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Agricultural Matters.

THE COMPOSITION OF MAIZE (INDIAN CORN) AND SOME OF ITS PRINCIPAL PRODUCTS.

By H. W. Wiley, Chemist United States Department of Agriculture.

Maize is the most important crop cultivated in the United States. The average area in maize for the ten years ended December 31, 1897, was 75,061,112 acres (30,376,815.86 hectares), and the average production of the grain of maize for the same period was 1,844,951,786 bushels (650,157,446.52 hectoliters).

Maize is not only valuable for the grain which it produces, but the fodder, stalk or stover has a high commercial value as feeding material and for other purposes. It is true that the greater part of the fodder at the present time is left upon the fields to be burned before the planting of the next crop. In the older parts of the country, however, the fodder is now carefully preserved and is found to be equally as valuable as the grain when prepared and fed in the proper manner. The purpose of this paper is to present, in a condensed form, some of the results of the extensive chemical examinations which have been made in the laboratory of the Department of Agriculture at Washington on the composition of Indian corn in its entirety, and especially in relation to some of its principal products.

In all parts of the country maize forms a considerable percentage of the food of our people, and especially is this true in the Southern States, where Indian corn bread, among parts of the population, is the chief bread food used. In various other forms, as hasty pudding (mush) and other methods of preparation, it enters largely into our dietaries. Although important as a human food, the principal use of maize is as a feed for live stock; and it is also used for the manufacture of starch, of glucose, and of whisky and alcohol. On account of its great importance, a somewhat careful study of its composition is justifiable.

COMPOSITION OF THE GRAINS.

For the typical samples of grain grown in the United States and collected at the World's Columbian Exposition, at Chicago, the following represents the constitution:

Weight of 100 kernels, grams.....	38.92
Moisture, per cent.....	10.93
Proteids, per cent.....	9.88
Fat and oil, per cent.....	4.17
Crude fiber, per cent.....	1.71
Ash, per cent.....	1.36
Carbohydrates other than crude fiber, per cent.....	71.95

Comparing the means of the analyses of American samples with those of foreign origin, we are struck with the excess of moisture in the foreign samples. In those from southwestern Europe are found 4 per cent. more moisture than in samples of domestic origin. Among the samples grown in the United States, those in the Middle West, viz., Iowa, Missouri, Nebraska, etc., contain the largest amount of moisture, while those grown in the arid region have the smallest amount. Of the domestic samples exhibited at the World's Fair it was found that the mean content of water was 10.93 per cent., nearly 1 per cent. higher than the mean of former analyses of the department. The weight of 100 kernels was a little more than that before found, and this is not a surprising fact, inasmuch as it would be natural for exhibitors to send not only the largest ears, but also the largest grains to the exposition. The percentage of proteids in the domestic World's Fair samples was surprisingly low, being about 0.75 per cent. less than was found in the samples examined a few years ago. On the other hand, the percentage of carbohydrates was about one point higher than that obtained in the former work.

The typical American maize has approximately the following composition:

Weight of 100 kernels, grams.....	38.00
Moisture, per cent.....	10.75
Proteids, per cent.....	10.90
Oil, per cent.....	4.25
Crude fiber, per cent.....	1.75
Ash, per cent.....	1.50
Carbohydrates other than crude fiber, per cent.....	71.75

VARIATIONS IN COMPOSITION.

Certain special varieties of early maturing maize, or sweet maize intended for table use when in the partially ripe state, are characterized by the large quantity of sugar which they contain, especially when the starch is still soft. In the earlier investigations of the department it was noticed that the percentage of crude fiber was somewhat larger in varieties grown in the West and South than in those from the North and East, and, further, that in samples grown on the Pacific coast there was a slight deficiency of proteids. Further

investigations, however, would be necessary to determine whether or not this apparent increase in fiber be due to the accidental constitution of the sample or to the real influence of the soil and climate. It is reasonable to expect that in some slowly maturing varieties, such as would grow in the Southwest and South, the percentage of fiber in the grain would be greater than in the more rapidly maturing varieties growing in the East and North.

In the case of sugar or sweet corn Richardson found the mean composition of nineteen samples to be the following:

	Per cent.
Moisture.....	8.44
Ether extract.....	8.57
Crude fiber.....	2.82
Ash.....	1.97
Proteids.....	11.48
Carbohydrates, other than fiber.....	66.72

This analysis shows that the sweet corn has a considerably larger percentage of oil than the field varieties, and there is a larger percentage of sugar in the carbohydrates.

