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BREEDERS' DIRECTORY.

Cards of four lines or less will be inserted in the *Breeders' Directory* for \$15 per year or \$5.00 for six months; each additional line, \$2.50 per year. A copy of the paper will be sent to the advertiser during the continuance of the card.

HORSES.

PROSPECT STOCK FARM.—Registered, imported and high-grade Clydesdale stallions and mares for sale cheap. Terms to suit purchaser. Thoroughbred Short-horn cattle for sale. Two miles west of Topeka, Sixth street road. H. W. McAfee, Topeka, Kas.

CATTLE.

ENGLISH RED POLLED CATTLE AND COTS- world Sheep.—Young stock for sale, pure-bloods and grades. Your orders solicited. Address L. K. Haseltine, Dorchester, Green Co., Mo.

NEOSHO VALLEY HERD OF SHORT-HORNS.—Imported Buccaneer at head. Registered bulls, heifers and cows at bed-rock prices. D. P. Norton, Council Grove, Kas.

HOLSTEIN-FRIESIANS.—From this herd were furnished some of the winners at the World's Fair. Write for catalogue. M. E. MOORE, Cameron, Mo.

H. W. CHENEY, North Topeka, Kas., breeder of HOLSTEIN-FRIESIAN CATTLE. Farm four miles north of town.

VALLEY GROVE HERD OF SHORT-HORNS.—For sale, choice young bulls and heifers at reasonable prices. Call on or address Thos. P. Babst, Dover, Kas.

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TOPEKA HERD OF LARGE BERKSHIRES.—Breeders strong-framed, growthy and prolific; eight to fourteen pigs to a litter this year. Boars and sows of all ages ready to ship. H. B. COWLES, Topeka, Kas.

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PURE-BRED LANGSHAN, BARRED PLYMOUTH ROCK and S. C. B. Leghorn eggs, one dollar per thirteen. Address Robert Crow, Missouri Pacific Railway Agent, Pomona, Kas.

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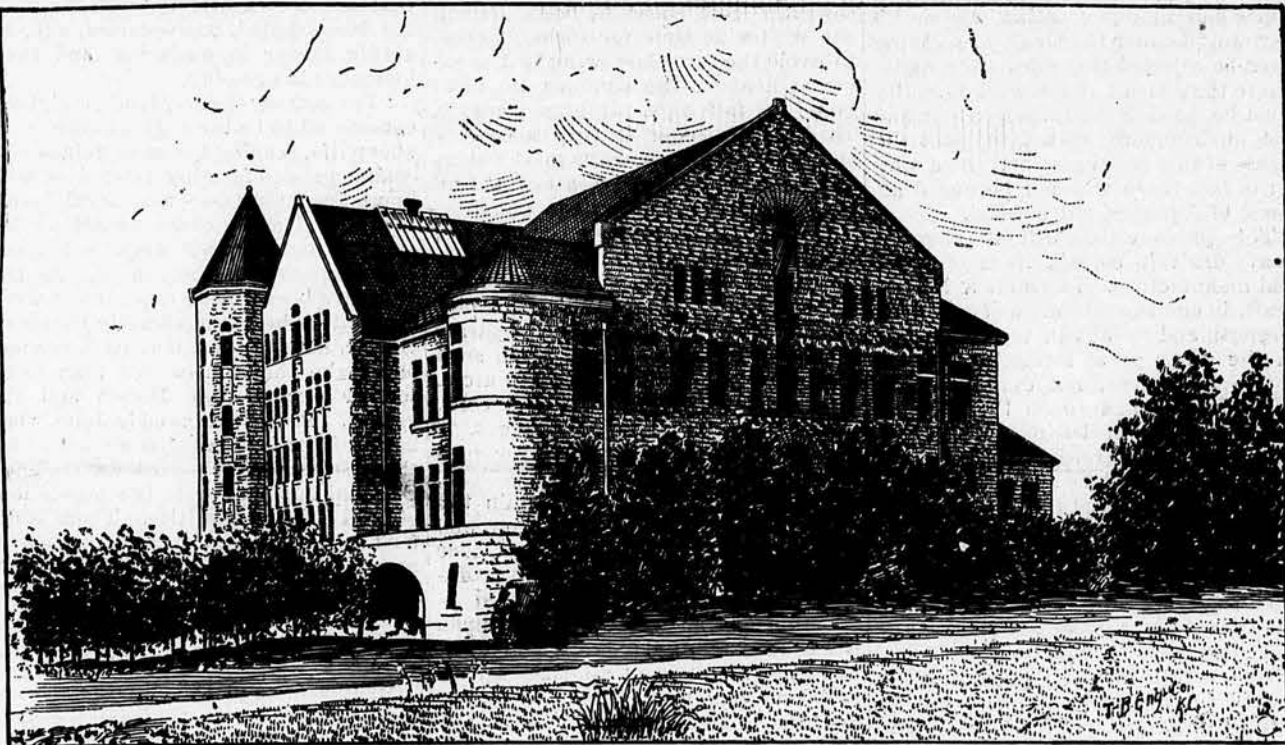
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Registered stock. Send for 44-page catalogue, prices and history, containing much other useful information to young breeders. Will be sent on receipt of stamp and address. J. M. STONEBRAKER, Panola, Ill.

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Have for sale pigs from State fair winners. Can fill classes for show. Boars for fall service. A few choice sows bred. Address G. W. BERRY, Berryton, Shawnee Co., Kas.



SCIENCE HALL, KANSAS STATE AGRICULTURAL COLLEGE, MANHATTAN.

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BERKSHIRES.—Wm. B. Sutton & Sons, Rutger Farm, Russell, Kansas. Choice February and March pigs. Young boars ready for service. Young sows bred. Good individuals and choicest breeding.

A. W. THEMANSOON, Wathena, Doniphan Co., Kas.,—Large Poland-China pigs sired by Early Sisson 1903 S. and other good boars. Write to-day. Mention KANSAS FARMER.

OHIO IMPROVED CHESTER SWINE.—Pure-bred and registered. Stock of all ages and both sexes for sale by H. S. Day, Dwight, Morris Co., Kas.

MAPLE GROVE HERD OF FANCY BRED POLAND-CHINA swine. Also Light Brahmas fowls. Owned by Wm. Plummer & Co., Osaage City, Kas. Stock of all ages for sale at reasonable rates.

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MIDLAND STOCK FARM.—F. M. Owens, Melvern, Kas., breeder of Galloway and Holstein cattle, Poland-China swine and thoroughbred poultry. Best of strains. Come, send or write.

M. H. ALBERTY, Cherokee, Kas., Registered Holstein-Friesian cattle. Poland-China and Duroc-Jersey swine. Rose-comb Brown Leghorns. Stock of all ages and both sexes for sale. Orders booked now for pigs and eggs.

ASHLAND STOCK FARM HERD OF THOROUGHbred Poland-China hogs, Short-horn cattle and Plymouth Rock chickens. Boars in service, Admiral Chip No. 7915 and Abbottsford No. 2861, full brother to second-prize yearling at World's Fair. Individual merit and gilt-edged pedigree my motto. Inspection of herd and correspondence solicited. M. C. Vansell, Muscotah, Atchison Co., Kas.

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RIVERSIDE POULTRY YARDS.—Have for sale R. M. B. Turkeys, S. L. Wyandottes, B. P. Rocks, S. C. White Leghorns, Brown Leghorns, Light Brahmas, Pekin ducks, and their eggs in season. Chicks at all times. Lucille Randolph, Emporia, Kansas.

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J. T. HARRAH, Pomona, Kas., breeder of pure-bred B. Langshans, B. P. Rocks and S. C. B. Leghorns. Eggs \$1 per thirteen. Young stock for sale after August 15.

WHITE GUINEA FOWLS—\$2 each; eggs \$1 per thirteen. Plymouth Rock Chickens, \$2 each; eggs \$1 per thirteen. White Holland Turkeys, \$3 each; eggs \$2 per thirteen. MARK S. SALISBURY, Independence, Mo.

A. B. DILLE & SONS, EDGERTON, KAS., breeders of choice B. P. Rocks, S. L. Wyandottes, Light Brahmas and M. B. Turkeys. Chicken eggs \$1 to \$2 per 15; turkey eggs \$3 per 11. Satisfaction guaranteed.

SWINE.

J. R. KILLOUGH & SONS, Richmond, Kansas, Breeders of POLAND-CHINA SWINE
The very best strains. Nothing but first-class stock will be shipped to any. Come and see us or write.

W. E. GRESHAM, Burrton, Kansas, Breeder of POLAND - CHINAS.
Won six prizes, including first blue ribbon west of Mississippi at World's Fair. Stock all ages for sale.

P. A. PEARSON, Kinsley, Kansas, Breeder of Poland-China Swine
All ages for sale. Herd headed by Dandy Jim Jr. and Royalty Medium, a son of Free Trade.

HILLSDALE HERD
Short-horn cattle and Poland-China hogs, bred by C. C. KEYS, VERDON, NEB. Aberdeen King 101458, a pure Cruickshank, heads the herd. Stock for sale at all times. Visitors welcome. A fine lot of young male pigs for sale. Farm two miles north of Verdon, Nebraska.

CATTLE.

SUNNY SLOPE FARM,

C. S. CROSS, Proprietor, Emporia, Kas.
Breeder of pure-bred Herefords. Beau Real 11055 heads the herd. Young bulls and heifers for sale. Also for sale, Poland-China swine. Choice bred young boars and sows by the World's Fair prize-winner, Longfellow 29785; and Berkshire swine of the noted Duchess and Lady Lee strains of N. H. Gentry. Bismarck and General Lee, both Gentry bred boars, in service.

Brookdale Herd of Red Polled Cattle.

Has won more prizes in 1892 and 1893 than any other herd out, including championship at six State fairs and World's Columbian Exposition on Iowa Dayson 10th 3149. His calves for sale. Write.

WM. MILLER'S SONS, Wayne, Neb.

MAKIN BROS.,

Florence, Kansas, Breeders of HEREFORD CATTLE. We offer cheap good well-bred young bulls and heifers. Also choice show heifers and bulls. Write or come.

SHORT-HORN CATTLE

Poland-China Swine, Buff Cochins Fowls. Inspection invited. **E. L. KNAPP, Maple Hill, Kansas**

SHANNON HILL STOCK FARM.

G. W. GLICK, ATCHISON, KAS.
Breeds and has for sale Bates and Bates-topped SHORT-HORNS. Waterloo, Kirklevington, Filbert, Cragg, Princess, Gwynne, Lady Jane and other fashionable families. The grand Bates bull Waterloo Duke of Shannon Hill No. 89879 and Winsome Duke 11th 115,137 at head of herd. Choice young bulls for sale now. Visitors welcome. Address **W. L. CHAFFEE, Manager.**

SHEEP AND POULTRY FOR SALE.—Some choice COTSWOLD and MERINO bucks, any age. Will sell to suit the times. The leading varieties of first-class poultry for sale at all times. Address **H. H. Hague & Son, Walton, Kas.**

The Stock Interest.

THOROUGHbred STOCK SALES.

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

OCTOBER 2—C. C. Keyt, Short-horn cattle and Poland-Chinas, Verdon, Neb.
OCTOBER 3—W. H. Wren, Poland-China swine, Marion, Kas.

THE AMERICAN DRAFT HORSE.

The American trotter is, in a real and very true sense, a new creation. He is distinctively American, as much so as the descendants of the Pilgrim fathers.

Will there ever be a distinctively American draft horse? If pulling was capable of furnishing as much sport as trotting, there would, most certainly. The same skill in selecting, breeding and feeding that has developed the trotter would develop the draft horse that for strength and endurance would have no equal in the world. So far, in the creation of the American draft horse, we have simply collected from all lands the material, which is now lying around the site, loose, and it needs the wisdom and skill of the trained architect and the skill of the builder, to say nothing of the labor of the workmen, to rear the structure that is clearly possible. In the last twenty years we have gathered in from every horse-growing nation a mass of heterogeneous material, "gold, silver, precious stones, wood, hay, stubble," and if the American draft horse is to be created, a new and distinct creation, the architect must develop the ideal; everything must be rejected that does not contribute to that ideal; the law of heredity must be used to its fullest extent and the environment shaped to meet the wants of this new creation. As a matter of fact there will not be one draft horse of America, but several.

The great cities will require the heavy draft in certain lines of trade and manufacture. In others a lighter draft, in one the minimum of combined strength and weight in the collar, and in the other great strength with an active movement, not destitute of a certain grace, and so on through the different lines of business and manufacture. There are, however, certain elements that will be demanded in all these sub-types, and the breeder who neglects any of them does so at his peril. For example, the man who would breed any kind of draft horse must reject from his stud all animals, whether male or female, that have any defect or blemish that can be transmitted by the laws of heredity. The great cities are every decade requiring a harder material for pavements. The result is greater strain on the feet and legs of the horse, and under these circumstances to tolerate unsound animals in the stud is the very worst kind of lunacy. The managers of our great fairs cannot too quickly reject from the show rings every horse in which the most skillful veterinarians can detect an unsoundness that can, by any possibility, be transmitted to its posterity.

Again, there is a certain conformity of limb and body that will best endure the strain of his severe work in the cities, and men who wish to grow horses for this trade should reject from the stud all animals, both male and female, that do not conform to this type. We need not describe this type in detail at this time. The long-legged, long-coupled horse has no business on the drays of the great cities. Narrow-chested, consumptive looking horses need not apply. The quality of the bone has as much to do with the requirements of the draft horse as its size. The pulling instinct is of almost as much importance in the draft horse as the trotting instinct in the trotter.

Again, there are certain sections of the country that are peculiarly adapted to the production of the draft horse. The soil and water must put into the grains and grasses the material that is needed for the production of the frame. It can get these in no other way. Horses grown on a rolling, limestone soil have a toughness of bone and the texture of hoof imperatively demanded in the draft horse, and that cannot be obtained on soils that are at once flat, marshy and mucky.

The draft horse, however, can be

grown only on rich lands. It is folly to talk of growing draft horses at a profit on lands that will not grow clover and blue grass. Size is as important as quality of bone and soundness of foot, and size is only found where the environment is capable of supporting size.

We might continue this subject to almost any length, but we refer at present to but one more point, and that is, that the draft horse must have the pulling instinct and love to pull as well as the trotter loves to trot. Whether in man or beast, success comes only with love of the work.

In fine, if we are to develop an American draft horse, which will stand as the peer of the American trotting horse, the work of the architect and the builder cannot be begun too soon. There is plenty of foundation work to be done.—*Western Agriculturist.*

Management of Fall Pigs.

In an address made by J. H. Sheppard, at a meeting of Indiana breeders, on the topic of advantages and disadvantages, and the care and management of fall pigs, he said, "It is one that should interest every breeder of swine. While, to a certain extent, spring pigs are always most desirable, yet unless we are willing to do with only one litter from each sow, we must expect to have some fall pigs, and should not fail to make suitable preparations for properly taking care of them. Then I find that sometimes sows fail from cause to breed during the winter in time for spring, hence, to avoid the sows farrowing in the extreme heat in the summer we must breed for fall pigs. If pigs come in the fall I consider it very necessary that they should secure as good a start as possible before cold weather sets in, and by making preparation ahead so that they can all be made comfortable, and by feeding good, nutritious food, first by feeding the sow well and making her comfortable. When the pigs are of proper age prepare a separate place to feed them in, feed them such feed as will make bone and muscle. Bran, shorts, ground oats and corn, with what skim-milk you can get, is good for growing pigs. Never feed more than the pigs will eat up clean, but feed sufficiently to maintain the growth secured by feeding the sow, and the desired end will be obtained. Under these circumstances fall pigs are profitable, and I consider that which is profitable as an advantage. If, upon the other hand, fall pigs are neglected, and large numbers of all sizes are allowed to pile up together, the large and strong ones gradually draw the life out of the small ones, and they begin to look rough, and no difference how much you feed them it does but little good, and nothing seems to grow but the head and ears. Under those circumstances fall pigs are a disadvantage financially and otherwise."

Profitable Sheep for Feeders.

John A. Craig, writing in *Rural New Yorker*, says: "If this is the system that will ultimately prevail on our farms, early maturity must be a leading merit of the sheep that will fit into it best. They must be hearty and thrifty, gaining nearly three pounds per week throughout the time that they are fed. They must be strong in bone and of that bodily conformation that is universally known as that of a good feeder. There is one characteristic of the type that I have in mind which may not have been noted by some, and it is to the effect that the sheep which has the quickest feeding capacity is circular in form. The box-shaped animal may, after long feeding, become heavier at all times; but in my experience they have not been able to make as rapid gains. It has always seemed to me that Colling was near the truth when he stated that the animal with projecting brisket that goes far to make the box-shape in the fore end, had invariably sharp shoulders and deficient chest development. He was a great improver of Short-horns, and we are told that it was a favorite expression of his to liken his cattle to a barrel in shape. The Scotch breeders of the 'Doddies' place this circular form as one of the cardinal points of their fa-

vorites, and I am not acquainted with the breed that will weigh heavier when the end of the second year comes around. I am not sure but the expression that the Poland-China will grow and fatten at the same time, owes its possibility to a similar fact. The sheep that is the squarest is invariably the most projecting in the brisket, the flattest on the rib, or else it would not seem square from the side view, and it must have high hips to square the hind quarter. The sheep, in addition to being of this type, must be active animals, for there is a period when it is necessary to fold them on such fodder crops as rape, white turnips, etc., to make the most profit from them.

"The breeding flock required to produce such feeding sheep must average 200 pounds when mature and in fair breeding condition, and they must be of that type which guarantees constitution. They must be prolific. A good ewe will rear twins, and it means more profit to have her do so. The fleece in these sheep should, of all things, have density, as it is associated with thrift and vigor. It is necessary that it be dense on the back to protect the sheep from snow and rain, and dense on the belly as well, as the latter is of special protection to the sheep when lying down. Fine wool is a quality that is related to density, and I do not believe it is opposed to fattening qualities, but really the reverse. In killing and dressing sheep to determine the weights of different parts, I noted that the sheep that are comparatively coarse in wool are heavy-bodied, coarse-boned, and, as a rule, slower in maturing, and they lose more in dressing.

"The rearing of early lambs is rightly considered to be the highest culture in sheep life, bearing the same relation to common sheep farming as truck or hot-house gardening does to general farming. The leading characteristic of the sheep suited for this work is that of breeding early in the season. As far as I have been able to experiment with the mutton breeds of sheep in this particular, none of them may be depended on to take the ram earlier than September except the Dorset and its grades. These will breed in June. Our flock of grades have done so. The sheep suited for this work are prolific. Of equal importance is the possession of good milking qualities. There is no food that will give the lamb that early appearance of plumpness like the sustenance it will get from an abundant flow of milk from its mother."

Changes in Pig Feeding.

Many years ago the pig went from acorns to corn in the timbered sections of the country. The pig didn't know how to eat anything else, unless it was a rare little slop. In those days the pig was a coarse, hardy animal, maturing in two years fairly well to 200 pounds.

This was later succeeded, a writer says, by the gospel of grass and the clover fields. The farmers were not long in discovering that a bushel of corn fed on good clover or blue grass pasture went much farther than a bushel fed in a dry pen. The next idea was, why not feed the hog altogether on grass? Simply because the hog is not built that way.

The stomach is not large enough to enable it to utilize enough coarse feed to make a profitable growth. Give the hog time enough, and select a grazing type, and it can be done, but the time involved, together with the risk from disease, and the interest on the investment, render it unprofitable in the grass and corn States of the West. How much of the frame should be made on grass, and how much on grain to secure the greatest profit depends very much on conditions and circumstances. The point that we wish to emphasize is that the hog cannot be grown profitably on grain alone, nor under ordinary Western conditions on grass alone; that it is not grain nor grass, but grain on grass that brings the profit.—*National Stockman.*

Five World Beaters.

"SICKLES" BRAND HARNESS. All genuine stamped with this "Trade Mark." Made in five styles at \$6.50, \$9.00, \$10.00, \$15.00 and \$25.00 per set complete. The best harness for the money on the market. Ask your harness dealer for them. Manufactured only by J. B. Sickles Saddlery Co., St. Louis, Mo.

Feeding Calves.

Recently the *Farmers' Voice* answered an inquiry as to how calves could be fed without the use of milk. That answer has prompted another subscriber who styles himself "a novice" to ask how to feed milk by hand. We answer by giving below the practice of a practical Wisconsin farmer: Leave the calf with the cow till the milk is good; then take it away at night, after it has filled its stomach. In the morning feed it about three quarts of milk, fresh from the cow, letting it suck your fingers, if you have not a calf feeder. A piece of rubber hose an inch in diameter and six inches long, held in the milk answers the purpose admirably and saves bitten fingers and loss of patience. Continue feeding this way regularly night and morning for a week; then make the feed part skim-milk, gradually increasing the amount till, at the end of the week, it is all skim-milk; at the same time increase the quantity according to the age and size of the calf till it reaches eight or ten quarts at a feed. Always be regular in time of feeding and uniform in quantity and temperature. Heat the milk to 100°. Feeding a calf a small feed one time and a large one next, or 100° at one feed and 70° at the next, or one time perfectly sweet and the next a little bit sour is the cause of indigestion and scours. Skim-milk contains all the elements necessary for the perfect growth of a calf; it will keep in good flesh and grow rapidly, if fed a sufficient amount. A heifer calf should never be allowed to get fat, neither should it be let to get too poor. When about a month old teach it to eat bran and shorts, ground oats, or whole oats. Put a little in the bottom of a pail of milk, or into their mouths; they will soon learn to eat it. Give them all the clover hay and bright straw they will eat; give them free access to water, no matter how much milk they drink they like water; give them plenty of exercise, it develops bone and muscle; keep them in a box-stall or pen, not tied up, with a good bed of straw. If in summer, keep them where they can get plenty of green grass.

