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EXPERIMENT STATION BULLETINS.

The question as to what should be published as an experiment station bulletin has received attention from the agricultural press. The writers have been almost unanimous in holding that these bulletins should be confined rather rigidly to the scope contemplated in Sec. 4 of the Hatch Law providing for their publication. This section requires: "That bulletins or reports of progress shall be published at said stations at least once in three months."

While it may not be wise to follow the views of the strict constructionists and exclude from these publications everything except reports of progress of experiments at the station issuing them, it is manifest that a station, ambitious to make a record for the number of pages published, or for the tons of its bulletins, might easily, by the employ-

ment of a few active typewriters, spare its officers the arduous labor of much original investigation and yet flood the State with literature denominated bulletins.

The rational view is that the bulletins should be primarily and only for the purpose of reporting the progress of the original investigations by which shall be acquired useful and practical information on subjects connected with agriculture, and scientific investigation and experiment respecting the principles and applications of agricultural science. In elucidating these researches and in confirming their results, it may often be wise to refer to the experiments of others with the results and the conclusions arrived at, but the experiment station bulletin should be plainly differentiated from the lower grade work of the mere compiler.

SAVE THE MOISTURE WHILE IT IS HERE.

The liberal rains came in time to save much of the wheat. The straw will be short, but with favorable conditions from this time to harvest, the yield of grain to straw will be surprising.

Corn is in excellent condition. There is in the ground throughout most of the corn-belt enough moisture to grow and mature a far better crop than was harvested last year. But a persistent robber is after this moisture. Kansas soils retain from seepage large percentages of their volume of water. But if uncultivated, these soils raise this stored moisture rapidly to the surface whence the sun and wind carry it away.

It was formerly thought that the only use of cultivation was to destroy weeds. Later developments have shown that a more important purpose is to prevent the rise of the moisture to the surface. The learned doctors have discussed in various language the force by which soil moisture comes to the surface. The name of this force—whether it be called, as formerly, "capillary attraction," or by the newer name—surface tension—is immaterial to the farmer. But the important fact recently established is that, as soon after a rain as the soil has lost by seepage the water that will drain out of it and the sun and the wind have dried the surface, the stored moisture of the soil begins to rise to take the place of that carried away. If the soil crust which forms after a rain be left unbroken the upward motion of the moisture is rapid. If the surface crust is broken up into granules, the moisture from below rises only to the under surface of the loose layer where it awaits appropriation by the growing crop. Surprisingly large quantities of water come to the surface and are carried away in a day if the be not broken up, while surprisingly small quantities are thus lost if the soil mulch be established before the crust is formed.

The maintenance of this soil mulch rather than the destruction of weeds should determine the frequency of cultivation. The weeds must of course be destroyed, for a thrifty weed draws in proportion to its size as much moisture and fertility from the soil as does a corn-stalk. But even if the weeds shall have been all destroyed, prospective dry weather admonishes the cultivation of the land as often as necessary to keep down the water.

Cultivation right through a drouth has been advocated. The doctrine is not a bad one. But a thorough understanding of the philosophy of cultiva-

tion will enable the cultivator to apply his labor to the best advantage. There is not much use locking the stable after the horse has been stolen, unless, indeed, there are other horses to be protected. The time to save the moisture in the soil is while it is there. After a heavy rain, it is there. The sun and wind begin immediately to steal it. They take it very rapidly during the hot weather of June, July, and August. It is usually not wise to cultivate a field while the soil is muddy, but is wise to cultivate it as soon as in condition to work properly. Whether cultivation need be continued after establishing the soil mulch will depend upon the continuance of the loose condition of the surface soil and the presence or absence of weeds. Cultivation, whether for the conservation of moisture or as a fight against weeds, should be considered a preventive measure. It adds no moisture but saves the moisture we have. It is more efficient in preventing the growth of weeds than in their destruction when grown.

In this connection the editor calls attention to the paper of Prof. Otis on another page of this week's KANSAS FARMER, in which he gives the results of the application of the modern methods of cultivation to lands in the short-grass country.

THE AFRICAN WAR CLOSES.

The most important news of the last several months is the announcement from London that peace has been concluded in South Africa. The terms of surrender received the signatures of the British authorities and the Boer representatives last Saturday, May 31. This brings to a close one of the most stubbornly fought wars of modern times. The surprising gallantry of the Boers commanded the admiration of the world and compelled the respect—the homage—of their combatants. The great resources of the British nation were heavily drawn upon in conquering the little Dutch republics, and it must be confessed that Great Britain's prestige was severely strained. The final victory, so dearly bought, can scarcely restore to that nation the place and influence she once had among the nations of the world. But to small and weak nations, her willingness to use her resources to the utmost to have her way in South Africa is but a reinforcement of her previous record.

To the world at large and to America in particular the final outcome of the war in South Africa will probably prove a material advantage. The resources of that country will be under the protection of a strong nation. The marvelous gold mines will be worked as never before. The great additions to the world's supply of gold which came from South Africa had immense influence in stimulating the industrial activities which have characterized the last few years. The effect was similar to that of the California gold production about the middle of the 19th century. The effect of the reopening of the South African mines should be to strongly support prices, so that the most profitable thing to do with money should be to invest it in the production of commodities. A busy world always consumes liberally of the farmers' products, and the demand raises prices. When the world is active it is peculiarly liberal to its stomach, so that the producer of food staples of the better kinds is favorably affected. Thus the prospective quick development of the mines of South Africa has a special in-

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terest for the farmers of the grain and stock belt.

This cause, conspiring as it does with the rapid increase of population upon practically non-expandable productive areas, furnishes themes for social scientists. The economic evolutions of the near future promise to be increasingly interesting. They are likely to receive considerable impetus from the closing of the Transvaal war and the reopening of the mines.

THE CATALPA BULLETIN.

The botanical department of the Kansas Experiment Station has just published—in Bulletin No. 108—a very fine (Continued on page 610.)

Agricultural Matters.

Growing Wheat Under the Campbell Method.

PROF. D. H. OTIS, IN THE INDUSTRIALIST.

WHEAT CONDITIONS IN CENTRAL KANSAS.

Since the resignation of Prof. H. M. Cottrell, the writer has had charge of the field work on the farm of the College and Experiment Station. Hearing that the wheat in the western part of the State had been severely injured, while that grown under the Campbell system on the Pomeroy model farm in Graham County was looking fine, the writer made an investigating trip.

A short visit was made in Saline County just after the recent rain, May 5, to consult the farmers, bankers, wheat buyers, and others who were informed as to the wheat situation. These men estimated that 50 to 60 per cent of the wheat had been injured by the dry weather. No one seemed to know that anything about the Campbell method of soil culture, although nearly all expressed themselves as favorable to early plowing and good harrowing. As far as information could be gathered, no harrowing was done after the wheat was up, although one man said that while farming in the eastern part of the State and before coming to Saline County he had harrowed his wheat for the purpose of covering clover seed, and as a result had secured a yield ten bushels per acre greater than he had obtained on adjoining land not harrowed.

Traveling northwest from Saline County, through Ottawa, Lincoln, Russell, Osborne, Rooks, and Graham counties, we found the wheat looking very poor until after reaching the center of Rooks County. From there to Hill City, Graham County, the wheat had a much better appearance and the growers estimated the loss by dry weather as from 25 to 30 per cent. Between Salina and Plainville, Rooks County, the wheat, although frequently a good stand, was very short and many fields were being listed to corn, while others were being closely pastured previous to listing. From the middle of Rooks County west, the rains have been more seasonable and the wheat had a better appearance. The volunteer wheat (wheat that springs up from shattered grains lost in the harvesting of the crop of the previous year), which in favorable conditions makes a fair crop, was nowhere a success and the ground was being used for corn.

WHEAT ON THE POMEROY FARM COMPARED WITH THAT ON SURROUNDING FARMS.

The Pomeroy model farm, which is being tilled under the Campbell system, is located about one and a half miles northwest of Hill City, in the center of Graham County. The writer was taken in charge by Dr. I. B. Parker, a graduate of the Kansas State Agricultural College, and driven fourteen miles south of Hill City to examine a number of wheat-fields. Quite a variety of conditions existed. Where there was a good stand of wheat on the bottom or first raise, the growth was short, measuring seven to eight inches, and was fairly well stooled, but the lower leaves were turning yellow. Where the stand was thin (one-third to one-half of full stand) the growth was considerably better, measuring from twelve to fourteen inches. On the upland the wheat looked poor. Samples taken measured five to six inches in height, but had stooled but little.

Comparing these fields with those on the Pomeroy farm, the contrast was marvelous. Farmers, merchants, and professional men all agree that the Pomeroy model farm is naturally the poorest in the neighborhood; that for ten years before the establishment of the Campbell system the land had been farmed by various parties, but no one was able to grow paying crops. The first wheat-field visited was situated on some of the highest land in the county. Several attempts have been made to secure well water on this high land which were unsuccessful. The wheat was from twenty to twenty-two inches high, of a uniform stand, and was really too thick for best results. Actual counts showed from eighty to one hundred stalks to the linear foot in the drill row. Individual plants had stooled out until they contained fourteen to sixteen stalks apiece. On top of this was the remarkable statement that the seed had been sown at the rate of only one-half bushel per acre. The field of wheat was by far the best seen on the entire trip.

THE VALUE OF SUMMER FALLOW FOR WHEAT.

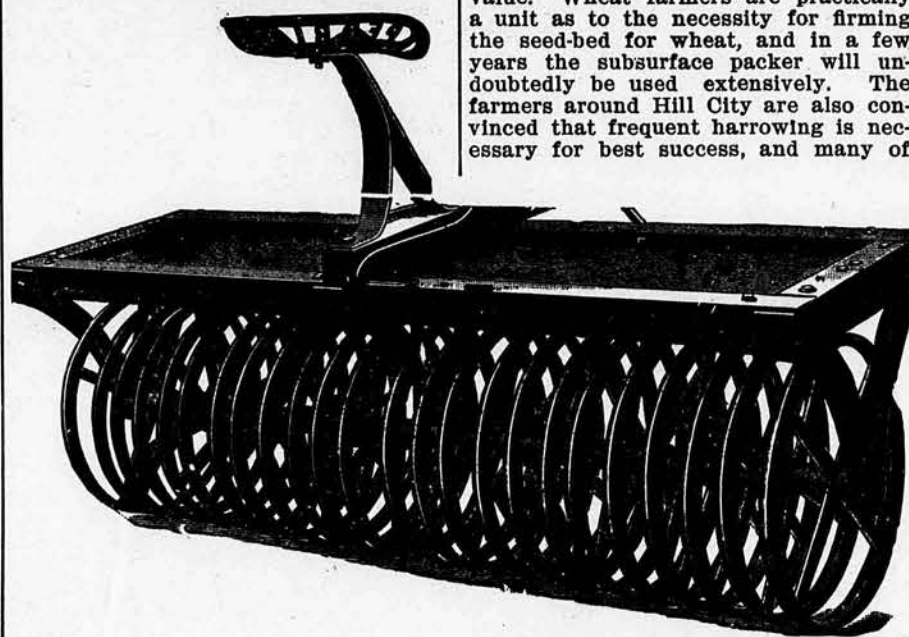
Other fields visited on the same farm did not look quite so well but gave ev-

ery promise of good yields. The reason for this difference was that the first field had produced no crop the previous year, but was plowed early in the spring and harrowed after every rain until wheat was sown in the fall. With neither crop nor weeds to sap the moisture, and with the soil mulch to prevent loss by evaporation, the soil was well stored with water, which the wheat plant pumped up to excellent advantage. The other fields had grown crops the previous year, one of them yielding thirty-six bushels of wheat to the acre, and the supply of moisture being consequently more limited, the wheat did not grow as luxuriantly.

Mr. H. W. Campbell, the originator of the Campbell system of soil culture, advocates summer fallow or, as he calls it, "summer culture." Leaving the land idle for one year allows the moisture to accumulate in sufficient quantity to produce a good crop, while if an attempt is made to produce a crop each year where the rainfall is limited (not enough annually to mature a crop) continuous failure may be the result. In the western part of the State, where these suggestions would apply, land is comparatively cheap and a farmer could well afford to let half of his land remain idle each year if he could be assured of a good crop from the other half. There are probably no two successive years in which there is not enough rain to mature a crop of wheat. By the Campbell system of clean-culture and a soil mulch, practically all of this moisture is stored in the soil. Half the land with plenty of moisture will produce a greater yield of crops than all the land with only half or two-thirds enough moisture.

HOW THE SOIL IS PREPARED AND TILLED.

Where the land is to receive summer culture (fallow), it is double-disked by lapping one-half as soon as possible in the spring. This furnishes a dust blanket that prevents evaporation and puts the soil in excellent condition to absorb



THE SUB-SURFACE PACKER.

all the rain that falls. As soon as convenient the land is plowed about seven inches deep. Each half-day's plowing

is gone over at once with the subsurface packer to displace the air chambers formed in plowing and to make capillary connection with the soil below, and near the close of the day each day's plowing and packing is gone over with the harrow to prevent evaporation of moisture, by the formation of a dust blanket. The harrowing is repeated after each heavy rain. After the young wheat plant is well rooted it is gone over with a light harrow or weeder after a heavy rain. This is especially advisable in the spring, when the wheat commences to stool. When the wheat is harvested the ground is gone over the same day, if possible, with a disk harrow for the purpose of producing a dust blanket to conserve the moisture. The ground is then plowed at the earliest convenience and treated as indicated above.

CAMPBELL METHOD ADOPTED BY FARMERS.

Although the Pomeroy model farm has been operated under the Campbell method only two years, it has, nevertheless, been a great object-lesson to the surrounding community. The fact that the poorest farm in the vicinity could be taken and with less than half the usual amount of seed could be made to produce nearly double the amount of wheat produced by the average farm has opened the eyes of thoughtful farmers. The leading hardware merchant of Hill City told the writer, that after the first year's trial of the Campbell method, and as a result of it, he sold three times as many harrows as he had sold any year previous. Thus far only two or three subsurface packers have been sold; the farmers have been waiting to be absolutely sure they are essential before investing. Substitutions in the way of rollers, planks, disks, etc., have been used for firming the soil. Frequently the disks are arranged with the concave faces together, forming a sort of wheel. While the various arrangements do not equal the subsurface packer, they all point to its value. Wheat farmers are practically a unit as to the necessity for firming the seed-bed for wheat, and in a few years the subsurface packer will undoubtedly be used extensively. The farmers around Hill City are also convinced that frequent harrowing is necessary for best success, and many of

them are even harrowing their wheat in the spring when it is four to six inches high. Mr. Campbell finds that

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packing the soil keeps it from drifting with the winds.

THE SAME PRINCIPLES APPLIED TO OTHER CROPS.

Oats, a scarce article in the western part of the State, were looking fine on the Pomeroy farm. The corn had just been listed. Inquiry revealed the fact that even during last summer's dry spell the corn plants made a good growth under the Campbell system, and had it not been for the dry, hot winds that dried up the tassel and pollen in spite of there being plenty of moisture in the soil, a good yield would have been obtained. The orchard on the Pomeroy farm would be a beautiful sight in any country. It is situated on high land and has a southern slope, but in spite of its poor location, these trees, which have been set out two years, show a good, thrifty growth. The soil is gone over after each rain with an Acme harrow; not a weed is to be seen. We compared these trees with trees of the same age planted in the court-house yard, about a mile distant and on lower ground; they have made a growth of eight inches in trunk circumference while the court-house trees measure only four inches in circumference. The latter were given ordinary treatment, and in addition were extensively irrigated. The maple-trees on the Pomeroy farm show a growth of twenty-four to twenty-six inches in the terminal limbs while the court-yard trees show only eight to nine inches. The same comparison as to the elm-trees shows twenty-five to twenty-seven inches for the Pomeroy farm and only ten to twelve for the court-yard. The trees on the Pomeroy farm are thirty, while many of those in the court-yard are dying.

SUGGESTIONS FOR WHEAT GROWERS.

It is hard to appreciate the full value of the Campbell method of soil culture without visiting the Pomeroy model farm, but after the visit is made there is no question about its value. The wheat farmers who have suffered loss from the lack of sufficient moisture, or who are likely to suffer from this cause, will do well to study into the system and as far as possible guard against future losses. Disk the soil immediately after harvest, if possible the next day, and plow at the earliest convenience. If it is possible to secure a subsurface packer, Mr. Campbell recommends plowing seven inches deep; without a subsurface packer the plowing should be four to five inches deep. The depth of plowing, of course, will vary considerably with the depth of the soil and subsoil. After plowing, pack the soil and follow with harrow to secure dust mulch. Harrow after every rain until seed-time, and the much-needed moisture will be stored up for the succeeding crop. Maintain the soil mulch by harrowing after the wheat is well rooted.

D. H. OTIS.

"Dwarf Essex" Rape.

CIRCULAR NO. 12, UNITED STATES DEPARTMENT OF AGRICULTURE.

Rape (*Brassica napus*, Linn.) is much like the Swedish turnip or rutabaga in appearance, but the root is more like that of cabbage. The leaves are large, glaucous, smooth, spreading, and variously notched and divided; the flowers are bright yellow, nearly one-half

inch in diameter; the seeds are produced in pods usually two inches or more long.

Under ordinary field conditions the plant reaches a height of from one and one-half to four feet, and the strong-growing roots penetrate the soil to a considerable depth.

For the best development rape requires a rich, moist, loamy soil, and will usually do well on any but light sandy soil and stiff clays, such soils being usually deficient in vegetable matter. In general a soil that will produce good crops of turnip, cabbage, wheat, and corn will be suitable for rape.

Results obtained at the North Dakota Experiment Station indicate that the growing of a crop of rape on land that has been sown to wheat for a number of years produces a decided increase in the yield of wheat from the succeeding crop. This is a point of much value in regions where wheat is extensively grown.

Throughout the Northern States generally, seeding may take place from the first of June or possibly earlier, to the middle or last of July, according to the season and locality. In the South the seed may be sown in September or early in October. Under favorable conditions two to three pounds of seed per acre will be sufficient and it will never be necessary to use more than five pounds per acre. The seed should be planted in drills far enough apart to allow cultivation.

When rape is grown as a secondary or catch crop it will not often be possible to pay so much attention to the preparation of the soil and the time and method of seeding, and quantity of seed used may be varied to suit the circumstances. Often fine rape may be grown on land that has already produced a crop of some of the early maturing cereals, such as rye, oats, or barley. As soon as the crop of grain is removed the land is plowed or "disked" and at once seeded to rape. Field peas and other early maturing forage crops, or rye or winter oats that have been pastured off in spring may also be followed by rape with profitable results.

Another practice which is coming into favor in some sections of the country is to sow rape in the spring with some grain crop, such as wheat, allowing the former to take possession of the field when the latter has been removed. This method is especially satisfactory when succulent forage is desired for fall feeding. Rape may also be sowed in the corn-field just before the last plowing, as is often done with rye and winter wheat.

The rape is usually ready for use in about eight or ten weeks from the date of seeding. The general practice is to use it as a soiling crop or as pasturage. Sheep and swine may be turned into the field and allowed to remain until the rape is pastured off. Cattle may also be allowed to run in the field, but as they waste much of the forage by pulling up the plants and tramping them down it is a better plan to cut the rape with a scythe or mower and feed it to the animals.

With sheep and cattle care should be taken at first not to allow the animals to eat too much, as there is danger of injury from bloating. Hungry animals should not be allowed to eat their fill, and it is not best to turn them into the rape when the leaves are wet. There is no danger of bloating with swine. It is an excellent plan to have the fields so arranged that the sheep and cattle have access to an open pasture as well as to the rape. Animals should have free access to salt at all times when being pastured on this crop.

Rape has a high feeding value. It makes an excellent feed for fattening sheep and swine and for producing an abundant flow of milk in milch cows. On account of danger of tainting the milk many people do not feed it to cows until after milking. Rape can be used to good advantage as a part of the rations for animals that are being fed in pens for market or for the show-ring. It is also a valuable food for young lambs at weaning time. By beginning as early as practicable in the spring and seeding at intervals of two or three weeks, a continuous succession of rape can be produced throughout the period when the permanent pastures are most likely to be short. Rape will endure quite severe cold weather and thus will last a long time after the ordinary pasture grasses succumb to the frost.

Gives and Asks Experience.

EDITOR KANSAS FARMER:—Will you please give us, through the FARMER'S columns the results of Colonel Dudley's (or anybody else's) sweet clover experience? I would also be glad to have the experience of any of your readers with sowing alfalfa in the corn-field in

the summer or fall, or in the spring with flax. Several fields were sown in this county with flax last year and so far as I have heard all were successful except a part of one field, although the summer was too dry for clover and timothy sown in the same way. Brother farmers, fire in your alfalfa experience. The KANSAS FARMER management realizes that nothing in that splendid paper is of more general interest or value than alfalfa experience. Failures are just as useful as successes. My own failures justify me in saying, don't sow late in the spring, nor on fresh spring plowing, nor in the fall unless the ground is in perfect condition. But I am going to keep trying. CHESTER SMITH, Waverly, Coffey County.

Alfalfa in Lincoln County.

EDITOR KANSAS FARMER:—On suitable land in central Kansas, alfalfa will probably give better returns than any other known crop. Not knowing anything about it I followed the advice of agricultural writers and "plowed deeply, pulverized thoroughly, and brushed or harrowed in the seed lightly." As I did this in early spring when the weather was favorable, I usually got a fine stand that sometimes lasted for as much as two months. Finally after fooling away several dollars and, what was worse, several years' time I saw in one of Coburn's reports where a farmer secured good results from sowing on clean corn ground. I tried it, putting on twelve pounds of seed with a press drill. I have never failed in getting a stand and keeping it. Had I packed my soil and used a press drill from the start I would have probably succeeded. I wintered fifty head of hogs chiefly on alfalfa hay. The last cutting, made November 5, was about ten inches high and the hay was certainly worth more than wheat bran of equal weight. My hog lot contains twenty acres, ten in alfalfa and the rest in rye or taken up by the creek that runs through it. A hundred hogs and five horses are pastured in the lot. The horses are fat and the hogs in fair condition. Neither got any grain and the horses work every day save Sunday, though not over eight or ten hours.

I do not believe it is ever safe to pasture ruminating animals on alfalfa. President O. B. Whittaker, of Kansas Christian College at Lincoln advanced the same theory that the FARMER did last week, that is, that you could allow your cattle to fill up on wheat, rye, or other food and they will not bloat. This is doubtless true sometimes. "Experience is a dear school"—I have attended the school some. Though I keep but few cattle I have had hundreds of cases of bloat and in spite of unremitting care have lost several. My neighbor who has more cattle and has allowed them to range his alfalfa rather laughed at my fears but has been compelled to change his mind, having lost some recently.

As to sorghum and Kafir I have seen them pastured with impunity. Again I have seen animals die from a single mouthful. In 1874 a herd of beeves was being driven from bed to grazing ground. Crossing the corner of a second-growth sorghum patch a few merely nipped the frosty leaves. Though driven at a reasonably fast walk five died within a half mile, one within a hundred yards and in less than five minutes.

All these feeds are good dry and it is perfectly safe and profitable to feed them.

It seems to me that ground prepared by the Campbell system would be the ideal for seeding alfalfa. I would rather have ten or twelve pounds of good seed per acre than a bushel. When the ground is very loose it should be planked or rolled after drilling. I have seen several good stands destroyed by the drill furrows washing shut after the plants were all well up.

On heavy land if seed were sown deeply it might cover the seed too deeply, but on my light loamy soil I would as soon have it one and one-half to two inches as not.

I have written more than I intended but I wish some one had written the same for me twenty years ago. A. T. BRIGGS.

P. S. Since writing the above I have been reading "Experience With Alfalfa" on page 528 in FARMER. I. M. Bisby's idea of thin seeding coincides with my experience and observation. With an ordinary seven-inch spaced drill ten pounds of seed per acre would give us about two and one-half seeds to the inch, which is more than twice as thick as it can grow. The cultivation of alfalfa can scarcely be overdone. If it is sown soon enough in spring (March or first of April) it will get a good start and may be cultivated with a spring-tooth weeder by June; the weeds may

The Family Friend

An old and true friend that will help you in times of distress. When racked with pain you would give anything for relief. In the hour when the little child, too young to make its wants known, lies suffering, its little face drawn with agony; in the hour when the good wife, worn and tired, needs an arm to lean on; at all such times, when the calling of a doctor means a dangerous delay, besides great suffering and a heavy bill, there is nothing else so good as a bottle of

WATKINS' Vegetable Anodyne Liniment.

We receive numberless letters like these:

SAVED THE CHILDREN.

CLARA CITY, Minn., June 14, 1901. We had five children sick with diphtheria last winter and carried them all through in one week without any doctor. Watkins' Vegetable Anodyne Liniment should be used at once as soon as any symptoms appear. We mixed two teaspoonfuls of Watkins' Liniment with two of vinegar and one of salt. Gave some of the mixture once an hour, also rubbed the Liniment on outside of neck. OTTO PETER.

HORSES WOULD HAVE DIED.

SHIRESHWANA, Ind., June 18, 1901. I have used Watkins' Vegetable Anodyne Liniment for nine years and find it the best remedy for colic in horses I ever knew. I saved two horses with it that would have died. Cannot speak highly enough of it. HENRY CATTON.

The best thing made for Cholera Morbus, diarrhea, flux, rheumatism, cuts, cramps, strains, burns, colic, mumps, sore throat, diphtheria, frosted limbs, etc. For horses and cattle it cures sprains, cuts, scratches, bruises, sweeny, colic, etc. Of course when you read this advertisement you may not feel the need, but the need of it may arise at any moment of the day or night, and then its worth can not be counted in dollars and cents. Order it the next time our agent calls, or if we have no agent in your county, send us your name and address at once, and we will see that you are supplied.

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We send out a beautiful 100 page illustrated Home Doctor and Cook Book absolutely free, and want to place your name on our mailing list. It is the cleverest and most complete thing of its kind ever issued. Write for one to-day.