A study of all the analyses which have been made in this division reveals the fact that maize is one of the most invariable of the cereals, maintaining under the most different climatic conditions a most remarkable uniformity of composition, and varying chiefly in the size, color, and general physical characteristics of its kernels rather than in their composition.

COMPOSITION OF FINE MEAL.

The composition of the ordinary Indian-corn meal produced by grinding the whole grain and removing only the coarser bran is, as has already been said, practically that of the whole grain itself. Analyses of the refined Indian-corn flours show that they differ chiefly from the whole grain in having a smaller content of fat, fiber, and proteids and a correspondingly higher content of carbohydrates. The low content of proteids is due to the fact that the germ and the finer envelopes are rich in proteid matter and are removed in the process of milling. The low content of oil is due, of course, to the fact that the germ has been extracted. The content of fiber, while low compared with the whole grain, is high compared with a high-grade wheat flour.

A description of the samples analyzed and their composition follows:

Composition and Description of Indian Corn Flours.

[Purchased for United States Army by Maj. H. G. Sharpe, St. Louis, Mo.]

Serial No.	Moisture.	Proteids. N x 6.25	Ether extract.	Ash.	Crude fiber.	Carbo-hydr'ts.	Calculated calories of combustion.	Ascertained calories.	Description.
15958.....	12.66	6.94	1.91	0.52	0.63	78.67	3,827.3	3,840	"Best."
15959.....	12.05	8.50	1.76	0.83	1.17	76.86	3,895.1	3,898	"Topeka."
15960.....	13.01	5.94	1.02	0.47	0.80	79.56	3,787.9	3,912	"Decatur."
Average..	12.57	7.13	1.33	0.61	0.87	78.36	3,836.8	3,883.3	

RELATIVE NUTRITIVE PROPERTIES OF WHEAT AND MAIZE.

There is a widespread opinion that the products of Indian corn are less digestible and less nutritious than those from wheat. This opinion, it appears, has no justification, either from the chemical composition of the two classes of bodies or from recorded digestive and nutritive experiments. A study of the analytical data of the whole grain shows that, in so far as actual nutrients are concerned, the maize is fully as nutritious as wheat. The ash content of maize and its products is probably not quite so high as that of wheat, and there is, therefore, a slight deficiency of the mineral foods employed in the nourishment of the body. Inasmuch, however, as the cereals contain an excess of mineral matters above the needs of the body, this slight deficiency is of no consequence. In respect of its content of fat, Indian corn and its products easily take precedence of all the other cereals, with the exception of hulled oats. In round numbers, it contains twice as much fat or oil as wheat, three times as much as rye, twice as much as barley, and two-thirds as much as hulled oats. In regard to digestible carbohydrates, that is, starch, sugar, dextrin, and digestible fiber, it possesses a higher content than hulled oats, almost the same as wheat, and slightly less than rye or barley. Comparing the content of nitrogenous matters with that of other cereals, it is found that the first place must be awarded to oats, especially if they have been hulled. Indian corn, however, has nearly the same quantity of proteid matter as the other leading cereals, oats excepted.

EXPERIMENTS IN FEEDING MAIZE AND WHEAT.

In regard to the digestibility of Indian corn and wheat, it must be admitted that a larger amount of expe-

rience has accumulated with Indian corn than with wheat. The low price of wheat in the last few years has, however, directed a considerable amount of attention to the use of that cereal instead of Indian corn in the feeding of animals. The data which have been obtained in this country, secured from comparative feeding experiments, are not always uniform. In some instances it has been found that, pound for pound, wheat gave a slightly better result in feeding animals than Indian corn, while in others the preference is given by the experimenter to Indian corn. In experiments made at the South Dakota Station (Bulletin 38) pigs were fed with different cereals, among others with ground Indian corn and ground wheat. The comparative results obtained are as follows:

Summarized Results of Experiments With Pigs

Kind of cereal.	Weight of lot at beginning.	Average daily gain per pig.	Total gr'n consumed by lot.	Grain eat'n per pound of gain.	Average gain.		Price realized per bushel of grain.	Shrinkage in dressing.
					Per 100 pounds of grain.	Per bushel of grain.		
	Pounds.	Pounds.	Pounds.	Pounds.	Pounds.	Pounds.	Cents.	Pr. cent.
Lot 3, ground corn ..	191	1.40	1,159	4.58	21.83	12.22	60.00	14.
Lot 4, ground wheat	205	1.32	1,144	4.81	20.79	12.49	58.39	16.