Horse Notes.

W. W. Harper has shipped his stable from Fayette to the Marshall, Mo., track.

Crayon 2:29½, by Cuyler 100, is doing stud duty near Slater, Mo., the property of R. K. Thomson.

Joe Patchen, by Patchen Wilkes, dam by Joe Young, captured the 2:15 pace at Davenport, Iowa, last week in 2:12, 2:13½, 2:13½.

Alamita defeated Phoebe Wilkes, Walter E. and Keno F. last week in the free-for-all at Davenport, Iowa, winning the last three heats in 2:13½, 2:16, 2:15.

J. W. Porter & Son, Dunksburg, Mo., will race through Missouri and Kansas this season with their pacers, Idler 2:30½, Lady H. 2:32½ and Windover, by Kentucky Wilkes.

Harris Bros., Hustonia, Mo., have shipped their stable to the Holton, Kas., track, where they will open the season's campaign August 18-17, with P. J., a two-year-old pacer, and S. P., a yearling.

G. W. Payne, Higginsville, Mo., has shipped his stable of pacers to the Louisiana track, where he will open the season's campaign with three green pacers that can all beat 2:20. They are Gertie R., Odessa Clipper and Lee Steele.

R. L. Harriam, the popular Missouri horseman, had two winners at Jerseyville, Ill., last week. Miss Fullerton won the 2:21 trot in 2:22½, 2:20½, 2:22½, while his green mare, Josephine, captured the three-minute trot in 2:28, 2:30½, 2:31.

N. M. Delaney, trainer for Frazier & Welsh, Pleasant Hill, Mo., has shipped his stable to Louisiana, where he will open his season's campaign with such good ones as Irene 2:11½, Peerless 2:25, Princess Belle 2:29, and other good ones.

W. R. King, Marshall, Mo., has bought of Elk Hill stock farm, Koping, Mo., the promising two-year-old colt Pay Down, by Elsmere, son of Electioneer, first dam by Wm. L., second dam by Pacing Abdallah, third dam by American Clay.

John Harrison has bought of H. H. Downing, Marshall, Mo., his half interest in the trotting stallion Gambert 2:27½, and now that he is to be placed in Harrison's stable he will be seen among other good ones in Missouri and Kansas this season.

The Kansas Weekly Capital publishes more Kansas news than any other weekly paper. A free sample copy will be sent on application to THE TOPEKA CAPITAL CO., Topeka, Kas.

Agricultural Matters.

LAYING OFF LANDS FOR PLOWING.

By A. C. Shinn, Ottawa, Kas., before the annual meeting of the State Board of Agriculture.

Before starting the plow, make a careful survey of the field with the eye, and by pacing off the lands, to see where the proper places for back furrows and dead furrows are to come. The proper place for the back furrow, if in an old field, is where the dead furrow of the year before was, so as to keep the field as near level as possible.

Having selected the proper places for the back furrows, pace from each end of the field three less paces than one side of the land; then place the guide stake at one end and start the plow from the other, using care to drive the first furrow straight and parallel with the side of the field. Plow back and forth, throwing the furrows together, until you have a strip six paces wide plowed; then plow across the end of this back-furrowed strip at each round, using care to start the furrow across the end of the back-furrowed strip parallel with the end of the field and the furrows straight, so that the angles at the corners are right angles, then when you come to finish the land it will come out even on the side and end of the plowed land.

For the second land, having selected the place for the back furrow, pace from each end of the line nine less paces than the number of paces from the last furrow of the land last plowed, place the guide stake at one end of land and start the plow from the other, and plow as before until you have a strip six paces wide plowed, throwing the furrows together, and then plow across the end as before, and so continue until there are but six paces remaining in the strip between the back furrows.

Then plow back and forth on this strip, throwing the furrows alternately toward one back furrow and then the other, until completed, and so continue until the field is completed.

The advantage of this method of laying off land over the ones in common use is, that you have the field plowed without turning on and tramping down the plowed ground at each corner of the land, and that the dead furrow, by ending at the end of the field, carries the surface water completely past the plowed ground, and thus gives a much better drainage than is done by plowing around a land and turning on the plowed ground and finishing the land a number of paces from the end of the field, so that there is no outlet for the water gathering in the dead furrows.

Another advantage of this method of laying off lands is this: Instead of piling up a number of furrows of the soil on the outside edge of the field, where it is of little or no use, and is often of great damage by holding the surface water on the field, it tends to work the plowed soil more toward the center of the field, where it is of use, and makes the edge of the field low, so the drainage is more complete.

DISCUSSION OF MR. SHINN'S PAPER.

Mr. Babbitt: I would like to ask the gentleman how he would plow a field that way with a sulky plow?

Mr. Shinn: I never used a sulky plow and never expect to; but it is my understanding that the plows, as manufactured nowadays, may be turned either right or left-handed.

President Smith: That is true.

A Delegate: In Brown county, we are using the sulky plow very generally; it is provided with three wheels; if you attempt to plow across the end in the way that the gentleman has suggested, in starting out the wheel that runs in the furrow will throw the plow out of the ground, and as you come out at the end and then turn around and start in, in the manner suggested here, you will have great difficulty; in fact, you can't do it successfully. I have tried it. In our county, the sulky plow is fast coming into the most general use. I know of three being used to-day where, four or five years ago, there was but one. Their use seems to be general.

A Delegate: I would suggest that he take that wheel off and put the point

of the plow down, and then he will get along all right.

Mr. —: The paper speaks of a dead furrow. I never heard the term until I came to Kansas. I think the fewer dead furrows we have the better. I presume the name was given because that part of the ground treated in that way never grows anything. My idea of plowing is to get as much in one land as possible, and to have as few dead furrows as possible. I would rather take pains and time in measuring off my land a little more precisely, and plow twenty acres in one land. I don't believe in plowing around the land, as a good many people do; I believe in backing. I do not plow the first land in the field. When I go into the field I plow the second land. I back that land until it gets so wide, say twenty or thirty paces, that it becomes unprofitable to drive across the ends empty; then, whenever the land gets any wider than that, and I lose too much time in going across the ends, I plow the other land, and when the space between them gets narrow, I go around that. I believe in backing the land and keeping it untramped; the less dead furrows we have the better. In our swamp lands in Ohio, we had to plow as many dead furrows into the land as possible, in order to raise anything, but in this region they are a nuisance, and ought to be avoided, even at extra pains.

Mr. Forney: There is a good deal in plowing properly. The gentleman who last spoke has my idea of plowing, especially with a sulky plow. Now, the gentleman who read the paper, without doubt, has a very good way of plowing with a walking plow; but it is late in the day to remain ignorant of the value of the sulky. I have used them for years. My plan has been to start in a field from the hedge, we might say, or from the line of the fence, and step in twenty steps, and the same distance at the other end, and lay off your land. When that is done, drive back and forth across the field, going around the ends until the land is fifteen or twenty steps wide, or whatever you please; but do not finish that land; leave it just as it is, and go on and lay off another land, and when you are down to a rod and a half, go clear around; and then you can plow as near to the hedge as you please, and you will leave but one back furrow. That is the system I have used for many years, and the suggestion that the water would give much annoyance does not apply with any special force in Kansas, and the dead furrows give us no trouble; but I usually take the precaution of running over that dead furrow with a cultivator, through and back, and raise just as much and as good corn in that furrow as I do anywhere else. So, the dead furrow will cut no figure if we take that simple precaution. I believe that is the proper way to treat it.

Mr. Willey: It is next to impossible to apply any general rule to all the various kinds of soils that we have here in Kansas. The proper thing to do is to find out what is best adapted to our soil, and follow that plan, improving upon it from time to time, as experience teaches, and as may be possible from the circumstances under which we work. In our country the dead furrows wash out and leave ditches; so that, in plowing, we have to avoid dead furrows as much as possible. Some of our lands we have to plow in very narrow lands, in order to drain them, otherwise, in heavy rains, the water will collect and stand in such quantities as to drown everything out. But where the soil is very heavy and well drained and there is no danger of washing out, the system of plowing which the gentlemen have advocated is doubtless excellent.

A Delegate: In reference to turning upon the land, I want to say that, in the section of the country from which I hail, we have a very heavy clay soil, and in the fall of the year, and even in the spring frequently, after a dry spell, the soil is very hard, and after a man had plowed his ground as has been suggested here, he would have tramped it so hard that it would crack, and would have to be worked in some way to overcome that condition. Hence, I think that, at least in our section of the

country, when we go upon a land to plow, we want to finish it at once, and do as little turning as possible.

A Delegate: In our county we do not leave any dead furrows or lines. When I have plowing to do, I go, for instance, into an eighty-acre field with a walking plow and plow enough off of each corner to get a circular corner; and then any boy who knows how to drive a team can take a sulky plow and go right along with the work, and when he gets through there is but one very short dead furrow in the field.

SPECIAL FOR JULY.—For new subscribers, both the KANSAS FARMER and Topeka Weekly Capital, to January 1, 1895, for 50 cents, club-rates to keep half the money.

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Husbanding Nitrogen in the Soil.

Excerpt from graduating thesis of Ernest A. Dunraven, of Agra, delivered at the Agricultural College commencement, 1894.

The most essential element of plant food and reproduction is nitrogen. Every development of muscular tissue requires it. All animal effort, whether mental or physical, is at the expense of it. Yet available nitrogen is a scarce and expensive article.

In crude Chilean nitrates, 16 per cent. pure, costing 17 cents a pound, the element itself costs \$1.02 per pound. The beef you eat, 2.9 per cent. nitrogen, costing 15 cents a pound, is paying over \$5 a pound for the pure product. Then, did you ever think of the inexhaustible mine of wealth surrounding you everywhere—that the air you breathe is 80 per cent. pure nitrogen, and wonder why no provision was ever made for an easy transformation of free atmospheric nitrogen to available forms? Plants cannot do it. Animals cannot do it, still the fixation of free nitrogen is known to take place. That leguminous plants contain more of this element than they get from the soil has long been suspected; that they obtain it from the atmosphere has lately been demonstrated. If you will carefully examine the fine roots of the clover, alfalfa, peas, beans, peanuts or other leguminous crops, you will find them growing a number of small bunches or nodules. Yes, here is the secret of the mysterious work. Here, in this little unassuming bunch, which might easily be mistaken for an insect gall, is one of the most mysterious and profitable of all nature's laboratories. The gaseous nitrogen is here worked into fixed compounds, readily available for plant food. But step into the laboratory, and with a powerful microscope you will find the agent of this work, a bacterial form, working in and out through the cell tissue. The bacteria lives in the soil, attacking tender roots of leguminous plants and burrowing in them for a home. The nodule you found is an abnormal growth of plant tissue, caused by the microbe *mycelium*.

But the practical part. The roots of clover, alfalfa, etc., are large and numerous, and the amount of nitrogenous fertilizer thus added to a soil is of more importance, perhaps, than many think. Why do you follow clover with wheat, oats and corn? Because the soil is rich in this essential element and an abundance is furnished for plant food. Moreover, during the clover cropping the soil has had a rest and other plant food has been made available, and now any judicious system of rotation is sure to provide for clover meadows. Again, the value of alfalfa as a field pasture for young stock has just begun to receive the attention it merits and is becoming a necessity where it can be successfully grown. The narrow compass within which the nitrogen bacteria work, viz., on leguminous plants only, is an unfortunate limitation, but even this promises to be remedied. For a year or two experiments to inoculate the roots of corn with clover bacteria have been going on, and, according to a recent Illinois station bulletin, with reasonable chances of success. Should this ever become practical, the benefit would be immeasurable, than which no greater stimulus could be given to the economics of agriculture.

"The Great Leak On The Farm"

is a valuable pamphlet relating to corn fodder, and also descriptive of that wonderful machine, the

"Keystone" Corn Husker and Fodder Cutter, combined.

It is sent free.

KEYSTONE MFG. CO., Sterling, Ill.
(Mention this paper.)

Modern Hay-Making.

On our large Western farms, where the hay harvest continues for any considerable length of time, the four-foot mower has been replaced by one with a six or seven-foot cutter-bar. The eight-foot rake has given way to one twice the width. Other implements have been added. Clover grows in such luxuriance in the Iowa soil that the tedder is indispensable. The loader saves time and hard labor. Stacking in the open air has proved to be a very costly method of preserving hay, and our prairies are becoming thickly dotted with hay barns, into which the hay is placed by horse-power. Brain has supplanted brawn in a great measure, and haying may now justly be considered an art. By utilizing the improved machinery and following the improved methods one man can now do the work that formerly required two men. Thus writes one of Iowa's progressive farmers to *American Agriculturist*. He says:

"Where the hay is placed on the wagon by a hay-loader and taken off with a fork or sling, a good working crew for a large farm consists of four men and two boys 10 to 14 years old. With the wide-cut mower it is not necessary to begin cutting before four o'clock in the afternoon. This is easier for the horses, more comfortable to the man who drives them and much better for the hay when it contains much clover. Enough can be cut between four and six o'clock to keep ahead of the wagons until the next afternoon. One man does the mowing and tedding and what little raking there is to do, and still has time to help considerably in mowing away the hay in the barn. The boys drive the wagons. Two men stay in the field and do the loading, and one stays at the barn to manage the horse fork and keep the hay mowed back.

"Three teams and one good horse are necessary, the latter being used at the barn for unloading. When the boy comes in with a load he leads the horse which is attached to the fork, taking the load off his wagon while the other is being loaded in the fields. The time consumed in loading is a little more than that for unloading, and this allows the man at the barn to scatter the hay in the mow. Whether he can keep up this end of the work depends on the distance to haul and the amount of hay in the barn.

"Hay is made very rapidly and very cheaply in this way. With the force mentioned there is very little time lost. Everything runs smoothly, and little energy is wasted. The hay is put in the barn at the rate of fifteen or twenty tons per day, and at a cost of 45 to 60 cents per ton, varying of course with the weather. On the farms of the Atlantic and Central States this tedder, loader and horse fork are coming into increasing favor, but the average farmer of those regions manages the work with two, or at most, three horses and two men. The tedder and the loader not only save time and money, but the hay is secured in much better condition. The tedder shakes the grass and gives the air a chance to circulate through it and dry it evenly and quickly without burning. The loader follows and takes the hay out of the swath; hence the leaves are not shaken off, as when it is raked."

Irrigation.

SUB-IRRIGATION VS. SURFACE IRRIGATION.

By Prof. J. W. Sanborn, in Utah Agricultural Experiment Station Bulletin No. 26.

It has long been held that irrigation water applied beneath the surface is better than surface irrigation, in relation to the amount used, the temperature of the soil, the amount of evaporation, washing of soil and yield of crop, including quality of crop received. Though philosophically there would seem to be little doubt that the propositions are well taken, sub-irrigation as an economical process has been overpressed by some as a means of very greatly curtailing the amount of water used. There are those who have asserted that only one-tenth of the water applied by sub-irrigation would be found necessary to substitute for that required by surface irrigation. Such claims are the untempered claims that enthusiasts frequently make in new methods proposed. But if the claim for sub-irrigation be granted, we are confronted with the cost of preparing for the application of sub-irrigation and our practical ability to distribute it rapidly enough through the soil to meet the wants of growing plants.

In 1890 the station attempted to lay perforated cement pipes, with protected orifices for the exit of the water, but failed, from inexperience, to secure the successful use of such pipes. Water-ways in the soil were laid as stone drains are made, and at about eighteen inches deep. Into these the water was let at the head of each plat. Unfortunately, in order to lay the stone drains it was necessary to pass through the surface soil into the rather open, gravelly soil below, through which the water soaked, although it rose to the surface above the drain readily and made some lateral movement.

During the season of 1892 we successfully laid perforated cement pipes. These pipes were laid twelve feet apart, about one foot deep. The water entered at the head of the plat, in one channel, from which the three pipes diverged, first at right angles and then along parallel lines the length of the plat, ending at one point at the extreme end of the plat. At this point a cistern was dug, in order that we might flush the pipes when required. Perforations were made every twelve feet. Into these wooden plugs were placed. These plugs contained holes through which the water could flow. Over the plugs were placed cans to prevent the soil from clogging them.

For the third season the under-drains disappointed us very much. We opened them up the fourth year and made the perforations in the plugs larger, in order to secure a freer flow of water, but with no better success.

We kept no account of the cost of the cement drains, as cost will vary in varying communities, and it seems utterly beyond economical use for common farm crops, amounting to several hundred dollars per acre.

The following table gives the yield from the stone under-ground passages and from the cement drains. The second set in the table was the stone system. The yields are given in pounds:

TABLE NO. 1.—SUB-IRRIGATION VS. SURFACE IRRIGATION.

	Crop of 1890, yield.		Crop of 1891, yield.		Crop of 1892, yield.		Crop of 1893, yield.		Totals.
	Grain.	Straw.	Grain.	Straw.	Grain.	Straw.	Grain.	Straw.	
Sub-irrigation, grass	38	40	48	58	37	40	100	180	340
Surface irrigat'n, grass	38	40	48	58	37	40	100	180	340
Sub-irrigation, wheat	45	44	48	58	37	40	100	180	340
Surface irrigat'n, wheat	45	44	48	58	37	40	100	180	340
Sub-irrigation, grass	38	40	48	58	37	40	100	180	340
Surface irrigat'n, grass	38	40	48	58	37	40	100	180	340
Sub-irrigation, wheat	45	44	48	58	37	40	100	180	340
Surface irrigat'n, wheat	45	44	48	58	37	40	100	180	340

The noteworthy fact in this table is the failure of the sub-irrigation system in crop yield when compared to surface irrigation. This was noteworthy in the fourth series, devoted in 1892 and 1893 to grass; grass being a crop that requires a large amount of water, will show more markedly the influence of a

sufficient amount of water than wheat, and this is quite decisive.

The following tabulated data will explain the reason of the failure on our soil of sub-irrigation, this soil being a sandy loam at a point where the sub-irrigation was tried:

TABLE NO. 2.—MOISTURE IN SOIL, 1893.

Date of sampling.	Three inches deep.			
	Plat 184.	Plat 185.	Plat 186.	Plat 187.
June 10 ^a	7.54	4.68	3.88	12.08
June 14	6.30	5.70	4.34	13.12
June 17	5.52	4.48	1.44	6.60
June 22	7.56	2.63	3.05	14.66
June 28	4.94	5.24	2.64	9.38
June 30	3.54	5.53	1.76	6.18
July 5	3.06	2.96	1.35	5.34
July 10	5.20	2.48	1.56	12.53
July 14	6.54	1.73	2.53	7.70
July 18	3.24	1.80	1.08	7.18
July 22	9.76	2.53	1.08	6.72
July 26	3.56	3.36	1.02	3.52
July 31	5.22	1.70	1.48	3.12
Totals	79.24	42.25	26.95	106.26
Averages	6.09	3.25	2.07	8.17

Plat 184—Surface irrigation, wheat.
Plat 185—Sub-irrigation, wheat; cement drain.
Plat 186—Sub-irrigation, grass; cement drain.
Plat 187—Surface irrigation, grass.
^aThree days after irrigation.

It will be seen on reviewing these few figures that the lateral flow of water in sandy loam is exceedingly slow, and not equal to the evaporation from the leaves and soil of the growing crop.

Some crops evaporate from 1,000,000 to 2,000,000 pounds of water during the growing season, aside from that which takes place on the surface of the soil, and in ordinary soil the lateral movement of water in the pipe system is too slow to supply the needs of the plant. This fact is familiar to engineers and investigators of the movement of water in soils of capillary action, or by tension, as it is now called.

At my request, Prof. E. S. Richman, Horticulturist, made the experiment with inverted V-shaped troughs placed along a row of grape vines. These troughs had apertures or breaks in them. This system Prof. Richman will report upon, but, in general, I will say that where the aperture was made near the vine he reports that it succeeded quite well. In California, sub-irrigation has been used in orchards, the water being let out near each tree; but as the roots of trees in an orchard completely fill the entire space of soil, it will appear that the system cannot be permanently successful, for the reason that the roots of trees should be encouraged to follow their natural positions in the soil, in order to increase the area from which they draw nourishment and moisture. The exit of water near the tree tends to narrow the feeding area of the roots of the tree, and so creates an excess of water in a very narrow region, as the lateral movement of water in most soils cannot possibly be equal to the necessities of growing crops. But to in any way make it successful for farm crops would require pipes within a few feet of each other. It is true that where sandy soil overlays impervious clay the lateral movement of water will, in time, become adequate for a crop; yet this is by another law than the free movement of water by tension in the soil, for where it has the choice of a downward movement by gravity it will take place much more rapidly than the lateral movement, the lateral movement never being equal, I believe, upon ordinary

open subsoils and ordinary soils, to plant demands.