J.R. Watkins

Wanted a Man. We want one good, open-eyed young man in each neighborhood who has a little ambition, and an inclination to get on in the world, to write to us. We are in a position to start him in a good paying business of his own. We have lots of young fellows, "boys" you might call them, who are making a nice thing selling Watkins' Remedies.

The J. R. Watkins Medical Co.
28 Liberty Street,
Winona, Minnesota, U. S. A.



be kept down and a dust mulch secured that will carry it through any ordinary drouth. After it is 2 years old disk and harrow. Cut "early and often" or at least as often as it begins to bloom. If you want the most and best hay you can't have honey too. Handle green enough to save the leaves.

B.

Cow-pea Harvester.

EDITOR KANSAS FARMER:—You will find enclosed a description of a cow-pea harvester. You might call it a cross between a mowing-machine and a header. In order to make it plainer go where there is a mower, lay the sickle bar down in position for cutting hay; step to the end of the sickle bar and look along the bar towards the machine, imagine a short sickle bar with a platform, like a header only much smaller behind with a canvas running towards the machine, also an elevator at the machine end, also like the one on a header. A reel could be added where needed, the whole to be worked up or down by a lever made for the purpose. Of course a mowing-machine would not do, but a machine could be built on those principles, with alterations to suit the placing of the platform and elevator. The gearing would also have to be changed to suit. If any reader can use this do so, for I have not the wherewithal to either make a model or get a patent. Lincoln, Kans. JOHN MURPHY.

More Experience with Fall Sown Alfalfa.

EDITOR KANSAS FARMER:—After harvest last year I had twelve acres of wheat stubble plowed and harrowed twice. It was plowed in July. About August 12, we had a pretty good rain and on the 15th I sowed three bushels of alfalfa broadcast with a hand seeder and harrowed it twice after sowing. The land is upland with a stiff yellow subsoil, one part of it a kind of sandstone gravel. The stand was quite poor on this, but I think it was on account of the ground baking from a rain we had after I sowed it. The stand was fine on the balance but about one-half to two-thirds froze out on the poorest of the land, which was about six acres. This spring I sowed about three pecks and harrowed with teeth slanting back. On the poor ground the alfalfa looks yellow and sickly while on the good ground it is dark green and about twice as big now. A great deal of volunteer wheat came up in this ground and it will make fully one-half crop and I am at a loss whether to wait till the wheat is ripe or to cut for hay. The alfalfa does not look now as if it would blos-

som before wheat was fit to cut, and if it did, the alfalfa being found up with the straw, it would hold its leaves and I think would make nearly as good feed as to cut the wheat before it is ripe. Perhaps some of the readers of the KANSAS FARMER could give me a little information on this. Would be very glad to have it. I do not think there is any danger of planting it too deep if there does not come a hard rain before it comes up, which may bake the ground. My brother planted some in a small can in the house and covered it about three inches deep and it came up and was very thrifty.

CHAS. O'CONNOR, Atchison County, Kans.

Commercial Fertilizers on Corn—Do They Pay?

EDITOR KANSAS FARMER:—I would like to hear from some one who has had practical experience in fertilizing corn in Kansas. What does it cost per acre and what per cent of increase over the old way of planting without fertilizing? From what I have observed of the advantage in fertilizing wheat over seeding without it seems to me it would pay equally well with corn. Upland prairie in these parts that raises five to ten bushels of wheat per acre without fertilizing has been made to yield twenty to thirty bushels per acre by its use with the additional cost of \$1 per acre for fertilizing. Humboldt, Allen County. TITUS SIMONS.

Good appetite and cheerfulness follows the use of Prickley Ash Bitters. It purifies the blood, liver, and bowels and makes life worth living.

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Mr. M. McCoy, Gogonac, Kans., Captain Company A., Fifteenth Indiana Infantry, writes: "Hermit Remedy Company, Dear Sirs:—I have doctored for piles since the Civil War—thirty-six years—and am now glad to report that after using your treatment for a few weeks I am completely cured. I believe you can cure any one, for a man could not be in a much worse condition than I was and live, and I am duly grateful to you. Respectfully, M. MCCOY."

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Horticulture.

Disposition of Cull Apples.

FRES. FRED. WELLHOUSE, BEFORE KANSAS STATE HORTICULTURAL SOCIETY.

Just what to do with our culls, has been with us a chronic disease of long standing. Many years before our trees bore fruit we were worrying about how to dispose of cull apples. And during these cogitations, one of the indispensables always prominent in our thoughts was a large cider-mill, for converting our inferior fruit into a marketable commodity; hence in 1881, when our trees produced their second crop, we bought a Bloomer & Boschert cider-mill, with the necessary power and appurtenances required to run off a car-load of cider in ten hours. This mill we started at once working up all our culls and many for the neighbors; meanwhile we were selling all the sweet cider we could; but at the end of the season many barrels were yet unsold; by the next season this had turned to vinegar and was put upon the market. The following year we procured vats, shavings, and such other things as were needed to rapidly convert cider into vinegar and during that year all the unsold cider was put into vats and converted into vinegar; about this time we were getting a faint idea that we were acquiring experience. The leakage of vats and barrels, the bursting of hoops and the constant evaporation were daily lessening our stock, and by the end of the year we had concluded that converting apples into cider with the expectation of making money out of it was an uncertain road to travel.

The next year we received circulars giving glowing accounts of the wonderful performances of the Plummer evaporator; we also received a call from Mr. Plummer in person, and, as the cider-mill as a money-maker diminished in importance in our mind, the Plummer evaporator began to "loom up"; and Mr. Plummer soon convinced us that if we had one of his mammoth evaporators the road to wealth was easy, and of course we ordered one, although the price was high. In about two years we had more experience. Ah, these experiences! They are precious things; and a man who does not experience a few never amounts to much. I do not want it understood that I am saying one word against the Boomer & Boschert cider-mill or Plummer's evaporator; in fact, each performed its work well, and all it was recommended to do, and in the hands of experts no doubt would have been profitable. But at the

end of two years, when our books were balanced, we found that the manufactured products only brought us about what the culls would have sold for in the market; thus losing our labor, wear and tear of machinery, etc. Since this experience, we have had very decided opinions as to what ought to be done with our culls, and, as they were picked, we have sold them to whomsoever would give us the most cash. Another thing we discovered about this time, and that was that all our time was needed in caring for our orchards, gathering the fruit and getting it to market, fighting rabbits, borers, tent-caterpillars, canker-worms, fall web-worms, codling-moths and other insects that love the apple as well as ourselves, and were contending with us for its possession.

Another problem also faced us at this time, and that was how we should obtain the right kind of help to gather our fruit; there is at times a good deal of it, and when we need it we need it bad, and in order to have our work done rightly we need the best help we can find; and to secure this kind of help we have always found it necessary to pay good wages, and during the past twenty-five years we have invariably paid \$1.50 per day for ten hours, or 15 cents per hour; and when a man was incapable of earning this amount we gave him his time. This was from 25 to 50 cents more per day than customary wages; and often we could have secured help at lower wages, but thought it good business to stick to our regular prices. This has enabled us to get plenty of help at critical times, when the work had to be done immediately, and also to get men who, by helping us year after year, had become skilled in the work; and now, when we have a job of work on hand, we at once employ as many men as we can work to advantage, and when the work at hand is completed we pay all off. We keep no help the year round except a foreman.

The selection of the right kind of tools and implements to gather and place the fruit in market economically had also to be attended to, and the following is a description of those we employ: We use two ordinary farm wagons, with front wheels twenty-four inches and hind wheels thirty inches high. These wheels are of steel, with cast-iron hubs, and very cheap and durable. On each of these is built a platform fifty inches wide and sixteen feet long, made of two-inch pine or cypress lumber; on the side and ends of these platforms we spike two-by-four joists to hold the boxes in. These platforms are just above the hind wheels and just high enough in front for the front wheels to turn under. This brings the platform to an easy height for the men to empty the fruit into the boxes set thereon. Next we make 100 boxes twenty-four inches long, eight inches deep, and sixteen inches wide. The ends are of seven-eighths- and the sides of three-eighths-inch lumber, of any light kind that will hold nails good; elm or cottonwood will do. We obtain these boxes from a box factory, ready to nail together, with handholds cut in either end, at about 14 cents each. They hold from fifty to sixty pounds of apples each. Each wagon platform holds twenty-two of these boxes.

Next comes the sack or basket in which to put the fruit while picking; we have tried everything that came in our way, but settled on the old seamless sack with a bottom and top corner fastened together with hook and eye. The essentials for a good receptacle to hold apples, while picking, are: First, one that will cause the least amount of bruising; second, one that can be readily fastened to the body of the picker and allow both arms perfect freedom; third, one that can be easily emptied into the boxes on the wagon with the minimum amount of bruising; fourth, one that is durable and not expensive. Next, we procure from four to six ladders twelve to sixteen feet long, thirty inches wide at the bottom, and six inches at the top. This, I believe, completes our outfit for field-work. We now hitch a team to each wagon and drive to the field with twenty-two boxes on each wagon, and with, say, from ten to fifteen pickers and a foreman. We foreman's business is to keep the team up even with the pickers; see that the drive one team between two rows. The men do not huddle up and interfere with each other; see that they do not get too far away from the wagon; see that they do their work correctly; and to keep the time of the men. When the wagon is loaded, it is driven to the packing-house and the other wagon takes its place. Our men pick all the way from thirty to seventy-five bushels each per day. Our trees are headed so

low that five-sixths or more of the fruit is picked from the ground. Last year, on a block of 270 acres of 6-year-old trees, our men averaged seventy-one bushels each per day during the entire season.

We pick our apples, large and small, good and bad, clean from the trees at one picking, and do all sorting at the packing-houses; we have tried sorting direct from the trees, but it never gave satisfaction and we always had to sort again. Sorting is the most particular work we have to do and requires great care in selecting careful help for this purpose. Women often make excellent sorters, but we have never had success with boys or girls, either in the field or in the packing-house. Young farmers, from 20 to 40 years of age, used to hard work, have given us the best results as pickers, but most of our best sorters we get from town. Our outfit for sorting and packing is a platform or floor sixteen by thirty-two feet, with a table along one side four feet wide and thirty inches high, two dozen one-half bushel baskets, three or four light hatchets, two barrel presses, plenty of barrels, liners, and nails. Our platforms are sometimes made in sections, so that we can move them to any part of the orchard. The wagon-load of apples from the orchard is driven up to the table and the full boxes removed to the tables and empty ones placed on the wagon and returned to the orchard for another load.

The sorting is done from these boxes while on the table. First grade are put in barrels; second grade are hauled in wagons and loaded into cars in bulk; third grade are carried to a pile. Our first grade embraces all sound apples above two and one-quarter inches in diameter; second grade, all above one and one-half inches that are not badly damaged; third grade, all below one and one-half inches, and all those of that size that are badly injured. This grade we sell to the neighbors at 10 cents per hundred, or 5 cents per bushel, and they load them into their wagons from the pile. This grade is of too little value to bear the cost of shipping, and must be sold at home, and at 5 cents per bushel we have little trouble selling them. The second grade we nearly always sell in bulk in car-load lots; they usually go to localities where apples are scarce. Last year we sold seven car-loads to one firm for 60 cents per hundred, who shipped them to small towns in Nebraska, and sold readily at a good profit. Twenty years ago railroad rates were so high that there was almost an embargo on this class of apples. We then paid as high as \$1.10 per hundred to Denver; now we get rates for one-third amount. Last year we sold two car-loads to a Topeka canning factory for 40 cents per hundred. This, I believe, is the first we have sold to the canneries, but we expect to sell largely to them this year. The highest price we ever received for these culls was 60 cents per hundred pounds, and the average for twenty years has been a little over 36 cents per hundred, or 18 cents per bushel, f. o. b. cars here.

We had trouble at first in loading cars in bulk. The railroad requires a minimum of 24,000 pounds, and to get that amount in we had to pile them three or more feet deep, and this required the men getting onto the apples with their feet, which bruised them badly. We finally arranged a sliding door or partition the width of the car and three feet high, set at an angle, with braces to hold it in place. This door we placed near the end of the car and piled the apples in behind, and when filled to the proper depth the door was pulled forward; this enabled us to fill the car with a minimum amount of bruising. The demand for this class of apples is constantly increasing. The lowering of rates on the railroad has had much to do with this. In 1890 we sold our entire crop of culls to two New York firms at 40 cents per hundred, and they put up kilns in the

orchard and dried them. These kilns are so simple and so efficient that I take the liberty of describing them. They erected a cheap building, eighteen feet wide and thirty-six feet long, and two stories high, divided into two rooms below and two above; these rooms were each eighteen feet square, and the only floor was eight or ten feet from the ground, and was made of slats one and one-half inches wide and one inch thick, beveled on the lower edge; these slats are laid so as to leave a crack one-eighth of an inch wide on top and one-half inch on the under side. The prepared fruit from 100 bushels of apples is put in each room on these floors. Large stoves or furnaces in the lower rooms raise the temperature to about 150 degrees; and by having ventilators below and above, the hot air is carried up through the fruit, and by turning or shoveling it over once or twice the fruit is dried in about twenty-four hours.

After those parties were through drying we bought their kilns and added three more, thus making their capacity 500 bushels per day. We never have time to use these kilns ourselves, but have often sold our culls and allowed the purchaser to dry them in our kilns. This enabled us at times to make good sales. A ton of coal will dry about 125 bushels in these kilns. Three women, with one paring-machine, will pare, core, and trim fifty to seventy bushels ready for the slicer and dryer. Each 100 pounds of apples yields about ten pounds of dried fruit, and about ten pounds of dried parings and cores. The prices for dried fruit have ranged from 5 to 14 cents per pound; parings and cores, from 1½ to 3 cents per pound.

Is the Disease Blight?

EDITOR KANSAS FARMER:—I have apple-trees affected the same as those described by D. H. Welch in the FARMER of May 22. Judging from his description mine are worse than his. They have been affected about five years. I tried three years ago to find out from the experiment station what was the matter with them, and sent several specimens of twigs. They came to the conclusion that it was some kind of root disease. I have since concluded that it was blight, and that the only remedy was to cut away the affected wood, or a better way I think would be if the tree is badly affected, to cut it down.

It seems to be a serious trouble, and I would like to know if there is any other way of dealing with it. In my case the worst cases stop growth entirely. I have cut down several trees and if the disease continues will cut them all down, and try again. I have never known a tree to get rid of it after being once affected.

J. E. WRIGHT.

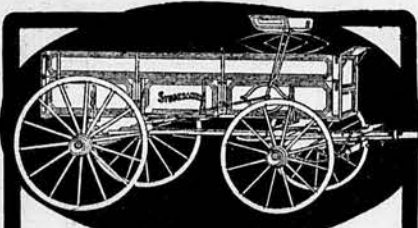
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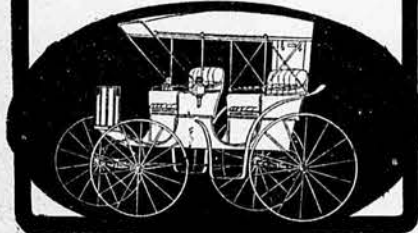
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The Stock Interest.

THOROUGHBRED STOCK SALES.

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

November 6, 1902—Thos. Andrews & Son, Cambridge, Neb., Shorthorns.
November 18-19, 1902—Marshall County Hereford Breeders' Association Sale, Blue Rapids, Kans.
December 16, 1902—Gifford Bros., Manhattan, Kans., Shorthorns.

Weaning Pigs.

EDITOR KANSAS FARMER:—When it is desirable to have the sow have two litters a year there is no better time for the first litter than the last of February; but when only litter is desired, I should wait till about May 1, and the pigs should not be weaned until about 3 months old.

Pigs farrowed in February will begin to eat slop and specially prepared pig feed in the "pig creep" at about 4 weeks old, and if they are hearty and lusty the should be weaned at 6 weeks of age. In about 21 days the sow will be bred again for a fall litter in latter part of August or 1st of September. To wean pigs successfully at 6 weeks one must thoroughly understand his business, for it makes quite a change for animals so young.

When sweet skim-milk is at hand it is not so bad, but when not a drop of milk is available it is rocky, indeed. This has been my experience this year, but my pigs are looking very nice. Of seventy-five pigs, I have not had a single case of scours, and the sows and pigs have had very early grass. I feed salt in quite large quantities at every feed, in the hog and pig slop. Wood and cobs are burned every pleasant day in their yard, the natural gas pipe that runs there enabling me to start a fire out of almost anything. It is a splendid thing to cremate a dead hen or pig, or to burn old bones and leather.

The sow is placed by herself in warm quarters with plank floor under her nest. Her bedding is cut corn-fodder, which is the very best bedding in the world for hogs on account of its being such a wonderful absorbent of moisture from the pigs. For a week before she is due she is fed shorts to keep her cool and loose, about two quarts shorts per feed is the right thing, and when she becomes wild and uneasy, she is fed all the shorts and bran in equal parts that she can possibly eat up. Then she will retire and find some pigs and will never eat up and will very rarely overlay one after this kind of treatment.

One of my best sows, Lady Golddrop, is stone deaf and always fat and she always raises large litters, although usually a deaf sow is of very little value.

I have not got a sow that does not come out for her feed at the first meal after finding pigs. This is probably because she has had no corn, having been fed entirely on shorts before farrowing (I regard corn as the worst enemy a breeder has and the best friend a feeder has), and I always give her a full feed, which is contrary to the advice of most writers. The first two feeds I give her are wholly of bran-slop with a little salt in it, then I gradually substitute shorts for the bran until the feed is all shorts. I am convinced this is a good plan, as she thus gets filled up with a very cooling feed and is not hungry and has no temptation to eat her pigs.

I do not take any stock in the theory of simply feeding the sow cold water for two days after farrowing. If water is good for her, water and bran is better. But under no condition feed meal, corn, or shorts until the pigs are 3 days old.

While the sow is eating the second or third day, the pigs are marked in the ear by a longish harness punch. It is really a metal tag ear-punch that cuts

out about as much as two harness punches could, and the numbers used in marking and the sex of the litter is at once recorded in my "Private Herd Register," where the sow's and boar's pedigree are carried out to sixty-two ancestors each.

I have already described my system of ear-marking from one to one hundred thousand in the FARMER. As soon as the pigs are marked I do not care what sows they suck, and it is a fact that all my pigs suck any old sow they want to. The sows don't object, and sometimes it is an advantage; but when an older litter robs a younger one, the latter will get hopelessly stunted and the herdsman should always be on the watch for this. The old invariable rule was, to never move the pigs when weaning, but to always move the sow. Here, again, I depart from the good old way and I move the pigs and allow the sow to remain and be sucked by the other pigs if they want to.

The pigs are put in a pen that they can not get out of and are well fed. As they have already learned to eat well they are not uneasy after the first day. When weaned a week, they are "snouted" and in another week are put in a moveable pen in a rape patch, where fresh rape is always given them and their slop is their shorts with salt and dried blood. When dried blood is used, one need never have any fear of the scours. For my pen I use sixteen-foot panels of fence, two of which are

Grade	Cost of corn eaten.	Cost of hay eaten.	Total cost of feed.	Cost of steer at beginning.	Cost of steer when fattened.	Value of live steer when fattened.	Loss to feeder
Shorthorn..	\$38.62	\$21.59	\$60.21	\$39.04	\$99.25	\$91.90	\$7.35
Angus.....	32.79	14.56	47.35	33.08	80.43	73.13	7.30
Jersey.....	32.58	20.84	53.42	24.57	77.99	72.60	5.39
Holstein....	33.54	20.86	54.40	28.80	83.20	71.34	11.86
Red Scrub..	33.51	21.34	54.85	34.19	89.04	85.50	3.54
Spotted Scrub.	31.92	21.20	53.12	34.68	87.70	78.78	8.92
Total loss.....							\$44.36
Average loss per steer.....							7.39

hinged together, and where the sections come together, they are wired around a gas pipe post driven into the ground. One extra panel is needed and the pigs can be shut up in one corner in a V-shaped pen on fresh rape while the other corners are swung around into place. Eight panels hinged together into four sections makes a pen large enough for twenty-five to fifty pigs, and an upturned hog crate, the extra panel of fence and a board or two complete the shade or shelter six by sixteen feet, which will do for twenty-five pigs of nearly 100 pounds weight each, when the sexes should be separated and the culling out done.

Moving these pens is only a few minutes' work, and the rape will at once grow again, each plant being capable of producing twenty-two leaves during the season. J. C. NORTON.

Moran, Allen County.

The Cost of Beef.

PROF. H. M. COTTRELL, IN THE INDUSTRIAL-IST.

The papers are filled with columns of matter in regard to the beef trust. A statement in regard to the actual cost of making beef may be of interest.

This college last winter fattened six steers for the purpose of having a slaughter test made, in regard to the quality in beef, for our students. It required nine hundred forty-seven pounds of grain for each one hundred pounds of gain made while fattening these steers. The usual average is one thousand pounds of grain for one hundred pounds of gain and one thousand two hundred to one thousand five hundred pounds of grain is not uncommon. This shows that these steers were fattened with less grain than is used by the average feeder. The grain was purchased in Manhattan at current market prices.

At the close of the feeding Mr. George Washington, Manhattan, an extensive feeder and shipper, estimated the market value of each steer. Mr. John Gosling, Kansas City, and Mr. Charles Anthony, head cutter for A. Weber, leading retail butcher of Kansas City, estimated the wholesale selling price of the dressed carcasses at Kansas City. The cost per hundred pounds and the valuations made on the finished animals and the carcasses are as follows:

Grade	Cost per 100 lbs.	Value at finish per 100 lbs. live wt.	Value of dressed carcass per lb.
Shorthorn....	\$3.75	\$6.40	\$0.08 1/2
Angus.....	3.75	6.25	0.71 1/2
Jersey.....	2.85	6.00	.08
Holstein....	3.25	5.50	.07 1/2
Red Scrub..	3.25	5.75	.07 1/2
Spotted Scrub.	3.25	5.75	.07

The value per one hundred pounds live weight as estimated by Mr. Washington on the six steers was regarded as a conservative price by well-informed stockmen who saw the animals, and many thought that the steers would

bring from 20 to 50 cents per hundred above Mr. Washington's estimate. Several butchers examined the dressed carcasses and they considered that Mr. Gosling and Mr. Anthony had made an accurate estimate of the carcasses as based on prices of Kansas City packers. If these valuations on the live animals and on the carcasses were correct, we have the following showing:

Grade	Value alive when fattened.	Value of dressed carcass.	Loss to slaughterer.
Shorthorn....	\$91.90	\$77.52	\$14.38
Angus.....	73.13	55.13	18.00
Jersey.....	72.60	57.60	15.00
Holstein....	71.34	59.99	11.35
Red Scrub..	85.50	66.75	18.75
Spotted Scrub.	78.78	57.26	21.52

These facts make creditable the statements often made by persons connected with the great packing-houses, that every dressed carcass sold from a packing-house is sold for less than is paid for the live animal that furnishes the carcass. They also show the remarkable utilization of the offal and by-products of slaughtering that enables the packing-house to make up the loss on carcass, pay running expenses, and make profits.

The steers were fed corn and corn-chop, which cost the college an average of \$1.30 per hundred pounds, and alfalfa hay, which cost \$10 per ton. The cost of feed, cost of steers at beginning, value of steers when fattened, and loss in feeding are as follows:

Grade	Cost of steer at beginning.	Cost of steer when fattened.	Value of live steer when fattened.	Loss to feeder
Shorthorn..	\$39.04	\$99.25	\$91.90	\$7.35
Angus.....	33.08	80.43	73.13	7.30
Jersey.....	24.57	77.99	72.60	5.39
Holstein....	28.80	83.20	71.34	11.86
Red Scrub..	34.19	89.04	85.50	3.54
Spotted Scrub.	34.68	87.70	78.78	8.92
Total loss.....				\$44.36
Average loss per steer.....				7.39

The prices at which the steers were valued when ready for the market were high, but the unusual high cost of feed caused a loss in feeding every steer. These statements show plainly why the man who buys meat for his table has to pay high prices when feed costs so much.

Fortunately for the college, we had hogs following the steers to pick up the droppings. For reasons not connected with this test it was necessary to change the hogs frequently and vary the number so that no accurate account could be kept of the gains of the hogs. We greatly regret this. Work in previous feedings shows two hundred pounds of pork per steer from seven months' feeding, and it is probable that more pork was made in this feeding. The hogs therefore covered the loss on the steers and left a balance for labor and profit.

The cost of feed for each one hundred pounds of gain was as follows: Shorthorn \$15.41, Angus \$17.31, Jersey \$15.16, Holstein \$15.16, red scrub \$14.15, spotted scrub \$17.02; average \$15.70.

The largest corn-crib in the world is located near this college on the feeding grounds of Mr. C. P. Dewey. This crib is eight hundred fifty feet in length and holds over three hundred thousand bushels of corn. A few years ago this crib was filled with corn at a cost of 13 to 15 cents a bushel, and this corn was used in fattening steers. Beef was cheap then and consumers were happy. This year corn has cost 70 cents per bushel in Manhattan—from five to six times as much as it did when beef was sold at a low price. Alfalfa hay, the chief roughness fed in this section, with corn, in fattening steers, has cost from \$10 to \$12 per ton. When corn was cheap alfalfa hay sold at \$2.50 to \$3 per ton. With beef-making feed costing from four to five times as much as it did a few years ago when beef was cheap, is it any wonder that steak costs more? The fact is that beef has not increased nearly so much in price in proportion as has the feed which makes beef.

The writer knows nothing about the profits of the packer, but he does know that since feed has risen so high few feeders have made anything, and many have lost heavily in fattening steers. The high prices of beef prevalent a few weeks ago were barely sufficient to cover the cost of production. The recent agitation and the reduction in consumption of meat has lowered the price, and will cause added losses to almost every feeder in the West.

H. M. COTTRELL.

Key to System of Numbering Animals.

