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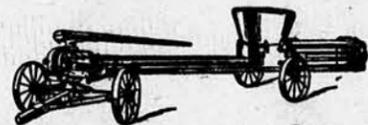
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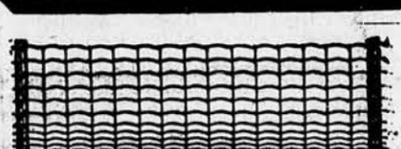
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Agricultural Matters.

SOIL FERMENTS IMPORTANT IN AGRICULTURE.

By H. W. Wiley, Chief of the Division of Chemistry, United States Department of Agriculture, from the Yearbook of the United States Department of Agriculture for 1895.

VITALITY OF THE SOIL.

Not many years ago the soil was regarded by the agriculturist as dead, inert matter, devoid of all vitality. The theories of fertilization of the soil were based upon this idea, and the methods of culture were conducted according to the same theory. The only vital thing which the farmer considered was the growing crop itself, and there was no suspicion of the relations existing between the vitality of the crop and the living organisms of the field. The reader of agricultural literature of to-day does not need to be told how all this has been changed in the last twenty years. The soil is no longer regarded as dead and inert matter, but is known to be so permeated with living beings as to entitle it to be considered a living mass. The parts of the soil which are not endowed with life now receive their highest significance as the environment of the living organisms which they contain and which they may help to nourish. The plant which forms the growing crop receives its nourishment through the media of the air and soil, but this nourishment must undergo a process of digestion, before it becomes available as plant food, similar to that suffered by the food which nourishes animals. Indeed, the purely mineral, inorganic foods of plants are probably not always absorbed as such, and must undergo a decomposition before they are assimilated. A striking instance of this is shown in the case of silica, an important plant food and a type of inert mineral matter. Silica is highly insoluble and apparently the least suited of the mineral constituents of the earth to enter the vital organism of the plant. Yet not only do we find it in the tissues of the mature plant, but also, strange to say, in the greatest abundance in those parts of the plant organisms, viz., the leaves, most remote from the sources of supply. It is evident from this that the highly insoluble silica of the soil must undergo a complete solution in order to be carried by the juices of the plant through the network of cellular tissues to be finally redeposited in the leaf.

The same statement may be made with regard to the other purely mineral foods of plants. It is quite certain that they do not become a part of the plant organism in the form in which they are found in the soil or in applied fertilizers. In phosphorus, for instance, is found one of the most important mineral foods of plants. This substance exists in the soil almost exclusively as mineral phosphates, or is applied as such in fertilizers. Nevertheless, the phosphorus which is found in plants, and especially in the seeds of cereals, exists largely in organic combination, showing that the original mineral phosphates have been entirely decomposed by the process of digestion to which they have been subjected. Even the mineral phosphates which are found in plants are not those which pre-existed in the soil. Soil phosphates are chiefly those of lime, iron and alumina, while plant phosphates are chiefly those of potash.

SOLUTION OF SOIL PARTICLES.

At the present moment it is supposed that the purely mineral matters mentioned above pass into solution under the influence of the secretions and vital forces of the plant rootlets. It is not improbable, however, in view of the knowledge we already possess of independent soil organisms, that there may be a class of such bodies especially active in the disintegration of mineral particles and the preparation of them for plant digestion. Naturally, the first organisms which would act upon a bare rock would be those which could subsist upon a purely mineral environment. Such organisms could draw their nourishment solely from the mineral itself and from the air. One of the most important of modern discoveries is the fact that the nitrifying organism of the soil, the nature of

which will be explained further on, and which is the chief instrument in providing and digesting nitrogenous nutriment for plants, is capable of subsisting and flourishing in a purely mineral medium. It is believed, therefore, that in the primary decay of bare rocks, especially at high altitudes, the nitrifying organism plays a highly important part and prepares the surface of the rock for the first growth of lichens and other low vegetable organisms from which the first traces of humus are formed. While these organisms are said to subsist in a purely mineral environment, it must be understood that the carbon dioxide and traces of ammonia which the air may contain belong to this category. It has been shown that these bacteria can be developed by absorbing from the ambient atmosphere traces of ammonia and other bodies which may be present in the air. They even assimilate the carbon of the carbon dioxide much in the same manner as vegetables which contain chlorophyll. Thus even in the denuded rocks of high mountains the conditions for the development of all these inferior organisms exist. In examining the particles produced by attrition from such rocks it is easily established that they are uniformly covered by a layer of organic matter, evidently formed by microscopic vegetations. There is thus discovered in the very first products of the attrition of rocks the characteristic element of vegetable soil, viz., humus, the proportion of which increases rapidly with the process of disintegration, until finally the decaying mass is capable of sustaining chlorophyll-bearing plants.

Not only upon the surface of exposed rocks have these organisms been discovered, but also to a considerable distance in the interior of rocks on high mountains, fragments of which have been collected in sterilized tubes and subjected to cultivation in an appropriate environment.

DECAY OF ROCKS AT HIGH ALTITUDES.

The naked rocks of high mountains comprise mineralogical types of the most varied nature, viz., granite, porphyry, gneiss, mica schist, volcanic rocks, and limestones of all varieties, and all these have been found to be covered with a nitrifying ferment which is doubtless extremely active in producing incipient decay. At the high altitudes at which these observations have been made the activity of bacteria is necessarily limited by the low temperature to which they are subjected during the greater part of the year. During the winter season their life is suspended, but is not extinguished, since they have been found living and ready to resume all their activity after an indefinite sleep, perhaps of thousands of years, on the ice of the glaciers, where the temperature never rises above the freezing point. When the activity of these ferments is recognized, it is easily seen how much more active they become when brought down to lower levels where they are nourished by the favoring conditions which exist, especially during the summer time, in cultivated soils. In fact, the importance of the action of these bodies on the mineral particles of which the soil is largely composed has never been fully recognized, and there is no doubt whatever of the great significance of their decomposing action in the liberation of plant food locked up in undecomposed mineral structures. In this case the activity of the bacteria is not limited to the surface of rock masses, but permeates every particle of soil and thus becomes effective over a vastly extended surface.

When the extreme minuteness of these organisms and of the phenomena which they produce is considered, there may be a tendency to despise their importance, but by reason of the fact that their activity is never-ceasing and of the widest application, it must be placed among the geologic causes to which the crust of the earth owes a part of its actual physiognomy and to which the formation of the deposits of the comminuted elements constituting arable soil are due.

TRANSLATION OF MINERAL MATTERS IN PLANTS.

Consider for a moment a minute

fragment of mineral matter of any description containing particles of plant food presented to the rootlet of a plant. It is evident at once that no mineral particle, however minute, can be bodily transported in a mechanical way and become an integral part of any plant tissue. Any attempt to move soil particles in this manner could only result in a clogging of the pores of the cellular tissues, the stoppage of the circulation, and consequent death of the plant. The mineral particle in question, therefore, must suffer a complete disintegration, and the only forces capable of effecting this, in so far as we know, are the solvent action of the plant secretions, the vital activity of the rootlet itself, and the decomposing influence of the soil ferments. What particular proportion of the solvent action is due to each of these causes has not yet been determined. It is known, however, that the weak organic acids which may be contained in secretions from the roots of plants are not capable of exercising a very important solvent influence on the soil particles.

In fact, one of the organic acids which may be found in the secretions of the rootlets of plants, viz., oxalic acid, is capable of exerting an influence which is unfavorable to the decomposition of mineral matters containing lime. A mineral which is composed in part of lime when exposed to the action of oxalic acid becomes coated with a film of lime oxalate which prevents any further decomposing action. The influence of nitric acid, which is due to the activity of soil ferments, is exerted in this case in the most beneficial way, attacking and dissolving the film of lime oxalate and exposing fresh portions of the mineral substance to decay. Phosphoric acid especially, which is so often found in combination with lime, may be released by this action and made available. It must not be forgotten also that lime itself is an essential plant food and must be supplied in appropriate quantities to secure a normal growth of the plants.

The "vital activity" of the rootlet itself, a phrase often used, has an indefinite meaning and conveys absolutely no comprehensible idea of solvent action. On the other hand, it is known that soil ferments are found in particularly large numbers clustering about the rootlets of plants and in fact existing in symbiotic union therewith. This signifies that the relation existing between them is so intimate as to make their vitality mutually dependent. It is therefore quite probable, as has already been intimated, that the preparation of soil particles for plant food is due quite largely to bacterial activity.

(To be continued.)

Clover vs. Chinch Bugs.

EDITOR KANSAS FARMER:—I want to make return for some of the good things I have received through your columns, by giving a couple of items of experience that may benefit some of your readers.

Chinch bugs are bad in our section of the State and all fields of small grain are full of them, yet I have some ninety acres of oats, situated on three different quarters of land, and some fields two miles apart, and fields all around them full of bugs—even my own corn fields are being eaten up by them—and yet my oat fields have not a bug in them. I attribute this to the fact that I sowed with all my oats a peck of red clover and timothy mixed and have a heavy stand a foot high. Of course the timothy is no help, but they won't touch clover, and evidently its presence is so distasteful to them that they won't work on anything where it is. I have noticed before this year that when they were eating up timothy meadows around me they did not touch my meadows which were timothy and clover mixed. This oat stubble with the grass in it will make splendid stock pasture up to New Year's in an ordinary year.

The lesson to me is to sow clover with all small grain. Those who do not want the clover for pasture or hay can get a big return on the investment by plowing under the clover in the fall.

A Sufferer Cured

"Every season, from the time I was two years old, I suffered dreadfully from erysipelas, which kept growing worse until my hands were almost useless. The bones softened so that they would bend, and several of my fingers are now crooked from this cause. On my hand I carry large scars, which, but for



AYER'S

Sarsaparilla, would be sores, provided I was alive and able to carry anything. Eight bottles of Ayer's Sarsaparilla cured me, so that I have had no return of the disease for more than twenty years. The first bottle seemed to reach the spot and a persistent use of it has perfected the cure."—O. C. DAVIS, Wautoma, Wis.

AYER'S

THE ONLY WORLD'S FAIR
Sarsaparilla

AYER'S PILLS Promote Good Digestion.

I have just put in the barn two and one-half tons per acre clover and timothy sown with oats two years ago and cut three times last year.

I would like the experience of others who may have had clover with small grain, as to whether they had chinch bugs in it. If it is a sure remedy, it is easily tried. The infection method has not been a success here. I have saved corn where the bugs were coming to it from grain fields by making a narrow line of salt and dampening it with kerosene, of which it takes very little, but the line must be unbroken, and eternal vigilance must be the watchword. I cannot help feeling enthusiastic over the clover guard, which is cheaply and easily got and never sleeps. If it proves a never-failing preventive, as I believe it will, some genius must get us up a planter that will drill a little clover seed in the row with the corn and save that. It would grow slow early and never interfere at all with the corn.

My next item is experience with Dwarf Essex rape. I sowed five acres last July, which made a fine growth and lived through the winter. Not expecting much from it this year, I seeded the ground to timothy and clover broadcast and run the harrow over it. The harrowing started the rape to growing and it made an immense growth and we have saved many bushels of very fine seed, which we have sown this month and it is growing much better than our imported seed did. I believe there is a great future for the rape plant in our State to fatten stock in the fall when our pastures are apt to be dry. For use in July and August it can be sown as soon as the ground is warm in spring, or can be sown for later use after wheat or oats. It will grow rapidly on any land that will grow corn or turnips.

Burlington, Kas. E. D. KING.

Electric Farming.

Now for the trolley plow. The old-time farmer is out of date.

Electricity, the master force, which by the end of the century will dominate every field of human work and solve all the problems that so long baffled mankind, has been enlisted in the most essential of mortal occupation—agriculture.

The farming of the future is to be done by electricity. Dynamos and wires will attend to the business of the big farm. The sonorous "gee haw!" of the up-country soil-tiller will be heard no more, and the farm hand who would keep his job will have to be thoroughly acquainted with ohms, volts and amperes.

Eward M. Bently, of New York, has just made a long step toward the es-

establishment of electricity as a hard-working factor on the farm. He has patented an electric plow, which runs back and forth across the field and turns up the soil in a fashion that would have made pioneer farmers of 100 years ago stand dumb with amazement.

His invention calls into use the most recent developments in the line of transmission of electric power. A power house in a centrally located village can furnish motive force for all the farm work to be done within a radius of many miles.

Along the two opposite sides of a field poles and wires are put up, and between these, stretching directly across the field, is stretched a third wire, which serves as a trolley upon which the plow travels. This wire is slack, so that it may run through the plow contrivance, which lets out wire behind as it progresses and winds it in at the front.

When the plow reaches the end of a furrow the current is automatically reversed, so as to start the machine back again. Thus the plow goes back and forth until the whole field is traversed. The ends of the trolley wire, as the work progresses, travel along on the wires strung alongside the field.—*New York Journal.*

Seeding Alfalfa.

EDITOR KANSAS FARMER:—I was much interested in Secretary Coburn's report on seeding alfalfa in corn, and for the benefit of FARMER family of readers will add my own experience.

October, 1894, I plowed deeply a plat of wheat stubble that had been sated 300 pounds per acre on the wheat in autumn of 1893. The soil is a limestone ridge, part of which is too gravelly to cultivate in corn, the balance a stiff clay subsoil. After as deep plowing as possible with a three-horse plow, it was immediately planked crosswise, leaving about three feet between each passage of the planker. This latter precaution I found prevented the drifting of the soil with the winter and spring winds. On April 9, 1895, this plat was planted to Mammoth Cuban corn, with a drill planter. In about two weeks the corn, being up nicely, it was harrowed. May 1 the corn was cultivated, leaving the ground as near level as possible. On May 20 the plat was sown, broadcast, with alfalfa seed, twelve pounds per acre, and the corn was again harrowed with a "Butterfly" harrow, which ran astride the corn rows. About July 20, the corn being ripe, it was cut and drawn from the plat as needed for hog feed. Alfalfa had made a good growth and by August 1 was a foot in height, and by September 1, the crab-grass was so rank that it threatened to smother the former. At this time a mowing machine was passed over the plat and we secured a fine crop of alfalfa-crab-grass hay, say about one ton per acre. This we stacked as we had also previously the corn fodder. Summing up, we got fifteen bushels ear corn per acre, a fine crop of corn fodder and a crop of crab-grass-alfalfa hay from the same land in one season. After the mowing the alfalfa grew quite an aftermath, but after the first freeze looked anything but promising. But this spring it was the first green spot on the farm and the first cutting (June 10) is estimated at one ton per acre. A part left standing is now two feet high and nearly out of bloom.

A correspondent in the KANSAS FARMER asks how to make alfalfa hay. Mr. Weir, of north Woodson county, who has been growing alfalfa for eleven years on bottom and upland, gave his method, as follows: Mow in afternoon and rake into windrows forenoon the following day. Then stack or mow in barn. He estimates that one load of this hay is equal, in feeding value, to two loads of prairie or timothy hay. He further states that he has wintered calves on it and considers it equal to good sheaf oats for that purpose.

And now to close my little say, Alfalfa makes the best of hay; Stock can live on it without fasting. For it's the "clover everlasting."

J. W. G. McCORMICK,
Manager Snow Experimental Farm.
June, 1896.

The Stock Interest.

THOROUGH-BRED STOCK SALES.

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

SEPTEMBER 17—W. H. Wren, Poland-Chinas, St. Joseph, Mo.
OCTOBER 1—E. E. Axline, Poland-Chinas, Oak Grove, Jackson Co., Mo.
OCTOBER 30—J. R. Killough & Sons, Poland-Chinas, Richmond, Kas.

A GOOD HOG-RAISER IN KANSAS.

To be successful in swine raising abundant shelter from both heat and cold is necessary. For this reason we have chosen for a hog lot a piece of rough land, of not much value for farming, which has been set out to trees of various kinds. Its area is about two acres, and we have fenced it, using one strand of hog wire, then two six-inch boards, leaving a space of three inches between them, then four strands of wire. The lot, like ancient Gaul, is divided into three parts, one for the growing pigs, one for brood sows and the other for a fattening pen. We find it most profitable to sell when about eight months old, usually, but the present demand for light hogs makes it more profitable to sell at about six. But in order to have them in proper condition for market at this age they must be kept growing from the first. Our February litters, which are to be marketed in October, are fed as soon as weaned upon bran and shorts and milk, as we have found no other food that so satisfactorily develops bone and muscle, and as soon as they can be led to eat them, beets, carrots or pumpkins are given them to develop the digestive apparatus, until they can be turned into adjoining pastures, which have growing in them alfalfa, oats and corn, peanuts, artichokes, or other root crops, turning from one to the other in the order named, and supplementing the food as occasion requires by other green foods, one of the most valuable of which is sweet corn, cut up and fed when the corn is fit for table use. Thus their food, except the bran, costs us little and has proved well adapted to stimulate the growth and health of the pig. Our August litters are fed as nearly as possible like the others, but after a short time they must be fed upon root crops and pumpkins or squashes.

Our brood sows are fed nearly like the growing pigs, except that oats and wheat are substituted for the bran and milk. They are kept in a part of the lot rather better sheltered than the rest and they have each a private apartment, 16x16 feet, containing a small, warm, well-ventilated house or shed, in which they are kept while attending to family cares, but being removed to the general enclosure as soon as the pigs are weaned. These enclosures are at other times used for undeveloped or stunted pigs, as such pigs can often be made, by special attention (a kind of hothouse culture), to nearly equal those that have always been strong and healthy. Our hog houses being sheltered by timber are warm in winter and cool in summer. They are open at all times, allowing swine to pass in and out when they please, are floored with planks and are supplied with plenty of clean straw for bedding.

Our feeding floors form a part of the hog houses, being kept clean and supplied at one side with a row of stalls facing a trough, so arranged as to accommodate only one hog each. We believe that the causes of disease in swine are impure food, lack of shelter, and filth, and to prevent disease, we see to it that these conditions do not exist. Our lot being situated upon both sides of a small ravine, filth does not readily accumulate. The trees furnish their part of the shelter and we do the rest. As a further precaution, we keep before our hogs plenty of salt and ashes, and in the more unhealthy seasons of the year feed small doses of sulphur, condition powders, etc., and we have never been troubled with a sick pig.

Our fattening pen is not large, as we do not wish our swine to waste their energies in too much exercise. It is divided into a feeding floor, a sleeping room, both sheltered, and a small yard with a cement floor. For while we

consider the manure from swine to be among the most valuable, we have not, as yet, been able to devise a way of saving very much of it, except that from the fattening hogs, which is more valuable than that from other pens, without losing in some other way. Our hogs invariably deposit the fertilizer upon the cement floor, and it is easily gathered and spread where wanted, or stored for future use. The food for these hogs consists of corn and wheat, and we would feed them milk if we had it.—*W. E. Benjamin, in Practical Farmer "Swine Special."*

A Woman's Hog Talk.