Table No. 3 [omitted here] deals with the question of the influence of different methods of irrigation on the temperature of the soil and the temperature of the air above. Theoretically we might infer, if irrigation occurred

on the surface, that evaporation would be increased, and the absorption of the requisite heat to accomplish this end would cool the atmosphere immediately around the plant. If the atmosphere is cooled about the plant, it will probably have an effect upon the growth of the plant in quantity and quality.

The temperature of the soil is higher with sub-irrigation, and the temperature around the plant is also higher when sub-irrigation is practiced than when surface irrigation is practiced. This might not have been the case, however, had the necessary amount of water been actually supplied by sub-irrigation. The presumption is, however, that it would have been warmer by the sub-irrigation process.

LATERAL FLOW OF WATER.

To ascertain the rate of lateral movement of water after it first was turned into the pipes, a trench was dug at right angles to the receiving pipe, and the rate of movement of water from the pipe measured in inches at different dates.

On Saturday, 15th, 10 a. m., water was turned in. At 1 p. m., it had spread one foot from the pipe. At 5:30 it had reached 1.5 feet. On Sunday, at 8 a. m., it had reached 2.5 feet. At 7 p. m., Sunday, it reached 4 feet from the pipe. Monday, at 7 a. m., it reached 5 feet. An accident prevented further observations from this point.

At another outlet from the pipe, on Saturday, 15th, at 5:30 p. m., an opening was made in the soil. The next night, at 7 p. m., it had spread 2 feet, and Monday, at 7 a. m., it spread 2.5 feet.

On Wednesday, the 19th, a start at another point was made. It was then 4 feet from the pipe. Thursday, the 20th, at 8 a. m., it was only 4 feet 3 inches; at 7 p. m., 4 feet 6 inches. Friday, 21st, at 8 a. m., 4 feet 8 inches. On Saturday, 22d, at 8 a. m., it was 5 feet; at 7 p. m., 5 feet 4 inches. Sunday, 23d, 8 a. m., 5 feet 7 inches; at 7 p. m., 5 feet 10 inches.

In another opening from the north pipe, it was found to have passed, from Wednesday till Thursday night, 18 inches; next Friday morning at 8 a. m. it was 22 inches; Saturday, at 8 a. m., 30 inches; at 7 p. m., 34 inches, and on Sunday morning it had made no further progress from that point.

Thus, it will be seen, after pressing out from the pipe for the first three or four feet or so, the progress for an entire day is measured by a very few inches. Of course, the further it is from the pipe, the more surface there is for evaporation, and, therefore, a less supply per square foot of surface. In a short time, or after passing a few feet from the pipe, evaporation soon equals the percolation, and it reaches a point where the water would not supply even the most moderate growth.

SUMMARY.

1. Sub-irrigation, whether by large, open drains or by the cement-pipe system, fails to supply moisture enough for growing crops.
2. The lateral movement of water was too slow to furnish the requisite supply for the evaporation of plants, being at the rate of a very few inches per day.
3. The sub-irrigated soil was warmer than the surface-irrigated soil.
4. The atmosphere around the plants, to the height of twelve inches, was warmer by sub-irrigation than by surface irrigation.
5. The sub-irrigated plat did not contain as much moisture as the surface-irrigated plat.
6. It is concluded that for the college farm the lateral movement of water cannot be made rapid enough for maximum crop growth.
7. The system is too costly for ordinary farm crops.

Experiments at the Utah Experiment Station in irrigating potatoes gave a larger yield for irrigation every seventh day than when irrigated with greater or less frequency. The largest yield of salable potatoes resulted from irrigating every eighth day. The variations of plants irrigated every five, six, seven and eight days were not very great, but those irrigated every three or four days did poorly.

Shall We Make History at Denver?

The following circular has been received:

"Are the people of the West capable of rising to a great opportunity? Have they the genius and courage to grasp, at an opportune moment, the results of a generation by the work of a few hours, days or weeks? These questions will only be answered when the results of the Third National Irrigation Congress are known. They can only be answered affirmatively by the presence of a large convention, of a convention properly representative of all the States and Territories, of a convention capable of realizing the importance of the work committed to it and willing to devote time, labor and thought in order to effect a great result.

"The Los Angeles Congress, in its five days' session last October, enunciated the fundamental principles of an irrigation philosophy. It then created the irrigation commissions, charging them to study the needs and ascertain the opinions of their various localities. It remains for the Congress at Denver to formulate a national policy and a code of local laws to be based upon the principles declared at Los Angeles and upon the report of these State commissions. Thus we have the material for good results. Whether we get them or not will depend upon the amount of brains, courage and devotion to duty represented at Denver.

"If every newspaper in the arid region, every member of national, inter-State, State and county organizations will unite in a supreme effort, the Congress at Denver will be a memorable success. In that case we shall make history as surely as it was made at Philadelphia in 1776. No popular convention in the annals of the American people has done more for human liberty and our country's material greatness than the Congress at Denver will do under these circumstances. Let us highly resolve to make the most of this great opportunity.

"The commission for Kansas is composed of J. G. Gregory, Garden City; V. H. Grintstead, Dighton; F. D. Coburn, Topeka; L. Baldwin, Great Bend; A. B. Montgomery, Goodland.

"The citizens of Kansas are requested to correspond with any of these gentlemen and give them such information as they may possess on the subjects to be covered by their report, which is designed to include every point of interest connected with irrigation which can be suggested. Information as to the work of the local committee and the arrangements for the entertainment of the Congress can be obtained of Thomas L. Smith, Secretary local committee, rooms 11 and 12, Equitable building, Denver, Colo."

To Overcome the Effects of a Dry Season.

The first thing to be done to tide over a dry season is to prepare well for it. There is but little wisdom in seeking how to tide over such a season when it is already on. Dry seasons may be expected in California; nearly all seasons are too dry along the Pacific coast from Cape St. Lucas to Cape Mendocino. Every farmer and fruit-grower should be anticipating a dry rather than a wet season, and shape his work accordingly. The man who has irrigation facilities with plenty of water need to have no care on the subject—but comparatively few are so fortunate.

To be fortified for a dry season means to have the soil well saturated with moisture to a depth of two or three feet before the vernal equinox. If this is not secured by the first of January by the rainfall it is high time for the person who has water at his command to flood every acre of land from which he expects to make a profit. If there should be an abundance of rain later on all the better. It will retard the growth of all trees during the winter months to their great advantage and is an assurance against frost. It will prevent deciduous trees from blooming in midwinter and thus casting their fruit. It will also retard the blooming and setting of the oranges and their ripening, which we in southern California have found to be an advantage, as it gives us a market more free from competition.

Many useful lessons were learned by

the pioneers from the methods of cultivation practiced by the native Californians before the advent of Americans. But the experiences of the past forty years by the Americans themselves has added much to their ability to meet the conditions of a scant rainfall. Several of the counties bordering San Francisco bay with an annual rainfall no greater, taking one year with another, than the same number of counties in southern California, produce—judging by the annual tonnage of fruit they ship abroad—an amount of orchard crops greatly in excess of our own.

The question is, how do they do it? and the answer is by thorough cultivation.

Whatever moisture falls on the soil is retained by intense cultivation until it rises through the roots and body of the trees to perfect a crop of fruit. As soon as the ground is dry enough to plow, plowing begins and cultivation is continued until the fruit is gathered. To get the best results the soil must be reduced to an impalpable powder to serve as a mulch to the damp earth beneath; it must be stirred to break up the capillary attraction that would otherwise bring the moisture to be carried away by the winds.—*Hiram Hamilton, in Rural Californian.*

Ouring Alfalfa Hay.

The *Field and Farm*, of Denver, Col., suggests that Henry Wallace, the clover man of Iowa, does not seem to grasp the right idea about alfalfa. He holds that inasmuch as it is more sappy than clover it must necessarily require just so much more drying on the field before going into the stack. In this country it is not of much moment whether the alfalfa is thoroughly cured or not. In fact, we know men who start the go-devils an hour behind the mowing machines, gather up the wilting hay and carry it off to the stack without further delay or formality. Of course the alfalfa burns in the stack, particularly so when ventilators are not put in, but no one cares for this and the live stock at eating time do not find it out. Burnt alfalfa is just as good to them, apparently, as any other forage, and they chew away at it as contented as you please and give just as much milk or put on just as much fat.

Specimens of newly-made alfalfa hay shown in this office have been merely wilted. In practice farmers find it unnecessary and injudicious to dry the alfalfa before stacking.

Weekly Weather-Drop Bulletin.

Issued by the United States Department of Agriculture, in co-operation with the Kansas State Board of Agriculture, for the week ending July 23, 1894, T. B. Jennings, observer:

Timely rains have fallen in the northwestern counties; from Gray and Clark to Ottawa and Marion, and in the eastern division about two-thirds of the State having been fairly well watered.

The sunshine has been excessive. The mean temperature has been nearly normal, the days being hot, the nights cool.

The rain has done much good to a large part of the corn crop, to meadows, pastures and many of the late crops.

Threshing is in progress in all parts of the State, and though the yield is generally short the berry is usually very good.

Corn generally is in prime condition, though the dry weather had injured it in some places and had begun to hurt it in others.

Prairie hay is being cut and is proving only a fair crop. Flax generally is good. Apples are abundant, plums fair.

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The farmer who makes his business pay is the man who finds a large per cent. of his profits in things so small as not to be considered worthy of notice by a majority of our people. It is a quarter saved here, a dime there and a nickel somewhere else.

The New Building of the Kansas State Agricultural College.

BY PROF. J. D. WALTERS.

The new Library and Science hall, a rough cut of which will be found on the front page, is nearly completed. The outside, including the necessary grading, is done, and a force of plumbers and painters are busy putting the finishing touches to the inside. The beginning of the college year will find the class-rooms and laboratories ready for the reception of the students.

The building stands about 175 feet southeast of the main College hall. It faces east and north, as shown in the cut. The main part measures about 100 by 100 feet, and is two stories high, with a twelve-foot basement and a roomy attic. On the main floor this part, or wing, contains a class-room for zoology, entomology and geology, a biological laboratory, and a private laboratory for the professor, both provided with north light, an office, a museum hall measuring about 40 by 60 feet, and reaching, with its two galleries, to the attic, girls' and boys' wardrobes, water closets, stairways, etc. The second floor shows the same number of rooms, with nearly the same arrangement, and is to be occupied by the department of Botany. There will be in addition on this floor an experiment station laboratory, and a class-room for civics. In the basement are five large rooms, well lighted and ventilated, two of which will be used as meeting rooms for the different societies and organizations, one for a gymnasium for the girls, and one as a taxidermical laboratory. On the east side this floor can be entered directly from the outside, and the closing of a single door will completely sever it from the floors above. All partitions are of solid stone wall or partition tiling, the floors are of cement tiling, and the ceiling of corrugated iron, making the basement entirely fire-proof.

The library wing is only one story high above the main floor, and extends west from the main part. It has been built so as to permit of an extension. Some day, probably not a dozen years after date, the library will have again outgrown its quarters and ask for more space. The stack-room will then be extended southward, from 50 to 100 feet and end in an octagonal art gallery. The stack-room has an inside measure of nearly 85 by 81 feet. An open arch connects it with a reading-room measuring about 18 by 35 feet. At the other end, to the north, is the outside entrance to the library and a small work-room for the librarian. The stack-room will contain two tiers of book-stacks, one above the other, and will provide shelving for about 60,000 volumes. Since the catalogue enumerates but 20,000 volumes, only part of the shelving will be put in place for the present. All stacks and shelving will be made of steel. A stairway and an elevator will connect the librarian's work-room with the basement, where the government reports, manuscripts, duplicate volumes, etc., will ultimately be stored.

It is not possible to speak in a short article of all the details that will make the building the model of convenience and solidity which it will undoubtedly prove to be. The walls are built of substantial ashlar work of white Manhattan limestone. The roof is covered with tin shingles of a Spanish pattern, and the inside is finished in varnished hard pine. Ample provision has been made for electric lighting, water service, closets and drainage. When finished, the building will have cost \$60,000. Its builders are the well-known firm of Ulrich Bros., of Manhattan, whose senior member is an M. Sc. by this college. It is being erected under the direction of the State Board of Public Works, after drawings and specifications by the State Architect, Mr. Seymour Davis, of Topeka, and under the superintendence of Mr. Newman, of Clay Center. The designs for the floor plans were made by Prof. J. D. Walters.

For some time the new Library and Science hall will be the sentinel of the groups of buildings on the hill, but the growth of the largest agricultural school in the world will soon make it necessary to erect still more buildings. The departments of Domestic Economy and Sewing have long since outgrown their present narrow and temporary quarters, and will have to ask the next Legislature to be as willing to help the cause of education as the last one was. The Musical department is in equal need of more room. The department of Physics, Engineering and Graphics are located in quarters that do not expand with their growth. These much needed buildings, with the exception of the last one, will probably be located to the west and south of Science hall.

Another Insecticide.

A new discovery in the domain of pomology has been made by F. C. Moulton, of the Gypsy Moth Commission, Malden, Mass. Arsenate of lead was the substance used, which was prepared by dissolving eleven ounces of acetate of lead and four ounces of arsenate of soda in 150 gallons of water. These substances quickly dissolve and form

arsenate of lead, a fine white powder which is lighter than Paris green, and while being fully as effective in its operation in destroying insect life is far preferable for several reasons. If by any means the mixture happens to be used stronger than necessary to destroy insect life, even three or four times the necessary strength, it is reported that it in nowise injures the foliage of the plants upon which it is sprayed. This is a great thing in its favor, for in using Paris green for potato beetle larvae and for the codlin worms, as much injury sometimes results from the poison burning the foliage as would result from the insect if let alone.

This is a better insecticide than Paris green under all circumstances and for all insects, says Prof. Fernald. It has the advantage of being readily seen on the leaves, so that one can tell at a glance which have and have not been sprayed, which is often of great convenience. Being lighter than Paris green it does not settle so quickly, and as a result can be distributed more evenly over the foliage. With the arsenate of lead it can be used if necessary in the proportion of twenty-five pounds to 150 gallons of water without injury to the foliage. Prof. Fernald advises the addition of two quarts of glucose, or if that cannot be obtained, two quarts of molasses to each 150 gallons of water, used for the purpose of causing the insecticide to adhere to the leaves. He says the experiments last season show that the insecticide will remain on the trees for a long time, even after quite heavy rains, and we infer, prove effective. The cost of these chemicals is given as 8 cents per pound for arsenate of soda and 14 cents for acetate of lead, at wholesale. It should be borne in mind that these substances are all poisonous and should be used with as great care as Paris green.

Gossip About Stock.

The Missouri Valley Veterinary Association was organized at Leavenworth last Friday night. Dr. Stewart, of Kansas City, Kas., is President, and Dr. S. L. Hunter, of Leavenworth, Secretary and Treasurer.

H. L. Liebfried, manager of Sunny Slope farm, Emporia, Kas., has just returned from an Ohio trip and a visit to the best swine-breeding establishments. His accounts to the *FARMER* of his trip are as follows: "I purchased three pigs of Shellenberger, one boar sired by J. H. Sanders 27219 O., dam Cora's Last 58212; one boar pig by Latest Fashion and one sow pig by J. H. Sanders. My purchase from Ed. Klever was one boar pig by Hadley 27105 O., dam Samboline 8th 59953 O. These pigs were selected by us and we should have the finest selection of boars in the Western country, as they are representatives of World's Fair prize-winning sires."

St. Louis wool receipts for week, 1,360, 115 pounds, against 676,345 last week; since January 1, 16,888,835 pounds, against 11,851,487 pounds for same time last year. Shipments for the week, 956,200 pounds, against 232,000 pounds last week; since January 1, 13,624,393 pounds, against 11,457,270 pounds for the same time last year. A right healthy feeling prevailed and there was sale for all available lots, while demand showed more life, but the offerings were light and trading necessarily not large. A slight advance in price for choice combing was obtained, that description being in best request and scarcest; other kinds unchanged, the inferior (short, sandy, heavy and off-color lots), while being salable, went only at low-down rates. Quotations for Kansas and Nebraska medium, 11@13c; fine medium, 10@11c; light fine, 9@10c; heavy fine, 8@9c.

W. S. Tough & Son, managers of the Kansas City stock yards horse and mule department, report the market during the past week, while some better than the preceding one, as showing a very depressed state of affairs. Values are so unsteady that it is almost impossible to strike an average for quotations. There was a very fair local demand and several buyers on the market from Indian Territory and Texas, but they were imbued with the spirit of the times and wanted to buy everything at strike prices. Some nice tasty drivers would sell very well, and good, smooth Southern chunks. About all that can be said is that prices are from \$10 to \$15 off. Things look a little brighter for next week, but country buyers must get more quality at less price or stop dealing. Some little trading in mules, but of no particular class. Seems to be just a hit or miss. Prices \$5 to \$7.50 off on most everything since the railroad tie-up.

Ash Grove herd of Poland-China and Duroc-Jersey swine, owned by D. Trott, Abilene, reports splendid sales and fine litters of beauties from his splendid brood sows, Daisy Tiptop, Tecumseh Prize 2d, Lady Corwin and Black Bess 2d. The *Indicator* representative, who recently visited this herd, says: "His present leading sire in the Duroc division is Kansas King, a hog of exceedingly short, heavy bone, broad face, strong constitution and the general characteristics of the proper kind of an in-

Hungry Leather.

The natural food of leather is oil. Hard and stiff leather is soft in a minute with

Vacuum Leather Oil.

25c. worth is a fair trial—and your money back if you want it—a swob with each can. For pamphlet, free, "HOW TO TAKE CARE OF LEATHER," send to VACUUM OIL CO., Rochester, N. Y.

dividual for a prepotent sire. He is the sire of more high-class stock that has been sent to different sections of the country than any other hog of the breed ever owned in Kansas, and the beauty of it is his pigs never fail to give satisfaction. This year's crop numbers seventy-five, sired by Kansas King, Red Chief, a well-formed, smooth hog of plenty of size, Broad Back and another whose name we did not learn. Some of the favorite brood sows are Lady Butler, Crimson Beauty of Kansas and Sunflower, Sunflower Queen and others. As we had known Mr. Trott more as a breeder of Duroc-Jerseys we had formed the opinion that he had made the old reliable Poland-Chinas play 'second fiddle' in his breeding operations, but we found, when we came to see the stock, that in this we were very much mistaken, as better individuals than were seen at Ash Grove are not often run across. The youngsters for the trade number one hundred head, sired by four different boars. The present head of the herd is the grand yearling, Victor Tecumseh, that at once must be classed as one of the best yearlings in the State. He has a most perfectly arched rib, is strong in the loin, thick hams and equally good throughout. He was sired by Tecumseh Victor, he by Lail's Victor, dam Lady Success, by Grand Knight 2d. The other herd boar is Low Down Chief, and a most appropriate name it is, as he is on very short legs, deep-ribbed, full of flesh and withal plenty of style and action. His sire was Low Down, dam Flora K., a granddaughter of the great boar Satisfaction. We saw several young sows by Low Down Chief that had finish, length, size and quality sufficient to warrant his being retained in service. The other boars used were Royal Osgood 25623 O., grandson of Old Osgood, dam Slick Star, by Stump of the World, and Best Quality, by Lord Duffield, whose dam was Lady Duffield B. The sows are of good colors, plenty of size, and are good mothers. The breeding is largely of Corwin, Tecumseh and Black Bess strains, with quite a number tracing direct to the Old Harkrader sow, Finch's Premium sow, etc. Several very attractive ones were from Pride of Kansas, by Storm Cloud, that was bred by that good breeder, Jas. Mains, of Oskaloosa, Kas. One of the good young sows seen was of J. H. Sale's breeding, being sired by his premium boar, King Perfection, that was sired by Vivion & Alexander's chief herd boar, King Perfection. His stock is smooth, large and easy feeders. He can furnish pigs in pairs or any number desired not akin, of either breed, at very reasonable prices. He will be pleased to answer all inquiries."

SPECIAL FOR JULY.—For new subscribers, both the *KANSAS FARMER* and *Topeka Weekly Capital*, to January 1, 1895, for 50 cents, club-rates to keep half the money.

SPECIAL FOR JULY.—For new subscribers, both the *KANSAS FARMER* and the *Topeka Advocate*, to January 1, 1895, for 50 cents, club-rates to keep half the money.

Texas Wants You. You Want Texas.

If you like May weather in winter, apply to nearest agent of Santa Fe route. He will supply it in thirty-six hours. It is done by buying a ticket to Galveston or Houston. Perhaps less expensive than staying at home, because a big coal bill is saved.

Regular winter tourist tickets can be bought any day, but special excursions will be run the second Tuesday of each month from a limited territory to all points in Texas.