EDITOR KANSAS FARMER:—I have visited a great many breeders lately and was surprised to see that all of them kept the identity of their stock in their head, having no system of marking. I mark my lambs when one day old, get

EPIDEMICS

controlled by

Mulford's Vaccines

Charbon Vaccine prevents Charbon. Black-leg Vaccine prevents Black-leg. Serum for Distemper prevents Distemper or Shipping Fever. Pneumonia Antitoxin prevents and cures Pneumonia. Tetanus Antitoxin prevents and cures Tetanus or Lockjaw. Tuberculin and Mallein detect Tuberculosis and Glanders. Price of Charbon or Anthrax Vaccine, \$2 per tube of 10 complete doses (two injections each) for cattle, horses and mules. Black-leg Vaccine, sufficient for from 10 to 20 cattle, \$1.25; for 20 to 40 cattle, \$2.25.

FREE BOOK

It contains valuable information to every breeder and dairyman.

H. K. MULFORD COMPANY

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WORK THE HORSE IF NECESSARY

BALMOLINE



NATURE'S WONDERFUL HEALING SALVE. CURES SORE SHOULDERS, COLLAR GALLS, SCRATCHES, CRACKED HEELS, SITTFASTS, CHAFES, ROPE BURNS, WIRE CUTS, SORE TEATS, OLD STANDING SORES AND ALL FLESH WOUNDS ON MAN OR BEAST. PREVENTS FLUZA, MAGGOTS, SCREW WORMS AND PROUD FLESH. ALL DEALERS. SEND 4c FOR TRIAL SIZE TO B. H. DEHUY, P. O. STATION A, DENVER, COLORADO. ENDORSED BY HORSEMEN EVERYWHERE.

25 and 50 Cents

Sunny Slope Farm.

Emporia, Kans., July 19, 1900. Dr. B. H. DeHuy, Denver, Colo.

My Dear Sir:—I have used two boxes of your Balmoline on my horses for sore shoulders and sore necks and must say that I find it a very satisfactory remedy. It has healed them faster than any remedy I have ever used. At the same time we were working our horses all the time. Yours truly, C. A. STANNARD.

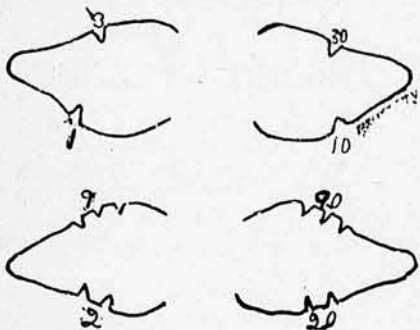
CAR-SUL CATTLE DIP

CURES Mange and Itch; KILLS Lice, Ticks and Screw-Worms; HEALS Cuts, Wounds, Galls and all Sores. GUARANTEED to do the work without injury to eyes or other parts of animal. At dealers or by express, prepaid, \$1.50 per gallon. 25 cent cans—dealers only. Special price in quantities. Write to-day for book and free trial Car-Sul. Address MOORE CHEMICAL CO., 1501 Genesee St., Kansas City, Mo.

the ewe's number from her association ear-tag and record it in my private register, a large book well bound and made especially for 200 ewes or cows.

I have another large book, ten by twelve inches, for hogs. Each hog has two pages allowing for a very full history and description, showing the entire produce for ten litters, giving the pedigree in a shape to analyze, and showing sixty-two ancestors. This book is of enormous value to a breeder. As soon as a sow has pigs they are marked. The produce is set down with their marks and at any time an entire stranger can come in and by the aid of the book and the marks on the hog's ears, pick out any one in the book. My wife and family are familiar with the key and can at any time read the numbers of each hog. I will here give the key. Let it always be remembered that the operator stands behind the animals and that the ear to the operator's left hand is the animal's left ear, and the ear to the right hand is the animal's right ear. All there is to remember is that any crop on the upper side of the ear, represents three times the value of the same crop on the lower side of the ear, and at the same time a crop on the right ear represents ten times the value of the same crop on the left ear. A notch cut in the lower side of the left ear is the unit of value or 1, while two notches represent 2. Now as a

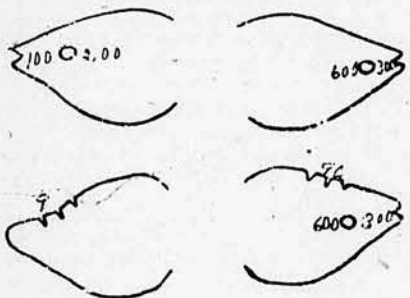
notch on top of ear has three times the value of same notch on bottom of ear, a single notch on top of ear would represent 3, while two notches there would represent 6. One notch on top of ear and one on bottom represent the added value of each notch or 4.



Two notches on top of left ear and one below represent 7, and it is easy to get all numbers up to 9, when a single notch at bottom of right ear represents 10, and when two notches are added to bottom of left ear the three notches represent 10+2, or 12. One at bottom of the right ear and two at top of left ear represent 10+3+3, or 16. Two notches at bottom of right ear represent 10+10, or 20; while one notch at top of right ear represents 30. Thus any number up to 99 is easily marked. To mark 40, cut a 30 on top of right ear and a 10 on bottom of right ear. To mark 98, make three 30s on top of right ear, two 3s on top of left ear and two 1s on bottom of left ear.

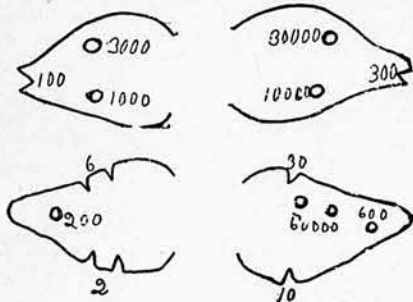
Up to 100 is all an ordinary farmer needs, but in cattle or sheep it is well to carry it on further. At 100 the key changes and a crop out of the end of left ear represents 100, while the same crop out of end of right ear represents three times as much, or 300.

A round hole about an inch from end of left ear represents 200 and the same hole near the end of the right ear represents three times as much, or 600.



With 100, 200, 300, and 600 it is easy to combine and make 400, 500, 700, 800, and 900. And this key from 100 to 900 does not interfere with the other key from 1 to 99, and the two can be combined, giving any value up to 999, which is a 600 hole near end of right ear, a 300 crop at end of right ear, three 30 crops on top of right ear, and three 3 crops on top of left ear. At 1,000 the key again changes and a round hole near the bottom of left ear represents 1,000, while the same hole in right ear represents ten times as much or 10,000. Two holes near bottom of left ear represent 2,000, and when on the bottom of right ear they represent 20,000. When two holes are on the bottom of both ears they represent 22,000. One hole near the top of left ear represents 3,000 and the same hole near the top of right ear represents 30,000, while both together would represent 33,000.

Three holes near the top of left ear represent 9,000, and when the same is added at the bottom of right ear the marks on the right ear equal 100,000, and with the three on left ear equal 109,000.



J. CLARENCE NORTON.
Moran, Allen County.

Vaccination Succeeded.

EDITOR KANSAS FARMER:—I see by Scott Rezean's article in the KANSAS FARMER of May 22 that he has not met with success in vaccinating calves, with the experiment station vaccine. I will give our experience with the same kind of vaccine. We vaccinated about eighty head of calves in the fall of 1900 and

sixty head in the fall of 1901. We have not lost any from blackleg since we vaccinated them. In 1899 we did not vaccinate and we lost two calves from blackleg in November of that year. In 1900 a neighbor whose pasture joined ours lost five or six from blackleg before he had the rest vaccinated. He lost one about three days after vaccination but after that did not lose any. Quite a number are lost from blackleg in this vicinity every fall. We used the double vaccine in 1900 and the single last year but we think the double is safer. We injected it into the tail.

Probably Mr. Rezean would have met with better success if he had injected into the tail instead of shoulder.

R. D. SAMUELSON.
Mariadahl, Pottawatomie County.

Contagious Sore Eyes in Cattle.

There exists in this and other West-States a contagious inflammation of the eyes among cattle that is popularly called "pinkeye," from the red and inflamed appearance of the eye. The disease is quite widely distributed, and while it occurs at all seasons of the year it is most frequently observed during the summer months while cattle are on pasture, as dust, and pollen from plants increase the irritation of the eye. The disease was first observed by the writer in this State in 1890, but since that time has spread rapidly and is now quite common. The disease seems to attack young cattle more frequently than old cattle; but cattle of all ages will take it and it seems to affect old cattle more severely than calves. It does not attack other animals than cattle.

CAUSES.—The cause of the disease has not been discovered, although it is believed to be due to a germ. The manner in which the disease is spread from one animal to another is little understood, although flies are believed to play an important part. The disease, however, also spreads during the winter, when there are no flies about. Direct contact seems to be a means of spreading the disease. There is a popular idea that pollen and dust cause the disease. They undoubtedly aggravate it, but the disease must be introduced into a locality by an infected animal.

SYMPTOMS.—The first symptom usually noticed is a profuse discharge of tears from one eye, that run down over the face. Dust and dirt often adhere to the moist hair and a dirty streak is observed, especially in white-faced cattle, extending from the inner corner of the eye downward across the face. The disease usually begins in one eye, and later attacks the other eye. In some cases both eyes may be attacked at the same time. Associated with a discharge of tears is a swelling of the eyelids, which are nearly closed, partly from the swelling, but principally to keep the light from the eye, as bright light seems to increase the pain. The front part of the eyeball becomes milky white in appearance and one spot, usually near the center, red or copper-colored. At this point an abscess or small gathering usually forms and looks to be a reddish, fleshy mass. It breaks and discharges a small amount of pus or matter that escapes with the tears. As the animal recovers and the eye returns to its normal condition a white speck remains on the eyeball for a time as a scar showing where the abscess existed. In a few cases this abscess weakens the front of the eye to such an extent that it bursts and allows the contents of the anterior chamber of the eye to escape. A few of the cases where the eye bursts will heal and the animal will recover the right; but in a majority of the cases the animal will be permanently blind in that eye. A few cases are reported where both eyes have burst and the animal was permanently blind in both eyes. During the acute stages of the disease if both eyes are affected at the same time the inflammation may be so severe as to cause temporary blindness, the animals being unable to see at all, and it is necessary to feed and water them to prevent them falling away rapidly in flesh. If the animal has the disease in an acute form there is often some fever associated with the disease; and in practically all cases the cattle cease to ruminate and will stand about with ears lopped and eyes closed exhibiting

They Work While You Sleep.

While your mind and body rest Cascarets Candy Cathartic repair your digestion, your liver, your bowels, put them in perfect order. Genuine tablets stamped C. C. C. Never sold in bulk. All druggists, roc.

all symptoms of severe suffering. Milch cows usually fall away in the amount of milk secreted, or in severe cases it may be stopped entirely. Owing to a closing of the eyes together with the pain animals do not eat well, especially while at pasture, and as a result fall away in flesh.

Since practically no animals die from the effects of this disease, and only a few are permanently affected by the loss of sight, the greatest loss is in the shrinkage of flesh, that follows an attack of this disease.

TREATMENT.—If possible the disease should be prevented by keeping infected animals away from the healthy. After the disease is once introduced among a bunch of cattle, by separating and isolating the affected animals as soon as the first symptoms are shown the disease can be checked. It is not practicable to attempt to treat a large number of animals unless they should be especially valuable or suffer from the disease in a severe form. When it is advisable to treat an animal it should be placed in a darkened stable, the eyes thoroughly washed with cold water, all secretions removed and a solution of boric acid, twenty grains dissolved in an ounce of water, should be applied. A few drops of Haarlem oil or a little ointment made by mixing one part of finely pulverized iodoform with twelve parts of fresh lard or vaseline can be applied directly to the eyeball by putting it on the inside of the eyelid and gently rubbing it over the surface. Cloths wet with cold water and kept over the eyes are useful in reducing the inflammation. Practically all animals make a good recovery in three to four weeks. N. S. MAYO.
Kansas Experiment Station.

Farm Notes.

An excess of fat is destructive of vitality.

Regular feeding makes animals more content.

To make a success of farming avoid extremes.

With a variety of stock one can utilize all foods.

There is the most profit in the growth of young stock.

Never let the farm work or stock stand still or retrograde.

Care and fertilizers make the farm. Care and feed make the stock.

Fatten and market every animal that in some way does not pay for its feed.

Anything that is worthy of a place on the farm should receive its share of care.

Thorough cultivation in good season is essential to the growing of bountiful crops.

Mange is the result of filth and allowing the pigs to sleep on rotten, dirty straw.

A little oats or bran mixed with flaxseed is good for stock that are out of condition.

Never leave the ground bare for any considerable time. It is not a natural condition.

So far as can be done, plan to convert all of the grain into meat before sending to market.

With all kinds of growing stock, from now until hot weather sets in is one of the best seasons for growth.

Farming may be made a burden or a pleasure, according to the management of the home, the farm, and the work.

With market fruit, hardiness comes first from point of desirability, then productiveness, size, beauty, ease of transportation and season of ripening.

Impoverishing the soil belittles the growth of the plant; warming and enriching it makes the growth luxuriant.

When horses or hogs do not have all of the salt they require they are much more liable to be affected with worms.

With fattening animals too much food clogs the appetite and too long periods between feeds make the animals restless.

A crop of clover will increase the nitrogenous elements in any soil whether it is cut and cured in the form of hay or is pastured.

For the plants to make the most rapid growth the soil must be kept in such a condition, to allow the plants to most readily send their rootlets through.

One strong argument in favor of sheep on the farm is that in nearly all cases wherever they are kept the farm presents a neater and cleaner appearance.

Good stock look better, do better, and pay better than scrubs, and it is the farmer that puts his money into this class of stock that receives the best returns.

There are two periods of plant growth when destruction of its vitality is most easily accomplished, viz., when

KIDNEY TROUBLES.

Mrs. Louise M. Gibson Says That This Fatal Disease is Easily Cured by Lydia E. Pinkham's Vegetable Compound.

"DEAR MRS. PINKHAM:—I felt very discouraged two years ago, I had suffered so long with kidney troubles and other complications, and had taken so much medicine without relief that I began to think there was no hope for me. Life looked so good to me, but what is life without health? I wanted to be well.



MRS. LOUISE M. GIBSON.

"Lydia E. Pinkham's Vegetable Compound cured me and made me well, and that is why I gladly write you this, and gladly thank you; six bottles was all I took, together with your Pills. My headache and backache and kidney trouble went, never to return; the burning sensation I had left altogether; my general health was so improved I felt as young and light and happy as at twenty."

—MRS. LOUISE GIBSON, 4813 Langley Ave., Chicago, Ill.—\$5000 forfeit if above testimonial is not genuine.

If you feel that there is anything at all unusual or puzzling about your case, or if you wish confidential advice of the most experienced, write to Mrs. Pinkham, Lynn, Mass., and you will be advised free of charge. Lydia E. Pinkham's Vegetable Compound has cured and is curing thousands of cases of female trouble.

the germ puts forth and when seed formation begins.

Soil that is cropped year after year becomes dead, hard, and lumpy and packs tightly. A growth of clover plowed under will liven up such a soil as nothing else will.

To secure the grain and hay in the best condition it is very important that the harvesting be done when the plants are at their best stage. A few days of delay often makes a considerable difference in the quality of the product.

Elden, Mo. N. J. SHEPHERD.

Present Outlook for Wheat in Sedgwick County.

EDITOR KANSAS FARMER:—My farm is in the southwest corner of Sedgwick County, twenty-five miles west of Wichita. About one-half the wheat was winter-killed and the other one-half came very near being killed by the long continued drought. We had had no rain to soak the ground for a year, and the sub-soil as well as the surface, was completely dried out, so up to May 12, the wheat that was alive was going back; was turning yellow and dying out. But May 12 we got a heavy rain; also on May 21, and 22, heavy rains fell, filling the sloughs and creeks. On May 27 we had more rain and we are now afraid of having too much. The wheat is headed out and if no misfortune overtakes it, we are looking for a half crop. All soft wheat was killed and also the early sown was killed or so nearly so as to be considered not worth sowing. I have a 1,000 acres of fresh sod wheat that looks fairly well; but the old land is there and won't make over ten to twelve bushels. The wheat that was pastured was hurt; the wheat being eaten off was not able to recover, owing to the severe drought. We are now hoping that no more rain will fall, as the ground is not only soaked but in many places covered with water.

A. J. HARMON.
Cheney, Sedgwick County.

Low Roundtrip Summer Rates

Via Chicago Great Western Railway to St. Paul, Minneapolis, the Cannon Valley Lakes, Duluth, and the Superiors. Tickets good to return October 31st. For dates of sale and other information apply to any Great Western agent, or J. P. Elmer, G. P. A., Chicago, Ill.

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.

Phrenitis.—What is the matter with my calves? One got sick yesterday morning and lay around all day; we could hardly get it to move.

This makes seven calves I have lost this spring. Three of them acted about like this one; four of them died before we knew it.

Answer.—It is inflammation of the brain, and is probably caused from disorder in the stomach. It might be some rough feed taken in that acts as a foreign body.

Blackleg.—Yesterday morning I noticed one of my steer calves was lame with a swelling on the brisket, quite hard. The swelling did not extend into the shoulders much, but the animal seemed to suffer greatly, and it died before midnight.

Answer.—It was blackleg, and the disease run into the thoracic cavity and affected the heart and lungs.

Blackleg.—Would you please report through your valuable paper what was the cause of the death of the calf I shall describe?

A thrifty, 3-months-old Hereford calf, running with its mother, had been on rye since February till two weeks ago. From then on it was on bottom pasture till one week ago, when it was removed to upland pasture.

Answer.—It was blackleg.

Diseased or Irregular Teeth.—I have a horse that has been in poor flesh all winter. I have fed him all kinds of chopped feed. He lays down a great deal when in the stable and now his jaws are both swollen on the outside about as thick as my hand.

Answer.—Have a qualified veterinary surgeon examine him. He is probably badly in need of a dentist.

Sick Pigs.—I have a lot of pigs two months old, which cough and wheeze in breathing, at first only slightly, but continuing to get worse for about a week and then die. They seem to choke to death. I lost one; one was

sick, but is better; and another is sick. What shall I do for them?

Answer.—Give a teaspoonful of turpentine to each once a day in milk for a few days. Let them run on grass if possible.

Calculi.—I have a 5-year-old horse that has something wrong with his kidneys. He can not hold his urine. He will make urine from ten to twenty-five times a day.

Answer.—Have your horse examined by a qualified veterinarian for calculi in the bladder.

Tuberculosis.—I have a 6-year-old cow, one-half Jersey, that coughs with a hard rattle in her throat. One of my neighbors says she has tuberculosis. She is a valuable cow and I would like to test her.

Answer.—It would be best to have a qualified veterinarian test her for you.

Gossip About Stock.

M. H. Alberty, the noted breeder of Duroc-Jerseys, of Cherokee, Kans., has recently supplied the wants of several of his customers, sending a fine male pig to J. M. Wallace, of Cedar Vale, Kans., and during past week has delivered another to H. D. Compton, Anness, Kans., and one to W. R. Randall, Hutchinson, Kans.

The great Shorthorn sale to be held at Kansas City stock yards on June 17, offers many special inducements for farmers and fine stock breeders to be present to secure some of the pure-bred beauties to be sold at that time.

Keiser Bros., at Keota, Keokuk County, Iowa, report the finest year's business and the best collection of Percherons, Shires, and Clydes on hand at this time that they have ever had in the history of the firm.

E. E. Wait, of Altoona, Wilson County, Kansas, has given many years of close attention to breeding up one of the finest Poland-China herds of swine in the State. He now has, in his pens, for sale five grand boars in excellent shape for the show-ring at any State or county fair, ranging in age from 7 to 10 months old, and it is doubtful that there are five better young boars in the State of Kansas.

An article of great merit among stock-growers which is being regularly advertised in our columns is Zenoleum, manufactured by the Zenner Disinfectant Company, 61 Bates St., Detroit, Mich. The manufacturers know they have a good thing and they are pushing it with commendable zeal.

June K. King, in writing of stock consigned to the great sale to be held at Kansas City on June 17, says: The ten head of Shorthorns that I consign to the sale to be held June 17, at Kansas City, are in every way a desirable lot.

Huston \$1,500 for at 15 months of age. The females are a very even lot, one a 6-year-old cow this month, has had four calves, suckling a fine red heifer of Jan. 31, 1902, by Kirklevington Duke of Wooddale 121760, a fine individual, a good milker and a sure breeder.

THE MARKETS.

Last Week's Grain Market Review.

Continued good growing weather with plenty of rain, is causing much weakness in the markets and cash grain and as deferred futures have suffered alike. The notable feature is that while Chicago and all Eastern markets have made a decline of only 4c per bushels on wheat since the Government report for April was published, the Kansas City markets have declined nearly 7c.

From a statistical standpoint wheat conditions are rather bullish. The rapid decrease of the visible supply—now only about twenty-eight million bushels—the continued liberal exports, the gradual reduction of the world's stocks, the very light stocks of wheat in the southwestern winter-wheat markets—St. Louis, Memphis, Kansas City and the Gulf ports—altogether having less than one million bushels of wheat in store; as well as the low stocks of wheat carried by millers, are encouraging signs for better prices.

The situation in corn is weak at present. The splendid prospects for the growing crop have stopped speculation in this cereal for the time being, while the shutting down of most plants producing corn goods and timely rains producing good pasture have lessened the demand for corn for both manufacturing and feeding purposes.

Oats, too, are weak. The splendid prospects for the crop have contributed to this condition, but the principal cause has been the ending of a corner in No. 2 oats in Chicago, carried on ever since last harvest. It is said, the manipulator, Mr. Patton, has cleared a million of dollars by the operation and May oats worth 48 to 49c last Saturday are going begging for purchasers at 38 to 39c to-day.

Markets closed at following quotations with strong undertone and firm feeling: Chicago.—No. 2 red wheat, 79½c; No. 2 hard winter wheat, 74½c; No. 2 corn, 61½c; No. 2 oats, 39c.

Kansas City.—No. 2 red wheat, 71½c; No. 2 hard wheat, 70c; No. 2 corn, 60c; No. 2 white corn, 61½c; No. 2 oats, 42½c.

Topeka.—No. 2 hard wheat, 70½c; No. 2 corn, 62c.

Kansas City Live Stock Market.

The highest price on record was paid for beef steers at this point during the week just closed. On Tuesday, May 27, a bunch of native steers brought \$7.50, which was 10c higher than the previous high-water mark of \$7.40 which was given in 1882.

AN IMPROPERLY TIED BALE OF COTTON

Is a menace to every one who handles it, and in a short time it will be obsolete. The tie that solves the problem of Cotton Baling is the

WIRE COTTON TIE

Which combines strength and durability, ease and rapidity of application. These ties are adapted to any kind of press and are made from very tough and expensive steel manufactured especially for the purpose by the Illinois Wire Co.

WILLIAM CHRISTIAN, Agt., 203½ Main St. Houston, Texas

stock marketed before the grass cattle begin to move. This accounts for the liberal receipts.

Hog receipts locally were 39,100 head, against 81,500 a year ago. The five Western markets showed a total of 291,000 swine against 391,700 in 1901. All of the big markets participated in the reduction in receipts.

An erratic sheep market was had during the week. Receipts were moderate at 15,000 head, against 20,400 the previous week and about the same number in the corresponding period of 1901.

The horse market, owing to reduced supplies was stronger, and in some cases was \$5@10 higher. Very few good ones are arriving and buyers are forced to pay good prices for those that are offered for sale.

"Under the Turquoise Sky."

This most fascinating, clear and interesting description of Colorado will be sent free by E. W. Thompson, A. G. P. A. Great Rock Island Route, Topeka, Kans. Also "Camping in Colorado" free, if you want it.

An Appreciation.

Rear Admiral Evans in the May issue of McClure's Magazine says: "For comfort and luxury, the special train on which he traveled made a lasting impression upon the Prince and his suite. Prince Henry said: 'I have seen the best equipment on Russian railroads, and they are the best in Europe, but I have never seen or imagined that a train like this could be put together.'"

Coming from such an authoritative source this is indeed a compliment, especially so as two of the cars, the Iowa and Ohio, belong to the regular equipment of the Chicago Great Western Railway.

These beautiful compartment cars run every night between Chicago, St. Paul and Minneapolis on the "Great Western Limited" the new sumptuous Electric Lighted train.

(Talk No. 4.)

Styes.

In the majority of cases styes are caused by eyestrain. People always have some defect of the eye. Not necessarily a great defect, but more often a very slight one, just enough to produce an irritation and congestion. Correctly fitted lenses will prevent them.

CHAS. BENNETT OPTICIAN

730 Kansas Ave., Topeka, Kans. ESTABLISHED 1870.

Miscellany.

Cow-peas.

PROF. H. M. COTTRELL, IN THE INDUSTRIALIST.

The cow-pea is a bean and belongs to the same class of plants as alfalfa and clover. Our correspondents often get it confused with the Canada field pea, which is a genuine pea, while the cow-pea is a bean. This mistake is sometimes costly, as the field pea is the plant often sown with oats and must be sown as early in the spring as oats or the crop will be a failure, while the cow-pea is killed by slight frost and must not be planted until all danger of frost is over. Some correspondents get the cow-pea and soy-bean confused. Both are true beans. The soy-bean is an erect-growing plant with a stiff, woody stem, having many branches like a miniature tree. The pods are short and contain two to three beans in a pod. The cow-pea has a slender, trailing vine, sometimes growing partly upright, the vines from three to fifteen feet or more in length. The pods are long and slender and there are ten to twenty beans in a pod.

DROUGHT RESISTER.

After getting a good start the cow-pea will grow and thrive under greater heat and more severe drouth than any other field plant grown on a large scale on the college farm. Kafir-corn and soy-beans are good drouth resisters and will do well with any ordinary lack of moisture, but during the extreme drouth and heat of July and August, 1901, when Kafir-corn withered and stopped growing and the blossoms on soy-beans were killed by the heat as fast as they appeared, cow-peas in the same field on the college farm grew right along and looked fresh and vigorous every morning, although they wilted some during the middle of the day. The field was high upland, with a thin soil and stiff clay subsoil.