"I suppose some men will sniff at the idea of women knowing anything about raising hogs," says Mrs. Florence Parkinson, in the *Practical Farmer*, "but I know that the gentler sex can have just as good success as the sterner sex, for the reason that they are gentler in more ways than one. I know of no better occupation for women than raising hogs, if they do not care for poultry, as many do not. One does not have to wait so long for pigs to grow into money as other farm stock, and there are no lice to contend with as in poultry-raising. But my experience and observation has taught me that pigs and poultry can be raised profitably together, by using my pig and poultry pen combined. The advantage of this pen is the central alley for access to the root cellar, and place for an old stove to cook roots and other feed, and above all, to give warmth to sows and pigs early in spring, as it is the early pig as well as the early chick that is the most profitable. It is not beneath any woman to care for pigs and poultry when doing the work in this house. Now, as to breeds, I think Chester Whites and Poland-Chinas the best two. The former, the butchers tell me, makes the sweetest and choicest meat. We prefer them too for our own table. The meat is finer grained, pink and dainty. I have settled down to the homely fact that the hog brings in more money than anything else on the farm in the same length of time. What is nicer to look at than a nest of snow white little pigs? I have a lady friend who was left a widow, with several small children, so she could not follow any profession, neither did she like poultry-raising. She raised hogs, as that was easy, and last year kept twelve sows and sold 150 pigs. Her year's profit was \$900, thus lifting the last dollar of mortgage on her home. So much for a woman's financing. It also shows that the hog is not only the 'gentleman who pays the rent,' but the one who can pay a mortgage as well, if his keeper only aids him in a practical way. Strive to have the sows drop their litters in March and again in September, as advantage can be taken of the Thanksgiving markets, for a few loads of roast pigs for the city cousins. There is money in that scheme. Care: Feed milk from the dairy, and don't give sour dishwater or other filthy food. Hogs are like people; if forced to eat unclean food by starvation, why they will do it. The poor people in our cities drink from filthy barrels teeming with bacteria. So hogs will drink and wallow in mire if allowed to. Pure running water flows through the lower end of our pasture. No nicer food for hogs can be thought of than a field of crimson clover to sun in. Even without the milk they will fatten, by giving chop feed slops. The market hog of to-day must have flesh mottled like castile soap, to bring fancy prices. The old foggy sour dishwater pen-fed hog, with lard meat for sale, belongs to the past. A couple of acres of artichokes is another indispensable. One acre to root in at their own sweet will, and the other to dig and put in the cellar for feed during the winter for all stock. They prevent cholera, and an 'ounce of prevention is worth a pound of cure.' Well-fed hogs need no 'ringing,' as that is a more cruel practice than de-horning cattle; the latter is a 'necessary evil.' Hogs pastured in clover will not root much as in other crops. Hogs fed and housed do not degenerate into 'scrubs' any more than other stock. The pens should be sprayed every spring and fall with whitewash. The

Merit

Is what gives Hood's Sarsaparilla its great popularity, increasing sales and wonderful cures. The combination, proportion and process in preparing Hood's Sarsaparilla are unknown to other medicines, and make it peculiar to itself. It acts directly and positively upon the blood, and as the blood reaches every nook and corner of the human system, all the nerves, muscles, bones and tissues come under the beneficent influence of

Hood's Sarsaparilla

The One True Blood Purifier. All druggists. \$1.

cure liver ills; easy to take, easy to operate. 25c.

feeding and sleeping rooms are separate too. It is a treat to see pigs eat when fed thus. The pens open into the pasture, thus giving free range to the hogs, as they can be sheltered from storms in a short time."

When to Market Hogs.

"A serious mistake which most farmers make," says G. R. Henderson, of Columbia, Mo., in *Practical Farm Journal*, "is in not marketing their hogs when they are ripe, which should be when they weigh 200 pounds. With proper feeding a pig should reach this weight at from eight to nine months old. It has been demonstrated beyond question that the last 100 pounds put on a 300-pound hog is very expensive meat, costing nearly twice as much per pound to produce as the first 200 pounds; besides the risk of keeping a hog after it becomes reasonably fat is very great. With ordinary feeding, February pigs should weigh 200 pounds by November, but at that time prices rule very low, and it would, therefore, be well to crowd your pig from the start, and get him to market at least by the middle of October. As a rule you will realize from \$1 to \$2 more per head by so doing. The sooner you get your pig up to the required weight the less food he will have consumed."

If Mr. Henderson can crowd his hogs a little more and have them ready for market in September he will get better prices on the average than in October. The portion of the country which can mature its corn sufficiently early to finish its hogs for the September market has an enviable advantage.

If you would have an abundance of dark, glossy hair, if you would have a clean scalp, free from dandruff and irritating humors, or if your hair is faded and gray, and you would have its natural color restored, use Ayer's Hair Vigor. It is unquestionably the best dressing.

How's This!

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WEST & TRUAX, Wholesale Druggists, Toledo, O.
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For descriptive literature and other information address G. T. Nicholson, G. P. A., A., T. & S. F. Ry., Chicago.

Every man should read the advertisement of Thos. Slater on page 15 of this paper.

Irrigation.

WINTER IRRIGATION—MISUSE OF WATER.

By T. S. VanDyke, in *Irrigation Age*.

On the reclaimed swamp land of the San Joaquin valley all the irrigation of alfalfa and grain is in winter, and even that of corn is practically so, it being irrigated not more than twice and often only once after coming up. Remember the average rainfall here is about four inches, or practically nothing in assisting the summer growth. But this soil is a mixture of tule roots, rushes and reeds for many feet deep, with water at an average of about eight feet, and rarely over ten feet below, the year round. The capillary attraction of this soil is enough to draw water more than half way to the top. It is very retentive of moisture, so that if wet thoroughly in winter it will, by the aid of the rising moisture from the bottom, hold water enough in the top to mature such crops as grain, that ripen very early in the spring, and it will come very near ripening even corn, that runs far into the summer. Alfalfa, whose roots quickly go down to this permanent moisture, only needs a good stimulus of water in the top soil to start it more quickly, after the cold nights of midwinter have checked its growth.

GRAIN.

On this ground grain is sown dry. It is then plowed in, or rather scratched in, for there is no apparent advantage in deep plowing on this particular soil, as it is all loose enough except the crust, which will be formed on any fertile soil by excess of water. It is then irrigated so as to fill the top soil with enough water to sprout and carry it until ripe, in connection with the winter rains, of which there are always some of value, even in the driest times; one-third of an acre foot of water put in the ground will do this, for there is no loss of moisture downward, the entire subsoil being saturated instead of dry. If you will note how quickly a piece of dry, unplowed ground saps the moisture for several feet from a freshly irrigated piece beside it, you will understand how, with a dry subsoil, more moisture (not water only) will be lost downward than is lost upward by evaporation. But if there is no loss of this kind, grain well started with the top soil filled with water matures before the summer heat has its effect in drying out the top soil. Very heavy crops are raised in this way on this ground.

On the upland, where it is many feet to water, and where the subsoil for yards is as dry as the top soil, unless soaked from the ditches, all flooding is postponed until the grain is so large that it cannot be easily injured. The different quality of the soil is the principal cause of this. It is a fine granite wash, containing enough fine material to make a tough paste, without enough humus to prevent its formation. On the swamp land there is so much vegetable matter mixed with the fine granite flour that it cannot make as hard a paste. To flood this upland after the grain is planted and before it has started would be to kill half or more of it at once. Dependence is therefore placed on the slow, gentle rains, which do not beat down and puddle the ground. If the ground were thoroughly irrigated before plowing it would retain moisture enough to insure the starting of the crop in fine shape, but for grain at present prices this is considered too expensive, even when the farmer does his own work with his own teams. He would rather put in a larger area and gamble on a good rainfall, and from his stand-point of large farming it is hard to say he is not right. Therefore he plows his ground dry—that is, without irrigating. It may or may not be moist from the first rain, and generally is as dry as powder when plowed. Then it is checked for future irrigation if there are no permanent checks on the tract. Many of these checks are temporary only, especially where one is working rented land, as many do. Then the seed is sown for the rains to sprout and carry up to the point where it will stand flooding. This flooding is postponed

as long as there is no danger of the crop suffering, and often it receives no water until headed out and even in the milk, while it is rarely irrigated until in the boot, unless in winters very short of rain. A second irrigation is rarely needed, but can be given if required. The water is applied sparingly and not left on the ground, even as long as for alfalfa. Even when quite old, grain of all kinds will quickly scald if the sun is hot, and great care must be used. While a delicate operation, large crops can be raised by irrigation with certainty and success, and tens of thousands of acres are thus raised here every year. Corn and all summer crops like Egyptian corn and similar things, are raised in large quantities under the same system, though the yield to the acre is not what it would be if less water and more plow were used. But there is certainly a limit on fine work, and where land and water are so plenty and cheap it no doubt pays to work a larger area with a lower yield.

None of the land of Lux & Miller is yet for sale, but that of the Kern County Land Company is for sale for much less than any one person or ordinary aggregation of persons could ever put on the water from any source—from \$40 to \$60 an acre for as good land as the sun shines upon, with an annual payment of \$1.50 a year on the greater part, running, under some of the canals, to \$2.50. The water right is a cubic foot a second to 160 acres, or about an inch to three acres, or nearly five acre feet. Several thousand acres have been sold and settled, and the work of the settlers is very instructive as showing what human nature will do when it has a good chance. They have almost to a man selected good land. There their wisdom generally stops. There are a few places from which a stranger might find something to imitate, but they are rare.

TOO MUCH WATER.

The land company, desiring to accommodate all its customers, and having all the time an excess of water, has put no restrictions upon consumers. The allowance of a cubic foot to a quarter section is already too great for anything but alfalfa, and not really needed even for that, but the rule has been to let all have all they want and in heads of any size they want. The result of this mistaken kindness can be seen all over, in damaged orchards, and in the few places where there is any hard-pan or stratum of fine material underlying top soil, alkali is on the top soil to a ruinous extent. Soil and climate and all conditions show that as fine fruit can be grown here as in any part of California, which means in the world. Many places where some care has been used prove that it is so, the yield and quality both being beyond criticism. But many more show suffering trees that cannot bear good fruit, and that before long will bear little or nothing, and all because they have plenty of water. Every one floods for everything. Where the soil would carry small streams, and where they would be cheaper, more healthful and in every way better, you see none of them and no attempt to do anything but flood. Imitating the work of the great farms, they make the checks too deep, put more water in them than is needed, and keep it there too long.

The only cultivation is scratching the head to see how work with the plow and cultivator can be dodged. The effort has been very successful. I hate to say there is not a well-cultivated orchard in the county. Therefore I will not say so, but that is my only reason. Even the flowers around the house are planted in checks of all shapes and sizes that are never broken, the ground being as hard as the floor of a brick-yard. There are some orange trees near Bakersfield that are good enough to show that a fine orange could be grown there. But no one seems to know that they are treated in the exact method in vogue twenty years before, 200 miles south of them, and that never failed to produce a dry, insipid, sour, spongy, thick-skinned orange, to-wit, incessant flooding with no cultivation. A gentleman who has been there over twenty years told me

that scores of men had bankrupted themselves and had to leave in three years, by the excessive use of water. Some do it because they think they are getting ahead of the company, although it is by its favor that they are able to do so. Others do it because they imitate these others. Some do it because they think water cheaper than work, a principle that is sometimes a very good slave but always a very bad master. Still others do it because they think turning on water is all there is to farming by irrigation. Some do it because they don't think at all, and some because, having the water turned on, it is too much like work to go to the gate and shut it off, California being full of people who came here to play and not to work.

But wherever the water has been used with any care you may see prosperity at once, in spite of the want of cultivation. Cultivation would make it still better, but even without it it is plain that flooding pays. Good orchards and fine alfalfa patches may be seen in all directions, plenty enough to prove that intelligent handling of the water is all that is needed to make this the largest garden of California. The misuse of the water has proved that not more than one hundredth of 1 per cent. of the land can be alkali, and the way the alfalfa stands the incessant tramping of the big bands of cattle, especially on the large ranches, where they are never taken off of it, shows a vitality and toughness that in many other places it does not have.

FARTHER NORTH IN THE VALLEY.

Going farther north on the San Joaquin we soon reach the fertile fields of Tulare county. Here, even on the larger farms, we find the checks like those of the smaller places in Kern county, very much smaller and more shallow than those of the immense places above described. Most of them are square or rectangular, though many of them are conformed somewhat to the contour of the land. But there has been no such systematic laying out of the land as I have described. Many of the checks are not over five acres, running up to twenty and even forty acres, while on the ten and five-acre tracts they run down to a quarter of an acre or even half of that. Most of them are made with the plow and scraper and on some quite level ground they are apparently made with the plow alone. Fifteen and eighteen inches are about the maximum heights, with many not over a foot. All are made broad at the bottom and almost all are permanent and can be driven over with machinery of any kind.

Gates from one check to another are here very rare and the main reliance is on cutting the check. But in many cases they do not feed one another and the checks are arranged in lines along laterals. In many cases the only waste ditches are natural depressions which retain much of the water to the joy of the mosquito. The average depth of water in the checks is less than is too often used in Kern county, and seldom exceeds six inches. The land here is extremely rich for many leagues and prosperous farms of alfalfa and general crops, with fruit farms of all deciduous fruits are about one. The never-failing and beautiful Kaweah pours every year, across the land, a bountiful supply of water and what was once a vast park of immense oaks is now in long lines of farms, with only a little park of the ancient oaks about the house or out in the pasture, to shade the thousands of cattle from the heat of a summer's noon. It is a lovely land to look upon, but here, too, the fatal gift of plenty of water has wrought ruin on many an acre of the deep rich mold of the old park and undone many a two-legged hog who thought he was getting ahead of his neighbors or cheating the water company.

ALKALI.

Thousands of acres are now useless from alkali on the surface, where it is evident from the surroundings and the character of the subsoil in adjoining cuts that there was no excuse for it. Most all of it can be reclaimed, for there is plenty of drainage, but even such temporary ruin is shameful. It is but a few feet to good sheet water

under the greater part of the land with no hard-pan of consequence below the top soil. There is only a sheet of finer material over a greater part of it two or three feet below the top. With water so near the surface and the rainfall much greater than in Kern county there is no need of using any more water than is used south of the Tehachapi mountains where the finest work of the world is done.

On the greater part, furrows could be used as well as elsewhere, and the water now in the ditches could do twice or thrice the work it now performs. Yet everywhere you see where fields have been turned into swamps by allowing the water to run long after it should have been shut off, orchards with the top soil condensed to a cement by too deep, as well as too long standing water, others where the waste has been allowed to stand in the last checks because there was no waste ditch or because it was clogged up and the owner was too lazy to clean it, still others where the soil looks as if it was wet every week and never had a chance to dry. As I remarked about the other place, I don't like to say there is no attempt at good cultivation, therefore I won't.

But in spite of all this there are so many places that show unmistakable success in making, not only a living but also some money that, in spite of the gross waste of grand opportunities, this settlement must be considered a great triumph of irrigation. There is no place in the lands depending on the rainfall direct that can show any such wealth to so few acres and certainly none that can show so many farmers out of debt and with a comfortable balance in bank. There are unmistakable signs of prosperity, in spite of the hard times, that he who runs may read, and nowhere are they more positively written all over a section than over a great majority of the alfalfa fields and orchards here. On the alfalfa farms and especially those mixed with a little fruit and vegetables, with corn and pumpkins, Egyptian corn and some other things, you can see at a glance that certain living that once made the American farmer the most independent of mortals, as he was then called, and the neglect of which has reduced too many to the most dependent. In the fat cattle and the baled hay, in the corn in the bin, in the hens cackling around the straw stack, and the turkeys strutting about the road, you see a surplus for pin money, while the big udders on the cows and the great numbers of fat hogs in the fields show that they do not live on Chicago canned beef or flavor their coffee from tin cows. It is the farming that the American farmer must drift back to. The irrigating farmer can restore farming to its ancient respectability and he is probably the only one that can. It must be so restored, or there is little increase of prosperity in store for the great United States. The farm must be made attractive for the boys, and the irrigated farm now comes too near being the only one where they can see that they are not working for nothing. On the irrigated farm the girls, too, can see something beside work ahead, and the old folks feel while pulling the sled up hill that there is a chance for them to ride down before they die.

Following the winding Keweah up the foothills and into the great canyon, down which it foams from the lofty Sierra Nevada, I found many places where every variety of irrigation was attempted. Tulare county, too, has its "orange belt," and its a hard county in California that has not. This belt, though not over large, is unmistakably good but suffering from bad irrigation which the orange is sure to do. The looks of the trees told the tale well enough. Many of the oranges and some of the lemons were indicating foot rot on ground that was naturally well drained, an almost unerring sign of over-irrigation. One man was making a vigorous attempt to irrigate with small furrows. The soil was plainly fine enough in texture to enable him to do it, but the ground was sloping about twenty-seven different ways in wavy lines, and the water had evidently become so tired trying to get somewhere that it had finally given

up the job and settled down permanently in the middle. By the time he finds he wants the ground graded to an even slope on every face on which the water is to run, the orchard will be too old to change and then the swearing period will fairly begin.

I found some people irrigating by planting along the ditch in the old Indian way and others letting the water wallow around over the ground to suit itself and planting on the dry bumps it had left, but nowhere a decently irrigated place, although there was abundance of fine soil and an over-abundance of the finest water. But the place at which I spent the night, well up in the canyon, skimmed the cream of the whole entertainment. The owner was a rich old settler with money out at interest in all directions. He had a ditch carrying about four feet of water or 200 inches. This ran through his store, making, at one side of the door, a drop of some five feet upon an overshot wheel which turned a large fanning wheel in the center near the ceiling. In the breeze of this the old gentleman sat and drank beer and smoked away the summer days while waiting for customers. Passing on some hundred yards or so, the water spread upon a gravelly flat of five or six acres. This was filled with alfalfa and fruit trees. There were peaches, prunes, pears, apples, silver prunes and nectarines, all ripe, and we were badly in need of fruit, especially on the return from a fishing trip near Mt. Whitney, where it is a little cool for fruit. The alfalfa and fruit trees were all in a huddle together and the evident design was to get both irrigated at one stroke to economize labor. The labor of shutting off the water was evidently objectionable and therefore never done, as far as appearances went. The whole of this enormous head was running upon this five or six acres all the time we were there, and coming and going, and there was good reason to believe it had been running all the season. There was a fair stand of alfalfa on it in spite of the cows nibbling, but the fruit was everywhere sour, insipid and small. It was about the worst I have seen in California, and that is saying a good deal, for while California can raise the best fruit in the world with good care, it never makes a failure of raising the most abominable on earth when it tries.