The excursion fare? Cheap enough—a little over a cent a mile; tickets good thirty days, with stop-overs south-bound.

The Gulf coast of Texas is a charming resort for invalids who don't like zero weather. Big attractions also for home-seekers; twenty acres of land there planted in pears nets the owner \$6,000 each year after orchard is established. Strawberries and grapes also profitably raised.

Talk it over with agent Santa Fe route, or address G. T. Nicholson, G. P. A., A. T. & S. F. R. R., Topeka, Kas., and ask for a free copy of "Texas Gulf Coast Country."

Leasing Oklahoma School Lands.

All persons wanting to lease school land in Oklahoma will be rewarded by sending for a free sample copy of the *HOME, FIELD AND FORUM*, Guthrie, Okla., the leading agricultural paper of Oklahoma Territory.

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.

Counting Apple Seeds.

Beside the hearth, one winter night,
Made rosy by the great log's light,
That flaming up the chimney dark,
Hit every cranny, every nook,
Upon a rug a little maid
Sat curled, in pose demure and staid.

In pensive mood, with dreamy eyes
She sits, while up the chimney flies
A thought with every fiery spark,
Glinting and flashing through the dark,
Till with a sigh profound and deep
She moves, as one moves in her sleep.

A rosy apple in her hand
A weight of thought seems to demand.
She taps it with a finger light,
Then carefully she takes a bite,
Another bite, now one, now two—
The core is thus exposed to view.

Another sigh! what can it be,
My little maid, that aileth thee?
Ab, what is this? some incantation?
Muttered with such reiteration?
Hark! as each seed her bright eyes see,
These are the words that come to me:
"One I love, two I love,
Three I love I say,
Four I love with all my heart,
Five—I cast away!"

Here a tear rolls brightly down,
What the secret she has won?
Who can say? But just behind
Sounds a voice so soft and kind:
"Look again! Thou must indeed
Find for me another seed!"

Rosier her bright cheeks glow
In the firelight's ruddy glow,
Sure enough a culprit seed
Finds she in the core indeed—
"From thy lips I fain would hear
What the sixth one means, my dear."

"Six he loves," she murmured low,
And the firelight's flickering glow
Two happy faces now disclose,
With cheeks aglow like the rose,
But here we'll let the curtain fall,
For the end is best of all.

—Sacramento Union.

True Greatness.

'Tis not the splendor of the place,
The gilded couch, the purse, the mace;
Nor all the pompous train of state,
With crowds that at your levee wait,
That make you happy—make you great.
But while mankind you strive to bless
With all the talents you possess;
While the chief pleasure you receive
Arises from the joy you give;
This wins the heart, and conquers spite,
And makes the heavy burden light.
For pleasure, rightly understood,
Is only labor to be good.

THE EDUCATION OF THE FUTURE.

Graduation thesis, by George Luther Christensen, State Agricultural college commencement, 1894.

Education has passed through a process of evolution following the general advancement of civilization. As the ideas of the people have changed, changes have been brought about in education. Every age has fostered some favorite idea, the ruling motive of the time, but this has in its turn passed away to give place to new ideas. Education, in the different periods of history, has had for its aim the attainment of the favorite idea of that age.

The renaissance of the fifteenth century marks the introduction of an idea which fixed the standard of culture for several hundred years. The study of the classics was made the principal part of education. One who was acquainted with the Greek and Latin languages was considered a cultured person. Recent times have witnessed a wonderful advancement in all that ministers to human welfare, and education has undergone great changes. The traditional classical course has been forced to yield part of its ground to the more modern ideas. Many inroads have been made on the old method of culture through the rapid advancement of science in recent times. Another line along which education has experienced the effect of modern thought is the introduction of manual training into the educational curriculum—the combination of mental and manual training in distinction from the old culture, where mental training was the only one offered.

All these changes have operated in the line of advancement. Educational systems and the subjects of study have become more adapted to meet the demands of the people and true principles of education.

The education of the future will be the product of the experience, research and thought of all preceding ages. The systems will be more perfect than ours, and the subjects of study will be such as will furnish the best of discipline with the most useful knowledge. The true principles of education will be observed. All the powers of man will be developed in proper proportion till we obtain the thoroughly trained man, fit to cope with the great problems of the world. Commencing with the child, he will be led by trained teachers in the natural order of his development, bringing into action all his powers at the time at which they are the most naturally developed, producing in the end the harmonious result,

the accomplishment of which is the great aim of education. A growing tendency of modern culture is towards specialization. In the future, education will be directed towards the formation of the specialist, but it will be a training combined with a broad general education, which produces in its possessor liberal views on all subjects, instead of the one-sidedness characteristic of modern tendencies.

Education will become universal in the future. Present tendencies do certainly point in this direction. The growing patronage of institutions of higher learning, and the increasing interest in intellectual achievements amongst the masses, is surely prophetic of a glorious future. The present agencies operating for the extension of higher education, such as university extension, Chautauqua, and public libraries, will advance the intelligence of the people, and with this advancement education will receive more attention. The coming American will be the product of improved systems of culture. He will be a thoroughly trained man, in the fullest significance of that word.

A Woman on Suffrage.

Some weeks ago the Democrat proposed to publish short, terse arguments on either side of the suffrage question. Up to this date we have not received a single communication on the subject. We cannot understand this, as the subject is certainly worthy of discussion, and we had thought the suffrage advocates anxious to express their reasons for their faith. As the arguments we expected from local sources have not materialized, we publish what we esteem an excellent letter written by a learned lady to the Wichita Eagle:

"MY DEAR SIR:—If I had a vote it would be an emphatic 'No.' Woman is wiser than man in many things, inferior to him in very few, but that has nothing to do with a problem which involves public responsibility and the neglect of private ones of equal importance to the race. I could vote as understandingly as five out of ten men, I am convinced, but the power of the ballot in woman's hand would not be increased for good. It's an obligation with no adequate return for the wives of the land; would be a burden for the grandams and a thing of no interest to girls who hope to be the center of a home. All the men vote, including father, husband and brothers, and where, therefore, is distinctive advantage or honor for mother, wife and sister in it? I would not shrink, particularly, from going to the polls, but nature didn't endow me for all that logically grows out of that act. There is enough of public life for women already, and what with charities, churches and social demands I fear too many. Men cannot or will not take our places in these any more than they could in household duties and wisely burdens, for children are born and must be nurtured into manhood and womanhood. What the character of that manhood and womanhood will be rests almost wholly with the mother. * * * I say, let the responsibility of men's work and duties remain with them, all the demands of the childless, husbandless and discontented of my sex to the contrary, notwithstanding. Once the burden imposed and we would never rid ourselves of it legally, and to personally attempt to dodge or evade the duty of voting for your male friend's choice or against his enemy would lead to troubles that woman's heart would avoid. Upon the whole, I am with you heart and hand, preferring that the men folks do the voting and responsibilities of the ballot, including making laws whereby they can put their property in their wives' hands for the sake of a home and their children, and can do the fighting, also, when necessary."—Kingman Democrat.

Suffrage and Labor.

Jokes are made nowadays on the most serious of subjects. The following from Puck is intended to demonstrate how unlikely women would be to vote right:

"Mrs. Sauers—I am dead set against giving the women the constitutional right to vote.

"Mr. Sauers—I would never have given you credit for so much sense, my dear.

"Mrs. Sauers—Well, a woman would use about the same judgment in voting for a man that she uses in selecting one for a husband; and just see what a failure she generally makes of that!"

We hear a great deal about the tyranny exercised by "capital" over "labor," but the following from same paper as above mentioned, would indicate that possibly it may be reversed at times:

"Man of the House (in a loud and angry voice)—Confound it! Shut that door, you, out there! Shut that door right away!

"Servant (appearing with dignity)—Do yez know who yez is hollerin' at?

"Man of the House (collapsed)—Oh! excuse me, Bridget! I thought it was my wife."

Do not wear impermeable and tight-fitting hats that constrict the blood vessels of the scalp. Use Hall's Hair Renewer occasionally, and you will not be bald.

Woman Suffrage.

I would like to ask the opponents of woman suffrage to give one good reason why women should not vote, and why those women who do not want to vote should try to prevent those who do? If the right is granted women, there is no compulsion; no one need vote unless she chooses. A man said to me: "The polls is no fit place for a woman." What makes it unfit? Our fathers, husbands, sons and brothers go there; it ought to be a place of the greatest respect and honor. It is where the fate of our country is decided. Again, I heard it said: "If women vote they will drink and smoke and be worse than men." Is it any worse for women to drink and smoke than for men? It seems to be the highest aim of two-thirds of our male citizens to violate and defeat our temperance law, and if that is such a good, smart and honorable thing to do, why should the men keep it to themselves? But woman's work, both past and present, proves that idea to be a false one. Again, it is said women will be too independent. Do our young men, the majority of them, make the best of themselves? No, indeed, they do not, and is it any wonder our brightest and best women seek and live other lives rather than live the married life they would have to live with a man who steeps his head in tobacco and sells his brain for liquor? And yet 'tis such men who help control our government and say women must not vote.

S. CASWELL,
A Kansas Woman.

Republican City, Neb., July 14, 1894.

An Anecdote of Advertising.

It is well known that at the Pere la Chaise cemetery, near Paris, there stands in a conspicuous position a splendid monument to Pierre Cabochard, a grocer, with a pathetic inscription, which closes thus:

"His inconsolable widow dedicates this monument to his memory, and continues the same business at the old shop, 167 Rue Mouffetard."

Now a Parisian paper relates that a short time ago a gentleman, who had noticed the above inscription, was led by curiosity to call at the address indicated. Having expressed a desire to see the widow Cabochard, he was immediately ushered into the presence of a fashionably dressed and full-bearded man, who asked him what was the object of his visit.

"I came to see the widow Cabochard, sir."

"Well, sir, here she is."

"I beg pardon, but I wish to see the lady in person."

"Sir, I am the widow Cabochard."

"I don't exactly understand you. I allude to the relict of the late Pierre Cabochard, whose monument I saw yesterday at Pere la Chaise."

"I see, I see," was the smiling rejoinder. "Allow me to inform you that Pierre Cabochard is a myth, and therefore never had a wife. The tomb you admired cost me a good deal of money, and although no one is buried there it proves a first-class advertisement, and I have no cause to regret the expense. Now, sir, what can I sell you in the way of groceries?"—Sampson's History of Advertising.

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In a Swallow's Nest.

To see only the bottom of the nest, yet to know that within it lay young swifts which were being fed in some way by their parents, was tantalizing. I recalled a former year when I wished to see a swift's nest with its full set of eggs, and so had kept watch of the nest; not by climbing to the chimney top and peering down, but by raising a small mirror, by whose aid I had seen the reflected nest from below. The mirror served its purpose a second time. I lashed it to the tip of a fishing rod and pushed the slender joint up the chimney, adding first the middle joint and then the butt, in order to bring the glass well above the nest. Something white was in the nest—just what I could not at first tell, for mortar dust had fallen into my eyes, and it was difficult to keep the glass still enough to see with my eyes blinking and weeping. The mother bird had been driven from the nest by the appearance of the strange, misshapen thing which I had forced toward her from below, and she was now making short flights back and forth in the upper part of the chimney, producing sounds and sudden variations in light and darkness which would surely have frightened away any but a human intruder.

Wiping my eyes and steadying the glass, I took a careful look at the contents of the nest. The white object, or at all events its whitest part, was an egg shell, from whose opened halves a young bird was feebly trying to escape. Without waiting to see more I withdrew the mirror from the chim-

IVORY SOAP

99 ⁴⁴/₁₀₀ %

"PURE"

FOR THE BABY.

THE PROCTOR & GAMBLE CO., CINT'L.

ney and removed all disturbing objects, myself included, from the fireplace. My heart reproached me. Had my violence driven the birds from their nest, thus making probable the death of the young at this trying crisis in their career? More than fifteen minutes passed before booming wings in the swift's grewsome nursery assured me that a parent had returned.—Popular Science Monthly.

EFFECTUAL.—Charles J. Booth, Olive-wood, Cal., says: "I have used Ayer's Pills in my family for several years, and have always found them most effectual in the relief of ailments arising from a disordered stomach, torpid liver and constipated bowels."

See Chicago Sewing Machine Co.'s advertisement in next week's issue.

"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.

RUDY'S PILE SUPPOSITORY is guaranteed to cure Piles and Constipation, or money refunded. Fifty cents per box. Send stamp for circular and Free Sample to MARTIN RUDY, Lancaster, Pa. For sale by all first-class druggists and in Topeka, Kas., by W. R. Kennedy, Druggist, northeast corner Fourth and Kansas Ave.

"I CANT QUIT,"

Tobacco users say. Ah! maybe you say so yourself. There are millions like you, with what physicians call a "TO-BACCO NERVE"—that is, your nervous system is completely under tobacco's narcotic stimulant, and when you say, "I CANT QUIT," you tell the truth. The proper way is to treat the diseased nervous system by using

NO TO BAC

MAKES IT EASY,

because it acts directly on the nerve centres, destroying the nerve craving effects, builds up and improves the entire nervous system. Makes **WEAK MEN STRONG**. Many report a gain of ten pounds in ten days. You run no physical or financial risk—**NO-TO-BAC** sold under

OUR GUARANTEE

PUBLISHER'S IS PLAIN AND TO THE POINT. One box, \$1.00; three boxes, \$2.50. 30 days' treatment. \$2.50. IS GUARANTEED to cure TO-BACCO HABIT in any form, or money refunded. We don't claim to cure everyone, but the percentage is so large, we can better afford to have good will of occasional failure, than his money. We have FAITH in NO-TO-BAC. If you try NO-TO-BAC, you will find that it is to you

WORTH ITS WEIGHT IN GOLD.

Book called "Don't Tobacco Spit and Smoke Your Life Away," mailed for the asking. Buy No-To-Bac from druggist or mailed for price. Address THE BSTERLING REMEDY CO., Chicago Office, 46 Randolph St.; New York Office, 10 Spruce St.; Laboratory, Indiana Mineral Springs, Ind. (3)

The Young Folks.

The Coming Man.

A pair of very chubby legs
Incased in scarlet hose;
A pair of little stubby boots
With rather doubtful toes;
A little kilt, a little coat,
Cut as a mother can—
And lo! before us stands in state
The future's "coming man."
His eyes, perchance, will read the stars
And search their unknown ways;
Perchance the human heart and soul
Will open to their gaze;
Perchance their keen and flashing glance
Will be a nation's light—
Those eyes that now are wistful bent
On some big fellow's kite.
Those hands—those little, busy hands—
So sticky, small and brown;
Those hands, whose only mission seems
To pull all order down—
Who knows what hidden strength may be
Concealed within their grasp?
Though now 'tis but a taffy stick
In sturdy hold they clasp.
Ah, blessings on those little hands,
Whose work is yet undone!
And blessings on those little feet,
Whose race is yet unrun!
And blessings on the little brain,
That has not learned to plan!
Whate'er the future holds in store,
God bless the "coming man!"
—Boston Beacon.

The Made-to-Order Smile.

When a woman looks up at you with a twist
about her eyes,
And her brows are half uplifted in a nicely
feigned surprise,
As you breathe some pretty sentence, though she
hates you all the while,
She is very apt to stun you with a made-to-order
smile.

It's a subtle combination of a sneer and a caress,
With a dash of warmth thrown in to relieve
its iciness,
And she greets you when she meets you with
that look as if a file
Had been used to fix and fashion out that made-
to-order smile.

I confess that I'm eccentric and am not a wo-
man's man,
For they seem to be constructed on the bunco-
fakir plan;
And it somehow sets me thinking that her heart
is full of guile
When a woman looks up to me with a made-to-
order smile.

Now, all maidens, young and aged, hear the les-
son I would teach—
Ye who meet us in the ball-room, ye who meet
us at the beach—
Pray consent to try and charm us by some other
sort of wile,
And relieve us from the burden of that made-to-
order smile.
—Paul L. Dunbar, in Chicago Record.

Like a Crowded 'Bus.

The world is like a crowded 'bus;
A few good men, perhaps,
May find a seat, but most of us
Must hang on by the straps.

RISE OF A MESSENGER BOY.

He is one of the most remarkable men of
the time, physically small but mentally a
giant. Commencing life as a telegraph
messenger boy, with a stock of Scotch fore-
sight and shrewdness as his only capital,
he has been so successful that to-day he is
a twenty-five times millionaire and the
largest coke, iron and steel-maker in the
world. His name is Andrew Carnegie, and
in Europe that name is better known than
of the great city which he claims as his
home.

Back in the forties there came to Pitts-
burg from the village of Dumferline, in
Scotland, an iron moulder by the name of
Carnegie, who brought with him his wife
and two sons, Andrew and Thomas, aged
twelve and ten. The elder Carnegie was
very fond of a quiet game of checkers, as
was David Brooks, then manager of the
telegraph and railroad offices in that city.
This mutual fondness often brought the
two men together, and one night Carnegie
asked Brooks if he couldn't find something
for his son Andrew to do. "Send him down
to my office and I will make him a messenger
boy," replied Brooks. Young Andrew was
on hand bright and early the next morning
to commence his duties. A lot of pretty
sharp youngsters were then employed as
messenger boys in the office. Robert Pit-
cairn, now general superintendent of the
Pennsylvania railroad, was one of them,
and David McCargo, for many years past
President of the Allegheny Valley railroad,
was another, but Andrew was the bright-
est one among them.

Manager Brooks had an old telegraph
instrument rigged up in the office for the
use of the messenger boys, and the little
Scotchman pounded away on it so diligently
in his odd moments that he soon became an
expert operator. Not long after, the late
Thomas Scott, then superintendent of the
Pennsylvania, wanted an operator in his
private office, and Brooks recommended
Carnegie. Here the young man showed
such aptitude in moving trains that he
attracted the favorable attention of Scott
and Edgar Thompson, President of the
Pennsylvania, that he was transferred to
Altoona, and became in turn chief telegraph
operator of the road and superintendent of
the western division. When the Drake
well was struck Scott and Thompson put
their money against Carnegie's business
ability and the trio engaged in oil opera-

tions, which made the younger of the three
a millionaire before he was thirty.

With the Scotchman's canniness and
caution the young millionaire possessed an
American's push and energy. With his
younger brother, Tom, he saw that the iron
and steel industries were only in their in-
fancy in this country. Together they built
the Edgar Thompson steel works and a big
iron mill at Braddock, Pa. Then came
the war and with it a big protective tariff
and an ever-increasing demand for iron and
steel, which caused a corresponding increase
in prices. Andrew Carnegie in five years
doubled, trebled and quadrupled his already
large fortune and his brother also became
immensely rich. The hold which he then
obtained upon the iron and steel trade he
has ever since retained. He is the absolute
owner of the Edgar Thompson steel works,
which furnish employment to 8,000 men,
and turn out yearly 200,000 tons of steel.
The steel works are fed from five of the
largest blast furnaces in the world and all
are heated by natural gas supplied from
Mr. Carnegie's own wells and transported
through his own pipe lines. He owns a
controlling interest in a dozen other of the
largest iron and steel plants in Pittsburgh,
and five years ago the temporary embarrass-
ment of young Henry Frick, to whose
energy and sagacity the present dimensions
of the coke trade is due, enabled him to also
gain control of that important industry.
That nearly all of these enterprises have
grown from small beginnings to their pres-
ent vast proportions under his personal
direction and supervision indicates a man
of splendid executive capacity, and such he
is. Moreover, he is such a warm friend of
the workingman and so ardent a supporter
of the labor movement that he is sometimes
called the millionaire socialist. A believer
in scientific socialism he undoubtedly is,
and that he practices what he preaches is
shown by the fact that at the enterprises
controlled by him there has been but three
strikes in twenty-five years.

Some years ago I was sent to Cresson,
where Mr. Carnegie has built a castle after
the style of the Scotch barons of 800 years
ago, at a cost of \$1,000,000 or more, to inter-
view him, and during the conversation I
had with him I asked him how much he
was worth. "I declare," he replied, "I
can hardly tell, but at least \$25,000,000. My
income is over \$10,000 a day." Such figures
as these almost take one's breath away. A
pretty fair showing, aren't they, for a
Scotch emigrant boy who began life less
than forty years ago with neither money
nor friends? With all his wealth Mr. Car-
negie is a many-sided man and knows well
how to use wisely the great fortune at his
command. He has founded free libraries
and co-operative stores among his workmen
without number. He has given \$1,000,000
to the Carnegie libraries in Pittsburgh and
Allegheny, and before these institutions are
opened to the public he will probably
give as much more. Edinburgh has re-
ceived \$300,000 from him for the same pur-
pose, and to his native town of Dumferline,
for which he has always had a warm side, he
has given at various times and for various
purposes something over \$350,000. He has
always been a warm admirer of literature
and art, and his home is adorned with the
masterpieces of American, French and En-
glish painters. Although he left school
when he was 12 years of age, he is one of
the most scholarly of men and on intimate
terms with the leading literary men of
America and England. Some years ago he
made a coaching tour through Scotland in
a four-in-hand with William Black, the nov-
elist, and Matthew Arnold, the poet, and
wrote a book on their experiences which
was published on both sides of the water
and widely read because of its easy and
delightful style.

