

KANSAS FARMER

ESTABLISHED IN 1863.
VOL. XXXIII. NO. 49.

TOPEKA, KANSAS, WEDNESDAY, DECEMBER 4, 1895.

SIXTEEN TO TWENTY
PAGES--\$1.00 A YEAR.

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(Breeders' Directory continued on page 15.)

Agricultural Matters.

CORN ROOTS—THEIR DISTRIBUTION AND VARIOUS OFFICES.

BY H. R. HILTON, TOPEKA, KAS.

Plants, like animals, "must have food to eat, water to drink, air to breathe and sunshine or warmth in order to live. All four requirements are so dependently linked that there can be no life, animal or vegetable, if one be missing. If water, air and heat are present in a fertile soil, in right proportions, a healthy, vigorous growth of plant life follows. If there is an excess or deficiency of either one, that excess or deficiency controls the development of the plant.

The object of plowing, harrowing and cultivating the soil, aside from the killing of weeds, is to bring about such a physical condition of the soil as shall maintain the soil air, water and temperature in as nearly equable proportions as possible and to vary the conditions, where necessary, to suit the needs of different plants, or of the same plants at different seasons. For instance, in the early spring, temperature is usually most deficient, and we cultivate for warmth. At midsummer, temperature is usually in excess and water deficient, and we cultivate to promote coolness and retain moisture.

Nitrogen is the most important and costly food element required by farm crops. It is the most easily wasted and lost. It cannot be stored and retained in the soil in available form for an indefinite period, like potash, or magnesia or lime. The amount of available nitrogen is dependent on the amount of organic matter in the soil. If moisture, heat and air are present in right proportions, the organic matter is converted into nitric acid by the process of fermentation, through the agency of micro-organisms. Leguminous plants (clover, peas, etc.) are exceptional in their power to supply their own growth and the crops that follow them with nitrogen taken from the air through agency of micro-organisms peculiar to their own root growth. Leguminous plants add nitrogen to the soil; non-leguminous plants deplete it. The highest percentage of organic matter in the soil is nearest the surface, hence we expect to find the micro-organisms most active in the surface soil, and especially in the early spring, because then the surface soil only has sufficient warmth to promote the fermentation essential to the formation of nitric acid and rendering available also the needed potash, phosphorus and lime. As the season advances and the soil is warmed to greater depths, the area from which the plants can gather the nitrogen and other food elements is proportionately increased. Under these conditions we also expect to find the roots of plants most developed where the food supply is most abundant, and we do find the fibrous roots or food-gatherers most plentiful just as near the surface as the soil is sufficiently moist to maintain the required condition.

In recent experiments by Deherain, in France, he found a greatly increased supply of available nitrogen where the soil was frequently stirred over that found in the same soil left undisturbed. The mixing of the soil grains and freer admission of the atmospheric air seemingly promoted the activity of the micro-organisms, thus placing nitric acid at the disposal of the plant in larger supply. This presents two problems: First, how can we stir the soil in which corn is growing to increase the available supply of nitrogen and not destroy the fibrous roots of the corn plant that push themselves out from the main artery roots to find this nitrogen? If we cultivate, we cut the roots and the plant is deprived of the manufactured food till a new root growth takes place. Again, how long is cultivation necessary to insure all the food the plant needs and manufacture no more than is needed, so that there may be no waste? Second, under our Kansas conditions, in midsummer,

our soil will dry out almost to depth stirred, so that in frequent stirring we so reduce the moisture content in the surface soil that fermentation practically ceases. Is this favorable or detrimental?

We cannot hope to solve these prob-

upland plowed five to six inches deep, near county poor farm, four miles north of Topeka. In September, just as corn was maturing, two excavations in upland fields were made on the farm of J. B. McAfee, three miles west of Topeka. Photographs of the exposed

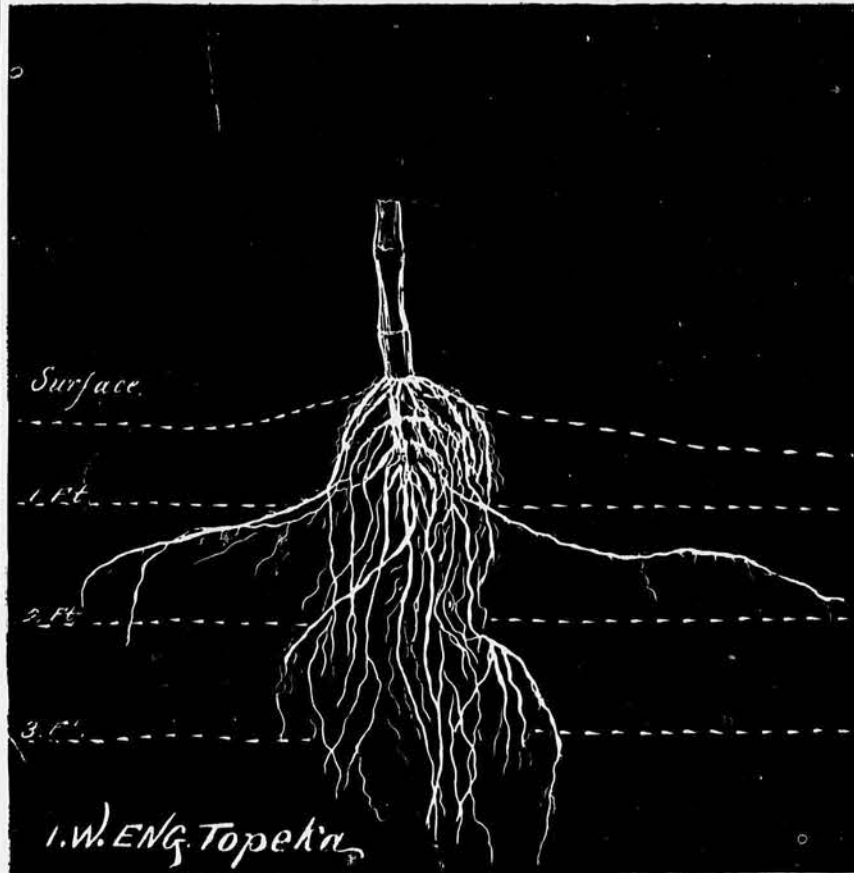


FIGURE I.—Corn roots exposed, on land subsoiled.
(On farm of J. B. McAfee, near Topeka.)

lems till we have a better knowledge of the manner in which the roots of our principal grain and vegetable crops distribute themselves in the soil, and whether through cultivation, irrigation or fertilization, or all three combined, we can give a better environment to the roots with the promise of better returns in the matured product.

As corn is the great staple of Kansas, and as there is still great difference of opinion as to the best methods of preparation and cultivation, even on the same soil, a number of excavations were made in the vicinity of Topeka

roots were taken and are here reproduced.

Figure I. is of excavation in field subsoiled eighteen to twenty inches deep this spring, and figures II. and III. are of excavations in field plowed usually eight inches deep but never subsoiled. Figure III. is an enlarged view of the left hand root shown in figure II.

Fibrous roots were much more abundant in the surface soil in June than in September. The subsoiling was done with a tree-digger on Scott Kelsey's farm, and the tracks of the digger,

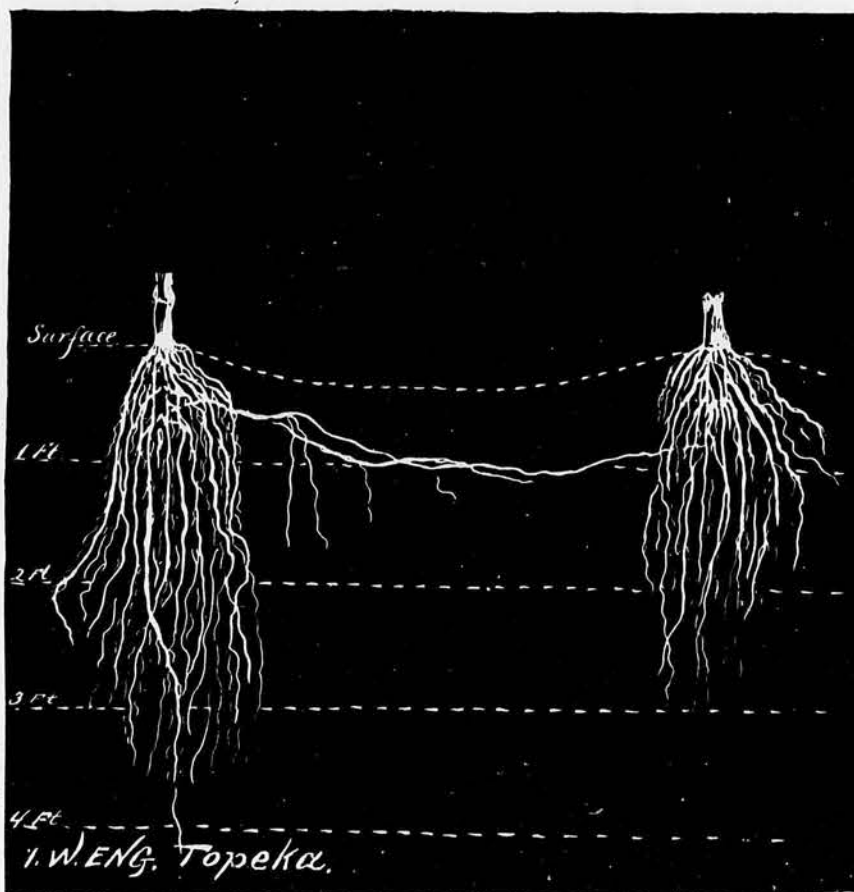


FIGURE II.—Corn roots exposed, on land not subsoiled.
(On farm of J. B. McAfee, near Topeka.)

this season, to get a more definite idea of just how the corn roots distribute themselves in different soils and under different systems of cultivation in the same soil. Two excavations were made as corn was tasseling—one on subsoiled bottom land on the farm of Scott Kelsey, near Oakland, and one in sandy

twenty inches wide by sixteen deep, were a mass of fibrous roots. In the compacted soil between, there was not as many fibrous roots six inches deep as there was in the loosened soil sixteen inches deep.

On the upland farm, north of Topeka, the fibrous roots occupied every

inch of soil in the lower two inches of the stirred soil and diminished rapidly below the line of plowing. Many of these roots were in danger from deep cultivation.

On the McAfee farm, in both locations most of the first roots and their fibrous branches seem to have disappeared—probably destroyed by cultivator.

The lateral roots exposed are first circle roots. Those in figure II. are eight inches below the surface and in figure I. are ten inches down.

An examination of a great many corn roots in their natural position and after removal, show a root development about on the order and general direction shown in figure V. Roots will vary in their development in different soils and in different seasons in the same soil. A different development will take place in a wet season from that in a dry one; different in a season wet in May and June and dry in July and August from one just the reverse.

The root outline in figure V. will, however, be helpful in identifying the various sets of roots and the special work each performs in the plant development. Roots referred to can be identified and followed to terminal point by reference to the numbers 1, 2, 3, 4, 5, 6. The star in lower right hand corner shows end view of butt end of stalk and starting points of "first roots" and first circle (2 and 3).

1. A few tender roots from the seed to sustain the bud till it reaches the surface.

2. When the plant appears above ground it sends out from five to ten roots just as near the surface as there is moisture to sustain them. For convenience we will call these the "first roots." The center point from which these first roots radiate becomes the tip end of the corn stalk. These are lateral or surface roots and spread out through the surface soil, sending out many branches. Both main root and branches are covered with fibrous or hair roots, through which water with its store of diluted food is taken into the main root, to be conveyed to all portions of the plant structure. Many of these roots were followed over six feet out from the stalk and then broken off. The first roots are very wiry and very much smaller than those developed later. (See No. 2 in both upright and end view in figure V.)

3. As the plant develops, and probably within forty days from its first appearance, a new circle of roots start out just above the "first roots"—which are referred to in this article as "first circle." (See No. 3 in both upright and end view, figure V.) The number of roots will vary from six to fifteen and radiate in all directions from the stalk, just as the "first roots" do, but do not keep so close to the surface. Some take an angle of 45° downward and some follow along the bottom of the cultivated ground for several feet and then turn downward into the subsoil. The condition of the soil, as to temperature and moisture, probably determines the direction of the root growth. These, like the "first roots," are surface roots, although they take a wider range between the surface and subsoil than any other class of roots that originate in the stalk.

4. The second circle of roots develop still later and (see No. 4, figure V.) grow downward into the subsoil, the depth depending on porosity of the soil and the water content. The main roots rarely spread much, but occasionally a branch root is found that follows the surface soil.

5. The "third circle" of roots (see No. 5, figure V.) are identically the same in habit and direction as the circle immediately below, but are developed later in order of time.

6. The number of circles of roots depends on the number of joints developed in the lower six inches of the stalk and the depth of soil covering after the first roots are formed. The node or joint just above the soil surface usually sends out spur roots—familiarily known as "brace roots." If the spurs reach the moist soil, they become true roots, with the same office as the "circles" just below the surface. In their growth down through the surface soil they become covered with fibrous

roots, just like the others. These roots make their growth principally after the period of tasseling.

In this classification it will be noticed (see figure V.) that the "first roots" and "first circle" are surface or lateral roots or food-gatherers, and all the other roots developed later are subsoil roots.

There is evidently a law of preservation in the direction of growth and a law of succession in the formation and use of these various classes of roots. The seed roots sustain the bud till the first roots are developed. Then their work is accomplished and their usefulness ended. The first roots are the main support of the plant during the first thirty to forty days of the plant's aerial life. These roots seek the surface soil, and especially that first warmed by the May sun. The "first circle" comes to the aid of the "first roots" after the plant is a foot high, and with increasing temperature follows a lower level in the soil. These are subject to more variation than any other class of roots, because of the greater changes in moisture content and soil temperature during June. The "first" and "first circle" roots are called food-gatherers, because these range and send out their thousands of branches preferably in the cultivated soil, where the air, water and heat can set in motion the agencies that extract from the soil the nitrogen, potash, phosphorus, magnesia, lime, silica and other food elements needed in building the plant structure and in perfecting the fruit.

The absence of fibrous or food-gathering roots in the subsoil is not always because the subsoil lacks fertility, but oftener because of its physical condition. The air, water and temperature cannot be so well proportioned as in the surface soil and the plant cannot get the food it may contain without the aid of these agencies.

In experiments with spring wheat at the Minnesota Experiment Station, it was found that the plant takes over 80 per cent. of the nitrogen and 75 per cent. of the potash required by the crop before the wheat heads out, and over 80 per cent. of the phosphate in first half of growing period. Corn was also found to make its greatest demand on these elements in the earliest growth. Evidently these food elements were stored in the leaf and stalk awaiting transfer to the seed as it approached maturity.

This is in harmony with the different stages of the root development of the corn plant. The earliest roots seek the surface soil richest in available nitrogen, etc. The later roots reach down into the subsoil for good anchorage and also to supplement the water supply, which is usually in greatest demand at the time of flowering and fruiting. These deeper roots also supply the loss by evaporation from the leaves and aid in those intricate processes within the plant itself by which the food elements accumulated in the earlier growth can now be transferred to, and concentrated in, the seed. A briefer statement of root action would be: Surface roots pump water containing a high percentage of plant food. Subsoil roots pump more water containing a low percentage of plant food.

As the corn plant needs half the necessary water supply after the tassel begins to form, the importance of these added pumps in deeper wells during the period of highest temperature is self-evident.

Mr. J. E. Payne, of Manhattan, has traced corn roots to a depth of six feet eight inches. The writer has found them abundant at four and one-half feet below surface, but has never followed one to its end. Many surface roots have been followed over six feet from the stalk and then broken. Many surface roots follow the surface five or more feet, and if season turns dry, turn directly down into the subsoil, evidently following a law of self-preservation in seeking fresh sources of moisture at lower levels.

The much greater development of roots shown below the two-foot level, in figure I., subsoiled, over that in figure II., not subsoiled, suggests the value of subsoiling. In the excavations made this season, the plants hav-

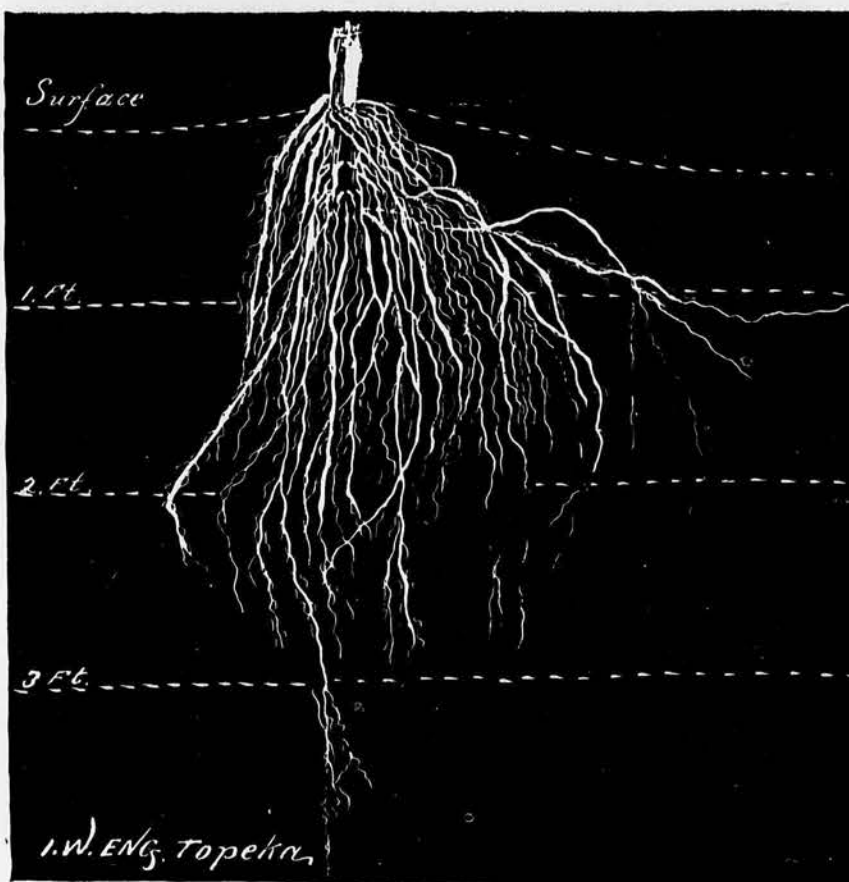


FIGURE III.—Enlarged view of left hand root in Figure II.

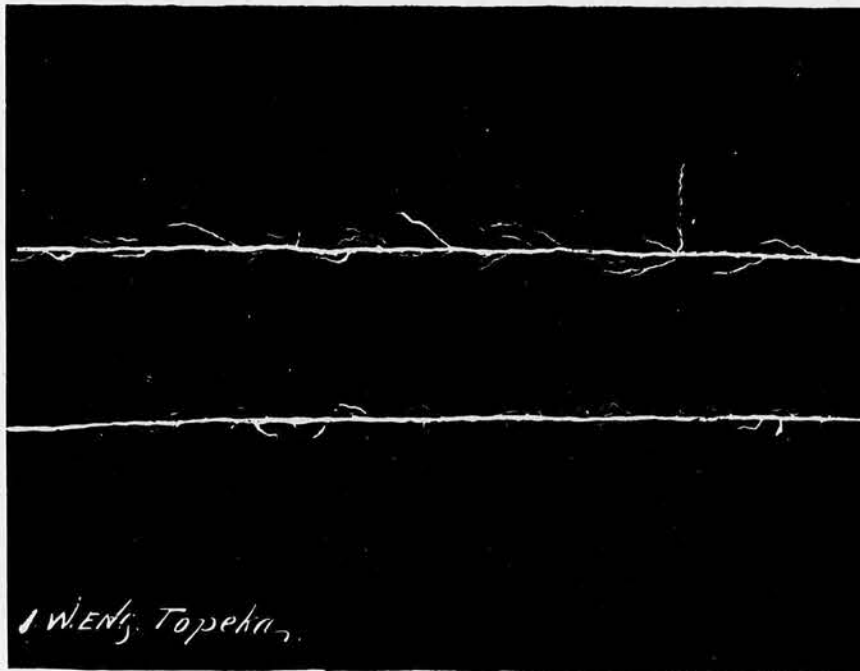


FIGURE IV.—Corn roots, nearly life size.

