. He also discovered that these plants absorbed much more nitrogen than they could use and left the surplus in the soil. That is, beans, peas, alfalfa, clover, put back into the mother earth what corn and wheat and grains remove. The manner in which they do this is unique and another instance of the marvelous and mysterious laws by which the balance of nature is maintained.

If one digs up a healthy bean or clover plant and examines the roots, he will see a number of rounded bulbs, called nodules or tubercles, on the roots. At first sight he might imagine that the plant had a lot of sores over it, that it was diseased, or had been bitten by worms or insects. All legumes have these nodules or tubercles, varying in size from a pinhead to clusters as large as a good-sized potato. Scientists noticed that plants with good-sized nodules flourished, while plants without nodules or with very small ones looked starved and withered, and they concluded that the nodules must have something to do with the vigor of the plants. On dissecting a bulb and examining it under a microscope, it was found to be packed with bacteria. Further examination showed that it, and all nodules, consisted of millions of bacteria and that these bacteria were incessantly absorbing free nitrogen from the air and converting it into forms suitable for the plant's digestion.

For want of a better term, we will call the germs nitrogen-fixing bacteria.

Careful examination of the earth showed that all soil where legumes grow contain these nitrogen-fixing bacteria in greater or less quantities; that these organisms settle on the plants and form the colonies or tubercles on the roots. If the soil contains none of these organisms to settle on the roots, the legumes will not grow at all. Each tubercle acts as a feeder to the plant. The more numerous and larger the tubercles, the more prosperous is the plant. One might thus define a tubercle as a little factory where millions of tireless, infinitesimal workers are separating the nitrogen in the air and converting it into plant-food. A celebrated German, Professor Nobbe of Tharandt, realized that if he could put into barren ground some of these organisms, or if he could artificially present the seeds with power to develop tubercles of themselves, he could make legumes grow in the most hopeless soil.

Dr. Moore is in charge of the Laboratory of Plant Physiology of the Department of Agriculture, and a



widely known practical botanist. He had been watching Dr. Nobbe's experiments and had come to the conclusion that Dr. Nobbe did not cultivate his nitrogen-fixing bacteria in the right way. The German's method of rearing his germ colonies resembled that of a rich father who gives his son everything he asks for without making the boy work for anything. As a result, when the youth is thrown upon his own resources, he proves unable to earn his own living, and collapses. Similarly, Dr. Nobbe, instead of developing the natural inclination and ability of his bacteria to hunt out nitrogen for themselves, dulled and destroyed this ability by giving them large quantities of nitrogen food, in what we might call predigested form; he so satiated them with nitrogen that they lost their ability to hunt for it themselves, and, when turned out of the laboratory, were helpless. They soon consumed the store of nitrogen which they had received, but could not by themselves get any more. Their nitrogen-fixing ability was gone, and they perished.

Dr. Moore decided not to dull the appetite of the nitrogen-fixing bacteria by giving them all the nitrogen they wanted; he thought he would whet their appetite, he would strengthen their nitrogen-fixing power, by exercise, by giving them in their food just enough nitrogen to make them want more and to make them strive to get more by their own efforts. By following this principle of feeding he developed a permanent type of bacteria in his laboratory, possessing five or ten times more power to fix free nitrogen than the original germs had possessed. The bacteria had gained strength, vigor, and self-reliance, and, when turned out of the laboratory, prospered like all healthy bacteria. Legumes inoculated with the bacteria developed great tubercles and grew to great size even in the poorest soil.

The nitrogen-fixing power of the bacteria developed by Dr. Moore is so extraordinary that seeds soaked in the solution will sprout and produce luxuriant plants in quartz sand which has been previously ignited to a red heat in order to drive out all nitrates.

Having secured a type of bacteria the nitrogen-fixing power of which was permanent, the next step was to obtain a simple means of distributing them to persons who desired to inoculate their land. Experiments showed that bacteria when grown upon nitrogen-free media will retain their high activity for a long time if carefully dried out and revived in a liquid medium. Dr. Moore also discovered that by using some absorbent, like cotton, a small piece of which will soak up millions of the organisms, and then by allowing these cultures to become dry, the bacteria can be sent to any part of the world and yet arrive in perfect condition.

A simple method of distributing the germs that bring fertility having thus been found, the announcement was made that the Department of Agriculture was prepared to send applicants free of charge enough inoculating material for several acres.

A portion of inoculating material as it is mailed to the farmer by the Government consists of three different packages. Package No. 2 contains the cotton with its millions of dried germs. Packages 1 and 3 are the media or food by means of which the farmer can multiply the germs. The Department incloses explicit instructions how to use the bacteria, as follows:

DIRECTIONS FOR USING INOCULATING MATERIAL.

(Method patented in order to guarantee the privilege of use by the pub-

NO MONEY TILL CURED. 27 YEARS ESTABLISHED.
PILES We send FREE and postpaid a 232-page treatise on Piles, Fistula and Diseases of the Rectum; also 108-page illus. treatise on Diseases of Women. Of the thousands cured by our mild method, none paid a cent till cured—we furnish their names on application.
DRS. THORNTON & MINOR, 3909 Olive Street, St. Louis, Mo., and 1007 Oak St., Kansas City, Mo.

lic. Letters Patent No. 755,519 granted March 22, 1904.)

Put one gallon of clean water (preferably rain-water) in a clean tub or bucket and add No. 1 of the inclosed package of salts (containing granulated sugar, potassium phosphate, and magnesium sulfate). Stir occasionally until all is dissolved.

Carefully open package No. 2 (containing bacteria) and drop the inclosed cotton into the solution. Cover the tub with a paper to protect from dust, and set aside in a warm place for twenty-four hours. Do not heat the solution or you will kill the bacteria—it should never be warmer than blood-heat.

After twenty-four hours add the contents of package No. 3 (containing ammonium phosphate). Within twenty hours more the solution will have a cloudy appearance and is ready for use.

To Inoculate Seed.—Take just enough of the solution to thoroughly moisten the seed. Stir thoroughly so that all the seeds are touched by the solution. Spread out the seeds in a shady place until they are perfectly dry, and plant at the usual time just as you would untreated seed. The dry cultures as sent from the laboratory will keep for several months. Do not prepare the liquid culture more than two or three days previous to the time when the seeds are to be treated, as the solution once made up must usually be used at the end of forty-eight hours.

To Inoculate Soil.—Take enough dry earth so that the solution will merely moisten it. Mix thoroughly, so that all the particles of soil are moistened. Thoroughly mix this earth with four or five times as much, say half a wagon-load. Spread this inoculated soil thinly and evenly over the field exactly as if spreading fertilizer. This should be done just before plowing, or else the inoculated soil should be harrowed in immediately.

Either of the above methods may be used, as may be most convenient.

Enough germs are sent in each little package to inoculate seeds for from one to four acres. The package can be carried in your pocket, and yet does more work than several cart-loads of fertilizer. It costs the Government less than four cents a cake, or less than a cent an acre, and saves the farmer thirty or forty dollars, which he would have to spend for an equal amount of fertilizer. Different cultures are sent for different crops.

Two patches of hairy vetch, grown side by side under precisely the same conditions, yielded crops as follows: Uninoculated patch, 581 pounds; inoculated patch, 4,501 pounds—an increase of more than eight times. Crimson clover under similar conditions yielded: Uninoculated, 372 pounds; inoculated, 6,292 pounds—an increase of nearly twenty times.

The same bacteria that increase the harvest of beans or clover or alfalfa tenfold enable the plants to leave many times more nitrogen in the soil than they would have done if uninoculated; in other words, they make the soil many times more fertile, so that the crop of cotton or wheat or corn or potatoes planted next year is many times larger. Thus the rotating crop the year following inoculation derives an equal benefit from the inoculation. For instance, a crop of crimson clover, not inoculated, added to one acre of land 4.3 pounds of nitrogen; a crop of crimson clover, inoculated, added to one acre of precisely similar land 143.7 pounds of nitrogen, an increase of 33 1/2 times; a crop of inoculated hairy vetch added to one acre 15 times more nitrogen than a crop of uninoculated hairy vetch.

Cotton planted after an inoculated crop of red clover gave an increased yield of 40 per cent. Potatoes, after an inoculated crop, yielded an increase of 50 per cent. The wheat crop increased by 46 per cent, the oats 300 per cent, and the rye 400 per cent. The table below shows the effect of inoculated legumes on various crops.

The germs can be used in any climate. It must be clearly understood,

however, that only leguminous plants—beans, clover, alfalfa, peas, lupin, vetch, etc.—are directly benefited by the nitrogen-fixing bacteria. Where the soil is rich in nitrates, the crop is not appreciably increased by the use of the inoculating bacteria; but where the soil is poor, the harvest is increased many times.

	Original yield per acre.	Yield per acre after inoculated crop.	Gain in weight.	Gain in value.	Per ct. of gain
Cotton.....	932.0 lbs.	After red clover.....1904 lbs.	872 lbs.	\$44.64	40
Potatoes.....	67.8 bus.	After crimson clover, 1022 bus.	34.4 bus.	15.00	50
Oats.....	8.4 bus.	After velvet beans... 33.6 bus.	25.2 bus.	9.00	300
Rye.....	4.6 bus.	After peas..... 23.5 bus.	19 bus.	9.85	400
Wheat.....	18.6 bus.	After melilotus..... 26.9 bus.	8.3 bus.	6.50	46

THE ST. LOUIS SHEEP AND SWINE SHOW.

This week, at the World's Fair, St. Louis, will witness the grandest display of all the breeds of sheep and swine as well as Angoras, Cashmere and milch goats ever exhibited in the world. Geo. S. Prine, of Oskaloosa, Iowa, is superintendent of the swine department and has two hundred and seven exhibitors of pure-bred swine, comprising 2,364 head, distributed as follows:

Forty-one Berkshires exhibits, 530 head; forty-five Poland-China exhibits, 476 head; forty-six Duroc-Jersey exhibits, 456 head; twenty-seven Chester White exhibits, 419 head; six Essex exhibits, 169 head; six Tamworth exhibits, 107 head; six Large Yorkshire exhibits, 137 head; one Small Yorkshire exhibit, 5 head; two exhibits of Victoria, 20 head; four Cheshire, 25 head; three Hampshire swine exhibits, 30 head.

Kansas Berkshires are represented by E. B. King, Burlington. Poland-China exhibits are made by Harry E. Lunt, Burden; John D. Marshall, Walton; W. R. Peacock, Sedgwick; W. T. Hammond, Portis; and Winn & Mastin, Mastin. Duroc-Jerseys are shown by John O. Hunt, Marysville, and N. B. Sawyer, Cherryvale. Chester Whites by Alvey Bros., Argentine; J. F. Given, Waverly; and F. M. Smith, Holton. A big display of Tamworth swine is made by C. W. Frelove, Clyde. There were other entries made of Berkshires and Poland-Chinas, but owing to hot weather or the prevalence of cholera in their respective localities, they were unable to make the show at St. Louis.

The sheep department is a most magnificent display and the arrangement of the barns is a splendid grouping of the sheep by long-wools, medium-wools, and fine-wools, so that visitors can make a careful study of the several groups. The same is true of the display of Angoras, Cashmere, and milch goats. This department is in charge of John L. Thompson, Gas City, Ind., superintendent. The breeds of sheep are distributed as follows:

Shropshires, 247; Cotswolds, 190; Hampshires, 138; Cheviot, 130; Leicester, 133; Merinos A, 236; Merinos C, 60; Suffolk, 22; Oxfords, 183; South-downs, 241; Rambouillets, 221; Dorset, 135; Lincoln, 169; Tunis, 20; and goats, 214. Total number on exhibition, 2,239.

The only exhibit of sheep from Kansas is a few head of Rambouillets shown by E. B. King, Burlington.

TRANS-MISSISSIPPI CONGRESS.

The fifteenth annual session of the Trans-Mississippi Commercial Congress is called to meet at Convention Hall, World's Fair Grounds, St. Louis, October 25-29, 1904. The Governor of each State and Territory may appoint ten and not more than twenty delegates.

The mayor of each city, one delegate and one additional delegate for each 5,000 inhabitants, provided, however, that no city shall have more than ten delegates.

Each county may appoint one delegate through its executive officer.

Every business organization one delegate and one additional delegate for every fifty members, provided, how-

ever, that no such organization shall have more than ten delegates.

Governors of States and Territories, members of the Congress of the United States, and ex-presidents of this Congress are ex-officio members with all privileges of delegates except those of voting.

Subjects of importance to the West are considered at these meetings, with

a result of considerably influencing legislation affecting Western interests.