Now the point I wish to emphasize is this—this was a wash of coarse gravel standing on a slope so great that in spite of the great head of water it all drained away underneath, the top showing no sign of swampiness anywhere. Here, then, was the choicest of conditions for growing the best fruit on earth, climate and all being as perfect as the drainage. The alfalfa did quite well, because it will always do well on well-drained soils, even if pretty poor, for to some extent the theory that it makes its own fertilizer seems true. But the food the trees demanded was leached away by the constant run of water, making trees and fruit both small, although the trees were lightly loaded; while the trees, sickened by having the roots all the time too wet in spite of the drainage, could not produce good fruit even on rich soil.

As I remarked in the beginning of this work, bad irrigation is generally far ahead of no irrigation, even in those countries where so much can be raised on the rainfall as to make people feel insulted when you advise them to irrigate. Yet nothing is more foolish than to follow the methods of certain sections simply because they are succeeding. You may learn much in the San Joaquin valley about flooding, especially on the large scale. But when you have seen it all, spend a few days among the small farmers of Orange county if you want to learn how to make a good living and some money over, out of a small piece of land, with the smallest amount of discomfort, and do it all by flooding. Yet there you can learn nothing much about furrow work for their land is generally too open for it and they should not attempt it. To see that, go to San Bernardino and Riverside counties, and the east half of Los Angeles county.

Young men or old should not fail to read *This*. Slater's advertisement on page 15.

A Remedy for Burdocks.

The following letter to Secretary Coburn, from P. H. Wimpey, of Burlington, Kas., contains a good suggestion from experience and is here published for the benefit of KANSAS FARMER readers. Doubtless the kerosene remedy will be found efficacious for other troublesome weeds as well as the docks. Mr. Wimpey says:

"Burdock is very common in this part of Kansas, and when it once gets a good start in yards and along fences it is very troublesome to get rid of. I have a remedy that perhaps is new to some. It is simple and not expensive. Any time after the weed begins to grow in the spring until fall, cut the stalks off at the top of the ground, make a hole in the top of the root and pour about a teaspoon or tablespoonful of kerosene in the opening, and it will rot from top to the bottom of the root in a few days. It is a sure remedy and never fails in any kind of weather, and is much quicker than digging them out by the roots. The same remedy will apply to yellow dock. I generally use a screwdriver in making a small opening for the oil."

Hold on to Young Stock.

There is one very encouraging sign in Northwestern live stock conditions, and that is that farmers are beginning to appreciate the value of their young stock and refuse to sell yearlings at such low prices as formerly. Until recently the big ranchmen found it much cheaper to buy their young stock from farmers than to raise it, consequently few big ranches of the Dakotas or Montana possessed anything but steers. Mr. Wibaux, the largest individual cattle-owner in America, has been almost the only exception to this rule; he has made a practice of raising his own calves. He recently made a contract with Green & Badger, of Mandan, by which that firm is to supply him with 15,000 cows. Other ranchmen are now finding that farmers want to keep their yearlings and fatten them on their farms, and as a result of this change of attitude on the part of farmers the ranchmen are obliged to buy cows and raise calves.

President Thomas, of the Missouri River Stock Association, makes the assertion that he could pay 25 per cent. interest and make a profit at raising cattle. He took 100 steers as an illustration, as follows: First cost of yearling steers, \$1,200; care for two and a half years, \$750, when they would bring an average of \$40 per head in Chicago; cost of transportation and other expenses of marketing, \$4 per head, leaving a profit of \$24 per head, including an estimated loss of 10 per cent.

If the above statement by Mr. Thomas, who is a practical cattle-man, is true, then we must take it for granted that the Northern buyer either prevaricates when he comes to the Southwest for feeders or else is not satisfied with the Dutchman's 1 per cent.

Will Southwestern cattle-men take the cue?—*Arizona Stockman.*

Killing the Horn-fly.

C. S. Plumb, Director of the Purdue University Agricultural Experiment Station, says, in Bulletin No. 30:

"At this season of the year cattle are suffering from the persistent biting of the horn-fly. This fly, which is smaller than the house fly, congregates in colonies about the base of the horns, along up the back and sides, at tender points about the flanks and udder, and on the belly.

"This fly sucks blood from cattle, and so irritates them as no doubt to retard the laying on of flesh with beef cattle and the production of milk by milch cows.

"Many substances have been recommended to keep away the flies. The Mississippi experiment station recommends two parts of cottonseed oil or fish oil and one part pine tar. This station applied this mixture to 350 head at a total cost for material of \$2.20.

"Kerosene emulsion has also been used, spraying it over the cattle with a knapsack sprayer. The flies are killed by the emulsion if it touches them. The emulsion may be made by

mixing at the rate of one pint of soft soap (or one-fourth pound of hard soap dissolved in boiling water) and one pint of kerosene in fifteen pints of water, thoroughly whipped and churned together.

"At the Indiana experiment station we have tried different substances to keep away the flies. None of these were effective over two or three days. We have secured satisfactory results by using a quart of fish oil in which was mixed about two tablespoonfuls of crude carbolic acid. Fish oil is 60 cents per gallon in Lafayette. These liquids are applied on the body with a flat paint brush about four inches wide. Fish oil is especially disagreeable to flies, and is probably largely used in the special preparations sold at high prices. There is one objection to using any form of tar in that it makes the hair sticky, which accumulates dirt and so gives it a bad appearance.

"Stockmen would do well to break up the manure in the pasture whenever possible, as the flies deposit their eggs in it, from which the young are developed. If the manure is gathered up or broken to pieces within a day or so, and if remedies to keep off the flies are applied to the cattle, the insects will disappear early in the season."

A well-bred bull on the farm is always a sure indication of something better to follow in the feed yards or in the dairy.

The Connecticut Sheep Breeders' Association offers a royalty of \$10 for every dog caught killing a sheep, or against which the act can be proved.

Be careful in selection when buying trees. One variety will bring profit, another will cause you loss. Foresight is better than hindsight.

The name of "downy mildew" has been given to the potato rot disease, from the fact that there appears, under favorable circumstances, a downy or moldy growth upon the under surface of the leaves.

For corning beef, says the *American Cultivator*, take a clean half barrel, put in four quarts of rock salt, five or six pounds of sugar, three ounces of saltpetre; pack well, then make a brine, fill, and head up. You will get as a result the choicest corned beef.

It requires cheap feed and cheap pasture to make it possible to produce animals for the market now at a profit. And having these, the farmer must know just how to manage and care for stock in the very best manner to even then bring about the desired results.

One of the largest cattle companies in the Panhandle has decided to abandon its Montana ranch and breed such a steer as the Kansas feeder desires and cater to them alone. With the proper bulls the cattle can be raised and the Kansas people will not be slow to recognize it.

Young cattle like sweet corn, green fodder and oats, barley and other kinds of green fodder just as well as the milch cows do. When you are planting soiling crops for the cows to fall back on when the pastures begin to fail, don't forget to put in enough to give the calves and colts a bite, too.

The Boston horse market reports large sales and good demand from New England for family and draft horses at \$75 to \$300. New England farms, as well as towns and cities, must be supplied by Western farmers with these family and draft horses. Where will they get them after this year? as buyers report good horses scarce.

Illinois is guarding well its immense live stock interests by rigid inspection of the health of all animals exposed in the market or found elsewhere. The inspection for lumpy-jaw cattle ought, however, to be severely followed up in the matter of tanking, tallowing and making fertilizers of those affected. A beef that has lumpy-jaw, in which any of the ulcers have ever broken, is not fit for human food or for animal food either.

To Chicago, St. Louis and the East via Burlington Route.

The traveling public is sure to find the best fast vestibuled trains from the Missouri river to the East via the "Burlington Route." Elaborate compartment sleepers (same rate as standard sleepers); free chair cars of luxurious pattern to St. Louis; standard sleepers, free chair cars, and dining cars to Chicago.

Ask ticket agent for tickets via Vestibuled Ell to Chicago, and via the Vestibuled Limited to St. Louis.

L. W. WAKELBY, Gen. Pass. Agt., St. Louis, Mo.

Germany has 17,000,000 cattle, 13,000,000 sheep and 12,000,000 hogs, but her many millions of people are increasing faster in numbers, while the production of live stock is practically at a standstill. They require large supplies of foreign meats and are bound to take increasing shipments from America every year.

It begins to appear that the heavy sheep has to go. The rulers in the market have decreed that the heavy steer has to go, and they are now after the heavy sheep and in time it will have to follow. This will be good news to a good many, for it will be easier to produce the lighter than it is the heavier one. No matter what is wanted, the breeder and feeder has to cater to the wants of the buyers.

The pig has a wonderful digestive capacity. Steers consume 11½ pounds of dry food to every 100 pounds of live weight, the sheep 10 pounds, but the pig consumes 27 pounds and converts it into meat. Cattle make a gain of 1 pound for every 11 pounds of dry food consumed, sheep a pound for every 9, and the pig a pound for every 4½ pounds. This gain is accounted for by his immense digestive capacity.

Be sure and fit a piece of good land for the root crops that are so nourishing and healthful as cattle feed. The sugar beets and the mangels will yield immensely on good land if put in in good time and well tended, and no farm crops are more valuable. Cattle thrive on such food in winter when it forms a large part of their rations, and every stock-owner should have a good supply. Carrots are particularly desirable for horses, keeping them in good, thrifty condition.

Publishers' Paragraphs.

INTERESTING TO POULTRY RAISERS.—In another column will be found the advertisement of Geo. H. Lee, of Exeter, Neb., the manufacturer of the famous "Lee's Lice Killer." This preparation has attracted widespread attention and comment as the only successful disinfectant and eradicator yet discovered. It is recommended by all the poultry breeders in the country as being unequalled to rid not only chickens but all other stock of lice, mites and other annoying vermin, also house and garden plants, and it is so easily applied that it takes little time or work. It will pay chicken raisers to try it.

Unequaled Service

Denver to Chicago via Kansas City is given via the UNION PACIFIC and Chicago & Alton railways.

Through Pullman Sleepers, Pullman Dining Cars and Free Reclining Chair Cars leave Denver Daily. The Union Pacific is the great through car line of the West. Ask your nearest ticket agent for tickets via this line.

E. L. LOMAX,
Gen. Pass. and Ticket Agent,
Omaha, Neb.

41
Low Excursion Rates to the East, via "Burlington Route."

HALF RATES.

National Republican League, Milwaukee, August 25 to 27.

Ask ticket agent for tickets via Vestibuled "Ell" to Chicago, and via Vestibuled Limited to St. Louis.

Both trains supplied with the most modern equipment.

L. W. WAKELBY, Gen'l. Pass. Ag't.,
St. Louis, Mo.

"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.

AGENTS To sell cigars to dealers: \$15 weekly, experience not required. Samples free. Reply with 2c stamp. National Consolidated Co., Chicago, Ill.

To Cripple Creek

VIA COLORADO SPRINGS

The Chicago, Rock Island & Pacific Railway is

4 hours quicker

To Cripple Creek than any other line.

Full particulars by addressing JOHN SEBASTIAN, G. P. A., Chicago.

The Home Circle.

I'M SORRY.

There is much that makes me sorry as I journey down earth's way,
And I seem to see more pathos in poor human lives each day.
I'm sorry for the strong, brave men who shield the weak from harm,
But who in their own troubled hour find no protecting arm.

I'm sorry for the victors who have earned success, to stand
As targets for the arrows shot by envious failure's hand;
And I'm sorry for the generous hearts who freely shared their wine,
But drink alone the gall of tears in fortune's drear decline.

I'm sorry for the anguished hearts that break with passion's strain,
But I'm sorer for the poor, starved souls that never know love's pain.
Who hunger on through barren years, not tasting joys they crave;
For sadder far is such a lot than weeping o'er a grave.

I'm sorry for the souls that come unwelcomed into birth;
I'm sorry for the unloved old who cumber up the earth;
I'm sorry for the suffering poor in life's great maelstrom hurled—
In truth I'm sorry for them all who make this tolling world.

But underneath what'er seems sad and is not understood,
I know there lies hid from our sight, a mighty germ of good;
And this belief stands close by me, my sermon, motto, text—
The sorriest things in this life will seem grandest in the next.
—Ella Wheeler Wilcox.

A SUMMER VISIT AMONG THE OZARKS.

When the hot July days remind one of delightful rest to be found under leafy shade trees and beside cooling springs and babbling streams, the thought naturally turns to Northern lakes and forests; but, to one who has tried it for several years, even the Southland (such as Caleb gave his favorite daughter—Judges 1:15) can furnish most delightful resorts for a summer vacation.

A party of excursionists started from KANSAS FARMER office on July 1, to visit the "land of the big red apple," among the Ozark highlands of southern Missouri and northern Arkansas. Taking the Kansas City, Fort Scott & Memphis train at Kansas City in the evening, a comfortable night journey was made through eastern Kansas to Fort Scott, thence to Springfield, where the party stopped for breakfast and spent the day viewing the big city of southwestern Missouri. The next morning the journey was continued and the famous Ozark region was exhibited to the travelers during a pleasant ride of 150 miles to Mammoth Spring, Ark. From the highest point of the Ozarks southward the ancient forests, along the railroad, have been largely replaced with new orchards of apple and peach. Beautiful farm homes in the midst of leafy fruit trees have been built along this route within the past ten years, and at no time, while on this journey, were long rows of orchard out of view.

At West Plains the finest crops have been raised this year, and the many stacks of wheat and shocks of oats closely scattered in the fields gave evidence that the husbandman's labor has been amply rewarded.

This pleasant region has been well advertised and many Northern farmers, weary of the rigors of a cold climate, have found more desirable locations for homes "Among the Ozarks."

A complete description of the Ozark country would be unnecessary here, for all who feel interested can get complete illustrated pamphlets by writing to J. E. Lockwood, General Passenger Agent of Memphis Route, at Kansas City, Mo.

Mammoth Spring was the point objective with the FARMER party. Here can be found the "upper springs" and "nether springs," such as were considered very desirable by Caleb and his daughter above mentioned.

Every one can admire a spring of clear water bubbling from the hill-side, but not everywhere, as at this point, can a spring be found with a volume of water sufficient to drive a flouring mill of 500 barrel capacity daily, and a cotton mill employing hundreds of spinning and weaving machines, and still only a fraction of the whole water power used. This is what Mammoth spring does, and stands ready to multiply several times the power now used.

A "Fourth of July" amid burning gunpowder and equally pleasant oratory may be enjoyable, but under the cool shade trees at Hotel Nettleton, Mammoth Spring, the FARMER party found enjoyment more to its liking, and the rippling of the cool water over the rocks below the spring furnished music far more agreeable than the noise of any cornet band. Should any one want to know more about this place, write to Hynson & Elmore, Mammoth Spring, Ark., and all information will be furnished free.

NELLIS.

Get up a club for KANSAS FARMER.

OLD WOMAN NEWSBOY.

Sells Papers, in Fair Weather and Foul, to Educate Her Children.

"The pioneer woman newspaper vendor of Chicago" is the unique distinction claimed by Mrs. Susan Freds, whose hair has been whitened by the passing of 60 years.

At the busiest, windiest, coldest corner in Chicago she has stood every weekday for four years selling her papers. "So I can educate my children," as she explained to a kindly, but inquisitive purchaser. No matter how inclement the day she is always there where the Masonic temple, with its thousands of tenants, frowns upon its hundreds of thousands of passers-by.

Few soldiers of the civil war, says the Chicago News, endured more vigorous weather than has she. She has been scorched by the summer's heat and pinched by the winter's cold, and repeatedly have her fingers been frost-bitten while making change. For two years she took her place in line in "newspaper alley" and, buying her stock of papers, carried them to her corner, State and Randolph streets, there to sell them. Now women or girls are not allowed in the alley, so they are supplied by a boy, whom they pay for the service. It was a bitter fight when she began her unique occupation. The boys fiercely resented the invasion of their territory. Every persecution their fertile minds could invent was heaped on the defenseless woman.

"Not that I blame them, for selling papers isn't the proper work for girls or women, but what else can I do?" she inquires anxiously. "I am too old to sew, though that was my trade when I was a girl; I can't go out to service even if I could get a place, for I have to keep house for my three children, and in this way I can do my housework and also earn our bread, clothes and rent."

There is something inexpressibly pathetic in the sight of this aged



MRS. SUSAN FREDS.

woman standing in a storm selling papers. Her face is as tender as any grandmother sitting by a sheltered fireside and her manner is as quiet and gentle as a Quaker's. She numbers among her patrons many of the best people in the city, who go out of their way to patronize her. Ladies in their carriages, pedestrians and wheelmen drop their pennies into her toil-hardened hands. Only twice during the four years has anyone snatched a paper from her pile on the curbstone.

"Anyone who would steal from me must be in greater straits than I, so I let them go," is her patient comment.

Mrs. Freds goes on duty at three o'clock in the afternoon and stays until eight at night. She averages 150 papers daily and has been "stuck" but a few times. Through her industry she has educated three children, her daughter graduated in June, and few knowing the pretty girl ever dream that her mother is selling papers on a public street. She has now the monopoly of the corner, a boy who vigorously opposed her having outgrown the business.

Washing Fine Handkerchiefs.

Few laundresses wash fine embroidered handkerchiefs properly. Too often they go to pieces in the wringer or are rubbed into holes on the washboard. The dainty bit of cambric that is carried more for show than for use may be washed by the owner in her own bowl. This done, all dust should be wiped from the large window pane,

and the handkerchief, while it is still wet, spread smoothly over the glass, all creases pressed out and the corners kept flat. When the handkerchief is dry it will be crisp and new in appearance.

PARENTAL DISCIPLINE.

Seven Maxims Which Every Parent Should Learn by Heart.

As long as human nature exists in its present imperfect condition, so long will the question of the discipline of children remain of the greatest importance in every home, for on the discipline of children in the home depends, to a very great extent, the future welfare not only of individuals, but of the nations and the race. For the object of parental discipline is not to secure obedience to this or that rule which suits the temporal convenience to make, nor even to secure "good conduct" in the child, so much as to develop the character of the young life intrusted to our care.

Dr. Mary Wood Allen, in a recent article on punishment, quotes Nora Smith's seven maxims, which we think every parent should learn by heart. They are:

1. The discipline should be thoroughly in harmony with child-nature in general and suited to the age and development of the particular child in question.
2. It should appeal to the higher motives, and to the higher motives alone.
3. It should develop kindness, helpfulness and sympathy.
4. It should never use weapons which would tend to lower the child's self-respect.
5. It should be thoroughly just and the punishment should be commensurate with the child's first offense.
6. It should teach respect for law and the rights of others.
7. Finally, it should teach voluntary obedience, as the object of true discipline in the formation of character; it should produce a human being master of his impulses, his passions and his will.—Womankind.

FOR FAULTFINDERS.