VALUE FOR FEED.

The cow-pea is rich in protein (the material necessary in formation of lean meat, milk, and blood) and in mineral matter. This makes it of special value in feeding growing calves, pigs, and dairy cows. The following table shows how cow-pea hay compares with hay from other plants:

Hay.	Per ct. mineral matter.	Per ct. digestible nutrients.		
		Protein.	Carbo-hydrates.	Fat.
Timothy..	4.4	2.9	43.7	1.4
Red clover..	5.2	6.8	35.4	1.7
Cow-pea..	7.5	10.8	38.6	1.1
Alfalfa..	10.5	14.3	43.0	1.0
Soy-bean..	7.2	10.8	38.7	1.5

*Cut when first bloom appeared.

This table shows that so far as composition goes cow-pea hay is more valuable than red clover and stands next to alfalfa hay. Feeding trials confirm the showing of the table.

As a pasture the cow-pea has similar good qualities to alfalfa and red clover and has the same defects. Cow-peas are a safe and good pasture for hogs and a good pasture for dairy cows and other cattle and sheep, but with the ever-present danger of bloat.

At the college we have raised cow-peas for several years but have made no accurate feeding experiments with them because of lack of funds.

Prof. F. C. Burtis, at the Oklahoma Experiment Station, found that with fattening pigs fed all the grain they would eat, one lot fed grain alone required eight and one-fifth pounds of grain for each pound of gain while another lot fed cow-pea hay and grain required only four and three-fourths pounds of grain for each pound of gain. The cow-pea hay saved 42 per cent of the grain. The hogs fed cow-pea hay in addition to grain had the best appetites, ate the most grain and gained the most rapidly.

Prof. J. F. Duggar, at the Alabama Experiment Station, divided a bunch of fifty-pound pigs, putting one lot on corn alone and the other lot on corn and cow-pea pasture. In six weeks the pigs on corn alone gained forty-five pounds while the pigs on corn and cow-pea pasture gained one hundred twenty-two pounds. The pigs on corn alone ate five and nine-tenths pounds of corn for each pound of gain while the pigs on pasture ate three and one-tenth pounds of corn for each pound of gain. At the conclusion of this experiment the pigs were put in fattening pens. The first lot was continued on an exclusive corn ration and gained sixty-eight pounds in seventy days. The lot that had been pastured on cow-peas were put on a grain ration of one-half corn and one-half cow-peas, ground, and gained one hundred eight pounds in seventy days. The lot on corn alone required eight pounds of grain for one pound of gain

and the other lot five and three-tenths pounds grain for one pound of gain. After deducting the gain from the corn Professor Duggar secured three hundred fifty-five pounds of pork per acre of cow-peas on poor soil. The pork from the hogs fattened on corn and cow-peas had a fine, delicate flavor and the fat was firm.

SOIL IMPROVER.

The cow-pea enriches the land on which it grows the same as alfalfa, clover, and soy-beans. It makes hard soils mellow and aids in holding loose soils together.

Prof. C. L. Newman, at the Arkansas Experiment Station, sowed cow-peas in corn at the last cultivation and harvested both corn and cow-peas. The next season the yield of corn on this ground was three bushels more per acre than on adjoining land where cow-peas were not planted with corn. On light, sandy land, impoverished from continuous cropping, the yield per acre from wheat was as follows:

	Bushels.
Wheat following wheat.....	10.0
Wheat following cow-pea vines plowed in.....	11.4
Wheat following cow-pea stubble plowed in.....	15.8
Wheat following wheat, cow-pea stubble plowed in between crops.....	16.5

A test made with oats on similar soil showed the following yields per acre:

	Bushels.
Oats following corn.....	24.7
Oats following sorghum.....	20.8
Oats following cow-peas.....	38.8
Oats following soy-beans.....	35.2

Nitrogen is usually the most needed element of plant growth and the cow-pea takes this from the air and by the decay of roots adds the nitrogen to the soil in a form which makes it of special value to following crops. The nitrogen is taken from the air by means of bacteria which grow in tubercles on the roots. In Kansas soils these bacteria are present, but in small numbers. The first planting of cow-peas will have a small number of tubercles only. If cow-peas are grown on the same land the following year the number of tubercles is greatly increased and with it the fertilizing effect. For this reason

A PASTOR'S TROUBLE

Trials Which Beset a Minister in Indian Territory.

For many long years the Rev. William R. Brock, of Provence, I. T., was burdened with troubles more than fall to the lot of the average man, but finally he was able to throw them off and now tells entertainingly how he accomplished it. He says:

"When I was a boy of about twelve years, I had what a boy seldom has—rheumatism. I had been in bad health for some months and was taken out of school on account of it. But I kept getting worse and at one time could hardly get around. This, I suppose, undermined my health and was the cause of the later troubles which afflicted me.

"Some sixteen years ago I developed a torpid liver and an enlarged spleen which finally caused a chronic diarrhoea. This in itself was very weakening, but, in addition to that, my stomach refused hearty food, I had a severe pain in my side almost all the time, and, when I walked any distance, I became out of breath, with a feeling of burning at the heart. My head and limbs would ache fearfully, especially at night. Then my rheumatism came on again and, later, I had a dry, hacking cough which nearly drove me distracted.

"I was under the care of two physicians, but, although the tonics they gave me seemed to do me good for a while, the effect was only temporary. Finally I was induced to try Dr. Williams' Pink Pills for Pale People by an advertisement in a paper which told of the cure of a case similar to mine. This was four years ago. I took them and eight boxes made me well. I am now well and strong and Dr. Williams' Pink Pills for Pale People have made me so."

Mr. Brock took a medicine that attacked his trouble at the root—the blood and nerves. Poor blood and disordered nerves are at the seat of nearly all the ailments which afflict mankind, and Dr. Williams' Pink Pills for Pale People have been proven to be a certain remedy for all diseases arising from this cause.

Dr. Williams' Pink Pills for Pale People are sold at fifty cents a box or six boxes for two dollars and fifty cents, and may be had of all druggists, or direct by mail from Dr. Williams Medicine Co., Schenectady, N. Y.

SALLOW WOMEN

A disordered digestion makes itself manifest in a muddy or blotchy complexion, nervous weakness and irritable temper. The right remedy is

PRICKLY ASH BITTERS

THE SYSTEM REGULATOR.

It is the best beautifier on earth because it goes to the root of the trouble, in the liver and bowels and removes it entirely. Imparts freshness and bloom to the complexion, brightens the eye, promotes good digestion and cheerful spirits.

SOLD AT DRUG STORES.

\$1.00 PER BOTTLE.

We advise growing cow-peas for two years in succession on poor soils.

The mechanical improvement in the soil made by cow-peas is greater than the fertilizing effect. Cow-peas make a vigorous root growth, the stubble decays quickly and many leaves fall and decaying mix with the soil. In these ways much vegetable matter is added to the soil and this vegetable matter increases the ability of the soil to absorb and retain moisture and to withstand drouth. With hard upland soils we have found the land to plow up mellow in the spring where cow-peas had been grown the previous season. With loose and sandy soils the addition of vegetable matter from the cow-peas assists in the better holding of the soil together and the land does not blow or wash so badly.

For these reasons the cow-pea is a good crop to grow for one or two years before seeding to alfalfa on soils that are either too loose or too stiff or hard. With soils that blow badly we have left the vines on the land through the winter just as they grew. The vines held the snow and checked blowing in the spring.

There are a hundred or more varieties of cow-peas. Many varieties have been tried at the Kansas Experiment Station. A description of some of the

tage of blooming the whole season and frequently many peas "pop out" and are lost while the plant is yet in bloom.

Unknown or Wonderful is a late variety. It is upright, comparatively free from runners, and a heavy yielder of vines and is easily handled. It has large, coarse leaves and does not mature seed at this station.

Extra Large Black Eye is a medium early variety. It produces a good yield of seed, and a fair yield of vines, yet it has the great disadvantage of dropping its leaves very early in the season before reaching the stage of maturity. The pods are from seven to nine inches long and the seeds are large, white, with a black spot on each one.

Whip-poor-will.—Medium early. This variety is probably the best variety tested at this station when both grain and hay are considered. It is a typical "bush" variety, yet under most favorable conditions produces runners. Its yield of both peas and vines is good and its tendency to retain the leaves makes it superior to many other varieties. The pod is from seven to eight inches in length and well filled with seed. The bean is medium in size, of a dark brown color, spotted with brown spots of a darker color.

Nine varieties planted June 1 made the following records:

	Blossomed.		Ripe.
	No blossoms.	.....	.....
Black.....	.....	.....	.....
Black Eye.....	August 6.....	.....	September 1.....
Clay.....	August 12.....	.....	Did not ripen.
Granite Crowder.....	July 21.....	.....	August 20.....
Iron Pea.....	July 30.....	.....	August 31.....
Nigger.....	August 8.....	.....	August 30.....
Two Crop.....	July 24.....	.....	August 25.....
Unknown, or Wonderful.....	.....	.....	Did not mature.....
Whip-poor-will.....	August 2.....	.....	September 1.....

leading varieties that we have tried follows. The description was written by Mr. O. H. Elling while acting assistant in field and feeding experiments:

Clay has several well-defined strains that vary in time of ripening and in color, but as a rule they are later than the Whip-poor-will. It produces a large tangle of vines and a small amount of seed only. In Kansas the seasons are usually too short for it. It has the disadvantage of being hard to handle when cut, owing to its tendency to run and twine, and in most seasons produces no seed.

Granite Crowder is an early variety; the stem is rather thick at base, from which stem-like runners grow from four to eight feet long and form a complete woven network. The leaves are large and thick. The pod grows from six to eight inches in length and is well packed with seed, but owing to the fact that the pods are not numerous the grain yield is only fair, and on account of its tendency to run and twine, this variety is difficult to cut and handle for hay and the yield of vines is not heavy.

Iron Pea.—Medium early. This variety stands up well, the vine is rather coarse and yield only fair. While it has a bush form, still it twines much, but not enough to make it difficult to handle for hay. The pod is slender, seven to nine inches long, and well filled with seeds. The pods are not numerous on the plant.

Nigger is a medium early variety. The pods are six to seven inches long and the seeds small and black. The plant produces runners and trailers quite extensively, forming a network flat on the ground. For these reasons it is not desirable for cutting for hay. The seed yield is only fair.

Two Crop.—Early variety; it grows more in the form of a bush, yet under favorable conditions it twines considerably, growing branches from three to five feet in length. The pods are eight to ten inches long, slender, quite numerous, and a good yield of grain may be expected; but it has the disadvan-

The Iron, Nigger, and Whip-poor-will varieties were cut a second time for hay October 8. Continuous rains spoiled the entire second cutting.

For most conditions in Kansas we recommend the Whip-poor-will. On high upland it yields one and one-third tons the first cutting. On good land it yields from one and one-half to two and a half tons of hay per acre. It will usually be found most profitable to either pasture or leave on the ground for fertilizing the second growth of this variety on account of rains at the time of harvesting.

PLANTING.

Planting must not be done until all danger of frost is over. We make our first planting after we have finished planting corn and Kafir-corn. This makes the planting of the cow-peas come from May 20 to June 1. We plow and prepare the ground the same as for surface planting of corn. If the ground is thoroughly clean the cow-peas may be sown broadcast and covered with a harrow. If the ground is not free from weeds the beans should be drilled in rows thirty-two inches apart, dropping single beans two to four inches apart in the rows. When planting in drills the cow-peas should be cultivated the same as corn. Broadcast cow-peas make the best quality of hay, as the stems are finer. Cultivated cow-peas have yielded the greatest weight of hay for us, but the stems are so coarse that there is a large waste. Where the cow-peas are sown in drills, from one-half to one bushel of seed is required. When sown broadcast, two to two and a half bushels of seed are necessary.

Both early planting and thick seeding result in a heavy production of vines and few seeds. Late planting and thin seeding is productive of light growth of vines and heavier yield of seed. This has been the case every year we have grown the cow-peas.

Prof. C. L. Newman, at the Arkansas Experiment Station, sowed Whip-poor-

(Continued on page 612.)

The Home Circle.

THE BUILDERS.

All are architects of Fate,
Working in these walls of Time;
Some with massive deeds and great,
Some with ornaments of rhyme.

Nothing useless is, or low;
Each thing in its place is best;
And what seems but idle show
Strengthens and supports the rest.

For the structure that we raise,
Time is with materials filled;
Our to-days and yesterdays
Are the blocks with which we build.

Truly shape and fashion these;
Leave no yawning gaps between;
Think not, because no man sees,
Such things will remain unseen.

In the elder days of Art,
Builders wrought with greatest care
Each minute and unseen part;
For the Gods see everywhere.

Let us do our work as well,
Both the unseen and the seen;
Make the house, where Gods may dwell,
Beautiful, entire, and clean.

Else our lives are incomplete,
Standing in these walls of Time,
Broken stairways, where the feet
Stumble as they seek to climb.

Build to-day, then, strong and sure,
With a firm and ample base;
And ascending and secure
Shall to-morrow find its place.

Thus alone can we attain
To those turrets, where the eye
Sees the world as one vast plain,
And one boundless reach of sky.
—H. W. Longfellow.

The Disaster in the West Indies and Its Explanation.

FROM THE SCIENTIFIC AMERICAN.

Now that we have in a measure recovered from the first shock of the West Indian disaster, our attention is turned from the appalling accounts of human destruction to the interesting details of the volcanic phenomena. It is a general rule that the intensity of an eruption is proportional to the volcano's quiescent period. For years the people of Martinique had lived in perfect safety under the shelter of Mont Pelee and they had lost all fear of danger. First warnings of impending danger began on May 3, when the volcano threw out dense clouds of smoke. During the next night these clouds reflected the glowing mass in the crater and rumbling noises were heard. Hot ashes covered the city of St. Pierre on the



The Island of Martinique.

4th; and at noon of the 5th a stream of boiling mud suddenly rushed down the mountain side to the sea. The ter. In the city almost the entire population was immediately suffocated by the hot, poisonous gases. This is proved from the fact that almost all the dead were found face downward with their hands covering their mouths. It is supposed that the destruction was the work of but a few seconds. The short duration of this intense heat is shown by the fact that delicate fabrics were found uninjured among the badly charred victims. The terrific force of the explosion tore up huge trees by their roots and laid them flat; heavy blocks of stone were scattered about; stone buildings were entirely destroyed. Debris covers the city for a depth of twelve feet. According to the present estimates the loss of life was almost equal to that resulting from the tidal wave which followed the eruption at Krakatoa, when 36,000 people perished.

As yet few facts are obtainable of the eruption of Mt. Soufriere, St. Vincent, which occurred on May 9. A large loss of life is reported and dust from the volcano spread over the Barbadoes Islands, seventy-five miles to the east. This eruption had probably a sympathetic connection with that of Mont Pelee. The topographical changes occasioned by these two volcanoes can not be accurately given at present, be-

cause of the lack of exact scientific data. It is reported, however, that Mont Pelee, which was previously 4,528 feet high, has now considerably less elevation. Rivers that were obstructed have overflowed their banks, causing floods and landslides. Important submarine changes have also taken place, for in grappling for the broken cable off St. Pierre, the cable ship "Poyer Quartier" reports that she found the sea bottom 4,000 feet below the surface of the water, where formerly the depth was but a thousand feet. These changes may result in a disaster to shipping until properly recorded by hydrographic survey.

Volcanic eruptions are generally attributed to the expansion of moisture in the heated subterranean rocks. The original theory that the earth is a liquid mass, covered by a thin crust of solid matter is now entirely discarded by scientists. Such conditions would seriously interfere with the rotation of the earth and the stability of the crust. We know the effect of the moon's and sun's attraction on the thin skin of ocean that covers the surface of our globe. Tidal waves are continually sweeping around the earth in a direction contrary to the earth's rotation. In comparison with this we can easily see what a tremendous drag to the rotation of the earth would result were the entire earth a liquid mass covered by a mere shell of solid matter. Scientists tell us that the wave produced would be so powerful as to make even a solid steel crust of 300 miles of thickness yield like India rubber to its deforming influences. The theory of a molten interior was based on the observation of volcanoes and on the fact that the temperature of the earth increases on the average one degree for every fifty feet of descent from the surface. Following this theory come others, in which the earth is supposed to have a solid core and an outer crust, between which is a layer of liquid mass of this flow far exceeded that of an express train; for it is said that the distance of five miles was covered in three minutes. This sudden rush caused the sea to recede some 300 feet and return in a tidal wave of considerable, though not serious, proportions. Cable communication with Martinique was interrupted in the afternoon of May 6, and the next news filled the world with horror. An entire city was wiped out of existence.

From the wild and exaggerated stories of the few survivors we gather the following details: Thursday, the 8th, at 7.50 a. m., there was a sudden, deafening explosion, and immediately the air was filled with hot sulphurous gases which withered everything they touched. It is said that the whole top of the mountain was blown off and fell in hot dust and shattered rock on the city, while mud and lava poured out of the opening thus made. An eye witness at Morne Rouge, a town 4 1/2 miles away, which was not destroyed, states that there were seven luminous points on the side of the mountain, just before the volcano burst, and that the explosion was followed by ten minutes of absolute darkness. Simultaneously with this explosion a tidal wave tore the vessels in the harbor from their anchorages and wrecked them on the beach. The "Roddam," which had a full pressure of steam on, was the only vessel to escape total destruction, and she worked her way flaming from the harbor, amid a shower of molten material. Any displacement of the crust covering this liquid layer, whether resulting from contraction of the earth or other causes, would force the lava to the surface through the weakest spot. In refutation of this argument the conditions at Hawaii might be considered. The crater of Mauna Loa is 13,650 feet above the sea level, and that of Kilauea is 4,040 feet. These mountains are not over thirty-five miles apart and yet both are filled with lava. How could such varying levels be maintained, if both craters were fed from the same

source? This query has forced many to believe that the liquid matter was contained in local, vesicular spaces beneath the crust. Both of these theories were brought forth to reconcile the requirements of physics with those of geology, which called for the existence of fluid matter at a small depth from the surface of the earth. At present geologists have pretty generally discarded these theories as unnecessary; for it is claimed that the powerful pressure due to the earth's contraction would prevent material from attaining a liquid form. Immediately on release of this powerful pressure, however, the matter would become fluid and pour out of the mountain in the form of lava. As stated above the power which causes the upheaval is attributed to the expansion of imprisoned vapor. From the fact that volcanoes are usually found near the sea, it was at first argued that the water oozed down into the heated regions, either of its own weight or by capillary attraction. Many scientists think this theory to be absurd, for they argue that it would be impossible for the water to enter a region under such compression, also that long before reaching a sufficient depth it would be turned into steam and forced back through the very channels by which it entered. The most plausible theory, and one now pretty generally accepted, accounts for the presence of water in heated rocks as having occurred during their crystallization period. These rocks in the course of time, were deposited in the sea by the action of rivers. After many ages, the water-bearing rocks are covered to a great depth under layers or "blankets" of deposited matter, and the heat there encountered finally brings the water to a sufficient tension to cause an explosion.

For months after the eruption of Krakatoa red sunsets were seen all over the world, and were attributed to the volcanic dust thrown into the air. This fine dust, commonly called ashes, is merely the rock which is shattered and pulverized by the force of the explosion. In all probability the same phenomenon will follow the West Indian eruptions and in the course of a month red sunsets should be seen in New York. As in the case of the Krakatoa eruption, the dust will probably travel toward the east, following the upper currents of the air which flow in a direction opposite to that of the trade winds.

A marked series of seismic and volcanic disturbances are now occurring over a wide region, but whether these are in any way connected with the eruption of Mont Pelee is merely a matter of conjecture. We have already shown that the volcanoes in Hawaii are not connected, though they are very close together, and we may look upon this series of disturbances merely as a coincidence; for one would suppose that the other volcanoes in the West Indies would be active before the more distant volcanoes of Central America. According to precedent, Mont Pelee should continue in activity for a long period, her eruptions growing weaker and weaker as years pass by. What future changes will result from this disturbance it is hard to tell. Considerable light will shortly be thrown on the situation by the large body of scientists who are already flocking to the scene of the disaster. A short description of the unfortunate island might be of interest. Martinique has an area of 381 square miles and a population of about 190,000, of which number about 5,000 are laborers brought from India and over 5,000 laborers from Africa; also about 500 Chinese immigrants. The remainder of the population is largely native negroes, the white population numbering in all about 10,000. A large share of the interior of the island has never been brought under cultivation, although it has been occupied by the French almost constantly since 1636, a period of 267 years, the only interruption in French control being the period from 1794 to 1802, when the island was held by the British. Slavery existed until 1848, when it was abolished in this as well as other French colonies. Notwithstanding the fact that a large part of its interior has never been brought under cultivation, the island is described by Reclus as "one of the most densely populated spots on the globe; on the arable islands people are packed as closely as in such industrial centers as Lancashire, Flanders, or Saxony."

The Volcanoes of the Philippines.

Of interest in connection with the recent volcanic eruptions in the West Indies, is the report of George F. Becker on the geology of the Philippine Islands, which has just appeared in Part III of the Twenty-first Annual Report of the United States Geological



EVERY MAN
WOMAN AND CHILD

who suffers from

Rheumatism

should use

St. Jacobs Oil

It Conquers Pain, acts like
magic, and has no equal on
earth as a pain killer.

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SOLD BY ALL DEALERS IN MEDICINE.

Survey, and which contains a review of everything bearing upon the geology of these islands.

The report deals in general with the geologic and economic features of the islands, from extant reports on the subject, and from studies in the field, so far as they could be carried on during the disturbed period of 1898-'99, though geologizing under arms and with a military escort was found to be more exciting than profitable.

In many respects the Philippine Islands so closely resemble the West Indies, especially in being the scene of violent past and present volcanic energy, that the chapter of the report on the active and extinct volcanoes of the archipelago is at this time particularly interesting. While it was possible to visit but few of these mountains owing to the hostility of the natives, much valuable information from local and other sources was collected. Forty-nine of the eruptive mountains were located among the islands, and their altitudes and the dates of their eruptions obtained. Conspicuous among them is Mt. Apo, the highest mountain in the Philippines, which rises 10,761 feet above the level of the sea. At Camiguin de Mindanao, one of the most interesting volcanoes of the group, a cone nearly 2,000 feet in height has risen since 1871 over what was formerly a lake, the basin of which was presumably an ancient crater. Mayon, or the volcano of Albay, is said to be the most symmetrically beautiful cone in the world; and the famous Taal volcano, situated on a small volcanic island in the lake of Bonbon, is readily accessible from Manila. The accounts of the eruptions of these and other volcanoes of the group bear a striking resemblance to those of the recent outburst of Mt. Pelee in Martinique. Of an eruption which occurred in the year 1641 near Jolo the report quotes: "the darkness and atmospheric disturbance were so great that the people of Jolo could not perceive whence came the stuff which fell from heaven upon them." And in one of the numerous eruptions at Taal, loud detonations like discharges of artillery were heard, incandescent stones were thrown out, and a great fire ran like a river across the island. The fire then shifted into lake Bonbon throwing up water and ashes in immense masses. "The water grew hot and black, fish were strewn on the beaches as if they had been cooked, and the air was so full of sulphurous smells and the odor of dead fishes that the inhabitants sickened." At one of the eruptions of Albay, that in 1814, 1,200 lives are said to have been lost.

In drawing comparisons between the volcanoes of the Philippines and those of the Dutch East Indies, Mr. Becker notes that "Papandayang, in West Java, had a great eruption in 1772, destroying forty villages. Galung Gung in 1822 destroyed 114 villages and it is some measure of the violence of the Krakatoa explosion of 1883, that over 36,000 people perished."

Mrs. Winslow's Soothing Syrup

Has been used for over FIFTY YEARS by MILLIONS of MOTHERS for their CHILDREN WHILE TEETHING, with PERFECT SUCCESS. IT SOOTHES the CHILD, SOFTENS the GUMS, ALLAYS all PAIN; CURES WIND COLIC, and is the best remedy for DIARRHOEA. Sold by druggists in every part of the world. Be sure and ask for "Mrs. Winslow's Soothing Syrup," and take no other kind. Twenty-five cents a bottle.

Would You
knowingly buy unclean
groceries for your table?
How under the sun can bulk
coffee—constantly exposed
to dirt and dust—be clean?

Lion Coffee
comes in sealed pound
packages only, thus insur-
ing freshness, strength,
flavor and uniformity.

The Young Folks.

Conducted by Ruth Cowgill.

WHEN I WAS A GIRL.

Aunt Clarissa wears her snow-white hair
In the fashion of long ago,
With three little curls each side her face,
Arranged in a spiral row.
But she looks askance at my frizzy bangs
When their fluffy kinks unfurl,
And mutters with disapproving air,
"La! me, when I was a girl!"

She gowns herself in a skimpy frock
That is fearfully short in the waist,
But opens her eyes at my high-cut sleeves,
And thinks them devoid of taste.
It fairly gives me a fit of the blues,
And sets my head in a whirl,
When she arches her brows and says with scorn,
"La! me, when I was a girl!"

You'd think the girls, in Aunt Clarissa's time,
Were angels from top to toe,
To hear how grimly she lectures me
When I chance to mention a beau.
And if I just venture to speak of love,
Her lips take an upward curl,
And she says, in a prim and prudish way,
"La! me, when I was a girl!"

But I found her reading a letter once;
It was tied with a ribbon blue;
The writing was dim and blurred by time,
But I know 'twas a billet-doux.
For I saw a flush on her faded cheek,
Half hid by the spiral curl,
And I heard her murmur, in accents low,
"La! me, when I was a girl!"
—Good Housekeeping.

Seeing the Sights in Indiana.

The writer was recently in Indiana. We had heard that in the East Kansas was looked upon as a wild and woolly place, but we supposed that Indiana was far enough West to have more correct views. What was our surprise, therefore, to find ourselves looked upon with mild curiosity as creatures who had survived the drouths and cyclones of the American desert and who had probably had a passing glimpse of Mrs. Nation and an intimate acquaintance with wild Indians and buffaloes.