KANSAS POULTRY AT THE WORLD'S FAIR.

The following-named Kansans have made entries of poultry at the World's Fair poultry show, to be held from Monday, October 24, to Saturday, November 5, inclusive:

A. J. Waddell, Sedgwick; Mitchell Bros., Valley Falls; Dr. J. Martin, Wichita; W. A. Doolittle, Sabetha; Wm. R. Fritz, Sabetha; O. E. Skinner, Columbus; Mrs. Fay Finkle, Galva; Mrs. Jennie Warren, Cottonwood Falls; Rees Warren, Cottonwood Falls; Mr. and Mrs. A. Fleming, Ozawie; W. C. Chestnut, Birmingham; N. M. Odell, Wichita.

There are doubtless many others whose names will appear in our report of the show.

BLOCKS OF TWO.

The regular subscription price of 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 receive the paper at half price. While the subscription price will remain at one dollar per 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.

Special to Our Old Subscribers Only.

Any of our old subscribers who will send us two NEW SUBSCRIPTIONS at the introductory rate of fifty cents each, will receive any one of the following publications as the old subscribers may choose, viz., "Woman's Magazine," "Western Swine Breeder," "Vick's Family Magazine," "Blooded Stock," "Poultry Gazette," "Dairy and Creamery," or "Wool Markets and Sheep."

One of the greatest pieces of newspaper enterprise with which the writer is familiar, is that which has lately been put forth by the Breeders' Gazette, of Chicago, in its efforts to give its readers a correct idea of the World's Fair cattle show. The issues of the Gazette for September 21 and 28, are worth many times the price of the subscription for a year, to any lover of good cattle. The Breeders' Gazette is in a class by itself and is easily the best live-stock paper in the world. Its illustrations of the cattle rings at St. Louis are magnificent examples of the printer's art and next to being present in the show ring, one can get almost as much good by seeing the illustrations in the Gazette.

Old Men and Women Bless Him.

Thousands of people come or send every year to Dr. Bye for his Balmy Oil to cure them of cancer or other malignant diseases. Among this number are a great many very old people whose ages range from seventy to one hundred years who, on account of distance and infirmities of age, send for home treatment. A free book is sent

telling what they say of the treatment. Address Dr. Bye, 901 B Broadway, Kansas City, Mo. (If not afflicted, cut this out and send to some suffering one.)

A Remarkable Horse Feat.

The Ohio State Fair at Columbus, and the Minnesota State Fair at Hamlin, midway between Minneapolis and St. Paul, were both held the same week commencing August 29 and ending September 3. The horse show in connection with the St. Louis World's Fair was going on at the same time. McLaughlin Brothers had about 75 stallions at St. Louis, leaving about 30 stallions at Columbus and about 20 stallions at St. Paul.

At the Ohio State Fair they won with their stallions three first prizes. At the Minnesota State Fair their Percheron stallions won two first prizes and their French Coach stallions won every possible first prize, championship and grand championship. At the St. Louis World's Fair their horses won every possible first prize in the French Coach and Percheron stallion classes and grand championship in both breeds.

To have been able to win these honors at the St. Louis Exposition and at two great State fairs all at the same time, shows that McLaughlin Brothers have a remarkably even lot of horses. Of course it would be impossible for each one of their horses to win, but those that did win are almost as good as the first-prize winners. The poorest horse to be seen in McLaughlin Brothers' stables in quality is not far below the champion with his honors.

World's Fair Accommodations.

The St. Louis Young Men's Christian Association has organized a World's Fair Bureau, through which it is prepared to furnish reliable accommodations at reasonable rates in hotels, boarding-houses, and splendid private homes. This is really an extension of the boarding-house register, which such associations have always maintained for the benefit of strangers. The St. Louis Association makes no charge to its patrons, either directly or indirectly, for the service, and the benefits of the Bureau are extended not only to young men, but to the public generally. Those interested are invited to correspond with E. P. Shepard, secretary Y. M. C. A. World's Fair Bureau, Grand and Franklin Aves., St. Louis.

Publisher's Paragraphs.

An article on "Working One's Way Through College," which is contributed to The Youth's Companion for October 6, by Arthur Stanwood Pier, will be read with interest by thousands of youths whose means are more limited than their ambition!

We call attention to the new advertisement of the American Scale Company at Kansas City, who offer a five-ton scale for \$35. Any of our readers interested in this necessary adjunct to the farm should write them for catalogue and particulars. Mention Kansas Farmer at the time.

The big mail-order house of Sears, Roebuck & Co., Chicago, is now offering their enormous and wonderful General Catalogue No. 114 absolutely free of charge. Any one can get this big catalogue absolutely free by simply writing a letter or a postal card and asking for it. It is wonderful what a great business the house of Sears, Roebuck & Co. has built up throughout the country, and the prices they name on the highest quality of merchandise in every line are really astonishing, they are so cheap. Sears, Roebuck & Co. have established a most enviable reputation for honest and fair dealing with the people and their word is as good as a Government bond. They are among our largest advertisers and we take pleasure in adding this word of indorsement to their various announcements that appear in our papers from time to time. We know that not one of our readers can ever lose a single penny by dealing with this big house, and we feel that it is only justice to our subscribers to call attention to this fact, and say to them frankly that we will surely pay them to find out Sears, Roebuck & Co.'s price on any article before they buy elsewhere.

We wish to call the attention of our readers to the advertisement, on page 891 of this week's paper, of the Publishers' Oil and Gas Company of Cherryvale, Kans. A prominent attorney was recently requested by intending investors in the stock of this company to make a thorough examination of its lands, wells, and oil-production and report on them. He found that the company has 2,120 acres of oil lands under lease, that it has only partially tested its lands by sinking test-wells on different parts of the central body of 600 acres; that 8 of these test-wells have been gushers, and the 16 other wells drilled have all proved to be good producing oil-wells of a capacity of 30 to 60 barrels a day pumping capacity. Each of its well is daily delivering to the pipelines of the Standard Oil Company the limit that the Standard Oil Company will receive from each well. The company has the certificates of a daily delivery of 15 barrels per well, since each well has been connected with the Standard's pipeline, and four rigs are at work sinking wells all the time, working night and day. All the new wells are being drilled in the tested field to increase the daily production, as the company as soon as its oil-production will pay for a continual development of the property, and a dividend upon its stock, will withdraw its stock from market, as all its receipts from the sale of stock have been used in developing. Those who have funds to invest can not make a more profitable investment than the stock of this company at its present prices. As the Farmer man had to recommend this investment to his investors so he now recommends it to the readers of this paper.

DON'T BUY GASOLINE ENGINES UNTIL YOU INVESTIGATE "THE MASTER WORKMAN," a two-cylinder gasoline engine superior to all one cylinder engines; revolutionizing gas power. Costs Less to Buy and Less to Run. Quickly, easily started. No vibration. Can be mounted on any wagon at small cost—portable, stationary or traction. Mention this paper. SEND FOR CATALOGUE. THE TEMPLE PUMP CO., Mfrs., Meagher & 15th Sts., Chicago, THIS IS OUR FIFTY-FIRST YEAR.

In the Dairy

Substituting Grain with Alfalfa in Feeding Dairy Cows. (Continued from last week.)

SILAGE AS A COMPANION FOOD.

One of the best ways to feed alfalfa hay is with silage, unless in a region where alfalfa is very cheap, a contingency that is not likely to arise in the Southeastern States, because the crop will hardly grow with the luxuriance characteristic of it in the West. Alfalfa hay in the Southeastern States, by reason of its higher price, is a food-stuff that must be utilized more carefully than in the West, where it can be fed in the most wasteful fashion and still give profitable returns. It is a great advantage to feed alfalfa or any other of the leguminous crops that may be substituted for a portion of the concentrates in a ration for the dairy cow, with some such succulent and palatable food as silage. By chopping the alfalfa up, as practiced in our experiments, and sprinkling it over the silage with the meal fed, the whole ration was readily consumed. If the alfalfa hay was fed by itself, even in larger quantity, it would not be so completely consumed, and the waste would be much greater and its effectiveness in the ration reduced to that extent. In our judgment the gratifying results following the substitution of alfalfa and cow-pea hay for a certain amount of concentrates were due, in a large measure, to the feeding of these crops with a fine quality of silage which is generally admitted to be the best form of roughness for the dairy cow. Of course, silage by itself is not so satisfactory as when fed in conjunction with a small amount of dry roughness.

Another peculiarity was noticed in these experiments, namely, that the ration containing the largest amount of protein was eaten with the greatest relish. In other words, the best results were obtained in the experiments of 1902 and 1903, when cottonseed-meal was fed in conjunction with cow-pea and alfalfa hay. It is difficult to give a satisfactory reason for this peculiarity, unless it is that the larger amount of protein acted as a tonic to the nerves and the system generally, and kept the animals in a more perfect condition of health. The other rations were also eaten with relish and the animals were in good condition throughout the experiment, but in

both years the best results have been obtained from the high protein ration.

THE RATIONS FED.

Group 1 received silage, wheat bran and cottonseed-meal; group 2, silage, alfalfa hay and cottonseed-meal; group 3, silage, alfalfa hay and wheat bran. In group 2 alfalfa hay was substituted for wheat bran, and in group 3 alfalfa hay was substituted for cottonseed-meal. The largest amount of silage was naturally consumed by group 1, which received no dry roughness. This group also consumed the largest amount of wheat bran and cottonseed-meal. The amount of alfalfa hay fed to replace the wheat bran fed to group 1 varied from 8.3 to 11.9 pounds, depending on the individuality of the cow. The basis of substitution was made on the relative amount of protein contained in wheat bran and alfalfa hay, and the ration actually consumed by the cows shows that this was the correct basis on which to make the substitution.

The method of feeding the animals will have an important influence on the success of substituting any roughness, no matter how favorable it may be, for a certain amount of grain. Care should be taken to see that the roughness is placed before the animals in a palatable form; that it is of good quality. Of course, the substitution can not be carried on indefinitely. It seems almost needless to say this, and yet correspondence would indicate that some farmers have the idea that provided they have a roughness rich in protein they need feed practically no concentrates. This notion extends even to silage. Some persons argue that as corn is put in the silo with the stalk, no grain is necessary. A ration of silage and a roughness rich in protein will not, as a rule, prove satisfactory. Some concentrate is necessary and the substitution of a home-grown foodstuff for a high-priced one that must be bought, will be limited by the individual capacity of the cow to consume a large amount of roughness.

The cows seemed to eat the ration in which alfalfa or cow-pea hay was substituted for wheat bran to better advantage than where the roughness was substituted for cottonseed-meal. This is not hard to understand, because a larger amount of roughness must be consumed to replace a given amount of cottonseed-meal in a ration than of wheat bran, and the capacity of the cow being limited, the results are not so satisfactory. Evidently an economic ration for the Southern farmer is one consisting of some leguminous crop rich in digestible protein fed in conjunction with cottonseed-meal, a product almost universally available in the South and at much less cost, when the protein and fat are considered, than any other concentrate that can be used. Wheat bran is not produced in large quantities in the South. It is quite as expensive in many sections, and often costs more per ton than cottonseed-meal, and hence it seems folly to use it when other foodstuffs that can be grown on the farm at a moderate cost can take its place with such satisfactory results if fed in conjunction with the great staple concentrate of the entire region. This is one of the evidences of the compensating influences of nature's laws that seems to have been overlooked. Cottonseed-meal by itself is not satisfactory for the dairy cow. It is too rich and not well enough balanced to give the most profitable returns, and when wheat bran is not available at a reasonable price, other crops can be utilized in its place, which makes cottonseed-meal the cheapest and most satisfactory foodstuff available and materially reduces the cost of producing a gallon of milk and a pound of butter, and so solves the most serious problem of the dairyman. While individual animals will have an influence on the utility of these different rations, experience does not incline to the belief that the differences observed are attributable to the animals used. The substitution of alfalfa hay for wheat bran in the case of group 2 resulted in a saving of 3.24 pounds of grain per gallon of milk, or 33.9 pounds of concentrates

OVERHEARD AT THE COUNTY FAIR



"Jim, how are you making out with the new separator that you told me was so good and cheap?"

"Ain't making out at all—I told the agent to take it away. I'm goin' to buy a De Laval."

"Well, I told you long ago, Jim, that the De Laval is the only separator worth having. I had a call from a 'cheap separator' man myself last week—I laugh every time I think of it."

"Why, was it funny?"

"Yes, he wanted me to sell my good old De Laval and put his machine in at 40 per cent. discount on regular price. I told him if he could prove his machine to be half as good as my De Laval, I'd buy it and make him a present of mine and \$100.—to boot. He skipped without leaving his address."