Duplication of Their Own Traits Excites Their Antagonism.

Many people have a genius for seeing the faults of others, but there is one peculiarity about this faculty which will be an interesting study for the psychologist; it is the tendency to criticize most sharply those faults in others which are most prominent in ourselves. In other words, that which excites our greatest antagonism is the duplication of our own traits. It would be amusing, if it were not disturbing and pathetic, to hear people criticize mercilessly traits in others which everybody recognizes as being the special possession of the critics themselves. It is pathetic because it shows how little we know about ourselves, and it is disturbing because it suggests to the listener that he may be doing precisely the same thing. In all probability he is. So little do we know ourselves, as a rule, that when we see parts of ourselves in others we detest them. If we recognized them as being in a sense our own possessions, we might not like them any better, but we should surely sympathize with their possessors. If there is any common experience which ought to draw us together, it is identity of struggle and temptation. We ought to stand shoulder to shoulder with those who are fighting the same fight which we are fighting, and who find in themselves the same tendencies to evil or to weakness; and yet these are the very people from whom, as a rule, we withdraw ourselves most entirely, and upon whose shoulders the lash of our criticism falls most mercilessly.—Home Queen.

Good for Sore Throat.

Tincture of myrrh dropped into water is an excellent wash for the mouth and the throat. The proper proportions are ten drops of myrrh to a glass of water.

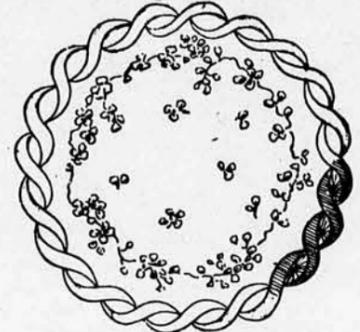
Rose Gold is Fashionable.

Rose gold, which is in reality a gilding over silver, is the latest novelty for purse and bag clasps, chatelaines, and the equipment of the toilet table. The name is singularly appropriate and suggestive, for the peculiar quality of the gilding is a warm, rosy tint that is not sufficiently defined to become pink.

HONITON LACE DOILY.

A Very Pretty Thing When Carefully and Tastefully Made.

Honiton lace has lost none of its popularity, and in combination with silk embroidery is very beautiful. The design here shown is a wreath of maiden-hair ferns with single leaves dropped here and there; honiton lace is basted on the edge all round, having for a foundation round thread white linen. For the ferns and stems use the natural



HONITON LACE DOILY.

shades of Asiatic floss, the silvery greens. Buttonhole the honiton lace down with the Asiatic lace silk, white. These doilies are very useful for cake-plates or water bottles. Cut the linen away from under the lace.

To wash embroidery I make a suds of tepid water and ivory soap. Swish the article about in the water. Rinse in clear tepid water. Then iron while wet. Place a clean handkerchief over several thicknesses of flannel, lay the article face down and press on the back with a hot iron till dry.—Eva M. Niles, in Boston Globe.

Usefulness of Green Soap.

Since women have taken to studying medicine, attending clinics, and visiting hospital wards with scientific interest, they have learned the value of green soap. Green soap, which comes in paste form, is an antiseptic, and is much used in hospitals and by physicians who come into contact with many varieties of uncleanness during a day's work. It is particularly beloved of those who make a specialty of scalp diseases, for it is as a hair soap that it is particularly valuable. After washing the head with it the hair is more silky, shiny, and soft, than after treatment with ordinary washes, and its effect is, moreover, stimulating to the growth of hair and generally beneficial.

To make your business pay good health is a prime factor. To secure good health the blood should be kept pure and vigorous by the use of Ayer's Sarsaparilla. When the vital fluid is impure and sluggish there can be neither health, strength nor ambition.

Drink **HIRES** Rootbeer when you're hot; when you're thirsty; when callers come. At any and all times drink **HIRES** Rootbeer.

Made only by The Charles E. Hires Co., Philadelphia. A 25c. package makes 5 gallons. Sold everywhere.



FORTY FOR \$1.00...

For the next 60 days we make this extraordinary offer on our **HIGH-ARM SINGER MACHINES**. On receipt of \$1.00 we will send our No. 3 High Arm on 80 days' trial (price \$12.95), or our No. 1 (price \$18.75). Our machines are the best made; our No. 1 beats the world; 10 years' guarantee with each. Deal with a reliable house; buy at factory prices. H. R. Eagle & Co., 70 Wabash, Chicago.



LADIES

Know the Certain Remedy for diseases of the

Liver, Kidneys and Urinary Organs is

Dr. J. H. McLEAN'S LIVER AND KIDNEY BALM

It Cures Female Troubles

At Druggists. Price, \$1.00 Per Bottle
THE DR. J. H. McLEAN MEDICINE CO.
ST. LOUIS, MO.

The Young Folks.

BAND OF HOPE.

See the merry children
Passing down the aisles.
Voices full of music,
Faces bright with smiles.

Banded in a union,
Temperance their aim,
"Hope" is on their banner,
"Band of Hope" their name.

Grand and noble purpose!
Let us humbly pray,
God will bless the order—
Help them on their way.

Each one has a mission
In the world to fill,
Each one is in earnest,
With a perfect will.

When our days are numbered,
They will have their day;
They will fill our places
When we've passed away.

Carbondale, Kas. JAY VEE.

BOMBARDIER BEETLE.

Supplied by Nature with a Strange
Weapon for Protection.

Of creatures inhabiting the land the bombardier beetle certainly has the queerest means of defense. When pursued by an enemy he discharges an extremely volatile fluid which is secreted by special glands and which has the curious property of turning into a cloud of light bluish smoke. Some say that this smoke blinds the pursuer for a time, others say that it only confuses him. If the first discharge is insufficient the bombardier can repeat it as many as 20 times, but he usually escapes before carrying the bombardment to this length.

Of sea creatures, the globe fish, or puffer, uses the most extraordinary means for protecting himself against or escaping from his foe. In a quiescent state its body is somewhat thick, and flattened on the under side. As such, he would make a nice mouthful for a good-sized enemy, but when he finds that he is about to be seized he pumps water into himself until he swells out into a globe from 12 to 15 inches in diameter, and at the same time erects a multitude of short, sharp spikes, and so becomes a very awkward mouthful. Sometimes, even in this state, he gets within the jaws of some large enemy, and then he suddenly collapses to his original size and swims out, leaving the jaws to close on nothing—Philadelphia Press.

DOG CATCHES FISH.

Has the Reputation of Having Never Lost a Victim.

William Clawson, a fisherman of South Plainfield, N. J., is the owner of a dog of which he may well be proud. The animal, which looks like an ordinary cur, is possessed of an intelligence far above that of other animals of his species. The dog has become one of the most expert fishermen in the vicinity, and has the reputation of having never lost a fish. Mr. Clawson and the dog work in company. Arriving at the stream, his owner will get the lines ready, the dog watching with more than ordinary interest, and when everything has been arranged to the mutual satisfaction of the two the dog will watch the water until he sees that a fish has taken hold of the line, and then he will assist in landing it. But it is when his master goes gigging that the dog is in his element. Nearby Mr. Clawson's place is a bridge over a small stream in which are a number of carp. It is Mr. Clawson's habit to stand on the bridge and let down a line into the water, which is so arranged that a fish in passing will run his head into the loop prepared to receive him, and so get caught. The moment that the fish is caught the dog does his work. Leaping into the water, he grabs the struggling fish and brings it in safety to the shore, and he has never been known to lose a fish caught by him in this manner.—Cincinnati Enquirer.

Inside the porch of a doorway of a house in Jesmond, England, a pair of greybirds built their nest. The passing in and out of the people residing in the house did not seem to disconcert the "happy couple," who helped themselves to some feathers placed at their disposal. The greybird, or song thrush, often chooses a singular place as a nesting site.

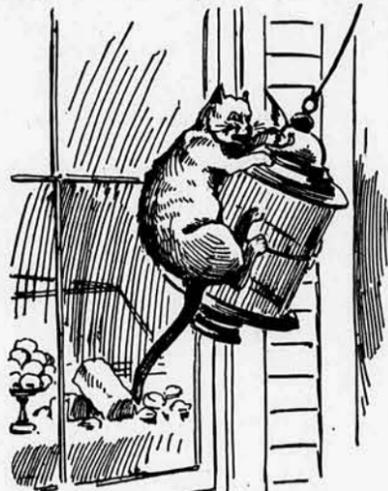
THE CAT WAS FAITHFUL.

Laid Down Its Life to Avenge the Death of a Bird Friend.

Some time ago, in a quiet little corner way down on the Rue Royale, I chanced upon a queer little Creole creature, whom the neighbors called "Mam'zelle." If there was ever any name attached, it must have been in prehistoric times, for now there is not even a sign upon the door of the little bake-shop where Mam'zelle sells bread and cakes to the neighborhood. Very good bread and cakes they are, too, as I can testify, for recently I have found Mam'zelle's cozy shop a very comfortable resting place after a morning's tramp in quest of news. In this way I have come to be pretty well acquainted with Mam'zelle and Pierre, the cat, and Jeanne, the bird.

Pierre is a handsome black and white fellow, with a noble head, and he and the little canary, Jeanne, were about the same age. Mam'zelle told me in her pretty Creole patois how devoted the two pets were to each other, and I myself saw frequent evidences of their kindly relationship. In a quiet corner of the little shop I have seen Pierre and Jeanne taking their breakfast together from the same plate, and by and by, when the cat would lie dozing in the sunshine, the bird would hop about him, or cuddle up snug and comfortable between his outstretched paws. When Mam'zelle was busy so that she could not keep an eye on the little bird's safety she would swing the cage in the doorway, while Pierre would stretch himself on the floor beneath, keeping guard over his friend. And woe betide the stray cat that wandered that way. Pierre was always on the alert for squalls, and if a cat came too near to suit him he would send Jeanne hustling into her cage while he chased the offending feline off the street.

Just this very thing happened yesterday for the 100th time, probably,



POUNCED ON POOR JEANNE.

but for the first time on record grief followed the move. Pierre and Jeanne were taking their usual morning game in the sunshine of the little shop door, when a big brindle stranger appeared on the banquette without. Straight as a die Jeanne was in her cage and Pierre had gone in hot pursuit of the brindle. The chase was a hard one, and Mam'zelle says Pierre must have been gone a long time, but she was busy serving customers, and by and by noticed Jeanne hopping about the counter. Thinking, of course, that Pierre had returned, she took no further notice of the bird. A little later, however, hearing a dreadful commotion on the banquette she ran out to witness the sad little tragedy which I, too, arrived just in time to see, but too late to prevent. Taking advantage of Pierre's protracted absence an ugly-tortoise-shell from the next block strolled to the little shop in search of Jeanne. Finding her out hopping about unprotected, he began siege at once, no doubt. Mam'zelle and I arrived just in time to see the tortoise-shell pounce on poor Jeanne as she sat perched on top of the swinging cage and bear her with him to the pavement. Before either of us could interpose the deed was done, and then in a moment there came Pierre rushing round the corner, and as quick as a flash he had taken in the situation. With one fierce bound he sprang upon the tortoise-shell and swept poor Jeanne from his clutches. For a brief moment he sat

guarding her, but that moment was long enough to tell him he was too late.

Then letting Mam'zelle take the little corpse from under his paw, he swooped down upon the tortoise-shell. It was only for a little while, and when the battle was over both cats lay dead on the pavement. Pierre had laid down his life to avenge Jeanne's death, and the little Mam'zelle mourns both her pets.—New Orleans Cor. Philadelphia Times.

THE ARTFUL DODGER.

Appropriate Name Given to a Lazy Horse That Played Lame.

Some horses are as lazy as some men, and perhaps it would be equally true to say that some horses are as cunning as some men; but not many ever combine the two qualities of laziness and cunning better than one whose performances are chronicled by Lady Barker. He was one of her horse friends in New Zealand, christened Artful Dodger. This name was given to him on account of the trick of counterfeiting lameness the moment he was put into the shafts of a dray. That is to say, if the dray was loaded; so long as it was empty, or nearly so, the Dodger stepped out gayly, but if he found it at all heavy he affected to fall dead lame.

More than once, with a new driver, this trick had succeeded to perfection, and the Dodger found himself back again in his stall, with a rack of hay before him, while his deluded owner or driver was trying to find a substitute in the shafts.

In order to induce the Dodger to act his part thoroughly a drayman was one day appointed whom the horse had never seen. The moment the signal was given to start, the Dodger, after a glance around, which plainly said: "I wonder if I might try it on you?" took a step forward and almost fell down, so desperate was his lameness.

The driver, who was well instructed in his part, ran round and lifted up one sturdy leg after the other, with every appearance of the deepest concern. Thus encouraged, the Dodger uttered a groan, but still seemed determined to do his best, and limped and stumbled a yard or two farther on.

It seemed impossible to believe the horse to be quite sound; but the moment had come to unmask him. His master stepped forward, and, pulling first one cunning ear, on the alert for every word, and then the other, cried: "It won't do, sir! Step out directly, and don't let us have any nonsense." The Dodger groaned again—this time from his heart, probably—shook himself, and, leaning well forward in his big collar, stepped out without a murmur.

A Larder Full of Dainties.

Foxes are devoted parents, like all of the lower order of animals, and the way they provide for their young is something amazing. It is related that one fox in Scotland had developed such a marked fondness for lambs that efforts had to be made to find her lair. After a long hunt the men succeeded, and in the den five young foxes were found. They found also a store of food calculated to last a long while. There were lambs, rats, curlew, plover, ducks, partridges, and, most astonishing of all, 76 short-eared owls. All the game was dead, and the hunters soon dispatched the young foxes, and also Mrs. Reynard, when she approached her lair.

Oyster Vanquishes a Crow.

The strength of certain bivalves, that of the mussel, for instance, is notorious, and an interesting incident in this connection was witnessed some time since on the beach of Oxford, a little village in Suffolk, where there are oyster beds. A predatory crow, when the tide was out, had pounced upon an oyster which had opened to feed, and, inserting his beak, prevented the mollusk from closing. Corvus triumphantly sailed aloft with his prey, but his flight was of short duration, for the "native" tightened its ligaments, with the result that the crow, suffocated, came down speedily, and, what is more, he never got up again.

NEST IN A POCKET.

Wrens Establish a Cozy Habitation in a Queer Place.

After reading about the English sparrows that set up housekeeping on the elevated railroad structure, one of our girls—Mabel Taylor, of Greenfield, Ill.—writes about the doings of two funny little wrens. One day they spied an old coat hanging in the corner of the back porch. It belonged to one of the farm laborers who wore it only when the weather was chilly. Mrs. Wren thought it would be a good place to live, and Mr.



WHERE TWO WRENS CHOSE A HOME.

Wren quite agreed with her. So they brought straw and strings and built a house in one of the pockets, making it as cozy a little flat as anyone could desire. When the wind blew the old coat would swing gently and rock Mr. and Mrs. Wren to sleep.

But chilly weather came and the farmer wanted his coat. He went to take it down and he found the nest. Of course, he hung it right back again, and now there are little wrens peeping out of the ragged old pocket.—Chicago Record.

Girls' Confidence Betrayed.

Susie—I don't want to seem flattered by the attentions of these men. I don't look as if I had not been used to such things, do I?

Amy—No. You look as if you were a belle before the war.—Bay City Chat.

Ice Cream Made by a New Process.

I have an ice cream freezer that will freeze cream instantly. The cream is put into the freezer and comes out instantly, smooth and perfectly frozen. This astonishes people and a crowd will gather to see the freezer in operation and they will all want to try the cream. You can sell cream as fast as it is made, and sell freezers to many of them who would not buy an old-style freezer. It is really a curiosity and you can sell from \$5 to \$8 worth of cream and six to twelve freezers every day. This makes a good profit these hard times and is a pleasant employment. W. H. Baird & Co., 140 S. Highland Ave., Station A., Pittsburgh, Pa., will send full particulars and information in regard to this new invention on application and will employ good salesmen on salary.

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KANSAS FARMER CO., Topeka, Kas.

Volume XL "American Short-horn Herd Book" is just out. It includes bulls 117790 to 121633 and contains pedigrees of animals calved before February 1, 1896.

According to the Minneapolis *Market Record*, millers in the Northwest are buying up round lots of wheat in country houses for future use, owing to the rust in the growing crop and to other unfavorable conditions.

The organ of the American woolen manufacturers, speaking of probable prices to prevail for goods now in course of manufacture, says: "It is the general opinion that they will be somewhat under last year's opening quotations; 5 per cent. seems to be an average expectation. Some of the goods that have been opened were quoted more than 5 per cent. lower, and these figures were made with the desire to force business." This situation is, of course, deplored, and the paper suggests the old and new remedy of combination: "Any such movement must necessarily demoralize the market before the lines are generally open, and while there is little or no benefit to be derived from such a course, it is productive of great evil to the trade. If an agreement could be entered into and carried out, whereby all would open at a stated time, and with prices on a certain basis, the benefit to the trade would be almost inestimable." Are we to expect a woolen trust?

OTHERS' MISFORTUNES.

When struggling against adverse times, many a person feels that he has more than his share of misfortunes. So, too, it not infrequently occurs that a section or State receives the impression that its share of misfortunes is above the average. Again, politicians promise to remedy all evils if only they are elected to office. The remedying business has not been very successful.

In its issue of last Thursday, the *American Wool and Cotton Reporter*, under "Dry Goods Notes," gives ten paragraphs to as many firms. Six of these tell of financial embarrassments, as follows: (1) Receiver appointed for Deutsch & Co., cloak dealers, 39-41 West Twenty-third street, New York. (2) Chattel mortgage on stock given by M. Peyser & Bro., dealers in dry goods, Seattle, Wash. (3) Chattel mortgage given by A. Lippie, dealer in dry goods, Allegan, Mich. (4) Judgment entered against David Marx & Co., dealers in suits, 125 Greene street, New York. (5) Assignment William Drack, manufacturer ladies' suits and cloaks, 11-13 West Houston street, New York. (6) Assignment, L. Baldwin & Co., cloak manufacturers, Baltimore, Md. The same paper has been publishing a series of articles on "Woolen Mills—Some Reasons Why They Are Not Prosperous."

Verily, a change from this kind of reading would be most welcome.

CHANGING SEED WHEAT.

It is no longer disputed that in ordinary farming the sowing of any given variety of winter wheat continuously on the same land or in the same locality results in its deterioration, both as to yield and quality.