In the data obtained in this experiment the Indian corn, pound for pound, was found to give the better results in every respect.

COMPARATIVE ASSIMILATION OF WHEAT AND MAIZE.

The comparative digestibility of wheat and Indian corn has been studied in the Minnesota Station (Bulletin No. 36). The data obtained, with the exception of the digestibility of the ash, are as follows:

Digestion coefficients of wheat and other grains.

Constituents.	Cracked wheat.	Cracked corn.
Dry matter.....	82	90
Proteids.....	80	90
Ether extract.....	70	78
Crude fiber.....	60	48
Nitrogen-free extract....	83	94

From these data it is seen that the wheat was slightly less digestible than the Indian corn. From a study of the data at the Minnesota Station it may be stated that when corn and wheat are both selling at 50 cents per bushel, the

most the same for both. Calculated on the market price of wheat and Indian corn, it cost \$4.01 to produce 100 pounds' increase with wheat, and \$2.85 to produce the same increase with Indian corn.

Carefully weighing all the reliable evidence at hand, the conclusion is inevitable that from the point of view of chemical composition, of digestibility, and of nutritive value Indian corn with its products, pound for pound, is fully equivalent to wheat. In the case of food for man, which this bulletin particularly has to consider, there must be taken into account the additional element of palatability. It is evident that in the case of two given foods of almost the same chemical composition, and of equal digestibility, the more palatable will be the more valuable food for man.

In regard to palatability, as has already been mentioned, there is the widest difference of opinion. European writers on dietetics uniformly condemn Indian corn and its products as being unfit for food for man. On the other hand, the ample experience of our own country shows that it is an extremely palatable food, as well as nutritious, and a large part of our population prefer it, from a gustatory point of view, to wheat. It must be admitted, therefore, that in respect of palatability usage is an important factor, and it is evident that other nations, when accustomed to the use of Indian corn and its products as a food for man, would find it equally as palatable as it is found to be in the United States.

BREAD FROM MAIZE MEAL.

Bread made from Indian corn is a popular diet in the southern part of the United States, although it is not used very extensively in the northern part nor in the western portions where Indian corn is most extensively grown. The best and most palatable bread made from Indian corn are those made from the coarsely ground meal, which is simply sifted fine enough to remove the coarser parts of the bran. The meal is mixed with a little salt and water and baked into hard, unleavened cakes. In some of the more primitive methods making this bread the dough is spread on an oak board and baked by exposure to the radiating heat of a wood fire. This kind of bread is known as johnnycake, probably a corruption of journey cake. In some parts of the North the term johnnycake is applied to a thin corn bread made of a mixture of corn meal, milk, eggs, salt, and baking powder. Indian-corn bread is sometimes leavened by a fermentation with yeast baked in iron vessels, and is in the form known as pone. It is quite frequently leavened with baking powder and the corn meal is sometimes mixed with wheat flour, either for domestic use or with fraudulent intent.

RATIO OF NITROGENOUS TO OTHER DIGESTIBLE CONSTITUENTS.

From a study of the composition of the typical maize, as deduced by the examination of hundreds of samples of the division of chemistry, it is seen that the ratio of the proteids to other digestible matters (namely, carbohydrates, fat x 2.25) is about as 10 to 80, or 1 to 8. This is a somewhat wide ratio as determined by the ordinary rules of nutrition. When it is considered, however, that if we exclude the fat, which is the most digestible of the constituents of the maize, the ratio as given above, 1 to 7, it is seen that there is practically no objection, from a nutritive point of view, to the consumption of maize food for man or beast.

Experience is also a factor of some value in this connection. Attention has already been called to the fact that the manual labor of the southern part of the United States is done almost exclusively on a diet of Indian-corn bread and fat pork. These produce a ratio between the protein and other nutrients even larger than the one given above. And yet with this food the most severe manual labor is performed in a climate which is excessively trying to the laborer on account of its intense heat. It should also be remembered, as shown in the data given on the relative digestibility of the protein in the Indian corn and in wheat, that in many instances has been found that protein in Indian corn has the larger percentage of digestible constituents. Further, it should