"I guess he won't come back."

"No, I guess not."

Profit by the experience of the biggest and best informed users of separators everywhere, and waste nothing over "cheap" separator trials. Send for catalogue and name of local agent.

THE DE LAVAL SEPARATOR CO.

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Advertisement for U.S. Separators featuring an illustration of a woman operating a separator and text: THE U.S. SEPARATORS HAVE LOW SUPPLY CAN AND MAKE MORE MONEY... SAVE MORE MONEY... MOST PROFITABLE TO BUY... Vermont Farm Machine Co., Bellows Falls, Vt.

See the exhibit of U. S. Separators at the St. Louis Exposition, Space 52, opposite working creamery, Agricultural Building.

for each 100 pounds of milk yielded, which would mean a great saving in the cost of the concentrates for a year with even a moderately large herd of cows. From 41 to 48 pounds of roughness were consumed for the production of a pound of butter, and from 3.8 to 9.4 pounds of concentrates. Thus, the substitution of alfalfa hay in group 2 effected a saving of 5.6 pounds of concentrates for the production of each pound of butter, or 560 pounds of concentrates for each 100 pounds of butter yielded. The substitution of alfalfa hay for cottonseed-meal did not give as satisfactory returns as the substitution of alfalfa hay for wheat bran. With alfalfa hay at \$10 and wheat bran at \$20, the saving effected by substituting alfalfa for wheat bran would be \$2.80 for every 100 pounds of butter and 19.8 cents for every 100 pounds of milk. In other words, the farmer could afford to sell his milk for 19.8 cents a hundred less than he now receives if he fed alfalfa hay as compared with wheat bran, and his butter for about 22 cents as

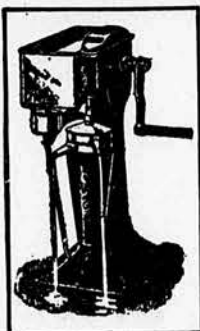
Table with 4 columns: Group, Rough-ness, Concen-trates, Per gal. of milk, Per lb. of butter. Rows for Group 1, 2, and 3.

compared with 25 cents a pound. Then, it is well to remember that the production of alfalfa on the farm has certain advantages which make it even more valuable. In the first place, it is a permanent crop and when well established will remain on the land for several years. Instances are recorded where it has been grown on the same land for more than fifty years in suc-

cession and still yields good crops. It is a soil renovator, and in figuring it at \$10 per ton, a fair market value has been accorded it. It will not cost the farmer anything like \$10 to produce it on his own land, and hence his profits from the use of alfalfa hay to replace wheat bran will be very much larger than those indicated here. He should certainly be able to produce alfalfa from a well-established field at the cost as he can grow red clover, which will not exceed \$2 to \$4 per ton. The limit of substitution that can be permitted will depend on the individual capacity of the animals to consume alfalfa hay. When alfalfa hay is cheap and abundant it can be fed in what might be termed a wasteful manner; that is, it should be placed before the animals in larger quantities than might seem advisable from a purely economic standpoint, for the purpose of inducing them to eat as much of it as possible, because it provides digestible protein in the cheapest form in which it can be obtained; at a less cost, in other words, than can be supplied to animals in the form of wheat bran and cottonseed-meal. Ordinarily, not more than 10 to 12 pounds of alfalfa hay will be consumed with silage. On the other hand, where no silage is fed this amount may be increased to 15 to 20 pounds per day. The facts set forth would indicate that in substituting a roughness rich in protein for a concentrate that satisfactory results are most likely to follow when the two most nearly approach each other in composition. Ground alfalfa has been used as the basis of many artificial foodstuffs that have been placed on the market. It is easy to see how satisfactory it would prove as the basis of such foodstuff when fed

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There is just one way to make the most money out of any business. The way to make the most money out of dairying is the Empire Way. The

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makes dairying easier, pleasanter and more profitable. It saves time, trouble and temper. It saves work because it is easy to operate and easy to clean. It saves worry because it is always ready, skims closely and is made to last. Our books about the money-making Empire Way of dairying are free to everybody. They are just common-sense talks in plain language, plainly printed for busy farmers and dairymen. Send for them. They are free for the asking.

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OUR SEPARATOR BOOK FREE.



Write for it at once. Mailed free to anyone who keeps cows. Illustrated with half-tone engravings and full of valuable information to every dairyman. It also tells why the

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is actually the most profitable and economical machine a dairy farmer can own. Made in the largest separator factory in the West. Guaranteed in every particular. See our separator exhibit in the Agricultural building at the St. Louis World's Fair, but don't forget to write for our catalog to-day. DAVIS CREAM SEPARATOR CO., 54 to 64 N. Clinton St., Chicago.

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with LESS WORK can be made with the Double Diamond "O. K." Churn than with any other. A child can run it. Buy direct from manufacturer and save dealer's profits. If you are not satisfied return in 30 days and get money back.

PRICES—CASH WITH ORDER
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No. 7, 10 " " " " " " 3.75
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Box 50, Manhattan, Kans.

in a finely ground condition, permitting it to be more thoroughly masticated and digested. It is also easy to see that when thoroughly ground up and mixed with cottonseed-meal and some other rich concentrate, how readily it may be made to take the place of foodstuffs which it resembles in composition. The condition in which the roughness is placed before the animal so far as fineness, palatability and ease of digestion are concerned, will affect the degree of substitution that can be practiced with success.

(To be continued.)

The Kicking Heifer.

A writer who evidently speaks from experience says:

"I do not know of any cure for kicking heifers. When once the habit is established it is likely to crop out almost any time. I doubt if they can ever be cured—and stay so. I know of one way that is strictly humane in the way of device to prevent them from kicking, and that is to take a two-inch strap and long enough to strap the hind legs together above the gambrels, crossing the strap between the legs in figure 8 style, and draw up so snugly as to prevent slipping the legs out of the double noose. Let them have their dance out before making any attempt to milk them. Usually a dozen tyings so conquer them that they are very good afterwards. If they do revert to the habit, retie them several times, and let them know that kicking is followed at once by restraint, that they can not kick loose from. Now and then this fails to cure. We have a young cow that for three years twice a day leg-tying does not keep her 'out of the air,' if the strap is not put on. But this is the single exception, after forty years' experience. Heifers very rarely kick, if their calves are not allowed to suck, and they never know that there is any other way to take the milk from their udders than by hand milking. It is easy to see that a heifer possessed of a mother's instinct of feeding her offspring, resents it when, a few days after, the owner attempts to both dispose of her calf, and appropriate its milk. It is natural she should 'kick,' and lift up her voice against the proceeding. We do not know the cause or remedies this subscriber has met, and labored with, but eloquence, persuasion, or an 'appeal to Caesar' are as nothing as compared with a wide, well-buckled strap."

Experience with the New Milk Fever Treatment.

Another man, H. A. Pierce, of Mont-calm County, Michigan, who has become convinced that the air treatment for milk fever is of great value, contributes his experience to the Michigan Farmer in the following words:

"Sunday morning, September 4, one of my best cows came fresh and did well. The next day she began to act sick and would not eat, although the cattle were in good clover pasture, and by 9 o'clock in the evening she lay flat, paying no attention to her calf nor to anything else. I got the bicycle pump and attaching a milk tube to it, I pumped air into all four quarters of the udder until it was nearly twice normal size and quite hard. Then covering her with a blanket, I left her and went to bed. At 3 o'clock I got up and went to her; found her up and hunting for her calf, which had in the meantime been taken to the barn. In another hour or two she was eating with a good appetite, as if nothing had happened, though I fed her carefully at first. After this experience milk fever will have no terrors for me."

The process of homogenizing milk—perfected by Gaulin of Paris—consists in forcing the milk, at about 185° F., from a closed drum in very fine jets against a porcelain plate. The fat globules are broken up into very minute particles. There is no subsequent tendency for cream to rise, digestibility is not affected, and when combined with pasteurization, the treated milk keeps a long time unchanged.

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 inquirer's postoffice, should be signed with his full name, and should be addressed to the Veterinary Department, Kansas Farmer, Topeka, Kans., or Dr. C. L. Barnes, Manhattan, Kans.

Pigs Out of Condition.

We have about 55 pigs 6 months old which for the last five or six weeks have been affected with a deep cough and they gradually get poor as the cough increases. Their sides jerk as if it required an effort to breathe. They cough worse when they run. Finally they begin losing appetite and in about two weeks die. We have lost three, and on the last one I noticed a dirty looking substance caked around the eyes as though they were sore. We gave them a few doses of Moore's hog remedy but lately we have been giving slaked lime in their slop. We give them about five acres of ground to run over, part of which is in timber, the rest was in rape and corn; but they have eaten all the pasture out of that, so their diet is mainly green corn and water, and slop once in a while. They have a dry, bare stone-cement floor in the shed to sleep on. What is the matter with them and what would you advise as a remedy? Please recommend some veterinary work which would be good for a farmer to refer to in cases of sick stock.

Newton, Kans. F. C. D.

Answer.—For your hogs which are affected with cough will say that it no doubt started from taking cold which settled in the lungs. The Government formula for sick hogs will be beneficial for your hogs. It is as follows: 1 pound of wood charcoal; 1 pound of sulfur; 2 pounds of sodium chloride; 2 pounds of sodium bicarbonate; 2 pounds of sodium hyposulfite; 1 pound of sodium sulfate, and 1 pound of antimony sulfide; these drugs should be thoroughly mixed together. The dose is one tablespoonful to each 100 pounds of hogs to be treated and it should be given once a day. Care should be taken that each animal receives its proper share. Dr. Mayo's book on "The Care of Animals" is a good book for the use of stockmen.

Mule Out of Condition.—I have a mouse-colored mule 7 years old, weighs about 800 pounds. About a week ago I noticed a swelling on the inside and at the top of left hock joint; also swelling in front of the joint. I did not notice any lameness until the last three or four days; he is a little lame of a morning, especially on a hard road. I have been working him. I think he has bog spavin; what can I do for him? Can I work him?
Greensburg, Kans. C. E. S.

Answer.—For your mule which you think has a bog spavin would advise you to rub onto the affected part daily until sore, the following liniment: Ninety-five per cent alcohol, 1 pint; tincture of iodide, 8 ounces; sulfuric ether, 6 ounces; spirits of turpentine, 6 ounces; shake the bottle well before using, and withhold the medicine a few days after the part becomes sore, then begin again.

Barb-Wire Cut.—I have a light bay, 6 months old, male Hambletonian colt, which received a cut on the barb-wire fence about two months ago, on the back part of the pastern joint of the left fore leg. It was neglected until the screw worms got into the wound, causing the leg to swell very much. Pus formed and was let out just above the pastern point. After dressing the wound several times with chloroform it was dressed with fish oil. The wound is entirely healed at this date and the lameness has left him, but the joint is enlarged. What is the best treatment to reduce the enlargement?
S. C. M.

Gerolmo, Okla.
If there is a thickening of the tissue around the joint, would advise you to use the following blister: Pulverized cantharides, 1 ounce; biniodide of

ZENOLEUM
Famous **OOAL-TAR** Carbolic Dip
For general use on live stock. Send for "Piggies' Troubles" and "Zenoleum Veterinary Advisor" and learn its uses and what prominent stockmen say about it. Books mailed free. All druggists, or one gal., exp. paid, \$1.50; 5 gal., freight paid, \$6.25
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When Your Heart Fails to Pump Your Blood, Trouble Results.

Have you heart trouble? You have, if you find it hard to breathe after walking up stairs, exercising, etc. If you have pain in your left side, in chest, back or shoulder. If you suffer from cold extremities, pale face, blue lips, dry cough, swollen ankles.

If you have fainting spells, breast pang, palpitation, redness of the face, discomfort in sleeping on one side. The only scientific treatment for this whole train of troubles is Dr. Miles' New Heart Cure.

Dr. Miles' New Heart Cure is the prescription of a famous specialist, whose great success in treating obstinate nervous heart disease has made his name pre-eminent in the medical and scientific world.

The medicine will cure you. We know it. We want you to prove it. If first bottle does not benefit, your druggist will give you back your money.

"I have for several years suffered at times with heart trouble. I got so bad I could not sleep half the night, and had to sit up on the side of the bed lots of times to get breath. Three of my brothers have died of heart trouble, and I thought I was going the same way, but about two and a half years ago I got a pamphlet about Dr. Miles' New Heart Cure and thought I would try a few bottles. After using them I recovered, and have had better health since then than before for several years. I can heartily recommend them for heart trouble."—REV. JERRY HURT, Pastor Baptist Church, Hurt, Kans.