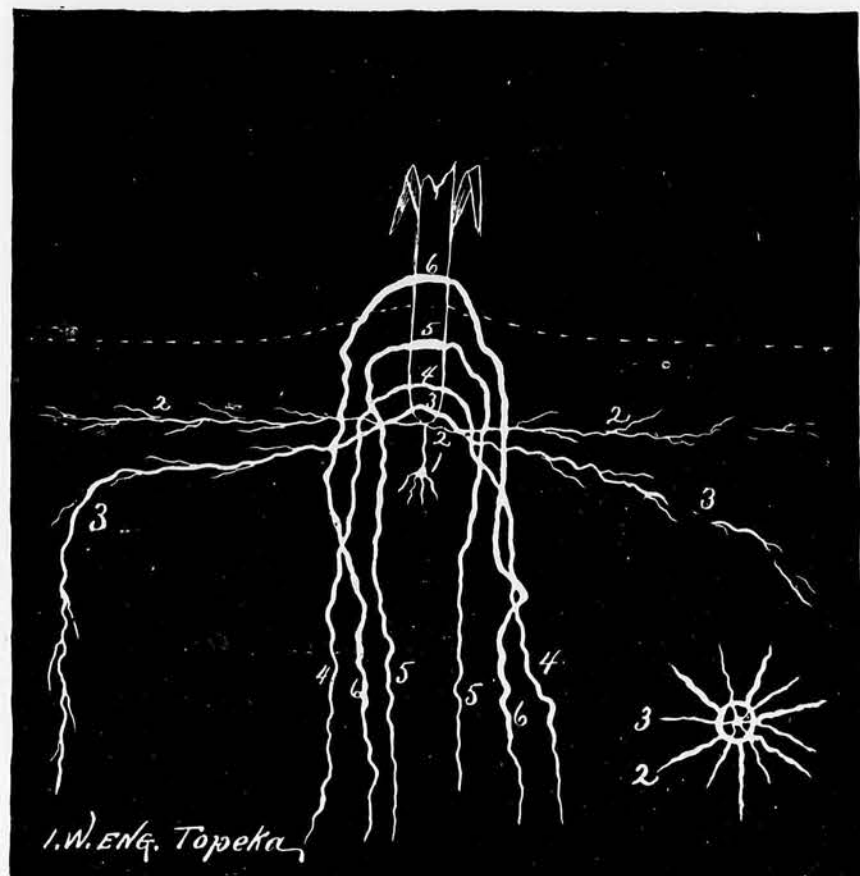


FIGURE V.—Classification of corn roots.
(Figures 2 and 3 in end view are inverted.)

ing the greatest development of subsoil roots had the largest stalk and ear.

Roots do not readily penetrate a fine-textured silt or clay subsoil, and we often find a new root following down the track of an old, decayed root, evidently choosing the lines of least resistance in its search for food or water. If it is desirable to encourage the "circle roots" to grow deep in the soil, it is certainly desirable to prepare the way by loosening the deeper soil with the point of a subsoil plow. Give the subsoil roots a chance, for, a "way in" to the subsoil for the roots may be a "way out" for the subsoiler.

The importance of the physical texture of the soil in storing and saving moisture and its agency in preparing the plant food, has already been presented in the columns of the FARMER. The length of this article prohibits repetition here, but in this study of roots we can see why the check-rowed corn in well-prepared soil makes a better development in the earlier part of the season than the listed corn. The physical condition of the soil insures greater warmth in the early spring. It also suggests the reason why listed corn resists dry weather in July better than the check-rowed corn with level culture. More joints of the stalk are covered when listed and more circle roots are developed to go to the subsoil after water. One stalk in a place also gives a better distribution of the roots in the subsoil. Listing in the fall and double listing in the spring favors earlier warming of the soil and suggests that it might be profitable to combine both systems. Prepare for check-rowing and plant in lister furrow.

Study so far suggests the following method and order for eastern half of Kansas: Deep fall plowing where the soil does not blow in winter. Shallow spring plowing. Spring-tooth harrowing to prepare seed-bed. Open lister furrow; after a few days warming, plant; level ridges; harrow or cultivate frequently. Cultivate deepest when plant is quite small, so that if any roots are cut they can grow again. Run cultivator shallower each time, but never less than two to three inches. If weeds do not get the start, prefer five or twelve-tooth single-horse cultivator all the time, but if large cultivator must be used to kill and cover large weeds, follow it within three days with one-horse cultivator run two to three inches deep to dry out surface soil and save the moisture. After corn is two feet high and weeds subdued, the small cultivator only should be used, and its use continued until ears are formed. It is important to cultivate promptly after every good rain, no matter how recently or how often the soil has been stirred. Shallow stirring of the surface soil up to earing-time prevents waste of moisture, promotes filling of the ear, checks the growth of crab grass, which saps the soil of water at a time when it is most needed by the corn plant, and leaves the ground in good condition for seeding fall wheat in the corn, if that rotation is practiced.

The student of root growth can readily see the great value it would be to the farmer who could store up surplus water from the earlier part of the season and apply it from three to six inches deep over his corn field about tasseling time, to fill up this subsoil reservoir and give the subsoil roots wells of living water from which to supply all the wants of the plant for seed formation and evaporation and to assure a good bloom and a good ear, thus making assurance doubly sure. It is just at this point our corn crops fail, when we have a failure. It is the abundant rains at this period that gives us the rich harvest of grain.

The dark green leaves of the corn plant reveals the abundant presence of nitrogen, etc. A strong, vigorous plant before tasseling needs only water to transfer these elements to the seed and insure a fruitful harvest.

The unquestioned value of manures—green crops, etc.—to supply the soil with organic matter or "humus" and to increase its water-holding capacity, has already been presented in the FARMER and may be made the subject of a future article.

The Stock Interest.

HOW TO USE CONCENTRATED FEEDS.

A cow that has been on pasture all the season must not be put at once onto a heavy ration of rich grain; the process must be gradual. Especially is this true of animals that have never been highly fed, or whose history in this respect is unknown. The rich feeds like cottonseed, linseed or gluten meals should be given first at the rate of a pint per day to each cow, then increase slowly to a quart, observing how each animal behaves and how the quantity and quality of milk or butter is affected. Some creameries have refused to take milk or cream from cows fed more than a quart of cottonseed meal daily, but in such cases the real trouble is that either the meal was of inferior quality or a few patrons were so careless or reckless in feeding it that the injury to their cream affected the whole batch of cream at the factory. To guard against this the directors had to restrict the amount fed by the careful as well as the careless dairyman.

The chief objection to these heavy feeds is that if carelessly used they make the butter soft and oily and therefore injure its keeping qualities and market value. But we know of numerous private dairymen who by very careful feeding and by gradually accustoming their cows to concentrated feeds are able to feed four to six pounds of cottonseed and gluten meal per head daily without any apparent bad effect on the butter. Feeding for milk can be pushed further than feeding for butter. We know farmers who make a practice of buying new milch cows or farrow cows, feeding them heavily and then turning them off for beef when they give less than eight quarts of milk daily; these men get their cows to take as high as twelve quarts of grain daily, including three quarts of cottonseed meal, with no bad effects, the cows getting fat and making heavy beef, while the manure is extraordinarily rich. Such forcing is not to be recommended, few cows could stand it more than one winter, and it is only applicable to stock intended for the shambles, and it is mentioned here only as indicating the extremes to which feeding is sometimes carried.

The result of extended work at the Massachusetts Experiment Station is that, for intensive dairying, cows of 1,000 pounds weight in full flow of milk (yielding ten to twenty-four quarts of milk daily) should have, in addition to what coarse hay, corn fodder, straw, etc., that they eat up clean, nine quarts of grain daily from a mixture of 100 pounds each of the feeds named in the following rations, except that in Ration D, 200 pounds of bran are used; Ration A., cottonseed meal, wheat bran and corn meal; B., Chicago gluten meal, wheat bran and gluten feed; C., linseed meal, wheat bran and ground wheat; D., linseed meal, Pope or King gluten meal and wheat bran.

For years it was thought that these concentrated feeds could be safely used only for cows, but for the past two or three seasons they have been more freely used for horses, sheep, hogs and poultry, as well as for steers and young cattle. Of course any animal not accustomed to these feeds must be given a very small quantity at first, and never to excess. Hay, straw, corn meal, and similar starchy foods should be given freely, in order that the ration be not too concentrated. The very satisfactory increase in egg production from liberal feeding of cottonseed and gluten meals to hens, is explained by the fact that these foods supply a large proportion of albuminoids (also called protein) or nitrogenous matter, which the hen requires to furnish albumen in the egg. The richer a feed in protein the less can be fed at a time to swine or sheep, yet those who have never used gluten or linseed meals for hogs will be astonished at the gains. Every sheep man knows how prudent he has to be in feeding even plain corn to sheep, and will see that even more judgment must be used with feeds several times richer. About one-third of the grain ration of C. J. Hamlin's famous horses is gluten

feed, which is specially valuable for brood mares and colts, for, as he says, "it takes the bellyache out of the corn."

The Corn By-Products.—The gluten feeds and meals are remarkable for their richness in protein (nitrogenous matter). The various brands of gluten meal contain about 33 per cent. of digestible protein, or nearly five times as much as clear corn meal, while gluten feeds contain about 24 per cent. of available protein, or more than three times as much as corn meal. A corn oil meal and cake is on the market in a small way, that is still richer. The maize bran or germ bran, mainly hulls and germs, is the nearest approach to straight corn meal and can be fed quite as freely and in place of the meal. These by-products fed with wheat bran produce more and richer milk than clear meal. Experiments have not yet shown that it is possible to feed fat into milk, that being apparently influenced quite as much by the individuality of the cow as by the feed.

Oil Meal Products.—Cottonseed meal is the richest, containing about one-third more protein than linseed meal. It is liable to cause scours or diarrhea in animals not used to it. Linseed meal is a much safer feed. Occasionally some inferior meal from both these feeds is put on the market, but the standard brands are too well known for feeders to be deceived. Linseed meal may be fed to hogs in small quantities along with corn and cob meal or bran, but the advisability of cottonseed meal as hog feed is disputed. Many who have tried it condemn it as a food for hogs, the Texas Experiment Station being emphatically against it. Others report good results from its use in a small way, but the weight of evidence favors linseed, wheat, oats or buckwheat by-products as much preferable to cottonseed, whole or ground, for hogs.

Wheat shorts and middlings have about the same composition (one pound digestible protein to nearly five pounds digestible sugar, starch and fiber, that is to say, their nutritive ratio is about 1 to 5), are about equally digestible, and in most cases have about the same feeding effect. The bran is less digestible and more of it may be safely fed, or it may be used more liberally to extend a ration of which gluten, cottonseed or linseed meal forms a part. These wheat by-products are all clean and healthful feeds that can be used with a freedom and even a carelessness that in the case of more concentrated oil meals might prove disastrous.

Small grains—oats, rye, barley and buckwheat—furnish useful feeds as meal, bran and middlings, and even buckwheat hulls are fed by some farmers (in connection with gluten, linseed or cottonseed by-products) with fair results. Several combinations of those feeds are on the market and are endorsed by many feeders.

Brewers' Grains.—Wet grains are still a favorite feed with many producers of milk for market, but when fed freely injure quality of both cow and milk. Compared to the more concentrated feeds at current prices, wet brewers' grains are one of the most costly of feeds. The dried grains are better and safer to feed, and at the price usually sold pay better than wet. Dried grains are excellent for horses and may be fed in place of oats, though oats are so cheap this fall that the saving by feeding dried grains would not be as much as usual. Malt sprouts are quite as rich as dried brewers' grains, and are four or five times as rich as wet grains.—*Herbert Myrick, in American Agriculturist.*

\$100 Reward \$100.

The readers of this paper will be pleased to learn that there is at least one dreaded disease that science has been able to cure in all its stages, and that is catarrh. Hall's Catarrh Cure is the only positive cure known to the medical fraternity. Catarrh being a constitutional disease, requires a constitutional treatment. Hall's Catarrh Cure is taken internally, acting directly upon the blood and mucous surfaces of the system, thereby destroying the foundation of the disease, and giving the patient strength by building up the constitution and assisting nature in doing its work. The proprietors have so much faith in its curative powers, that they offer one hundred dollars for any case that it fails to cure. Send for list of testimonials.

Address, F. J. CHENEY & CO., Toledo, O.
Sold by Druggists, 75 cents.

Prevention of Hog Cholera—Sulphur.

EDITOR KANSAS FARMER:—By your request, I reply to the inquiries of "F. L. T.," of Coldwater, Kas., as to how much sulphur should be fed to hogs, and whether or not there is danger of feeding too much. As Mr. T. was led to ask these questions through reading an article on hog cholera taken from the *Ohio Farmer* and published in the *KANSAS FARMER* in the issue of November 27, page 755, I will refer to some excellent advice given there in regard to the care and management of hogs for the prevention of the disease.

It is well known that some localities, and even some herds in infected localities, either remain entirely free from the disease or have it in a very light form. It is also an established fact that the more strong and vigorous the constitution of an animal, the greater its power to resist an attack of disease. But this power of resistance is not always found in the animal which carries the most fat. Eminent physicians, in order to ascertain the cause of the great fatality among the inhabitants of basement rooms and filthy dens of the cities, have taken healthy animals and exposed them for a time to the foul air of these dens and then inoculated them with the virus of some disease, at the same time inoculating an equal number of unexposed animals with virus of the same disease, when it was found that those which had been exposed to this foul air, though only for a few days, had less power of resistance and succumbed much more readily to the disease than those which had not been exposed. So it may be seen that while a herd of animals may be so well cared for generally as to possess great powers of resistance, yet a week of rainy weather may render their quarters so foul as to make them readily susceptible to disease. Hence the necessity of keeping hog yards thoroughly clean at all times, and if possible the yard should be on high ground instead of on low, moist ground on the bank of a stream, as it often is. Another plan is to move them to a new place occasionally to give the old ground a chance to dry off and become purified by the action of the air and sunshine.

As to feeding sulphur, there is no doubt but that it is very beneficial. It not only has the power to destroy disease germs, but it is also very effectual in keeping the bowels open and preventing the constipated condition so apt to ensue in animals confined in pens. It does not matter whether it is fed in the hard roll or in a pulverized state, just so that it is pure and they eat it. It has a better effect if pulverized and mixed with equal parts of salt and powdered charcoal. The only danger in feeding too much is that it may purge too violently, but in the above mixture there is little danger of that. And when so mixed the salt and charcoal both have an excellent effect in regulating the bowels. The medicinal dose of sulphur for a hog is from one to two ounces. The safest way is to give the animals a moderate quantity each day for a few days until they get accustomed to it before placing it before them in large quantities. S. C. ORR, V. S.
Manhattan, Kas.

Brood Sows Following Cattle.

In a timely article in *Wallace's Farm and Dairy*, the objections to allowing brood sows to follow fattening cattle are clearly stated, as follows:

"It is a common remark that brood sows will not do well when following fattening cattle. Pigs are likely to come dead or hairless or delicate and die off like flies about the time of the first frost. There is nothing strange about this. It is what might be expected if they are fed no other food. Hogs following cattle that are corn-fed, as most cattle are, receive a very highly carbonaceous ration. The foetus of all young animals is mainly flesh and bone and not fat. A carbonaceous diet for the brood sow, whether obtained in following cattle or otherwise, does not furnish the material with which to build up a healthy foetus. No finished product can be made without the proper raw material. If the animal is not fed bone-making

"Saved My Life"

A VETERAN'S STORY.

"Several years ago, while in Fort Snelling, Minn., I caught a severe cold, attended with a terrible cough, that allowed me no rest day or night. The doctors after exhausting their remedies, pronounced my case hopeless, saying they could do no more for me. At this time a bottle of



AYER'S

Cherry Pectoral was sent to me by a friend who urged me to take it, which I did, and soon after I was greatly relieved, and in a short time was completely cured. I have never had much of a cough since that time, and I firmly believe Ayer's Cherry Pectoral saved my life."—W. H. WARD, 8 Quimby Av., Lowell, Mass.

AYER'S

Cherry Pectoral

Highest Awards at World's Fair.

AYER'S PILLS cure Indigestion and Headache

and flesh-forming material, then there cannot be the proper development of the animal which is wholly fed on that material. This should be plain to every man who gives it a moment's thought.

"The subject is of more importance than would appear at first sight. We have been growing hogs this year on 50-cent corn and selling them at about 20-cent corn prices. It goes without saying that there has been no money in the business. The profits have all been lost, and unless they were well-bred and well-fed some of the principal as well. The best thing that we can do is to make it up next year by growing the requisite number of thrifty, vigorous pigs, and to do this they must be properly born, well-fed before they are born, and this cannot be done by allowing brood sows to follow cattle. Let the fattening hogs follow, let the shoats follow, but keep the brood sows away, or if that is not practicable give them bone-making and muscle-making food in addition. Oats are cheap—as cheap as they ever were—and not only cheap, but of good quality. Let the brood sows have them. Wheat is cheap and we can afford to feed the brood sow on the finest of the wheat if we have no other proper food. Middlings are cheap, if not plenty. Give the sow material with which to develop healthy pigs and there may be a good chance next year to make back all the losses of this and more."

MEDICAL TREATMENT.

If you want the best expert and scientific treatment by the leading physicians and specialists of the country, consult only DR. HATHAWAY & CO., 70 Dearborn St., Chicago, Ill. All Chronic Diseases of men and women, Private, Skin, Blood and Nervous Diseases. Cases treated by mail all over the world by sending for Symptom Blank No. 1 for men, No. 2 for women, No. 3, Skin Diseases, No. 4 for Catarrh. Best of references.

ELECTROZONE

IT KILLS THE GERM An Absolute Cure for Chicken and HOG CHOLERA

Mr. JEFF. D. CRENshaw, of Riverton, Ala., in *Southwestern Cultivator*, of Sept. 25, 1895, says in part: "After an experience of nearly a month during which time about every hog on our premises has had cholera, we have lost three out of a forty-odd killing ones—ELECTROZONE has proven to be a specific for which I go on record as saying it will cure hog cholera, and will prove of incalculable benefit to pork producers throughout the land."

50c. per quart bottle. Send for circulars and complete information to THE GEO. CARLETON BROWN CO., 72 Park Place, New York City. Manufactured by Electrozone Co. Used by Board of Health of New York City



HOGS! More Hogs! Better Hogs! Subscribe for *Whinery's Swine Advocate* A 16 page monthly devoted to the interests of breeders and feeders of swine. Especially adapted to the wants of farmers and young breeders. Subscription price 25c. per year. 4 mos. trial 10c. Sample copy FREE. *Whinery's Swine Advocate*, Salem, O.

Irrigation.

SETTING OUT FRUIT TREES FOR IRRIGATION.

Writers upon the subject of the distances at which fruit trees should be planted never seem to take into consideration that it makes a great deal of difference whether the trees are to be irrigated or not. Take, for instance, the case of peach trees, which it is usually recommended to plant at a distance of twenty-one feet, or 100 trees to the acre. Now I have no hesitation in saying, that to set out peach trees on the square at twenty-one feet from tree to tree will be found a most inconvenient method where the trees are to be irrigated. The system may do very well for an orchard not under irrigation, as it gives an equal opportunity for cultivation both ways, that is along the rows and crossways; but in the case of irrigation a much greater space will be required between the rows along which the irrigation takes place. Not only is additional space required in which to open the irrigating furrows, but also for the subsequent cultivation, and on land sufficiently strong to make a six-year-old peach tree spread twenty-one feet, or even eighteen feet, the alleys between the rows will not be found sufficiently wide to permit the various operations of irrigation and cultivation to be carried on efficiently. Or on the other hand, if, on account of the weaker growth of the trees, twenty-one feet be found sufficient for the alleys along which the irrigating furrows run, then the distance of twenty-one feet is too wide the other way, and it would have been more economical to have set the trees out twenty-one feet by sixteen, or say 125 trees to the acre.

I do not propose to lay down a rule for the proper distance at which fruit trees should be planted, as this will depend entirely upon the size to which they may be expected to grow under the varying circumstances of climate, soil, etc. I merely wish to point out that in order to give space for irrigation and cultivation, the distance between the rows along which the water runs should be at least six feet wider than the distances at which the trees are set in the rows. As I have already remarked, twenty-one feet on the square will not be sufficiently wide if the trees grow to a distance of eighteen feet, but exactly the same number of trees can be set out to the acre if the rows are made twenty-four and a half feet wide and the trees eighteen feet apart in the rows.

The water should not be allowed to come up to the trunks of the trees, and there will therefore be a strip of land on each side of the rows, varying from three to six feet, according to the age of the trees, which will never receive water. On this strip the want of water, and, as the trees grow larger, the heavy shade will prevent any rampant growth of weeds and it can easily be kept clear by an occasional hand-hoeing, while the wider alleys will give ample room for horse cultivation.