50 cents will purchase the same amount of digestible dry matter in both instances. In the case of wheat, however, the purchaser will obtain 2½ pounds more of digestible protein, and in the case of Indian corn 2½ pounds more of digestible carbohydrates. The quantity of heat generated by the food in each case is almost exactly the same. The result of these experiments, therefore, is to establish with certainty that the digestible coefficient of Indian corn is not inferior, but, if there be any difference, superior to that of wheat. Data of the kind mentioned above, based on carefully controlled feeding experiments, checked at every point by chemical analyses, are evidently of far greater value than those which are reported by the Kansas State Board of Agriculture for the quarter ending September 30, 1894, where circulars were sent to prominent growers of stock and reports of their observations on the comparative value of wheat and Indian corn were tabulated. As a result of the preponderance of testimony given by these circulars, it was concluded that wheat was superior to Indian corn, pound for pound, as a food for animals. These reports, however, were based merely upon observation, and were not controlled in any way by weighing or chemical analysis. The conclusion, therefore, is not valuable as evidence when contrasted with that of the feeding experiments at the Minnesota Station above mentioned.

COMPARATIVE PRODUCTION OF PORK FROM WHEAT AND MAIZE.

In experiments made at the Ohio State University, collected in The Experiment Station Record, Vol. 6, page 466, it was found that a bushel of wheat produced 13.7 pounds of pork, while a bushel of corn made 12.3 pounds. When the difference of weight between a bushel of wheat and a bushel of corn is considered, the actual gain, it is seen, is al-

remembered that in the data above stated the ratio is given upon the whole of the constituents as determined by chemical analysis, and not upon those only which are digestible, which is the usual method for calculating the proteo-carbohydrate ratio.

Judged, therefore, by chemical composition, digestibility, and experience, it is seen that the Indian corn contains a sufficient amount of protein to make a well-balanced ration for those engaged in manual labor. It is true that a ration made of Indian corn is more fattening than one based upon oats, rye, or wheat, but in case of manual labor this tendency to the accumulation of fat is corrected, and no trouble arises in that direction.

It appears that the fat materials of Indian corn are easily digested, well assimilated, and practically consumed without waste in maintaining a high degree of muscular exertion. Even should we grant a slight deficiency in the ration of corn bread due to the low content of proteid matter, it is certain that this defect would be remedied by the development of a variety of maize richer in proteid matter. This could be easily accomplished by pursuing the system of development which was used by this division in increasing the content of sugar in sorghum. Properly conducted experimental work covering a period of ten years would result in the development of a variety of Indian corn with a higher and reasonably constant content of proteid matter. This development could be secured by taking advantage of natural and cultural conditions, combined with chemical studies of the grains, selecting for seeds those which show marked increments in the content of the proteid matter.

MAIZE OIL.

In the manufacture of starch and glucose and in some varieties of maize meal the germ of the grain, which contains the larger percentage of oil, is extracted. From this germ a valuable oil is expressed, while the residue forms a food material as valuable in every respect as that derived by the expression of oil from ordinary oily seeds. Maize oil is easily purified and forms a light, amber-colored, perfectly transparent liquid, without rancidity and of a pleasant taste. It has been used to some extent as a salad oil, and doubtless will in the future be very greatly employed for that purpose. It can also be used for lubricating delicate machinery, has fine burning properties, and can be used as a lamp oil. The coarser and less pure oil makes a valuable soap.

In general, it may be said that maize oil has a commercial value, gallon for gallon, quite equal to the oil derived from cotton seeds.

Tame Grass and Eastern Weeds.

Editor Kansas Farmer:—The Western farmer has troubles of his own, also by his indifference or carelessness he carries a load of specially prepared and concentrated troubles from the East. What I refer to is the multitude of bad weeds that are brought in with tame grass seed from the Eastern States.

There are three ways to keep these weeds out: First, buy clean seed—practically impossible. Second, pick out the weeds after they come up and before they go to seed—also almost an impossibility. Third, don't buy tame grass seed from the East or any other infested locality. Enforce a strict quarantine; just like you would against Texas fever. This, of course, shuts out most of the tame grass seed, but that is just what the writer would ask. "But," you ask, "can't we raise tame grass?" For an answer, we say "No," and for a text suggest, "Go to the ant, thou sluggard; learn her ways and be wise." The agricultural ant of the Western plains raises a crop of wild grass. "Go thou and do likewise." Prairie hay is much richer and better than tame hay and the yield is as good under equal conditions. Chemists and botanists all over the land recommend the wild grass instead of the tame, and our Kansas Experiment Station is now trying the best of the native species, many of which when separated from the prairie mixture show off to a better advantage than many tame grasses. Or, if you want something to seed down an already cultivated field take alfalfa.