FREE Write to us for Free Trial Package of Dr. Miles' Anti-Pain Pills, the New Scientific Remedy for Pain. Also Symptom Blank. Our Specialist will diagnose your case, tell you what is wrong, and how to right it, free. DR. MILES' MEDICAL CO., LABORATORIES, ELKHART, IND.

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Modern Dining Cars serving meals on Individual Club Plan, ranging in price from 35 cents to \$1.00, also service a la Carte. Coffee and Sandwiches, at popular prices, served to passengers in their seats by waiters. Direct line to Fort Wayne, Findlay, Cleveland, Erie, Buffalo, Rochester, Syracuse, Binghamton, Scranton.

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

mercury, 1 ounce; lard, 8 ounces; mix these drugs thoroughly with the lard; rub well into affected part and in three weeks' time repeat the blister. You had better keep the horse's head tied up short for a few days after applying the blister, as otherwise the mouth is apt to be blistered.

Pigs Affected with Skin Disease.—Can you tell me what is the matter with my pigs that are about 2 months old and have been doing finely until about two weeks ago? They began scratching and are broken out with pimples and the skin seems to be stiff, they have a good appetite. I have been feeding them wheat and corn and they are running out and get plenty to eat. M. N. W.

Montgomery County.
Answer.—If you have not a dipping-plant near by, and the pigs are small enough, you may be able to arrange a temporary tub in which you can give them the following treatment: In the following proportions make a lime and sulfur dip; use 8 pounds of lime and 24 pounds of sulfur; boil in 25 gallons of water, four hours; allow it to stand until cool, then remove the surface liquid that is above the sediment that has settled to the bottom. To this liquid add enough water to make 100 gallons. Apply this diluted mixture as hot as the pigs can stand it. Repeat the treatment in ten days.

Fistula.—I have a mare 12 years old that has fistula on one side of her withers; it is running and has been for several weeks. Hot turpentine was applied to both sides before it began to discharge. The swelling went down but one side is running now while the other seems all right. What will cure it? I also have a bay Shire mare 8 years old that is lame in the left fore foot. Some two months ago she lost a shoe off that foot and I drove her fifteen miles over a pretty rocky road, and the result was she was very tender-footed. I had her shod and in a few days she was all right, but in a short time was lame again. I had the shoe removed but the smith could find nothing wrong; he gave it as his opinion that she had a gravel in her foot. He replaced the shoe and she got well, but eight days ago while in the pasture she again became lame and is still so. There is no heat around the foot or ankle, but when tapped on the bottom, sounds as though it might be hollow on one side of the frog; there has been no remedy of any kind applied to the foot. A. C.

Answer.—For your mare that has fistulous withers would advise you to first remove thoroughly all the discharge from the side that is now running, then grease all of the side of the shoulder that is affected, so that any discharge coming from the wound will not blister the shoulder. Then burn out the proud flesh with butter of antimony. After which, once daily, inject tincture of iodine into the wound, and continue doing so until healed; if proud flesh gets into the wound, burn out again with butter of antimony.

For the horse that is lame I should judge that you had given your horse a very severe injury. It will be advisable for you to poultice the foot, using bran in a gunnysack, applied to the foot for several days, and removing just as often as it gets cold. Continue this until the foot becomes softened. You may then be able to locate the exact cause of the trouble; there may be a stone-bruise. If so, pus would very likely begin to come out at the back of the foot. With hoof forceps you can test the bottom of the foot to see where the soreness is located. It may be necessary to cut away the sole of the foot to allow pus to escape and to treat the bottom of the foot. Not being able to see the animal I am not able to tell you any more definite treatment.

Lameness.—I have a horse 6 years old that has been lame for about 8 months. It is his right ankle joint. There is no swelling in the ankle except when he stands in the barn for a couple of days, but after he has traveled a few rods he gets over his lameness. J. M. L.

Hamlin, Kans.
Answer.—Your horse has the symptoms of a bone lameness. Would ad-

vise you to give him perfect rest; then apply to the affected joint the blister given for the treatment of "barb-wire cut" in this issue. C. L. BARNES.

The Poultry Yard
 CONDUCTED BY THOMAS OWEN:

Remedies for Cholera.

Cholera remedies are being called for almost every week. Cholera is a very difficult disease to cure and it is much easier to prevent it from getting into a flock than to get rid of it after it once gets a foothold. We believe the cholera germ is generated in filth. The feed of the fowls is thrown among the dirt and filth of the yards and in picking it up the chickens are compelled to take some of the filth with it, which, if persisted in, will breed cholera. We believe that both fowls and swine can be kept perfectly immune from this dread disease if kept perfectly clean and fed pure food and clean water. So much for the preventive; but some have already the disease among their flocks, and for their benefit we give the following remedies:

Equal parts of tincture of opium, red pepper, rhubarb, peppermint and camphor, well shaken, dose to be increased from 10 to 20 drops several times a day when not immediately relieved.

2. Two ounces each of alum, resin, copperas, lac-sulfur, and cayenne pepper, pulverized. Mix 3 tablespoonfuls of the powder with one quart of corn-meal and dampen for use. This is sufficient for a dozen fowls and may be effectively used as a preventive and a cure for cholera. Once or twice a week is sufficient.

3. Blue mass and cayenne pepper each one ounce; camphor gum one-half ounce and a teaspoonful of laudanum, well mixed and made into pills of ordinary size. Give one pill every hour until the purging ceases.

4. Cayenne pepper and prepared chalk, each two parts, pulverized gentian and charcoal each one part (measurement not weight). Mix well together and form a paste with lamb or sheep suet. Give a pill the size of a common marble once a day, and keep the fowls in a warm, dry place forty-eight hours.

5. Carbolic acid, one drachm; glycerine one ounce. Mix thoroughly, adding one quart of water. Of this solution, use two tablespoonfuls to one gallon of water, allowing the fowls access to no other water.

The fountains and feed boxes should be disinfected with carbolate of lime or carbolic acid. The water must be kept cool, plenty of shade provided and free use of green food indulged in for those fowls not attacked. No food or water with the exception of soft or moistened wheat bread in warm milk is needed for the affected birds.

Do You Have Them?

On nearly every farm and in all flocks of chickens are some non-producers. They consume more food than others, and they produce nothing to compensate for it. It does not matter so much how much a hen consumes if she is a producer. She is bound to pay for her board. But the hen that eats and lays no eggs is the undesirable thing on a farm. Do you have them? If you have, you would better see about getting rid of them at once. Do you know the individual hens, and know their record, whether they are laying hens or just staying around doing nothing but eat?

When a portion of the flock is laying, the unprofitable hens should be separated from the flock and made to contribute something to the general revenue, even if they have to fall to "pot luck." It is too costly to retain non-layers in order to get eggs in the future when prices are low and nearly every hen is trying to contribute to help make a surplus of eggs. To feed them high-priced food now in order to have them laying in the spring, will not pay. This is the rule with ordi-

nary fowls, but of course there may be exceptions; as when you have thoroughbred which you wish to retain as breeders for next year, or which you may wish to sell as breeders next season, thus realizing a larger price than you can get now; but this rule with ordinary hens will hold good: Keep none over that are not paying their way.

Hens should be fed a variety of food, and the greater the variety, as a rule, the better it will be for them. If they fail to begin laying soon on good food, it is safe to conclude that they will not lay till spring and they would better be put in the fattening pen and put on the market as soon as possible. It is the poultryman who looks after these small matters who makes the business a success. The merchant gets rid of all his shelf-worn goods at almost any price and keeps such goods as he can sell readily and at a profit. The poultryman should use the same business management in his business, and get rid of all the non-producing and non-paying hens at once.

Poultry Notes.

Remember that the man who picks up his birds, just as they run in his yards, throws them into a crate and ships them off to a show, rarely gets a prize. It requires careful selection and training and previous preparation to put a bird in the best possible condition; and the man who wins is the man who has thought of this and thought of it many months before the show commences. It is not too early for you to be preparing your birds for the winter shows.

Many a farmer's wife has her regular customers to whom she supplies good fresh eggs at all times in the year at prices above what are paid in the open market. Many more could do so if they would make the effort. The consumer is willing to pay more to a person who is known to be honest, and who will provide strictly fresh eggs and not impose on him by selling storage eggs for fresh ones.

Some people decry fancy poultry and claim they are no better than common hens. But we notice they are very anxious to exchange eggs with a man who has thoroughbred stock; and they will descend to some very low tricks to get some of his stock at a price away below what it is worth.

When feeding meat to hens try to avoid getting fat meat. The object in feeding meat to poultry is to supply them with nitrogen or albumen and not fat, as the grains contain all the fat and starch they require and in a cheap form. If fat is fed it does not assist in any way to provide material for eggs but rather retards than assists egg-laying. The cheap portions of beef, such as the neck, are better than the choicest fat portions for the laying hen.

Radium inflames the skin and destroys various kinds of life, but its place in medicine is yet to be determined. When it shall have been found useful, Dr. E. S. London, a Russian physician, proposes to make its energy cheaply available. Experimenting with various substances, he has shown that wool absorbs a large quantity of the radium emanations, and that the "emanated" wool produces physiological effects similar to those of radium itself. The wool, moreover, can be applied to any part of the body. Five or ten milligrammes of radium may be made to energize a large quantity of wool, and, as the radio activity is retained a long time in hermetically-sealed vessels, "emanated" wool may be transported long distances, and may soon become a part of the pharmacists' regular stock in trade.

Some foreign experiments made recently to determine the poisonous properties of corn cockle on cows, sheep, pigs and goats, indicated that the feeding of this weed in the amounts ordinarily found in feeding-stuffs exerted no poisonous influence upon domestic animals. The feeding of large quantities of cows, however, exerted an unfavorable influence upon the quality of the butter.

Get More Eggs
 Your hens will lay all winter and keep in health and vigor if you feed
Standard Poultry Food
 It makes poultry pay. The best tonic food for poultry. Brings eggs when all else fails. Largest package for price, 25c & 50c. If your dealer hasn't it, send for special trial offer.
STANDARD STOCK FOOD CO.,
 1817 Howard St., Omaha, Neb.

POULTRY BREEDERS' DIRECTORY

FOR SALE—A few Rose Comb White Leghorn cockerels, 50 cents. Mrs. John Hill, Vinland, Kans.

S. C. BROWN LEGHORNS—Pullets all sold, but some fine cockerels left at reasonable prices; also three cocks. J. A. Kauffman, Abilene, Kans.

NEOSHO POULTRY YARDS—Rose Comb R. I. Reds and Buff Orpingtons; this year's breeders for sale at half price, if taken soon. Also some fine young stock. Prices reasonable. J. W. Swartz, Americus, Kans.

TO GIVE AWAY—50 Buff Orpingtons and 50 Buff Leghorns to Shawnee county farmers. Will buy the chicks and eggs. Write me. W. H. Maxwell, 921 Topeka Ave., Topeka, Kans.

BARRED PLYMOUTH ROCK EGGS, 50 for \$2.25; 100 for \$3.75. Adam A. Weir, Clay Center, Neb.

SPECIAL SUMMER PRICES on my Superior Strain Barred Plymouth Rocks: 15 eggs, 60c; 30 eggs, \$1; 100 eggs, \$3. E. J. Evans, Box 21, For Scott, Kans.

ROSE COMB RHODE ISLAND REDS—Superb in color. Extra fine layers, mated for best results. Eggs \$1.50 per 15. L. F. Clarke, Mound City, Kans.

WHITE HOLLAND GOBLERS—From first prize stock, \$4 each. E. W. Melville, Eudora, Kans.

SCOTCH COLLIE PUPS—Four more litters of those high-bred Collies, from 1 to 3 weeks old, for sale. Booking orders now. Walnut Grove Farm, E. D. Nutting, Prop., Emporia, Kans.

COLLIE PUPS FOR SALE—Send for circular. W. B. Williams, Stella, Neb.

WHITE WYANDOTTES

White ones, pure-bred, and good layers. Eggs, \$1 and \$1.50 per sitting.
ALVIN LONG, - - Lyons, Kans.

PARK VIEW FARM

I will sell young stock, Mammoth Imperial Pekin ducks, at greatly reduced prices if taken within twenty days. The parent stock is from the best flocks in the United States. Address O. E. Walker, Route 8, Topeka, Kans.

GEM POULTRY FARM

Stock and eggs for sale at all times. Buff Plymouth Rocks and Bronze Turkeys. Quality the very best.

C. W. PECKHAM,
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White Plymouth Rocks

EXCLUSIVELY.

Three Grand Yards of the Best Strains in the Country.