All in Andrew Carnegie's career has been
one to be studied with profit by every
American boy.—Rufus R. Wilson, in Globe-
Democrat.

SPECIAL FOR JULY.—For new sub-
scribers, both the KANSAS FARMER and the
Topeka Advocate, to January 1, 1895, for 50
cents, club-rates to keep half the money.

SPECIAL FOR JULY.—For new sub-
scribers, both the KANSAS FARMER and To-
peka Weekly Capital, to January 1, 1895, for
50 cents, club-rates to keep half the money.

The Doings of Absent-Minded Folk.

There is the story of a man who arranged
to give an elaborate dinner to a numerous
and distinguished company. The appointed
evening arrived; the collation, an elegant
one, was ready to be served, but the guests
came not. Half an hour passed, and still
they did not come, and the host became
really uneasy. When the delay had grown
to an hour, and not a man of them had
shown up, his feelings were indescribable.
And who can picture his agony of spirit
when, on returning to his room, he chanced
to pull open a drawer, and therein found
the whole bundle of invitations which he
had forgotten to send out?

Attend the Wichita Commercial College
for a thorough business training. Y. M. C.
A. building.

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

Royal Baking Powder

ABSOLUTELY PURE

How a New York Bootblack Has Made Himself Rich.

You don't know Tony? No New Yorker
who has business down town makes such a
confession. Tony is the proprietor of the
bootblacking stands that are found in the
down-town exchanges and in parts of the
city uptown as well. But to every one ex-
cept his own people he is simply Tony. His
full name no one knows, and he himself
won't reveal it.

"Not that I am ashamed of the business,"
he said. "I feel that I deserve credit for
the success that I have made of it. But I
don't want to go with my wife to the thea-
tre or any other place and have people
point at me and say in her hearing, 'That
is the man who runs the bootblack stand.'
My next door neighbor does not know my
business, and to the people I have to meet
in it Tony is as good as any other name."

Tony's various stands about the city rep-
resent an investment of about \$5,000. He
employs thirty-five men, and it is generally
supposed that the profits are large.

The story of his career has the ring of
fiction, but the truthfulness of it is vouched
for by some of the officers of the Maritime
Exchange and the Equitable Life Assur-
ance Company, who have known him from
boyhood. His parents, who are American-
born Italians, are living in this city, have
an income from property investments suffi-
cient to enable them to live in good style,
and they are strongly opposed to their son's
business. Tony, who is 28 years of age, is
married and has two children. He lives up
town in his own house and has a place in
the country near Stamford, Conn.

He was a bootblack when only 9 years old.
At that time his father lost a great deal of
money, and Tony had to go to work. With
the aid of another boy he made a blacking
box and then stole his father's brushes and
box of blacking. He ran away from home
and soon found himself in front of Trinity
church. He shined shoes there that day
and made 50 cents. One of his customers
was a director of the Maritime Exchange.
He became interested in Tony and told him
that if he would come to the exchange he
would get him plenty of work to do.

At that time the Maritime Exchange was
at 66 Beaver street. When night came
Tony did not dare to go home, but slept in
a doorway with some boys whose acquaint-
ance he had made during the day. His car-
eer from this point is best told in his own
words:

"The next morning I went to the Mari-
time Exchange, and there I got lots to do.
I made \$1.50 that day. That night I went
home. My father gave me a whipping, and
so did my mother, and then she cried. My
father took my box away, but the next day
I found it where he hid it and went back to
the Maritime Exchange. There were a lot
of bootblacks hanging about the Maritime
Exchange doors, and they were so much
bother and made so much noise that the
Superintendent of the exchange wanted to
get rid of them.

"So he told me he would give me a chair
outside the door, and all the members
would get me to black their boots. Of
course that was a good thing for me. I
was glad of the chance to stop going around
the streets with my box ever my shoulders
and to have a regular place, which seemed
to be more like business. With my chair I
made much more money than when carry-
ing a box, and when the Maritime Ex-
change moved to Beaver and Whitehall
streets I went also, and at the new place
business was so good that I set up two
chairs.

"I didn't have to pay any rent until the
Produce Exchange people moved in, and
then I had to sign a contract to pay a rent
of \$600 a year. The Produce Exchange
brought more business, and I put in six
chairs. I hired bootblacks enough to tend
the chairs and kept working myself. I
paid my assistants \$5 and \$6 a week, but
it was hard work to get them at that price.
They all wanted to work for themselves.
They thought they could make more money
outside.

"At that time I had a great deal of trouble
with my people because they wanted me to
give up the bootblacking business and go
into a commercial house and learn that
business, but I told them that I was making
more money blacking boots than I would in
any store, so I kept on at my work.

"Business increased at the Produce Ex-

change until I had eleven chairs going.
Then I opened a branch under the Madison
Square bank at Twenty-fifth street and
Broadway and put in seven chairs there.
I had to take a seven years' lease of the
place in order to get it. I found I couldn't
shine shoes myself and look after both
places, so I put a man in each place to act
as superintendent and paid him \$10 a week.
I started another stand at Forty-second
street and Sixth avenue, where I have five
chairs going. It keeps me pretty busy
looking after these three stands, and I
work harder keeping things going and see-
ing that the men do not slight their work
than when I was blacking boots myself.

"All this time I have been known by the
name of Tony. That isn't my name. I was
called that by a man whose boots I was
blackening the very first day I went to work,
and I have used it ever since. My wife
never knew what my business was until
just before we were going to be married,
and then I told her. She didn't care,
though, as much as my father and mother
did.

"Well, I got married, and with the money
that I had saved up blacking shoes I bought
a good house up town. The people who
live about me think I am a fruit importer.
About two months ago some of the officials
of the Equitable Life Society wanted me
to take the bootblack stands in the corri-
dors of the Equitable building. The par-
ties then running the business there had a
lease until the 1st of May, but I got them
to give it up two weeks before their lease
expired by paying them a bonus.

"As fast as I got my money I put it into
the bank, and I have kept increasing my
business by not simply blacking the shoes
of the people that came to me, but by try-
ing to take care of the boots and shoes the
same as I would my own. I have studied
the thing until I have got it down to a reg-
ular system and have talked with leather
manufacturers, so that I know what leather
requires to keep it in shape."—New York
World.

"Can't Be too Quick!"

BELOIT, Kan., May 14, 1894.

Lion Nerve Tonic Co., Kansas City, Mo.

GENTLEMEN—Two years ago this month I com-
menced taking your Nerve Tonic
Restorative. I had been a suf-
ferer from epilepsy for 13 years and
spent hundreds of dollars trying to
get relief—doctored with the best
physicians in Indiana, Illinois and
Ohio, but obtained no permanent
relief until I began your treatment,
since which time I have not had a
single attack. I would just like to
say to all epileptic and nervous suf-
ferers you can't be too quick in procuring some of
this medicine. I will gladly answer any inquiries in
regard to my case. Words cannot express my thank-
fulness to you for what you have done for me.
Box 496. Mrs. MARTHA A. GORE.

Price \$1—6 bottles \$5 or 12 for \$10, delivered.
LION NERVE TONIC CO., Kansas City, Mo.

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(From U. S. Journal of Medicine.)

Prof. W. H. Peeke, who makes a specialty of Epilepsy,
has without doubt treated and cured more cases than
any living Physician; his success is astonishing. We
have heard of cases of 20 years' standing cured by him.
He publishes a valuable work on this disease which he
sends with a large bottle of his absolute cure, free to
any sufferer who may send their P. O. and Express ad-
dress. We advise anyone wishing a cure to address,
Prof. W. H. PEEKE, F. D., 4 Cedar St., New York.

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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.

Two years ago the entire country was thrown into dissensions over the tariff question, one leading party having declared in favor of the tariff as it now is, and the other in favor of reductions and a revenue basis. The reductionists carried the elections by large majorities, and the country held its breath to see what would happen. This party has now fallen into a quarrel with itself about the matter, involving the possibility of no tariff legislation of any kind. Great is the tariff talk humbug.

To sow wheat or not to sow? to sow less or to sow more wheat? are questions which appeal to almost every Kansas farmer and which must be answered within the next few weeks. It is on this account well to consider all sides of the question, to get all possible information bearing on the probable course of prices and to hear every thoughtful man's views on the subject. On next page is presented an able paper from the *American Agriculturist*. This writer takes a different view from that entertained by many other investigators and his views will not unlikely provoke some discussion. This, however, is not undesirable and will probably bring out important considerations which might otherwise be kept from the public.

Wall street is entirely complacent as to tariff legislation. Last Saturday's circular from that center observes: "We are close on the termination of the twelve months of suspense connected with tariff legislation. Whether the present crisis in that question ends in the enactment of the bill or in its defeat, matters little to the immediate welfare of business. If the bill becomes law, preparations have already been made in our industries for giving effect to the lower duties with the minimum of disturbance to manufacturers. If it is defeated, both sides will concede that, at least, no present injury, but rather an immediate stimulus, must result to domestic interests at large. From this point of view Wall street takes comparatively little interest in the failure of the joint committee of the two houses to reach an agreement on this measure." So also the sugar trust is doubtless quite "indifferent" about the disagreement. Under the present (McKinley) law the trust has the advantage of a differential of half a cent per pound on refined sugar. Under the Senate bill this differential remains practically unchanged and under the House (Wilson) bill it is entirely cut off. Obstinacy to the extent of final disagreement between the two houses means the continuance of the McKinley law. There is big money for the trust, in a disagreement or the Senate bill. There may be big money also for enough Senators to secure a disagreement.

It pays to have sharp tools, even if you have to stop on your busiest day to sharpen them. But a wise farmer puts his tools in order on rainy days.

LEARN FROM THE STRIKE.

The great railroad strike has been practically ended for more than a week and is claimed by the railroad managers to have been a complete failure. It, however, demonstrated not only the ability but also the liability of some great organization to completely paralyze the commerce of the country, for a time at least. It also discloses the fact that only a little more universal organization than that of the A. R. U. would be able to take the country's progress by the throat and hold it indefinitely without violating any law. Debs, whose career appears to have been meteoric, may or may not have the genius to perfect a universal organization of railroad employees, but he has manifested startling abilities in that direction and may pilot the way for another organizer more able and more daring who can direct the actions of all of these employees as of one man. The power already manifested is dangerous to peace and prosperity, and it is a strong indictment of our civilization that any such action has by so many thousands of honest, sober, sensible, industrious men been deemed necessary. The great strike ought to be heeded as a warning of what disorders may follow if we fail to provide more effectually than now for the general welfare.

The fact that there was arrayed against the strikers the combined strength of the railroad corporations, the city, State and national governments, is not without precedent in other great conflicts, but should be noted by labor organizations as an admonition to turn their attention to the weapons of defense provided under our institutions for all who have grievances, namely, the use of the ballot and the regularly-ordained methods of righting whatever of wrong exists.

The strike has done nothing to make more work for the idle and is not likely to cause more than brief hesitation in the reduction of wages. This reduction is clearly inevitable until something is done more rational than physical resistance to reduction—something to remove the cause.

There are natural resources in the United States sufficient to furnish brisk and remunerative employment and luxurious living to many times our present numbers. The utilization of these as they should and may be utilized would furnish so much work as to produce lively competition for laborers instead of the present competition for employment. The time may come when the resources of this country will be taxed to support its people. It is yet a great way off. The proper enjoyment of the opportunities afforded can be assured only by the means of statesmanship and not by the forcible obstruction of industry. This lesson cannot be learned too soon by all parties in interest, and the chances of winning the honors of leadership are greater in the field of statesmanship than in that of obstruction and war.

The view of the strike taken by those most directly interested against them is well shown in the latest circular of Henry Clews, as follows:

"The end of the Debs strike has contributed to a great strengthening of confidence in the future of transportation interests. The constant attitude of threat held by some of the unions, and the increasing violence of their strikes has been a steadily growing element of distrust in this class of investments, not only at home but also in the foreign markets for our securities. These unions have now put forth all the force they could summon in order to measure their strength with that of the railroads. They declared in advance that failure would mean not only present defeat but also the final overthrow of at least the strike as a method of warfare. They are defeated most utterly; and that in a way which makes it certain that the unions can never dominate the railroads except through the overthrow of the armed power, not only of the cities and the States, but also of the United States. This settlement is of immeasurable value, not only to the railroads, but also to the entire vast interests dependent upon the railroads for the safe and regular

transportation of products, which have so repeatedly suffered from the growing violence of employees led by injudicious leaders. It is thus felt that July has brought a great amelioration of the working conditions of our 175,000 miles of railroad."

This is certainly too optimistic a view for his side of the case. Until there is amelioration of the cause of strikes they will occur with continually increasing unanimity and possibly greater violence to life, property and industry. The problem of employment, of production and distribution and the enjoyment of the products of industry is a present, a pressing and a growing one in economics, and must engage the attention of the people at the ballot-box, and of their representatives in legislative bodies as never before to avert the disorders of which the strike is but premonitory.

IMPERTINENT INQUIRIES.

It is true that the Congress of the United States has, by law, given the sugar trust and other refiners of sugar the power to extort from every user of refined sugar a half a cent per pound more than foreign producers can obtain for the same grade by shipping to our markets. It has generally been held by sugar refiners and others similarly favored by legislation, that it was nobody's business how they conducted their affairs, how much they had invested or how great were their profits. Indeed, any inquiry as to these matters has generally been treated as unpardonable impertinence. The demand for the protection was regularly made in the name of the poor laboring man, but what, if any, division was made with him was not disclosed. It is, therefore, with some surprise that the public has read, from Mr. Harter, of Ohio, Chairman of the House sub-Committee on Trusts, the following letter, dated July 22, 1894:

H. O. Havemeyer, Esq., President American Sugar Refining Company, New York.

DEAR SIR:—If you will supply me, as Chairman of the sub-Committee on Trusts of the Committee on Manufactures, the information asked for herein, I will see that it is laid before the House. A free trader myself, and believing no tax should be levied on sugar (or anything else), except for revenue, nevertheless, as practically every article of consumption is to retain protection, I feel no prejudice against the sugar interest as such, and I think a large number of the members of the House entertain the same view.

As, however, the sugar trust demands protection, or, more properly speaking, the taxation of the public for its profit, it should put before Congress and the public its real condition, so an intelligent opinion of the merits of its demand may be formed. If, upon an actual and necessary investment of cash capital it cannot save itself from losses without burdening the tax-payers, then it has as much justification (and more) for being fed from the public resources by taxation as many industries which we, in passing the Wilson bill, allowed to remain upon the charity list. If, however, its profits have been excessive when figured upon an actual cash and unwatered capital stock, then you, as a fair-minded man, will agree with me that you should not have any legislative favors.

In such an event a tax of 1 cent per pound upon 100 degree sugar for revenue only would be a fair and equitable one permitting a reduction of one one-hundredths of a cent for each degree of sweetness lacking. Such a tax as this, while taking nothing to the treasury of your company, would pour a great many millions into the government coffers. The information asked for is comprehended under four heads:

First—What is the present tax value, i. e. (cost of replacing), of the plants actually in operation and necessary to produce a quantity of refined sugar turned out by your company?

Second—What have been the actual profits of the American Sugar Refining Company for each full fiscal year since its organization, and what are its profits so far in the current year?

Third—What annual salary is paid to each of its general officers?

Fourth—What is the actual paid-in cash capital, including the plants turned in at their real cash market value, and what is the present surplus fund of the company, including all individual profits?

The McKinley bill gives the sugar refiners an opportunity of collecting from the consumer a tax of one-half cent per pound upon all sugars above No. 16 Dutch standard and the consumption of all classes of sugar during the past three fiscal years aggregated 12,956,802,446 pounds, fully 9,000,000,000 of which were above this standard.

It follows, therefore, that the sugar trust and the independent refiners in the United States must have received over \$40,000,000 of the people's money, while the government got during the three years \$470,751. As your company asked continued favors, the propriety of supplying the country with the information asked herein will not be

questioned by so reasonable a man of business as yourself.

You are a Democrat, and will, I trust, join me in the hope that within a few years the present wretched system of taxing the people (under the misleading name of protection) for the benefit of private interests will be done away with entirely and forever. Yours truly, MICHAEL D. HARTER.

Michael has an Irish name, and his pugnacity in making the above inquiries and suggestions, is quite Celtic. Not unlikely, however, he will be made feel the weight of the sugar trust's disapproval of his presumption. If he shall find himself denominated a crank, an impertinent fellow, a jay without any conception of "business;" if he shall find his influence rapidly disappearing and a strong opposition developing in his district, he will possibly be able to trace all of these to the unfortunate day on which he presumed to ask an accounting for some \$40,000,000 of money per year legislated from the pockets of those who sweeten their coffee to the coffers of the sugar trust. Would that Ireland might send us more men as reckless as Harter.

RUSSIAN THISTLE.

Not many people know that the Russian thistle, the terrible pest for the extermination of which Congress has been asked to appropriate \$1,000,000, has gained a firm foothold in Kansas, but such is the case. There are many patches in Rawlins county, a few infested areas in Decatur and Norton counties and it recently appears that the pest has made its way into Phillips county. Secretary Coburn received from Logan, Saturday, for identification matured and growing specimens of a weed suspected of being the Russian thistle. A rather unscientific but wholly convincing examination leaves little doubt that the suspicions were well founded.

It behooves the farmers of Kansas, and especially of northwestern Kansas, to use all possible care to prevent the further spread of this terrible thistle, which is the bane of Dakota and Minnesota agriculture, and to take active steps for its eradication.

The weed was introduced twenty years ago at a point near Yankton and has been steadily adding to its domain since. An extensive bulletin just gotten out by the United States Department of Agriculture gives a map showing the reported distribution to extend over the east end of the Dakotas, northeastern Nebraska and northwestern Iowa, with small spots all over the Dakotas, Nebraska, Minnesota and Wisconsin. No mention is made of the thistle in Kansas, but it is here, just the same.

The Russian thistle very closely resembles the common "tumble weed," but is more spinous. In fact it is a tumble-weed of the worst kind. When it breaks off at the root late in the fall, it rolls away in the wind at a rapid rate, scattering its seeds upon every rod of ground over which it travels. Well-grown plants in the Dakotas are said to reach four and five feet in diameter, and even more in exceptional cases. The prickly branches are so dense that it is impossible to pass one's hand to the interior of the bushy plant.

The technical name of the pest is *Salsola kali*, and it is briefly described as follows: Herbaceous, annual, branching from the base, usually densely bushy at maturity, leaves alternate without stems, long, spiny-pointed, and with narrow margins near the base, usually striped with red like the stems; flowers minute at the base of the leaves, without sepals or petals. It blossoms in July and August and its seeds mature in September and October.

The extermination of the Russian thistle demands that it be smitten hip and thigh by a sharp hoe in the hands of an active \$1.25 a day man. Digging it up seems to be the only way to fight it. If it is hoed or plowed up before it goes to seed it is likely to leave no posterity. To plow it under later than that is idle. It will take hard work to exterminate the pest. If raked with a horse rake or cut with a reaper some seed will surely be left to perpetuate the curse. Burning will not effect a complete eradication. Cultivating corn, potatoes and other root crops

serves to wipe it out if thorough work is done.

Bulletins bearing on the subject of the Russian thistle are No. 31 of the University of Nebraska at Lincoln, and No. 15 of the Division of Botany, United States Department of Agriculture, Washington, D. C. Either of these bulletins will be sent free to applicants. Every farmer in Kansas should have one or both.

POISON FOR NATIVE HOPPERS.

In a recent number of the KANSAS FARMER appeared an account of the use of white arsenic for grasshoppers, from a bulletin of the Texas Experiment Station. Considerable inquiry failed to give any information as to the use of this remedy for the native hoppers, which frequently do considerable damage in all parts of this State, and especially in the western half and in Colorado. They become very numerous and especially troublesome to growing crops during dry weather such as has prevailed over considerable areas during the present season.

Recent observation has shown that they have a special fondness for the rich, green and tender alfalfa. Senator Armstrong, of Great Bend, had, this season, a fine field of alfalfa and was saving the first crop for seed. The native hoppers made a raid on it and, before Mr. Armstrong was aware of it, had completely devoured everything except the stems. W. M. Morris of the same neighborhood had a fine stand of young alfalfa of last spring's sowing which has been entirely denuded of leaves. Many others have had similar experiences. So fond are the hoppers of alfalfa that they damage it greatly in the shock if left standing for a few days. Amos Johnson, of Barton county, had cut a field of alfalfa for seed. This was cut and bound with a binder and shocked like wheat. The hoppers damaged it considerably by eating the smaller stems and letting the seed pods drop.

The writer expects to sow alfalfa during the summer and fall, so that this grasshopper experience appeals with unusual interest to him. He therefore determined to try the Texas station method in a small way.