The numerous letters which each season brings his office relative to this condition and as to the sections from which the most profitable change of seed is likely to be had, have prompted Secretary Coburn, of the State Board of Agriculture, to obtain for publication the views of those having the largest opportunity for observation in such matters and noting intelligently some of the practical results. No other men are in such close touch with wheat-raisers and the wheat interest as the millers; and the tenor of valuable information secured from them in reply to inquiries is well shown in extracts from some of their letters, as follows:

Mr. C. V. Topping, of Enterprise, Secretary of the Kansas Millers' Association, writes: "The belief existing among winter wheat growers that sowing the same varieties year after year in the same latitude lowers the yield and quality, is correct. C. B. Hoffman & Son, extensive millers at this place, last year imported from Russia some of the pure Russian wheat. (This is the Crimean winter wheat, and I would suggest for accuracy and definiteness that the name Crimean winter wheat be used for this Russian variety and that the misnomer "Turkey" or "Rice" wheat be discarded.) A number of years ago the same quality of wheat was imported, and by comparing the wheat that has been sown here year after year with that just imported, it shows a very marked difference, both in quality and certainly in yield of bushels per acre, as well as in the wheat product. The flour from pure Russian wheat is much stronger than that from wheat that has been sown and resown in this country for a number of years. This is very noticeable in European markets, where the Hungarian flours command from 20 to 50 cents per barrel more than our ordinary Russian wheat flours. Farmers should change seed certainly every five years, and I consider that it would pay them well to change every three years. For this part of the State (Dickinson county) I would recommend sowing the hard varieties, and in exchanging seed the central part of Kansas could use that grown in either northwestern or northeastern Kansas; but of course where it can be had, the pure Russian seed from the Crimea should be used."

Mr. J. W. Krehbiel, manager of the Moundridge Milling Co., at Moundridge, McPherson county, says: "The nature of our wheat undergoes some change and it would be very profitable to procure new seed at least every ten years. I think a decline in the original qualities for milling will first be manifested, but as the plant loses its native European hardness (as the Turkey variety) it will not stand the winter so well and consequently give a less yield. Our locality would want Turkey wheat imported from Russia. Mr. B. Warkentin, of Newton, now has some of this new seed imported, and the use of such should be a great profit to our farmers."

Mr. Warkentin, above mentioned, President and manager of the Newton Elevator and Milling Co., Harvey county, says experience teaches him that by sowing the same variety year after year in the same locality it changes its qualities, both as to yield and milling. "Our so-called Turkey wheat is becoming softer from year to year. Of course the growing season has much to do with this. If the wheat can mature without too much rain the per cent. of gluten, which makes it valuable, will be much larger than otherwise. In my opinion our farmers should change seed at least every four or five years and new seed should be imported from the Crimea about every six to eight years. Farmers should be encouraged to exchange for seed from a distance of say twenty-five miles, as I have found it a great means of improvement. Our soil and climate seem best adapted for the red hard winter wheat, with which we can easily com-

pete in the world's markets. I have twice within the past ten years imported fresh seed wheat from the Crimea—the wheat known as the Russian Turkey, the beneficial results of which are very plainly seen in our county."

Geo. H. Hunter, President of the Hunter Milling Co., at Wellington, in Sumner county, writes: "Our considerable experience and observation is that continuous sowing of the same wheat in one locality is injurious to it. We have tried wheat from other portions of our county and find a change, especially from the north, is beneficial. Would not recommend seed obtained from too great a distance, say not to exceed 150 miles, but it has been our experience that when new seed has been brought in, either wheat or corn, the yield has been much better for several years. Generally a poor yield makes a poor product, which is the only complaint we would make as to quality. It is a good rule to change seed at least once every five years."

The Messrs. Colburn, of the Queen Bee Roller Mills, at McPherson, write in substance as follows: "We believe our farmers should change seed as often as once in three or four years; not necessarily to imported seed, but to that raised in a different locality. This, we believe, with the exceedingly good milling qualities of the Russian, or, as we term it, 'Kansas hard,' would hold both the yielding and milling qualities intact for many years. While we are firm believers in changing seed at least once in three years, it is a fact that prevailing climatic conditions make a wonderful difference in the outcome of quality and yield, whether the change is made or not. Everything does not depend upon seed. We have seen the choicest seed sown, only to produce the meanest wheat, and vice versa. If some of the imported was available each year it would certainly tend to hold up the reputation we are now attaining in the world's markets on 'Kansas hard wheat,' as well as the flour made from it."

Prof. C. C. Georgeson, of the State Experiment Station, at Manhattan, says: "That wheat does deteriorate in the course of years under the care that the average farmer gives his crop, I think must be conceded. The yield becomes less, the grain of an inferior quality, and the millers complain that the proportion of bran to flour is too large. From what section it would be most desirable to procure a change of seed cannot be answered positively. In our experience here at the station we have as a general thing had the best results from wheat grown in about the same latitude to the eastward of us. The start for our best yielding varieties came from Virginia, Maryland and Ohio. A variety of superior merit, produced only by selection and culture under the most favorable conditions, can maintain its superiority only when grown and selected with the same care which produced it. Our farmers do not give their wheat that care and culture, and the legitimate result is that it runs out. The main cause of deterioration then is under the control of the farmer himself."

END OF A LONG BANK TAX CASE.

The mandate of the United States Supreme court, in the case of the First National bank of Garnett vs. R. H. Ayers, as Sheriff, and the County Commissioners of Anderson county et al., was ordered spread upon the records of the Supreme court at its session this week. The decision of the Kansas Supreme court in its opinion written by Justice Allen was affirmed.

The question was whether a shareholder in the bank is entitled, under Kansas laws and the National Banking act, to deduct the amount of his indebtedness from the value of his bank stock, in assessing the stock for taxation. Some of the District Judges decided that he had this right. Judge Benson decided that he had not. He was affirmed by the Kansas Supreme court, and its decision was affirmed in the United States Supreme court.

Gleed, Ware & Gleed and Rose & Roberts were attorneys for the bank, and Judge A. Bergen and C. T. Richardson were attorneys for the county officers.

A GREAT SHIP LINE TO GALVESTON.

The North German Lloyd Steamship Company has established a line to Galveston. The rate from Bremen, Germany, to Galveston is said to be only \$2 more than to New York. It has been said that the great steamship companies would not recognize the Galveston port, and every effort has been made to continue all foreign traffic through Eastern seaboard ports rather than those on the Gulf. The fact that the Lloyd Company has established a line to Galveston is, therefore, of the first importance.

The time is probably not far distant when the produce of the rich plains of the West, increased many fold over its present volume, will find its foreign outlet through the direct line to the Gulf, rather than over the mountains to the Atlantic, and when passengers to and from the old world will not have to pay fares over the long railroad routes between the West and the East.

It is interesting in this connection to note that a freight rate has resulted from the ease with which our products reach tide water via the Southern route, and on last Friday was reported a 6-cent reduction in the charges for carrying wheat from the Missouri river to New York. But when reductions are all made and matters are finally adjusted on an equitable basis of carrying charges, it is evident that the part of Kansas' surplus which seeks a foreign market will take the short route to Galveston rather than that more than twice as long to New York. So, also, the time ought to come rapidly along when imported goods, and even Eastern manufactured goods, shall be distributed to the great plains region from Galveston rather than from New York.

SPEULATIVE DEPRESSION.

Whether the depression is as low as it will go, is a question on which there is difference of opinion. Some think the bottom has been reached. Speculators are now the loudest squealers, as will be seen by the following, which appeared in the *Chicago Inter-Ocean*, about the beginning of the present month:

"What is known as the speculative trade on the Chicago Board of Trade is in the midst of a period of depression. If the depression were confined either to the making of low prices or to the curtailing of the volume of business it might be endurable. The depression covers both. If it were the depression of a day or a week, or even a season, it might be borne more patiently. But it has claimed months already, and the end is not yet. The close of the past week marked low ebb for prices for the year. Everything appeared to be under the hammer. There is no such thing as rebound to anything. Short sellers show as little confidence as if markets were in a top-heavy condition. People in trade who never croaked before are talking in discouraging tones now. There are no investors in anything. The whole trade has gone to scalping. If a man buys to-day it is to take small profits or small losses to-morrow.

"The low prices have served to emphasize the absence of the countrymen. At each drop in prices in wheat, corn and pork for three months the outside buying has been looked for. On a few occasions the commission people found a good sprinkling of country buying orders. The professional trade forthwith sold enough stuff in all pits to ten times satisfy the country orders, and then smashed prices, leaving outsiders with losses the first twenty-four hours. With everything on the farms almost given away, with hard times at country centers because of the beggarly prices for the producers, the conditions have not been conducive to raising a fresh crop of country bulls every week, or even every month. Thus, the trade has become largely professional, as it has largely of a scalping character."

Variations of price on account of difference in quality are more marked as to hay than any other farm product.

If you want KANSAS FARMER and Semi-Weekly *Capital*, send us \$1.50. Or, KANSAS FARMER and Topeka *Advocate*, send \$1.50.

CONVENTION EVENTS.

The second national political convention of the year was held last week at Chicago. The Democratic party there made its declaration of principles and named its candidates. As in the Republican national convention, at St. Louis, in June, the money question was the leading issue. But, while in the Republican convention the single gold standard people had an overwhelming majority, in the Democratic convention the 16 to 1 silver people had a majority of over two-thirds. The gold standard people offered their amendments in the sub-committee and again in the full committee on platform. Defeated in both these they offered a minority report in the convention, which was promptly voted down. There was, however, no open dramatic bolt as in the St. Louis convention. But the dramatic scenes of the bolt of the silver Republicans were even exceeded. The cause of gold had been presented in a lengthy and powerful speech by Senator Hill, of New York. He was answered and the debate closed by ex-Congressman Bryan, of Nebraska, who, with his second sentence, electrified the galleries which had been against him, and so carried away the convention that at the close of his speech many State delegations marched around to the Nebraska seats and dipped their banners to the banner of Nebraska. It was at once suggested that the speech had won for Mr. Bryan the nomination for President. This prediction was justified by his nomination the next day on the fifth ballot.

Aside from the money plank the platform is not strikingly different from former declarations of the party. Coming after, as it does, the directly opposite course of the St. Louis convention on the money question, the platform and the nomination of the Chicago convention make it certain that the money question is to be the overshadowing issue of the campaign.

It now seems probable that the People's party convention, soon to assemble at St. Louis, will endorse the Chicago platform and nominations and that there will be marshalled upon the one side all those who favor the restoration of the coinage system in the United States, as it existed prior to the act of 1873, whereby gold and silver were coined, free of expense, for all holders, the silver dollar being sixteen times as heavy as the gold dollar and each a full legal tender, and upon the other side those who favor making gold the one and only standard of values. Indeed, the campaign has already begun on this question and people are discussing it upon every corner, with apparently many changes in party affiliations. The gold Democrats who are reluctant to vote the Republican ticket talk of nominating another ticket, but such course apparently becomes more and more unlikely as the heat of convention excitement subsides.

APPARENT REVERSAL OF MALTHUS.

Almost every thinker is concerned more or less on account of the abnormal situation of a world nearly full of people, a vast majority of whom are underfed and illy clothed, indifferently housed and insufficiently warmed, "short" on opportunities and "long" on time, while this same world is complaining of overproduction in everything useful to mankind.

The writings of ancient and modern thinkers have been studied, statistics have been questioned, theories propounded and opinions launched. Among those who have taken up the subject is Judge Albion W. Tourgee, whose first notable work was entitled "A Fool's Errand, by One of the Fools," and depicted his experience as a "carpetbagger" in the South soon after the war. This author, in the July number of *Sociology*, says:

We are facing for the first time in the world's history this condition: The world is able to produce, and actually does produce, more food than is needed to meet the requirements of the population of the globe. More wheat, corn, rice, meat and other staple food products are raised every year than can possibly be consumed. One-fourth of the arable lands of the United States might be abandoned and the world still have enough. The immediate issue of this condition is the fall in prices of farm products, and a necessary result of this fall in

the price of farm products is a declension of farm values.

A hundred years ago Malthus put forth the theory, which has been almost universally accepted as a fundamental axiom of political economy from that time to the present, that the sum total of human labor applicable to the productive capacity of the earth, was insufficient to supply the material needs of its population. In other words, he formulated the theory that population increases in a geometrical ratio, while the world's capacity to supply them increases only in an arithmetical ratio. To-day we are facing a situation which seems to be an exact converse of the premises on which this hypothesis was based—one apparently establishing the fact that the world's labor, applied to and supplementing the natural capacity of the earth, has already produced more than enough of life's necessities to supply the actual population of the globe, and moreover that this condition is likely to prove continuing. What, then, is to be done? The only logical answer is to restrict production.

That the novelist has the better of the scientific investigator in reaching such conclusion, is evident by the disregard of the fact of the unsupplied want—abject, partial and relative—of the majority of mankind. The fact that his proposed remedy is cruel would be against his well-earned reputation for kindness of heart, were it not for the fact that he is a dreamer and not a philosopher.

Limit production when the world is producing only a small percentage of surplus over present consumption, and while consumption is a very large percent. less than people need for their comfort and full nourishment! Too much is not produced. There are too many clogs preventing products reaching those who need them. The noted novelist will have to dream again and dream more rationally before he can overthrow the conviction in studious minds that Malthus was correct in his conclusion and before he can get rational humanitarians to agree to the plan of the trusts to reduce production as a remedy for the anomaly of bursting granaries and ill-fed people, of markets glutted with manufactured goods and nations of ragamuffins. The statesmanship which finds a way to enable people to procure and consume, to be employed and to earn, to the extent of the full productive capacity of the age, many fold more fully developed than now, will receive and deserve the homage of the race when the dreamer who prescribes "restricted production" as the remedy for the ills of society shall have been long forgotten.

Weekly Weather-Crop Bulletin.

Weekly Weather-Crop Bulletin of the Kansas Weather Service, for week ending July 14, 1896, prepared by T. B. Jennings, Section Director:

GENERAL CONDITIONS.

A cool week, the temperature ranging from 2° to 8° below the normal. Occasional light showers have fallen in the extreme western and eastern counties, with abundant rains in the central counties, being heaviest in Pawnee and Stafford, where it ranges from three to four inches and over.

RESULTS.

EASTERN DIVISION.

The cool week, light showers and heavy dews have been very beneficial to growing crops, facilitated threshing, flax harvest and haying, and favorable to plowing and other field work. Corn about all laid by. Threshing progressing. Oats generally a poor crop, owing to rust. Flax harvest nearly done. Meadows are fine and pastures in first-class condition, with stock water abundant.

Allen county.—A dry week; much hay put up; threshing in progress; oats seriously affected by the rust.

Brown.—A good week for haying and stacking; threshing progressing; wheat yielding well; chinch bugs becoming numerous in the corn fields.

Chautauqua.—A good growing week; corn has made rapid progress, is doing fine and a large crop is assured; haying begun, grass good; threshing in progress; flax likely to be injured by too much moisture; cattle doing finely.

Cherokee.—A good week for farm work; corn in bad condition for dry weather, as it is poorly cultivated and weedy on account of too much rain earlier in the season.

Coffey.—A fine growing week, with heavy dews each night; corn fine, early

corn furnishing plenty of roasting-ears, late corn in silk.

Douglas.—Crops all doing well; threshing has commenced.

Elk.—A good week for growing corn, and flax harvest; corn could not be better.

Franklin.—Oats almost a total failure from rust; flax weedy in many cases; corn doing well; some chinch bugs.

Johnson.—A good week for growing corn and hay harvest.

Labette.—Good week for threshing, most of the shock threshing done, stack not begun yet; corn needing rain very badly; ground getting hard to plow.

Marshall.—All conditions favorable for corn, prospect never was better; threshing commenced; oats are poor in quantity and quality; wheat fair; grass fine.

Montgomery.—Weather mild, 3° below normal, and but one light shower, though heavy dews every night; corn still doing finely, but rain would be beneficial; flax harvest in progress.

Osage.—A fine week for growing crops, threshing and haying.

Pottawatomie.—Cool, favorable week for all crops, especially apples; wheat turning out good; oats very light on account of rust; corn fine, all tasseled out and some silking.

Shawnee.—Corn growing very fast, the early-planted is silking; late potatoes also growing well.

Wilson.—Threshing; oats light on account of rust; corn needs rain to fill up; hay crop heavy; second alfalfa crop ready to cut.

Woodson.—Everything still favorable for unprecipitated corn crop; flax do to cut the 18th.

Marion.—Splendid growing week; wheat making good yield; oats poor, corn good, pastures good.

McPherson.—Fine week for corn; harvest about over and grain mostly in stack, some has been threshed, yield fair, quality good; oats poor; grass and rough feed abundant.

Mitchell.—A favorable week for all growing crops; corn, the sorghums, millet and gardens doing well; in some locations grasshoppers injuring alfalfa.

Ottawa.—An ideal week for corn and gardens; harvest ended, wheat not yielding well as expected; oats very poor; second alfalfa cutting begun; fall plowing and listing stubble to fodder crops the order of the day.

Pawnee.—Pastures excellent; corn fine and much of it past the danger point; all feed crops growing rapidly; all small grain harvested considerably damaged by rain in the stack.

Phillips.—A fine growing week; corn never looked as well at this season.

Pratt.—All growing crops booming; too wet in places to cultivate; early corn in roasting-ear; wheat yield poor, quality fair; grazing fine.

Reno.—Fine growing week; early corn now safe; all crops doing well.

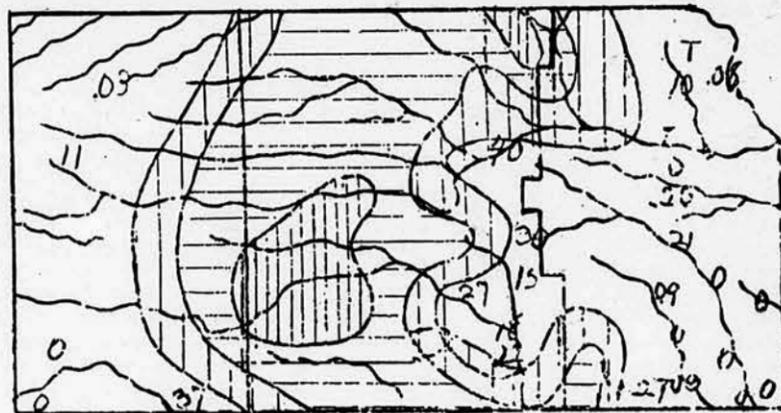
Rice.—Wheat proving a light yield, with light berry; corn is doing finely.

Salline.—A good growing week; corn promises a bountiful crop; no hot days, but the rain of 8th and 9th interfered with threshing and stacking; all kinds of growing grains are in full vigor.

Sedgwick.—Fine corn weather; much of the field corn is in roasting-ear.

Smith.—Corn is growing and could not look more promising for a large crop.

Sumner.—Corn looking fine, many stalks setting two ears; much Kaffir corn being planted on wheat stubble.



Scale of shades in inches less than 1/2 1/2 to 1 1 to 2 over 2 T Trace

ACTUAL RAINFALL FOR WEEK ENDING JULY 11, 1896.

MIDDLE DIVISION.