White Plymouth Rocks hold the record for egg laying over any other variety of fowls; eight pullets averaging 289 eggs each in one year. I have some breeding stock for sale at reasonable figures. Eggs in season, \$2 per 15, express prepaid anywhere in the United States. Yards at residence, adjoining Washburn College. Address

THOMAS OWEN, Topeka, Kansas.

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Thanolice (lice powder)	25c
Creo-carbo (lice killer)	50c
Egg Maker	25c
Poultry Cure	25c
Roup Pills	25c
Medicated Nest Eggs	5c
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Buckeye Cholera Cure	35c

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 All our Fine Breeders of this season, also Spring Chicks for sale after the first of June. Barred Rocks, White Rocks, Buff Cochins, Partridge Cochins, Light Brahmas, Black Langshans, Silver Wyandottes, White Wyandottes, Silver Spangled Hamburgs, Black Minorcas, S. C. Brown Leghorns, and Belgian Hares. Buy the best now at the lowest prices. Write your wants. Circulars free. Choice Breeders and Show Birds.
A. H. DUFF, Larned, Kan.

POULTRY TOPICS

is the real farmer's wife's poultry journal. Issued monthly, 16 to 40 pages, beautifully illustrated, and containing articles by successful farm women who raise poultry. Sample free and a whole year's trial trip with us at 10 cents stamps or coin for the year.
POULTRY TOPICS, Lincoln, Neb.

WEEKLY WEATHER CROP BULLETIN.

Weekly weather crop bulletin for the Kansas Weather Service, for the week ending October 3, 1904, prepared by T. B. Jennings, Station Director.

GENERAL CONDITIONS.

Hot, dry weather characterized the first days of the week and cool weather the last days, with copious rains over the greater portion of the State, the period beginning with the 24th and ending with the 28th being the hottest five consecutive days this season. The rainfall was unusually heavy in the southwestern counties, and in the central counties from Pawnee and Stafford to Douglas and Jefferson.

RESULTS.

EASTERN DIVISION.

Corn-cutting has progressed rapidly and is developing a better crop than anticipated except in Doniphan County. The crop generally is well matured, the ears well filled and solid. In the southern counties the new corn is being marketed at good figures. In the counties of Coffey, Anderson, and Linn and northward to Atchison and Brown the latest planted corn is not out of danger from frost. Wheat-sowing is nearly finished and the early sown is up, showing a good stand. Late thrashing is developing a better quality of wheat. Early sown rye is up. The buckwheat crop has been cut and is a good crop. Haying is finished and a large crop of fine prairie hay is up. The potato crop is being dug and, except on low lands, is a good crop. Apple-picking is progressing; in the northeastern counties the apples are scarce but in the central and southern counties they are abundant. Pears and peaches are abundant in the central counties. Pastures have been much improved by the late rains. Anderson County.—Wheat-seeding nearly finished; the general rains will be beneficial to early seeding and insure ger-

dant, large and fine; pastures and meadows green; cattle in fine condition.

MIDDLE DIVISION.

Corn-cutting is progressing and developing a better crop than was anticipated. Early corn is being marketed in the southern counties. The late corn is now deemed safe from injury by frost. The ground is now in good condition and plowing is progressing rapidly in the counties where it was stopped by the dry weather. Wheat-seeding is well advanced and the early sown is coming up quite well, showing a good stand. The fourth crop of alfalfa is a good crop and cutting has begun. Rye is up, and in Cowley County is being pastured. Haying is about finished and a fine crop of hay has been put up. Kafir-corn and cane are in good condition and if not cut by frost will furnish a large crop of forage. Apples are being picked and in most counties a good crop is being gathered. A good crop of potatoes is being dug. Peaches are abundant in the northern counties and are good.

Barton.—Farmwork suspended on account of rain; ground very wet; fourth crop of alfalfa fine; prairie haying finished, crop very good; pastures good.

Butler.—All crops looking well; sufficient rain during the week to keep pastures green; hay crop above the average; cane and Kafir-corn doing well, and if frost keeps off will make up for shortage of corn.

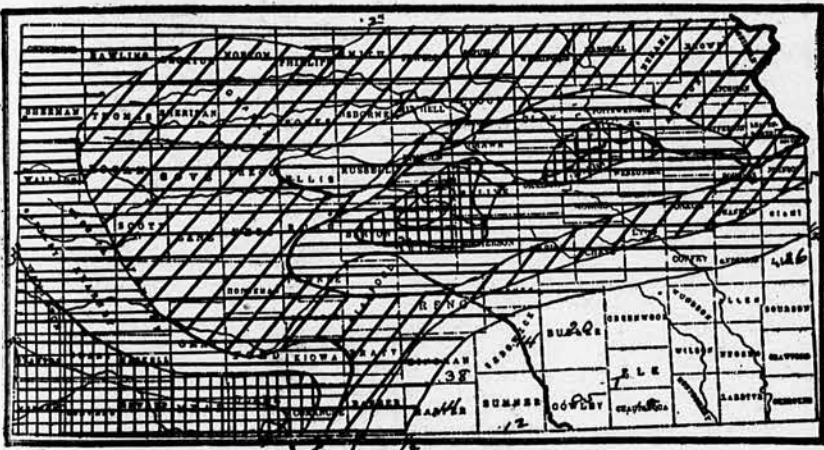
Cloud.—Ground in fine condition; early-sown wheat coming up.

Cowley.—Fine week for all kinds of farmwork, especially for wheat-seeding; early-sown rye being pastured; new corn coming into market; fourth crop of alfalfa ready to cut; fall-sown alfalfa up and growing finely.

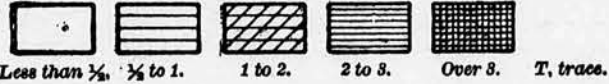
Dickinson.—Seeding at a standstill on account of rains; wheat previously sown coming up nicely; pastures fairly good; apples being gathered and some late potatoes being dug.

Harper.—Thrashing finished; the yield of wheat has been good; corn is being gathered, the crop is larger and better

Rainfall for Week Ending October 1, 1904.



SCALE IN INCHES.



mination from now on; late corn will require more warm weather to mature properly.

Atchison.—Wheat-sowing not finished on account of wet weather the latter part of week; late corn will need ten to fifteen days to be safe from frost; pastures good; buckwheat harvested, acreage small but crop good; Irish potatoes a poor crop.

Bourbon.—Corn-cutting nearly finished; late corn maturing rapidly.

Chase.—Grass was beginning to dry up before the rains.

Cherokee.—A favorable week for ripening the corn, which is better than was anticipated, being unusually well filled; the late thrashing of wheat is producing a better yield, some field yielding and testing very well; wheat-sowing in progress; ground in good condition.

Coffey.—Ground was getting dry before the rain; this week has been favorable for maturing late corn as the nights were warm.

Crawford.—Ground in good condition for wheat-sowing; some fields of wheat up; considerable yet to sow; corn well matured, danger of frost past; the ears of corn are solid and curing well.

Doniphan.—A warm week ending with a heavy rain; ground now in good condition for plowing and seeding; corn will be a light crop; hay and pastures good; apple crop small.

Elk.—Early part of week very warm, latter part cooler; new corn being marketed.

Jefferson.—Corn matured rapidly the early part of week; much of it still needs a week or two of favorable weather; haying about finished; apples have improved during the past month but the crop is very light and much of it of inferior quality; the wind has blown off much of the best fruit.

Johnson.—Wheat-sowing finished and wheat mostly up; some English blue-grass has been sown; corn-cutting begun; late corn not yet out of danger of frost; fall pastures good and cattle in good condition; apples and potatoes scarce.

Linn.—The dry weather has matured all the corn except what was planted after the floods; wheat mostly sown.

Marshall.—Ground in fine condition since the rains; early sown wheat and grass growing nicely; a large amount of hay and corn fodder has been saved in fine condition.

Montgomery.—A good week for maturing late Kafir-corn; wheat-sowing in progress; early wheat up with fair stand; some corn being marketed.

Titley.—Farmwork delayed by rain; a few late peaches still coming to market; pastures in fine condition; stock cattle look fine.

Shawnee.—Wheat and rye coming up nicely; corn nearly all out of danger of frost; corn-cutting being rushed; crop much better than expected; thrashing finished; peaches, pears and apples abun-

than expected, being a fair yield; wheat-sowing being rushed; early-sown wheat up and in fine condition.

Jewell.—The rains have been very beneficial; ground now in condition for sowing wheat and rye; corn crop rather light; it is now safe from frost; alfalfa seed crop fair; sorghum a good crop; stock in good condition; apples and peaches good.

Kingman.—Plowing and wheat-sowing being rushed; the acreage will be large; having interferred by rains; corn beyond danger from frost.

Lincoln.—Good weather for ripening corn, which is now being cut to considerable extent; wheat-sowing continues but is not being rushed; the ground was rather dry before the rains; apples falling badly; the rains will make good pastures again and cause the wheat to come up.

Ottawa.—Too much rain for thrashing and wheat-sowing; wheat about half sown; forage crops will be very heavy; corn crop and pastures unusually good; this year's wheat crop not as good as expected, ranges from light to quite good.

Republic.—The rains have put the ground in fine condition for plowing and seeding; wheat-sowing well advanced and much of it is up; corn maturing nicely and will make from one-third to one-half a crop.

Rooks.—The ground is in fine condition and farmers are well along with wheat-sowing; wheat coming up; corn is yielding well and of good quality.

Russell.—The rains have been very beneficial to plowing and pasturing.

Saline.—A warm week with abundance of rain; ground in good condition for wheat-sowing.

Stafford.—Early-sown wheat up and doing well; ground in fine condition.

Washington.—Plenty of moisture in ground; pastures good; wheat-sowing more than half done; fourth crop of alfalfa about ready to cut; potatoes about half dug; peaches abundant; corn nearly beyond danger from frost; corn crop medium.

WESTERN DIVISION.

Corn has matured and is a fair crop. The late rains have put the ground in fine condition for plowing and wheat-seeding and plowing is being pushed in the northern counties and wheat-sowing in the southern. The last cutting of alfalfa in Lane County was injured some by wet weather; in Wallace the seed crop is light and has not all been cut yet. Haying is about finished and an abundant crop has been put up. Pastures were greatly improved and cattle are in good condition. Kafir-corn and cane are being cut and afford a large crop of forage. Peaches are nearly all ripe in Norton. Wallace has a good crop of fruit.

Clark.—Wheat-sowing in progress. Decatur.—The rains during the week have been of great value to farmers, having put the ground in fine condition for

When You Die

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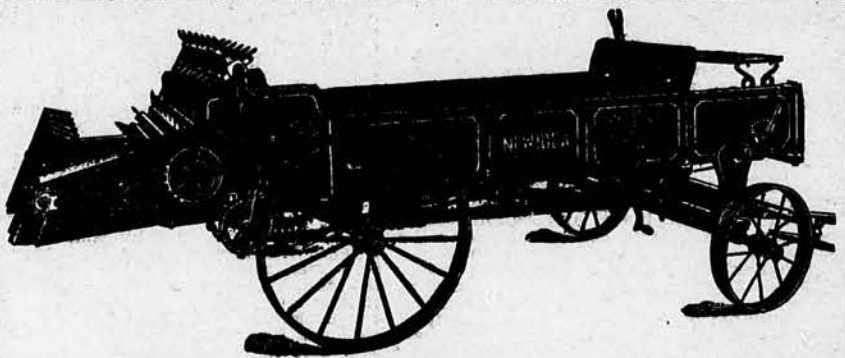
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The New Idea Manure Spreader

Distributes the Manure Evenly Twice the Width of the Wagon.

The double cylinders revolve in opposite directions, insuring thorough pulverization, and the revolving fans do the rest. Bed can be removed and Truck used independently, making of the NEW IDEA an "all the year 'round" machine. It is simple, strong, well-finished, and very light draft. Write us for catalogue, giving full description.

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Pure Soft Copper Cable Lightning Rods

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NO PIT TO DIG.

STEEL FRAME STEEL JOIST

WE SAVE YOU \$40 TO \$50.

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Secure a Home in the Great Southwest

The rapid increase in population is pushing land prices upward. The Southwest was never so prosperous as now, and never before has there been such a demand for good farm lands. Through the

M. K. & T. LAND BUREAU

thousands of acres of rich farm lands (improved and unimproved), located along the line of the Missouri, Kansas & Texas Ry., are now offered for sale. The lands are especially adapted to the growth of corn, wheat, oats, fruit and vegetables, rice, cotton, sugar-cane, and for stock farming. The lands are well located as to markets, schools, etc. If you are interested in this new and prosperous country, offering so many opportunities, and rich farming lands which can be secured at low prices, we will gladly furnish you information about lands, business chances, etc. Advise exactly what you want, what State or Territory you prefer, and the amount you have to invest.