"But," you ask, "can't the tame grass be raised without regard to the weeds?" Try it and see. If you have tried it and were successful, then you simply had good luck or good seed. All the tame grass fields in this part of the West, at least, have weeds in them; some have some grass, the rest just weeds. Mats of bindweed (*Convolvulus arvensis*) spread away in undisturbed repose over the level acres, their morning-glory-like flowers rivaling the ox-eye

daisies (*Chrysanthemum leucanthemum*) that are fighting along with them for the ground the grass should cover. Bearded plantain (*Plantago aristata*) and rib grass (*Plantago lanceolata*) are rarely absent and are very bad pests when once started. The list is long and varies with the source of the seed. In most fields, though, can be found many of the following: Daisy fleabane (*Eragrostis divaricatus*), pepper grasses (*Lepidium virginicum* and *Draba*), bur clover (*Medicago lupulina*), chicory (*Cichorium intybus*), etc. These are all hard to eradicate. Mow, rake and burn and in a week or two most of the list will have bloomed again and set seed; plow the field up and mahu will live in cultivated ground; pasture it and the cattle will eat the grass and leave the weeds. But this is all an old story.

"Better let good enough alone" and be content with prairie grass and alfalfa, rather than run the risk of getting a good stand of daisies and bind-weed. They may be all right flowers but they don't make good hay. N. Manhattan, Kas.

The Stock Interest.

THOROUGHBRED STOCK SALES.

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

AUGUST 16—H. W. Cheney, Clifton George, E. E. Axline and H. C. Snyder, Poland-Chinas, Fough's sale barn, Kansas City.
AUGUST 24—Henry Comstock & Sons, Poland-Chinas, Cheney, Kas.
SEPTEMBER 3—Hornaday, Young and Turley, Poland-Chinas, Fort Scott, Kas.

WEANING PIGS.

The highest success in growing pigs requires care as well as suitable feed and breeding. There is no more critical period in the life of the young animal than when it is deprived of its mother's milk. This is nature's ration that so exactly meets the wants of the young animal that the problem of furnishing a substitute for it is most important and difficult. So long as the young things have an ample supply of milk from a dam that is in good health and well fed, we find the growth is rapid and the form shows a harmonious growth of muscle and bone. As soon as the supply of mother's milk falls below the amount required to meet the increasing demand of the growing pigs, we note a change in the hair, the form and proportions of the pigs, showing that the supply of feed from the dam and other sources is not complete in kind or quantity. The problem of the skillful feeder now is to supplement the mother's milk with such food as will insure natural growth and not overtax the stomach or digestive powers of the pigs. They have been in the habit of taking their milk warm and often. But we cannot afford the time or expense to imitate the dam's supply, so we can only approximate and take the hint of supplying foods as near like the mother's milk as we can and as often as convenient. Most of us can feed three times a day and in such quantity as will be eaten up clean. The stomach is easily deranged by too much feed or by that which is unsound or fermented. It is easier to prevent derangement of the stomach than to correct it. If a little judgment is used in always having the troughs clean, free from filth or stale, left-over, sour feed, and the feed is sound and sweet, we can gradually bring the pigs onto such feed as the farm supplies. Almost every farm has at this season of the year a surplus of skim-milk. This of itself is not a complete substitute for sow's milk, but if we add to it corn meal or wheat middlings, we have a ration that so nearly meets the wants of the growing pigs that if fed sweet and sound in clean troughs and in judicious amounts we will find the feed acceptable and not followed by derangement of appetite or digestion. One great point in pig feeding is to never overtax the stomach and to keep a keen appetite. If the stomach is kept in good condition it will gain strength as the feed is increased and the regular healthful growth follows. There are thousands of pigs injured before and after weaning time by disregard of the common laws of health. Because old sows with strong digestion are not sickened at once with a feed of sour swill from a neglected and filthy swill barrel it does not follow that such stuff is best for them or that the pigs can safely eat what the sows can get away with. A little carelessness in hot weather when the milk dumped into an old swill barrel is the beginning of derangement of the stomachs of pigs that lowers their power of assimilation and invites disease. While the milk fed sweet, in moderate amount, and with sound corn