Few seasons have proved so completely "corn seasons" as the present, and the corn has grown very rapidly. It is silking in the north and furnishing roasting-ears in the south. Harvest is about over, but the rains interfered with threshing. Meadows are in fine condition, pastures splendid and stock excellent.

Barber.—Best growing weather for years; all kinds of crops in best possible condition; corn, cane and Kaffir planting still in progress; range was never better nor cattle in finer shape.

Barton.—Past week wet and cool, improving the corn finely; corn is setting on ears and silking and some fields have roasting-ears; as the weather was unfavorable for millet cutting, farmers are busy plowing for wheat; threshing will commence soon.

Butler.—Wheat and oats being threshed as fast as possible; wheat yield mostly light; oats very light and, as a rule, poor; corn in extra fine condition, some past any damage from drought; flax fine; pastures, hay land and alfalfa in No. 1 condition.

Cloud.—The best week of the season; corn ten days earlier than usual and in fine condition, nearly all tasseled and the early in roasting-ears.

Cowley.—A growing week for all growing crops; plowing commenced.

Dickinson.—Harvestover and threshing commenced; wheat poor and light; oats worse than wheat; corn in tassel and looking splendid.

Harvey.—A cool, moist week; corn in fine shape; threshing in progress; peaches in abundance.

Kingman.—Good growing week for corn; not much threshing being done, too wet and in sweat.

Washington.—Corn doing fine, early corn in silk; threshing commenced; flax is all harvested; fruit is good, peaches, apricots and apples being marketed.

WESTERN DIVISION.

A fine growing week, with weather much cooler and damper, though but little rain fell anywhere. Harvest is nearly over, and threshing will begin the coming week. Much attention has been paid of late to fodder crops, and this year is no exception. These crops are in fine condition.

Gove.—Harvesting about half done; wheat short crop but very good quality; corn and sorghum good yet.

Morton.—More hot and dry weather; forage crops are growing but need more rain.

Thomas.—A fine week for harvesting, but corn will need rain soon; grasshoppers are plenty.

Trego.—A fine week; corn has made the greatest change, the late tasseling, another such week and most of our corn will be fertilized; late fodder crops are in prime condition; wheat harvest continued longer than expected; the potato crop looks like a failure, owing to early drought, bugs and grasshoppers.

Wallace.—Fine growing week; commenced cutting wheat in southeast part of county, over the balance of the county the grasshoppers and the May drought cleaned it up; prospects for good crops of alfalfa seed; range grass fine.

Homes for the Homeless.

The opening of two Indian reservations in northeastern Utah to settlers opens up over three and one-half million acres of fine agricultural and stock-raising land for home-seekers.

The Uintah and Uncompahgre reservations are reached by the only direct route, the Union Pacific system, via Echo and Park City. E. L. LOMAX, G. P. & T. A.; U. P. system, Omaha, Neb.

Horticulture.

DWARFING.

From Bulletin No. 116, Cornell University Experiment Station.

Effect of checking the movement of sap.

All fruit trees are provided with certain well-defined courses through which the sap passes to every part of the plant. After the roots have taken in the water with its freight of dissolved plant food, the crude sap, as it may then be termed, enters a definite course which eventually brings the nourishment to the parts in which the materials are used for constructing plant tissue. There is no circulation of sap in plants in the sense in which there is in animals, no definite tubes through which it flows. It passes through the plant tissues by a process of absorption. The regions in which this transfer takes place will become apparent upon consideration of a few common facts.

Let us suppose a very common case. Labels are frequently secured by means of a wire which surrounds either a branch or the trunk of the tree. It is no unusual occurrence that such labels are neglected, and as the stem increases in size the wire becomes imbedded in the bark. This forms a constriction about the stem, and the connection between the parts above and below the wire is more or less effectually destroyed, especially in the outer portions. As the wire becomes more deeply buried, an unequal growth takes place in the adjoining tissue. The stem immediately above the wire becomes abnormally enlarged, while the rate of growth below is greatly lessened or almost entirely checked. If the wire is not removed, union of the tissues separated by the wire may take place, and the tree will be little the worse for the check. More frequently, however, young trees are so severely cut that the increased weight of the top forces the stem to break where it is surrounded by the wire, causing a total loss of this portion.

Another familiar example may be named. When the trunk of a plant has been entirely girdled, as frequently occurs with orchard trees, and as is sometimes purposely done with grape vines when particularly large fruit is desired, it is interesting to note that the plant makes little attempt to cover the wound from below, but the healing process takes place from above. At the same time the foliage does not wilt as if suffering for water, unless the cut has been made very deep, but it frequently remains green and apparently healthy for a long time.

The above facts lead to but one conclusion. The sap upon entering the plant rises through the inner tissues to the extremities of the branches, or the leaves; from here it descends, choosing for its path, however, the tissues which lie between the outer bark and the wood. The part through which the sap rises is well known under the name sap-wood. In many plants this wood is very conspicuous in sections of the stem on account of its light color. The sap descends through what for convenience may be loosely termed the inner bark, which consists of the soft tissues that lie directly underneath the hard, corky covering of the stem.

Endogenous plants, such as the palm, corn and others, do not have these tissues separated from each other as above described. The tissues which correspond to the sap-wood and to the inner bark are arranged in the form of long, slender, thread-like bundles, which are readily distinguished as coarse fibres, thinly scattered in the pith as seen in corn stalks, and more thickly at the edges of the stems. The sap rises and descends in each of these many bundles of fibre, so that the girdling of this class of plants is not followed by such abnormal growths as occur on our fruit trees; the primary result of such injury is that the amount of sap which reaches the foliage is reduced in proportion to the number of these fibres which are cut.

The reason why the sap passes directly to the foliage before it returns to the growing parts of the plants is

obvious; in the tissues of the leaves the crude sap is acted upon by various agents, with the result that the nourishment which was carried to the leaves is made available for use by growing cells. The process of changing the unavailable food to that which is of use to the plant is known as assimilation; the green portions of the plant are the only parts in which this change can take place, and it can proceed only in the presence of light. The leaves may therefore be considered as one of the most important factors in the nourishment of plants. An injury to them is not merely a local matter, but it affects the entire plant economy.

After the sap has been elaborated by the foliage, it is in proper condition for nourishing any of the growing cells of the plant. It passes to the growing tips and there assists in lengthening the shoots, in forming new leaves and in producing buds—some of which may be fruit-buds—which remain dormant until the following year. It passes to the main branches and the trunks of the plant, and supplies the cells which are forming wood and those which are forming the tissues of the inner bark with the materials necessary to their support and growth. It passes down into the root system of the plant and furnishes the roots with the food required for their proper growth; but if an insufficient amount of food is present the roots are the first to suffer, for it seems that only the part which is not needed by the parts above ground is allowed to go as far as it may towards the nourishment of the roots.

We are now prepared to consider the effect upon a plant of any injury or other abnormal modification. When a plant is girdled, the nourishing sap is prevented from returning to the roots; these must suffer and eventually die. But when only a part of the top of the plant is girdled, the roots need not necessarily be deprived of their proper amount of food, since the remaining branches may perform their duty without the aid of the girdled portion. This part, however, may show very marked effects of the treatment. The sap is allowed to enter the branch freely, but when it is returning from the foliage it cannot pass the point of injury and we therefore find the abnormal growth of tissue which so commonly results from such mutilation. Yet all the food is not deposited at the girdle. Girdled branches are frequently the most fruitful ones; in fact, they may be the only ones upon a tree which produce fruit. The branch may be said to be congested with food, and relief from this condition is sought in the production of fruit.

Girdling may have other effects than to promote fruitfulness. Grapes are girdled, not in order to make them more fruitful, but that the fruit may be larger, and that it shall mature a little earlier. These are results which naturally follow from the abundance of the food supply.

The girdling of trees has been considered in connection with dwarfing because the two subjects appear to be closely connected. The results of checking the flow of sap are very pronounced in girdled trees. In a union of a Fallawater apple upon the dwarf Paradise stock, budded about twenty-two years ago, an enormous swelling has been formed at the point of union. The slow growth of the stock, as compared with that of the scion, prevents the free passage of sap from the foliage to the roots. The stock in such cases may be said to form an obstruction to the descending sap, much as the wire does upon improperly labeled trees. If in spite of such an obstacle, the roots receive all the prepared sap which they require, the tree should prove to be very fruitful.

Dwarfing a tree is done primarily for the purpose of growing a certain variety of fruit upon a slow-growing stock so that the top may never attain its normal size. Other things being equal, this dwarfing need not necessarily cause it to be more precocious or more fruitful. Yet dwarf trees do, as a rule, bear earlier than standards; this is especially true in the case of apples. Fruitfulness depends largely upon a proper food supply. The reason that a

tree bears earlier when it is dwarfed may probably be ascribed to the fact that it comes to an earlier maturity, and that certain buds receive better nourishment than when growing as standards. A dwarf tree never makes a rank growth, so in this respect it may be said to be at all times more inclined to bear fruit than the standard. If, in addition, the stock serves as a check to the return passage of sap, we have the condition which we suppose will produce fruit in standard trees.

In the case of pears, there is less difference between the bearing periods of standards and dwarfs than there is in apples. The difference that does exist may be caused by the same conditions which were advanced above as causes for the earlier fruiting of apples. Dwarf pear trees are also supposed to produce larger and handsomer fruit than standard trees, but I know of no experiments which have shown this to be the case, although the truth of the statement is highly probable. All pear-growers seem to agree that dwarf trees bear more regularly than standards, and it is the general impression that they bear more abundantly in proportion to their size.

The entire subject of plant dwarfing is an extremely intricate one. Directly connected with it are all the questions relating to the formation of leaf and fruit buds, the effects of more or less active vegetative growth upon fruitfulness, the kinds and proportionate amounts of food which are most influential in producing a desired effect, the influence of certain mechanical disturbances upon the habits of the plant. These and many other equally important points still require investigation. Laws controlling such behavior of plants undoubtedly exist, but continued observation and wide experience must be had before these laws may be formulated with any degree of certainty.

Fruits grown as dwarfs.—The pear is the fruit most commonly dwarfed. It might be said that in the Eastern States fully 50 per cent. of the trees are grown in this manner. The quince is used for stock. Such trees are very productive and under proper treatment they are long-lived. One interesting point to consider in connection with dwarf pears is the fact that some varieties do not grow well upon the quince, while others behave better when dwarfed than when grown upon free stocks. Apple varieties, however, are supposed to grow with equal readiness upon Paradise or upon Doucin stock.

Cherries may also be grown as dwarfs. The stock most generally used in such cases is *Prunus Mahaleb*, but the top must be kept severely pruned, otherwise large trees will be formed; but the dwarf trees are rarely grown in this country. (As a matter of fact, the sour cherries, and very often the sweet ones, are grown upon Mahaleb stock in New York State. The Mahaleb stock is more easily worked and managed than the Mazzard or sweet cherry stock. The trees which are grown upon Mahaleb ordinarily reach their full stature. They are made dwarf only by judicious pruning.—L. H. B.) In Europe, however, the small cherry bushes have the reputation of being exceedingly productive, the fruit at the same time being of very fine quality. These plants are grown mostly by amateurs.

Plums have long been dwarfed by pruning the roots severely every year or two, so that the top growth of the tree may be checked. Such trees bear regularly and abundantly; cherries may be treated in a similar manner with the same result.

About the last of June turn the pots of calla lilies on their sides under a tree and leave them undisturbed for two months, to rest.

A COUGH SHOULD NOT BE NEGLECTED. "Brown's Bronchial Troches" are a simple remedy and give immediate and sure relief.

Union Pacific Route.

What you want is the through car service offered between Denver and Chicago via the Union Pacific and Chicago & Alton railroads, which is unexcelled by any other line. Magnificent Pullman sleepers, dining cars and chair cars, run through daily without change, Denver to Chicago via Kansas City.

FARMERS

DO YOU WANT TO BETTER YOUR CONDITION? If you do, call on or address: The Pacific Northwest Immigration Board, Portland, Oregon.

Why a North Slope Is Best for an Orchard Location.

During the winter of 1894-5 the Wisconsin Experiment Station endeavored to ascertain the effect of winter temperatures on the trunks of trees situated on the south slope, summit, and north slope of a hill. In the situation chosen the apparatus was located on a gently sloping bluff, the side-hill stations being thirty-two feet below the summit. The method of taking the temperature was by self-recording instruments, the thermometer bulbs being placed in augur holes one inch beneath the bark. The measurements were exactly similar in all cases, and records give temperatures at 7 o'clock a. m. and 1 o'clock p. m. for four months—December, January, February and March. The only room for criticism of the experiment is that the temperatures were taken in green black-oak posts, eight inches in diameter, instead of in the trunks of living trees, it being barely possible that the presence of living branches and roots might tend to regulate the temperature of the tree trunk even in winter.

The results of these temperature measurements in winter show that a trunk on the south slope of a hill may have an average daily change of temperature for an entire winter over 8° greater than the change of temperature in a tree on the north slope. But it is not the average but the extremes of temperature which are destructive of fruit trees. On this point we find the greatest variation on any one day on the south slope was 53.1°. On the north slope the greatest variation was 38.6°. This gives a variation in favor of the north slope of 16.5°. The north slope became as cold as the south slope, yet the exposed trunks do not warm up so quickly on the north slope, hence the less danger of rupturing the sap cells, which constitutes the phenomenon of injury by frost.

This investigation deals only with winter temperatures. We can safely draw the inference from them, however, that summer measurements would show similar differences of temperature. Doubtless measurements of soil moisture would show also that a north slope retains moisture during summer better than a south slope, and it has been pretty fully demonstrated by Prof. Sweezy, of the Nebraska Weather Service, that the fruit crop varies as the moisture available to the tree varies; or, as Mr. Sweezy puts it, the fruit crop varies with the seasonal rainfall.

One other condition is important to planters in the Missouri valley. The prevailing summer winds, and especially the hot winds, are from the south or southwest. A north slope affords the best possible shelter from these winds.

YOU CAN'T BUY HAPPINESS, but if you are suffering from dyspepsia, scrofula, salt rheum, impure blood, you may be cured and made happy by taking Hood's Sarsaparilla.

HOOD'S PILLS are the best family cathartic and liver medicine. Harmless, reliable, sure.

KANSAS HOME NURSERY now offers choice berries and orchard fruits of all kinds in their season. Fresh shipments daily by express. Prices to applicants. A. H. Griesa, Box J, Lawrence, Kas.

Carnahan's Tree Wash and Insect Destroyer

Destroys the bore worm and apple root louse, protects the plum from the sting of the curculio and the fruit trees from rabbits. It fertilizes all fruit trees and vines, greatly increasing the quality and quantity of the fruit. Agents wanted everywhere to sell the manufactured article. Address all orders to John Wiswell, Sole Mfr., Columbus, Kas., and Cleveland, Ohio.

CIDER MACHINERY
Hydraulic, Knuckle Joint and Screw Presses, Graters, Elevators, Pumps, etc. Send for Catalogue.
BOOMER & BOSCHERT
PRESS CO.,
899 W. Water St., Syracuse, N. Y.



In the Dairy.

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

How to Test Oleomargarine.

A. Ashmun Kelly, of Chester county, Pennsylvania, in writing the *Country Gentleman* on the constant efforts made by the oleo manufacturers and their agents to evade the laws of that State in the sale of this article, gives the following methods for detecting the bogus compound:

"There are several tests for suspected butter. One way is to melt it and soak a candle-wick in it; when cold, light the wick, then blow it out. If the mass is real butter, it will have a distinct butter smell, as in frying or cooking. If it is oleomargarine, it will smell like a blown-out candle.

"Pure butter at 15° has the same specific gravity as alcohol of 53.7 per cent., or 0.915.

"Take two pieces of window-glass, each about an inch square, put a bit of lard between them, then press together until only a film is seen. Hold up to the light and you will see white, opaque spots in the film of the lard. These are crystals of fat. Now test suspected butter the same way. Pure butter will not show suet spots or fat crystals.

"Another simple test for butter is to put a drop of sulphuric acid (oil of vitriol) on it. Pure butter will turn nearly white, while tallow will turn to a deep crimson red. Lard, under this test, gives a variety of colors.

"Under the microscope, pure butter shows a mass of globules similar in size and appearance, with intermediate layers of salt and water. Oleomargarine shows a mass of what appears to be fan-shaped and fibrous crystallizations entirely different in character and appearance from butter. Put a piece of oleomargarine—the size of a walnut—in a small glass, and pour enough ether on it to cover and dissolve it, stirring with a spoon to hasten this result. The salt settles and the liquid is poured off into a saucer, where the ether soon evaporates and leaves the tallow fully exposed. Good butter, under this test is not changed in character or appearance, the fatty residue retaining the true butter odor.

"As a rule, bogus butter is not so dense as the genuine, and it usually has a whitish look on the outside."

What Butterine Has Done.

Oleo and butterine have undoubtedly damaged the market abroad for American butter. - In the past six years the exports of oleo oil and butterine have increased from 68,218,000 pounds to 127,194,000 pounds, while in the same time the exports of butter have fallen from 29,748,000 to 11,806,000 pounds. It is not insisted that this falling away is altogether due to oleo and its ilk, but it is charged that much of the bogus stuff is palmed off and sold abroad as genuine American butter, thereby injuring the market for anything in the butter line exported. Every pound of the imitation stuff sold, no matter where, takes the place of a pound of butter.

Natural Color of Butter a Mystery.

Prof. Van Slyke, Chemist for the New York Agricultural Experiment Station, is authority for the statement that we know nothing whatever of the composition of the natural coloring matters in butter. Whatever they may be, they are mixed or united with the fats so as to defy detection. So far as chemists have been able to find out, none of the several compounds of which either milk or butter is composed is of any hue except pure white, so that the coloring cannot be a natural part of the fat. Some have suggested that color in butter is due to the shape and size of the fat globules; in other words, that light is the main factor in color development.

The anti-color oleo law has substantially shut down the trade in that article in Boston, Mass., and vicinity. Only one firm in Boston has taken out a license to sell, and this firm will not renew their license. Oleo in its natural color is no go, says an exchange.

Dairy Notes.

The average milk in this country tests only 3.69 butter fat.

In summer cream should never be churned at a temperature higher than 58°.

A gallon of milk weighs 8.66 pounds. A gallon of milk of average richness makes six ounces of butter.

The colder butter can be churned the better and the better it will stand up after it has been churned.

It pays to give the cows a little extra feed as soon as the pasturage begins to fail. Keep them in good condition.

Make a superior quality of butter, put your brand upon it, then keep up the quality, and your customers will multiply.

Massachusetts cows average a higher yield of milk than any others. The annual average yield to each cow is 480 gallons.

A cow that is in a fevered state will give tainted milk, and if her milk be mixed with that of others it will spoil the whole batch.