The Homeseeker's Excursions on the first and third Tuesday of each month, afforded an opportunity to visit the great Southwest at a small cost. If you are interested write to-day for full information. Address,

GEORGE MORTON, Gen. Pass. Agt., M. K. T. Ry., Katy Bldg., ST. LOUIS

WHEN WRITING ADVERTISERS PLEASE MENTION THIS PAPER.

seeding; a large acreage of wheat will now be put in.

Ford.—Abundance of hay and feed; cattle prospects good; corn crop much better than the average; alfalfa, cane, corn fodder and Kafr-corn crops good; grass fine; excellent rain of the week put the ground in condition for rapid and effective work; wheat-seeding now being rushed.

Lane.—Ground in fine condition for wheat; last cutting of alfalfa injured some by wet weather.

Morton.—Fodder-cutting well advanced; cattle doing well.

Norton.—Kafr-corn being harvested, but the seed is not yet ripe; peaches nearly all ripe.

Thomas.—The rains have put the ground in fine condition for fall plowing and seeding.

Wallace.—Haying about finished; third crop of alfalfa about cut; alfalfa seed crop not all cut, the crop is light; corn cured; the rains have put the ground in fine condition for plowing; cattle doing finely; fruit crop good.

American Royal Herefords.

(Continued from page 987.)

low, then is the very best time for the farmer to make a beginning, and there will be a number of such animals in this sale as will please any one desiring the best. It will be a rare opportunity for the farmer to buy a good bull to improve his stock, and it will likewise be a good opportunity for the small breeder, who has already started, to add to his herd.

Do not forget the time and place, but attend the Royal Show and this important sale.

Catalogues descriptive of the animals are now ready and will be sent to any one desiring the same if he will make his wants known to C. R. Thomas, secretary, 225 West 12th Street, Kansas City, Mo.

Gossip About Stock.

Owing to the extreme hot weather the early part of last week, a number of exhibitors in shipping swine to the World's Fair lost several show animals. The only one reported lost from Kansas was Lunt's Chief, the head of the young herd under 1 year, who died at Springfield, Mo., en route, being overheated by delay in the yards on the Frisco line.

Duroc-Jersey swine are meeting with excellent demand and the fall trade has opened up in a lively and satisfactory manner; and in this connection we call attention to the new announcement of our old advertiser, J. F. Chandler, proprietor of the Rockdale Herd of Duroc-Jerseys at Frankfort, Kans., who has one hundred of March and April pigs for the fall trade of prize-winning strains and good individuals. Everything sent out is guaranteed as represented.

Breeders of Galloway cattle will have 117 head at the American Royal Show at Kansas City, October 19-24, as follows: J. E. Bales & Son, Stockport, Iowa, 15; Brookside Farm Co., Fort Wayne, Ind., 20; W. M. Brown & Son, Carrollton, Mo., 6; C. E. Clarke, St. Cloud, Minn., 15; G. W. Lindsey, Red Cloud, Neb., 10; C. N. Moody, Atlanta, Mo., 14; O. H. Swigart, Champaign, Ill., 14; J. W. Troutman, Comisky, Kans., 1; E. H. White, Estherville, Iowa, 13; F. P. Wild, Cowgill, Mo., 9.

This week we take pleasure in introducing Mr. P. J. Pugh, of Fullerton, Neb., through his breeder's card. Mr. Pugh has won a reputation as a breeder of Large English Berkshires and he issues a catalogue of some of the choice things in his herd which is remarkably rich in pedigree. Some of his herd-headers are imported animals and others are by such great boars as Enterprise 54867, Biltmore Augustus 2d 57461, Highclere Topper 51934, Baron Lee 15th 40660, and others. Notice his card on page 991 and write for catalogue and information.

A recent letter from J. C. Robison, manager of the Whitewater Falls Stock Farm, Towanda, Kans., announces that their show herd of Percherons arrived home in good shape and that old Casino seems glad to get back in his big box stall again. They also announce that they are fitting up the best bunch of horses they have ever offered for sale to go into the Wichita sale in February. As this bunch will include their World's Fair prize-winners, we think it will pay somebody to go to Wichita during the horse sale to be held the first week in February.

Mr. J. H. Davis, the very well-known feeder at Straight Creek, Kans., had on the Kansas City market on September 16 a load of branded Western-bred steers averaging 1,292 pounds, for which he obtained \$6.15, topping the market for the week. Not content to rest upon his laurels, however, he sent in another load the following day, these averaging 1,395 pounds, which sold at \$6.25, the highest price paid at Kansas City since last June. Both sales were made by Clay, Robinson & Co., Mr. Davis being a regular patron of that popular firm.

We call attention to two forthcoming sales of thoroughbred Duroc-Jersey swine, the first to be held by J. B. Davis, Fairview, Kans., on Tuesday, October 25, 1904, at which time he will sell forty head of Duroc-Jersey hogs, nine head of horses and some high-grade Red Polled cattle. On the day following, Wednesday, October 26, will be a breeders' combination sale of Duroc-Jerseys at Pawnee City, Neb., at which time fifty head, tops out of herds number 300, will be offered. Catalogues are now ready and will be sent on application.

S. H. Lenhart, Hope, Kans., who owns the Plimpton Stock Farm of Shorthorn cattle and Poland-China hogs, has decided to change the date of his sale of hogs to January 31, 1905. Meantime he has a fine lot of Royal Perfection pigs, both male and female, that he offers for sale. He can furnish pigs not akin. In getting ready for his sale has bred his sows to Missouri's Black Perfection 2d who was first in class, sweepstakes Poland-China boar, and grand sweepstakes of all breeds at Ottawa Fair and was sired by J. R. Young's great Missouri Black Perfection. The sows in the herd are highly bred and of good quality. Mr. Lenhart seems to spare no time or money in mak-

ing his herd the best he can. He can supply breeders with choice hogs at this time and when his sale time comes we expect him to be able to furnish something extra.

Mr. Pat Phelan, Holyrood, Ellsworth County, Kansas, has just bought the splendid young Shorthorn bull, Governor Stanley 214261, by Lord Mayor 112727 out of Jennie Gray, from Mr. C. W. Merriam, of the Alysedale Herd, Topeka. Governor Stanley was calved May 1, 1903, and was sired by one of the most famous bulls in the State of Kansas. Mr. Merriam states that his purchaser was glad to pay a good round price for him because of his quality and breeding and because he was advertised in the Kansas Farmer, which gave him the assurance that the calf was all right.

A. M. Jordan, of Alma, Kans., reports that the turnout at his first annual sale was small on account of threatening weather. The prices realized were fair on what was sold, but as soon as the demand was supplied the sale was closed, leaving a few for private sale. The top price was \$50, which went to A. E. Hoffman, of Greenwood County. The top price on spring boars was \$25 to J. A. W. Core, Bradford, Kans. The other breeders present who made purchases were: Smitz Bros., Alma; Herman Arndt and L. C. Case, Alta Vista; L. A. Abbott, Wamego; S. R. Barry, Manhattan; J. E. Miller, Bradford; R. M. Buck, Eskridge; and J. C. Johnson, Clay Center.

For several years past Mr. & Mrs. W. R. Crow, of Hutchinson, Kans., have been exhibiting Duroc-Jersey swine at the Hutchinson State Fair and elsewhere, and they have never failed to meet with recognition at the hands of the judges. This year they made an exhibit of twenty animals and won practically all the premiums at the Hutchinson State Fair. Their show herd this fall is in good shape and is the best, all things considered, that they have ever had. They now rank among the most successful of our Duroc breeders and the spring farrow this year enables them to again offer some of their stock for sale. Their card will be found on page 991 and our readers are urged to remember that the offering made by Mr. & Mrs. Crow is very largely of prize-winning blood and that their prices still remain reasonable. Write for what you want and rest assured that it will be right when it reaches you.

C. D. McPherson and his son, Raymond, 6 years old, had an exhibit of fifty head of horses, ponies and Galloway cattle at the Michigan State Fair held at Grand Rapids last week. They arrived there at 4 o'clock Monday afternoon and left at 4 o'clock Thursday afternoon. They won over \$500 in cash premiums, taking first premiums on all draft horses, Shetland ponies, and J. M. B. colts. This stock is now on exhibition at the Illinois State Fair at Springfield. At the close of the Illinois State Fair his stock will be rounded up for public sale on his farm 4 miles northwest of Fairfield. Wisecarver Bros. will be the auctioneers. McPherson has had 100 head of horses and cattle on exhibition in Iowa, Indiana, Illinois, and Michigan for several weeks, and has taken first premiums all round. When we consider that his stock was taken right off of pasture without any special fitting it speaks well for individuality. He made his first exhibit of Galloway stock at the Columbus Junction fair and they had been taken off of grass and fed on grain from May 18. See announcement on page 1004.

Some idea of the estimation in which Red Polled cattle is held by the people of the West was shown by the number of prizes won by the Red Poll breeders at St. Louis. One of the best herds in this State is owned by Chas. Morrison, Phillipsburg, Kans., but was not shown at St. Louis. He reports that the crop season has been great in his section of the State and that his third crop of alfalfa was very large and is all harvested. This insures fine quality for the splendid crop of young Red Polls and Poland-Chinas which he now has on the place. We have the impression that the Phillips County Herd is the largest herd of Red Polls in the State. At any rate, Mr. Morrison is prepared to fit out buyers with a young herd if they so desire, or he is well equipped to sell young animals of either sex, and it would pay to look them over before buying. Mr. Morrison is also a successful breeder of Poland-China swine which he raises on alfalfa pasture with the result that they are always growthy and healthy. He now has a nice bunch of Missouri Black Chief, Hadley, Tecumseh, and Corrector blood so that he can fit out buyers with their choice. Just write him a line of inquiry and see what he will tell you.

A public sale of Jersey cows and Poland-China hogs is advertised by M. S. Babcock, Nortonville, Kans., to be held at his farm adjoining town on Monday, October 24, 1904, at 10 o'clock, at which time he will sell eleven head of registered Jersey cows and twenty head of high-grade young cows, most of which are fresh. This will be the best opportunity of the year for dairy farmers who wish to buy some profitable dairy stock. Mr. Babcock will also sell at the same time sixty head of pure-bred Poland-Chinas of desirable breeding and choice individuals. Visitors from a distance will receive free entertainment at the Commercial Hotel. For catalogue address, as above, and mail-order bids can be sent to either of the auctioneers, care of Mr. Babcock, Col. Jas. W. Sparks and Col. John Daum. Following this sale are a number of other important sales of Poland-Chinas comprising a circuit in Jefferson, Leavenworth, and Atchison Counties. On October 26, James Mains, of Oskaloosa, will hold his annual sale. On October 27, John Bollin and Gus Aaron, of Leavenworth, will hold their annual sale of Poland-Chinas, and on October 28, Leon Calhoun, of Potter, Kans., will hold a Poland-China sale at Atchison. This will give buyers from a distance an unusual opportunity, in this circuit of sales, to secure a select lot of Poland-Chinas with very little time and expense. For catalogues address the parties named.

H. W. Avery, Wakefield, Kans., who made such a fine Kansas display of Percheron horses at the World's Fair and

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BULLETIN NO. 120, ALBERT DICKENS, M. S., HORTICULTURIST; G. O. GREENE, M. S., ASSISTANT.

(Continued from last week.)

OSAGE ORANGE (Toxylon pomiferum).

From the report of 1886: "The Osage orange plantation stands as made, trees three to four feet apart, in rows four feet apart. No systematic thinning has been made. The trees average over 20 feet in height, and, as shown by measurement at a height of one foot from the ground, over 10 inches in circumference. As will be understood, they are much more generally branched low and the trunk often divided at the height of one foot from the ground. The lower branches do not so readily kill out by shading as in other trees."

The later growth of the Osage orange plantation of 1872 has been such as to warrant its being recommended for general planting. It has readily replaced itself from coppice growth, when cut. Some of the trees now growing in the 1872 plantation show that two good posts have been cut in former years and the trees now standing would each make several good posts.

At the present date, 1903, this planting, containing somewhat less than one-half acre, contains 200 trees which would make 350 posts.

The trees of the original planting average 35 feet in height and 11 inches in diameter one foot from the ground. At five feet from the ground the average diameter is 7 inches.

For fuel and posts the wood is more valuable than any other grown in the artificial forests. The wood burns well even when green, and lasts well.