In the collection of the fruit these alleys will also be found a great convenience.

Moreover, a much larger number of trees may be successfully grown upon the same space by planting somewhat thickly in the rows, provided the rows are wide enough apart to allow sunlight and air on two sides of the trees. For instance, trees at eighteen feet apart each way may form a perfect thicket in a few years and exclude the sunlight and air to such an extent that they will all become weakened. The same trees set in rows twenty-one and a half feet wide and the trees fifteen feet apart in the rows will do much better, although there will be exactly the same number on the ground, but the wider rows will admit a current of air and light, without which no tree will thrive in any climate.

There is yet another advantage in favor of the alley system and it is this: Suppose you are setting out some new variety and don't know exactly how large it may ultimately grow. You are not sure it will grow to more than fifteen feet in diameter, and on the

other hand it may grow to thirty feet. If you were adopting the old square system you would probably venture to put them out at twenty feet, or 110 to the acre. Should the trees be found to need only fifteen feet you are wasting the ground, while if they ultimately need thirty feet, you can only meet the emergency by cutting out every other row and every other one in the rows left, which would reduce the number per acre to only twenty-eight. But on the alley system you would plant out your 110 per acre twenty-five feet by fifteen, and if you found the trees really grew to a diameter of thirty feet—that is, a spread of branches thirty feet in diameter—you could meet the difficulty by cutting out every other tree in the rows and so have the orchard thirty feet by twenty-five, or about fifty-five to the acre.

In planting slow-growing but long-lived trees, this alley system offers the advantage of gathering several crops from a larger number of trees before they need additional space. Pear trees will often bear several crops before their branches extend over twelve feet, and yet the tree may ultimately grow to twenty-four feet in diameter of spread. To set out the orchard in the first place at twenty-four feet entails a great waste of land and labor for many years, while to put them out at twelve feet will soon make irrigation and cultivation extremely difficult, but if you set out your trees twenty-four feet by twelve you can go on many years before you need to cut out every other tree in order to leave them twenty-four feet apart. In the meantime you can grow corn or vegetables in the wider alleys and economize space. By the by, perhaps one of the greatest advantages of the alley system is that it gives more space for growing crops between the rows of trees until the latter come into bearing.—F. C. Barker, of New Mexico, in *Irrigation Age*.

Gossip About Stock.

Breeders of improved stock in Kansas need both the *KANSAS FARMER* and the *Breeder's Gazette*. We furnish both for the price of one paper—\$3 only.

W. E. Gresham, Burrton, Kas., has sold the young boar, King U. S., to J. M. Collins, Mt. Ida, Kas. This fine boar is a regular "Crackerjack" and will be a great show animal as well as a good sire.

Dr. P. A. Pearson, the Poland-China breeder of Kinsley, Kas., has practically sold out his herd, but expects after a year or two to be ready for business again but in a different location. Hon. E. B. Allen, Wichita, ex-Secretary of State, bought five yearling sows, and C. W. Jenkins, Kinsley, took one boar and ten sows. Dr. Pearson still has on hand the fine herd boar, Royalty Medium, which should go to head some fine herd.

The fourth annual meeting and election of the National Duroc-Jersey Record Association will be held in El Paso, Ill., Tuesday, January 14, 1895. While the past year has been a discouraging one for the swine breeders generally, owing to sickness in the herds, yet the National association has had a prosperous year and the attendance at the coming meeting promises to be much larger than at any that has yet been held. Papers on swine husbandry and kindred subjects will be presented by many members and the day will doubtless be a pleasant and profitable one.

The *KANSAS FARMER* takes pleasure in calling the attention of its readers to the public sale, next week, near Lawrence, Kas., of seventy-four head of high-class pedigreed Poland-China swine, the property of the well-known and successful breeder, Mr. J. C. Day, Cadams, Nuckolls county, Nebraska. Our live stock field man paid the herd a visit last Monday, and, among other things, he says that the herd is in first-class condition and has not been contaminated with disease since its foundation, four years ago. A draft of seventy-four of the 120 head have been catalogued and will be offered without reserve or by bid, on Tuesday, December 10, 1895. The offerings consist of thirty-two boars and forty-two bred sows and gilts. Fourteen of the spring pigs were sired by Tecumseh Buster 11381 S., four litters by Day's Seldom 14785 S., two litters by Baby Wilkes 11798 S. (a grandson of Seldom Seen), two by Mc's Tecumseh 12518 S. and an extra top litter by Nebraska Chief 14780 S. (a son of Chief Tecumseh 2d, owned by E. H. Andrews, of Nebraska, for whom a \$1,500 standing bid for a change of ownership stands to his credit). The seventeen sows have been bred to Tecumseh Buster, Commissary Wilkes, a grandson of Guy Wilkes

2d, who is a son and Commissary Wilkes a grandson of Guy Wilkes, the \$950 hog. The reader will, if up in Poland-China lore, at once recognize the great merits of the blood in the herd and the visitor at once concludes that the individual of the herd is the equal of the best offered during the year in Kansas. The diversity of the breeding, too, readily admits of a purchaser selecting groups for herd foundations with pigs not akin. Mr. Day has been unfortunately located in a district of southern Nebraska where for three years short crops have prevailed, hence his coming into one of the best corn sections of the West to make his second annual sale. His first sale, held last year, made a higher average than did seventeen of his competitors in Nebraska, and his herd won more first prizes at the Lincoln fair and at his own county fair than did seven of his less fortunate competitors. All the prize-winners except the aged herd boar are included in the coming sale offerings, for which long prices were offered at private sale, but all were reserved for the regular public sale. Consult the sale advertisement elsewhere in this issue for further particulars and govern yourselves accordingly.

Kansas Creamerymen Combine.

Leading creamery managers of Kansas have formed what is known as the Kansas Creamery & Supply Company, including nearly all the creameries of the State, and will make a united effort to secure the market of the South, now filled with the Illinois and Iowa product. Houston, Galveston, New Orleans, Fort Worth and Dallas are to be furnished Kansas butter in car-load lots below the Illinois prices.

They have a plan for making their own market, which may or may not be a success. Every creameryman will, each Monday, send in to the central office the price he thinks should be made for the week. These prices and the Eastern market prices will be put together and averaged and the average will be the price for Kansas butter at their storehouse for that week. This possesses some of the features of both the Elgin and Chicago markets. It is a very important part and on its practicability much depends. The officers of this new association are: President, J. K. Forney, Abilene; Vice President, H. M. Brandt, Canton; Secretary and Treasurer, J. E. Nissley, Kansas City, Mo. Nearly one hundred creameries are in the deal, the capital stock is \$20,000, and the first of next January is the time set for beginning business.

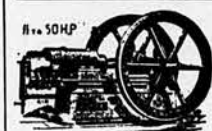
The creamery industry is becoming one of the most important in the State, and is paying nearly \$5,000,000 a year to farmers for milk, in cash.

Not a Kick.

Never before have we had the pleasure of attending a convention but that there was more or less kicking against the decisions of the judges. At the Kansas meeting, Messrs. A. H. Barber and John H. Palmer performed the thankless task of passing on the merits of the exhibits. Not a single complaint was made and this is a high compliment to these gentlemen. As a matter of fact, this feeling was so general that one of the members arose in the convention, and although not a prize-winner, testified to his entire confidence in the verdict. It was a pleasant incident and we wish that there were more of them of this character.

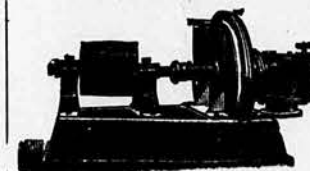
"WHEN SHALL WE FLY?" Hiram Maxim believes that the time is not far distant, and gives his views on the subject in an article which he has written for *The Youth's Companion*.

Every breeder in Kansas should have the *Breeder's Gazette* (price \$3 a year) and the *KANSAS FARMER* (\$1 a year). Both journals are furnished by us for the price of one paper, viz., \$3.



THE PREMIUM ENGINE
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The WITTE ALWAYS TAKES FIRST PREMIUM.
The only engine for successful IRRIGATION. Can be used for feed-grinding, shelling, etc.
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IRRIGATION MACHINERY.
If you want the most practical, efficient and cheapest irrigation pumping machinery, write for catalogue of Centrifugal and Triplex Pumps, Engines, Boilers, Gasoline Engines, etc., to
IRVIN VAN WIE,
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Vacuum Leather Oil

May as well know it. Get a can at a harness- or shoe-store, 25c a half-pint to \$1.25 a gallon; book "How to Take Care of Leather," and swob, both free; use enough to find out; if you don't like it, take the can back and get the whole of your money.

Sold only in cans, to make sure of fair dealing everywhere—handy cans. Best oil for farm machinery also. If you can't find it, write to
VACUUM OIL COMPANY, Rochester, N. Y.

"Among the Ozarks,"

the Land of Big Red Apples, is an attractive and interesting book, handsomely illustrated with views of south Missouri scenery, including the famous Olden fruit farm of 3,000 acres in Howell county. It pertains to fruit-raising in that great fruit belt of America, the southern slope of the Ozarks, and will prove of great value, not only to fruit-growers, but to every farmer and home-seeker looking for a farm and a home. Mailed free. Address,
J. E. LOCKWOOD, Kansas City, Mo.

Seekers for Homes,

Who wish to start over again in some locality where good land is plentiful and climate is favorable, should post themselves relative to the irrigated districts of Kansas, New Mexico and Arizona, the dirt-cheap farms of Oklahoma, and the fruit tracts in southern Texas.

To find out the facts address G. T. Nicholson, G. P. A., Monadnock building, Chicago, or J. E. Frost, Land Commissioner, Topeka, Kas.

And the Santa Fe is the best line to almost every part of the Great Southwest.

Notice to Farmers.

The farmers of Kansas, by sending their application, plainly written, name and post-office address, to G. V. Bartlett, Commissioner of Forestry, Dodge City, Kas., will receive by return mail a blank to be filled out by the applicant for a share of seedling forest trees, which will be shipped free of charge, except for freight, which must be guaranteed by the applicant. Delivery will be made in the spring of 1896.

G. V. BARTLETT,
Commissioner of Forestry, Dodge City, Ford Co., Kas.

If you want one of the finest magazines published, send us \$2.25 for *KANSAS FARMER* and *Cosmopolitan*.

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Branches: Council Bluffs, Kansas City, St. Louis, Columbus, Philadelphia.

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W. S. DICKEY CLAY MFG. CO.,
20th and Main Sts., Kansas City, Mo.

IRRIGATION.

The Home Circle.

To Correspondents.

The matter for the HOME CIRCLE is selected Wednesday of the week before the paper is printed. Manuscript received after that almost invariably goes over to the next week, unless it is very short and very good. Correspondents will govern themselves accordingly.

THIRTY YEARS AFTER.

Been thirty years since the fightin'—though it don't seem long as that
Sence I follered "Stonewall" Jackson, with nary a shoe or hat,
Through the valleys o' Virginny an' ev'ry wher' else he went—
Thirty years sence I got back home to the burnt-out settlement.

But the world, it's been a-movin', for I'm a-gettin' gray,
An' still, somehow, when I look around I feel it slippin' away;
The roses come in the spring-time—the frost is shore in the fall,
But still it seems to a old man's dreams like thar warn't no war at all.

A change is come to the country; the fields whar I used to plow
Is paved with stone, and the steeples is risin' above 'em now;
The woods whar I went a-huntin' is roarin' with noisy o'wls,
An' the lakes whar I done my fishin' is gone ol' an' up in the clouds.

Oh, the country, it's a-movin', an' 'pears to be movin' right;
Thar's a brighter sun in t' daytime, an' lots more stars by night;
The people's a-comin' closer an' larnin' the golden rule—
Lots o' the women votin' an' the niggers goin' to school.

Whenever I git to thinkin'—as I do think—o' the war,
A-tryin' const nt to figger out the things we was fightin' f'r,
I kind o' d-d-ckle it was Providence a workin' its wisest ends—
Purifyin' through fire an' makin' us better friends.

I think we're a-doin' better than we done 'fore the troubl' o' me;
Got us to the stars an' stripes once more an' do e'er t' n' in the drum!
I've d' need to "Lankee Doodle" on the mount-tai' an' the plain,
An' I've heard 'em ch-e-rin' "Dixie" from Texas clean to Maine!

Old things is change! in a twinklin'—it's hard to ou-avel how,
But north, an' south, under one old flag, they're "Marchin' through Geor'y" now;
An' I'm glad I lived to see it, an' spite o' my y'ars I'm bou'd
If I don't just feel from head to heel, like shakin' hands all r'ound!

—Frank L. Stanton, in *Leatie's Weekly*.

A CHRISTMAS NOVELTY.

The Watch Pocket Here Described Makes a Very Pretty Gift.

A watch pocket is one object that finds an almost, if not quite, universal welcome. For that reason alone it is a good thing to make just now when you are asking yourself: "What shall I give my friends on Christmas day?" The one given here is quite simple, while, at the same time, it perfectly serves its end.

To make one like the model, cut two pieces of cardboard about the size of a silver dollar if your gift is for a girl friend, or a little larger if it is to greet either your father or big brother. In either case select fine white linen for the discs and the palest of olive green silks for the puff. Lay the cardboard



THE WATCH POCKET.

down upon the linen and cut four pieces, each half an inch larger, all around the board. On one of these embroider a spray of apple blossoms in their own lovely pink and the lettering in olive filo floss, the exact shade of the silk selected for the puff.

When the embroidery is finished press the linen carefully on the under side and with it cover one side of one disc. Turn the edges over and paste them neatly and firmly, then line with a plain piece of linen. Cover the second disc, or the back of the case, with the two remaining bits of linen, and place all under a press to dry. Measure the

distance two-thirds round one of the discs and cut a strip of silk about five or six inches wide, just twice that length. Turn over both edges twice, as for an extremely narrow hem, then whip each for its entire length and draw up so as to form a puff. Place the edges exactly even with those of the disc, as the drawing shows, and overhand them neatly and firmly, one to each other. When that is done attach a silk cord at each side and finish each end with a bow and tassels. The watch can easily be slipped into the opening and will be kept safely until needed. The decoration as given here is very pretty indeed, and may well be exactly copied, but if you prefer any other sort it is easy to substitute one for the other. In any case the method of making is the same and if you embroider one flower or another the general directions remain the same.

IN THE SICK ROOM.

Hints That May Assist the Nurse and Relieve the Invalid.

Do not add to the trials of the patient by keeping constantly before him medicine bottles, glasses and spoons. Let all these reminders of his low estate be kept out of sight on a neatly arranged table behind a screen or in the alcove, which it is wise to have off every sick room. To keep medicine and suggestions of medicine before the invalid is about as humane as to treat a condemned prisoner to daily glimpses of the scaffold.

The sick room should be odorless. The air must be let in freely as often as possible. Pile extra blankets and comfortables over the invalid; tie up his head that the wind may find no spot at which to attack him, and open the windows and doors wide. Disinfectants are generally disagreeable, but they may be used during the airing of the room, for the draught will destroy their unpleasant odor, and they will destroy the unpleasant odor of disease.

The bed clothes and the patient's linen must be changed every day. Fresh clothing and fresh sheets will do much to prevent the atmosphere from becoming "stuffy." The patient should be bathed as often as the physician permits. He should not, however, be bathed without the doctor's knowledge and direction, for baths are as effective as medicine, and their effects are sometimes as disastrous as those of the wrong medicine.

Never ask the patient what he wishes to eat, but keep an attentive ear open for any chance words he may say on the subject. Feed him according to the doctor's directions. Never bring him much food at one time. It will destroy his appetite. Let the tray be daintily arranged and never let it remain in the sick room for an instant after the meal is over. Even a healthy person will be revolted by the sight of scraps of food and unwashed dishes.

The windows should be shaded with dark green holland shades, which will temper the glare of light for the sufferer's eyes. At night there should be a shaded night light in the room. A screen should always be placed so that no direct rays may fall upon the patient's eyes.

The nurse should be neatness, quickness, quietness and good cheer personified. Her slippers should be noiseless felt affairs. Her skirts should not rustle. Her gown must be neither too somber nor too bright. Her apron must be spotless and unrumpled, her hair smooth and shining, her patience inexhaustible and her good cheer perpetual. She must rule the rest of the family with a rod of iron, permitting no noisy visitors, no gloomy visitors, no visitors who will relate tales of business or of household worry.—St. Louis Republic.

The Darning Basket Is Useful.

The darning basket may be constructed to serve a very useful purpose by setting three flat-topped baskets in graduated sizes on top of each other. Line with silk and fit them up one for glove-mending, one for stocking darning and one for shoes, with a little pouch for buttons, a spool of heavy linen thread and with a flannel leaf of large needles. This nest of baskets will be occasionally in requisition, it will be found,

Highest of all in Leavening Power.—Latest U. S. Gov't Report

Royal Baking Powder

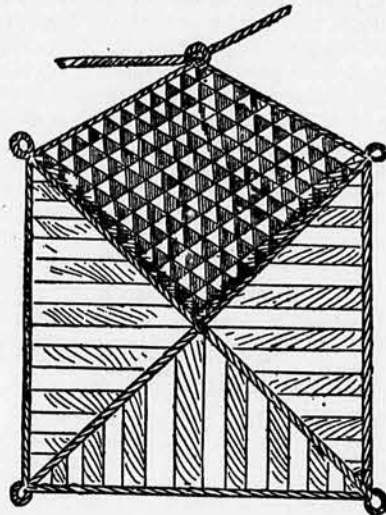
ABSOLUTELY PURE

CHRISTMAS FANCY WORK.

Inexpensive Articles Which Are Sure to Please Your Friends.

A splash-back to a washstand saves many an ugly stain upon the wall paper. Novelty in shape is now sought, and one of the latest ideas represents a huge fan of plaited cretonne or "art" muslin. If the latter is used, it is so thin that it requires a lining. The better plan is to cut the fan shape out in American cloth, or even stout brown paper, and then to take a long strip of the muslin having a lace sewn (plainly not full) along the top edge and to plait that over the paper, tacking it here and there to keep it in place. The splash-back can be hung up by a cord, the ends of which are to be brought through holes pierced in the foundation.

A key cover keeps dust from the piano and can be made exceedingly ornamental. The material chosen should be as rich as possible; we are thinking now of a background of rather bright crimson plush, with a central band of



A NOVEL NIGHTDRESS SACHET.

cream satin enriched with embroidery in white, cream, crimson and gold; and an outlining of Japanese tinsel. The cover should be lined with soft crimson silk and have an interlining of thin flannel.

A nightdress sachet need not be made in the conventional shape. For convenience it should be moderately large. Our model is made square, of striped sash ribbon lined with quilting and edged with cord, looped at the corners. A ribbon is sewn to one of the loops at the tips, and to close the case the four flaps are turned inwards; the ribbon is threaded through all the four loops and tied into a careless bow; the whole thus bearing some resemblance to a Broddingnagian envelope.—Good Housekeeping.

Cleaning Shop-Worn Corsets.

A good way to rejuvenate a shop-worn corset, or any other for that matter, is to scrub it with a brush dipped in a strong solution of ammonia and water. All the steels should be first removed, and the corset then tacked to a board, on which it should be both scrubbed and dried. For washing shirt waists in delicate cottons it is best to use white castile soap and dry them away from the sun.—Philadelphia Inquirer.

A Large Barometer.

The largest barometer is one made for recording observations in New York city. Its tube is 31 feet long.

Do you know a good farm and fruit paper when you see it? Let us send you the *Rural New-Yorker* this week. Send your address; no money.

The Rural New-Yorker,
409 Pearl street, New York.

THE MEDICINE HABIT.

It Is Becoming Alarmingly Prevalent All Over the Country.

The habit of taking medicine for every ache, pain or uncomfortable feeling is becoming alarmingly prevalent, and a very bad habit it is. There are ready-made medicines warranted to cure anything and everything, and they are advertised in such a way as to attract attention of every nervous and chronic invalid in the land. These read the symptoms to which these cure-alls apply and then invest in them.

There are thousands of barrels of stuff drank every month, and tons of pills and powders taken by those who are ashamed or too stingy to consult a physician. If they happen to recover from their headaches, tired feelings or other discomforts, they credit it to the medicine. If not they go straightway and get some of another kind. Thus the dosing goes on, but the general health does not improve. In fact, we are becoming more and more a nation of medicine takers. If the craze continues we will soon need a cure for the medicine habit as badly as for the liquor habit.—Pittsburgh Commercial-Gazette.

FOR IRRITATION OF THE THROAT caused by Cold or use of the voice "Brown's Bronchial Troches" are exceedingly beneficial.