Six pounds of wheat bran, one pound of sugar and a pound of white arsenic were procured and a mixture was made, adding enough water to make it stick together and work readily into balls. These balls, which may be quite small, were placed at intervals of six feet around a stack of headed wheat which stood in the edge of the prairie grass and appeared to be literally alive with hoppers. The balls were placed at about 7:30 o'clock Friday morning. No effect was noticeable by Friday evening. On Saturday morning the hoppers seemed to be rather less numerous, but one could not be sure that there was any considerable decline in their numbers. By Saturday noon they were noticeably much decreased and a little examination disclosed very many dead hoppers around the stack. Both hoppers and crickets were seen to eat greedily of the poisoned balls at every observation.

The writer was obliged to come away at noon on Saturday, and the poisoned bran was taken up. There seems, however, to be little room for doubt of the effectiveness of the remedy. It can probably be best applied as a defense against the invasion of a newly-sown field of wheat or alfalfa. The expense of placing a double row of poisoned balls along the exposed edge of a field, and of re-wetting and re-working these once in two days, need not be great. White arsenic is very cheap. The writer paid 10 cents for a single pound. It should be much cheaper in larger quantity.

There are several methods of dealing with the troublesome native hoppers. These will be given in the FARMER at an early date. It is safe to say that no crop need be lost on account of hoppers by the farmer who informs himself of all the methods and uses due diligence in the application of that which his good judgment shall indicate as the best for his case.

Get up a club for KANSAS FARMER.

WHEAT.

To sow or not to sow, is, with some farmers, the question. To sow little or much is the debate in the minds of others. To sell, to feed, or to hold is still open for discussion as to the crop just harvested.

The answer to all of these depends upon the prospective price of the great bread-making grain. The same questions were confronted a year ago, and the results have not been satisfactory to those who presumed upon an advance in price. Speculative prices at Chicago on July 18, compared with those of last former dates as follows:

	July.	Sept.
July 18, 1894.....	55	56 1/4
July 11, 1894.....	56 1/2	58 1/2
July 4, 1894.....	58	60 1/2
Corresponding date a year ago.....	63 1/2	67 1/2

To this it may be added that the closing price for No. 2 wheat on the first mentioned date for December delivery was 59 1/4.

It is not well to be led blindly by the Chicago speculative market in questions of farm policy and management, but it must be remembered that the Chicago market is in the hands of cold-blooded calculators who care nothing whether prices are high or low, but only to arrive at correct estimates of the probable future figures. It is possible that the major part of the influence at this time of year favors the view that prices will be low, even to the placing of erroneous constructions upon reports of conditions. But in the main, the Chicago grain speculator takes great care to be informed of the probable course of the market. He has often been mistaken, to his cost, and has taken occasion to improve to the utmost his methods and agencies of obtaining information so as to avoid the liability of being caught again on the wrong side of speculative deals. A year ago he bought and sold at prices which broke the record. He is now trading at prices which are 8 to 9 cents below those of last year. There are large amounts of wheat held in Chicago and those who have their money in this are doing everything in their power to secure advancing prices. But in spite of all this the decline continues unabated.

This is not pleasant reading, but yet it is better to look at the cold facts as nearly as they can be learned than to deceive ourselves with false hopes.

But if we conclude that the "bears" are running the Chicago market and that they are making an artificial situation in this country, we may well look abroad and see how foreign markets are going. The *Miller's Gazette*, of London, England, in its issue of July 11, says:

"Off the coast two cargoes of Australian have been sold at 22s. 9d. to 23s. 9d., [per quarter, 8 bushels], and the same price is bidding for others; whilst Californian, for which 24s. to 24s. 3d. is asked, has buyers at 23s. 6d. to 24s. River Plate cargoes, of which the choice off the coast largely consists, and the quality of which varies considerably, are held for 20s. 9d. to 22s. 6d., with buyers at 20s. to 22s., according to sample. For arrival there are practically no sellers of either Californian or Australian wheats for shipment, but River Plates on passage offer at 20s. 3d. to 20s. 6d.; June, July at 20s. 9d., and July, August, and August, September at 21s. 3d. to 21s. 6d.; but buyers do not seem at all disposed to make bids for these cargoes. American parcels to London are very quiet; some Hard Manitoba, just shipped, found a buyer on Wednesday at 24s. 10d. Indian wheats are not forced upon the market, but the demand very slow; some No. 2 Club Calcutta is on passage (tenderable) has been done at 23s., and some Soft Red, also on passage, at 21s. 6d. Sellers of Choice Kurrachee July, August to Hull, ask 22s. 6d., and for Ordinary Whites 21s. 9d. is wanted.

"In the country markets English wheat is very scarce, but meets with little inquiry; but foreign, under the influence of fine weather, has been generally 6d. [1 1/2 cents per bushel] cheaper."

Coming back to our own country, the reports of the Department of Agriculture for 1893, gave 396,131,725 bushels as the aggregate of this country's

wheat crop. For the present year's crop the aggregate estimate is 392,885,000 bushels. The amounts in store and elevator on the first of July were, for 1893, 62,316,000 bushels, and for 1894, 54,657,000. Allowing that the amounts in farmers' hands were about the same this year as last, the total stock available as per these government estimates is about 10,000,000 bushels less than last year. According to the estimates of the Treasury Department the population to be fed will be about 1,500,000 more this year than last. Estimating that these will consume five bushels per head, and that requirements for seed and exportation will be the same as last year, we shall reach the end of the present cereal year with reserves diminished by about 17,500,000 bushels, which will leave in sight about 34,000,000 bushels, besides a stock in farmers' hands as large as that of the first of the present month.

Full crop reports from foreign countries have not been received. There is, however, no impending apprehension of foreign shortage like that which gave life to the wheat market three years ago.

The KANSAS FARMER is, on account of its subscribers who are largely wheat-growers, interested in favor of higher prices for this cereal, but it owes to its patrons, first of all, accuracy in presentation of facts and fairness in their consideration.

The question of sowing must be answered soon. It will be determined by some with little reference to the market prospects, and determined affirmatively because at almost any price it is the best crop which can be produced on some of the wheat lands of this and other States.

To all wheat-growers, whether they must or may choose between it and some other crop, the question of the best form in which to market the wheat is an important one. Until recently, it has been supposed that it must sooner or later be made into flour, and that to feed it would be a serious waste. The accuracy of this assumption has of late been challenged, and the practical test has shown that at present prices for grain and meat it is as profitable to convert the wheat into pork as to sell it in the bushel.

It is conceded, from the feeding experience of the last year, that wheat produces more meat than can be made from the same number of bushels of corn. The usual estimate of the returns from judiciously feeding sound corn to well-bred hogs is ten pounds of hog for a bushel of corn. The ratio for wheat is not so well established, but has been stated as high as 12.49 pounds of hog per bushel of wheat. Doubtless the best results can be obtained by combining wheat and corn in the ration. If we adopt the conservative estimate of eleven pounds as the product of feeding a bushel of wheat we may easily determine what wheat will bring when fed to hogs. Thus: Last week's Chicago quotations on hogs were \$4.90 to \$5.10 per 100 pounds, averaging, say, \$5. To make this 100 pounds of hog required, according to the estimate given, about nine and one-tenth bushels of wheat. The price received for the wheat was then $\$5.00 \div 9.1 = \0.55 per bushel. Chicago quotations last week were, No. 2 red, 56 cents, No. 3 red, 51 cents, No. 2 hard, 54 cents, No. 3 hard, 53 cents. It therefore appears that at Chicago the prices of wheat and hogs were nearly in accord. For farmers in Kansas the method of feeding has the advantage of reducing the freight charge by about converting five-and-a-half pounds of wheat into one of live stock.

If the price of wheat continues to decline, and hogs continue at or near the present figure, farmers will do well to feed liberally from their wheat. This will have the added advantage of reducing the surplus of wheat.

Should hogs bring in the local market, say 4 cents per pound, the price which this will represent for a bushel of wheat may readily be found by remembering that approximately each bushel of wheat represents eleven pounds of pork. Thus, $\$0.04 \times 11 = \0.44 cents per bushel for the wheat.

No doubt wheat should be ground before feeding it to any kind of stock.

Further experience is wanted to accurately determine the feeding value of wheat.

The Future of Wheat.

Statisticians have tried to prove that within five years the value of wheat would be at least \$2 a bushel, and that this price would be reached by gradual advances from now onwards, until the consumption of it would overtake the production and then surpass it, thus giving the wheat-grower the absolute command of the markets of the world. It is doubtful if any farmer was deluded by this roseate view of the position of the wheat-grower, for every intelligent person knows that the reserve of land suitable for the culture of wheat within the boundaries of North America alone is sufficient to more than double the present product, without even any improvement in the cultivation of this crop. And certainly every farmer knows that if the right methods were taken the present product might be easily doubled without adding a single acre to the area now under this crop. For, while the average product of wheat is not more than eleven or twelve bushels per acre there are many farmers who produce three times this yield, and what these farmers are doing others may and can do if they will only use the same methods.

But if we look abroad we find the very same conditions prevailing over enormous areas of territory suitable to the growth of wheat. There is that vast stretch of fertile land known as the Northwest Territory of Canada, and which is only now being simply touched by the plow, but when fully occupied may produce not less than 2,000,000,000 bushels of wheat, which is about the whole product of the world at this time. The farms of Europe may be wholly left out of the calculation, and only the at present undeveloped fields taken account of. And these will include Australia, a greater part of Africa, and the vast area of Argentina just now opened to this enterprise, with other parts of South Australia that will yield the best quality of this grain; and, to make our story as short as possible, we may confine ourselves to Argentina alone.

Here are 240,000,000 acres of fine wheat lands, that two years ago no one thought of as wheat exporting territory. Indeed only a few years back this great country procured its supply of wheat and flour from the United States, but last year it exported 20,000,000 bushels as a beginning, and the present season expects to have a surplus of 50,000,000 bushels for export. And by the use of the most improved machinery and large enterprise, wheat is now grown at a good and indeed attractive profit for 25 cents a bushel, which is about the cost of it in the Canadian Northwest Territory and the Dakotas. At only ten bushels an acre here alone is a doubling of the world's product. At the present time Canadian wheat is being carried from Winnipeg, in Manitoba, to England for 28 cents a bushel, and the wheat of Argentina can be laid down in the same market for 50 cents a bushel. Considering these vast fields and their possible, not to say probable or certain, products in the near future, what is then the position of the American farmer? He must grow wheat, or change entirely his rotation and system of farming. The pivot on which his rotation revolves is wheat, and he cannot abandon it. Then he must make up his mind to compete with these foreign wheat-growers and meet them on equal terms. And doubtless he will be able to do this and produce this grain for 25 cents a bushel, when he adopts the indispensable improved methods of culture by which the yield may be made to reach forty bushels to the acre. And this seems to be the present view of the future of wheat that must be taken, and indeed that presents itself to the American farmer. —Henry Stewart, in the *American Agriculturist*.

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Horticulture.

English Walnuts Not Hardy.

EDITOR KANSAS FARMER:—Will you be so kind as to answer the following questions in your valuable paper: (1) Can any one give me some experience in growing English walnuts in this State? (2) Where can stock be obtained, or the nuts that will grow? Please state if can be grown at all. Riley, Kas. A SUBSCRIBER.

This inquiry was referred to Prof. Mason, who kindly furnishes the following:

In reply to the above I will say that the English walnut so called, *Juglans regia*, is a native of Persia and is semi-tropical in its habits. While in the "Proceedings of the American Pomological Society" it is recommended for culture in several States, it has only been made a practical success in southern California. A number of these trees were placed in the trial grounds of the college several years ago, and while they made a vigorous growth during the summer, they were killed to the ground during each winter for several years, when they finally died. They will have to be classed with many other desirable trees and shrubs, not able to endure the vicissitudes of a Kansas winter. S. C. MASON.

Care of Orchards.

EDITOR KANSAS FARMER:—Enclosed find \$1 to renew my subscription. I would like to ask through your valuable paper about the care of orchards, six and seven years old. Is it better to plant something in it, or to plow and cultivate without sowing any grain? I would also like to know about topping back peach trees. JAS. W. HOWE. Wichita, Kas.

The practice of orchardists varies greatly. It is generally agreed, however, that grain should not be planted in a bearing orchard. A practice with some of the most successful orchardists is to sow the orchard to clover and cut this up into short lengths on the ground with a roller with knives in its circumference reaching from end to end of the roller. The clover, and whatever weeds there may be, remain on the ground for mulch. An Eastern peach-grower gives the following method:

"The soil is plowed in the spring and kept loose with the cultivator until August, when the season of rest begins. Work after this will induce a late growth and the trees will be winter-killed. Last year we fed the 1,400 trees with 1,000 pounds of ground bone and 500 pounds of muriate of potash. In May we trimmed the trees and headed in the tops from four to six inches. This was to prevent their growing out of reach and to increase the fruitfulness. At the same time we pinched off all the fruit buds, except four or five on each branch. This is to increase the size of the fruit and to save the trees from injury in being overburdened. In harvesting the peaches we handle them as carefully as we would eggs, and sort into first and second grades."

Shade Trees.

EDITOR KANSAS FARMER:—There are differences of opinion regarding shade trees, especially by the sides of highways. There are those—but it is to be hoped that they are but a small minority—who are utterly opposed to the planting of trees by the sides of highways, and who, if they possessed the power, would not only destroy those that have been planted in the past, but would prevent such planting in the future. It would seem as though such persons had little conception of the economy of nature. So long as animal life exists upon the face of the globe, vegetable life becomes a necessity for the purification of the atmosphere. Air that has been inhaled and passed through the lungs, becomes impure as it is exhaled, being heavily charged with carbonic acid gas of a decidedly poisonous nature, but this is taken from the atmosphere in turn by trees and plants, and so an equilibrium is maintained.

While it may not be desirable to have a dwelling so enclosed by shade trees as to exclude sunlight, there is a degree of comfort that comes from a refreshing shade that with many can-

not be resisted, and so shade trees are found to occupy places around the home and upon the farm.

What is comfortable to man in this direction is also comfortable to beast, and to see a pasture devoid of shade of any description in which animals can take shelter from the rays of a scorching sun, is little less than inhuman, and yet one farmer stated that if there were shade trees under which milch cows could lie in hot weather, they would not feed as they ought and so give less milk. That is a selfish side of the question and one of which any one ought to be ashamed.

Upon the question of comfort, trees upon the sides of highways enter largely as a factor. Travel upon highways is a necessity, and when the sun is high in the heavens, sending to earth its scorching rays, how many a traveller on passing into the shade of trees set by the highway, with a sigh of relief, has blessed the benefactor that planted them there. Nor has the change been felt only by the human traveller; the faithful and ever-patient horse joins in the enjoyment as fully as his driver.

A writer has said: "It is a well-known fact that trees along highways, trees in towns and cities, trees in groves amid agricultural regions, render the atmosphere purer. They, by their foliage, absorb hurtful gases, which would otherwise be breathed by the inhabitants of the densely populated cities, thereby modifying diseases, lessening the dangers of epidemics, and in all ways improving the healthfulness of communities." With that view of the case these are reasons why shade trees should be planted, and it is because of this that village improvement societies are organized, and that Arbor day has come to be a holiday, giving encouragement to the more general planting of shade trees.

A shade tree becomes a dear friend, and as years advance and the thought of cutting one is expressed it is not strange that the lines of the poet rush into the mind:

"Woodman spare that tree;
Touch not a single bough;
In youth it sheltered me,
And I'll protect it now."

WM. H. YEOMANS.

Columbia, Conn.

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Our Native Fruits and Their Improvement. Excerpt from graduating thesis of Walter Harding, of Manhattan, delivered at the Agricultural College commencement, 1894.

The subject of fruit will never cease to be of interest to mankind until that day when, chemists tell us, we shall extract the nutriment directly from the soil. But even when that far-distant time does arrive, it is doubtful whether man will forego the innocent pleasure of cultivating fruit and enjoying the delicious product.

To be sure, large quantities of fruit are raised, and yet who has not had cause to regret that so little falls to his share as each succeeding year throws greater obstacles in the path of successful fruit culture? Cannot some one suggest at least a partial remedy? It has been done. Already the market is familiar with fruits that, through their comparative immunity from ills to which others succumb, are rapidly replacing them. Whence come they? From hill and valley, from grove and glade, from all parts of our broad land. They are the native fruits. Meeting the introduced species, in open contest, by reason of their superior vigor and hardiness, they are driving out these former occupants of orchard and garden. Nor is it surprising. The fruits of the old world originated there—not in their present condition, by any means, but plainly marked out by nature for cultivation. They were cultivated, and, being suited to the country of their nativity, they developed into those triumphs of horticulture with which we are familiar.

Now, just as it was possible there, so it will be possible here. Extraordinary

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strength and vitality are characteristic of the native fruits. For centuries they have struggled with adverse elements, seeking to discover their proper relations, and from this adjustment and difficulties mastered comes the sturdy, self-reliant qualities they display.

When the fathers had a new country to subdue, little attention was paid to the wildlings. It was simpler to bring from the mother country something that would answer their purpose. But now the native grapes and plums have long played an important part in their respective spheres. The European raspberry, blackberry and gooseberry cannot compete with our own, and so far as other natives have been tested the prospect is equally brilliant. Soon neglected but valuable fruits, such as the papaw and the persimmon, will find a place in our gardens, and then our horticulture will be distinctively American.

But how are our fruits being prepared for these positions? All over the land are men engaged, like Munson, in discovering the possibilities and bringing out the good qualities of the natives. They select the best of the numerous wild varieties of each species, plant and care for them, and they require their labor by an increased yield. By selecting seed from the most promising, and continued selection in the direction of the greatest possibilities, they gradually approach their object. But this is too slow; so, frequently, instead of depending wholly on natural variation, they cross-fertilize, and immediately the tendency to vary is increased and the range of selection widened. Moreover, certain laws of hybridization are known, and by judicious selection of the parents the variation may be directed along particular lines. This reduces the question of improvement from generations to a few years.

Then let us improve in every way the fruits we already have, and fill every niche a new fruit may occupy by some one of our many natives. Let me add, as E. S. Goff does: "Do not say we already have enough delicious fruit; the field of the horticulturist is to develop to the utmost all wholesome fruits that can please the palate."

Missouri State Horticultural Society.

Following is the fruit report of this society for July, 1894:

The strawberry has not averaged more than half crop.

The raspberry has been much better than expected, because of the late rains but has been nothing like a full crop.

The blackberry is now being marketed, and the crop is a very full one.

The plum (Wild Goose) is now ripening, and in all the central and northern part of the State the crop is an abundant one.

The peach crop is a failure.

The cherry has been an abundant crop in the central and northern part of the State, and prices have been good.

The pear crop was badly injured in all parts of the State and there will not be many to market. The Seckel seems to have the best crop.

The grape never was in better condition than at present. The vines are loaded with fruit wherever they were not injured by the early frost. We may be sure that there will be an abundance of grapes if the rot does not injure them yet. Local hail storms

have injured the apple and grape crop to a slight extent.

The apple crop, the most important of our country, will still hold out its promise of a fair crop in most parts of the State. Many orchards are as full as they should be under any circumstances. As heretofore stated, the young orchards, of six to nine years, will have a very light crop, and hence will be a disappointment to many who were expecting a crop from their beautiful young trees. These trees included in the per cent. makes this report less than it otherwise would appear, but they are better off without the crop, and are preparing well for a good setting of buds next year.

Young orchards of one and two years planting have been very badly injured in the southern part of the State by the seventeen-year locust, notably those planted last spring.

All orchards are in good condition and making a healthy growth, so that they will mature well what fruit they have and be ready for next year in good shape. The fruit never seemed better or more perfect than now, nearly free from insect pests and scab, so that, if nothing further happens, the fruit will be remarkably perfect. The Janet and Ingram are full wherever the trees are in good condition.

The following report by counties will give the average per cent. of the reports of five hundred replies.

The northern part of the State will have a good crop, the central portion a fair crop, the southern part a small crop and the eastern, from St. Louis to the south line of the State, a very small crop.

The healthiness of the orchards, the fine growth and freedom from insects, scab and rust are putting the orchards in better shape than for the last three years, and prospects are bright.

Trees that have been sprayed from one to three times already show by their perfection and increased size that it pays to spray.

L. A. GOODMAN, Secretary.
Westport, Mo.

It is your duty as well as privilege to look young as long as you can. One way to do so is by dressing your hair with Ayer's Hair Vigor. It causes the hair to retain its color and fullness to a late period of life, and keeps the scalp in good, healthy condition.

Climate and Crops Just Right.

Oklahoma has thousands of acres of the finest farming land in the world, waiting for you or anybody else with a little cash and lots of gumption. Climate crops are just right. Farms will cost more next year than this. To find out if this is the country you want, ask G. T. Nicholson, G. P. A., Santa Fe route, Topeka, Kas., for free copy of Oklahoma folder.

Its either Direct Legislation through the INITIATIVE and the REFERENDUM or another Revolution. Which shall it be? For books, information and plan write W. P. BRUSH, Topeka, Kansas.

BOOKKEEPING. 10 cts. ONLY. Easy home study. Wonderful book positively self-instructive. 10c. mailed. Advertisements pay us, otherwise actually worth \$5. MACNAIR PUB CO., Detroit, Mich.