We felt that we had won a victory for our native State when it was admitted that there "might be pleasant people in Kansas—you could almost always find some nice people wherever you would go."

Once in a while we met people who had been to Kansas, and they were like oases in the desert. We could hardly tear ourselves away from them, for they knew our beautiful prairies and our hospitable people and to them our enthusiasm was perfectly comprehensible.

We were asked by a business man what was the principal industry of Kansas.

"Farming," we answered. He looked at us in a kindly, indulgent way as taking account of the fact that we were from Kansas and therefore not expected to know much, and explained, "I mean what do they do in Kansas to make money?"

We insisted that our great men were farmers, that our business men owned farms, and, in short, that farming was the industry of Kansas.

"Ah, well," he said, "I suppose you have no rich men. There is probably not much wealth in Kansas," and though we indignantly denied it, and boasted of our great farms and the fine houses upon them and of the educated and cultivated men and women who lived upon them, he still was evidently of the opinion that we knew nothing about it, and that in reality, Kansas was a dusty prairie from which a few primitive farmers eked a scanty living. We finally concluded that his opinion could not harm us and that, though we had our opinion of him, it could not help him, so we allowed the argument to drop.

The great industry of Indiana is manufacturing and among the many delightful experiences of our stay among these kindly, though misinformed people, were trips to the glass factories.

Possibly an account of what we saw there may be of interest to other Kansas young people.

IN A GLASS-HOUSE.

Our first trip was to the plate-glass works. The owner of the factory, a wealthy Jew, accompanied us, explaining the processes, pointing out details that would else have escaped our notice, and by his courtesy making our trip through his immense factory at once very instructive and thoroughly enjoyable. We were first led through room after room where was stored the costly finished product, immense sheets of heavy, crystal-clear, brilliantly polished glass, exquisite in their transparent purity. Perhaps our appreciation of their beauty was quickened by the prices which we saw marked upon them; we saw thousands of dollars' worth of plate-glass left standing with

apparent carelessness against the walls.

We went on and on through this storehouse of crystal until we came to a long room, lined on all sides with immense brick furnaces where the glass is manufactured. Dirty, perspiring, panting men were hurrying back and forth, pulling on trucks, what looked like immense kettles of red-hot taffy. Our first impression was of confusion and aimless hurrying about, but we soon saw that all this running about was with a purpose. They filled the ponderous earthen-ware kettles with sand and lime and soda and lead oxide, and sent them into the glowing furnaces, where they were transformed by the magician, Fire, into a semi-fluid mass. On being drawn out this mass of uneatable taffy was sent to a broad, smooth, cast-iron table, and poured out upon it. A dozen men quickly took their places, five or six at each side of the table, and passed a heavy cast-iron roller over it. The table was then pushed into a great oven, where it was to be left for four days. The heat of the ovens is carefully regulated, being gradually lessened until on the fourth day it is comparatively cool. We saw the men taking out one immense sheet of glass that had just undergone this annealing process. One man crawled into the oven and pushed it out; then when it came into the light, another man walked over it, examining it carefully and marking all imperfect or weak places. The next step after the annealing is the grinding. The slabs of glass are deposited upon revolving tables which are cemented with plaster of Paris and over which revolve immense flat lids. Sand and water are constantly fed into this apparatus, and the friction soon reduces the glass to smoothness.

The polishing room was the noisiest place which it was ever our misfortune to enter. We did not stay long. This last process is done by fine felt rubbers which push back and forth over the glass. The tables upon which the glass is placed, are also in constant, steady motion, their movement, however, being transverse to the direction of the rubbers.

This is the whole process of making plate-glass, simple enough in its theory, but in practice an arduous and costly operation.

Accidents in this place are of frequent occurrence. The proprietor took us into a hospital room, where were a stretcher and an operating-table and all the paraphernalia necessary in case of accidents. Scarcely a day passes on which some one is not injured, though frequently the injuries are slight. Some very horrible accidents have resulted from the breakage of the heavy glass plates while the men were carrying them. The glass is carried perpendicularly and if there is a weak spot in it, it may break by its own weight, and come crashing down upon the defenseless men, cutting off an arm, or a head, with horrible precision.

After three or four hours spent in looking through this immense factory, we were both weary and hungry. We imagined we must ride an hour or two before we could get a lunch, since the factory was far from our stopping-place, but we were agreeably disappointed when the proprietor invited us to luncheon at the factory club-house. This is an unpretentious but comfortable cottage near the factory, which the proprietor has had built and managed for the benefit of his chief assistants and foremen. Here several of them have rooms, probably much better than they could afford if they were to build them for themselves, and here many of them take their meals. We enjoyed our meal with these people very much, the novelty of it adding greatly to our pleasure.

Some of these factory people, though for the most part foreigners, seemed quite well-informed and self-possessed. Indeed we were afraid to take any very great share in the conversation, lest we show our ignorance.

We left feeling that we had added materially to our information, as well as very greatly to our stock of pleasant memories.

Next week we will try to tell you of the manufacture of common window-glass and lamp chimneys which was quite different from this, but even more interesting to see.

In the early days of our country an officer presented an Indian with a medal, on one side of which President Washington was represented as armed with a sword, and on the other side an Indian was shown in the act of burying his hatchet. The chief was quick to perceive the injustice and shrewdly asked: "Why does not the President bury his sword, too?"

Not what is said of it, but
what it does, has made
the fame of the

Elgin Watch

and made 10,000,000 Elgins necessary to the world's work. Sold by every jeweler in the land; guaranteed by the greatest watch works.

ELGIN NATIONAL WATCH CO.
ELGIN, ILLINOIS.

The Death of Admiral Sampson.

There was something pathetic in the illness and death of Admiral Sampson, occurring as they did in the midst of the political conflict which followed the less distressing naval conflict with Spain. And however people may differ as to the question of the honor in that campaign—a point upon which it is difficult to form a just opinion—it is universally conceded that he was a great general, and that his death is a distinct loss to the United States Navy.

The Scientific American writes thus of him:

"In the death of Admiral William T. Sampson the country has lost one of its most distinguished men, of whom history, we believe, will speak in even yet more positive terms of approbation than do we, whose painful duty it is to record his death and give the customary brief obituary to his honorable, patriotic and most useful life.

"When the exigencies of the war with Spain demanded the selection for the command of our Navy of a man with special qualifications, Sampson, although not the senior ranking officer, was chosen, the selection being made because of the technical knowledge, executive ability, calm, judicial sense, and unquestioned courage which he had abundantly displayed in his earlier career. The manner in which Admiral Sampson conducted the naval operations in West Indian waters amply justified the Nation's choice, and the technical and military features of the campaign, as ordered by him, have received the practically universal indorsement of naval experts throughout the world. It is true that, for a while, his record was obscured by those miserable miasmas which arise from the swamps of political intrigue and personal hostility; and it is to be feared that the positive cruelties to which he was subjected by his political enemies may have helped to bring about his premature death. Whether that is so or not, it is certain that already the miserable Santiago controversy is being forgotten, and that the heart of the American people is more than ever with the man who, through all the bitterness of that strife, never once opened his lips to make any reference, tacit or otherwise, to the subject.

"William T. Sampson was born at Palmyra, N. Y., February 8, 1840. He was born (to his greater honor, be it said) of humble parentage. Whatever of greatness he achieved was won by dint of the sheer force of sterling character. As a lad he divided his time between labors on his father's farm and the Union school, and from the very first he began to draw out ahead of his fellow scholars. He entered the Naval Academy in 1857; three years later he graduated at the top of his class. He had his first taste of the sea in the frigate "Potomac" in 1861; in 1862 he was a lieutenant. Two years later he was detailed to the ironclad "Patapsco," and in the following year, while he was executive officer of that vessel, he was ordered to enter Charleston harbor and remove or destroy the submarine mines and torpedoes by which the city was protected. In carrying out her work the "Patapsco" was blown up by a submarine mine, and Lieutenant Sampson was thrown clear off the vessel by the force of the explosion, being subsequently rescued from the water with twenty-five of his men.

From this time he rose steadily until "at the outbreak of the Spanish war Captain Sampson was made Acting Rear-Admiral by the late President McKinley and placed in supreme command, hoisting his flag on the cruiser "New York." He was held to be a great authority on torpedo work, and

his lectures at the War College have a world-wide reputation. It was due to his influence that the double-deck turret was introduced on the battleships "Kearsarge" and "Kentucky," and as Chief of the Bureau of Ordnance he was largely instrumental in the construction and equipment of the very fine gun factory at the Washington Navy Yard. His death has left a gap in the ranks of our abler naval men that will not be easily filled."

FOR THE LITTLE ONES

THE BOY'S MOTHER.

My mother, she's so good to me,
If I was as good as I could be
I couldn't be as good. No, sir,
Can't any boy be as good as her!

She loves me when I'm glad or mad;
She loves me when I'm good or bad;
An' what's the funniest thing, she says
She loves me when she punishes.

I don't like her to punish me;
That don't hurt, but it hurts to see
Her cryin'—nen I cry; an' nen
We both cry—an' be good again.

She loves me when she cuts and sews
My little coat and Sunday clothes;
An' when my pa comes home to tea
She loves him most as much as me.

She laughs and tells him all I said,
An' grabs me up and pats my head;
An' I hug her an' I hug pa,
An' I love him purt 'nigh as much as ma.
—James Whitcomb Riley.

Lucie's Letter.

KATHERINE K. MORTON.

Do you want to hear the story of how Lucie wrote to the Governor? And would you like to know what the Governor wrote to her?

You know, Lucie was a very little girl with roundest of bright brown eyes and straightest of short brown locks—"elf locks," brother Jimmy called them, because they were always slipping out of the ribbon and falling about Lucie's eyes and face. "Sheltie" he called her too, because she sometimes reminded one of some little Shetland pony with bright eyes peeping from behind his mane.

Well one day, a wonderful letter came to Lucie from the Governor of the State and with it a beautiful copy of "Little Lord Fauntleroy." You see the Governor knew Lucie's papa, and one day Mr. Burton—that was papa's name—happened to tell Governor Sedley that his little girl—the Governor's little girl, you know, Lucie Sedley—and his little girl, Lucie Burton, were the same age, exactly.

"Bless me," said the Governor—at least I think he said that, for nice old gentlemen in stories always say that when they are surprised and pleased—"Bless me! I must send that little girl a present!"

And so he wrote Lucie such a nice letter, and sent her that copy of "Little Lord Fauntleroy"—something Lucie had wanted for a long, long time she said—at least a month.

And this was Lucie's letter to the Governor—mama told her how to spell all the words, so it was quite correct, of course:

"Dear Mr. Governor Sedley:—
"Please excuse me not writing you before. I wrote three letters but they didn't go off. I thank you for "Little Lord Fauntleroy. I am very thankful. It is a very thankful little book. And would you like a little pen-wiper for your desk? I never made a pen-wiper before, but mama thought you could use it, so I made it just like a butterfly—only this is green and I never saw a green butterfly. Did you? You just rub your pen on it every time you finish a letter, and it doesn't let your pen get rusty. Mama says so. It took me quite a while to think of what you'd like because it's easier to make a present for a lady. I hope you will like it as well as

\$550.⁰⁰ GIVEN AWAY	GAVITT'S SYSTEM REGULATOR IS GUARANTEED. Contest Closes July 1st, 1902. YOU MUST SECURE A COUPON. READ CONDITIONS.	\$550.⁰⁰ GIVEN AWAY
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PRIZE OFFER	<p>"Gavitt's System Regulator is Guaranteed."</p> <p>OFFER.</p> <p>FIRST PRIZE. \$30.00 in cash will be given to party sending in the most words formed by using letters occurring in "GAVITT'S SYSTEM REGULATOR IS GUARANTEED."</p> <p>SECOND PRIZE. \$25.00 in cash. THIRD PRIZE. \$10.00 in cash.</p> <p>FOURTH PRIZE. \$5.00 in cash. NEXT TEN PRIZES, \$1.00 in cash each.</p> <p>NEXT TWO HUNDRED PRIZES, A \$1.00 Box of Gavitt's System Regulator each.</p> <p>NEXT FORTY PRIZES, 50 cts in cash each.</p> <p>NEXT ONE THOUSAND PRIZES, A 25c Package of Gavitt's System Regulator each.</p> <p>CONDITIONS.</p> <p>FIRST. In order to enter this contest, the contestant must have a PRIZE COUPON, which can only be secured by buying a box of our Gavitt's System Regulator, from our agents or from us direct. Price \$1.00 per box for nearly one year's treatment. Guaranteed to cure all Blood, Kidney, Liver and Stomach troubles or money refunded.</p> <p>SECOND. The prize period will close on July 1st, 1902.</p> <p>THIRD. In case of a tie, the party who sends in the words first will be eligible to the best prize.</p> <p>FOURTH. The words must be numbered consecutively.</p> <p>FIFTH. You may use the letters occurring in Gavitt's System Regulator is Guaranteed as often as you like.</p> <p>SIXTH. We expect a great many contestants and would thank you to write the words very plainly, giving your name, post office address, etc., on coupon, and also on the list. Send the coupon and list direct to us at once.</p> <p>Secure a \$1.00 Box of our Gavitt's System Regulator, tablets chocolate coated or other forms and enter Contest at once.</p>	PRIZE OFFER
1,254 PRIZES.		1,254 PRIZES.

IMPORTANT NOTES.

For our medicine and coupon, apply to any of our agents, or if we have no agent at your place send direct to us.

If the party buying the medicine does not care to enter the contest, they may sell or give their coupon to another. The coupon shall be evidence that there was a sale made by our agents or ourselves, therefore we will honor each coupon received, providing words are written plainly.

Any number of people may help select the words, but only one name must appear upon the coupon.

Give the coupon to your son or daughter—they will have plenty of time to form the words in the evenings, and with a little help from you, they in all probability, will secure one of the prizes.

You have 1,254 chances of receiving a prize; with a little work and thinking you should get one of the best.

W. W. GAVITT MEDICAL CO.

MANUFACTURING CHEMISTS.

HARRY E. GAVITT, Mgr.

Three Buildings. TOPEKA, KANSAS, U. S. A.

Agents Wanted in all Unoccupied Territory.

my 'Lord Fauntleroy' likes me. I mean, as well as I like it.

"Very much your friend,
"Lucie Bradford Burton."

And in two days came back another letter from the Governor—a short one because he was such a very, very busy man:

"Dear Lucie:—
"Your nice letter and the little pen-wiper came to-day. I have put the pen-wiper on my desk and I shall always keep it. I know how hard it must have been to think of a present for a man. I would change and be a lady after this, only I've been a man so long now, its become a kind of a habit with me.
"I am glad you liked the book. Write me again when you have read it.
"Your sincere friend,
"Gilbert E. Sedley."

What the Figures Say.

FROM "LE MATIN," PARIS.

Figures have a language of their own. To be sure, it is not the language of flowers, it is a more rude one. It must be said, however, that they have an eloquence of their own, against which no quibbling will stand, which sweeps away all sophistries, which oftentimes is as sharp as the knife of the guillotine, and at times even causes a shiver.

This feeling is suggested on reading the study of Mr. O. P. Austin, Chief of the Official Bureau of Statistics, at Washington.

The "World's Debt" is written at the front of the work, and indeed Mr. Austin deals with the debts of all the countries of the world. He does it with a sort of delight, for in the temple where he assembles the budgets of all the nations the United States have somewhat the right of occupying the place of the Pharisee of the New Testament, and looking straight in the face of the God of Bankruptcy of exclaiming: "O, Lord! I thank thee that thou hast not made me like the publicans of Europe, who do not know how to put a cent aside, who are given to the most shameful and unbridled squandering, and who by long strides approach bankruptcy and ruin!" And the publicans, particularly we poor publicans of France, can but sigh, strike their breasts, and prostrate ourselves on the ground.

But listen. In 1801 the world's debt amounted in round figures to 15,000 million francs; in 1848, after the Napoleonic wars, it was 42,000 millions; in 1901 the world's national debt was 159,000 millions. The world's national debt, then, increased within the last century by 144,000 millions; but, whereas, during the first part of this century, notwithstanding the gigantic wars which then unsettled the condition of

a part of the world, it increased but at the ratio of three to one, the increase during the second part of the century was at the ratio of ten to one.

Listen further. Towards this increase each nation has contributed with all its power. They seem to have been engaged in something like a race, the nations of the Old World especially rivaling with each other, as to which of them would spend the most money, and acquire the most crushing debt burden.

Amidst this storm of folly which shook the world only two nations preserved their cool blood: Great Britain, which during forty years reduced its debt by 5,000 million francs; and the United States, which reduced theirs by over 7,000 million francs. All the other nations permitted themselves to be carried away by the whirl.

The Austrian debt, which in 1850 was but 3,000 million francs, reaches at present the figures of 8,500 millions; the debt of Germany has grown from 580 millions in 1870 to 2,795 millions at present; that of Italy, which in 1869 was 7,000 million francs, is now 12,915 millions. The debt of Russia, which in 1853 was 2,000 millions, exceeded in 1900, 15,000 millions. France is easily winner in this contest. Her debt, which in 1852 was a little over 5,000 million francs, amounts to-day to about 29,000 millions, or almost six times the amount in the former year, constituting almost one-fifth of the world's total indebtedness.

If one analyzes the debts of the group of nations which may be called Germanic, it will be seen that these debts, for the last quarter of the century have been due chiefly to the purchase or construction of railways. These nations, which during twenty-five years have increased their debt by no more than 3,500 million francs, own at present their railways, possessing in them a "physical" capital which almost equals their total debt, and deriving therefrom a revenue almost sufficient for the service of this debt.

Almost the same holds true in the case of the group of Slavnic nations. The latter have increased their debt considerably more than the Germanic nations. During the last twenty-five years the increase amounts to 10,000 millions, but they as well accumulated meantime as an offset of the increased debt assets which are a partial equivalent of their indebtedness.

Quite a different picture is presented by the group of Latin nations. These latter have within the last twenty-five years increased their debts by 25,000

million francs, Spain and Italy very nearly doubling their debt, France almost trebling hers. In return they can not be said to have acquired any well-defined material assets. France particularly, which perhaps more than any other nation has spent on her railways, will have to wait until 1954 to acquire ownership of her railways.

If the reader will stop long enough before the figures just presented to his eyes he will not have to wait long to be able to listen to their speech and to know what they say. They say that a country, as France, no matter how prosperous and great, can not with impunity increase its public debt by 24,000 millions within fifty years, when other countries equally rich diminish their debt by about that amount within the same space of time. They say that when a nation, as France, increases its debts by about 500 million francs a year its taxes must fatally increase, and, owing to this increase, its savings diminish. They say that there is a point of time, when a nation, no matter how rich, can no more bear new tax burdens just as a human being, no matter how strong his energy, can not go beyond a certain limit of effort. They say that France has now arrived at this extreme point of time, and that if during the half century to come she is to continue on the downward grade of her extravagance and mad expenditures at the same startling rate of speed which she maintained during the half century just ended, she will break down under the burden, stumble and fall. * * *

This is the language spoken by the enigmatical figures which the statisticians arrange and form in an inexorable manner. Let this language be heard, for it is a matter of life.

Great Salt Lake Sinking.

The decline in the surface of Great Salt Lake is causing apprehension among the people of Utah. This interesting body of water has been steadily sinking for a number of years, but the cause of its decline are not well understood. It is thought by some that the lake is subject to cycles of change which correspond to like cycles of years of heavy and light rainfall, and that it is now undergoing one of its low-water periods, from which it will soon revive. The movements in the water have also been thought to be related to the development of agricultural and grazing interests, which divert large quantities of water from the streams which feed the lake for use upon the land. During past years the cutting of the timber

on the neighboring mountains has been unusually heavy, practically destroying the forest protection of the head-waters of a number of streams whose waters flow into the lake. The cutting of these forests is supposed to have injured the flow of the streams, and thus to have affected the lake-level. Great Salt Lake is the means of considerable resource to Utah, and the value of property near the lake and certain lines of business are said to be unfavorably affected by its decline. The matter is there considered of so much importance that the United States Geological Survey has been asked to make an investigation into it.

Nothing equal to Prickly Ash Bitters for removing that sluggish bilious feeling, so common in hot weather. It creates strength, vigor, appetite, and cheerful spirits.

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"UNDER THE TURQUOISE SKY."

The Camping book tells how, where, and at what cost parties of two, four, and six can enjoy an inexpensive vacation in that delightful climate.

E. W. THOMPSON, A. G. P. A., Topeka, Kans.
JNO. SEBASTIAN, G. P. A., Chicago.

THE CATALPA BULLETIN.

(Continued from page 599.)

forty-two-page essay on the "Hardy Catalpa." This essay does not contain any account of original investigations by the department issuing it, but is a careful and concise compilation of information from various sources. It is a valuable compilation.

The same bulletin in five pages contributed by the horticultural department contains a statement of the experiences of that department with catalpas. The work began in 1872. Following are the conclusions from the botanical department's experiments:

"The catalpa plantings made by the college and the experiment station have given encouraging results. On very poor soil the catalpas have been a paying crop. Almost any other cropping of this land would have reduced its fertility, while the crop of trees has unquestionably been beneficial, both by preventing washing and by the addition of some humus.

"On good soil the growth has been proportionately better. The trees have made a more rapid and vigorous growth, producing trunks of suitable size for posts in from seven to ten years, and in twenty years trees have grown to a size sufficient for heavier uses, or for lumber for finishing or cabinet work.

"The most desirable distances for planting probably vary somewhat for different soils and locations. Rows eight feet apart, with the trees five or six feet apart in the row, would seem, from our observations, to be a good distance for general planting. With the rows eight feet apart, corn or some other rowed crop may be planted for at least one season.

"Good clean cultivation should be given for several years. Attention should be given to trimming the trees, to avoid low branching.

"Cutting back to the ground usually secures a rapid growth of smooth straight wood.

"The young trees are easily raised, transplant readily, grow rapidly, and endure extremes of drouth, heat, and cold."

The bulletin is finely illustrated with photograveurs, many of which represent developments on the agricultural college grounds.

"COMMENCEMENTS."

College commencements are now in season. Following is the outline of program for this annual event at the

KANSAS STATE UNIVERSITY.

Thursday, June 5.—Alumni concert of the Department of Music, at 8 p. m.
 Sunday, June 8.—Baccalaureate sermon, by Etherbert D. Warfield, LL. D., President of Lafayette College, at 8 p. m.
 Monday, June 9.—Sigma Xi Address, by Samuel W. Williston, M. D., Ph. D., at 8 p. m.
 Tuesday, June 10.—Class-day exercises, 7.30 a. m. to 11 a. m.
 Annual Alumni address, by George B. Watson, A. B., LL. B., of Kansas City, Mo., at 11 a. m.
 Varsity-Alumni baseball game, at 3 p. m.
 General university reception, in Spooner Library, at 8 p. m.
 Wednesday, June 11.—Commencement exercises of all schools, with address by Joseph Swain, LL. D., President of Indiana University, at 10 a. m.
 University Dinner, at 1 p. m.

Commencement occurs a week later at the

KANSAS STATE AGRICULTURAL COLLEGE:

Friday, June 13.—Recital by Music Department, College Chapel, 8 p. m.
 Sunday, June 15.—Baccalaureate sermon.—College Chapel, 4 p. m., by Rev. J. T. McFarland, D. D., Pastor First M. E. Church, Topeka.
 Monday, June 16.—Society entertainment, to invited guests, college chapel, 8 p. m.
 Tuesday, June 17.—Examinations from 9 a. m. to 3.35 p. m.
 Class-day exercises, to invited guests, opera house, 8 p. m.
 Wednesday, June 18.—Examinations from 9 a. m. to 12.20 p. m.
 Business meeting Alumni Association, college chapel, 2.30 p. m.
 Callisthenic drill, 7 p. m.
 Triennial Alumni address, college chapel, 8 p. m., by Mrs. Nellie Kedzie-Jones, M. S.
 Thursday, June 19.—Annual address, college chapel, 10 a. m., by Pres. W. M. Beardshear, LL. D., Ames, Iowa.
 Presentation of diplomas.
 Parade of live stock at 2 p. m., followed by band concert.
 Military drill at 3 p. m.
 Reunion of literary societies.
 Triennial Alumni banquet, gymnasium, 8.30 p. m.