FARM-POULTRY PAYS

The constant demand for first class poultry and strictly fresh eggs at good prices, make poultry-raising one of the most profitable occupations you can engage in. The Armour Packing Co. have dressed and packed 15 tons of poultry in a day. They pay several cents a pound extra for A1 stock. *Farm-Poultry* will teach you how to raise A1 poultry and how to prepare it for market. Every issue is brimful of valuable information gained through the actual experience of its editors upon poultry farms. From a careful study of its pages, you will learn the best up-to-date methods of caring for and managing fowls: the certain means of—

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GEARHART'S FAMILY KNITTER. Knits a stocking heel and toe in ten minutes. Knits everything required in the household from homespun or factory, wool or cotton yarns. Most practical knitter on the market. A child can operate it. Strong, Durable, Simple, Rapid. Satisfaction guaranteed. Agents wanted. For particulars and sample work write, address J. E. GEARHART, CLEARFIELD, PA.

The Young Folks.

SPECKED APPLES.

Old Farmer Grump, with thrifty care,
Had safely stored away
For winter use his apple crop—
Enough to last till May.

"We'll not begin," said Farmer Grump,
"To eat 'em yet awhile;
They've got to last the winter through—
There's none too big a pile!"

And so they lay 'neath look and key,
Till the ripest showed decay.
"Begin on 'em," then the farmer said,
"Begin on 'em right away!"

"We'll kinder sort 'em out," said he,
"And use fer sassa the wust.
And every one who goes for 'em
Must take the specked ones fust."

And so they used the specked ones first,
As Farmer Grump had said,
But though they ate some every day
The specked ones kept ahead.

And they not only ate them first,
But all the winter through.
If that's their way, I've naught to say,
And naught I'm sure have you.

Now Farmer Hearty also had
A well-filled apple bin,
But as he stored them in he said,
"Now listen: We'll begin

"To eat the best of 'em right off,
And keep on so each day.
For some of 'em will not keep long,
Though some will last till May."

And so his household, one and all,
Enjoyed the fruit with sound;
And eat not still the ripest first,
Had some when May came round.

Now, boys and girls, it's out of date
To hitch a moral on—
I'll leave it to your common sense
To see if there is one.

—A Thur's Magazine.

TWO SMART PUG DOGS.

Grover Performs Many Tricks and the
Other Acts as Messenger.

It is the general impression that pug dogs are too dull to be taught to perform tricks, and professional trainers have in most cases turned their attention to other breeds. There is no doubt that a pug dog, taken at the right age and with proper care and patience, can be taught many amusing and difficult tricks. It is proved by the following:

Grover is a pug owned by Charles E. Tibbles, of Englewood, who has devoted a great deal of time to the dog's education. Grover is a full blooded pug. All his ancestors were full blooded pugs, with their tails curled to the left. His ability to learn was discovered when he was a diminutive fat ball of yellow and black hair and legs at the age of four weeks. They commenced by sitting him braced up in the corner and feeding him. After several trials at this the family were eating dinner, when, hearing the dog whine, they found him sitting up in the corner by himself and crying for something to eat. From that time on his education has been rapid, until now he performs at least a dozen amusing and entertaining tricks. He knows each member of the family by name, and will go to either one of them when told to do so. He will stand on his hind legs with fore feet against the wall, nose between his paws, and play hide and seek, finding whoever is hiding when they give the word.

He will walk across the room erect on his hind legs, play dead, say his prayers, sit erect on a chair, fetch a ball or slipper, and, in fact, seems to understand just what is said to him.

There is another interesting pug owned by a lady in Groveland park.



GROVER.

One day recently a dressmaker was sewing at the house. It was about dinner time and she was preparing to lay down her work, when in rushed the pug, and, placing itself squarely

in front of her, gave two short, sharp barks, and then turned abruptly away and trotted downstairs. This rather startled the lady for a minute, but she went on quietly with her sewing. In a few minutes the pug rushed in again, and this time he gave three short, angry barks, and out he bounced and downstairs again. The actions of the dog made the seamstress nervous, and laying aside her work she went down to the dining-room and found dinner waiting. She mentioned the peculiar actions of the dog to its mistress, and laughing she said: "Oh, I just sent him up to call you to dinner." And it was a fact.—Chicago Times-Herald.

THE CROCODILE BIRD.

It Walks About in the Saurian's Mouth
Picking Up Leeches.

A curious feature in natural history is the favor bestowed upon the crocodile by a bird bearing its name, through removing a certain parasitic leech veritably from the innermost recesses of the saurian's mouth. In thus acting he, in addition to performing an invaluable service to the crocodile, obtains for himself a leisurely and luxurious living.

Herodotus writes that the bird and animal are on the most amicable terms, the former entering the latter's mouth and walking about with the greatest confidence. The gentlemen of the Smithsonian institution, however, are disinclined to accept this belief, but think the crocodile bird stands at a safe distance, extracting the leeches by thrusting its head into the animal's mouth and again removing it before the crocodile can close its jaws.

The saurian during the performance lies lazily sunning itself on the bank, with jaws wide open and seeming to relish the relief which it obtains. It is not to be believed, however, that the crocodile's sense of obligation for the invaluable services rendered it would be sufficient to deter it from making a feast upon its benefactor should an opportunity present itself.

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"Tommy!"
No answer.
"Tom-meel!"
"Well?"
"What are you doing to your brother Willie?"
"Nothin'."
"Yes you are. You are making him cry."
"No, I ain't—I'm bein' generous. I'm givin' him half o' my codliver-oil."

An Error Somewhere.

My pa says if I don't keep still
Some time, I won't get strong;
But when I watch the moving sea,
And think how strong the waters be,
I sort of think he's wrong.

—Warner's Young People.

Every man having a beard should keep it an even and natural color, and if it is not so already, use Buckingham's Dye and appear tidy.

WE TAN Cattle hides and all sorts of skins whole for BOOTS and SHOES. Soft, light, moth-proof. Get our tan circular. We make frisian, coon and galloway fur coats and robes. If your dealer don't keep them get catalogue from us. The CROSBY FRISIAN FUR CO., Box 58, Rochester, N. Y.

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Display advertising, 15 cents per line, agate, (fourteen lines to the inch).
Special reading notices, 25 cents per line.
Business cards or miscellaneous advertisements will be received from reliable advertisers at the rate of \$5.00 per line for one year.

Annual cards in the Breeders' Directory, consisting of four lines or less, for \$15.00 per year, including a copy of KANSAS FARMER free.

Electrotype must have metal base.
Objectionable advertisements or orders from unreliable advertisers, when such is known to be the case, will not be accepted at any price.

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

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

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

Address all orders—
KANSAS FARMER CO., Topeka, Kas.

A reader of the KANSAS FARMER writes to inquire if chinch bugs work on Kafir corn to the same injurious extent as on wheat or Indian corn.

The farmers' institute of Atchison and Jefferson counties is in session at Nortonville, to-day and to-morrow. An excellent program has been prepared.

Never is a dull line to be found in *The Youth's Companion*. Not satisfied with making its every issue the very best family paper, the publishers of *The Companion* are continually doing all that liberality and enterprise can suggest to make it better still. The Thanksgiving number will interest, entertain and benefit every one.

December is here. The subscription department of the KANSAS FARMER realizes this now, and will realize it a good deal more as the month nears its close, when a good many thousands of our subscriptions will expire. If our friends will be a little considerate and send in their renewals early in the month the favor will be appreciated and possibly some confusion will be avoided when the rush comes.

Capt. W. S. Tough, formerly United States Marshal for Kansas, and who has for so many years managed the Kansas City stock yards horse and mule market, handling and disposing of weekly hundreds if not thousands of head, product of all the trans-Mississippi region, is to deliver an address before the annual meeting of the Kansas Board of Agriculture in January, on "The Horse Situation and Its Future Outlook." If a lifetime of actual contact with the business counts for anything, the speaker should be able to make a wonderfully interesting and suggestive talk. Capt. Tough is the gentleman who introduced the great Kansas trotting horse Smuggler to the world.

It is reported that Prof. L. L. Dyche, of the Kansas University, who accompanied the latest expedition in quest of the north pole and who brought back something less than a ship-load of specimens for the University museum, is willing to make a final dash for the pole. It is safe to say that if any man on earth can float his country's flag from the long-sought pole, a Kansas man can do it. If any man in Kansas can accomplish the feat, no doubt the University has him, and if any man in the University can get there, Dyche is his name. It is understood that Prof. Dyche has received a proposition to command an expedition and that he considers the success of such expedition hinged solely on its outfitting and the quantity of its supplies. If Dyche goes after the long-lost pole, Kansans will expect him to bring it home with him and plant it on one of the University buildings before the close of the century.

PRICES LOWER.

Every turn of the dial marks a further decline in prices of the products of industry, except for such commodities as are in some way controlled by monopoly. This reduction in prices is especially noticeable as to the staple products which come into competition in the great markets of the world. The literature of every avocation attributes its patron's lack of prosperity to the decline in prices. The difficulty of conducting industrial or trading operations on a declining market is recognized everywhere. The merchant who fails, not infrequently finds that while each successive invoice is bought at lower prices than its predecessor, yet at least a part of it has to be sold at less than cost on account of further decline. The manufacturer who shuts down may find an explanation in the fact that his competitors bought their raw materials a little later, and consequently a little cheaper, and are therefore able to place the finished product on the market a little lower. But the merchant and the manufacturer make short turns compared to the farmer, who must await the seasons and the growth of stock before he can realize on his investment. Declining prices, therefore, catch the farmer at a greater disadvantage than his fellow workers in other lines.

The question of how long these lowering prices are to continue is more important than what caused the decline. On this the financial oracles have become as silent as the political parties. They have practically assumed that the condition is inevitable, and, indeed, they look upon descending prices in this country as likely to promote exportation of products instead of gold. Those who have heretofore prophesied that "bed-rock" was near and the turn must come soon, have lost confidence in their own predictions. The recent gains in prices of wheat, cotton and iron are seen to be but temporary.

The conditions came upon those engaged in industry like a thief in the night. They have been taken unawares, and while promised that various measures should bring relief, no improvement has followed. Little confidence will be had in the latest set of remedies proposed. These are "that Congress pass an act" making it imperative that at least half of the customs be paid in gold; "that Congress pass an act" to take up, through an issue of 24 or 3 per cent. bonds, the entire issue of Sherman notes, these bonds to be made the basis for further issues of national bank notes; "that Congress pass an act" declaring the \$347,000,000 greenback notes and the \$140,000,000 Sherman notes payable on demand in gold coin; "that Congress pass an act" declaring all the bonds of the government payable in gold coin. It is just to say that these measures are proposed, not as remedies for low and falling prices, but with a view to helping Wall street speculation out of the deep depression into which it has fallen.

THE IRRIGATION AGE.

The fact that the interest in the artificial application of water to the soil is so great as to support a high-class magazine devoted to that specialty, is significant as to public appreciation of the importance of reclaiming the fertile lands of the West, whose only deficiency is in the moisture available for crops. This magazine has heretofore been held to a \$2 subscription rate, but, recognizing the demand for small cost, the publishers have reduced the price for 1896 to \$1 per year. This is done without in any way diminishing the excellence of the magazine. Indeed, the array of writers engaged for next year gives promise of greater strength than the publication has heretofore possessed.

Subscribers for the KANSAS FARMER can obtain the *Age* and the *FARMER* together for one year at the low clubbing price of \$1.75, by sending their orders to this office.

The *Cosmopolitan Magazine* during 1896 will contain 1,344 pages and 1,000 illustrations. Do you know that it is one of the very finest magazines pub-

lished? If you have never seen a copy step into any postoffice news depot in the United States and examine a copy you will find there. We can furnish you subscription one year for KANSAS FARMER and *Cosmopolitan Magazine* for \$1.90 if sent direct to this office.

CONGRESS WILL TALK MUCH AND DO LITTLE.

The Congress of the United States convened at the capitol, at Washington, on last Monday. In the House of Representatives a complete reversal of majorities has taken place, the Republicans, who were in the minority in the last House, now having an immense majority. In the Senate the Democratic majority has melted away and the Republicans have half of the entire number of Senators while the Populists have six. The Republican House caucus on Saturday night selected Mr. Thos. B. Reed, of Maine, for Speaker. In his speech Mr. Reed, who is noted for putting a good deal into a short sentence, indicated the policy of the majority when he said: "History will accord us praise for what we did in the Fifty-first Congress, and it may accord us its praise in this for what we do not do." Mr. Reed then points out the fact that the branches of the government are not of one accord and suggests the impossibility of any partisan legislation.

ANNUAL HORTICULTURAL MEETING.

One of the great annual meetings is that of the State Horticultural Society, which is to meet in Lawrence, next week. Under the management of the present officers this society is rapidly advancing, and is occupying the place for which it was organized. Fruit culture is destined to become a more important part of Kansas husbandry. This State is in the middle belt, where the king of fruits, the apple, reaches its greatest perfection. The grape, also, and the full line of middle latitude small fruits are here at home. The tillers in Kansas who are making most money and establishing the most desirable rural homes are making fruit culture a prominent part of their farming. The horticulturist who attends the coming meeting will feel that he has received a decided and valuable help in his business. The leading fruit-growers of the State will be there. The program appears on another page of this paper.

In this week's KANSAS FARMER we publish the carefully prepared paper of Prof. H. R. Hilton, of Topeka, illustrating and explaining the root growth of corn. The engravings are from photographs taken for this purpose. The depth to which these roots penetrate will surprise those who have not given attention to the subject. Every reader should, and doubtless will, study carefully the article. This is only one of the many important investigations undertaken by Prof. Hilton, all of which are important to practical agriculture. Several communities in Kansas have engaged Prof. Hilton to lecture on these subjects, greatly to the advantage as well as entertainment of those who hear. The KANSAS FARMER wishes he could be heard by every farmer, for the reason that a knowledge of these subjects tends directly to the more intelligent handling of the soil, which insures greater prosperity. He is prepared to fill a few engagements during the present winter. Local committees desiring to arrange for an entertaining and instructive address, illustrated by drawings and actual experiments with the soil, should correspond with him.

The new KANSAS FARMER binder is made expressly for the convenience of those subscribers who desire to keep their KANSAS FARMERS for reference. It takes but a few seconds to put the paper in it when received. The binder holds fifty-two numbers, and keeps the papers in as nice shape as if they were a book. The price is 25 cents, postpaid, or \$1.10 for the binder and the FARMER one year. Send your own renewal for one year and a new yearly subscriber, with \$2 for both, and we will send two binders, one for yourself and one for the new subscriber.

GOVERNMENT CROP REPORT FOR NOVEMBER, 1895.

CORN.

The November returns to the Department of Agriculture make the corn crop the largest in volume on record, with a rate of yield, however, somewhat less than that indicated by the returns for October, being 26.2 bushels per acre. This must be regarded as preliminary and not as a final estimate of the yield.

The rates of yield of the principal corn States are as follows: Pennsylvania, 33.5; Texas, 26.4; Ohio, 32.6; Michigan, 33.8; Indiana, 32.8; Illinois, 37.4; Wisconsin, 31.8; Minnesota, 31.2; Iowa, 35.1; Missouri, 36; Kansas, 24.3; Nebraska, 16.1. In the Atlantic States, except those about middle latitude, the yield appears to be large and of high quality. In the Virginias and Carolinas, some counties of Pennsylvania and Maryland, the greater part of the Great Lake and Ohio valleys, California and New Mexico, reports are conflicting, owing to the different action of the universal drought upon different soils, rich bottom lands giving an abundant yield, while upland and clay tracts are very short. The whole Missouri basin reports a great falling off from earlier estimates, the extreme dry weather having converted fair promise into a comparative failure in Nebraska and adjoining States, while considerable damage is ascribed to untimely frosts near the Rocky mountains and along the northern border. There are many complaints of the chinch bug and army worm, while the rotting of ears by soaking summer rains has made a large part of the crop unmerchantable in some interior States.

POTATOES.

The average yield of potatoes appears from the preliminary estimates to be phenomenally large, amounting to 100.7 bushels per acre, and exceeding the heavy crop of 1891 by 6.8 bushels per acre. The estimates for the last ten years have been as follows:

	Bushels.
1885.....	77.2
1886.....	73.5
1887.....	56.9
1888.....	79
1889.....	76.4
1890.....	57.5
1891.....	88.9
1892.....	62
1893.....	72.2
1894.....	82.3
1895.....	100.7

New York, Pennsylvania, Michigan, Wisconsin, Minnesota and Iowa—States of large acreage—have all yields of more than 100 bushels per acre; some of them greatly in excess of that figure.

The general average for quality is 94.8. The States of large yield named above are also among those in which the quality is high. In three of them it is rated above 100.

In most of the New England States there is some complaint of potato rot, both before and after digging. There is also complaint on the same point from Missouri and Kansas, and from some localities in other States.

In several States along the northern border from Michigan westward potatoes have been much damaged by freezing weather. In many cases a considerable part of the crop was left undug on account of the low price of the product. It is possible that when all losses are allowed for and the stock available for market reckoned up the present preliminary estimate of average yield may have to be reduced.

SWEET POTATOES.

The crop is reported good in Missouri, Kansas and California, but injured by frosts in Ohio and Colorado, by excessive early rains in a few counties near the Gulf, and by the severe drought everywhere else. The potatoes will be small, but in many States their quality is stated to be fairly high.

HAY.

The average yield of hay this year is only 1.06 tons per acre, against 1.15 tons in 1894. Out of fifteen States having an area of more than 1,000,000 acres in hay there are only five whose yield exceeds this average. These, with their respective yields in tons per acre, are Minnesota (1.30), Iowa (1.08), Missouri (1.17), Kansas (1.24) and California (1.66). The highest averages are found in States of comparatively small production. Among the larger producing States, Ohio and Michigan pro-

duced less than three-fifths of a ton per acre and Indiana but a small fraction over that amount. The average yield for the entire country was the lowest in several years. It was 1.32 tons in 1893, 1.17 tons in 1892, 1.18 tons in 1891, and 1.20 tons in 1890.

In quality as in yield the crop of 1895 is inferior to that of 1894, the figures for the two years being, respectively, 91.3 and 94.5. The States in which the quality falls below the general average are West Virginia (88), Ohio (87), Michigan (81), Indiana (83), Illinois (82), Iowa (79), Missouri (89) and South Dakota (85).

The relatively high yields of the Rocky mountain and Pacific coast States are largely due to the prominence of alfalfa as a hay crop in most of these States. In some of these States cereal grasses are cut for hay to a considerable extent.

Drought was the chief cause of the low average yield, but frosts contributed to the result in some localities, and in a few instances the army worm or other insects did considerable damage.

SORGHUM.

The estimated yield of sorghum for 1895 is fully up to the average of recent years, and the State averages show more uniformity than usual. There are but three States, Idaho and the Dakotas, returning yields of less than sixty gallons to the acre, and at the other extreme, four, Pennsylvania, Kentucky, Missouri and Utah, with yields above 100 gallons. Of the remaining States seven report yields between ninety and 100, nine between eighty and ninety, and four between seventy and eighty gallons per acre.

FRUIT.

Fruit returns for November give comparative product, i. e., yield this year compared with a full crop. The average for the country is shown for apples only, and stands at 71.1. This is about thirty points above the figure for last year. Crops ranging from one-fourth to a little over one-half the normal product in ten important States, viz., the New England States (with the exception of Connecticut), New York, Pennsylvania, Michigan, Wisconsin and Iowa, have reduced the general average to the present figure. Had conditions in these States been as favorable as in other important sections the crop would have been phenomenal. As it is, there is general abundance of this fruit in the South and West, and prices are extremely low in many sections. Much of the crop is reported as of inferior quality, however, owing to the severe drought, and a greater proportion than usual has been consumed in the manufacture of cider. It would seem from this and the fact of shortage in the East that prices for really first-grade fruit should improve.

COTTON.

A large majority of the correspondents of the department complain of a short yield, many reporting "a half crop," "poorest in thirty years," or something similar. The dry weather, which has practically destroyed the top crop in many localities, and injured it everywhere, has been favorable for picking, so that the fiber is generally reported clean and in good condition. The damage from drought is not confined to particular States, none being free from it.

RAINFALL.

The month of October has been unusually dry over nearly the whole United States, the drought being even more general than during September. The very light rainfall during the month was very unfavorable to fall plowing and seeding. In many localities the ground was too dry to admit of plowing, and in others the seed sown did not germinate.