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Secures detailed information regarding recent offers made by the
Bureau of Immigration,
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In the Dairy.

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

Salt Makes Milk.

Experiments have recently been made to ascertain whether the giving of salt to dairy cows has any direct bearing on the supply of milk, and the results have been of a character which will be surprising to many who attach little importance to providing salt for the cattle. Salt they must have in some form or another, and if it is supplied to them in suitable quantities, the milk will be of a better quality and more abundant.

The next thing I desire to say about sections is, use them by all means. If your hives are not so arranged that you can use them, get some hives that are made for the use of sections. Having concluded to use them, put them on the hive at the proper time. A great many neglect the bees until the main honey flow is over, and then if by chance they discover that the bees have everything full below, they rush off to some dealer and get a lot of sections, after which they wait and wonder why their bees will not work in the sections when neighbor Brown's bees have all of the sections on his hives full of honey. The time to put on the sections is early in the season, or about the time the honey flow begins, and not after it ends. This, of course, makes it necessary for the bee-keeper to know from what flowers the bees gather the surplus honey, and also to know when these flowers begin to bloom. If one is not disposed to take the pains to gather this information and act upon it, he would better not try to keep any bees, as he is sure not to get anything out of them.

However, putting on the sections at the right time is not all the secret of neighbor Brown's success. He not only put them on at the right time, but he prepared them properly before he put them on. Many farmers who have been used to the old-fashioned box hives with their surplus arrangement that would hold from forty to fifty pounds of honey treat the sections in the same way that they have been treating those boxes. They seem to think that all that is necessary is to put the sections on the top of the hive and the bees will go up and fill them full of fine snow-white honey at once. They will not do anything of the kind.

Foundation is an invention of modern apiculture. It is simply sheets of beeswax.

"The increase in fat is not due to the oils but to the unnatural character of the ration."

"The results in this experiment tend to confirm the conclusions expressed in previous bulletins from this station, that the composition of a cow's milk is determined by the individuality of the cow, and that although an unusual food may disturb for a time the composition of the milk its effect is not continuous."

The Chemist and Oleo.

During the Herkimer County (N. Y.) Farmers' Institute, as reported by Mr. Jennings, the discussion turned upon keeping oleo out of the State. A farmer arose and said: "I do not believe the people have a moral right to prevent the sale of a food which chemists say is a wholesome article," etc. There is a point right there which is the key to the whole framework of misunderstanding on this question and which accounts for the lack of feeling against the fraud which so many farmers exhibit.

The oleo manufacturers have been cunning. They are rich, and they employ chemists to tell the public just what they want told. Now, in the first place, the chemist is not the proper judge of what is wholesome. As we said on this question years ago, "Chemistry never discovered a poison. Chemistry never discovered that arsenic or strychnine were poisonous. It required a stomach to find that out. A good specimen of swamp peat will analyze as rich in digestible nutrients as the best clover hay. Yet will any man believe that the swamp peat would

prove digestible or wholesome to the cow?" It is just so with this indigestible stuff called oleomargarine or butterine. Cow butter is designed by nature as food. Consequently it melts in the stomach at the heat of the body and passes readily into pancreatic emulsion and digestion. The substitute stuff is composed of cotton seed oil and raw animal fat, and its melting point is about 105°. The consequence of this is that it remains in the stomach until finally expelled by gastric action. This excessive gastric action reduces the nervous force or tone of the stomach, and this fact has been clearly noted in European hospitals. For this one reason alone, saying nothing of many others, the stuff is indigestible and unwholesome. For men to say that they prefer good oleomargarine to bad butter is no argument. As well to say that we prefer a fine portrait to a bad woman. No one need be deceived by poor butter. It invariably advertises itself. Not so with oleomargarine or butterine. It is put up to deceive; colored to deceive; named, packed and sold to deceive; and its true character as to its wholesomeness is withheld from the people. Its manufacturers buy up the metropolitan press so that consumers shall not know the truth about it; buy up eminent chemists so the people may be misled concerning its digestibility; buy up members of Congress and State legislators to prevent just legislation. All this the oleo interest does in its effort to deceive the "very elect." Is there any wonder that it has succeeded as well as it has?—*Hoard's Dairyman*.

SPECIAL FOR JULY.—For new subscribers, both the KANSAS FARMER and the Topeka Weekly Capital, to January 1, 1895, for 50 cents, club-rates to keep half the money.

SPECIAL FOR JULY.—For new subscribers, both the KANSAS FARMER and the Topeka Advocate, to January 1, 1895, for 50 cents, club-rates to keep half the money.

Cheese-Making Process for Producing a Fine Cheese From Skim-Milk.

For a number of years it has been a well-known fact that that peculiar chemical process known as the cheesy fermentation will not readily go on without the presence of fat, and that the larger the proportion of fat in the milk, the more rapidly the cheesy fermentation proceeds. In skim-milk the fat has been in large part removed and it is necessary in making cheese from it to make the other conditions upon which the cheesy fermentation depends as favorable as possible, thereby making up in large measure for the loss of fat. But the presence of fat is not the only essential condition necessary for the production of the soft, salty condition of rich cheese. It also depends upon the extent of the cheesy fermentation, the change which distinguishes cheese from pressed curd. When this change can be carried on to the extent desired, cheese from skim-milk assumes a rich appearance and becomes palatable and digestible.

The exact nature of this change and the time required to produce it, depend largely upon the treatment of the curd in the process of manufacture. In the ordinary skim-milk cheese made, the curd cures very slowly and imperfectly.

This process of making fine cheese from skim-milk consists in agitating or churning the skim-milk previous to the addition of the rennet to set the curd. This action is in the nature of a fermentative process. The small amount of fat in the skim-milk is rendered more active in the curing of the cheese, which process is sooner completed, and results in a better product. The churning must not be carried so far as to cause the fat to separate from the milk, for then, being less uniformly distributed throughout the liquid, its activity in promoting the cheesy fermentation both before and after pressing is reduced.

The milk after being skimmed can be put into a churn and churned, or it can be placed in the ordinary vat used for setting the curd and one or more sets of rotary paddles or stirrers attached to vertical rods descending from the ceiling and moved in any convenient manner, can give it the required amount of agitation. These paddles

are contrived so as to be removed from the vat when not in use. If the vat is large more paddles will be needed.

The same result is obtained by putting a part of the milk into the churn and agitating sufficiently by churning. It is not necessary that all the milk should be agitated, usually about one-third is sufficient. It must be remembered that this churning should not be carried far enough to separate the fat in any marked degree. This process also improves milk which has not been skimmed, making the cheese product ripen more rapidly and adding to its soft, salty state.—*Indiana Farmer*.

Dairy Notes.

During the hot weather churn at 58°. Flies are very troublesome, causing cows in many instances to fall off in milk.

Butter, to bring the highest market price, should have the regulation June color in addition to other good points.

Cream should always be well stirred twice a day. This helps it to ripen evenly and prevents white specks from showing in the butter.

Much of the butter this summer has been very light in color, showing that something is wrong in the most important stages of the work.

Store butter continues low. The price since the first of June has been from 8 to 14 cents. The former figure is below the actual cost to the maker.

It has been reported that some farmers are mixing tallow with their butter to help out on the price. Such butter is off in color and does not melt readily when exposed to heat.

When cold weather comes on, get a few bushels of wheat ground and try the experiment of feeding to milch cows. Statements were made last winter that wheat fed in this manner netted, in some cases, as high as 80 cents a bushel. If even 60 cents could be realized for 50-cent wheat it would pay to feed it in place of other grain.

The Poultry Yard

Feeding Hens.

The production of eggs depends more upon the care and proper feeding than upon the breed. It has over and over again been proved that the best laying strains will prove unproductive if ill or improperly fed—starved to-day and gorged to-morrow, given all soft food this week and all grain next. All the large and heavy breeds require careful feeding in the winter or they put on fat too rapidly on account of the small amount of exercise they take when it is cold. Plenty of oats and wheat, with corn in moderation, about twice a week, lean meat now and then, and abundance of green food always, is the best diet for Cochins, Brahmas, Langshans, Plymouth Rocks, etc.

The smaller and more active breeds require more soft and stimulating food than the heavier kinds. They will stand more corn and less oats and more meat, and, strange to say, if fed the same as the heavy breeds they will lose condition while the others are positively putting on fat, showing plainly the difference between a sluggish disposition and a quick, active one. The best time to give soft and stimulating food is in the morning, and as early as possible. One can often buy damaged oatmeal, peas, beans, etc., from the storekeepers, which are a great help in the poultry yard, for the fowls like change of diet, and are as much the better for it as we ourselves. Cooked vegetable peels and fruit parings mixed with meal, scraps of bread and some finely cut up grass or hay, and, if very cold, a few chillies or a teaspoonful of pepper makes an excellent morning meal.

Charcoal is a great aid to digestion and should always be placed within their reach. An excellent form in which to give it is as charred corn. Throw a dry cob of corn into the fire until the grains are well blackened, then throw it, without shelling, in to the fowls, and watch how they will pick at it.

I notice that most of the poultry journals advocate the use of plenty of

"For Years,"

Says CARRIE E. STOCKWELL, of Chesterfield, N. H., "I was afflicted with an extremely severe pain in the lower part of the chest. The feeling was as if a ton



weight was laid on a spot the size of my hand. During the attacks, the perspiration would stand in drops on my face, and it was agony for me to make sufficient effort even to whisper. They came suddenly, at any hour of the day or night, lasting from thirty minutes to half a day, leaving as suddenly; but, for several days after, I was quite prostrated and sore. Sometimes the attacks were almost daily, then less frequent. After about four years of this suffering, I was taken down with bilious typhoid fever, and when I began to recover, I had the worst attack of my old trouble I ever experienced. At the first of the fever, my mother gave me Ayer's Pills, my doctor recommending them as being better than anything he could prepare. I continued taking these Pills, and so great was the benefit derived that during nearly thirty years I have had but one attack of my former trouble, which yielded readily to the same remedy."

AYER'S PILLS

Prepared by Dr. J. C. Ayer & Co., Lowell, Mass.
Every Dose Effective

milk, both sour and sweet, for the poultry. I do not agree with them at all. Doubtless milk is excellent when sweet, and in the colder parts of the colonies the freshly-turned sour milk is good for them. But in the warmer districts I have found that sour milk is anything but beneficial, particularly for young chickens. It may be that the heat causes some chemical change to take place quicker in the hotter parts, but I know sour milk frequently causes diarrhea, and where much is given the hens lose color and get a yellowish or bilious hue, while the eggs become watery. A little thick milk once a week or so may do good, but where it is at all warm it should be given out soon after it has turned.

Sweet milk is excellent and chickens can never get too much of it, while mixed with oatmeal, pollard, etc., nothing is better for rearing young chicks.

Many people have asked me the difference between a poor egg and a good one, or an egg from a healthy hen and one from an unhealthy one. A proper egg, when broken, does not run all over the plate or have any watery, thin white. It retains its form, and offers resistance when whisked. The poor egg spreads at once and has a certain amount of thin, watery substance, which runs from it directly it is dropped onto the plate. When very poor, that is, from half-starved hens, the whites take a long time to rise or froth, and in some cases they won't rise at all. Many people are under the impression that all eggs are equally healthful and nutritious, no matter what the hens feed on. This is a mistake, I am quite certain, though I believe I am almost alone in my theory. It has been proved by actual tests that there is no animal whose stomach communicates quicker or more directly with its products than the hen. A whole bunch of eggs in embryo will become impregnated with the contents of the gizzard or stomach in twelve hours. Consequently the eggs from hens fed on filth cannot possibly be healthful. More than this, I believe medical men will yet find that the germs of disease can sometimes be traced to the eggs. There seems to be an idea among amateur poultry-breeders that the fowls do not require so much water during the winter. As a matter of fact they drink about the same quantity summer and winter.—*Mrs. Lance Rawson, in the Australian Agriculturist*.



The Family Doctor.

Conducted by HENRY W. ROBY, M. D., consulting and operating surgeon, Topeka, Kas., to whom all correspondence relating to this department should be addressed. Correspondents wishing answers and prescriptions by mail will please enclose one dollar when they write.

BAD EFFECTS OF TOBACCO.

Smoking and chewing, like malaria, alcohol, coffee, tight lacing, late hours, high-heeled French shoes and other debatable agents, do not affect all alike, and some devotees suffer so little from its use, and, within certain limits, even from its abuse, as to be practically exempt from harm.

I know a man whose pipe is seldom out of his mouth except when he is eating or sleeping, and another who lights one cigar by the stump of another all day except when eating, who, when he is where he cannot smoke is chewing, and habitually sleeps with a quid in his mouth, without any appreciable injury, and each of you knows robust and healthy lovers of the weed, leading active outdoor lives, who can smoke and chew any and every kind of tobacco, good or bad, with apparent impunity.

But, notwithstanding such exceptions, I am fully convinced that, as a rule, the majority of all who chew constantly or smoke more than two or three cigars or pipefuls of tobacco a day venture on dangerous ground.

THREE CLASSES OF SMOKERS.

For this reason I would divide the patrons of tobacco into three classes:

First—Those strong and healthy people who can use it, and, within certain limits, abuse it, too, without injury.

Second—Those who can use it in moderation, with little or no discernible injury, but suffer if they abuse it; and,

Third—Those to whom tobacco is toxic, who must suffer if they attempt to use it in any way at all.

The last two classes fall within the scope of this paper, and I have seen so many diseased conditions of the upper air passages created or made worse by it that I have little hesitation in attributing the existence of a considerable proportion of important throat and nasal diseases that increase or remain obstinate to the use of tobacco by these two classes.

We all know that nicotine and the dark brown empyreumatic oil produced in burning are tobacco's two most harmful ingredients, and that to this oil is due the stale, pathognomonic smell of the old pipe and of the stale stump.

Nicotine is present in about 2 per cent. in the mildest Havana tobacco, and ranges up to about 7 per cent. in the strongest Virginia.

Notwithstanding the fact that the properties of tobacco, chemical and physical, differ in chewing and in smoking, and also with the variety—and in smoking, also with the method—yet the pathological action of tobacco on the upper air passages is somewhat the same, no matter in what form its ingredients are brought in contact with them; but, as a general rule, smoking is worst, because tobacco, burning either in cigar, cigarette or pipe, not only imparts everything natural to tobacco, but also adds the oil and other products of combustion, and discharges them hot into the mouth and upper air passages, and the harder the burning weed is drawn in the more deeply these go, and thus the hot smoke, impregnated with nicotine and the oil, comes in contact with every part of the throat and nose.

A WORD ABOUT CHEWING.

The smoker takes in less of the nicotine but more of the oil, etc.; the chewer little or no oil, but more of the nicotine; but both chewing and smoking involve spitting or swallowing the saliva, and both impregnate all the fluids that come in contact with the mucous linings with tobacco. On the whole, however, I have seen chewing seriously affect as many persons as smoking, but were the mass of smokers to indulge that habit as constantly as the mass of chewers do, its ill effects on the smoker's air passages would be much more frequently seen, and we would much oftener find the mucous membranes of the patrons of the cigar, cigarette and pipe in a thoroughly diseased condition.

In chewing one escapes the empyreumatic oil produced in burning, which would always be terribly toxic to the mouth and upper air passages were it not for the fact that while smoking there is an abnormal secretion continually taking place from the relaxed mucous membranes, which, although it makes a good vehicle for conveying the nicotine, yet prevents more than a fraction of it from being absorbed by these membranes, the balance being either expectorated or swallowed, and we all know that spitting is a waste, and swallowing these tobacco-tinctured secretions, either to prevent waste of the saliva or because there is no convenient place to spit, is very harmful to the whole economy.

Of course, the one who both smokes and chews risks all the dangers that tobacco can present.

THE BEST PIPE TO SMOKE.

Whether the pipe, cigar or cigarette in-

stills most nicotine, and which is safest to smoke, are also questions of importance. Short pipes and thick, stumpy cigars are most apt to induce cancer, etc., and no habitual smoker should smoke his cigar down to the very end, but should throw the last third away, as analysis has shown that the arrested nicotine, nicotianin and empyreumatic oil are there, all thickly accumulated.

Using pipes with long stems and smoking all cigars and cigarettes through smokers enables the wise to escape much of the poison and heat, and robs smoking of half its harmful powers, and the later in the day one smokes or chews the less it injures, and the earlier in the morning the smoke or chew is taken the more it inhibits nerve power and nutritive activity; and further, no one should shut himself up in a small room at any time to smoke and create around himself a cloud of nicotine, for an increased amount of poison is then condensed on the delicate mucous membrane of the whole respiratory tract and is thence taken into the entire system.

Tobacco is a potent agent that certainly is capable of creating a cachexy that interferes with both growth and repair, and I find that all inflammatory affections and lesions of the throat and nose, and especially those of specific origin, are more persistent and recover more slowly in persons suffering with what I might call tobacco scurvy, and not only the specialist but also the general practitioner, knows how difficult it is to heal lesions, whether specific or benign, in the mouths, throats and noses of those who either chew or smoke excessively, or rub snuff; and a scratch, pimple, blister or wart, or a sore lip, mouth or throat, may be made cancerous by keeping it bathed in tobacco juice or smoke, especially if the person is suffering with chronic tobacco intoxication of his system.

(To be continued.)

August Notes.

Sow rye among the corn for winter pasturage.

In cutting the clover for seed handle as little as possible.

After plowing is a good time to haul out and apply manure.

Get the ground for winter wheat plowed as soon as possible.

Work the surface of the soil as fine as possible for fall wheat.

In nearly all cases early potatoes may be dug the last of this month.

In plowing under any green growth an application of lime will be of benefit.

As soon as corn matures sufficiently it will pay to commence feeding the pigs.

The best result in plowing under clover is secured when the plants are in full bloom.

Millet or Hungarian should be managed much the same as clover in cutting and curing.

It is often a good plan to push the feeding this month in order to have the stock fat reasonably early.

Old cows or old ewes should be fattened and marketed now as soon as they are in a marketable condition.

If there is sufficient moisture in the soil this is one of the best months in the year to set out strawberry plants.

This is one of the best months for cutting down sprouts, briars or shrubs when it is desired to kill them out.

Do not let the corn get too ripe before cutting. A good corn harvester will aid materially in lessening the work.

The less weeds that are allowed to mature seeds the less work will be required to give clean cultivation next season.

It is very often the case that it will be necessary to feed the milk cows this month if a good flow of milk is maintained.

Better sow a less acreage of wheat and have the conditions as favorable as possible rather than a larger acreage less carefully put.

It is nearly always best to commence feeding new corn lightly at first and then gradually increase as the stock get accustomed to it.

It is poor economy to allow the stock to pasture down the meadows or pastures too closely this month, as the grass plants may be entirely killed out.

As the season's work with much of the machinery is completed for the year, it will be found good economy to gather all up and after thoroughly cleaning to store under shelter.

On many farms this is one of the best months to build the necessary shelter for the stock next winter, as the work will interfere less with the regular farm work than later.

As August is usually a hot, dry month, care must be taken to see that the stock have plenty of good water. This is very essential if the best health and thrift is maintained.

This is a good time to select out and commence marketing all of the stock that it is not desired to winter over. In nearly all cases early fattening is the most profitable.

Eldon, Mo.

N. J. SHEPHERD.

Invest Your Savings Safely!

\$25 CASH and \$10 per month until paid, at lowest legal rate of interest, will buy CHOICE lots in my beautiful **AVONDALE** Addition, Spokane, Washington, at one-half their price one year ago, and way below their value at the present time. They will sell at **double** the price in two years, but I need money and will sell 100 lots and no more on above conditions and terms.

Population of Spokane about 36,000; good churches, fine schools, six railroads, gas-works, water-works, great water power, elegant street car service to all parts of the city, fine public buildings, in fact a city that is destined to be the metropolis of the great Northwest inside of ten years.

Avondale is situated within fifteen minutes' ride of the postoffice, on the best electric line in the city, and overlooking the beautiful Spokane river and valley, and full view of the distant mountains.

For prices and further information address my agents, **ARTHUR D. JONES & CO., Spokane, Wash.,** or **WILBUR E. CAMPE, Owner, Kansas City, Mo.**

The Millerite Scare of 1843.

That was a rather remarkable decade from 1830 to 1840, and it had considerable foundation to sustain the idea that unusual exhibitions in nature excite strange and abnormal mental phenomena. During this period there were great comets and grand auroras and altogether the most transcendently dazzling meteoric display of modern times was the famous "shower" that occurred on the night of November 13, 1833.

There were heated political campaigns in this stirring decade that fairly reached incandescence. The Mormon church took organic form and hurled itself into the religious mentality of the time as an organized force. Something in the mental soil seemed to favor new planets. The new faith, with its wonderfully grotesque features, prospered from the start and soon crystallized into a temple at Kirtland, O., which still stands as a monument of the peculiar growth of that era.