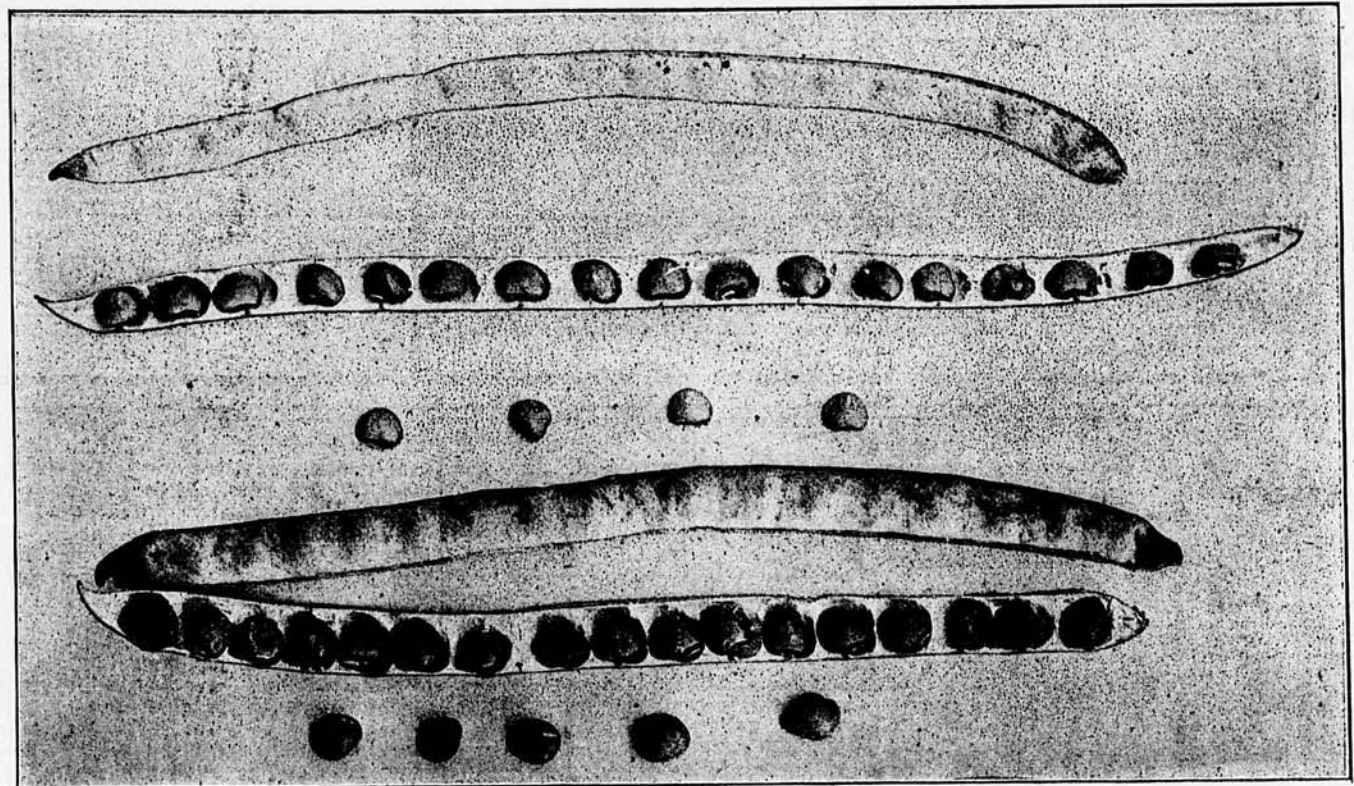
The Ideal Twentieth Century Fruit-Grower.

PRES. JOHN M. MACOMB, BEFORE DOUGLAS COUNTY HORTICULTURAL SOCIETY.

The Douglas County Horticultural Society has been accused by those who from motives of economy keep without its pale, of failing to practice what it preaches. They say that our trees have canker-worms and our strawberries are consumed by grubs, that our peaches have yellows and our raspberries are covered with rust, that our fences are



WHIP-POOR-WILL COW-PEA.



PODS AND SEEDS, COW-PEA.

(See page 606.)

down and that we buy our garden sauce in the market. To these charges I reply that this is an age of reform and it is the duty of these croakers to join our ranks and show us how to avoid all these errors and how to make two blades of grass grow where one grew before.

The times indicate that we must not only work for a greater degree of perfection, but that we must work together to attain that end. All trades and all professions are drawing their members nearer and nearer together and are thus able to control the market for their goods, their products, and their services. The horticulturist in his effort at self-aggrandizement tries to outstrip his brother in production and market instead of carrying him on with him to their mutual profit. The emulation which encourages a brother is turned into envy of his success. We must learn to work together in our experiments for the attainments of common knowledge as well as for greater production and the best markets.

The horticulturist not only has aspirations but he has needs as well. A theorist may get along upon a poor farm and content himself with telling the public how things should be while failing to give them the benefit of an object lesson.

Good land is of course a necessity, and first he must be able by proper study and attention to select such soil as will be best adapted to his needs—furnishing the elements of plant growth appropriate to those crops that he proposes to raise. Nor must he forget that situation plays an important part in such selection, for while the soil may be all that could be desired, the situa-

tion might be such as to ruin the crops with frost, or at least to retard them by slow growth beyond the season of profitable market. Having procured good soil well situated he must consider a selection of crops suited to such land and such situation, as well as the markets within his reach. Then, too, he must curb that ambition which has been the ruin of so many well-meaning men. I mean the desire to possess many acres. Some men like great generals are fitted by nature to conduct horticultural enterprises on a large scale; others for the same reason, or perhaps from a lack of capital, are only able to take charge of a much smaller place, and so one must determine the size of his farm as well as its other characteristics. It goes without saying that the horticulturist must understand the various operations that become necessary in the conduct of his work, but he must understand them so well that he can teach those whom he is obliged to employ and make their assistance in the various operations as effective as possible. Furthermore he must learn by careful study and experiments what he must use in the care of crops or in the preparation of the soil for their growth.

In this new country with its rich virgin soil we are apt to neglect or to value too highly the fertilizers that are deemed so important to those who find their soil impoverished by constant cropping. In the best sense of the word it is not always the grosser forms of manure that are needed, but the carefully prepared fertilizers compounded after chemical experiments to supply some defect in the soil without unduly adding some of those elements,

that while of great value in a moderate quantity would in themselves be ruinous if largely increased.

One of my neighbors finding stable manure was cheap and that transportation was also inexpensive one winter, bought and carted onto a very fine vineyard of Catawba grapes a large quantity. The growth of wood and foliage was very fine as a result, but the crop of grapes for years afterwards was very small and badly affected by rot. It took several years to overcome the ill effects of this too generous treatment.

Education for the rising generation has been the pride of Kansas and the advantages that are offered should be embraced by all. Nor is it in the school only that education is to be looked for. The progressive horticulturist will avail himself of the weekly or monthly visits of the horticultural press to keep informed of the world's progress in his own line of work. The farm papers give the experience and practice and the latest discoveries of the best fruit-growers in this country and abroad. They come quietly into the house like a welcome visitor and afford the anxious inquirer entertainment, advice, admonition, and reproof which he would not receive kindly from any other source. They place him in the society of the most intelligent and best educated horticulturists in the world. They keep him informed in relation to the invention and value of implements and machinery best suited to his needs. But best of all they interest him in his chosen vocation and arouse his ambition to excel in all his undertakings.

And so the horticulturist of the fu-

ture as of the past, while he must give attention to the weightier matters, must also give due heed to the mint, anise and cummin of the detail work of his calling.

WEEKLY WEATHER CROP BULLETIN.

Weekly weather crop bulletin for the Kansas Weather Service, for the week ending June 3, 1902, prepared by T. B. Jennings, General Director.

GENERAL CONDITIONS.

A cool week, too cool for corn, but suitable for small grains and grass, the temperature averaging about 2° below normal; the minimum temperatures in the northern counties ranging from 40° to 46°, and in the southern from 42° to 55°. Generous rains occurred in nearly every part of the State, being quite heavy in Ellsworth, Saline, Morris, Osage, and Coffey thence eastward and southward to the State line. Very heavy rains fell in the Arkansas Valley through Hamilton, Kearney, Finney, and Gray. The rainfall was light in Elk, Decatur, Norton, Washington, Marshall, and Nemaha.

RESULTS.

EASTERN DIVISION.

Wheat is ripening in the southern and some of the central counties, being ready to harvest in Chautauqua; rust is feared in Atchison, and some wheat is rusting in Chase and Johnson. Corn needs more sunshine and warmth; it is generally clean, but the weeds are now making a start. Oats are generally in fine condition, and have made good growth. Flax is in bloom in Anderson. The first cutting of alfalfa has been delayed in many counties by the wet weather; it is, however, progressing in Marshall, Montgomery, and Woodson, and is nearly finished in Wabaunsee; the first cutting is lost in Anderson. Grass is fine. Potatoes are being marketed in the southern and many

cut, and much wet on ground; oats short; wheat will yield well, but straw is short; worms injuring many orchards.

Wilson.—Too much rain for corn, oats, wheat, flax, and potatoes; pastures and meadows fine; cattle look well; corn-fields in bad condition, too wet to work.

Woodson.—Fields generally clean; alfalfa and clover being cut; potatoes and gardens doing nicely; some complaint of bugs; early cherries on market.

MIDDLE DIVISION.

Wheat is improving, though rust has appeared in Butler and Pratt; it is heading in the northern counties, while the soft wheat is ready to cut in the southern. Corn is getting weedy, the past two weeks having been too wet for cultivation, and its growth is being retarded by the cool weather. Oats have improved considerably, and in Pratt, McPherson, and Washington are heading. Grass is fine. Alfalfa-cutting is progressing in Washington; cutting delayed in other counties by wet weather. Potatoes are doing well and are blooming in the northern counties. Cherries are ripening in McPherson. Apples are poorly set in Saline and promise a half crop in Smith.

Barber.—Cool wet week; crops growing rapidly; too wet for cultivating; some fruit and vegetation badly damaged by hail.

Barton.—Wheat condition much improved; corn getting weedy, growing rapidly; oats and barley heading; potatoes fine; meadows and pastures greatly improved; cattle doing well; apples dropping; strawberries on market.

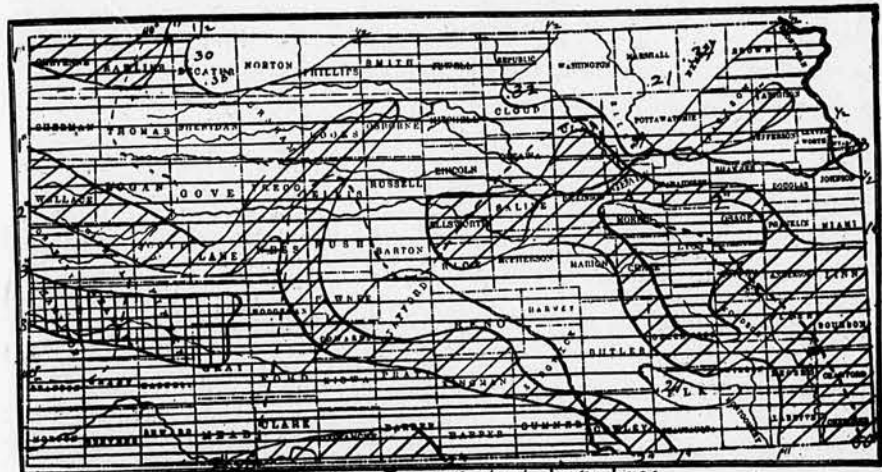
Butler.—Too wet for work; oats and grass doing well; some listed corn washed out; corn generally weedy; wheat rusting, otherwise doing well; alfalfa past best cutting stage.

Clay.—Favorable week; corn too wet to cultivate; alfalfa and grass about ready to cut; wheat still improving; oats in fine condition; potatoes in bloom and looking well.

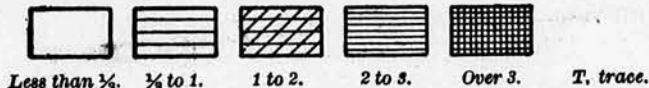
Cloud.—Dry weather needed, to clean corn and cure alfalfa; cool weather beneficial to wheat, but retarding growth of corn; oats promise good crop.

Cowley.—May wheat ready to cut; corn getting weedy; alfalfa ready to cut for past three

Rainfall for Week Ending May 31.



SCALE IN INCHES.



of the central counties. Cherries and strawberries are ripe in the central counties. Clover is in full bloom in Johnson, and is being cut in Woodson.

Anderson County.—Ground too wet for work; too cool for corn; small grains doing well; wheat ripening; first cutting of alfalfa badly damaged; red clover ready to cut; flax in bloom; grass growing rapidly, and a good hay crop promised; small fruit plenty; sunny weather needed.

Atchison.—Rapid growth; oats and wheat looking well; replanted corn again washed out; potatoes in bloom.

Chase.—Grass good; wheat rusting; corn growing, but weedy; cultivation slow; too wet for cutting alfalfa; potatoes doing well, large enough to use; apples and cherries improving.

Chautauqua.—Too wet for farm work; wheat ready to harvest; corn doing finely, getting weedy in some places; alfalfa ready to cut; large potatoes on the market; strawberries and cherries over.

Cherokee.—Farm work stopped by rain; corn getting weedy; other crops doing well.

Coffey.—Some corn getting weedy, little cultivating done.

Elk.—Generally too wet for cultivating, corn growing rapidly and getting weedy; alfalfa ready to cut; pastures fine.

Franklin.—Crops doing well.

Geary.—Wheat looking fine, and oats very promising; corn not growing rapidly; grass, sorghum, Kafr, and millet looking well.

Greenwood.—Cool weather favorable for wheat; cultivating corn; some wheat ready for harvest, and promises good yield.

Jackson.—Early corn clean and in good condition; all crops looking well.

Jefferson.—Good week for growth and cultivation of corn, which is quite promising; all crops improved and in good condition; cherries ripe, light crop; soil in fine condition.

Johnson.—Corn free from weeds and looking fine; prospects for oats, flax, and wheat good, but wheat rusting some; clover in full bloom; grass improved; timothy short and thin.

Labette.—Everything growing well, including weeds; no cultivating being done.

Leavenworth.—Crops in fine condition; corn and oats doing well; potatoes doing nicely; pastures good.

Marshall.—Corn cultivated once, and in fine condition; wheat and oats making good growth; fair crop of alfalfa being cut; spring sowing of grass doing well; pastures good.

Montgomery.—Wheat, oats, and grass have done well; corn slow growth, looking well; wheat ripening.

Morris.—Some corn cultivated middle of week; wheat headed, promises good crop; oats good; alfalfa-haying progressing slowly; good crop; potatoes on market, with prospect for large crop; gardens and fruit-trees in fine condition; grass making good growth; fruit, except apples, short.

Nemaha.—Cool weather retarded growth of corn, but was good for small grain and grass; corn has good stand, being cultivated; oats improved, but short; wheat thin and hurt by chinch-bugs; general prospect good.

Osage.—Corn growing rapidly; hail damaged some corn and garden truck in eastern part of county.

Pottawatomie.—Rains timely; corn cultivated once; alfalfa-haying commenced; fine prospects for potatoes; pastures good; strawberries plenty.

Riley.—Wheat, corn, and oats good; alfalfa cut; fine week for crops and work.

Shawnee.—Wheat and oats in fine condition; corn growing rapidly and some cultivated; grass doing well; too wet to cut alfalfa; heavy rain in northeastern part on the 31st of May washed corn badly and flooded bottoms.

Wabaunsee.—Corn a good stand and making good growth, being cultivated; alfalfa nearly all

weeks; potatoes plentiful; pastures fine; strawberry season about over.

Ellsworth.—Wheat improved somewhat; corn being replanted; potatoes, oats, and grass doing well.

Harper.—Corn getting weedy, needs cultivating; oats fine; soft wheat harvest to begin soon; wheat thin, but heads good.

Jewell.—Corn backward on account of replanting and delay in planting, caused by dry weather; alfalfa being cut; crops and pastures doing nicely.

Kingman.—Corn growing rapidly; cultivation hindered by wet weather; wheat, oats, and rye improving and doing well.

McPherson.—Wheat filling nicely; oats rank growth and heading; too cool and damp for corn, getting weedy; potatoes doing well; grass abundant; cherries ripening; sunshine needed.

Ottawa.—Wheat improved by rains; corn growing nicely; oats and alfalfa doing well; potatoes good; corn-planting still progressing; gardens greatly improved.

Pratt.—Good filling weather for wheat; oats and corn fine; wheat doing well, but some is rusting a little; pastures good; much young poultry lost; a great deal of prairie being broken; too wet for general work.

Reno.—Wheat filling nicely, much improved; oats well headed; too wet for cultivating corn, growing slowly and getting weedy; alfalfa ready to cut.

Republic.—Good week for work; alfalfa ready to cut; corn-cultivation commenced; wheat and oats promise a fair crop.

Rice.—Wheat filling well; oats doing nicely; alfalfa good crop; grass improving; corn getting weedy.

Saline.—Cool cloudy week; wheat improving, some weedy; corn growing, getting weedy; oats doing nicely; alfalfa not a very good crop; potatoes promising; gardens good; few apples on trees.

Sedgwick.—Much cut alfalfa damaged by rain; some corn drowned and cultivation delayed; grass fine, and oats and wheat recovering from injury by drouth.

Smith.—Fine growing week; wheat heading, and prospect improved; pastures good, and stock doing well; potatoes in bloom; small fruit a failure; alfalfa ready to cut, good crop; apples promising a half crop.

Stafford.—All growing crops doing well.

Sumner.—Corn fine, ground too wet for cultivating; other crops growing, but weedy; gardens good; some damage by hail.

Washington.—Corn mostly cultivated first time; what headed, and oats heading; alfalfa being cut.

WESTERN DIVISION.

Wheat has improved in Finney, and is in fine condition in Sheridan and Wallace, and is in bloom in Graham. Barley is much improved in Finney, and is in fine condition in Wallace, and is heading in Ness. Alfalfa-cutting is progressing in Gove, Graham, and Norton; it is ready to cut in most of the counties, but wet weather prevents. Grass is fine. Corn is generally in good condition, but cultivation is being delayed by rains. Apples and cherries have set well in Trego, and are in fine condition in Wallace. Strawberries are ripe in Trego.

Clark.—Too wet for farm work of any kind.

Decatur.—Planting practically done; all crops in fine condition; corn a good stand; alfalfa-cutting commenced; some damage by hail.

Finney.—Considerable cut alfalfa badly damaged by rain; wheat, oats, barley, and alfalfa greatly improved; damage by hail in localities; some bad flooding from irrigation ditches filled from river.

Gove.—Fine rains; alfalfa-haying begun, a good yield; corn looks fine; pastures good.

Graham.—Good growing week; wheat in

Advertisement for Lightning Gas Engine and Scales, Kansas City Hay Press Co., 129 Mill St., Kansas City Mo.

blom; alfalfa harvest on; corn clean and looks well; potato-bug coming. Grant.—Rains making pastures good; forage crops generally a good stand. Greeley.—Grass good; cattle fattening; good prospects for forage crops. Hamilton.—Pastures and crops doing well. Haskell.—Ground thoroughly soaked; work suspended; small grain heading nicely; effect of rains encouraging. Lane.—A good growing week; small grain improved; alfalfa ready to cut, but work delayed by unsettled weather. Ness.—Condition of small grain improved; grain being cultivated and looking fine; range-grass good; barley heading; alfalfa ready to cut; potatoes good, and large enough to eat; forage crops growing nicely. Norton.—Good week for growing crops; much corn and Kafr replanted; good crop alfalfa being cut; wheat in fine condition; cherries ripening. Republic.—Farmers replanting corn and cane, and cutting alfalfa; grains and fruit making very rapid growth; weather warm. Sheridan.—Wheat generally in fine condition, but some injured by hail; corn-cultivation delayed by wet weather, and corn getting weedy; alfalfa, heavy growth; pastures good. Thomas.—Everything doing well; alfalfa-cutting about finished; corn cultivated first time. Trego.—Much plowing for stock feed being done; alfalfa growing nicely, new-sown coming up well; pasture good; apples, cherries, and plums well set, and strawberries ripening. Wallace.—All crops improved; wheat, barley, alfalfa, and range-grass fine; corn and forage crops coming up nicely; gardens fine; apples fair crop promised; cherries, apricots, and plums none.

\$100 Reward \$100

The readers of this paper will be pleased to learn that there is at least one dreaded disease that science has been able to cure in all its stages, and that is Catarrh. Hall's Catarrh Cure is the only positive cure known to the medical fraternity. Catarrh being a constitutional disease, requires a constitutional treatment. Hall's Catarrh Cure is taken internally, acting directly upon the blood and mucous surfaces of the system, thereby destroying the foundation of the disease and giving the patient strength by building up the constitution and assisting nature in doing its work. The proprietors have so much faith in its curative powers, that they offer One Hundred Dollars for any case that it fails to cure. Send for list of testimonials. Address, F. J. CHENEY & CO., Toledo, Ohio. Sold by Druggists, 75c. Hall's Family Pills are the best.

Gavitt's \$550 Prize Offer.

An interesting contest is at hand. Our readers will not fail to notice the display announcement on page 609 of the W. W. Gavitt Medical Company, Topeka, Kans., who offer \$550 in prizes for a list of words formed by using letters occurring in "Gavitt's System Regulator is Guaranteed."

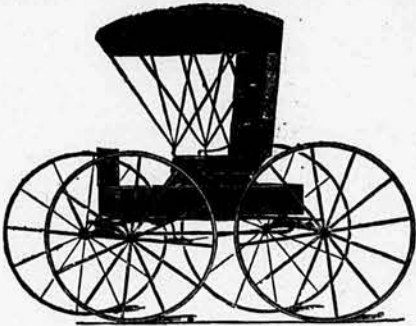
The W. W. Gavitt Medical Company is a firm of manufacturing chemists of Topeka, and have built up a tremendous business during recent years. No firm in Topeka receives a larger daily mail than this house. Their business has grown to such an extent that they occupy three buildings, each of which is taxed to its fullest capacity. Every reader of the Kansas Farmer should feel a special interest in this Kansas institution and enter the contest at once.

To Boston and Return at One Fare Via New York City.

If desired for the round trip via Nickel Plate Road, for Christian Scientists' meeting in June. Tickets on sale June 12, 13, and 14, with extended return limit of July 31. Stop-over to visit Niagara Falls en route also granted. Write John Y. Calahan, General Agent, 111 Adams St., Chicago, for detailed information. (16)

Century Easy Runners.

The Century Manufacturing Company, Dept. M, East St. Louis, Ill., is doing a great business with their own make of buggies and surreys, which they sell direct from factory to user, and the customer



thereby saves all middlemen's profit. This firm claims to save the buyer from \$20 to \$40 on every vehicle which is warranted in every respect as high class goods at low prices. Look up their advertisement on page 618, and write for further information, which will be sent to any reader of this paper free, and without delay.

\$19 To Boston and Return \$19 \$22 To Boston and Return Via New York \$22

via Nickel Plate Road, account of meeting of Christian Scientists, June 15 to 18. Tickets on sale June 12, 13, and 14, with open return limit of June 21st. By depositing tickets with Joint Agent in Boston on or before June 21st, extended limit returning until July 31 may be obtained. Stop-over at Niagara Falls, in either direction if desired. Three trains daily. Through vestibled sleeping-cars. Ameri-

A COMPETENCE

Advertisement for Western Canada Free Homestead Lands, featuring a map and text about land acquisition and agricultural opportunities.

Large advertisement for the New Fast Train to Colorado via Santa Fe, highlighting the route and service details.

Advertisement for Pullman Palace Sleeper, Composite Car, Observation Sleeper and Chair Car, detailing the train's route and amenities.

Cow-peas.

(Continued from page 606).

will cow-peas with the following result:

Seed per acre	Hay, pounds.	Cow-peas, Bushels.
One peck.....	3,314	31.4
Four pecks.....	2,463	25.4
Eight pecks.....	1,749	16.4

He says: "If to grow shelled peas is the object, not less than ten nor more than twenty pounds of seed drilled per acre will give best results. If hay or green manuring is the object, not less than thirty nor more than sixty pounds to seed should be sown. If a crop to smother weeds is desired, from fifty to one hundred pounds may be sown broadcast, or half these quantities in two and a half to three foot rows and cultivated."

AS A SECOND CROP.

July 16, 1900, F. A. and F. C. Abbott, Manhattan, Kans., planted fifteen acres of cow-peas on oat stubble on sandy river bottom. A crop of oats was grown on the land and harvested. After the oats were stacked the ground was listed, the lister opening the furrows in the oats stubble just as it was left at harvest. The furrows were run about three feet apart, and the cow-peas were drilled in the bottom of the furrows with an ordinary one-horse corn drill, four bushels of seed being used to plant fifteen acres. The drill did not cover the seed well and the ground was harrowed to get more dirt in the furrows. The Whip-poor-will variety was used.

The beans were cultivated twice with an ordinary two-horse cultivator. This left the ground nearly level at the last cultivation. The season was very dry, but the beans made a heavy growth and at the time of cutting, October 4, stood two feet high and covered the space between the rows.

The Abbotts tried to cut the crop with a mower, but found this unsatisfactory, as the mower could not reach the vines that were on the ground; and with part of the vines cut and part uncut it was difficult to gather the tangled mass. Finally, after consultation at the Kansas Experiment Station, the Miller bean-harvester was tried and found to do the work just right. This machine is made by the LeRoy Plow Company, LeRoy, N. Y., and was designed for harvesting navy beans, but it was found just as successful in harvesting soy-beans and cow-peas.

With the Miller harvester two rows were cut at a time, the knives cutting off the plants just below the surface of the ground and the wings above the knives throwing the vines together into a windrow. The vines were put up in small cocks, where they were left to cure until dry enough to stack. The yield of hay was estimated to be one ton per acre, possibly a little more.

In the summer of 1901 the Abbotts repeated the experiment. On account of drier weather the yield was somewhat less, but the results were satisfactory.

The college farm is all upland and we have not succeeded in getting a profitable crop of cow-peas when the planting has been done after harvest. When the soil is sufficiently moist we have had best results from surface planting; when the soil is dry we recommend listing.

HARVESTING.

The upright-growing varieties of cow-peas may be cut with a mowing-machine. With the varieties which run along the ground the mowing-machine can not be run close enough to the ground to cut anywhere near all the plants. We have had the best results from cutting the cow-peas with a bean-harvester. After cutting, the cow-peas

Everything but the Horse and Girl !!

HERE WE OFFER YOU SOME

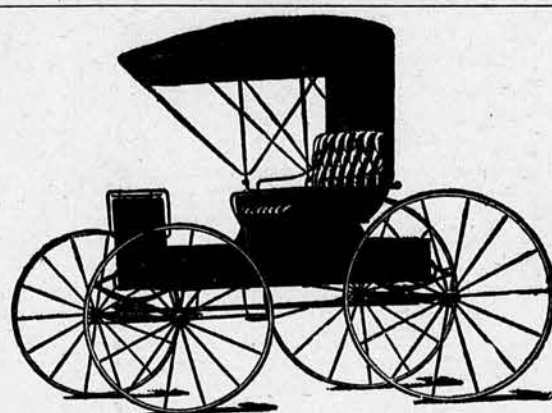
SPECIAL BARGAINS IN BRADLEY BUGGIES

Particularly the Fellow That Has the Horse and Girl.

Horseless Offer No. 1.