The posts are considered the most desirable that are grown. Posts set thirteen years ago in the vineyards are practically sound posts to-day. The only objection to the post is that, after drying, the wood becomes so hard that it is almost impossible to drive staples into it, and when stapled green the wood is liable to check and loosen the staple. This difficulty has been overcome satisfactorily by the use of smooth-wire ties, kept in place by a shallow notch.

The posts are very strong, and less liable than are most other posts to catch fire from burning grass.

The wood of the larger trees is valuable for purposes where strength is required, such as tool handles, tongues or other parts of vehicles or implements.

The question as to the desirability of hedges will not be discussed here, but general observations warrant the conclusion that the Osage orange is the best hedge-plant for our climate, and the further conclusion that it is a poor plan to attempt to maintain a hedge and grow posts with the same plants, as it nearly always results in a poor hedge, and the posts could be more economically grown in a compact block of ground. However, it is a common observation in many parts of the State that even in such an extravagant planting as a neglected hedge-row the wood and posts pay large rent for that land upon which no crops can be grown on account of the hedge.

When grown singly or in rows, for shade or ornamental trees, the Osage orange requires severe and frequent pruning, in order to form a symmetrical tree. With sufficient care, fine trees may be grown, and in localities not well adapted to tree-growth it is well worth while to plant and prune this tree.

Another well-grown tree of this species, probably between thirty-five and forty years old, measures:

Height.....	40 ft. 6 in.
Diameter at the ground.....	15 1/2 inches
Diameter at 5 feet.....	14 1/2 inches
Diameter at 10 feet.....	11 inches
Diameter at 20 feet.....	5 inches

Some measurements obtained from a number of old trees cut on the grounds adjoining the campus may be

of interest. The soil was upland of fair quality. The age was determined by counting the annual rings.

Age.....	Diameter at base.....	Diameter at five ft.
30 years.....	13 inches	11 1/2 inches
29 years.....	11 1/2 inches	10 inches
28 years.....	10 1/2 inches	9 1/2 inches
27 years.....	11 inches	11 1/2 inches
30 years.....	16 inches	13 1/2 inches
22 years.....	7 inches	5 1/2 inches
21 years.....	7 1/2 inches	6 inches
26 years two forks 6	inches	5 inches
26 years at ground 6 1/2	inches	5 1/2 inches
24 years.....	6 1/2 inches	5 1/2 inches
23 years.....	9 1/2 inches	6 inches
24 years.....	9 1/4 inches	8 inches

The Osage orange has been readily propagated from seed. In one test in securing seed two methods used have given practically the same stand of plants. One lot of the fleshy fruit was put in a barrel, covered with water, and early in the spring the seed was readily washed from the softened pulp and planted immediately.

The other lot was dried through the winter and in the spring the seeds were secured by pounding the dry fruits into pieces with a hammer. The washing was the easier method.

AILANTHUS (TREE OF HEAVEN), (Ailanthus glandulosa).

From the report of 1886: "The ailanthus grove, on the highest ground, is now a thicket of all sizes, down to last year's sprouts. The trees have not been thinned out, and were evidently planted at about 4 by 5 feet, though the rows are filled up by sprouts, some of which are nearly as large as the original seedlings. The trees selected as the oldest in the grove averaged 18 feet high and have a girth at four feet of eleven inches. On the outskirts of the grove occasional trees have twice this circumference."

The ailanthus does not seem likely to form trees of any considerable size. It grows rapidly for a few years, but later seems much less vigorous. They have frequently been severely injured by cold. During the severe winter of 1898-99 numbers of the trees were killed to the ground, and all were severely injured. The trees possess considerable recuperative power and have usually formed new tops in a short time. The killing back has been followed by excessive sprouting, thickets of young trees being formed. As grown here, the wood is of low fuel value and almost worthless for other purposes.

Upon the college campus the ailanthus has been sparingly planted. The best specimens, now about twenty years old, measure 32 feet in height, with a diameter at the base of 11 1/2 inches; at five feet, 8 inches.

For ornamental purposes, the most satisfactory results are secured by cutting back frequently, the strong growth secured having a rich, tropical appearance. A growth of eight or ten feet is often made during one season. A seedling on the campus measured at three years 18 feet in height; diameter at the base, 4 1/4 inches; at five feet, 2 3/4 inches.

The ailanthus has been readily propagated from seeds and sprouts.

WHITE OR SOFT MAPLE (Acer saccharinum).

From the report of 1886: "The white or soft maple is growing upon about as high ground as the plantation affords, but, owing to the mutual protection of the closely planted trees, this grove on a sterile southern slope shows an excellent growth. The trees stood originally about four feet apart each way, but were thinned four years ago to eight feet apart. They stand over 30 feet high, with straight, unbranched trunks, and show an average girth of over 15 inches at four feet from the ground. At least 95 per cent of the trees would furnish straight poles over twenty feet long."

The later growth of the soft maple trees in this plantation has not been so pleasing. The rate of growth has been much slower. Few of the trees have attained the height of 40 feet. The best trees have a diameter of 10 inches at 4 feet from the ground. Many trees of the original planting have died and more are making a feeble growth. The soft maples have produced a greater amount of cord-wood than any other species in this planting, and while the wood is not as good fuel

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as the ash or Osage orange, or even the walnut, the greater amount produced has much more than compensated for the lower fuel value. The growth of sprouts from the stumps has been much more vigorous when the trees have been in a vigorous state of growth than where the tree has become feeble before being cut.

Grown upon the campus as a shade and ornamental tree, the soft maple has been satisfactory. As the trees age, the wood seems to become more brittle and the branches are frequently broken by winds that do no damage to trees of other species. On rich soil the trees give promise of attaining a considerable age, but on high, dry land they seem to be short-lived.

The following measurements, taken as averages of trees of various ages, growing in different locations, will give an idea of the rate of growth. Trees nineteen years old, grown in good, rich soil, gave the following average measurements:

Height.....	41 ft. 6 in.
Diameter at base.....	11 1/2 inches
Diameter at 5 feet.....	11 inches
Diameter at 10 feet.....	7 inches
Amount of cord-wood in branches, 15 1/2 cubic feet.	

This rate of growth has decreased as the trees aged. Trees forty-six years old, planted in similar soil, give the following measurements:

Height.....	55 feet
Diameter at base.....	16 1/2 inches
Diameter at 5 feet.....	14 1/2 inches
Diameter at 10 feet.....	14 inches
Diameter at 20 feet.....	10 inches
Cord-wood in top and branches, 40 cubic feet.	

On higher ground and poorer soil, trees the same age, forty-six years, branched lower, were less vigorous and not as fine in appearance. The measurements are:

Height.....	37 feet
Diameter at base.....	14 inches
Diameter at 5 feet.....	12 inches
Diameter at 10 feet.....	9 inches
Cord-wood in top and branches, 25 cubic feet.	

The soft maple is very easily propagated by seeds, which must be sown

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and lightly covered soon after they fall. The trees transplant easily.

Wier's cut-leaved maple is a variety having very finely dissected leaves and a graceful, rather drooping habit of growth. It has been less rapid in growth, but compares well for vigor and hardness.

HARD MAPLE (Acer saccharum).
This species, also known as the sugar maple, has been more difficult to propagate and transplant, and has been much slower in growth. It has a handsome head, and seems to be worthy of planting in rich soils in the

eastern part of the State. It is liable to be injured by sun-scald, unless protected after transplanting. On the college grounds, it has given good results when planted among more rapid-growing trees.

Trees set in 1888, now growing on the campus, in rich soil and sheltered localities, give the following measurements:

Diameter at base.	Diameter at five feet.	Height.
3 1/4 inches.....	3 1/4 inches.....	22 feet
4 1/4 inches.....	4 1/4 inches.....	26 feet
5 1/2 inches.....	3 1/2 inches.....	20 feet
4 inches.....	3 inches.....	25 feet
5 inches.....	4 1/4 inches.....	27 feet
6 inches.....	4 1/2 inches.....	28 feet
6 inches.....	6 inches.....	22 feet
7 1/2 inches.....	6 1/2 inches.....	31 1/2 feet
8 1/2 inches.....	5 inches.....	31 feet
6 1/2 inches.....	4 1/4 inches.....	25 feet

The trees have borne but few seeds, and these have germinated but poorly.

NORWAY MAPLE (Acer platanoides).

The species is readily recognized by the close, thick head and dark foliage. Trees of this species on the campus have made good growth, slower than the soft maple, but more rapid than the hard maple. Though but a few of this species have been planted, they have uniformly made good trees, and seem well adapted to this climate. Young trees of the dark-leaved variety, known as Schwedler's maple, seem equally as vigorous.

BOX ELDER (Acer negundo).

Trees of this species have made rapid growth, but are liable to form very low, bushy heads, unless planted thickly or regularly and carefully pruned. The wood makes fair fuel but is not durable as posts, and trees grown here have been too crooked and irregular for other uses. Trees seventeen years old, grown upon high ground of fair quality, average 30 feet in height and 7 1/2 inches in diameter, at four feet from the ground. These trees average about twenty cubic feet of wood each, although much of it is crooked and uneven.

One of the best box elders on the campus, grown in a clump of trees, measured when forty-one years old:

Height.....	34 ft. 6 in.
Diameter at ground.....	10 inches
Diameter at 5 feet.....	8 inches
Diameter at 10 feet.....	5 inches

The box elder is easily propagated from seed sown in the fall or stratified until spring. It transplants readily.

HONEY LOCUST (Gleditschia triacanthos).

Plats of honey locusts have been planted at several different times upon the old college farm. A small planting made in 1891 extended from the bottom of a ravine to the top of a gravelly ridge. The trees were planted four feet apart each way and a part of them cultivated for three years. The growth and success have been directly according to the location and cultivation. The best trees, those near the ravine, measure 30 feet high, with a diameter of 4 1/2 inches five feet from the ground.

Other plantings made at early dates in similar soil and at the same distances show the same conditions, and indicate that the honey locust is not well adapted for close planting in poor soil. On good soil, the honey locust has shown rather poor growth in close plantings. When planted at greater distances the trees have made better growths. On the college campus the honey locust has shown a tendency to form wide-spreading, rather low trees when planted alone.

The largest trees of this species were planted before the college owned the land, and, as nearly as can be ascertained, are forty years old. These trees are growing in upland soil of medium quality, and stand far enough apart to allow symmetrical development. They average slightly over 40 feet in height, with a spread of about forty feet. The diameter at four feet from the ground averages 22 inches. They branch low, but are very handsome and altogether desirable shade-trees.

The best growth noted upon the campus is that of a tree which is one of a row of seedlings grown in 1893.

At this date, August, 1903, it measures:

Height.....	44 feet
Diameter at base.....	12 inches
Diameter at 5 feet.....	9 1/2 inches
Diameter at 10 feet.....	9 inches
Diameter at 20 feet.....	7 inches

The following record of a honey locust planting in Lincoln County is a fair average of numerous observations made in various parts of the State. Trees one year old from seed were planted in 1886 on upland soil of fair quality. The distance was four feet apart; rows eight feet apart. Trees thinned in 1900 to eight feet each way. No cultivation since the fifth year. Dust from a well-traveled road has caused some injury in very dry seasons. Greatest height, 29 1/2 feet; average height of sixty consecutive trees, 22 feet and 2 inches; greatest diameter of sixty consecutive trees, at four feet from the ground, 6 inches; average diameter at four feet from the ground, 4 inches. It would seem that this combination of the qualities of durability, resistance to drouth and fair rate of growth make this one of the most desirable trees for planting in Western Kansas.

The honey locust is readily propagated from seed. Seed planted in the fall has usually given a fair stand, but the germination of seed in succeeding seasons is sometimes troublesome. Soaking in water heated to 150° F. has given good results.

Many honey locust trees are thornless. This characteristic may usually be noticed in the nursery row or seedling bed, and it is well to select such trees for shade- and street-trees. Seed from the thornless trees has produced many trees with thorns, though the proportion of thornless trees is greater than from the seed from thorny trees.

BLACK LOCUST (Robinia pseudacacia).

The black locust was planted quite extensively during the first part of the decade 1880-90. Good growths resulted in all plantings, but the borers, *Cyllene robiniae*, have so seriously injured the trees as to prevent their growing large enough even for small posts. were it not for this insect, the black locust would probably be our best tree for post-production, but it is not recommended for localities infested by this insect.

It seems probable from observations made here that the best results from black locusts are secured by cutting as frequently as the trees reach a suitable size for posts. The rapid-growing sprouts seem less liable to injury than slower-growing stocks. The trees may be relied upon to renew from sprouts. Trees ten years old measure 20 feet in height, and 4 inches in diameter at four feet from the ground. Trees twenty years old measure 30 feet in height, and 8 inches at five feet from the ground. The black locust has been readily propagated from seed treated in the same way as those of the honey locust.