During the latter part of the week ending November 2 the drought was finally broken by general rains in Kansas, Nebraska, Oklahoma, Missouri, the Ohio valley and the Gulf and Atlantic States. The amount of precipitation differed greatly, being ample in some localities and only slight in others.

More rain fell during the week ending November 9 on the Pacific coast and in many parts of Texas, Oklahoma,

Kansas, Nebraska, northern Missouri and generally in regions east of the Mississippi river.

To what extent these precipitations—too long delayed—have benefited the winter wheat crop is at time of writing too early to estimate.

Disagrees With Secretary Morton.

EDITOR KANSAS FARMER:—In your issue of November 27, you give an extract from the report of Hon. J. Sterling Morton, Secretary of Agriculture, in which, after stating the capital invested in the average farm plant and roughly the amount of farm production, he concludes:

"In the presence of these facts, in the front of these figures demonstrating that agriculture in this Republic has fed itself, supplied all citizens of the Union engaged in other vocations, and then shipped abroad a surplus of over \$500,000,000 worth of its products, how can any one dare to assert that farming is generally unremunerative and unsatisfactory to those who intelligently follow it?"

Now, if that were logical, then were the victims of African slavery prosperous and happy, because their labor produced the cotton and tobacco to supply a large portion of the civilized world. If that is logical, then are the producers of 13-cent corn in western Kansas prosperous and happy, because their corn feeds hundreds of thousands in this and other lands.

Mr. Morton is so interested in advancing the cause of (dis) "honest money" that he cannot see that it is "not a theory but a condition" which confronts the American farmer. No amount of theorizing will convince our farmers that farming is remunerative and satisfactory when they know that very many farmers cannot honestly enjoy the necessities of life, while comparatively few possess the comforts to which he who feeds the world should be entitled.

Again, Mr. Morton assumes that if the capital of the farmer were invested in "gilt-edged" securities it would give an annual income of \$240, and then says:

"Follow the transfer of the farm money with that of the farm family to urban residence. Now, with the same labor in the city or village can they attain by hard work every day in the year, adding their wages to the \$240 income, as much of independence, wholesome living and real comfort as the same amount of money in the land and the same heads and hands working on the soil generously and healthfully bestowed upon them, in the sweet quiet of a home amidst flowers, trees, fruits and abundance on the farm?"

If the Hon. Secretary were able to offer the farmers of our country an annual income of \$240 and steady employment in the city at fair wages besides, he would learn that at least one-half of them are not of his opinion. The constant flow of population from country to city is evidence that the best prizes of life are most easily obtained in the latter. That flow would be very much stronger than now except for the uncertainty of remunerative employment in the city. Agriculture will have gained something when we can have some one besides a 2x4 lawyer at the head of the department.

Woodston, Kas. M. J. WELLS.

Analyses of Black Sea and Danubian Corn.

An analysis of maize from the Black sea and the Danube was recently made in the Chemical Division of the United States Department of Agriculture, with a view to determining its comparative value as a feeding stuff with that grown in this country, says a bulletin dated November 25, 1895. Of late years the first-named countries have been shipping corn exclusively to Germany, Great Britain and other countries of northern Europe, the imports into Germany from Roumania alone having last year exceeded those of the United States. The advantages enjoyed by the countries of southern Europe in competition for this trade, owing to their geographical location and the avoidance of a long sea voyage, is believed in this country to be offset by the superior quality of the American product, and this impression is strikingly confirmed by the recent analysis. The samples were found to correspond in composition to poor corn grown in the United States, being from 13 to 17 per cent. lower in protein and fully 33 per cent. lower in fat than the

averages of over 200 samples of American-grown corn. While an average for corn the world over shows but 9.45 of protein, and this average is higher than samples from the Black sea and the Danube, the American average is 10.5. These samples of dent and flint exceeded this, many indeed exceeding 11 per cent. So with fat, the general average being but 4.29. The average for corn grown in southeastern Europe is 4.13, while the average for American corn is 5.4, and many samples of the latter showed 5.5 and 6 per cent. The American average as given, moreover, includes numerous samples of inferior corn and cannot be said to fairly represent the average of corn exported.

While the above facts speak eloquently of the higher quality of the American product they also testify with equal force to the importance of maintaining the high standard of the feeding quality of American corn in foreign markets, as that is unquestionably the characteristic upon which main reliance must be placed to enable the American growers to compete successfully with the cheap labor of southern Europe. The shipment of inferior grades of corn under the circumstances would be to deal a death blow to American corn exports even to those countries where maize is used only as food for stock.

The quality of our American-grown corn as compared with that grown elsewhere is illustrated by the following data taken from Dietrich & Konig's very reliable compilation, the American average being from Jenkins & Winton's compilation (Experiment Station Bulletin No. 11):

Ash.....	Per cent.	1.5	1.33	1.30	1.42	1.38	2.02	1.29
Fiber.....	Per cent.	2.1	2.6	1.79	1.50	2.34	4.16	2.29
Nitrogen-free extract.....	Per cent.	69.6	70.2	71.10	71.14	69.37	65.78	69.33
Fat.....	Per cent.	5.4	4.07	3.35	4.38	4.13	5.30	4.29
Protein.....	Per cent.	10.5	9.39	9.06	9.12	9.42	8.84	9.45
Water.....	Per cent.	10.9	12.41	13.00	12.46	13.35	13.35	13.35
American-grown corn, American analyses.....								
Average of thirty-eight samples of Hungarian (1876).....								
Average of thirty-eight samples of Hungarian (1880).....								
Black sea corn grown in southeastern Europe (Danube districts, etc.).....								
Average of corn grown in southeastern Europe (Danube districts, etc.).....								
Average of corn grown in southwestern Europe (Southern France, Italy, Corsica, Burgundy, etc.).....								
Dietrich & Konig's grand average for corn from all over the world.....								

Separators at the State Dairy Meeting.

Forty-eight of the eighty-eight entries of butter at the Kansas Dairy Association, at Newton, last week, were made from cream that was separated by the De Laval Co.'s new Alpha separator. Their badges announcing that "the Alpha wins" was a great hit. True enough, the "Alpha" won everything in first, second and third premiums. The creamerymen and dairymen of Kansas are following closely those of Eastern States with this "Alpha" machine. In Elgin, Ill., no other machine is used. The manufacturers of this machine are prepared to prove greater possibilities in variation of temperature, speed and conditions generally than can be attained with any other machine.

R. D. Sands, of Peabody, who secured first premium at the State dairy convention on dairy butter, is one of the oldest users of the De Laval cream separators in Kansas. He is now using the new improved No. 3 Baby.

Any one wishing to become proficient in the handling of poultry should send 10 cents, in stamps, to the Des Moines Incubator Co., Box 83, Des Moines, Iowa, for their book on "Practical Poultry Keeping."

Get up a club for the FARMER.

GIVEN AWAY.

An Illustrated Medical Book of Sixty-Four Pages.

Chronic catarrh is a disease so frightfully common, so dreadful in its consequences, and so difficult of cure that it is no wonder the medical profession is making frantic efforts to check this ravage. Foremost among the writers on chronic catarrh is Dr. Hartman, of Columbus, Ohio. The Doctor writes for the people, and not for the profession only. Many of the books written by Dr. Hartman are for sale, but he also writes many for free distribution to the afflicted only. His latest free book on chronic catarrh is very instructively illustrated and has sixty-four pages of interesting information on catarrh, cough, colds, la grippe and other diseases of winter. Sent free to any address.

The medicine upon which Dr. Hartman chiefly relies to cure catarrh is Per-na. He has used this remedy for the treatment of catarrh for nearly forty years. There can be no doubt that Per-na is the greatest catarrh remedy of the age. Per-na cures permanently.

Catching cold, which is the bane of this season, and is the starting point of all catarrhal diseases, can be prevented by taking Per-na at the first symptom or exposure. If you cough, or sneeze, or hawk, wheeze, or snuffle, you ought to take Per-na; it is sure to save you much suffering and exposure, if not indeed your life. Letters answered free. Address The Per-na Drug Manufacturing Company, Columbus, Ohio.

Publishers' Paragraphs.

The Eureka Fence Co., of Richmond, Ind., present their advertisement in this issue of KANSAS FARMER and invite attention of our readers. This is one of the most reliable wire fence companies in the West, and those interested in fence-building will do well to address them for free catalogue and list of prices. Address Eureka Fence Co., Box J., Richmond, Ind.

Jacob Yost, Arkansas City, Kas., is the man to write to for information about incubators and brooders. He has had ten years of successful experience in making these egg-hatchers and brooders. He has a book entitled, "Valuable Information," price 25 cents, that every poultry-raiser should have. Any one interested in raising poultry will be repaid by writing Mr. Yost for particulars.

"KATY FLYER"—Is the name of the popular fast trains Nos. 5 and 6 on the M. K. & T. railroad between St. Louis and Houston, Tex., via Sedalia and Nevada, Mo., Ft. Scott and Parsons, Kas., and Dallas, Ft. Worth, Waco and San Antonio, Tex. These trains are entirely new, with the best modern equipment. There is considerable traffic in view for Texas and our readers who desire special information about reaching the principal points in Texas should address James Barker, General Passenger Agent, 405 Wainwright building, St. Louis, Mo.

The Christmas number of the *New England Magazine* is one of the most beautiful numbers which has ever appeared, and no number has ever offered a richer table of contents. It is full of the Christmas spirit and strong also in articles which appeal particularly to the patriotic sentiment. "A Story of Christmas Christianity" is the sub-title of Edward Everett Hale's story "From Generation to Generation," which will probably attract more attention than anything else in the magazine, and almost every story in the number is warm with the fraternal spirit which belongs especially to Christmas. "The Christmas Greens of America" is an interesting sketch by Agnes Carr Sage, the pages of which are handsomely illuminated by pictures of these same various Christmas greens. "The Passing of the Clerical Man of the World," a striking article by Robert Drail, is a vigorous rebuke of worldliness in the church. The Editor's Table is devoted, like Mr. Hale's story, to Christmas Christianity. Warren F. Kellogg, 5 Park Square, Boston, Mass.

Texas Coast Country.

The Texas coast country vies with California as a place to profitably raise pears, grapes and strawberries. Six thousand dollars' worth of pears from thirteen acres has been produced there in one season, and can perhaps be duplicated by you. G. T. Nicholson, G. P. A. Santa Fe route, Monadnock building, Chicago, will be glad to furnish without charge an illustrated pamphlet telling about Texas. Send to nearest agent for ticket rates. There is usually a low fare in effect to all important Texas points.

Old Mexico.

Modern Mexico is a beautifully illustrated monthly journal, published in the English language, and devoted to the interests of Mexico. Send 10 cents for sample copy. Address Modern Mexico Publishing Co., Topeka, Kas. Mention KANSAS FARMER.

Horticulture.

WHY THE APPLES FELL.

BY PROF. F. A. WAUGH.

Last spring, the apple trees in most sections of Kansas and adjacent States set a very heavy crop of fruit. Very soon, however, a large proportion of the little apples fell from the trees, leaving but a moderate setting of fruit to tax the strength of the trees during its maturity. And yet the apples kept falling, until, when the severe spring drought was broken by the unprecedented summer rains, there remained only fruit enough to have made a very moderate crop. Still more surprising, perhaps, was the subsequent phenomenon, shown in the continued falling of the apples after the heavy rains. One might have expected, apparently, that the comparatively small number of fruits still hanging when the rains came, should have thereafter matured in excellent condition. Instead of that, almost every apple fell prematurely. This trouble was widespread and remarkable.

As explanation for the facts observed several causes may be cited, some of which were exceptional and all of which seem to have operated in an unusual degree during the summer of 1895. The relentless drought of last fall, winter and spring was the culmination of a much longer period of insufficient rain. In consequence of it the trees went into the winter of 1894-95 in an utterly exhausted condition—in many cases a dying condition. It is well known that dry weather will cause the formation of fruit buds and that a tree dying from drought is especially certain to overbear excessively. Thus, under the conditions which have actually been imposed on our apple trees, an unnatural tendency to fruitfulness was set up and the trees overloaded themselves with fruit last spring. This load was so extravagant that, in the weakened condition of the tree, and during the unremitted spring drought, but a fraction of it could be nourished, and many of the small apples simply dried up and fell off—starved.

This difficulty continued to exist up to the time of the summer rains; so that after the first great shower of falling fruit, the apples continued to fall in all stages of maturity, as the increasing demands of the growing fruit and the decreasing ability of the dying tree to supply moisture came into more and more vigorous opposition.

Before the middle of the summer the young shoots had been half ripened by the inclement weather. This is still susceptible of abundant proof through an examination of the last year's growth, which shows that the spring buds were often ripe enough to have grown again after the rains came. This premature ripening of the wood was sometimes great enough to cause the dropping of the leaves, and must necessarily have been accompanied by a similar ripening of the half-grown fruit. When the rains came a very strong flow of sap was sent up into the thirsting tree; and this flow was strong enough to force the tree into a new and comparatively very vigorous wood growth. This is still shown by the remarkable fall growth of the shoots and the unusual crop of water-sprouts. Such a vigorous growth being once set up in any tree, it thereafter monopolizes the sap supply to the continual prejudice of the remaining fruit. Thus, instead of being brought to a perfect maturity by the abundant summer rains, the remainder of the apple crop was again actually reduced by the supply of moisture.

To these causes should be added the unusual multiplicity of the codling moths. They are said to have been much more numerous than common during 1895, and, of course, had their influence in bringing down apples before picking-time. I have also heard the heavy frost of May 12 charged with causing the fall of more or less of the crop; but the little that I can now learn concerning it seems rather to contradict than to verify that theory.

To recapitulate, we may be tolerably

certain of the following causes as having contributed to make the apples fall:

1. Overbearing.
2. Excessive drought.
3. Excessive rains.
4. Abundance of codling moths.

Annual Meeting of the State Horticultural Society.

The twenty-ninth annual meeting of the Kansas State Horticultural Society will be held in the K. of P. hall, opposite postoffice, at Lawrence, Kas., on Tuesday, Wednesday and Thursday, December 10, 11 and 12, 1895. The following is the program:

FIRST DAY—TUESDAY.

MORNING, 10 O'CLOCK.

Call to order by President.
Prayer by Rev. J. W. Somerville, First M. E. church, Lawrence.
Reading communications.
Appointment of committees.
Reports on orchards and fruits.
Discussion on above.
Music.

AFTERNOON, 1:30 O'CLOCK.

Reports on orchards and fruits.
Discussion on above.
"National Unity of Our Horticultural Interests," E. Gale, Mangona, Fla., ex-President of this society.

"Cold Storage." Led by the President.
"Apples, Seconds and Thirds—What Shall We Do With Them?" Discussion on above by Evans, Wellhouse, Taylor, Holsinger, et al.

"Transportation." Discussion.
Music.

EVENING, 7:30 O'CLOCK.

Welcome, Hon. A. L. Selig, Mayor of Lawrence.
Response, Judge L. Houck, Hutchinson.
"A Few Horticultural Statistics," Hon. F. D. Coburn, Secretary State Board of Agriculture.
"Soil Moisture" (with large illustrations), H. R. Hilton, Topeka.

SECOND DAY—WEDNESDAY.

MORNING, 9 O'CLOCK.

Report of Secretary, Hon. Edwin Taylor, Edwardsville.
Report of Acting Secretary, William H. Barnes, Topeka.

Report of Treasurer, M. J. Frank Holsinger, Rosedale.
Reports of standing committees.
"Small Fruits." Papers by Fred Eason, Lansing, and B. F. Smith, Lawrence.
Marketing Fruits.
Discussion on above.
Music.

AFTERNOON, 1:30 O'CLOCK.

"Irrigation With Storm Waters," Geo. M. Munger, Eureka.
"Irrigation in Horticulture," Judge J. S. Emery, Lawrence.
Remarks, Prof. Erasmus Haworth, State University.
"Orcharding With Irrigation," E. B. Cowgill, Editor KANSAS FARMER.
Music.

EVENING, 7:30 O'CLOCK.

Address, Prof. F. H. Snow, Chancellor of the State University.
"The Campus," Prof. J. D. Walters, State Agricultural college.
"Greenland Horticulture," Prof. L. L. Dyche, State University.
"Prognosis in Horticulture," Hon. Edwin Taylor, Edwardsville.

THIRD DAY—THURSDAY.

MORNING, 9 O'CLOCK.

"Kansas Wild and Water," S. T. Kelsey, Kawana, N. C.
"Fruit-Growing in Western Kansas," C. H. Longstreth, Lakin.
"Notes on Some of Mr. Munson's Hybrid Grapes," Prof. S. C. Mason, State Agricultural college.
"Some Insects Injurious to Cottonwood Trees," Prof. E. A. Popenoe, State Agricultural college.
Discussion on above.
Music.

AFTERNOON, 1:30 O'CLOCK—LADIES' SESSION.
"Domestic Economy," Mrs. L. Houck, Hutchinson.

"Nature's Lessons," Mrs. F. Holsinger, Rosedale.
"Rewards in the Flower Garden," Mrs. T. Lee Adams, Kansas City.
Music.

EVENING, 7:30 O'CLOCK.

Music and entertainment by the Douglas County Horticultural Society.
Reports of committees.
"Outlook for Next Year," William H. Barnes, Acting Secretary.
Closing—"Farewell Till '96."

RAILROAD RATES.

All railroads interested have agreed upon a uniform rate of one and one-third fare for round trip, on the certificate plan, provided 100 are in attendance by rail. Be sure to get certificate from agent when buying ticket.

ACCOMMODATIONS.

Eldridge House, special rate of \$1.50 per day.

Stop Naturally!
You Don't Have
to Swear
off!

NO TO BAC

makes the nerves strong, and brings back the feelings of youth to the prematurely old man. It restores lost vigor. You may gain ten pounds in ten days.

GUARANTEED TOBACCO HABIT CURE.

Go buy and try a box to-day. It costs only \$1. Your own druggist will guarantee a cure or money refunded. Booklet, written guarantee of cure and sample free. Address nearest office.

THE STERLING REMEDY CO.,
CHICAGO. MONTREAL, CAN. NEW YORK.

CASCARETS candy cathartic cure constipation. Purely vegetable, smooth and easy, sold by druggists everywhere, guaranteed to cure. Only 10c.

Lawrence House, special rate of \$1 per day.

Merchants' restaurant, under hall, meals at 15 cents each.

Furnished rooms and private board at fair prices.

EXHIBITS.

It is hoped that horticulturists and others interested will bring in large exhibits of fruits, vegetables, flowers, trees, seeds, horticultural appliances, traps, pickers, pruners, dryers, sprayers, etc., more especially such as can be made at home.

Potato-Digging Machines.

EDITOR KANSAS FARMER:—In all trades they are constantly adding new machinery to aid in lowering the cost of manufacturing. The farming world has its share of labor-saving implements. One of the latest things is the successful potato-digger. With the use of these labor-saving machines, the cost of producing a bushel of potatoes is materially lessened, and places the small grower who does not use one in the position of having to sell at less than cost.

Big growers use the two-horse planter, the machine cutter, big weeders and harrows, and dig from 2,000 to 3,000 bushels a day. In this way, a Wisconsin farmer shows an itemized account of how he raised his crop of 1895 for 4 cents per bushel, and as he sold to the starch factory for 12 cents per bushel, he had a net gain of \$24 per acre. He had seven acres of Rural New Yorker No. 2 potatoes that yielded 371 3-7 bushels per acre, and thirty-seven acres of other kinds that averaged 303 4-37 bushels per acre. One dollar per acre is the price paid for digging the crop. There are a great many machines on the market, but the Hoover & Prout seems to have been introduced the most.

These machines act on the same principle as a threshing machine. They root the hill out, elevate it and thresh out and separate all trash from the potatoes, and deliver the potatoes in a nice windrow behind the machine. These machines, with four horses to draw them, take the place of a great many hands with the fork or hoe, and as many rows can be dug as can be cultivated in a day. Wherever these machines are successfully used, they never have any crab grass. Every Kansas man knows all about this persistent grass and can understand how such a machine would be hindered by it. I have never heard of one of them being

run successfully in Kansas or Missouri. Many growers have told me they absolutely would not work at all in crab grass, and if the grass was taken off, the roots formed a sod that choked up and hindered the machine. Can any one tell us, from personal observation, whether this is true or not? The crab grass was so thick on my own potatoes that after it was taken off the sod would choke up a lister, plow or any common two-horse digger and throw them out before they had run a rod.