Soon after the brilliant meteoric shower, one William Miller, an honest-minded, smooth-shaven and strong-featured son of Vermont, allowed his mind to brood on the conviction that humanity was treading on the verge of the spiritual cataclysm, and, of course, began to prophesy. As already stated, the soil was in condition to receive such seed. Back in the other century had been the dark day, comets and magnetic storms came opportunely and Mr. Miller's prediction spread like a contagion. He was a total stranger to the higher mathematics and with its humbler brother, common arithmetic, he hardly possessed a nodding acquaintance, and the consequence was when he brought his unilluminated calculations to bear on the book of Daniel he worked up a line of such amazing conclusions that he was himself entirely carried away by the awful import and set to work to warn the world of the coming doom.

Yet he professed to be averse to doing this, but declared himself impelled by a force superior to himself. The close student of mental phenomena will have no trouble in diagnosing the peculiar ratiocination of Mr. Miller. The wild-fire spread. Not a section of country nor a rank of society escaped. The dwellers on the bleak hills and in the corn-laden valleys felt the infection. In the Northern woods, over the wide prairies of the West, on the smiling savannas of the South, and over the Puritanic quietude of New England spread the craze. The Mormons were rounding up the Latter-Day Saints and the omens on the sky were only too unmistakable. The man at his counter, at his mill, at his forge, on his farm, in the mine, the collegian, the unlettered backwoodsman, pulpit, rostrum, bench and bar, all responded to the "gathering in" of this sincere man's causeless panic. As the fateful November approached in many places business was suspended, property was disposed of, camp meetings were established, and preparations were made for the hejira to the New Jerusalem.

That blessed dispenser of our joys and instigator of many of our sorrows—woman—took a prominent part in these proceedings and left on the somber senses the still sunny imprint of her presence. The 13th of November came and went, as have fifty others since then, and while other woes have come the Millerite scare is almost forgotten.

Joseph Smith, Brigham Young and William Miller were all born in Vermont and each left a most remarkable impression on his time.—Chicago Times.

The larger grains of wheat sprout sooner, grow more rapidly and produce more than small grains. Careful seed selection is one of the surest ways to better crops.

A variety of grasses make better pasture than one, two or three, because they give a longer season. Try to have both early and late-growing sorts in the mixture when you seed.

If a hoe, fork, wagon wheel box or any iron article should come out, a good way to fasten it in is to take a rag, wet it in salt water, wind it around the iron and drive it into place. In a few days it will rust so it will stay.

had Tinting Colors, a one-pound can to a es time and annoyance in matching shades, wood, nts and color-card, free; it will probably

NATIONAL LEAD CO.

injured the apple and grape crop slight extent.

the apple crop, the most important our country, will still hold out its mise of a fair crop in most parts of State. Many orchards are as full they should be under any circum-

ances. As heretofore stated, the ng orchards, of six to nine years, have a very light crop, and hence be a disappointment to many who re expecting a crop from their beau- l young trees. These trees in- ed in the per cent. makes this re- t less than it otherwise would ap- r, but they are better off without

crop, and are preparing well for a d setting of buds next year.

young orchards of one and two years pting have been very badly injured he southern part of the State by

seventeen-year locust, notably se planted last spring.

ll orchards are in good condition making a healthy growth, so that y will mature well what fruit they e and be ready for next year in good

pe. The fruit never seemed better more perfect than now, nearly free m insect pests and scab, so that, if ping further happens, the fruit will e remarkably perfect. The Janet and ram are full wherever the trees are

ood condition.

he following report by counties will e the average per cent. of the re- s of five hundred replies.

he northern part of the State will e a good crop, the central portion a crop, the southern part a small crop

the eastern, from St. Louis to the h line of the State, a very small

p. he healthiness of the orchards should be a nice lawn. The farmer has the opportunity to excel in this sort of or- namentation.

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HOMES IN SO. DAKOTA AND MINNESOTA
FOR SALE \$5.00 to \$10.00 per acre.
10 years time, low int.
FARMS TO RENT OR EXCHANGE.
WE HAVE Rich soil, healthy cli-
mate, good schools,
churches and markets. Information and list of
farms free. **G. W. NARRENGAN, Aberdeen, S. Dak.**

The Apiary.

Edited by REV. E. T. ABBOTT, St. Joseph, Mo., to whom all communications relating to this department should be addressed. Inclose a stamp if you desire a reply by letter. We invite questions and communications from any of the readers of KANSAS FARMER who may be interested in bee culture.

Putting on Sections for Surplus Honey.

From facts which come under my observation almost every day I am led to offer a few suggestions on this subject. I may remark first, for the benefit of the reader who may not know what a section is, that this is the trade name for the box to be placed on top of the brood-chamber for the bees to store their surplus honey in, that is, the honey which is intended for family use or the market.

The next thing I desire to say about sections is, use them by all means. If your hives are not so arranged that you can use them, get some hives that are made for the use of sections. Having concluded to use them, put them on the hive at the proper time. A great many neglect the bees until the main honey flow is over, and then if by chance they discover that the bees have everything full below, they rush off to some dealer and get a lot of sections, after which they wait and wonder why their bees will not work in the sections when neighbor Brown's bees have all of the sections on his hives full of honey. The time to put on the sections is early in the season, or about the time the honey flow begins, and not after it ends. This, of course, makes it necessary for the bee-keeper to know from what flowers the bees gather the surplus honey, and also to know when these flowers begin to bloom. If one is not disposed to take the pains to gather this information and act upon it, he would better not try to keep any bees, as he is sure not to get anything out of them.

However, putting on the sections at the right time is not all the secret of neighbor Brown's success. He not only put them on at the right time, but he prepared them properly before he put them on. Many farmers who have been used to the old-fashioned box hives with their surplus arrangements that would hold from forty to fifty pounds of honey treat the sections in the same way that they have been treating those boxes. They seem to think that all that is necessary is to put the sections on the top of the hive, and the bees will go up and fill them full of fine snow-white honey at once. They will not do anything of the kind.

Foundation is an invention of modern apiculture. It is simply sheets of beeswax with the imprint of the cells in them. Some put full sheets of this foundation in the sections before they put them on the hive.

Others use only small, three-cornered pieces which are called starters. Now, there is no use to put sections on a colony of bees unless the sections contain full sheets of foundation, or starters, for in nine cases out of ten the bees will not go to work in them. If they do, they are almost sure to build the combs so crooked that the sections cannot be removed without breaking the combs. If one is producing honey for the market and wants to secure the largest possible yield, then it will pay under all circumstances to use full sheets of foundation. If one desires honey for family use only, and thinks more of quality than quantity, then starters will do. The surplus foundation comes in sheets about fifteen inches long and four inches wide. Cut a strip from this sheet about four inches long. This gives a square sheet of foundation. Cut this sheet into four three-cornered strips by cutting each way from the corners. Make up your sections and lay one of these strips flat down on the inside of the section, so that the edge to be fastened will reach a little beyond the center of the bottom of the section. Take a warm iron—a screwdriver is good—and rub this briskly until the wax adheres closely to the wood. Then set the section the other side up and turn down the starter so it will hang perpendicularly from the center of the section, and it is ready to put in the hive. It will be promptly occupied by the bees, if put on at the proper time,

and honey is coming in so that they have the hive full below. A cold iron can be used for rubbing the foundation if the iron is first dipped in a little honey to keep it from sticking to the wax. The operator should be careful not to get any honey on the section where he wants the foundation to stick, as the honey will prevent it from doing so. The honey is to prevent the iron from sticking to the foundation, and not to stick the foundation to the wood. The friction caused by the rubbing of the iron does this.

If sections are prepared in this way and put on at the proper time, and there is any honey flow in that locality, one is sure to be rewarded for his labor. In some localities it is too late for a honey crop this season, but in others the honey flow has not yet begun. Of this every one must judge for himself, as it all depends on the source from which the main honey flow comes.

North American Bee-Keepers' Association.

The quarter-centennial meeting of the North American Bee-Keepers' Association will be held in St. Joseph, Mo., October 16, 17 and 18, 1894. It is the first convention beyond the western banks of the Mississippi, and we hope a large delegation from the West will be present.

EMERSON T. ABBOTT, President,
St. Joseph, Mo.
FRANK BENTON, Secretary,
Washington, D. C.

"Pick-Ups."

Do not waste the wood ashes; put them around your trees. Do not waste anything that will help to improve the home in any way.

Never allow the trees, shrubs and roses that adorn the home grounds to become grass-bound. Use plenty of well-rotted manure, wood ashes or old leaves. It does them a world of good.

Japan snowball is a beautiful shrub, far surpassing our common sort in habit of growth and foliage, with a very fine flower. There are only a few of them in the West. However, when the plant becomes better known it will be seen in many homes.

Hydrangea-grandiflora is a grand shrub, with very large white and pink flowers, as large as the two hands. Blooms in August when flowers are scarce. Owing to the large number of flowers the plant should be supported during blooming time.

Improve the back yard. Plant a few shrubs and flowers for your own use. If they need a little attention a person can slip out in the back yard, look after plants, etc., when they would not think of going in the front lawns. A good rule is to plant something for the home folks.

Late fall is a good time to add some manure to the peonies. Frost has killed the foliage to the ground, and by enriching the ground in the fall the blooms will be more plenty and much larger next season. A row of peonies in full bloom is just about as fine as anything in the garden.

A nice way to improve bare, exposed places in the home grounds is to put up a heavy post, ten or twenty feet high, nail on strong cross pieces about three feet long every foot. Plant four sweet-scented honeysuckles; give them some attention, and in three or four years it will be completely covered, making one of the prettiest ornaments around the home.

Many stone houses and barns could be made beautiful by spending a very small amount of money and not very much time. Plant a few climbing plants. Virginia creeper and Ampelopsis Veitchii will cling to any kind of wall and can be trained to grow in almost any direction. A few years will change the homely stone building to a beautiful bower of green.

Topeka, Kas. GEO. W. TINCER.

Railroad Fares Reduced.

The Nickel Plate road has made material reductions in the fares to many points on that line, including Fort Wayne, Cleveland, Painesville, Ashtabula, Erie and many other Eastern points. Ticket office, 199 Clark street; depot, Twelfth street viaduct and Clark street, Chicago.

Chicago Horse Market.

Owing to the railroad strike the market was at a complete standstill for about two weeks, but since Friday, July 13, there has been light receipts, with a number of outside buyers here. On Saturday, July 14, F. J. Berry & Co. sold at auction eighty-five horses for \$5,942.50 and Tuesday 108 horses for \$7,697.50.

There is a strong demand and all classes of horses a quick sale. There is sure to be a brisk trade during the coming ten days or two weeks. It will be a good time to have horses on this market—probably better than later in the season. The late market quotations are: Heavy draft and expressers, \$80 to \$170; 1,100 to 1,300-pound chunks, \$70 to \$135; streeters, \$65 to \$85; chachers and speedy road horses, \$130 to \$250; ordinary drivers, \$75 and upwards. These prices are for sound horses, 5 to 8 years old, well broken and in good flesh.

In answer to many inquiries from those who have received one number of "Picturesque America," would say, that any subscriber who has sent us \$1 for subscription will receive three other numbers of the work from us upon receipt of one more dollar for a year's subscription for any one whose name you choose to send. By a little work in any locality several subscriptions can be obtained, and for each one, accompanied by a whole dollar, the sender will be entitled to receive from us three numbers of "Picturesque America." In sending to us always report what number or numbers you already have, and the numbers you claim.

Scrape off only the loose, rough bark of the tree.

Get up a Club for KANSAS FARMER.

MARKET REPORTS.

LIVE STOCK MARKETS.

Kansas City.

July 23, 1894.

CATTLE—Receipts, 5,649 cattle; 1,555 calves. Dressed beef and shipping steers, \$3 80@4 50; cows, \$1 50@2 50; bulls, \$1 50@2 20; heifers, \$1 00@2 20; stockers and feeders, \$2 65@3 15; Texas steers, \$2 90; Colorado steers, \$3 50@4 10; Texas and Indian steers, \$1 90@2 90; Western steers, \$3 50@3 60; Texas and Indian cows, \$1 25@2 85; Texas and Indian calves, \$2 50@3 00.
HOGS—Receipts, 3,749. Market steady and firm. Heavy hogs, \$4 50@5 00; pigs and lights, \$4 25@5 00.
SHEEP—Receipts, 834. New Mexico, 75c@82 10; stockers, \$1 75; culls, 75c; lambs, \$3 50@4 10.

Chicago.

July 23, 1894.

CATTLE—Receipts, 11,000. Market active. Texans steady. Some Westerners at \$3 95. Beef steers, \$3 75@4 75; stockers and feeders, \$2 00@3 10; bulls, \$1 85@3 00; cows, \$1 00@3 00.
HOGS—Receipts, 33,000. Mixed, \$4 80@5 10; heavy, \$4 80@5 20; light weights, \$4 80@5 20.
SHEEP—Receipts, 7,000. Steady. Natives, \$1 50@3 25; lambs, per cwt., \$2 50@4 40.

St. Louis.

July 23, 1894.

CATTLE—Receipts, 2,600. No good natives; Texans steady. Texas steers, \$3 25; native steers, common to best, \$3 50@4 25.
HOGS—Receipts, 2,200. Top, \$5 10. Bulk, \$5 00@5 05.
SHEEP—Receipts, 300. Market slow. Natives, \$2 00@3 25.

GRAIN AND PRODUCE MARKETS.

Kansas City.

July 23, 1894.

WHEAT—Receipts for forty-eight hours, 135,000 bushels; last year, 73,900 bushels. The market is still a bearish one. Liberal receipts everywhere, a light export movement and lower foreign markets enabled buyers to squeeze prices off again, but at the decline there was a liberal movement both on milling and export account. By sample on track on the basis of the Mississippi river, local 6c per bushel less: No. 2 hard, 20 cars 59 to 61 pounds at 50c, 16 cars 60 to 63 pounds at 50c, 26 cars at 49½c, 8 cars at 49c, 3 cars poor billing at 48½c; No. 3 hard, 2 cars choice at 49, 1 car at 48½c and 2 cars at 48½c; No. 4 hard, 2 cars at 48c; rejected, 1 car at 40c; No. 2 red, 18 cars 60 to 62 pounds at 50½c, 7 cars at 50c; No. 3 red, 8 cars at 49c, 1 car at 48½c, 1 car at 48c; No. 4 red, 1 car at 47c, 1 car at 46c.

CORN—Receipts for forty-eight hours, 51,000 bushels; last year, 63,000 bushels. Demand very good both for mixed and white, local dealers and order men both buying. By sample on track: No. 2 mixed, 8 cars at 35½c, 2 cars at 35½c, 18 cars at 36c; No. 3 mixed, 2 cars at 35c; No. 2 yellow, 2 cars at 36c; No. 2 white, 6 cars at 36c and 2 cars special billing at 40c; No. 3 white, 38½c@39c.

OATS—Receipts for forty-eight hours, 23,000 bushels; last year, 25,000 bushels. By sample on track: No. 2 mixed, 1 car at 26½c, 3 cars at

26½c, 2 cars at 26½c; No. 3 mixed, 2 cars at 26c; No. 4 mixed, 2 cars at 24c; No. 2 white, 28c@28½c; No. 3 white, 27c@27½c; No. 4 white, 25c@26c.
RYE—Receipts for forty-eight hours, 1,200 bushels. Dull and lower in sympathy with wheat. By sample on track, on the basis of the Mississippi river: No. 2, 45c@46c; No. 3, 42c@43c.
FLAXSEED—Slow sale and lower at \$1 08 per bushel upon the basis of pure.

BRAN—Quiet but steady. Bulk, 50c; sacked, 57c per cwt.

HAY—Receipts for forty-eight hours, 300 tons. Fancy prairie, \$5 50; choice, \$4 75@5 25; low grades, \$3 50@4 25; timothy, choice, \$9 00; No. 1, \$8 00; No. 2, \$7 00@7 50; choice clover, mixed, \$8 00@8 50.

BUTTER—Receipts only fair, yet supply fully equal to the demand. Best table goods sell fairly to the home trade, but all low grade goods have to go to packers. Creamery—Highest grade separator, 10c@11c per pound; finest gathered cream, 14c; fine fresh, good flavor, 13c; fair to good, 12c. Dairies—Fancy farm, 12c@13c; fair to good, 11c, 9c. Country store-packed—Fancy, 11c; fresh and sweet packing, 9c.

EGGS—Receipts light and market firmer. Fresh, 7c.

CHEESE—Kansas and Missouri, full cream, 8c.

POULTRY—Springs are selling at 8c and offerings fair, while hens are in good demand; firm. Turkeys and ducks quiet. Hens, per pound, 5½c; roosters, 15c each; springs, per pound, 8c; turkeys, per pound, 5c; ducks, young, 8c; old, 5c; geese, 8c; pigeons, per dozen, 90c; veal, choice, 80c@100 pounds, per pound, 4½c@5c.

POTATOES—Offerings light and so is the demand. Growers are getting 32c@35 by the wagon load.

MELONS—The market is not so active as on Saturday on watermelons, but sales are being made at \$10@15 per 100. Cantaloupes are in good offering but weak.

BERRIES—But few blackberries in and inquiry good. Grapes plentiful and selling at 50c per basket for Concord and 60c for Delaware. Plums are scarce and demand good at firm prices—thirds bringing 75c.

PEACHES—The receipts were good and demand brisk for choice stock at 75c@81 00 for quarters. Baskets brought 50c@75c. A few thirds are in that are too green and 80c@90c is a big price for them.

VEGETABLES—Jobbing prices: Beans, navy, California, per bushel, \$2 10@2 15; country, \$2 00@2 10; cabbage, per 100 pounds, \$4 00; celery, California, 75c@1 00 per bunch.

FRUIT—Apples, fancy, per bushel box, 30c@50c; choice, one-half bushel, 25c@40c.

EARLY VEGETABLES—Cabbage, home-grown, per pound, 1c@1¼c; cucumbers, per dozen, 10c@20c; beans, per bushel, 80c@90c; beets, per dozen bunches, 10c@15c; egg plant, per dozen, 30c@40c; new corn, per dozen, 10c@15c; tomatoes, half bushel, 50c@60c. New onions, 40c@50c per bushel. Squash, 20c@25c per dozen.

BROOMCORN—Harled, green, 3c@3½c per pound; green, self-working, 2½c@3c; red-tipped, do., 2½c@3c; common, do., 1½c@2c; crooked, half price. Dwarf, 2c@3c.

GROUND LIMESEED CAKE—We quote car lots sacked at \$25 per ton; 2,000 pounds at \$25; 1,000 at \$14; less quantities \$1 50 per 100 pounds.

WOOL—Selling fairly at unchanged prices. Missouri and similar—Fine, 8c@11c; fine medium, 10c@12c; medium, 12c@14c; combing, 13c@15c; coarse, 11c@13c. Kansas, Nebraska and Indian Territory—Fine, 7c@10c; fine medium, 9c@11c; medium, 10c@13c; combing, 12c@14c; coarse, 9c@10c. Colorado—Fine, 7c@10c; fine medium, 9c@11c; medium, 10c@12c; coarse and carpet, 9c@10c; extremely heavy and sandy, 8c@7c.

Chicago.

July 23, 1894.

The following table shows the range of prices for active "futures" in the Chicago speculative market for the speculative grades of the commodities. This speculative market is an index of all prices and market tendencies:

	High-est.	Low-est.	Closed July 16.	Closed July 23.
WHEAT—July.....	52½	51½	56½	51½
Sept.....	54½	53½	58	53½
Dec.....	58	56½	61	56½
CORN—July.....	44	43½	43½	44
Sept.....	43½	42½	43½	43½
May.....	39½	38	39½	39½
OATS—July.....	33	32½	35½	32½
Aug.....	28½	27½	29½	27½
Sept.....	28½	27½	29½	27½
PORK—July.....	12 50	12 37½	12 55	12 37½
Sept.....	12 55	12 42½	12 60	12 42½
LARD—July.....	6 85	6 80	6 82½	6 80
Sept.....	6 85	6 80	6 87½	6 82½
S. RIBS—July.....	6 60	6 60	6 57½	6 60
Sept.....	6 55	6 50	6 57½	6 52½

WHEAT—Cash—No. 2 red, 51½c@52½c; No. 3 red, 49c; No. 2 hard, 49½c@50c; No. 3 hard, 48c@49c.

CORN—Cash—No. 2, 43½c.
OATS—Cash—No. 2, 33c; No. 2 white, 35c; No. 3, white, 31c@33c.

St. Louis.

July 23, 1894.

WHEAT—Receipts, 208,000 bushels; shipments, 75,000 bushels. The market on buying ran up ½c early, but weakened on foreign news, closing with a net loss of ½c. No. 2 red, cash, 48½c; July, 48½c; August, 48c; September, 48½c.

CORN—Receipts, 181,000 bushels; shipments, 75,000 bushels. The market gained 1¼c@2½c on weather crop news. No. 2 mixed, cash, 89½c; July and August, 40c; September, 40½c@41c.

OATS—Receipts, 56,000 bushels; shipments, 8,000 bushels. Heavier and higher late with corn. No. 2 cash, and July, 27½c; August 27½c; September 27½c.

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