One No. 5 or 6D SPECIAL END SPRING BUGGY fitted with steel corners, 4-bow leather quarter top, leather trimming, spring back, spring cushion, seat ends padded, side and toe carpet, nickel dash rail, etc., with shafts.
One set "ALBERT" Single Buggy Harness, one inch double traces, imitation rubber or nickel trimming.
One "HARD-WEAR" handsome and durable Whip.
One FANCY PATTERN Lap Duster.

ALL FOR? SEE BRADLEY AGENT IN YOUR TOWN.
\$\$\$? VALUE, QUALITY GUARANTEED.



No. 6D Buggy—Bailey Loop.
No. 5D Same as Above, Except Hung on Wood Cross Bar.

Horseless Offer No. 2.

One No. 11 or 12 BRADLEY END SPRING BUGGY fitted with D. B. leather quarter top, D. B. leather trimming, spring back, spring cushion, seat ends padded, side and toe carpet, nickel dash rail, etc., with shafts.
One set "ALIX" Single Buggy Harness; 1 1/2-inch single traces, (V-shaped breast collar), imitation rubber or nickel trimming.
One "HAND-MADE" stocked Java Whip.
One FANCY PATTERN Lap Duster.

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should be raked, cocked, and cured the same as clover or alfalfa. The stalks are large and very succulent and curing is much more difficult than with either alfalfa or clover. The cow-pea is ready to cut in Kansas just as the fall rains set in. This makes curing still more difficult. Sometimes it has taken us two weeks during showery weather to get the cow-peas sufficiently cured to stack. The most valuable part of the hay is the leaf, and unless handled very carefully a large proportion of the leaves will fall off in handling before the stems become cured. When the weather is favorable the curing is easy and the hay is of good quality.

OBJECTIONS TO COW-PEAS.

The greatest objection is the one just mentioned—that of curing the hay. The one other serious objection to cow-peas is the high cost of seed. Practically all of the seed sold by seedsmen is raised in the South, where the pods are gathered and threshed by hand. Southern-grown cow-pea seed, like most Southern-grown seed, is weak in germination under Kansas conditions and matures late and irregularly. The seeds cost from \$1.25 to \$2.50 per bushel, and an extra quantity of seed has to be used because the seed is not acclimated.

Several Kansas farmers have reported having good success from broadcasting sorghum or Kaffir-corn with cow-peas. The sorghum or Kaffir-corn made the curing of the cow-peas easier and the richness in protein of the cow-peas improved the quality of the feed. This year several Kansas farmers expect to drill a row of cow-peas between the rows of corn at the last cultivations, and will cut the corn and attached cow-peas and shock. The cow-peas will improve the quality of the fodder.

Where the few seeds that mature from the first planting in Kansas are planted a much greater proportion of seed matures from the following crop than from Southern-grown seed. In southeastern Kansas several farmers have bred up acclimated seed that overcomes most of the defects found in seed from the South. When farmers in all parts of the State develop acclimated seed, the seed will become cheaper, less will be required per acre, and the crop will be more satisfactory. It is reasonable to think that enterprising Kansas farmers, when they get to growing this crop largely, will find practical methods of harvesting and threshing cheaply with machinery.

COW-PEAS OR SOY-BEANS, WHICH?

This is a question which we are asked very frequently. With the present quality of seed we recommend the cow-pea where hay is desired, and where fertilizing the ground is the chief reason for sowing. Where grain is the chief crop desired, the soy-bean is much the best.

CONCLUSION.

After five years experience with the crop on the college farm and a careful investigation of its growth on many farms scattered over the State, the writer believes that the cow-pea is one of the coming crops of Kansas. Its value as a feed, its adaptation to all

classes of soils, its improvement of soils both in fertility and in mechanical condition, the fact that it can be raised as a catch crop without interfering with the regular crops and its ability to resist drouth and heat makes the cow-pea of great use to Kansas farmers. As soon as acclimated seed can be procured at a low cost, raising the cow-pea should become general.

The cow-pea will not become a main crop on Kansas farms. There are other crops much better for this purpose, but it should be used on every farm in spots that need improving in fertility or mechanical condition and on stubble grounds where another crop is not to be planted until spring.

Happy in the New Country.

EDITOR KANSAS FARMER:—I was so glad to hear you say you include us Oklahoma boys in your family, so I will report to you how things look down here. To-day I took a trip eight miles around Alva to see how the crops looked so that I could know what I was writing about, and I was just delighted in what I saw and surprised beyond words to express in what I saw. I just took off my hat and threw it out on the wheat and yelled.

Ten years ago I went over these prairies then a little pasture fifty miles square, full of fat cattle and a mat of buffalo-grass just as thick as wool on a sheep. The happy cowboys lived in camps fifteen or twenty miles apart. There was not a house in sight—just a smoky look, with miles and miles of level, rich black soil and thousands of cattle contented and at home wherever night overtook them.

Only ten years earlier the red man's cattle, the buffalo, held possession.

What a change from what I saw to-day! Now in 1902 there is a fine house and barn, orchards and miles and miles of waving fields of wheat on every quarter-section. And these quarter-sections are worth from \$3,000 to \$6,500 a quarter. It is a perfect garden for this reason: One man just has only 160 acres to farm, and it is farmed.

We had the blues here thinking we would not have a wheat crop. We got it down to one-half crop. To-day I estimate what I saw as two-thirds of a crop without any more rain, and I will stand my estimate.

I have wondered what the Oklahoma boys beat us in crops in Kansas, and as I have made soil a study I have found the secret. It is all in the sub-soil. Up on the Medicine River the sub-soil is open and the water goes right on down and forgets to come back, while here in Oklahoma the sub-soil is a block of clay and holds the water. There is no sand and gravel to get hot here, although the top soil is a rich black mould, being easy to plow and mellow as a garden.

I would like to have some of the boys East come here and see thirty-five miles southeast of Alva. It is the most fascinating country I ever saw. It is just beautiful.

Oats will make seventy or eighty bushels to the acre. They don't need any more rain. All have ten or fifteen head of cattle with hogs and chickens—and the prettiest, fattest babies you ever saw.

Few are sowing alfalfa. Some have five acres to try. There is some corn, cane, millet and Kafir. The farmers are as independent as a hog on ice. They left rented or mortgaged farms and ran in here, and the good man Flynn got these pretty homes for them free, from Uncle Sam.

ELI C. BENEDICT.

Alva, Oklahoma.

A Fable for the Rich.

Suppose that a fine specimen of an old deerhound, very successful in his business should collect untold deer in his park, fatten them up, and then say to his puppies, "Here, boys, I've had a hard life catching these deer, and I mean to see you enjoy yourselves. I'm so used to racing through the woods and hunting that I can not get out of the habit, but you boys just pile into the park and help yourselves." Such a deerhound as that would be scorned by ever human father. The human father would say to such a dog, "Mr. Hound, you are simply ruining these puppies. Too much meat and no exercise will give them mange and seventeen other troubles, and if distemper does not kill them they will be a knock-kneed, watery-eyed lot of disgraces to you. For Heaven's sake keep them on dog-biscuit and work them hard."—From Andrew Carnegie's "The Empire of Business."

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Grange Department.

"For the good of our order, our country, and mankind."

Conducted by E. W. Westgate, Master Kansas State Grange, Manhattan, Kans., to whom all correspondence for this department should be addressed. News from Kansas Granges is especially solicited.

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The Grip of the Grippe.

It is a Hard Thing to Shake off.

People sometimes laugh at the tendency to call every little cold a "touch of Grippe," and sometimes they maintain stoutly that the Russian Grippe is nothing more terrible than the familiar influenza of our grandmothers' tricked out in a foreign name. But there is one thing which marks grippe as far more injurious than the ordinary influenza, and that is the disastrous results which follow it. When the victim of influenza is cured he is well. When the sufferer from grippe is cured of the disease itself he is left in such a weak and debilitated condition that he is the probable prey of any disease germ which may come his way. Old people are especially liable to

irons, etc. I bought two bottles of Dr. Pierce's Golden Medical Discovery and a vial of his 'Pellets.' Took the medicines according to directions and began to improve slowly. The way it helped my stomach was wonderful.

"I can not say or write enough in praise of Dr. Pierce's medicine. I have had no bad spell of sickness since I began its use, and I feel entirely well."

THE WEAK SPOT.

Most people have a weak spot in the health which is especially liable to attack from disease. This is particularly true after a siege of grippe. The entire physical power of resistance is weakened, but the weakness is most marked in such organs as have before been subject to disease. When the lungs are "weak" grippe almost surely leaves them weaker yet, and often the symptoms of lung disease begin to show in a marked manner.

In all such cases Dr. Pierce's Golden Medical Discovery quickly cures the cough, heals the inflamed tissues and strengthens the weak lungs so that they are enabled to throw off the disease which often has consumption as its sequel.

"I was in poor health when I commenced taking Dr. Pierce's medicine," writes Mr. Elmer Lawler, of Volga, Jefferson Co., Ind. "I had stomach, kidney, heart, lung troubles. Was not able to do any work. I had a severe cough and hemorrhage of the lungs, but after using your medicine a while I commenced to gain in strength and flesh, and stopped coughing right away. Took about six bottles of the 'Golden Medical Discovery' then, and last spring I had grippe and it settled on my lungs, leaving me with a severe cough. I had the doctor, but he didn't seem to help me any; so I commenced your medicine again and took three or four bottles of the 'Discovery' and two vials of Dr. Pierce's Pellets, and that straightened me up. I feel like a different person. I gladly recommend your medicine to all sufferers, for I know it cured me."

The cures effected by the use of Dr. Pierce's Golden Medical Discovery are so well authenticated that there is no room for a doubt as to the curative power of this remarkable medicine. Weak, run-down, worn-out men and women, whether their debility results from grippe or other causes, will find new health and new strength in the use of "Golden Medical Discovery."

Sick people, especially those suffering from chronic diseases, are invited to consult Dr. Pierce, by letter, free, and so obtain, without charge, the opinion of a specialist on their ailments. All correspondence strictly confidential. Address, Dr. R. V. Pierce, Buffalo, N. Y.

The sole motive for substitution is to permit the dealer to make the little more profit paid by the sale of less meritorious medicines. He gains; you lose, therefore accept no substitutes for "Golden Medical Discovery."

GREAT VALUE AT TRIFLING EXPENSE.

F. T. Houghton, of Hornitos, Mariposa Co., Cal., says: "I fully appreciate the value of your 'Medical Adviser' in my library, and consider it a hundred times more valuable than any medical work published at so trifling an expense."

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succumb to the weakening effects of this disease, and an epidemic of grippe surely leaves a broad trail of crepe behind it. The great need of the grippe victim is new strength. All sorts of stimulating beverages are offered as strength-giving which have not the least nutritive value, and all strength is derived solely from nutrition.

GRIPPE'S GRIP BROKEN.

"About five years ago, I had a severe attack of La Grippe," writes Mrs. Sarah F. Howes, of Churchton, Md. "It seemed I was nearly dead from weakness, and I commenced to use Dr. Pierce's medicines. I took five bottles of 'Golden Medical Discovery' and some of his 'Pleasant Pellets,' and experienced a great benefit. The lasting effects of Dr. Pierce's medicines are wonderful. Am in my sixty-ninth year and do all my housework."

Dr. Pierce's Golden Medical Discovery cures the diseases of the stomach and its allied organs which prevent the proper nutrition of the body, and so it enables the building up of physical strength by food perfectly digested and assimilated. It gives appetite to eat and power to digest and assimilate what is eaten, thus producing strength.

"Last winter I began suffering with a pain in my side," writes Miss Jennie Swearingen, of 1056 Market St., Parkersburg, W. Va. "It kept getting worse, and I had to have the doctor, and he pronounced it a kind of malaria and grippe. What I suffered I could never express to any one. I could eat nothing, had to lie flat on my back and could not rise from the bed. Every one thought I could not live. I had to be covered with mustard plasters and apply hot

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The Poultry Yard.

The Making of Layers.

WILLIAM HUGHES, IN COMMERCIAL POULTRY.

Some breeders are expert with one breed, some with another. Leghorns, for example, which are natural layers, do well in some hands and poorly in others. Brahmas, which always have been considered better table fowls than layers, in the hands of men who understand them are to-day made to lay a remarkable number of eggs. And so it goes, each one to his choice. The principle, however, is the same. Early layers will produce early layers, and vice versa. In order to establish a prolific laying strain, the early laying pullets must be noted, marked or penned in such a way that they can be recognized again when wanted for breeding purposes.

The pullet that will lay first and longest is an ideal breeder from which to establish the prolific laying strain. In order to produce vigor and health in the chicks, strong healthy males should be selected. After the pullets have raised their season's complement of eggs, it must be remembered that the males as well as the females come from a laying strain; therefore it becomes necessary that the laying quality be preserved both in female and male.

Of course in order to reproduce successfully and satisfactorily, thoroughbreds must be used, and they must be kept pure. Crosses can never fill the bill under any circumstances. But thoroughbreds though they may be, they need not be the thoroughbreds of the exhibition hall. It matters not whether the shape, comb or tail that wins be there or not, so long as the egg-production can be depended on.

Layers need special care. What we require of our layers are early eggs. A pullet that will not lay before December, and a hen not before January, are poor investments when considered as layers. They are consuming feed and are themselves non-productive when the prices of eggs are the highest. In other words, they are costing us more than they are worth, and since we are depending entirely upon their earning quality, they are found wanting. In order to have early layers we must hatch early.

From the very start the chicks must be kept growing. A set-back of one day often means a lack of growth for a week. Even when pullets lay in October they are quite uncertain, some starting well and continuing regularly, while others are fitful and unreliable. But October should be the month to look for eggs, and if the start is made, then the yield will be fairly well established by November 1. So long as a pullet will continue to lay well—and this depends entirely on the ability of the breeder—she is a money-maker; if she stops, from one cause or another, unless she is considered a very valuable specimen, and the delay is deemed only temporary, she had better be killed and eaten. It is folly under ordinary circumstances to waste time and care on what may turn out a hopeless case.

Many egg farmers of the present day believe only in pullets for layers; consequently when they begin to moult, they either sell or kill them. I can not say that I altogether agree with this idea, although it is a business principle, and it would seem folly to feed for three months a layer which can not earn her cost. I believe in yearling and 2-year-old hens; hence I do not believe in depending entirely on pullets.

Yearling and 2-year-old hens are very valuable. In the first place they must be kept, if a continuous and annual egg yield is desired. They will moult later than pullets and thus will fill up the

gap before the pullets start. The problem of a continuous egg supply is thus solved, and the hens lay while the pullets moult, and the pullets lay while the hens moult.

Parasites.

EDITOR KANSAS FARMER:—In searching through an old little-used hen house on the premises in quest of eggs, I ran up against what looked to me like thousands of mites on the roosting poles. When I emerged my clothes were plentifully besprinkled with the little pests. Notwithstanding the fact that a hen was due to hatch in one corner of the house, war was immediately declared and the spray-pump brought into use. I use a liquid lice-killer for mites and a good one at that, but when mites make their appearance I know a long and vigorous fight is in prospect. Not once, but many times will the spray-pump be called into requisition, and the better established and more numerous these little torments become the more work is required to exterminate them. One is surprised to see the number of lice and mites one small fowl can support and still live, and I am safe in saying that one-half—yes, two-thirds—the number of deaths among late-hatched chicks are caused by and attributed to the higher temperature. Chicks enjoy warm weather if unmolested by parasites. Weakened by the ravages of these pests they are apt to show every symptom of disease, and may even contract diseases they would otherwise be immune from, causing a high rate of mortality among the flock.

To avoid this, it is important to be on the alert quite early in the season, but on a farm one is prone to forget preventive measures, the curative ones seeming of so much greater importance.

Early spring is usually a very busy season and it is not until necessity points the way that we take the direction indicated. But there comes a time if we have been negligent when something must be done or we will lose the results of our work, and curtail the profits we may reasonably expect if we care for the flock as it should be cared for. Writes one, "What's the matter with my chicks? They droop, and seem sleepy or are cross and fretful, get a diarrhea and die. What shall I do for them?" I'll tell you what to do. Go to work in the hen-house, the coops, dust the old hen with insect powder, or better still, put her in what we term the "sweat-box" and murder the lice on her. The "sweat-box" is a small box covered with an old quilt or sack and painted on the inside with a good lice killer in liquid form. The hen is allowed to remain in this box closely covered from one to two hours and at the end of that time the dead lice will be lying in multitudinous company all over the bottom of the box. You would not believe one innocent looking hen could be the abiding place of so many parasites. I have taken them from their nests, perhaps an old biddy that has set faithfully for three weeks, and looking through her feathers, have exclaimed, "Oh, I don't believe she has any lice on her." But after subjecting her to the sweat-box treatment have found myriads of dead lice in the box. The hen-houses should be whitewashed and the roosts sprayed often.

During hot weather one should double his guard and even then he will be none too safe. Coops where the young chicks roost if made so as to be easily moved from one place to another are less liable to become badly infested, but use of the spray-pump will aid in keeping them free from parasitic pests. Keep the brooder chicks separate if possible from the balance of the flock. They may be kept entirely free from lice. When you see drowsiness, lack of plumage luster, or loss of feathers on the neck, go to work on the lice.

MRS. C. B. BARRETT.

Color of Skin and Egg Shells.

It is beyond dispute that the color of the skin in dressed poultry and the color of the shells of eggs have some effect on the market price of poultry and eggs, although that this is due to ignorance or prejudice, or perhaps a combination of both, is quite true.

In America the consumer prefers a yellow-skinned fowl, while in every country in Europe white-skinned poultry is the favorite. An examination to determine the reason for this would develop the fact that most people do not know why they choose as they do. The truth of the matter is that the delicacy of flesh that is found in the best poultry—that peculiar palatable flavor and that juicy sweetness which makes poultry the most delicious meat we have, when we get poultry as good as it can be—is due altogether to the system of feeding and the kind of feed.

WORN TO A SHADOW.

When there is a falling off in flesh in woman or man there is "something wrong." And that something wrong is generally a loss of nutrition due to disease of the stomach and the other organs of digestion and nutrition. Sometimes this loss of flesh is accompanied by variable appetite, but in many cases the appetite does not fail and there may be a constant desire to eat. Languor, nervousness, irritability, sleeplessness, are symptoms often associated with this loss of nutrition and falling off in flesh.

Doctor Pierce's Golden Medical Discovery cures disease of the stomach and other organs of digestion and nutrition. It enables the perfect digestion and assimilation of food so that lost flesh is regained and the physical health re-established.

"I had suffered from indigestion and only those who have suffered from it know what it really is," writes Mrs. M. J. Fagan, of 1613 East Genesee St., Syracuse, N. Y. "I had had severe attacks of headache and dizziness, with cold hands and feet; everything I ate distressed me, bowels were constipated and I was growing very thin and nervous. I cannot half express the bad feelings I had when I commenced taking Dr. Pierce's Golden Medical Discovery. I took nine bottles of the 'Discovery' and have taken several bottles of Dr. Pierce's Pleasant Pellets. I commenced feeling better with the first bottle and kept on improving. Now I am so greatly improved in health my friends often speak of it. I most heartily recommend these medicines to all suffering as I was."

The People's Common Sense Medical Adviser, in paper covers, is sent free on receipt of 21 one-cent stamps for expense of mailing only. Address Dr. R. V. Pierce, Buffalo, N. Y.

It is perfectly safe to say that nine-tenths of the poultry sent to market is not of good flavor nor is the flesh of good texture. The flavor comes from improper feed, and the texture from improper feeding.

This may be new to some people, but the facts are as we state them. Recently we had an opportunity to learn something about these matters from one who had no sentimental prejudices to sway him one way or the other. He fits fowls for market without regard to his own feelings on the subject. He is looking for the highest prices and feeds and cares for his fowls in such a way as to secure the top of the market.

Living in the very midst of the great corn-belt, this man feeds the fowls in his charge with but little corn when he gets ready to finish them for the market. He told us that fowls can be fattened on corn easier and quicker than with any other feed, but they do not bring highest price when so fattened. They have plenty of fat on them when finished on corn, but the fat lies inside the body and just under the skin, and when such a fowl is roasted the fat melts and runs out, leaving the flesh stringy and coarse in appearance.

He gets the fowls from farms, having them picked up by buyers and buying from hucksters who go from farm to farm. When brought to the place where they are to be finished, they are put in small coops containing four or five fowls each. These are then fed a thin batter-like mixture of ground oats and barley, with very little corn in it. The feed is placed in troughs outside the coops, and as soon as the fowls have eaten all they will the troughs are taken away and thoroughly cleaned. The feed is so thin that no water is needed, and nothing is given the fowls but the thin mixture. They get very fat within ten days and the flesh is sweet and juicy because the fat is mixed in through the flesh between the fibers.

A fowl finished in this way sells in the city markets for prices that would astonish the man on the farm who is in the habit of fattening his fowls on corn and selling them to the huckster or country merchant for 5 or 6 cents a pound.

When farmers learn to produce the best quality of poultry, there will be buyers ready to pay the price it is worth.

Canadian poultry breeders can not supply the demand for poultry at 12 cents or more a pound. These prices are offered because the poultrymen over the border pay particular attention to quality as well as weight.—Commercial Poultry.



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NO MORE PUPS FOR SALE until after May 1, but can furnish B. P. Rock eggs from large, vigorous, and finely-marked birds; 15 years' experience with this breed. Send me your order; you will be pleased with results. \$1.50 per 15.

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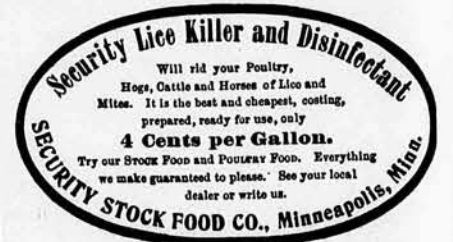


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In the Dairy.

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

Value of Milk as Food.

Prof. W. O. Atwater, of Storrs Experiment Station, says the average man and woman look upon milk as a beverage and not as a food, although they do know that it is good for children. Dr. Atwater says that a quart of milk contains about the same nutrients as three-quarters of a pound of lean beef, and the same as six ounces of bread, that is, four ounces of nutriment. He says that after the butter-fat has been removed there remains in the skim-milk the best part of the nutriment.

He said that the man who would make his noon lunch on twelve ounces of bread and a pint of skim-milk, at a total cost of about 4 cents, would obtain one-third of the nourishment he needed for the day, while the man who went to the cheap restaurant and had a small portion of soup, meat, potatoes, turnips, bread, butter, coffee, and sugar, and paid 20 cents for the same, had received about one-half the nourishment that the man who ate the bread and milk received. He is enthusiastic over the great value and fine quality of the old-fashioned pasty pudding. He says that there was no cheaper or more digestible food than this mixture of corn-meal and skim-milk. He mentioned skim-milk powder and gave figures to show that the skim-milk flour contained an exceedingly large amount of nutriment.

Illustrating the Value of Ensilage.

Below I give some figures to show the value of ensilage. Several days before we turned our cows on grass for the twenty-four hours we turned them out at night and fed regular feeds of ensilage, and of grain when silage gave out. Then they had twelve hours in day pasture and twelve hours in pasture reserved for nights. The grass is so good it waves like billows; in fact, it could not be better. The blue-grass is on high rolling land.

RECORD OF THIRTY-TWO COWS AND HEIFERS.

Day before dropping silage.....	Pounds butter-fat.....
First day on grass.....	630
Second day on grass.....	618
Third day on grass.....	578
Fourth day on grass.....	571
Fifth day on grass.....	581

The last day is an even date and prospects are that the cows may now regain some of the loss. Last year on dropping ensilage thirty-six cows dropped from 720 pounds to 645 pounds in ten days.

We wintered twelve brood sows on ensilage and milk and now at farrowing they are doing splendidly. Four sows farrowed to date and not a lost pig. Litters are from seven to nine, and the sows are in fine condition.

We are having an ideal spring for work. Rape is eight inches high. Peas and oats were never better and the corn land is in the best of condition.

BUFF JERSEY.

How Commercial Bacteria are Handled at the Creamery.

W. H. OLIN.

Received at the creamery this laboratory starter is generally propagated in skim-milk. It is placed in a sterilized milk jar, forming about 10 per cent of the first creamery starter-culture, the other 90 per cent being sterile skim-milk. At first there seems to be no perceptible growth of the starter, told by the acidity test. After the course of an hour or so growth will be observed as taking place, and if the temperature be normal—60° to 70° F.—this growth will be enormous and very rapid, as five minute acidity tests will show. Why this passiveness at first? No one absolutely knows. Some experienced creamerymen tell me that they think the changed method of culture and different degrees of temperature from the laboratory occasion it, and the bacteria, in a certain sense, must become acclimated. Let a raw December day drop down on us in May or June and we will ourselves appreciate the climatization. As soon as the bacteria become used to their skim-milk culture and changed environment they grow rapidly.

Culture No. 1 forms about 10 per cent of culture No. 2, to which is added the

other 90 per cent sterile skim-milk. In a similar manner culture No. 3 is built up, when the creamery will have about a large canful and our starter is ready for use. It is customary in this country to "plant" the starter and at once cool it down with ice or cold water and hold the bacteria passive or nearly so until next morning when the starter will be warmed up to good working temperature. In this country creamerymen generally make but one propagation a day, while in Denmark two or more are made. Hence our creamery takes three days to build up a laboratory culture and make it ready for starter use where the Danish creameryman is ready in a day and a half. The starter is not allowed to develop more than 1 per cent acidity, usually not more than .9 per cent. The amount of the starter added to the cream whose ripening the creameryman seeks to hasten, is determined by the acidity of the cream.

Each day that starter is used to sterilize skim-milk is added to continue propagation. In Denmark where cleanliness and sterilizing is now second nature to every creameryman the one laboratory starter can often be successfully grown and used for six months. I am informed that two weeks generally measures the life of a starter in an American creamery.

Experience in Handling Patron's Milk.