Mr. A. B. Perine sent me one of his diggers and requested me to try it, and if not successful, to send it back, and if it worked I was to pay him \$16 and freight on it. It proved to be a right-hand rod plow, weighing 140 pounds and with a thirty-six-inch land-side. The beam was steel and set parallel with the land-side, and this made it follow the furrow horse when two were used, and this made it necessary to use three horses and then it followed between the two outside horses and worked just right. The rods threw a sudden and very sharp-turned furrow and allowed all fine dirt to sift readily through, while the potatoes would start through and would be hindered an instant by the rear rods and would drop through and lay on top of the loose dirt. These rods can be opened or closed at will and will suit all kinds of land. The sudden pitch these rods gives the sod is what necessitates the long land-side. Sitting four inches off from the land-side is a rolling-cutter that cuts the sod, and this prevents the sod choking up under the beam. The plow is fourteen-inch and cuts eighteen inches from the cutter, and the draft is quite heavy, but it lays the potatoes out all right. It seems to me as though this principle ought to be applied to common plowing—that is, the sifting of the loose soil through into the furrow and the turning out of all clods and sods on top where the frost and harrow can demolish them. While we may not hope to successfully use the big machines, we can turn out lots of "taters" with such small machines. CLARENCE J. NORTON.

Morantown, Allen Co., Kas.

As an emergency medicine, Ayer's Cherry Pectoral takes the lead of all other remedies. For the relief and cure of croup, whooping cough, sore throat and the dangerous pulmonary troubles to which the young are so liable, it is invaluable, being prompt to act, sure to cure.

KENDALL'S SPRAIN CURE. Certain in its effects and never bilious. Sold everywhere.

Hosts of people go to work in the wrong way to cure a
SPRAIN,
when St. Jacobs Oil would cure it in the right way, right off.



In the Dairy.

Conducted by A. E. JONES, of Oakland Dairy Farm. Address all communications Topeka, Kas.

KANSAS DAIRYMEN IN CONVENTION.

The ninth annual convention of the Kansas State Dairy Association opened in the Ragsdale opera house, Newton, on Wednesday, the 20th of November, and continued in session three days. The meeting was called to order by the President, A. G. Eythe, of Enterprise. Invocation was pronounced by Rev. T. M. Erb, of Newton. In the absence of Mayor Wilcox, the address of welcome was delivered by Mr. Nicholson, of the Newton Commercial Club, who paid a high tribute to Kansas dairymen and wished them still greater success in their chosen field. Mr. J. E. Nissley, of Abilene, gave the response in one of his happiest veins and was heartily applauded. It was one of the best ever delivered before the association.

The first paper of importance was offered by Mr. D. L. Sammis, of Peabody, on the question, "Can We Increase the Per Cent. of Butter Fat by Feeding?" The paper was discussed at great length and brought out some interesting statements. One man declared that the richest milk in fat he ever saw was from cows that had nothing but straw, and were sheltered by a baro wire fence, but the quantity of milk was very small. It was generally admitted, however, that the most profitable cows were those that received the best care and feed; but the point was sustained that the smaller the quantity of milk, the higher the per cent. of fat. A paper on "The Best Way to Obtain Oleo Legislation" was read by ex-Governor Lewelling, of Wichita. This topic was vigorously discussed, and resulted in keeping the old Legislative committee that has served for several years, and by the addition of six new members. The committee now stands: A. E. Jones, Topeka, chairman; J. E. Nissley, Abilene; H. M. Brandt, Canton; F. S. Hurd, Meriden; L. D. Lewelling, Wichita; G. L. Fuller, Atchison; W. P. Brush, Topeka; Peter Heil, Topeka; J. L. Hoffman, Newton. The committee organized and will begin active work at once to secure such legislation as will better protect the dairy interests of the State.

The most enjoyable event in the progress of the meeting was the musical entertainment tendered the visitors by the Newton Musical Union. Wednesday evening, with Mrs. Gaston Boyd as director. The union is composed of some fifty members, and their selections were of the highest order and drew forth repeated applause. A vote of thanks was tendered them by the association.

The attendance on Thursday was larger than at any other time in the history of the organization. The first paper of this day was one on "Pasteurizing Milk and Cream," by Mr. Curtis, of Council Grove. From the remarks which this paper drew out it would seem that the new system must soon come into general use. The milk is heated to 155° F. and then cooled to a low temperature. By this method all disease germs are killed. When put on the market it is bottled and sealed air-tight, and is said to be much sought after in cities on account of its healthfulness for infants. One difficulty with Pasteurized milk is that the cream will not rise, and those using it have to get accustomed to that peculiarity. The paper by Mr. C. B. Merry, of Nortonville, on "Kansas Cheese," was next. Mr. Merry is making a specialty of cheese, and thus far has made his business a success. He reports not being able to fill orders. We should say if his cheeses are all like those he had on exhibition and which took first prize, there would be no need of hunting customers. The papers on "Possibilities of Kansas as a Dairy State," by A. E. Jones, of the KANSAS FARMER, and the one by Hon. F. D. Coburn, on "Dairying as an Agricultural Pursuit," and another by Prof. C. C. Georgeson, of Manhattan, entitled "Benefits of a Dairy School in Connection With the State College," will appear in full later on in the FARMER. A paper by Mr.

J. H. Ratsluff, Canton, on "Conn's B. 41," was very interesting and drew out much discussion. This is a preparation said to produce that exquisite flavor in butter. It is being used by a number of creameries in the State in order to determine its merits. "The Bright Side," a paper by Mr. Nissley, abounding in much originality and humor, put the audience in good spirits, which lasted throughout its delivery.

The scoring of butter and cheese was announced at this point and resulted as follows: First prize on separator butter went to Eudora Creamery Co., J. B. Dunlap butter-maker, score 97; second prize was tied between Brandt & Esley, Canton. J. H. Ratsluff butter-maker, and Riley Creamery Co., A. L. Goble butter-maker, scores 96½. First prize on gathered cream butter went to D. Hall, Great Bend, score 95½; second prize was awarded to A. L. Royal, score 95. First prize on dairy butter was given to R. D. Sande, Peabody, score 95; second prize to E. S. Engle, Abilene, score 91. First prize on cheese went to C. B. Merry, Nortonville, score 94; second prize to A. G. Eythe, Enterprise, score 92.

The diamond stud offered as a special premium on separator butter, by the Genesee Salt Co., was secured by Mr. J. B. Dunlap, of Eudora, who also took in the gold watch offered by Wells, Richardson & Co. on their butter color. The special prize of gold watch, offered by the Worcester Salt Co., on gathered cream butter, went to Mr. D. Hall. The second special prize of a gold watch offered by the Worcester Salt Co. on separator butter, went to the Hesston Creamery Co., Newton.

At the meeting Friday morning, the following officers were elected: President, H. M. Brandt, of Canton; Secretary and Treasurer, J. L. Hoffman, Newton; Assistant Secretary, J. K. Forney, Abilene.

The place of meeting next year was left with the Executive Board to settle.

A very interesting paper on "Artificial Refrigeration" was read by Mr. A. H. Barber, of Chicago. From this paper it seems that ice in cold storage warehouses, packing-houses and creameries will soon be a thing of the past, as artificial means used to produce a low temperature is very much ahead of the old way. Some of the principal reasons are, even temperature, dry air and less cost. Some of the new machines claim that cooling can be done at one-half the cost of ice. It was stated by Mr. Barber that the temperature of a cooling-room can be maintained at any pitch, and even carried several degrees below the freezing point.

The American Creamery has this to say in regard to the Kansas meeting: "In coming here we expected a good meeting and are pleased to report a better one even than we anticipated. The interchange of ideas between the creamerymen of Kansas at this meeting cannot but bear good fruit for the industry in this State. The attendance was largely made up of creamerymen, and a fine body of men they were. We do not know of a State where the men in this business, taken as a class, are more progressive and more thoroughly up to date in everything that tends to improve or elevate the business. Many of our readers may look upon Kansas as a far-away State. In a creamery sense, this is not so, and, as a matter of fact, no other State in the Union has so many combinations, or large lines, and they are good ones. At Newton, where the meeting was held, is the home of the Hesston Creamery Co., one of the strongest institutions of its character in the State. Abilene, Canton, Enterprise and other sections, as well, have all combined to work for the common good in upbuilding the industry in their State, and they have been wonderfully successful. That they are was evidenced by the way they turned out to the Newton meeting, and was further proven by the attention they gave the various subjects under discussion. Other States were well represented by men who are interested in the trade. To mention all their names would simply be to repeat the list that can always be depended upon.

"The natural and immediate out-

come of the Newton meeting will be an increased interest in the creamery among the people of the 'Sunflower' State. That it will revert to their good and to their great profit is not to be questioned by those who are conversant with the blessings which come to any community that properly appreciates the value of the cow."

To Make the Dairy Pay.

Determine in your own mind the amount of butter a cow should produce weekly to pay for her food and the labor of caring for her. Subject each animal to individual test and dispose of all those failing to come up to the mark.

Let the trial be a fair one and see that proper rations are given. Equal parts of wheat, oats and corn makes a fairly good milk ration. If a small root ration can be added, the yield of milk will be more satisfactory as a rule. Shelter the animals from the cold and wet by battening the cracks or lining the stable with tarred paper.

If you are anxious to find the most reliable blood-purifier, read in Ayer's almanac the testimonials of those who have been cured of such terrible diseases as catarrh, rheumatism and scrofula, by the use of Ayer's Sarsaparilla. Then govern yourself accordingly.

THEOS. B. SHILLINGLAW, Real Estate and Rental Agency, 115 East Fifth St., Topeka, Kas. Established in 1884. Calls and correspondence invited.

OR invited to send for my latest price list of small fruits. Half million strawberry plants 800,000 Progress, Kansas and Queen of West raspberry plants. B. F. Smith, Box 6, Lawrence, Kas. Mention this paper.

A. H. GRIESEA, Prop'r Kansas Home Nurseries, Lawrence, Kas., grows trees for commercial and family orchards—the Kansas Raspberry, Blackberries, standard and new Strawberries—also shade and evergreen trees adapted to the West.

ESTABLISHED IN 1873.

WILLIS NURSERIES.

Offers for fall of 1895 large stock, best assortment. Prices low. Stock and packing the best.

We should be glad to employ a few reliable salesmen. Address

A. WILLIS, Ottawa, Kansas.

[When writing mention KANSAS FARMER.]

EARLY KANSAS \$1 per bu. F. O. B.

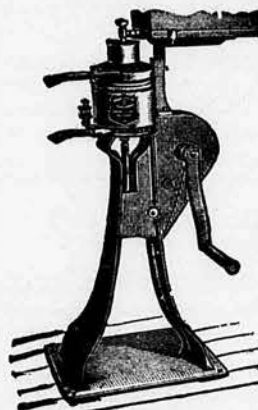
345 bu. SEED POTATOES

An enormous yielder, a great keeper and a splendid table potato. Supply limited.

CLARENCE J. NORTON, Morantown, Kas.

The United States Separator

COSTS YOU NOTHING.



Because it increases the butter product to such an extent that the increase pays you for the Separator. This is the machine that makes records like the following: Running full capacity, the analyses of separated milk were, at

Vermont Dairy School, 0.03 of 1 per cent.

Pennsylvania Dairy School, 0.04 of 1 per cent.

Indiana Dairy School, a Bare Trace Only.

Send for illustrated circular full of testimonials from users, showing equally good work in the hands of dairymen in all sections.

PRICES, \$75.00 AND UP.

Agents Wanted in every Town and County where we have none.

We furnish everything for the Dairy and Creamery.

VERMONT FARM MACHINE CO.,

BELLOWS FALLS, VT.

A Blacksmith.

May 22d, 1894.

The Dr. J. H. McLean Medicine Co.,
St. Louis, Mo.



Gentlemen: About three years ago, while working at my trade as blacksmith, I was taken down with Kidney disease. I suffered severely with pain in my back and general weakness, and was compelled to quit work. I was treated by several different doctors, who filled me full of drugs and medicines, but without benefit. I had begun to get discouraged when I received one of your almanacs and read of a case in it that was similar to mine, cured through the use of Dr. J. H. McLean's Liver and Kidney Balm. I concluded to try it. The result was entirely satisfactory as I began to improve immediately. I used, in all, three bottles, and was able to go to work once more, and ever since have enjoyed the best of health. I would be doing less than my duty if I failed to give you these facts, so that others may hear of the wonderful powers of your Liver and Kidney Balm.

Yours truly,

H. J. BRECHT,
CEDAR GROVE, WIS.



If you have **FIVE** or more Cows a Cream Separator will save its cost each year of use. Beware of imitating and infringing machines.

Send for new 1895 Catalogue.

The DeLaval Separator Co.

Branch Offices: General Offices:
ELGIN, ILL. 74 CORTLANDT ST., NEW YORK.

By using one of these Feed Cookers you can realize on your present crop of

Corn 75¢ per bushel.

This justly Celebrated Feed Cooker will save any

farmer, feeder or Dairyman Hundreds of Dollars each Year. Will pay for itself the first year it is used.



For illustrated circulars and prices, or catalogue of

CREAMERY AND DAIRY SUPPLIES

of every description; Boilers, and Engines; Milk Cans or Butter and Cheese making supplies

address

Creamery Package Mfg. Co.

Dept. B.

Kansas City, Mo.

Cook your corn before feeding to cattle or hogs, increasing its fattening qualities 50 per cent. and make each bushel go about ¼ further. It will enable you to realize 75¢ per bushel for your present crop—it will steam moldy hay or corn perfectly sweet and make dry cornstalks or straw soft and palatable. Made of steel boiler plates, with boiler tubes passing directly through the water—will do your work quicker, cheaper, and is guaranteed to be better satisfaction than any other.

American Short-horn Breeders' Association.

Annual meetings of the stockholders and Board of Directors of this association were held in the city of Chicago, November 20 and 21, 1895. Following is the list of officers for next year: E. Cobb, Kankakee, Ill., President; C. E. Leonard, Boonville, Mo., Vice President; J. H. Pickrell, Springfield, Ill., Secretary; F. M. Wade, Springfield, Ill., Assistant Secretary; D. W. Smith, Springfield, Ill., Treasurer. Board of Directors—W. E. Boyden, Delhi Mills, Mich.; H. F. Brown, Minneapolis, Minn.; Emory Cobb, Kankakee, Ill.; J. B. Dinsmore, Sutton, Neb.; W. A. Harris, Linwood, Kas.; A. H. Jones, Delaware, O.; C. E. Leonard, Boonville, Mo.; S. F. Lockridge, Greencastle, Ind.; John McHugh, Cresco, Ia.; J. Frank Prather, Williamsville, Ill.; Abram Renick, Sycamore, Ky.

Treasurer's report showed receipts as follows:

October 31, 1894, amount in hand.....	\$ 271.23
From Secretary.....	18,880.91
	\$14,102.14
Disbursements.....	13,890.28
Amount in hand.....	241.88
	14,102.14

By request of the stockholders, the Board of Directors determined to establish a separate book for recording the pedigrees of milking Short-horns. After determining to use the pedigrees of milking cows that had competed for and won prizes that had been awarded by the American Short-horn Breeders' Association at the various State fairs, previous to the Columbian Exposition, provided none would be eligible that had not made over one pound of butter per day, the cows and heifers that had made a record of that much and over that were in the Columbian dairy school were also included in the basis of the book.

Rule of Entry No. 2 was so changed that beginning with Vol. XLI, bulls will be numbered as accepted for record, and will have their pedigrees printed in numerical order instead of alphabetically, as heretofore.

A committee consisting of Messrs. Cobb, Pickrell, Prather and Dinsmore was appointed to memorialize Congress to publish the dairy tests made at the Columbian dairy school.

Entries for Vol. XL were ordered closed December 31, 1895. The Secretary requests that all pedigrees for that volume be sent at once, direct to J. H. Pickrell, Secretary, Springfield, Ill.

The Vineless Yam.

The Texas Experiment Station reports on a vineless yam, or sweet potato, as follows:

"Perhaps no other vegetable novelty which has been introduced in the South in recent years has caused more comment than the vineless sweet potato. The experimental stage has been passed, and the value of this variety, like that of the bunch lima bean, has been established beyond question. In Bulletin No. 28 we stated that the tops of the vines (leaves and stems) could be cut with a mower. It has been stated as an objection that the ground is usually too rough to run a mower over. With nearly a level culture we have grown over three hundred bushels per acre of this variety, and all the tops could have been easily cut with a mower. The high value of the tops for feed has been proven, but it is best to feed them green, as they do not cure well. Frequently it is a good practice to mow off the heavy tops and leave the gritty runners on the ground. Owing to the short vines of this variety, which seldom grow over two to four feet long, I have seen it planted in the corn fields and grown with fair success between the rows of corn. The ground can be cultivated later and the crop can be harvested easier than when running varieties are used. There is only one strain of the vineless potato that we can endorse. There are two others somewhat inclined to be vineless, but the foliage is much less dense, and the stems of the leaves are not near so long nor so heavy as in the case of the true vineless. The other two, which are perhaps varieties of the true vineless, judging from the resemblance of the foliage and

vines, have not proven themselves to be as productive here as the true vineless. This may account for the partial failure some have reported on the vineless. In one of these strains there is not only a variation in the vines and tops, but also in the tubers. One has all the flavor and color of the true vineless, but the other resembles very much in color and quality the pumpkin yam. This being true, the vineless is likely to become the parent of an entirely new race of sweet potatoes, ranging in quality from the soft, sugary yams of the South to sweet, mealy Nansemonds of the North.

"The vineless was found growing among some hills of the yellow yam potato in Mississippi in 1884. Just how it originated is not known, neither have I been able to trace the origin of the two varieties from the vineless with certainty, but all the evidence I have been able to collect goes to prove that these varieties were found also near the time and place of the true vineless. Perhaps we owe it to insects cutting off the vines or to the well-known tendency of plants to produce variations or 'sports,' that this excellent variety has come into cultivation."

What Calves Make the Best Dairy Cows?

There is a quite prevalent opinion among a good many of our best dairymen to the effect that, other things being equal, the fall calf makes the best milch cow if good winter care is given. The spring calf at a critical period in its life is exposed to heat and flies, which annoy and form an obstacle to its development at a time when it is least prepared to bear it. The fall calf with good winter care gathers a reserved force of vigor and energy, which enables it to withstand this annoyance by the time it is obliged to pass through summer and fly-time.

Canada's Good Example.

The United States needs well to follow the example of Canada in its restrictive laws against adulterated butter or cheese. In 1893, when it was rumored that a foreign firm proposed to start one factory in Canada to make filled cheese, Parliament immediately passed a prohibitory law forbidding its manufacture or sale under heavy penalties, going up to \$400, with half the fine payable to the informant. Not one case has since occurred. The manufacture and sale of oleomargarine were also prohibited, the penalty for violation being a heavy fine or imprisonment. The law also forbids the manufacture or sale of imitation or unwholesome dairy products, and their importation is prohibited. The use of the brand "Canadian" is restricted by law to cheese and butter made in Canada. Canada is the only dairy country where the manufacture or importation of oleomargarine and imitation cheese is wholly prohibited.

ARE YOU?

Are you subject to dizziness, headache, backache, biliousness, indigestion, sleeplessness, or palpitation of the heart?

Are you nervous and run down, with thin blood, pale, sallow complexion, dragging pains in the loins and loss of your natural cheerfulness? Do you suffer from tired, worn-out feelings?

Are you constipated, dyspeptic and lack strength and vigor? Do you want to feel well, happy and ambitious?

Are you aware that all these symptoms are caused by your liver and kidneys and that there is but one remedy which relieves and cures in just such cases as yours? You have probably heard the name before but it is well to remind you that Warner's Safe Cure is unequalled in building up the system. It speedily restores healthy action to the great organs of the body, purifies the blood and renews the strength. Will you not try it?

In writing to our advertisers please say you saw their advertisement in the KANSAS FARMER.

Dairy Announcements.

The Minnesota State Dairymen's Association will hold its annual convention at Litchfield, December 10, 11 and 12. In view of the great interest that is being manifested in dairying, this will, in all probability, be the best convention ever held by the association.

The meeting of the dairymen of Dakota to form a State association will be held in Sioux Falls, January 8 and 9. L. N. Hunter, who is promoting the convention, says he expects about 200 delegates there to discuss the various matters relating to the dairy and creamery business. Sioux Falls business men will raise a sum sufficient to defray the expenses of the various speakers while they are there.

The Nebraska Dairymen's Association will hold its annual convention at Lincoln, December 17, 18 and 19. Mr. S. C. Bassett, of Gibbon, Neb., the Secretary, is determined to make the meeting one of the best and most enjoyable gatherings ever held in history of the society, and in that direction he has announced that he would be glad to receive suggestions in regard to subjects for discussion, and extends a cordial invitation to all who are interested in any phase of dairy work to make such suggestions, to prepare papers and attend the meeting. Those who are willing to present topics for consideration and discussion are invited to correspond with the Secretary on the subject, in order that a place may be found for them on the program.