Two-thirds of a cow's food keep up her body, the other third makes the milk. Therefore give her the best of food and carefully-balanced rations.

After butter has been allowed to get warm and soften once it will never be so good again, though you chill it hard. Melting butter causes a volatile oil to escape, leaving it grease.

The farmer who neglects his cows in summer, leaving them a prey to heat, thirst and flies, loses at least a third of the profits of the whole year. He permanently injures the cows.

In the West Side court of Denver, Colo., last week, Orello E. Frink, a commission merchant, pleaded guilty to selling unstamped oleomargarine, and was fined \$100 and costs.

Milk dealers in Cuba do not grow rich, as the law compels them to drive their cows to the doors of their customers and milk them in their presence, thus assuring the genuine fluid.

It is said that the output of the oleo factories during the year that will end with the month of June will show a great reduction. The decrease so far is 66,165 tubs, or 3,308,250 pounds.

The Georgia State Dairymen's Association will hold their next meeting at Macon on August 19 and 20. There is to be a competitive exhibit of butter, and a good program has been arranged for the occasion.

The Cincinnati *Tribune* says the use of sterilized milk for infants has grown to enormous proportions in that city. Last year 25,000 bottles were used. This year it is expected that fully 100,000 bottles will be consumed.

The statement, "physicians know that tuberculosis is transmitted from cows to people through dairy products and this is impossible with butterine," is a shrewd bit of sanitary piety just invented by the oleomargarine people.

George Schillenberger, of No. 129 Main street, Camden, N. J., was fined \$100 and costs by Justice Schmitz, charged with selling oleomargarine colored with annatto. The complaint was made by State Dairy Commissioner Vandegrift.

The most valuable product of this country is corn. Next to it come in some years dairy products, in other years hay. Dairy products would never drop below second place if Americans had not sunk into making such vile concoctions as filled cheese and oleo.

When you begin to milk, pat the cow kindly and talk to her. Then brush with a cloth or suitable brush all the dust and rubbish from her udder. If dirt is caked on it wash the udder with water and a cloth. In any and every case be clean; be immaculately clean. Remember the disease microbes that drop into the milk drawn by the dirty milker.

A Michigan cheese factory has sent out the following pointers to its patrons: "That filth cannot be strained from milk. That milk will catch and hold bad odors from stable, wood-house and filthy yards. That the best milk, if shut into a can tightly while warm,

will spoil inside of three hours. That the meanest man on earth puts milk into the factory can that he would not use upon his own table. We can't make full cream cheese from skim-milk. Good milk should test 4 per cent. butter fat. Milk testing below average will be paid for accordingly."

The Chicago, Rock Island & Pacific railroad has begun the plan of creamery education in Kansas that has been so successfully followed along the Minneapolis & St. Louis road in Minnesota and South Dakota. Prof. Haecker, of the Minnesota dairy school, has been engaged to deliver a few lectures in Kansas.

A. E. Bent, of Lamar, Colo., says that the great dairy centers of New York and New Jersey and in the vicinity of Elgin, Ill., the greatest dairy country on earth, will find alfalfa a superior feed for dairy cows. The hay crops of those great dairy localities is of necessity limited in late years, and has been a total failure, owing to drought, the past three years around Elgin, Ill. These facts have caused the alfalfa-growers of the Arkansas valley in Colorado to make special efforts to get a fair test of their product with the assurance of creating a permanent demand for alfalfa among Eastern dairymen.

Thos. Slater has a message for every man on page 15.

If You Would Keep Cool

take the "Twin City Special" any evening from Kansas City, Leavenworth or St. Joseph, on the Chicago Great Western Railway (Maple Leaf Route), and spend a few days at the beautiful Minnesota lakes. Summer excursion rates now in effect. Through sleepers, free chair cars and cafe dining cars. Full information as to desirable resorts in the Northwest will be cheerfully furnished by G. W. Lincoln, Traveling Passenger Agent of the Chicago Great Western Railway, 7 West Ninth street, Kansas City, or F. H. Lord, G. P. & T. A., Chicago.

No Room for Doubt.

When the facts are before you, you must be convinced.

The facts are that the UNION PACIFIC is leading all competitors, is the acknowledged dining car route, and great through car line of the West.

The line via Denver and Kansas City to Chicago in connection with the Chicago & Alton railroad, with its excellent equipment of Free Reclining Chair Cars, Pullman Palace Sleepers and Pullman Dining Cars, demands the attention of every traveler to the East. Ask your nearest agent for tickets via this route. E. L. LOMAX, 42 Gen. Pass. and Ticket Agent.

A Look Through South Missouri for Four Cents.

The Kansas City, Fort Scott & Memphis Railroad Company has just issued a magnificent book of sixty or more photo-engraved views of varied scenery in south Missouri. From these views an accurate knowledge can be obtained as to the productions and general topography of that highly-favored section that is now attracting the attention of home-seekers and investors the country over.

The title of the book is "Snap Shots in South Missouri." It will be mailed upon receipt of postage, 4 cents. Address J. E. LOCKWOOD, Kansas City, Mo.

To Colorado, Montana, Black Hills, Puget Sound and Pacific Coast via "Burlington Route."

Take the shortest line with best through train service from Missouri river cities to the far West. Daily train leaves Kansas City 10:40 a. m., arrives Billings, Mont., 1,050 miles distant, 5:40 next afternoon; free reclining chair car from Kansas City to Billings; sleeper Lincoln, Neb. to Billings, connects with Northern Pacific transcontinental train to Montana and Puget Sound; time from ten to twenty-five hours shorter than any other line from Kansas City.

Sleepers and chair cars Kansas City to Denver, Rio Grande scenic line beyond for Colorado, Utah and California.

Ask agent for tickets over the established lines of the Burlington Route.

L. W. WAKELEY, Gen. Pass. Agt., St. Louis, Mo.

WOMEN CURED

By Dr. Hartman's Free Course of Advice.

A great many testimonials are coming in daily from mothers, wives and sisters who have followed Dr. Hartman's free course of advice and have got well. A great multitude of suffering humanity still remains to be cured. Send symptoms, duration of sickness, and kind of treatment already received, if any. The following are specimens:

Mrs. Birdie Richards, Hillsdale, Wis., writes: "It will give me great pleasure to have my testimonial published, so that all my friends may know what Pe-ru-na has done for me. I hope all suffering women, suffering with the same complaint, will take Pe-ru-na. I know it will cure them. It cured me, and will cure others also. I cannot praise Pe-ru-na enough. I should be pleased to send any information requested."

Mrs. Ferdinand Welland, Unity, Wis., writes: "I can truthfully say that Pe-ru-na and Man-a-lin cured me. I can say to every woman who is sick: Give Pe-ru-na a trial; it is the best medicine for female troubles. I am enjoying life again. I will not forget to praise your name and medicine wherever I have occasion to do so. It is the best medicine there is for female diseases."

Send for free copy of Dr. Hartman's book for women. Address the Pe-ru-na Drug Manufacturing Co., Columbus, O.

Utah station finds that steers fed on alfalfa cut before blooming gain three-fourths of a pound per day; steers fed on alfalfa cut in early bloom gained half a pound per day, and those fed on that cut in full bloom gained but one-fourth pound per day. It is probable that the same is true of all other clovers.

Jack Needs a Vacation.

All work makes Jack a dull boy. He should leave the office a while this summer, take Jill along, and go to Colorado.

An illustrated book describing summer tourist resorts in the Rocky mountains of Colorado, will be mailed free on application to G. T. Nicholson, G. P. A., A., T. & S. F. railroad, Chicago.

Tourist tickets now on sale at reduced rates to Pueblo, Colorado Springs, Manitou and Denver, over the picturesque line, Santa Fe Route.



Instantly and positively prevents flies, gnats and insects of every description from annoying horses and cattle. It improves the appearance of the coat, dispensing with fly-nets. Applied to cows it will give them perfect rest, thereby increasing the quantity of milk. It is also a positive insecticide for plants. We guarantee it pure, harmless and effective. Recommended by thousands using it. One gallon lasts four head an entire season. Price, including brush, quart cans, \$1.00; half-gallon, \$1.75, and one gallon, \$2.50. Beware of imitations. Made only by The Crescent Manufacturing Co., 2109 Indiana Avenue, Philadelphia.



SUMMER IN THE EAST The Ocean Resorts

Atlantic City, Cape May, Asbury Park, Ocean Grove, Long Branch, and resorts along the New Jersey Coast are on the Vandalia-Pennsylvania Lines, which lead from St. Louis to Newport, Narragansett Pier, Martha's Vineyard, Nantucket and popular watering places along the Atlantic from Chesapeake Bay to Maine.

In the Mountains

Cresson, Bedford Springs, Ebensburg, Altoona and other resorts in the Alleghenies are also on the Vandalia-Pennsylvania Route, over which the White Mountains, the Adirondacks, Watkins Glen, Mt. Desert Island, and places of Summer sojourn in Eastern New York, Vermont, New Hampshire and Maine may be conveniently and comfortably reached from St. Louis.

For information concerning rates, time of trains and the first-class through service please apply to W. F. BRUNNER, Assistant General Passenger Agent, St. Louis, Mo.



BUTTER in 2 min. \$150 PER MONTH

THE QUEEN BUTTER MAKER.
Sells at sight. Every woman wants one when she sees the butter come and gathered in two minutes. Every machine guaranteed or money refunded. Butter churned and gathered by the same machine; larger yield as all the butter is taken out. The Queen Butter Maker is the greatest invention of the age. We will send a trial machine to one family in any neighborhood; a good chance for agents to make big money; costs but little more than an ordinary churn. The Queen Butter Maker Co., 25 E. 3rd St., Cincinnati, O.

The Nut Culturist.

A treatise on the propagation, planting and cultivation of nut-bearing trees and shrubs adapted to the climate of the United States, with the scientific and common names of the fruits known in commerce as edible or otherwise useful nuts. By Andrew S. Fuller. Published by the Orange Judd Company, New York. 290 pages, 12mo, cloth, \$1.50.

The United States sends abroad annually several millions of dollars to pay for various kinds of nuts imported from foreign countries, the greater part of which could profitably be grown at home. There has been a prevailing idea that nut trees could not be grown easily, their cultivation and management requiring some unusual skill, and that failure stared those in the face who attempted to plant and raise nuts. In Europe as much care and attention is given to the growing of nuts as to any kind of fruit trees, and the profits derived from them are, in some sections of continental Europe, greater than from any other class of trees. The principal and favored locations for them are along the public highways. Miles of English walnuts and chestnuts line the roadsides and the returns from them often go far to meet the expenses of local government. Most of our native nut-bearing trees, as well as the English walnut, are remarkably handsome in appearance, which is another reason why they should replace many worthless kinds that are frequently seen along our highways.

The author of this book has for many years made a careful study of the entire subject and has given in this volume the results of his experiences and investigations. In successive chapters he treats upon the almond, beechnut, castanopsis, chestnut, filbert, hickory, and walnut, giving a condensed account of their history, description of all the species and varieties, together with their propagation by seed or otherwise; modes of grafting and budding, transplanting, pruning, gathering and marketing; insect and fungus enemies and the best means of preventing their ravages; and all the important details in regard to the methods and practices for the successful and profitable raising of nuts. The closing chapter is devoted to the description of the fruits which are known in commerce as nuts, and to foreign kinds of nuts which are not grown successfully in the United States. Over 100 original illustrations embellish the volume.

Price \$1 50, for sale by the Orange Judd Company, 52 Lafayette Place, New York city, or KANSAS FARMER Co., Topeka.

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

List of Kansas Fairs for 1896.

Following is a list of fairs to be held in Kansas during the present year, their dates, locations and Secretaries, as reported to the State Board of Agriculture and furnished by Secretary F. D. Coburn:

- Allen County Agricultural Society—H. L. Henderson, Secretary, Iola; September 8-12.
Brown County Exposition Association—E. H. Hoyer, Secretary, Hiawatha; September 15-19.
Chase County Agricultural Association—H. F. Gillett, Secretary, Cottonwood Falls; September 15-18.
Coffee County Fair Association—J. E. Woodford, Secretary, Burlington; September 15-19.
Douglas County—Sibley Agricultural Association—Wm. Bowman, Secretary, Sibley; September 16-18.
Finney County Agricultural Society—D. A. Mims, Secretary, Garden City; October 6-9.
Franklin County Agricultural Society—Chas. H. Ridgway, Secretary, Ottawa; September 22-26.
Greeley County Horticultural and Fair Association—I. B. Newman, Secretary, Tribune; September 8-9.
Jackson County Agricultural and Fair Association—S. B. McGrew, Secretary, Holton; September 14-18.
Johnson County Co-operative Fair Association—C. M. Dickson, Secretary, Edgerton; September 15-18.
Johnson County Fair Association—W. T. Pugh, Secretary, Olathe; August 25-28.
Linn County Fair Association—Ed. R. Smith, Secretary, Mound City; October 6-10.
Miami County Agricultural and Mechanical Association—Geo. P. Leavitt, Secretary, Paola; September 29-October 3.
Montgomery County—Southeast Kansas District Fair Association—D. W. Kingsley, Secretary, Independence; October 13-16.
Morris County Exposition Company—E. J. Dill, Secretary, Council Grove; September 22-25.
Nemaha Fair Association—John Stowell, Secretary, Seneca; September 8-11.
Neosho County Agricultural Society—H. Lodge, Secretary, Erie; September 8-11.
Neosho County—The Chanute Agricultural, Fair, Park and Driving Association—R. C. Rawlings, Secretary, Chanute; September 1-5.
Ness County Fair Association—Sam G. Sheaffer, Secretary, Ness City; September 17-19.
Osage County Fair Association—G. W. Doty, Secretary, Burlingame; September 1-4.
Osborne County Fair Association—F. P. Wells, Secretary, Osborne; September 15-18.
Riley County Agricultural Society—R. C. Chappell, Secretary, Riley; September 15-18.
Rooks County Fair Association—David B. Smyth, Secretary, Stockton; September 8-11.
Saline County Agricultural, Horticultural and Mechanical Association—H. B. Wallace, Secretary, Salina; October 7, 8, 9.
Sedgewick County—Kansas "State Fair"—C. S. Smith, Secretary, Wichita; September 22-26.
Wilson County—Fredonia Agricultural Association—J. H. Edwards, Secretary, Fredonia; August 25-28.

THE STRAY LIST.

HOW TO POST A STRAY. THE FEES, FINES AND PENALTIES FOR NOT POSTING.

BY AN ACT of the Legislature, approved February 27, 1895, section 1, when the appraised value of a stray or strays exceeds ten dollars, the County Clerk is required, within ten days after receiving a certified description and appraisal, to forward by mail, notice containing complete description of said strays, the day on which they were taken up, their appraised value, and the name and residence of the taker-up, to the KANSAS FARMER, together with the sum of 50 cents for each animal contained in said notice. And such notice shall be published in the FARMER in three successive issues of the paper. It is made the duty of the proprietors of the KANSAS FARMER to send the paper, free of cost, to every County Clerk in the State, to be kept on file in his office for the inspection of all persons interested in strays. A penalty of from \$5 to \$50 is affixed to any failure of the Justice of the Peace, County Clerk, or proprietors of FARMER for a violation of this law.

Broken animals can be taken up at any time in the year. Unbroken animals can only be taken up between the first day of November and the first day of April, except when found in the lawful enclosure of the taker-up.

No persons, except citizens and householders, can take up a stray.

If an animal liable to be taken up, shall come upon the premises of any person, and he falls for ten days, after being notified in writing of the fact, any other citizen and householder may take up the same. Any person taking up an estray, must immediately advertise the same by posting three written notices in as many places in the township, giving a correct description of each stray, and he must at the same time deliver a copy of said notice to the County Clerk of his county, who shall post the same on a bill-board in his office thirty days.

If such stray is not proven up at the expiration of ten days, the taker-up shall go before any Justice of the Peace of the township, and file an affidavit stating that such stray was taken up on his premises, that he did not drive nor cause it to be driven there, that he has advertised it for ten days, that the marks and brands have not been altered; also he shall give a full description of the same and its cash value. He shall also give a bond to the State of double the value of such stray.

The Justice of the Peace shall within twenty days from the time such stray was taken up (ten days after posting) make out and return to the County Clerk, a certified copy of the description and value of such stray.

If such stray shall be valued at more than \$10, it shall be advertised in the KANSAS FARMER in three successive numbers.

The owner of any stray may, within twelve months from the time of taking up, prove the same by evidence before any Justice of the Peace of the county, having first notified the taker-up of the time when, and the Justice before whom proof will be offered. The stray shall be delivered to the owner, on the order of the Justice, and upon the payment of all charges and costs.

If the owner of a stray fails to prove ownership within twelve months after the time of taking, a complete title shall vest in the taker-up.

At the end of a year after a stray is taken up, the Justice of the Peace shall issue a summons to three householders to appear and appraise such stray, summons to be served by the taker-up; said appraisers, or two of them, shall in all respects describe and truly value said stray, and make a sworn return of the same to the Justice.

They shall also determine the cost of keeping, and the benefits the taker-up may have had, and report the same on their appraisal.

In all cases where the title vests in the taker-up, he shall pay into the County Treasury, deducting all costs of taking up, posting and taking care of the stray, one-half of the remainder of the value of such stray.

Any person who shall sell or dispose of a stray, or take the same out of the State before the title shall have vested in him, shall be guilty of a misdemeanor and shall forfeit double the value of such stray and be subject to a fine of \$20.

FOR WEEK ENDING JULY 2, 1896

Riley county—James R. Young, clerk. COW—Taken up by F. H. Dale, of Manhattan city, June 6, 1896, one small red cow, 3 years old, some white on hips and belly; valued at \$15.

Shawnee county—Chas. T. McCabe, clerk. CALVES—Taken up by W. G. Kinnard, in Menoken tp. (P. O. Elmont), two red steer calves with some white spots, branded T on right hip; one red and white spotted steer calf with red neck, branded T on right hip; one black steer calf, branded T on right hip; one black heifer calf with white spots, branded T on right hip; all are supposed to be from three to nine months old; valued at \$35.

Crawford county—John Ecker, clerk. MARE—Taken up by W. D. Nance, in Lincoln tp., (P. O. Engleval, care J. A. Cunningham), June 2, 1896, one dark bay mare, 9 years old, small scar on left hip. HORSE—By same, one dark iron-gray horse, 4 years old, small white spot on forehead.

FOR WEEK ENDING JULY 9, 1896.

Anderson county—C. C. Young, clerk. HORSE—Taken up by P. F. Triplett, in Reeder tp., June 15, 1896, one sorrel horse, 4 or 5 years old, two hind feet white; valued at \$15. MARE—By same, one brown mare, 5 or 6 years old, scar across breast; valued at \$15. THREE CATTLE—Taken up by Sol Kelley, in Washington tp., two red steers and one red and white heifer, aged 5 months, end of ears cut off and slit and switch of tail cut off; value of steers \$6 each and heifer \$3.