COFFEE-BEAN (Gymnocladus dioica).

The coffee-bean has not been widely planted, but has succeeded well wherever tried. The young trees make fairly rapid growth, reaching a height of 20 feet and a diameter of 4 inches at five feet from the ground in ten years. Older trees have maintained a fair rate of growth. The coffee-bean is a desirable shade-tree. When young the trees have a strong growth of leaves and shoots that produce a pleasing, almost tropical effect. The older trees are pleasing in leaf and blossom, but their winter form is less desirable, usually presenting a rather bare, grotesque form. Some of the trees, however, are entitled to be classed as picturesque in their winter form. The coffee-bean has been readily propagated by seed planted in the fall or treated with hot water, as described for the locust. They also grow readily from root cuttings or sprouts. (To be continued.)

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GALLOWAY BULLS FOR SALE CHEAP

20-2-year-olds, 80-yearlings. Females of all ages for sale. Address
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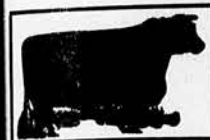
Also German Coach, Saddle and trotting-bred horses World's Fair prize Oldenburg Coach stallion, Habbo, and the saddle stallion, Rosewood, a 16-hand 1100-pound son of Montrose in service. Visitors always welcome.
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Will make special prices on car-load of yearlings and car-load of 2-year-old bulls.

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CHAS. E. SUTTON, Russell, Kans.

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They must be sold as I have more than I can winter.
25 Per Cent Discount for cash, on all sales, until surplus is sold.
 Come and look at the stock if interested. No trades wanted. Also 20 jennets for sale
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Registered Stallions For Sale

15 HEAD AT SPECIAL PRICES CONSISTING OF

Five Percherons, 2 to 5 years old—all black but one, and that a black-gray; two black yearling Percherons; four Shires, 8 to 7 years old; three trotting-bred horse, 8 and 4-year-olds; one registered saddle stallion. All but two at prices from \$200 to \$1,000 each. Come at once for bargains.
SNYDER BROS., WINFIELD, KANSAS.



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Herd Headed by Casino (45462) 27839

Winner of First Prize and Reserve Senior Champion at World's Fair, St. Louis, 1904. Largest Percheron breeding establishment in the West. Won more prizes at World's Fair than any other Percheron breeder. Fourth annual sale at Wichita, Kans., February 1, 1905.

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AMERICA'S LEADING HORSE IMPORTERS



The year 1904 opens with unprecedented victory. At the great Percheron show under the auspices of the Societe Hippique Percheronne de France held at La Ferte Bernard, June 16th to 19th, we won first, second, third and fourth in every stallion class with only two exceptions and first in collection.

At the great Annual show of France held under the auspices of the French Government at Le Mans June 21th to 26th, our stallions won first, second, third and fourth in every stallion class and first in collection.

Look for these grand horses in our exhibit at the St. Louis World's Fair Aug. 24th to September 3rd.

McLAUGHLIN BROTHERS,
 St. Paul, Minn. Columbus, Ohio. Kansas City, Mo.

"OLD FRIENDS, OLD TIMES."
 "MY HEART UNTRAVELL'D FONDLY TURNS TO THEE"

HOME VISITORS' EXCURSIONS
 FROM ALL POINTS ON
MISSOURI PACIFIC RAILWAY.
 GREATLY REDUCED RATES EAST,
 INDIANA, WESTERN OHIO, LOUISVILLE, KY.,
 AND INTERMEDIATE POINTS.
 ALSO HAWESVILLE, POWERS, LEWISPORT AND OWENSBORO, KY.
 September 6th, 13th, 20th, 27th and October 11th. Return limit, 30 days.
DON'T MISS THIS CHANCE
 To visit the old home and see your friends of other days.
 FOR PARTICULARS, INQUIRE OF COMPANY'S AGENT, OR
H. C. TOWNSEND, General Passenger and Ticket Agent, St. Louis, Mo.

WHEN WRITING ADVERTISERS PLEASE MENTION THIS PAPER.

A Good, Safe Investment

24 Producing Wells Insure It

The Publishers Oil and Gas Co. of Cherryvale Offers Its Stock at 20 Cents

Which will soon be at par. Its 24 wells prove that it has a great lake of Oil under the 600 acres of its holdings that it has tested. 1200 acres yet to drill.

Strongest Oil Company in the Oil Fields

Authorized Capitalization, \$1,250,000. Par Value, \$1.00 Per Share.

There is no preferred stock. One share is just the same as any other share. Stock is fully paid up and non-assessable, and there is no liability. The company is chartered under the laws of the Territory of Arizona.

Treasury Stock,	900,000 Shares
Treasury Stock sold to date,	820,000 Shares
Treasury Stock left for sale, now offered at 20c.,	80,000 Shares
Treasury Stock sold at 20c.,	226,000 Shares
Treasury Stock sold at 20c in the last 30 days,	120,000 Shares

Stock is being taken out on every mail, men are coming in on every train and deals are being closed every day by wire. With No. 24 completed, three more wells nearly completed and No. 25 due in the next forty-eight hours, makes this stock safe and solid and at the RIGHT PRICE. When you buy it at 20 cents you pay no more than DOZENS of other good BUSINESS MEN have paid in the last month. For a few days yet the company will offer the balance of the stock at the following low prices:

100 Shares, . . . \$20.00	250 Shares, . . . \$50.00	500 Shares, . . . \$100.00
1000 Shares, . . . \$200.00	5000 Shares, . . . \$1,000.00	10000 Shares, . . . \$2,000.00
12,500 Shares, or a one-hundredth interest, . . . \$2,500.00		

Term of sale half cash, balance in 30 days. Stock to be issued and forwarded promptly by return registered mail on receipt of first payment. Make remittances by check, draft, postoffice or express money order. Stock is being sold all over the United States. One thousand shares were sold in Canada last week. One man in Southern Indiana took five thousand shares last week, and two other Indiana men took one thousand shares each Monday of last week. A man in Central Pennsylvania took one thousand shares Monday of last week. The books are open to inspection and any stockholder who comes to Cherryvale can see these facts for himself. When you buy Publishers' stock you line up with a company that now has a daily production of over two hundred and sixty barrels (260) daily and one that is crowding ahead growing stronger every hour and now with increased energy have another drill and with a solid line-up for success will complete five more wells in the next two weeks, making 29—more than the half of fifty (50) which the management promised would be under the pump by January. The fifty wells will be completed and if you will come down to the field any

time after Wednesday of this week you will find the drills going deeper and deeper every minute toward the oil sand working even night and day on every day but Sunday.

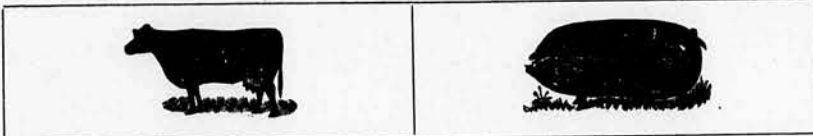
Personally inspected by a Kansas Farmer man, September 26, who found everything stronger than company claims. Not a single dry-well, duster or gasser has been found in this field. Every well drilled has been a producer of oil—either a flowing gusher or a 30-barrel-a-day pumper.

Reasons Why Publishers' Stock is a Fortune-Maker

The company has over 260 barrels daily production. Has pipe line tickets to prove their statements. Any man can come down, go out onto the tanks and see the oil flowing into them. You don't have to take any chances; the company has the oil in sight. A fifty-well pumping plant is installed and pumping, running from early dawn until midnight, pumping a steady stream of gold to market. There are men and money enough back of the Publishers' to guarantee grand and lasting success. There are no debts; company now has money enough on hand to complete nearly ten more wells. The company has ten times as much proved oil lands as the ordinary stock company. The company is crowding development. Their No. 9 well furnishes sufficient gas to run all the drilling rigs. The Publishers' are only paying 80c for drilling, while some companies are paying \$1.00. The Publishers' company is managed by Cherryvale business men, who know the oil fields. They are where they can give the property personal attention at very little expense to the stockholders. The company is crowding ahead by leaps and bounds and when you buy the stock you don't have to hold it a week until more wells are completed and your stock enhanced in value. It takes oil wells to increase the value of your stock—nothing else will. The company will be selling close to ten thousand dollars' worth of oil a month by January; this means thirty thousand dollars a quarter. They can pay 1c per share dividend on the stock then and have enough left to drill in one well a week; consequently will have ninety-eight wells completed in the next sixteen months. Publishers' stock is sure to go to 90c and will go higher, while the prospects are bright for it to go to past \$2.00 per share. The company is working in good faith, the drills are running, and in the next two weeks five more wells will be completed. Send for bird's-eye view and buy your stock at once. Write or wire. When you write for information or remit money, address H. H. TUCKER, JR., Secy, and give credit for seeing advertisement in Kansas Farmer.

BABCOCK'S PUBLIC SALE

Jersey Cows and Poland-China Hogs



Nortonville, Kans., Monday, Oct. 24, 1904, at 10 a. m.

The Jersey offering consists of 11 registered Jersey cows and 20 high-grades, a choice lot of young cows, mostly fresh. Also 60 head of Poland-Chinas of desirable breeding and choice individuals. Visitors from a distance entertained free at the Commercial Hotel. For catalogue address

M. S. BABCOCK, Nortonville, Kans.

Auctioneers—Cols. Jas. W. Sparks and John Daum.

Republic County Breeders' Combination Sale of Poland-Chinas

At Bel'ville, Kans., Saturday, Oct. 22, 1904, at 1 p. m.

Consigned as follows: O. R. Smith, Cuba, 5 boars and 3 gilts; F. C. Swiercinsky, Belleville, 4 boars and 4 sows; Carl Jensen & Son, Belleville, 4 boars and 3 sows; Geo. E. Smith, Cuba, 4 boars and 3 sows; J. J. Ward & Son, Belleville, 3 boars and 2 sows; T. J. Charles, Republic 3 boars and 1 sow; J. I. Myers, Hardy, Neb., 4 sows; H. B. Walter, Wayne, 6 boars and 2 sows.

50--Head Will Be Offered--50

The offering will be a select lot from the above well-known herds. No grander lot of breeding stock was ever offered in Northern Kansas. All herds in prime condition. Free entertainment at the Crystal Cafe for buyers and breeders from a distance. Ask for catalogue.

H. B. WALTER, Sale Manager, Wayne, Kans.

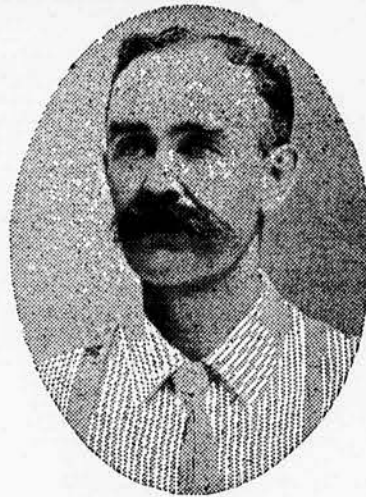
Auctioneers—Cols. L. W. Leonard and John Brennan. D. D. Bramwell, Clerk

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To be held at farm, four miles northwest of Fairfield, Iowa,

Thursday, Oct. 13, 1904



C. D. McPHERSON, Fairfield, Iowa. four at one time.

This offering consists of 50 High-bred and Registered Standard-bred Trotters and Norman Horses.

The owner of this offering has at the present time one hundred head of horses exhibiting at the fairs in Indiana and Iowa and is receiving more first and sweepstakes prizes than any other exhibitor in the showing circuit. The horses are highly educated and his 6-year-old boy, Raymond, exhibits them driving

Any one wishing further information or catalogue should address

C. D. McPHERSON, Proprietor,

Or Wisecarver Bros., Auctioneers,

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And other malignant blood diseases. Don't waste time and money experimenting with cheap stock food. Use a medicine prepared especially for the hog. Twenty years' test without a failure. We run all risk and in case THE GERMAN SWINE POWDERS fail to eradicate the disease from your herd, we refund your money. The greatest conditioner and growth-promoter ever discovered, and the biggest money-maker for hog-raisers known. Prices: 100 lbs., \$25; 25 lbs., \$7; 10 lbs., \$3; 5 lbs., \$1.75; 2 1/2 lbs., \$1. Send for our Treatise on Swine—it's free. Make all checks and drafts payable to

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The German Swine and Poultry Merchandise Co., Topeka, Kans.