Kansas Patents.

The following list of patents is reported through the Kansas City office of Higdon & Higdon, Patent Lawyers and Solicitors, Diamond building, Junction Main and Delaware streets, granted to inventors living in Kansas, the week ending Tuesday, December 3, 1895:

H. W. Hafer and J. O. Love, Fort Scott, piano string clamp.

Corn

is a vigorous feeder and responds well to liberal fertilization. On corn lands the yield increases and the soil improves if properly treated with fertilizers containing not under 7% actual

Potash.

A trial of this plan costs but little and is sure to lead to profitable culture.

O pam ar no, advertising, circular, bo ing special fertilizers, but are practical works, containing latest researches on the subject of fertilization, and are really helpful to farmers. They are sent free for the asking.

GERMAN KALI WORKS,
93 Nassau St., New York.

PINEOLA COUGH BALM

is excellent for all throat inflammations and for

asthma. Consumptives will invariably derive benefit from its use, as it quickly abates the cough, renders expectoration easy, assisting nature in restoring wasted tissues. There is a large percentage of those who suppose their cases to be consumption who are only suffering from a chronic cold or deep-seated cough, often aggravated by catarrh. For catarrh use Ely's Cream Balm. Both remedies are pleasant to use. Cream Balm, 50c. per bottle; Pineola Balm, 25c. at Druggists. In quantities of \$2.50 will deliver on receipt of amount.

ELY BROTHERS, 56 Warren St., New York.

KANSAS FARMER and Semi-Weekly World (N. Y.), you can have for \$1.65 one year.



Used and endorsed by Adams Express Co.

INVALUABLE TO HORSE OWNERS.

Because it is always reliable. It is a speedy, safe and positive cure for Cuts, Bruises, Sprains, Shoe Boils, Calluses of all kinds, Contracted and Knotted Cords, etc. Used and highly recommended by prominent horse-men.

TUTTLE'S ELIXIR

Is a sure specific for lameness. It never produces any scars or blemishes. Warranted to satisfy.

Readville Trotting Park, Mass., March 23, 1893.

Dr. S. A. Tuttle, V. S.—Dear Sir: I have used your Elixir for the past ten years, in the diluted form, for a leg and body wash. I consider it the best wash for keeping horses from sores up. Horses done up with this wash are much less liable to take cold than when done up with witch hazel or any other wash I ever used.

Tuttle's Family Elixir cures Rheumatism, Sprains, Sore Throat and all joint affections.

Sample of either Elixir sent free for three 2-cent stamps to pay postage. 50 cents buys either Elixir of any druggist, or sent direct on receipt of price.

DR. S. A. TUTTLE, 27 Beverly St., Boston, Mass.



Poultry on Top!

The introduction of preparations to take the place of lard—the trolley car, bicycle, motor cycle, etc., for carriages, have given the hog and horse raising industry of the entire country a serious setback, and the same farmers must turn their attention to an industry which promises to outstrip both of the old. The king is dead—long live King Poultry. The census of 1880 gave the total number of barnyard fowl at 125,500,340. The number of dozen eggs laid, 456,875,080. The census of 1890 gave fowl, 285,288,700; eggs laid, 817,211,146. This enormous increase shows nearly 100% in only ten years. Certainly poultry raising is on top. Read the

FARM-POULTRY

and learn all about it. There is already established in some parts of the United States great poultry packing establishments which are paying extra prices for choice stock, such as FARM-POULTRY teaches how to grow.

THE DEMAND for choice market poultry in the form of chickens for broilers, roasters, fowl, ducks, turkeys and eggs, is every year increasing. The average price in large markets rules high the year around. The demand for "good" poultry and "fresh" eggs is not supplied by the raisers of this country, and will not be for years to come. Prices are steadily increasing year after year.

THEREFORE, why not give more attention to poultry raising? You may answer, "Oh! there is no profit in it here." Yes there is, "here" or anywhere if rightly done. "Scrub" poultry, poorly prepared for market, and stale eggs, like all other second grade goods, will always sell slow in the market.

THAT BEST of all poultry papers, FARM-POULTRY, published by I. S. Johnson & Co., Boston, Mass., has done, is doing, and will continue to do very much to teach every person who reads it carefully and practices its teaching, how to raise poultry for profit, because all the matter that goes into it is the result of actual experience by the editor on a poultry farm. Upon this farm is being done every year just what FARM-POULTRY can and will teach you, if you study its pages every issue. It is a practical instructor; it is a helpful friend and aid; it is to the beginner an ever ready reference and guide to success.

Do you care to learn how others make their hens pay \$2.50 each per year? Then subscribe to FARM-POULTRY. "What has been done can be done again." Remember the price; one year, \$1.00; sample copy 25c. I. S. JOHNSON & CO., 38 Custom House St., Boston, Mass.



MARKET REPORTS.

Kansas City Live Stock.

KANSAS CITY, Dec. 2.—Cattle—Receipts since Saturday, 7,891; calves, 119; shipped Saturday, 1,568 cattle, no calves. The market was steady to 15c lower. The following are representative sales:

No.	Ave. Price.	No.	Ave. Price.
59.....	1.464 \$4.15	16.....	1.185 \$3.80
3.....	1.443 3.80	2.....	1.300 3.75
26.....	1.192 3.63	23.....	1.216 3.60
1.....	1.370 3.50	32.....	1.130 3.50
34.....	1.138 3.40	10.....	1.040 3.40
9.....	1.126 3.40	5.....	1.278 3.30
2.....	875 3.10		

TEXAS AND INDIAN STEERS.

25.....	1.132 \$3.25	1.....	1.010 \$3.00
403.....	855 3.20	22 Ind.....	747 2.61

WESTERN STEERS.

4.....	1.095 \$3.25	26.....	1.027 \$3.25
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COLORADO COWS.

1.....	850 \$2.65	51.....	935 \$2.65
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OKLAHOMA STEERS.

28.....	880 \$2.75	1.....	830 \$2.40
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TEXAS AND INDIAN COWS.

2 Ind.....	1.365 \$3.00	32 Ind.....	851 \$2.50
23 Ind.....	663 2.10		

COWS AND HEIFERS.

2.....	1.180 \$3.40	2.....	1.315 \$3.25
3.....	750 3.15	2.....	1.470 3.00
23.....	960 2.90	2.....	1.250 2.90
1.....	1.20 2.75	2.....	1.035 2.75
13.....	893 2.65	1.....	1.140 2.65
3.....	610 2.65	1.....	1.020 2.60
5.....	840 2.45	8.....	972 2.45
1.....	1.190 2.30	5.....	938 2.25
1.....	850 2.00	2.....	980 2.00
1.....	1.010 1.85	2.....	900 1.75

STOCKERS AND FEEDERS.

23.....	1.018 \$3.50	14.....	795 \$3.35
40.....	628 3.25	17.....	818 3.25
1.....	1.220 3.01	1.....	950 3.00
6.....	1.026 2.95	2.....	1.100 2.20

Hogs—Receipts since Saturday, 6,679; shipped Saturday, 232. The market was weak to 5c lower. The following are representative sales:

46.....	419 \$3.45	40.....	263 \$3.45	64.....	212 \$3.42½
52.....	229 3.42½	62.....	281 3.42½	72.....	230 3.42½
52.....	250 3.42½	77.....	241 3.42½	60.....	273 3.42½
52.....	285 3.42½	95.....	247 3.42½	75.....	269 3.42½
73.....	272 3.42½	73.....	269 3.40	54.....	205 3.40
5.....	316 3.40	70.....	241 3.40	34.....	205 3.40
68.....	265 3.40	61.....	202 3.40	78.....	264 3.40
74.....	275 3.40	56.....	217 3.40	84.....	208 3.40
17.....	202 3.37½	52.....	204 3.37½	33.....	280 3.37½
22.....	290 3.37½	56.....	223 3.37½	76.....	248 3.37½
12.....	289 3.35	46.....	216 3.35	73.....	177 3.35
13.....	232 3.35	30.....	243 3.35	71.....	254 3.35
67.....	182 3.35	26.....	150 3.35	11.....	401 3.35
23.....	177 3.30	33.....	133 3.30	98.....	196 3.30
21.....	95 3.25	25.....	129 3.25	19.....	143 3.25
1.....	340 3.25	41.....	118 3.25	20.....	77 3.20
5.....	106 3.20	1.....	340 3.00	3.....	30 2.75
28.....	50 2.75	3.....	203 2.65		

Sheep—Receipts since Saturday, 2,051; shipped Saturday, none. The market was active and strong. The following are representative sales:

26 1.....	78 \$4.40	73.....	129 \$3.35
80 2.50	11.....	116 1.50	

Horses—Receipts since Saturday, 401; shipped Saturday, 103. There was little doing. The receipts are fair and give promise of a good market this week. A few private sales were consummated to-day at nominally steady prices.

Chicago Live Stock.

CHICAGO, Dec. 2.—Cattle—Receipts, 20,000; market 10c lower fair to best beefs, \$3.50@4.15; stockers and feeders, \$2.25@3.60; mixed cows and bulls, \$1.50@3.70; Texas, \$2.90@3.50.

Hogs—Receipts, 66,000; market active at 5@10c decline; light, \$3.35@3.55 rough packing \$3.30@3.40; mixed and butchers, \$3.30@3.60; heavy packing and shipping, \$3.45@3.60; pigs, \$2.20@3.10.

Sheep—Receipts, 20,000; market steady; native, \$1.50@3.40; western, \$3.30@3.50; lambs, \$3.00@4.40.

St. Louis Live Stock.

ST. LOUIS, Dec. 2.—Cattle—Receipts, 3,000; market slow and lower; native steers, \$3.40@4.35; Texas steers, \$3.00@3.60.

Hogs—Receipts, 4,000; market 5 to 10c lower; heavy, \$3.40@3.50; mixed \$3.00@3.50; light, \$3.25@3.45.

Sheep—Receipts, 900; market slow.

Chicago Grain and Provisions.

Dec. 2.	Opened	High'st	Low'st	Closing
Wheat—Dec.....	56½	57	56½	56½
Jan.....	57½	57½	57½	57½
May.....	61	61½	60½	61½
Corn—Dec.....	29½	29½	29½	29½
Jan.....	29½	29½	29½	29½
May.....	29	29½	28½	29½
Oats—Dec.....	17½	17½	17½	17½
Jan.....	20½	20½	20½	20½
May.....	20½	20½	20½	20½
Pork—Dec.....	7 62½	7 65	7 62½	7 65
Jan.....	8 70	8 70	8 67½	8 70
May.....	9 10	9 10	9 05	9 10
Lard—Dec.....	5 15	5 17½	5 15	5 17½
Jan.....	5 37½	5 37½	5 35	5 37½
May.....	5 60	5 60	5 60	5 60
Ribs—Dec.....	4 25	4 25	4 25	4 25
Jan.....	4 35	4 37½	4 35	4 37½
May.....	4 60	4 62½	4 60	4 62½

Kansas City Grain.

KANSAS CITY, Dec. 2.—Wheat met with a brisk demand here to-day at about Saturday's prices. Occasionally a car sold at slight advance. There was more spring wheat on sale than for some days past. A few cars of soft wheat on the tables were held very high.

Receipts of wheat to-day, 116 cars; a year ago, 24 cars.

Sale of car lot by sample on track, Kansas City: No. 2 hard, 9 cars 58c, 3 cars 57½c; No. 3, 3 cars 55c, 5 cars 54c, 2 cars 53c, 2 cars 52c, 3 cars 51½c; No. 4, 1 car 47c, 1 car 43c; rejected, nominally 33@38c; no grade, nominally, 30@33c. Soft, No. 2 red, nominally 68c; No. 3 red, 1 car 67c, 1 car 64c; No. 4 red, 1 car 59c, 1 car 57c, 1 car 55c; rejected, 1 car 44c; no grade, nominally 35@40c. Spring, No. 2, 8 cars 57c, 7 cars 56½c; No. 3, 3 cars 54½, 3 cars 53½, 3 cars 52c, 2 cars 50c; rejected, 1 car 51c; white spring, No. 3, 1 car 52½c.

Corn met with good demand and buyers were disposed to bid up just a little on the cars with long billing out, which constituted the bulk of the offerings. The receipts were about as usual. Mixed corn with 10c to Memphis would have sold at 23½c. White corn was discriminated against just a little.

Receipts of corn to-day, 77 cars; a year ago, 72 cars.

Sales by sample on track, Kansas City: No. 2 mixed, 3 cars, 23c, 10 cars 22½c, 5 cars 22¼c; No. 3 mixed, nominally 22c; No. 4 mixed, nominally 21c; no grade, nominally 20c; white corn sold at the same price as mixed corn.

There was an improved demand for good oats, though prices were no higher. Low grades sold slowly.

Receipts of oats to-day, 21 cars; a year ago, 11 cars.

Sales by sample on track, Kansas City: No. 2 mixed, 1 car choice 18½; No. 3, nominally 15 @16c; No. 4, nominally 14 @14½c; no grade, nominally 13 @14c; No. 2 white, 3 cars 19c, 1 car 18½c; No. 3 white, 1 car 17½c; 1 car 18c.

Hay—Receipts, 56 cars; market steady; Timothy—Choice, \$10.00@11.00; No. 1, \$8.50@9.50; No. 2, \$5.50@7.50; fancy prairie, \$7.00@7.50; choice, \$6.50; No. 1, \$5.50@6.00; No. 2, \$4.50@5.00; packing hay, \$3.00@4.00.

St. Louis Grain.

ST. LOUIS, Dec. 2.—Receipts, wheat, 36,555 bu.; last year, 9,775 bu.; corn, 101,000 bu.; last year, 60,000 bu.; oats, 42,000 bu.; shipments, wheat, 10,560 bu.; corn, 49,119 bu.; oats, 24,390 bu. Closing prices: Wheat—Cash, 64c; December, 58½c bid; May, 62½c asked. Corn—Cash, 24½c; December, 24½c; May, 26c bid. Oats—Cash, 18c; December, 18c; May, 20½c.

Kansas City Produce.

KANSAS CITY, Dec. 2.—Butter—Creamery, separator, 21c; firsts, 17@18c; dairy, fancy, 14@15c; store packed, fresh, 10@12c; off grades, 8c; country roll, fancy, 13@15c; choice, 10@12c.

Eggs—Strictly fresh candled stock, 18½c per doz.; cold storage, 14½c.

Poultry—Hens, 5c; springs, 6@8½c; broilers, 7c; roosters, 15c; young, 20c; turkeys, 7c; ducks, 7c; geese, young, fat, 6c; old, 5c; pigeons, 6c per doz.

Fruits—Apples—Fancy, \$2.25@2.50 per bbl.; choice, \$1.75@2.00; common to good, \$1.00@1.50 per bbl. Grapes—Pennsylvania, New York and Ohio Concord, fancy, scarce, 20@21c; poor stock, 10@15c. Cranberries, \$7.50@8.00 per bbl.

Chicago Horse Market.

Quotations for horses, Union stock yards market, Chicago.

Smooth bred 800 to 1,050 pound chunks for Southern trade are in demand and selling well. There has been a slight increase in the demand for choice heavy drafters as well as piny horses. Other classes are hard sale and selling at very low figures.

Expressors and heavy drafters..... \$85@170
Chunks, 1,100 to 1,400 pounds..... 50@ 85
Streeters..... 50@ 60
Coaches and fast road horses..... 90@280
Chunks, 800 to 1,100 pounds..... 30@ 55
Ordinary drivers, \$60 and upwards.

These prices are for sound horses, 5 to 8 years old, well broken and in good flesh.

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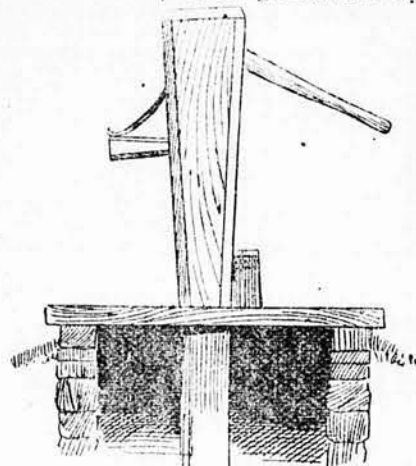
Writing on the management of turkeys a lady correspondent of the Practical Farmer is very practical. She says that unlimited range, where they can do no injury to gardens, is the road to success in the raising of turkeys. Then, of whichever breed is preferred, select vigorous stock. She prefers the Mammoth Bronze or White Holland to other varieties. Then have them tame, so their eggs can be procured without having to hunt for their nests, as in the latter case half of them will never be found. About three hens are as few and ten as many as it pays to keep with one gobbler. This is owing to the time one can spend to look after them and the kind and size of range they have to ramble over with their young. She prefers a wheat or oats stubble opening out to prairies or hills. By all means raise the young ones with the turkey hens. An old chicken hen with a gang of turkeys peeping around is a menace to the household. They never grow half as large as those that range with the turkey hens, and if they grow at all they eat their heads off twice over. She always sets a chicken hen when she sets the turkey hen, placing about eighteen eggs under the turkey and nine or ten under the chicken hen. Then when all are hatched, she gives all to the turkey hen. She will then have a fine brood large enough for her to hover at night and during a rain.

Never pen turkey hens and their little ones, as is sometimes advised, but look after them tenderly for the first months of their lives, feed them light bread and milk or hard-boiled eggs for a week, three times a day, then twice a day for the next week or two according to the weather. Feed just corn bread made with milk and eggs so it will be light. Then feed them once a day cheese curd, mashed potatoes, corn bread, or most any thing they will eat, just to keep them so they will not grow so wild, until they are six weeks old. Then if they have been on a good range they will be fully feathered out to stand a rain without shelter, except what they naturally seek under trees, and can take care of themselves until time to sell them in fall. Where there are large wild animals, such as wolves, foxes, etc., it is a question for persons to settle in their own minds whether or not it will pay to raise turkeys, considering the low prices that have prevailed the last two years. This lady's experience has proven to her that they are the very hardest of poultry, despite all lessons to the contrary.

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the curb on this, cementing joints to keep bugs and mice out. Put in a box, with opening covered with wire mosquito netting, for a ventilator, and the water will be kept pure. All these points are shown in the illustration, but special stress may be laid upon the point of rounding up the earth about

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the well. Too often one sees a heavy rain washing the surface of the ground into the well, carrying with it whatever impurities may be about—and where hens have the run of the grounds these impurities are many. Special stress may also be laid upon the idea of filling all the joints below the platform with cement, for bugs, mice, toads, frogs and even larger animals will get into a well if there is any opening about the top.—N. Y. Tribune.

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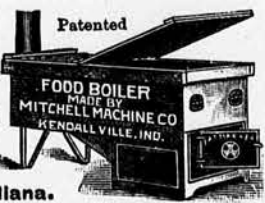
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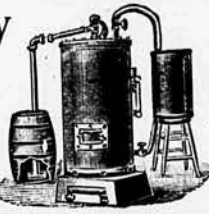
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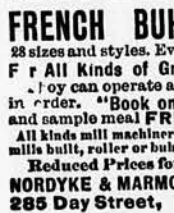
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If it does not save its cost on one lot of hogs. Address

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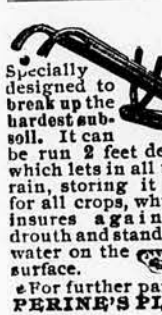
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The only mills made with Cast Steel Grinders. Warranted superior to any in use, for all purposes, runs easier, grinds faster and far more durable. Satisfaction guaranteed. Also Hay Presses of all styles.
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Specially designed to break up the hardest subsoil. It can be run 2 feet deep which lets in all the rain, storing it up for all crops, which insures against drouth and standing water on the surface.
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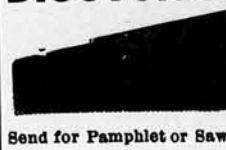


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The Best and Cheapest Mill on Earth. Fully warranted. Will not choke. Write at once for prices and Agency. Prices lowest. Quality best.
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Best Combination Bit made.
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If your dealer does not handle Cork Faced Horse Collars, write us; we've something to say in regard to them. **Cork-Faced Collar Co.,** Lincoln, Ill.