H. V. NEEDHAM, BEFORE THE TONGANOXIE FARMERS' INSTITUTE.

Years ago I handled milk and separated it for commercial cream at the cheese factory. This milk was delivered twice a day, except in severe weather, and although I worked every night until 10 and sometimes 11 o'clock, cooling that milk as cold as water would make it and then setting it in ice-water, there were constant complaints about bad milk and sour milk and cream. I questioned the patrons, but they were not to blame, to hear them tell it. In fact, if these statements weighed a pound apiece I could have freighted a whole whaleback steamship with a full cargo, if those told me in that two and one-half years had been stored up.

I had to fight against watering milk as well as bad handling. We had no acid test or Babcock test and I found I must sharpen my faculties so I educated my nose and wits. I found that if I got a whiff from a can just as it was opened or just as it was emptied, I could detect many faults. In fact, I think there were twelve or fifteen lots of milk in which I could distinguish the ownership by my smeller with my eyes blindfolded. Of forty patrons, few brought milk so free from odor that it could be called perfect milk. Several cans smelled of dish-cloths in several stages of decomposition; some cans were a little rusty and had the old soap-grease smell incident to all rusty tinware; some smelled of the stable; several reminded you of harness; others of foul strainer-cloths; some gave evidence of being in the living room or in the cellar. Of course, these taints varied with the season to some extent.

I have not time to enumerate the devices I used to detect watered milk, but I will mention two. I had set a sample of a patron's milk in a glass tube several times and was fully satisfied that it was liberally watered, but I wished positive evidence, and also to know how much. About this time a near relative of the patron died and I reasoned that on the day of the funeral that patron would be good, so I tested the milk again and got nearly 50 per cent more cream than in previous tests. In another case, the use of a strainer-cloth revealed wigglers from the rain barrel. These led to touching interviews. I am sure that I got every patron's moral rating down much finer than Dunn or Bradstreet does.

Hydraulic Separators and Cream Extractors.

ED. H. WEBSTER.

Frequent inquiries are being made of the dairy department in regard to these so-called separators. We answer one and all to let them alone.

The agents or makers of these machines tell the intended purchasers that they are better than the old system of crocks and pans and cheaper than the \$100 centrifugal machines. Both of these statements are entirely misleading—both containing partial truths, and omitting much more that is true.

They are better than old crocks and pans just to the extent that the shot-

gun or Cooley can is better than the crock or pan, no more, no less. They are never compared with the deep setting system of extracting cream for the simple reason that a ten-gallon capacity in the shot-gun can be purchased for about \$1.50, while for their patented cans working on the same principle they ask \$10. There is no better system of raising cream, aside from the centrifugal separator, than the deep setting method. A three- or five-gallon can nine inches in diameter set in a tub of cold water does better work than these patented cans and costs but little.

Again, these agents dote over the fact that they sell a separator much cheaper than the centrifugal separator—\$10 compared with \$100—seems at first glance quite a stake. Here again, if we compare actual value of material and labor on each machine the difference is in favor of the \$100 centrifugal separator by several per cent.

But the main issue is not in the above facts. Purchasers want a separator. The test of a separator is its ability to separate, this is told by the butter-fat test of the skim-milk. Numbers of tests have been made and reported of these machines and they vary from three-fourths of a per cent to over one per cent of butter-fat left in the milk, no better than is done by the deep setting system.

The centrifugal machine takes out all but about five one-hundredths of a per cent. A few simple calculations will convince any intending purchaser which to buy.

Summer Water for Dairy Cows.

W. N. BIRCH.

Cows need a large quantity of cool refreshing water for summer. A cow does not like to drink water that has stood in the sun for a day or two much better than a person would. Yet how often we see the water tank shaded by a windmill tower. The windmill pumps fresh water if the wind is blowing and some one is thoughtful enough to start the mill, otherwise the cows drink water that has stood in the sun from one to four or five days. More than this, cows are often compelled to drink from ponds, etc., water which the farmer himself would not touch if he had been without water for two or three days. Such water often gives a bad taste and odor to the milk. How a man can expect a cow to give good milk from such bad water is hard to

understand. Besides, when the water is bad the cow will not drink a sufficient quantity of it to give a large yield of milk.

Cows should have access to good clean water at a reasonable temperature at all times, but more especially in summer. Where this is an absolute impossibility, they should be watered at least twice daily, even in winter.

In conclusion let me say that there is no place where the application of the golden rule will give better financial results. This means in general care as well as in the matter of watering. "Do as you would be done by," and the cow will do her part.

Getting Down to Business.

F. F. FAIRCHILD, BEFORE THE TONGANOXIE FARMERS' INSTITUTE.

Cow culture is sadly neglected by some people who are trying to run dairies. It seems to be a lack of interest or a dislike to the business. But if they will get right down to business they will find that there is nothing that will improve their farms as fast as a herd of good cows.

As I have said, there is nothing that is as safe for a poor man or any one who wants to be on the safe side as dairy-farming. Even if you have not the money to start, borrow enough to buy you a farm and stock it with cows, and care for them as you should, and you will never be sorry of it. You need not stop to think and worry about the

300,000

Machines In Use.

Ten Times All Other Makes Combined.

The Standard of All That's Best in Dairying
in Every Country in the World.

That's the history of the

DE LAVAL

CREAM SEPARATORS

which possess the patent protected
"Alpha-Disc" and "Split-Wing" Improvements
And Are As Much Superior
to other Cream Separators as such
other separators are to gravity setting methods.

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The Easiest to Operate, the Closest Skimmer, Simplest and most Durable, is the

KNEELAND OMEGA Cream Separator.

We want you to know how good it is before you buy any other kind. Send for our free book, "Good Butter and How to Make It." The Kneeland Creamery Co., 26 Concord Street, Lansing, Mich.

SECURITY GALL CURE

CURES Sore Shoulders on Horses and Mules while they are working. Warranted. Feed our Stock Food. It will make you money. Ask local dealer, or write us.

SECURITY STOCK FOOD CO., Minneapolis, Minn.

SHARPLES DAIRY CREAM SEPARATORS,

"Business Dairying," a very valuable book and Catalogue No. 165 free. Sharples Co., Chicago, Ill. P. M. Sharples, West Chester, Pa.

interest and taxes and other expenses, the cows will look after that, if you will tend to your part.

It has always seemed strange to me to think that people will put their money in stock and then neglect it and at the same time be as close as the bark on a tree with what little money they have in their pockets.

Brain Markets.

Conducted by James Butler, Secretary of the Farmers' Co-operative Grain and Live Stock Association.

"The human race is divided into two classes,—those who go ahead and do something, and those who sit still and say, 'why wasn't it done the other way.'"—Oliver W. Holmes.

Stand Together.

If you want to help the farmers in this struggle to secure equitable prices for their products, organize! Special freight rates, or in other words, a discrimination in favor of certain shippers, gives them an advantage over others, and enables them to make money while others may lose money, paying the same price for grain. When the grain dealers' trust charges a margin of 5 cents per bushel for handling wheat, the line elevator or favored shippers gets 7 cents per bushel for the same work. It is not at all difficult to see that they can pay more than wheat is worth at some stations and make it up off of farmers at other stations where they are not organized. Therefore, we say, organize at your station and assist the farmers' movement.

Do not contribute to defeat the farmers' movement by patronizing trust members. We want your assistance. We want you to help us make the line elevators and the grain dealers' association, which are only catspaws for the line elevator system, and which are in reality the real arch conspirators of the grain trust system, pay all that grain is worth. We want you to assist us in making them handle grain on the margin or special rates given them by the railroads.

We can do this if farmers will organize at all of the leading grain stations in the State. It is for this reason that we ask farmers to pay a small commission on their local and State associations on grain sold to our competitors so as to support these associations and thereby secure and maintain the best prices for your grain.

The grain trust is basing its hopes on the defeat of our movement on the selfishness or hog spirit of the farmers.

They believe that farmers will not be willing to support the local and central association for the benefit secured through it, and that the whole movement will in this way end in failure.

We feel confident that the farmers are much more intelligent than the line elevator trust and State grain dealers' trust take them to be. We know from our experience with them that they are in earnest in this movement and will stand firmly by their local and central associations. (They will not be lured away by trust tactics nor will they be led away by their hired Hessians.)

They will stand firmly by their own organization, for they know full well if they were to let their own association perish for want of support that the trust would soon return to its old methods of extortion, and the farmer would be left in a hopeless condition. They will encourage and support their own associations, both local and central, and in doing so will protect their own interest and secure and maintain the best market price for their products.

Work Accomplished.

A year ago farmers could scarcely get cars to ship their grain. Now any farmer can get a car. Who did it? The Farmers' Cooperative Grain and Live Stock Association.

A year ago the trusts prevented commission firms and many of the mills from receiving shipments from farmers. The boycott has been removed. Who did it? The Farmers' Cooperative Grain and Live Stock Association.

A year ago the trust charged a margin of 5 cents on wheat and 3 cents on corn. This has been reduced one-half. Who did it? The Farmers' Cooperative Grain and Live Stock Association.

A year ago there was no competition in the local markets. The price was the same at every elevator. To-day at every point where there is a farmers' shipping association the farmers get the full market value for their wheat. Who did it? The Farmers' Cooperative Grain and Live Stock Association.

A year ago the shipper was robbed in weights at Kansas City, which was a loss to the farmer. This has been greatly reduced by the establishment of a board of trade weighmaster. Who did it? The Farmers' Cooperative Grain and Live Stock Association.

What more do you want in one year?

Shares of Stock Placed.

Shares of stock were placed at \$10 each, by the writer, at three meetings held last week. The following at Stafford took one share each: Ralph

The Way That Loses ..Money..

The Old Way. The Hard Way. The Long Way. The Poor Way.

Dairyman.	Milk Hauler.	Skimming Station.	Creamery.	Consumer.
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The Way That Pays.

The New Way. The Short Way. The Easy Way.

Dairyman.	Creamery.	Consumer.
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The road from the Dairyman to the Consumer on the skimming station route is a long, rough, and tedious road. The man that takes it has an expensive trip. For every Ten Dollars realized, there is Six and a half expended. The road from the Dairyman to the Consumer on the new route, the Hand Separator Route, is a short, smooth, and delightful road. The trip is cheap. For every Ten Dollars realized, there is less than One expended. Do you want to reach the consumer by the new route? If so, write to the

BLUE VALLEY CREAMERY CO., ST. JOSEPH, MISSOURI.

Pioneers of the Best Creamery System On Earth.

Dykstra, J. W. Horn, J. C. Buckle, G. W. Anderson, R. L. Milton, W. T. Carlisle, Harvey Crawford, J. N. Groves, and John G. McComb.

The following named, of Lewis, Kans., took shares as follows: R. A. Wolfe, one share; P. A. Ostrander, one share; James F. Malin, one share; J. H. Slobohm, one share; and Lewis Cooperative Grain and Live Stock Association, five shares.

Also M. C. Obee, Darlow, Kans., took one share; and the Darlow Cooperative Grain and Live Stock Association, ten shares.

The following subscribed for stock at St. John, Kans.: T. W. Mosley, one share; S. Pound, one share; R. S. Shank, one share.

Alex Ross, of Clifton, Kans., applied for and paid for one share.

Our association was a year old on May 16.

The Farmers' Grain Association at Stafford, Kans., will be one of the strongest associations in the State when completed.

The Farmers' Association at Athol, Kans., has subscribed for three shares of stock lately, making in all five shares for that association.

The Farmers' Cooperative Grain Association at Macksville has purchased the Youngs Elevator and taken charge of the same. This gives it convenient facilities for handling grain.

The farmers of this State are perfectly able to capitalize their own companies and transact their own business. They can do so if they will stick to true cooperative business principles.

If a local cooperative grain association does not cooperate with other like associations and jointly transact business through a central association, any man who understands the business can easily see that it will either be short lived or will join the grain trust.

All the capital stock of The Farmers' Cooperative Grain and Live Stock Association should be taken at once. Do not stank back and find fault, but help with cash and your influence. Do not imagine that we render you every assistance now that we could if we had plenty of capital.

The Farmers' Cooperative Association at Colby Kansas, subscribed and paid for five shares of stock in the central association. This association is farther west than any other association in the State, but it believes in supporting and aiding its own movement in a substantial way.

The Farmers' Cooperative Association, of Lewis, Kans., made application and paid for five shares of stock in the central association during our visit with them. Also four of their members took

a share each with us. Lewis is away out in the short-grass country, but Lewis farmers want to make our movement a success.

The Farmers' Cooperative Association, of Darlow, Kans., subscribed and paid for ten shares of stock in the central association last week. The Darlow comrades know that it takes money to conduct a successful business and they propose to do as much in the way of financing the central association as any other local association.

If the central association owned a few good elevators located in different parts of the State where it could take its low grade wheat and reclean it, thus raising the grade, it would be a great source of profit. This elevator proposition is one of considerable importance and should be freely discussed by the members of the association. Let us consider our own interest without regard to what the other fellow may have to say about it. Pay no attention to the laudation, criticism, and fault finding of the enemy. They are interested more in our failure than they are in our success.

The Grain Trust members have made a combined attack upon James Butler, secretary of the Farmers' Cooperative Grain and Live Stock Association hoping to prejudice the farmers against him and thereby destroy his influence. They will fail. We know Mr. Butler personally and we are positive he is entitled to the support of every honest farmer and true cooperator in Kansas. No more honest, faithful, energetic, uncompromising leader can be found in this State. Intelligent, honest farmers everywhere should rally to his defense and stand by him and assist him in the fight he is making for them.—The Kansas Cooperator.

We want the business of every cooperator in Kansas, Oklahoma, and Nebraska and we are going to get it. If we can't get it through your local association then we will get it direct from you. If your local association will not assist us in this fight against the grain trust, will not assist us in securing your rights; will not assist us in securing and

A CONSPIRACY!!

The dairy farmers of Kansas have entered into a conspiracy with the Continental Creamery company to make the best butter and the most butter out of the best cows and the most cows of any state in the Union.

STAY OUT!

Unless you want to get the most for your product. Stay out unless you want to get a big, fat milk check every month. Stay out unless you want Kansas to make a butter record this year that will make the effete East stare with surprise. Stay out unless you want to help make Kansas a land flowing with milk and honey, a better place to live in for yourself and your children,

HOW WE DO IT.

We are paying two and one half cents below highest New York quotations per pound for butter-fat in cream separated and in cans at railroad stations. If we skim, test, weigh, can, ship and assume risk, we charge you the actual cost per pound of butter-fat for doing it. If you are too far from a station we will sell you the best Separator in the market, the DeLaval, on easy terms. Don't stay in the old ruts of past centuries.

GET IN THE BAND WAGON!

The procession of progress is on the move. The farmer who is churning his butter is behind the times. Continental milk checks, once tried, can never be dispensed with. They are like getting money from home. No money comes so easy and it is all "velvet." See our operators or write us.

The Continental Creamery Co.,
Topeka, Kansas.

WHEEL CHAIRS.



All kinds for invalids and cripples. Built on new and practical methods at moderate prices. Full particulars on application. . . .

RECLINING CHAIRS... FOR LIBRARY OR SICK-ROOM.

Every known position for comfort. Write us for Free Illus. Catalog Mention this paper. STEVENS CHAIR CO. 405 6 St. Pittsburg, Pa.



reaching the best markets and best rates, which can be reached only by securing a large volume of business.

If you believe in cooperation and belong to a local association that refuses to practice what it preaches—refuses to join with the majority of like associations in furthering your interest by cooperation through a central organization and which does not transact its business through the parent association you had better begin to inquire "where you are at."

Publisher's Paragraphs.

One of the standard proprietary remedies of America is Mrs. Winslow's Soothing Syrup advertised regularly in the Kansas Farmer.

The most attractive announcement in this week's paper is to be found on page 609. Gavitt's prize offer of \$550 should attract the attention of our younger readers.

The Continental Creamery Company report as follows: The milk season began a little late this year but when the rains came the grass and the cows began to make up for lost time.

Perhaps the largest manufacturing establishment in the United States for first class mills and presses is the Whitman Agricultural Company, of St. Louis, who regularly advertise hay presses, cider-mills, feed mills, etc., in the Kansas Farmer.

The Hart Pioneer Nurseries, of Fort Scott, one of the oldest institutions of its kind in this section of the country, has been sold to the newly organized nursery company composed of A. B. Combs, Sheriff Brooks, and Major George Combs.

"An Early Coronation Sermon," by George H. Davenport, is the title of a timely and interesting article in the New England Magazine for June.

Given Satisfaction for Years.

Ardsley-on-the-Hudson, New York, March 14, 1902. Dr. J. B. Kendall Company, Enosburg Falls, Vt.

Gentlemen:—Kindly send me, by return mail, your book entitled "A Treatise on the Horse and His Diseases," for which I enclose a 2-cent stamp, as required by your advertisement or wrapper on your spavin cure.

Christian Scientists.

meeting in Boston, June 15 to 18. It will be to your advantage to obtain rates applying over Nickel Plate Road before purchasing elsewhere.

The Optimist.

When I am in a dentist's chair I do not raise a fuss, I thank my lucky stars I'm not a hippopotamus.

When baggagemen destroy my trunk I do not rave and rant, But mentally I say I'm glad I'm not an elephant.

When my new shoes are hard and tight And painfully impede My walk, I smile and think 'Tis well I'm not a centipede.

Special Want Column.

"Wanted," "For Sale," "For Exchange," and small or special advertisements for short time will be inserted in this column, without display for 10 cents per line of seven words or less, per week.

CATTLE.

FOR SALE—26 head of young cattle. A. Vining, Narka, Kans.

FOR EXCHANGE—Twelve head of thoroughbred Shorthorn cows and heifers, all dark red; will furnish pedigree with each animal.

FOR SALE—Ten registered Hereford bulls, \$100 each; sired by imported Southington, Lord Pretty Face, Young Kansas Lad, Leaurate; 1 to 2 years old.

RED POLL BULLS FOR SALE—From 7 to 11 months old. D. F. Van Buskirk, Blue Mound, Kans.

D. P. NORTON, Duniap, Kansas, has a few young bulls, by British Lion, fit for service the coming season.

TEN REGISTERED HEREFORD BULLS FOR SALE—\$75 to \$125; 3 unregistered thoroughbred bulls, \$50 to \$80; 60 grade cows, \$35 to \$50; with calves.

FOR SALE—My entire herd of high-grade Hereford cows and heifers; also one registered Hereford bull 13 months old.

FIVE HEREFORD BULLS FOR SALE—Never used in a herd, they are in fine fix, at a bargain for cowmen.

FOR SALE—Six good Shorthorn bulls, four of them straight Cruickshanks; prices reasonable; now is your chance to get a good individual.

FOR SALE—Three pure Cruickshank-Shorthorn bulls. Call on or address H. W. McAfee, Topeka, Kans.

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

MISCELLANEOUS.

FOR SALE BEES—Three strong colonies in m. c. f. hives, in excellent condition. Price, \$4.00.

IF YOU HAVE small fruit to gather, send for a set of patent, steel, thumb-nail Stem Cutters, 25 cents post-paid. Special prices to dealers and agents.

FOR SALE—Five hundred Angoras with registered bucks. Three hundred-acre ranch, excellent water and climate; price \$2,000.

GAS-RELEASING BIT—Write to Wilbern Bush 711 North Market Street, Wichita, Kans., and ask for his circulars showing his great invention for preventing bloating in dairy cattle and other stock.

DR. CLARK'S Instant Relief and Absolute Catarrh Cure. One month's treatment 50 cents. J. C. Whitaker Medical Co., 375 Oak Street, Chicago, Ill.

FOR SALE—20 iron rain-water tanks at \$1.60. 111 East 6th St., Topeka, Kans.

WANTED—Pasture for cattle, or will lease a good pasture. E. W. Melville, Eudora, Kans.

COLLIE PUPPIES for sale, 3 1/2 months old, unexcelled in breeding, and individual qualities, \$6 and \$4. Address J. W. Babbitt, Hiawatha, Kans.

FOR SALE CHEAP—Pedigreed Scotch Collie pups. W. H. Richards, V. S., Emporia, Kans.

WOOL WANTED—Will pay highest market price for wool. Sacks for sale. Topeka Woolen Mill Co., Oakland, Kans.

THE BEST CUP OF COFFEE and plenty of good things to eat. Farmers' trade a specialty. Come and get something good. The Two Minute Restaurant, 532 Kansas Ave., Topeka, Kans.

FOR SALE—Feed mills and scales. We have 2 No. 1 Blue Valley mills, one 600-pound platform scale, one family scale, and 15 Clover Leaf house scales, which we wish to close out cheap.

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

HORSES AND MULES.

FOR SALE—Shetland ponies. Address J. T. Marshall, Concordia, Kans.

FOR SALE—3-year-old Percheron Stallion, Favorite, dark bay, blocky, and heavy boned, will make a heavy horse; has proved sure; price \$400.

FOR SALE—One Clyde stallion, 3 years old May 14, weight 1,610 an extra good horse, fine style and action; will sell him right if sold soon.

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

SHEEP.

FOR SALE—100 head of well-bred Shropshire ewes. Reason lack of pasture. Correspondence solicited. B. A. Sponseller, Emporia, Kans.

WANTED—To get pasture for 400 grade Shropshire sheep, or put them out on shares, or sell them. Would give time on part. W. W. Cook, Russell, Kans.

POULTRY.

FOR SALE—World's greatest laying strain, Black Minorcas, beautiful in shape, color, and comb; grand winter layers. Eggs, \$1.50 per 15. Address George Kern, 817 Osage St., Leavenworth, Kans.

SEEDS AND PLANTS.

SOY BEANS FOR SALE—Early yellow variety; will grow; \$2.25 per bushel; sacks free. S. Segrist, Avoca, Kans.

CANE-SEED—KAFIR-CORN—Choice white Kafir, choice cane-seed. All home-grown, thoroughly tested and warranted to grow; \$2 per 100 lbs., sacked in jute sacks f. o. b. Kremlin, O. T. M. T. Williams & Co.

MAMOTH YELLOW SUI-Y-BEANS—Fine seed, best variety to grow; price, \$2.25 per bushel. Wm Bowly, Lone Elm, Kans.

SEED CORN FOR SALE—Choice white. Grown in Kaw Valley. Crops of 1900 and 1901 tipped, shelled, and sacked \$1.25 per bushel f. o. b. J. F. Godwin, North Topeka, Kans.

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

FARMS AND RANCHES.

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The Stray List.

Week Ending May 29.

Montgomery County—D. S. James, Clerk.

MARES—Taken up by J. H. Brinker, five miles southeast of Coffeyville, in Cherokee tp., (P. O. Coffeyville), May 12, 1902, one iron grey mare, 5 or 6 years old, weight 800 or 900 pounds, branded half moon and double bar underneath brand on left hip; valued at \$20.

Week Ending June 5.

Neosho County—B. W. Garvin, Clerk.

PONY—Taken up by J. R. Pierce, in Mission tp., 4 miles southwest of St. Paul, May 1, 1902, one sorrel mare pony, white spot in forehead, hind feet white, branded "E" on left shoulder; valued at \$25.

MARE—Taken up by M. M. Fresh, in Fairview tp. (P. O. Potwin), one dark bay mare, both hind feet white, branded on left hip, about 3 years old, weight about 700 pounds.

MONTGOMERY COUNTY—D. S. James, Clerk.

HORSE—Taken up by M. H. Ross, in Caney tp. (P. O. Havana), May 11, 1902, one black horse, 9 years old.

Wayside Herd of Registered HEREFORDS.

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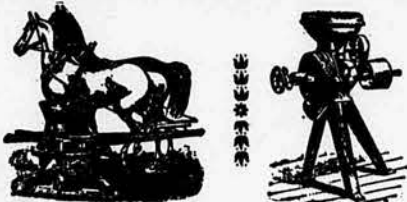
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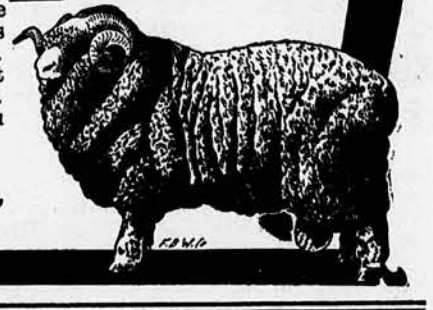
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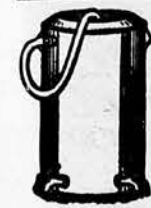
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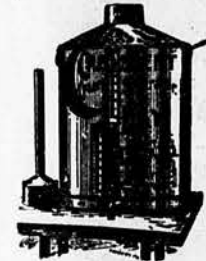
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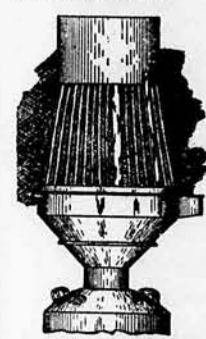
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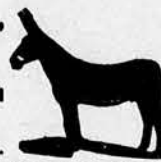
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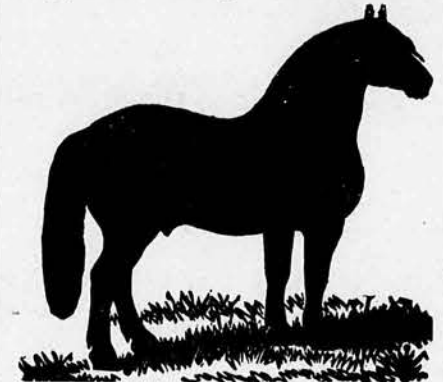
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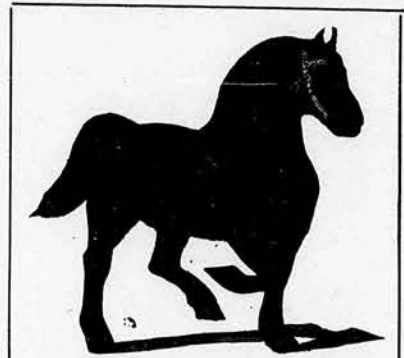
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