Osage county—E. C. Murphy, clerk.

HORSE—Taken up by A. L. Brady, of Quenemo, May 9, 1896, one gray horse, five feet nine inches high, had leather halter on when taken up; valued at \$20.

FOR WEEK ENDING JULY 16, 1896.

Sherman county—E. D. Adams, clerk. HORSE—Taken up by J. W. German, of Lamborn, June 22, 1896, one gray horse, scar on left hind foot, end of tail clipped, short rope around neck.

Pottawatomie county—Frank Davis, clerk. HORSE—Taken up by G. C. Kirby, in Lincoln tp., June 15, 1896, one horse, 9 years old, white spot in forehead, left hind foot white, four feet eight inches high; valued at \$20.

Montgomery county—J. W. Glass, clerk.

MULE—Taken up in Caney tp., one bay mare mule, harness marks, fourteen hands high, 6 years old. MULE—By same, one brown horse mule, fifteen hands high, harness marks, 9 years old.

PATENTS.

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

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The various departments, each under the direct supervision of writers especially adapted to them, are as follows:

Housekeeping This department is full of valuable suggestions on domestic economy and preparation of the daily meals.

Fashions Under this head are the prevailing fads and fancies which count for so much in my lady's toilet.

Fancy Work The numerous illustrations and practical instructions of this department will delight all lovers of this dainty art.

Flowers The department, ably edited by Geo. W. Park, B.Sc., of absorbing interest.

Decorations, Etc. This department is invaluable to those wishing to furnish apartments according to modern tasty ideas.

Literary The delightful stories, interesting articles and charming poems afford ample evidence of the care bestowed on this department. Many of the most popular writers in the country are regular contributors.

In addition to the above there is "Children's Corner," "Mothers' Chat," "Knotty Points," "Knick-Knacks," and "Miscellaneous."

OUR OFFER! In order to secure this Magazine free, send us two subscriptions for KANSAS FARMER and \$2, and we will order Ladies' Home Companion sent to your address one year, free to you. Or, send us your own subscription and \$1.35, and it will pay for KANSAS FARMER and Ladies' Home Companion one year. Add 10c. if "Modern Cook Book" is desired.

Address KANSAS FARMER CO., Topeka, Kas.

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Perhaps you will prosper better and be happier and more thoroughly informed when you take both the KANSAS FARMER and the

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When you can get both for little more than the price of one. The Semi-Weekly Capital is issued twice each week, Tuesday and Friday—eight pages, fifty-six columns of choice reading matter every issue. It contains the full report of the Associated Press and the latest news from all parts of the world. It is bright, spicy and interesting miscellaneous reading matter of every description. The KANSAS FARMER Co. has made arrangements with the publishers whereby it can offer The Semi-Weekly Capital and KANSAS FARMER for the very low price of \$1.50, or with Almanac and Kansas Year-Book, \$1.65. Address KANSAS FARMER CO., Topeka, Kas.

The Veterinarian.

We cordially invite our readers to consult us whenever they desire any information in regard to sick or lame animals, and thus assist us in making this department one of the interesting features of the KANSAS FARMER.

SORE EYES.—One of my horses gets sore eyes occasionally. Water runs from them and they nearly close up, then in time they get well again.

Answer.—Your horse has specific ophthalmia and will eventually go blind. All you can do is to bathe the eyes with hot water when sore and protect them from the bright sunlight as much as possible.

RHEUMATISM.—Two of my hogs have lost the use of their hind limbs. There have been some heavy rains lately which made the pens rather muddy.

Answer.—Your hogs have rheumatism from keeping in wet pens. Place them in dry quarters and give each animal half a tablespoonful of turpentine in swill twice a day.

HOGS LAME.—I have some hogs that get down and linger along until they die.

Answer.—See reply to V. D., in this column.

PIGS DYING.—My pigs, 11 weeks old, get lame in the hind feet, then all feet swell and they appear stiff like a foundered horse.

Answer.—Put the pigs in a clean, dry pen and cut green feed of some kind for them every day. Rub their swollen joints with turpentine and give each pig twice a day in a little swill half a teaspoonful of turpentine and three drops of carbolic acid.

ONE HONEST MAN.

DEAR EDITOR:—Please inform your readers that if written to confidentially, I will mail in a sealed letter the plan pursued by which I was permanently restored to health and manly vigor, after years of suffering from Nervous Weakness, Loss of Manhood, Lack of Confidence, etc.

Kalamazoo, Mich., is famous for celery—also as the home of Thos. Slater, whose advertisement appears on page 15.

Send \$1.35 to KANSAS FARMER office for one year's subscription to KANSAS FARMER and Chicago Weekly Inter-Ocean.

To St. Paul and Minneapolis via "Burlington Route."

Two splendid through trains each day from Missouri River points to the north via the old established "Burlington Route" and Sioux City Line.

L. W. WAKELEY, Gen. Pass. Agt., St. Louis, Mo.

Ho! for Cripple Creek.

Remember that the Chicago, Rock Island & Pacific is the only line running directly from the East to Colorado Springs, the natural gateway to the Cripple Creek District.

Two all rail routes from Colorado Springs are offered you. One by the Midland railway up Ute Pass, via Summit, to Cripple Creek.

JNO. SEBASTIAN, Gen'l. Pass. Ag't., Chicago.

MARKET REPORTS.

Kansas City Live Stock. KANSAS CITY, July 13.—Cattle—Receipts since Saturday, 6,999; calves, 880; shipped Saturday, cattle, 672; calves, none.

Table with columns: No., Ave. Price, No., Ave. Price. Rows include various stock types and prices.

TEXAS AND INDIAN STEERS. 72.....1,035 3.25 80.....1,006 3.05 47.....1,054 2.85 108.....918 2.81

COWS AND HEIFERS. 1.....1,040 \$3.35 2.....1,000 \$3.25 1.....930 3.03 1.....1,000 2.90

STOCKERS AND FEEDERS. 25.....685 \$3.75 28.....730 \$3.35 1.....905 3.33 16.....1,106 3.40

Hogs—Receipts since Saturday, 2,500; shipped Saturday, 1,962. The market was strong to higher.

Table with columns: No., Price, No., Price. Rows include various hogs and prices.

Sheep—Receipts since Saturday, 3,848; shipped Saturday, none. The market was steady as a rule on natives and strong on Texans.

Horses—Receipts since Saturday, 98; shipped Saturday, 9. There was practically no market to-day.

Chicago Live Stock.

CHICAGO, July 13.—Cattle—Receipts, 13,000; market steady, heavy slow; fair to best heaves, \$3.40-4.50.

Hogs—Receipts, 30,000; market active and steady; light, \$3.25-3.50; rough packing, \$2.81-3.01.

Sheep—Receipts, 16,000; market steady to 100 lower; native, \$2.00-4.00; Texas, \$1.50-2.50.

St. Louis Live Stock.

ST. LOUIS, July 13.—Cattle—Receipts, 4,000; market steady to strong; native steers, \$3.60-4.30.

Hogs—Receipts, 3,000; light, \$3.10-3.40; mixed, \$2.90-3.25; heavy, \$3.00-3.21.

Sheep—Receipts, 2,000; market steady.

Chicago Grain and Provisions.

Table with columns: July 13, Opened, High'st, Low'st, Closing. Rows include Wheat, Corn, Oats, Pork, Lard, Ribs.

Kansas City Grain.

KANSAS CITY, July 13.—Wheat met with good demand here to-day, and prices were somewhat higher than on Saturday.

Receipts of wheat here to-day, 43 cars; a year ago, 52 cars.

Sales were as follows on track: Hard, No. 2, 1 car old 40c, 6 cars new 48c, 1 car 47 1/2c.

Receipts of corn here to-day, 85 cars; a year ago, 17 cars.

Sales by sample on track: No. 2 mixed, 8 cars 22c; No. 3 mixed, nominally 21 1/2c.

Sales by sample on track: No. 2 mixed, 1 car 15 1/2c; No. 3, nominally 13 1/2c.

Hay—Receipts, 107 cars; market very weak; receipts large.

Stockers and feeders bought on order. Liberal advances to the trade. Write for market reports and special information.

Advertisement for Silberman Brothers, wool merchants. Includes text: 'IF you are looking for a place to which you wish to consign your wool...' and 'SILBERMAN BROTHERS'.

Olander & Isaacson, Live Stock Commission

Special attention given to the feeder trade. Kansas City Stock Yards, Kansas City, Mo.

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A thorough and practical course of instruction in the Principles and Practice of Veterinary Medicine and Surgery, and

Veterinary Sanitary Science.

The curriculum affords young men an opportunity to qualify themselves to become Veterinary Sanitary Officers for municipal, State or national service.

St. Louis Grain. ST. LOUIS, July 13.—Receipts wheat, 120,108 bu.;

Pete's Coffee House AND LUNCH COUNTER.

The popular restaurant. Opposite Kansas - City - Stock - Yards P. S. RITTER, Proprietor.

VICTOR COW CLIP.

Holds cow's tail to her leg and keeps it out of the milk and milker's face. Carried in the pocket.

Pennyroyal Pills

Original and Only Genuine. SAFE, always reliable. LADIES ask Druggist for Chester's English Diamond Brand in Red and Gold metallic boxes.

COOPER DIP

KILLS AND PREVENTS TICKS, LICE AND SCAB. MAKES WOOL GROW. Dipping pamphlet free from COOPER & NEPHEWS, Galveston, Tex.

CRIPPLE CREEK

The Santa Fe Route is the most direct and only through broad-gauge line from Chicago and Kansas City to the celebrated Cripple Creek gold mining district.

GOLD! GOLD!!

Address G. T. Nicholson, G.P.A., A., T. & S.F. Ry., Monadnock Blk., Chicago, or W. J. Black, A. G. P. A., Topeka, Kas., and ask for free copy of profusely illustrated book descriptive of Cripple Creek.

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HORSES SOLD AT AUCTION

on Tuesday, Wednesday and Thursday of each week. Private sales every day at the Kansas City Stock Yards Horse and Mule Department.

W. S. TOUGH & SON, Managers, KANSAS CITY, MO.

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Rooms 304-305 Exchange Bldg., KANSAS CITY, MO. Direct all mail to Station A. Market reports furnished free to all sheep feeders or breeders on application.

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Cattle, Hogs and Sheep

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COMMISSION MERCHANTS, STOCK YARDS, KANSAS CITY, MO. And EAST ST. LOUIS, ILL.

Stockers and feeders bought on order. Liberal advances to the trade. Write for market reports and special information.

The Apiary.

A WORD ABOUT HIVES.

Those Made at Home Are as Good as More Expensive Ones.

For the ordinary bee-keeper, and for most bee-keepers, for that matter, no hive is better than a plain, simple Langstroth hive. It is simply a plain box without top or bottom, with rabbets cut upon the upper inside edges of opposite ends for hanging the frames. To the hive there must be added, of course, a bottom board and a cover, but these are not nailed fast as a rule. Sometimes the bottom board is nailed fast. If this is the case the board composing the front end is three-eighths of an inch narrower than the other boards composing the sides. This gives an entrance the whole width of the front of the hive. If the bottom board is loose, a rim three-eighths of an inch high is nailed around its outer edges on the upper side, except in front. The leaving off of the rim in front makes an entrance. In either case, small blocks are used, when necessary, for contracting the entrance. If the bottom is nailed fast a cleat will be needed on the front end of the bottom board to keep it from warping. If it is loose a cleat will be needed at each end on the under side. A rim of wood nailed around the hive near its upper edge helps to keep the hive in shape and is very convenient for handling it. The cover is simply a plain, flat board with a cleat nailed on each end. Langstroth frames are 9 1/2 inches deep and 17 1/2 inches long, and the hive should be of such a size that there is a space of three-eighths of an inch between the frames and the bottom, top and sides of the hive. In this climate there is no necessity for halving, mitring, or dovetailing the corners. Just a plain lap-joint well nailed is sufficient. The frames are made of seven-eighths lumber, pieces of boards of the right length being cut off and then three-eighths-inch strips being sawed off the edges. The top bar is nailed on with 1 1/2 inch wire nails, and seven-eighths will answer for the other joints. All these parts can be cut out at any planing mill, or if the bee-keeper has a foot-power buzzsaw he can cut them out himself.

After the hive is made give it two good coats of white paint. White is preferable because this color does not absorb the heat as is the case with dark colors, and such hives can usually be used in the sun with no shade boards over them, and there will be no danger of the combs melting down. Such hives can be made by anyone who is at all handy with the hammer, and they answer every purpose for which a hive is needed. With such a hive as this extracted honey can be produced by simply setting one hive on top of the other, or they may be tiered up three high if necessary. In producing comb honey a super will be needed. This is made of half-inch lumber and is just about the same size as the hive except that it is not so tall, it being three-eighths of an inch deeper than the size of the sections used. The usual size of section is 4 1/4 by 4 1/4, and the super should, in that case, be 4 1/2 deep. There will need to be three partitions crosswise of the super, and to the bottoms of these partitions and to the bottoms of the end pieces must be tacked some strips of tin of such a width that they will project beyond the partitions about one-eighth of an inch, thus forming a sort of ledge that will support the sections when they are slipped down between the partitions. The ordinary hive cover will also cover the super.—W. Z. Hutchinson, in Prairie Farmer.

WORK OF HONEY BEES.

Calculations in Regard to the Nectar Collected by Them.

A writer in the Revue des Sciences Naturelles makes the following calculations in regard to the work done by the honey bee: When the weather is fine, a worker can visit from 40 to 80 flowers in six to ten trips and collect a grain of nectar. If it visits 200 or 400 flowers, it will gather five grains. Under favorable circumstances, it will take a fortnight to obtain 15 grains. It would, therefore, take several years to manufacture a pound of honey, which will fill about 3,000 cells. A hive contains from 20,000 to 50,000

bees, half of which prepare the honey, the other half attending to the wants of the hive and the family. On a fine day, 16,000 or 20,000 individuals will, in six or ten trips, be able to explore from 300,000 to 1,000,000 flowers, say several hundred thousand plants. Again, the locality must be favorable for the preparation of the honey, and the plants that produce the most nectar must flourish near the hive. A hive inhabited by 30,000 bees may, therefore, under favorable conditions, receive about two pounds of honey a day.

SERVIAN BEE FARMS.

They Are to Be Conducted on Strictly Scientific Principles.

A new industrial departure of great interest has been taken in Servia, where a "society for bee and fruit culture" has been established, says the St. Louis Globe-Democrat. This society seeks to introduce a system of beekeeping on scientific principles, and of developing the industry on a profitable basis throughout that country, where, until lately, the peasants have been in the habit of keeping their bees in conical straw skeps daubed with mud or plaster, and destroying the bees to obtain the honey. It is probable that the society will provide the peasants with cheap straw skeps with supers, as well as bar-framed hives and other desirable agricultural appliances. The farm of the society contains about 200 hives, placed in regular rows over the ground, six feet six inches from each other, facing north. These hives are all on the bar-frame principle, and of the pattern generally known as Dzierzon hives, and they contain about 80 pounds of honey in the comb when full. They are made of wood, with draw sides, and cost about \$2.25 each. The bees appear to be a species of the common bee (*Apis mellifica*), but are rather small in size, and unusually tractable. The Italian bee (*Apis ligustica*) does not succeed well in Servia, becoming quickly merged into the indigenous stock.

The bee farm is provided with two centrifugal honey-extractors of very simple design, but perfectly practical. After extraction, the honey is put into glass bottles, with neat screw tops, imported from Austria, containing respectively half pound, one pound and two pounds. The price of the honey is about 17 cents a pound, exclusive of the bottle, for which an extra charge is made. The wax is sold to the wax dealers for making into church candles, and realizes about 30 cents a pound. The importance of encouraging bee culture is evidently fully realized by the members of this society and others interested, and the introduction of a law is in contemplation obliging all priests, schoolmasters and certain others holding employment under the government to turn their attention to the keeping of bees.

NOTES FOR BEEKEEPERS.

Bees, small fruit and poultry make a good combination.

Golden rod gives a rich, thick honey of a golden color.

The queen bee is the only perfectly developed female in the hive.

The queen lives several years and is useful as a laying queen for three years.

A young queen is more liable to produce a working progeny and an old one drones.

If you want a reliable dye that will color an even brown or black, and will please and satisfy you every time, use Buckingham's Dye for the Whiskers.

Stack Covers Cheap!

Also Awnings, Tents and everything made of cotton duck. Every farmer should have a stack cover. Address best house in the country for these goods. C. J. Baker, 104 W. Third St., Kansas City, Mo.



WINDMILL OWNERS, stop the jerking, breaking and lifting platform with a perfect spring. No good, no pay. Agents wanted. **Egis Mfg. Co., Marshalltown, Iowa.**

DEAD • EASY!

The Great Disinfectant Insecticide **KILLS HEN LICE**

By simply painting roosts and drooping-boards. Kills Mites and Lice, cures Colds and Cholera, also kills Hog Cholera germs. If your grocer or druggist does not keep it, have them send for it. **THOS. W. SOUTHARD,** General Agent, 1411 Main St., Kansas City, Mo.



Used and endorsed by Adams Express Co.

INVALUABLE TO HORSE OWNERS.

Because it is always reliable. It is a speedy, safe and positive cure for Colic, Curb, Spina, Bruises, Shoe Boils, Callous of all kinds, Contracted and Knotted Joints, etc. Used and highly recommended by prominent horsemen.

TUTTLE'S ELIXIR

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

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

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

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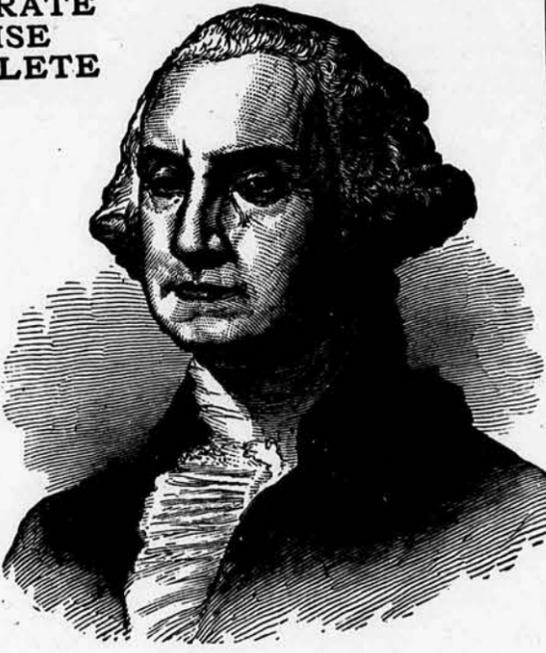
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