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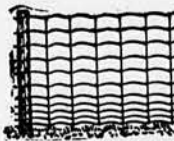
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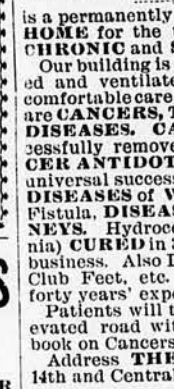
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is a permanently well established **INVALID'S HOME** for the treatment of **MALIGNANT, CHRONIC and SURGICAL DISEASES.** Our building is beautifully located, well lighted and ventilated, with ample room for the comfortable care of all patients. Our specialties are **CANCERS, TUMORS, SKIN and BLOOD DISEASES, CANCERS and TUMORS** successfully removed with the **MORGAN CANCER ANTIDOTE.** We are treating daily with universal success, Chronic Catarrh, Dyspepsia, **DISEASES OF WOMEN,** Rheumatism, Piles, Fistula, **DISEASES OF THE LIVER and KIDNEYS.** Hydrocele, Varicocele, Rupture (Hernia) CURED in 30 days without detention from business. Also Deafness, Hair-lop, Cross Eyes, Club Feet, etc. **DR. JOHN MORGAN,** of forty years' experience, physician in charge. Patients will take **GRANDVIEW** car on Elevated road without change to our door. A book on Cancers mailed free.
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MEN BE STRONG
We will send you the marvelous French Preparation **CALTHOS** free, and a legal guarantee that **CALTHOS** will Restore your Health, Strength and Vigor.
Use it and pay if satisfied.
Address **VON MOHL CO.,** Sole American Agents, Cincinnati, Ohio.



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Original and Only Genuine.
SAFE, always reliable. LADIES ask Druggist for **Chichester's English Diamond Brand** in Red and Gold metallic boxes, sealed with blue ribbon. Take no other. Refuse dangerous substitutions and imitations. At Druggists, or send 4c. in stamps for particulars, testimonials and "Relief for Ladies," in letter, by return Mail. 10,000 Testimonials. Name Paper. **Chichester Chemical Co.,** Madison Square, Philadelphia, Pa.
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DEAFNESS
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WHEN ALL OTHERS FAIL.
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JUST LIKE USING YOUR FINGERS—YOU KNOW HOW THAT IS!
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Three Fast Flyers

over the Santa Fe Route to Chicago—seventeen hours. No. 4, first flyer, vestibuled, limited, leaves Topeka 3 p. m., arrives Chicago 8:30 a. m. No. 6, second flyer, vestibuled, limited, leaves Topeka at 4:30 p. m., arrives in Chicago 9:48 a. m. No. 2, third flyer, vestibuled, limited, daylight express, leaves Topeka 5 a. m., arrives Chicago 10:30 p. m. Three daily trains Topeka to Chicago, all equally speedy, every one a flyer, not a slow coach anywhere. Solid vestibuled trains, composed of Pullman sleepers, free chair cars, and dining cars, smoothly running over a straight, dustless track. Overhead crossings insure safety and quick time. Meals in dining cars served a la carte.

The daylight express is a new departure. You leave Topeka 5 a. m.; you are in Chicago by bedtime. No other line equals this—seventeen hours!

Look at our new and already famous "California Limited," only fifty and one-half hours Topeka to Los Angeles, solid train of Pullman sleepers and free chair cars without change.

J. P. ROWLEY, C. T. A., Topeka, Kas.

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Through Sleeping Cars Kansas City to Jacksonville.

Commencing Sunday, November 18, 1894, the **MEMPHIS ROUTE**, Kansas City, Fort Scott & Memphis Railroad, will inaugurate a through sleeping car line, Kansas City to Jacksonville, via Memphis, Birmingham, Atlanta and Macon, arriving at Jacksonville at 9:45 a. m., making close connections there for all points in South Florida. The cars in this line will be strictly first-class in all their appointments and will run every day in the week, leaving Kansas City at 10:30 a. m.

For rates and full information, address **J. E. LOCKWOOD, G. P. A.,** Kansas City, Mo.

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THE FAVORITE ROUTE TO THE

East, West, North, South.

Through cars to Chicago, St. Louis, Colorado, Texas and California.

Half Rates to Texas Points!

LOW RATES TO ALL POINTS.

Especially California, Texas and Southeastern Points. If you are going to the Midwinter Fair at San Francisco, if you are going to Texas, if you are going East on business or pleasure—in fact, if you intend to do any traveling, be sure to consult one of the agents of the

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Vestibuled Drawing Room Sleeping Car Reclining Chair Cars (Seats Free).

ONLY ONE CHANGE OF CARS TO

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THE BEST LINE FOR

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Grass Seeds, Garden Seeds.
CATALOGUE 1896 FREE.

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(Continued from page 1.)

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FINE BLOODED Cattle, Sheep, Hogs, Poultry, Sporting Dogs. Send stamps for catalogs. 150 engravings. N. P. BOYER & CO., Coatesville, Pa.

SUNNY SLOPE FARM

EMPORIA, KANSAS.
We are the largest breeders of pure-bred hogs in the world, and have won more premiums at state fairs this year than any other breeder in the United States. We are breeding this year 200 brood sows and have twelve boars in our herd. At the head of our herd this year we have the great prize-winning boar, Hadley Jr. 13314, who took first prize as boar and four of his get at the Nebraska State fair. He is the sire of the two prize-winning pigs, King Hadley and Sambovine, that have won more prizes than any two six-months-old pigs shown in 1895. Longfellow 29785, who has the best Columbian record of any Poland-China boar west of the Mississippi river. J. H. Sanders Jr. 35089, Sir Chas. Corwin 33095, L's Sensation 13316, Clay Dee 26877 (who took first prize and sweepstakes at the Kansas State fair, 1895). These boars are either individual prize-winners or from sweepstakes boars. We bred the great sweepstakes sow, Faultless Queen Corwin 29788. We now have on hand about 140 boars sired by the above. Our prices are as low as small breeders. Why not come to the fountain head and get boars to head herds? We also breed English Berkshires on a separate farm, four miles from Sunny Slope. One of the largest breeders of pure-bred Hereford cattle.
H. L. LEIBERD, Manager.

SHEEP.

Shropshire Rams and Ewes for Sale.
Also Oxford and Delaine Merino, from 1 to 3 years old. Write for prices to
DORSEY BROS., Perry, Pike Co., Ill.

DOGS.

HIGHLAND KENNELS, TOPEKA, KAS.—Great Danes and Fox Terriers. The first prize and sweepstakes winner, Great Dane King William, in stud. Dogs boarded and treated for all diseases; also, remedies by mail. Correspondence solicited.

TWO-CENT COLUMN—CONTINUED.

FOR SALE—One hundred and sixty acre farm, one and a half miles from Bushong station, Lyon county, Kansas. Good spring. Price \$8 per acre. J. B. McAfee, Topeka, Kas.

JERSEYS FOR SALE—A few choice cows and heifers of leading strains. Prices reasonable, quality considered. Write or come and see. Rolla Oliver, Dearborn, Mo.

WE HAVE HORSES—To trade for Western land. Send us description and price of your farm. State kind of horses wanted. Eastern Kansas Investment Co., LeRoy, Kas.

FOR SALE—The best lot of Light Brahmas I ever raised. Also a few No. 1 Black Langshan cockerels. Wm. Plummer, Oaage City, Kas.

WANTED—Men and women to learn the Grayon Portrait Art at home, and earn from \$7 to \$15 weekly. Any one who can write can do the work. Mrs. L. B. McDonald, 1123 West St., Wilmington, Del.

YORKSHIRE HOGS, LEIGHORN, LANGSHAN, Plymouth Rock, Minorca and Silver Polish fowls bred in their purity. James Burton, Jamestown, Kas.

FOR SALE—White Plymouth Rock cockerels, \$1. at Sunny Slope Poultry Yards, Burlingame, Kas. E. K. Terry.

FOR SALE—One 1,150-pound jack, black, 7 years old. One imported black Norman horse, 1,300 pounds. Will trade at bed-rock prices for unnumbered real estate or cattle. E. Marple, North Topeka, Kas.

POPCORN WANTED—Correspond with F. Barteldes & Co., Lawrence, Kas.

360 ACRE VERY FINE IRRIGATED VALLEY farm for sale or exchange. Eleven hundred fruit trees; timber, water and grass handy. Rare chance. Stock of cattle also. John G. Howard, Topeka, Kas., or L. Hale, Rindoso, Lincoln Co., New Mexico.

FOR SALE CHEAP—Thoroughbred Poland-China hogs, sired by Ideal U. S., he by the \$1,000 Ideal Black U. S. My hogs are in best of health and doing fine. Have eighty head to select from. Wm. Maguire, Haven, Reno Co., Kas.

COPELAND MEDICAL INSTITUTE CURES Catarrh and kindred diseases. A free month to those beginning treatment before December 1. Write for symptom blank and particulars. Address 1024 Walnut St., Kansas City, Mo.

WANTED—Buyers for Large English Berkshires. One hundred pure-bred pigs, farrowed in March and April, are offered for sale at from \$10 to \$15 each. Farm two miles west of city. Riverside Stock Farm, North Topeka, Kas.

Bayfield Herd Pedigreed Poland-Chinas
Ninety spring pigs, twenty-four brood sows. Boars in service, Souvenir 9421 S., Magnet 13537 S. and Duke of Bayfield 14327 S. Write for particulars, or better, come and make selections. J. S. MACHIR, Linwood, Leavenworth Co., Kas.

THE STRAY LIST.

FOR WEEK ENDING NOV. 20, 1895.

Franklin county—J. K. Bailey, clerk.

FILLY—Taken up by Sam Saintabine, six miles southwest of Williamsburg, one sorrel filly, about 3 years old, white spot in forehead, no marks or brands.

Cherokee county—P. M. Humphrey, clerk.
MARE—Taken up by C. E. Gray, in Shawnee tp., (P. O. Crestline), one black mare, fourteen hands high, 10 years old, star in face; valued at \$10.

MARE—By same, one brown mare, fourteen hands high, 8 years old, had on halter; valued at \$15.

Meade county—J. F. Armstrong, clerk.
HORSE—Taken up by Virman Peoples, in Cimarron tp., (P. O. Byers), September 17, 1895, one strawberry roan horse with sorrel mane and tail, branded VI, right hind foot white to pastern joint, lump on right hind leg on outside of knee joint valued at \$10.

Woodson county—H. H. McCormick, clerk.
HORSE—Taken up by D. Upson, in Eminence tp., (P. O. Rose), November 20, 1895, one sorrel horse, small white spot in forehead, shod on front feet; valued at \$20.

STEER—Taken up by George Bell, in Everett tp., November 16, 1895, one red and white steer, 2 years old, branded R on right hip; valued at \$20.

FOR WEEK ENDING NOV. 27, 1895.

Atchison county—Chas. H. Krebs, clerk.

MARE—Taken up by W. M. Ham, in Grasshopper tp., (Muscotah P. O.), November 1, 1895, one brown mare, star in forehead, fifteen hands high, shoes on front feet, works well, about 5 years old; valued at \$18.

Hamilton county—John Wensinger, clerk.

MARE—Taken up by W. Sawyer, in Bear Creek tp., three miles northeast of Hatton P. O., October 18, 1895, one bay mare, fourteen and a half hands high, 8 years old, branded thus—on left shoulder; valued at \$30.

Washington county—August Soller, clerk.

STEER—Taken up by Fred Osticker, in Linn tp., (P. O. Linn), one black and white steer, 2 years old, four feet six inches high, black on shoulders, white body and white feet.

FOR WEEK ENDING DECEMBER 4, 1895.

Lyon county—C. W. Wilhite, clerk.

STEER—Taken up by Chas. Moss, in Agnes City tp., November 4, 1895, one two-year-old steer, all white, part of left ear gone, branded on left loin, has been dewlapped; valued at \$20.

STEER—Taken up by A. McCutcheon, in Emporia tp., November 2, 1895, one red two-year-old steer, white face; valued at \$24.

Rooks county—Chas. Vanderlip, clerk.

HORSE—Taken up by Israel Morris, in Northampton tp., November 19, 1895, one black horse, 3 or 4 years old, four feet four inches high, both hind feet white, small star in forehead, blind in left eye; valued at \$10.

STEER—Taken up by Philip McNulty, in Stockton tp., November 10, 1895, one roan muley steer, 18 months old, white face, white belly, two white feet, line back; valued at \$15.

Wabaunsee county—J. R. Henderson, clerk.

STEER—Taken up by A. D. Elmore, in Mill Creek tp., (P. O. Halifax), one red two-year-old steer, droop horns, white spot in forehead, no marks or brands; valued at \$20.

HEIFER—Taken up by T. B. Henry, in Wilmington tp., (P. O. Eskridge), one red two-year-old steer, silt in left ear, crop off right ear; valued at \$18.

STEER—Taken up by A. Schwaring, in Wilmington tp., (P. O. Eskridge), one red two-year-old muley steer, branded K on left hip, hog ring in left ear; valued at \$25.

Hodgeman county—John L. Wyatt, clerk.

COW AND CALF—Taken up by John Knouffer, in Sawlog tp., (P. O. Jetmore), one red and white cow, branded J—on left side, both ears marked by cutting out underneath; valued at \$18.

Elk county—S. D. Lewis, clerk.

STEER—Taken up by P. H. Hand, in Painterhood tp., (P. O. Busby), November 20, 1895, one red and white three-year-old steer, branded S on left hip; valued at \$30.

The Western Trail

Is published quarterly by the Chicago, Rock Island & Pacific Railway.

It tells how to get a farm in the West, and it will be sent to you gratis for one year. Send name and address to "Editor Western Trail, Chicago," and receive it one year free.

JOHN SEBASTIAN, G. P. A.

GRAND PUBLIC SALE OF THOROUGHbred

At the farm of FRANK TIMMERMYER, one and a half miles west and three-fourths mile south of Indian School, and one-fourth mile north of R. H. Wheeler's stock farm. (At 12 o'clock sharp.)

Lawrence, Kansas, Tuesday, December 10, 1895.

About Seventy-five choice individuals, sired by Tecumseh Buster 11331 S., the ribbon-eater; Day's Seldom 14785 S., a grandson of Seldom Seen; Baby Wilkes 11798 S., a son of the \$950 Guy Wilkes 2d; Mack's Tecumseh 12518 S., a getter of show pigs; Nebraska Chief 14780 S., son of Chief Tecumseh 2d.

All my old sows will be bred to Tecumseh Buster, and early gilts bred to Commissary Wilkes, a son of Baby Wilkes and granddam sired by VanDee, and Mack's Equal, a son of Mack's Tecumseh and dam sired by Equal Tecumseh. In using these eight grand males, I know second to none, I have pigs equal to any breeder and fit to go in any company. There will be about forty sows in all, eight yearlings bred, and the rest February, March, April and May pigs. All February pigs bred. This is the year and place to get your hogs, because (1) I have the blood. (2) I have the individuals. (3) Hogs are my hobby. (4) I study all the time to please my customers. (5) All that I think are not fair representatives, I put on the market. (6) I sell nothing till day of sale, giving every one a chance to get the best I raise. (7) I guarantee my hogs to be breeders and free from disease when they leave my hands. Come to my sale, December 10, and be convinced. All animals fairly represented. No postponement—sale under cover if weather is bad. Lunch at 11 o'clock. Send for catalogue. Address me at 1750 Massachusetts street, Lawrence, Kas.

TERMS—All sums of \$10 and under, cash; over that amount, a credit of three, six and nine months time will be given, purchaser giving bankable note bearing 8 per cent. interest per annum from date; 5 per cent. discount for cash on all sums over \$10.

COL. Z. S. BRANSON, Auctioneer.

J. C. DAY, 1750 Massachusetts St., Lawrence, Kas.

TWO-CENT COLUMN.

"For Sale," "Wanted," "For Exchange," and small advertisements for short time, will be charged two cents per word for each insertion. Initials or a number counted as one word. Cash with the order.
Special—All orders received for this column from subscribers, for a limited time, will be accepted at one-half the above rates, cash with order. It will pay. Try it!

WANTED—Sorghum and alfalfa seed. One M.B. gobbler and one peahen in exchange for pure-bred Poland-Chinas or Light Brahmas. J. H. Taylor, Pearl, Kas.

AGENTS WANTED—In town and country for article every family uses. If you want to make money address, with stamp for reply, Geo. Buford, 208 Nelson Building, Kansas City, Mo.

STRAYED—On Friday night, November 29, from 104 Exeter street, Abundance, one large dapple gray horse, 5 years old, had on two blankets and a halter. Suitable reward for return or information.

FOR SALE—White Plymouth Rock chickens. Hens, 50 cents; cockerels, \$1. Inquire at KANSAS FARMER office.

FOR A GOOD HAND-SEWED BUCK, CALFOR kid glove or mitten, address Mrs. Ed. Warner, Lexington, Clark Co., Kas. Reference: KANSAS FARMER.

WANTED—To exchange a cow for fresh milch cow, Jersey preferred. Will pay something to boot. Inquire at KANSAS FARMER office.

WRITE—To Alex. Richter, Hollywood, Kas., for information concerning sub-irrigation. Enclose 2-cent stamp for reply. Manufacturer of galvanized sub-irrigation pipe.

WE MAKE A GOOD FARMER'S SPRING WAG on two lazy backs and let-down end-gate, for \$55. Warranted. Kinley & Lannan, 424-426 Jackson street, Topeka.

\$75 a month and expenses to competent men and women. Write for particulars at once. E. C. Morse & Co., 56 Fifth Ave., Chicago.

FOR SHORT-HORN BULLS—Calves and yearlings, extra fine, write D. P. Norton, Council Grove, Kas.

FOR SALE—A nine-room house, fronting on public park, with furnace, gas, hot and cold water, sewer, stable. Convenient to Washburn and Bethany colleges. Will be sold cheap and on reasonable terms. Address "Residence," 19 Columbian building, Topeka, Kas.

10 EXTRA FALL GILTS AND FIFTY SPRING pigs, the pigs sired by Tecumseh J. Corwin 10744 S. and the great breeding and show boar Riley Medium 12306 S. E. T. Warner, Princeton, Franklin Co., Kas.

FOR SALE—Red Polled cattle, both sexes. Seventy-five head to select from. D. F. VanBuskirk, Blue Mound, Kas.

WANTED—Young ladies and gentlemen to learn bookkeeping, stenography and office work. Limited number pay expenses by assisting two hours daily. Address H. Coon, Secretary, Kansas City, Mo.

PENMANSHIP—Learn the art. Twenty lessons 30 cents. The Penman Co., Topeka, Kas.

FOR SALE—Hereford bulls sired by a son of Mr. Funkhouser's celebrated Hesiod. Apply to Peter Sim, Wakarusa, Kas.

WANTED—Sale bills, horse bills, catalogues and other printing. A specialty at the Mod Job printing rooms, 300 North Kansas Ave., North Topeka.

Salesmen Wanted!

\$100 to \$125 per month and expenses. Staple line; position permanent, pleasant and desirable. Address, with stamp, King Mfg. Co., P. 29, Chicago, Ill.

BEATS THEM ALL!

Eggs turned without opening the machine. Send for circular of the best INCUBATOR and plans to make the same.

JACOB YOST, Arkansas City, Kas.

The Arched Hedge Trimmer

Any one who has a Mowing Mach can attach our Trimmer to it and thus save the expense of special driving gear. Three years use in Labette county has established its reputation as a perfect trimmer. Cheap, strong, durable and very effective. It is guaranteed to please even the most critical disposition.

E. C. GORDON & SONS, Sole Mfrs., Chetopa, Kas.

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ESTABLISHED IN 1889.

Does a general tanning business, including robes, rugs, etc. Tanning Galloway hides for robes a specialty. First-class work, reasonable prices. All kinds of leather in stock—best quality. Have you any oak bark? Good prices paid for it. Write me.

M. C. BYRD, Lawrence, Kas.

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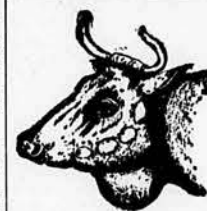
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	Cattle and calves.	Hogs.	Sheep.	Horses and mules.	Cars.
Official Receipts, 1894.....	1,772,545	2,547,077	589,555	44,237	107,494
Slaughtered in Kansas City.....	959,648	2,050,784	387,570		
Sold to feeders.....	308,181	11,496	69,816		
Sold to shippers.....	409,965	468,616	45,730		
Total sold in Kansas City, 1894.....	1,677,792	2,530,896	503,116	28,903	

CHARGES: YARDAGE, Cattle, 25 cents per head; Hogs, 8 cents per head; Sheep, 5 cents per head. HAY, \$1 per 100 lbs.; BRAN, \$1 per 100 lbs.; CORN, \$1 per bushel.

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