meal, barley meal, oat meal or wheat middlings makes a valuable feed, the same articles may be converted into an unwholesome mess by the addition of a ferment from the swill barrel that takes away all profit and the pigs become scrawny and thin; so while the cost of their feed is greater, the growth is less. It is a mistake, too, to give pigs all the skim-milk they will eat. The best growth follows feeding from three to four pounds of skim-milk sweet, with a pound of corn meal or wheat middlings. If a little care is exercised even pigs before weaning can be brought to eat sour milk moderately without injury. At this season of the year it is impossible for the farmer to keep milk from souring and it is better to gradually bring the pigs up to the use of it. Scours, showing indigestion, will follow a sudden change from sweet to sour milk. The term sour is one of wide range, as there are so many degrees of acidity in milk and sour swill. It is so easy to let the ferment of a swill-barrel pass the danger line that many have taken the extreme ground of claiming that neither milk nor swill made from mill feeds should ever be allowed to sour before feeding. Possibly the safest rule is to never feed sour milk or sour swill to pigs, but if this rule is adhered to there must oftentimes be a waste of milk, since in stormy warm weather milk will sour before the cream rises. Fortunately the extremist is wrong and there is no need of wasting an ounce of milk if the feeder will use a little judgment. Where we have hired help to do the feeding we find it necessary to compel the cleaning of barrel and buckets often and not allow an accumulation of old swill. If the barrel and buckets are emptied every day and well cleaned on wash days we find no trouble among the pigs. Slightly fermented milk or swill is as profitable a ration as sweet milk or freshly mixed swill. But the latter is perhaps a little safer in the hands of inexperienced and heedless feeders. So valuable do we consider skim-milk that we find a quart of it to a pint of meal or middlings is a better ration than mere milk. Before weaning we find the sows can furnish a better supply of milk and keep stronger if they have a quart or two of milk with their mill feed. After the pigs are six to eight weeks old we begin to lessen the milk allowed the sows, and increase the amount allowed the pigs at their side table. The change from dependence on the sow to other feed can be so gradual that there need be no shrinking or derangement in digestion of our little pork-makers. We look at them as little machines to be kept in good working order so long as there is a grist to grind.—A Veteran Swine Grower.

Hogs On Alfalfa.

The hogs which I sold on the Kansas City market May 26 at \$4.37½ were (in connection with many others which we raise on the ranch here) of the Poland-China breed. This car-load was less than one year old. I do not think there was a difference of ten pounds in weight in any of the sixty hogs comprising the car-load. Incidentally I will state that I never under any circumstances keep the same boar more than one season. I always use a boar coming 2 years old and turn him in with my brood sows January 1. The sows then come in through May and June. About November I sort out my brood sows for the ensuing year. I generally have about 150 to make my selection from and am very particular to take only the very cream of the bunch for breeders. From this you will see that I use young sows, and have them come in at about 1 year old, when their weight is about 300 pounds.

They are turned on alfalfa pasture as soon as it is sufficiently started in the spring, and they thus have an opportunity to get the system toned up before the pigs come. After the pigs come the sows are fed with slop made of skim-milk and shipstuff with a little water added. They are also fed an allowance of ground corn. As soon as the pigs are old enough to eat there is a small opening made in the fence and the pigs are coaxed into an adjoining lot and fed milk and corn meal separate from the others. In this manner the slop is gradually withdrawn from the mothers and given to the pigs. In August they are weaned and the sows fattened and sold, the pigs furnishing the basis for the following year's crop again. The shoats are turned after the steers as soon as the cattle are put on feed in the fall and through the winter they follow the cattle and during this time of course have all they want to eat.

Too much stress cannot be put on the value of alfalfa as a summer feed for hogs. Understanding the value of it as

Swollen Neck

Also Had Great Difficulty With Her Heart—How Cured.

"My daughter had a swollen neck and also heart trouble. After the least exertion she would breathe so hard she could be heard all over the room. She could not sweep the floor or even move her arms without affecting her heart. Her limbs were badly bloated. Her father insisted that she must take Hood's Sarsaparilla, and we gave her about six bottles, when she was cured, and there has been no return of her ailments." MRS. EMMA THOMAS, North Solon, Ohio.

Hood's Sarsaparilla

Is the best—in fact the One True Blood Purifier. Sold by all druggists. \$1; six for \$5.

Hood's Pills easy to buy, easy to take easy to operate. 25c.

I do I would under no circumstances try to raise hogs in large numbers without it. I have 100 acres of it and am sowing more. I think shelled corn and alfalfa hay the greatest combination to feed steers on that I ever struck.—Rice Co. (Kas.) Correspondent Breeder's Gazette.

Horn-flies and Cow-birds.

Editor Kansas Farmer:—I was much interested in Mr. D. P. Norton's plan for a horn-fly trap and your remarks thereon. We used to read much of this horn-fly trap a few years ago, but for the past two or three years I have not heard much of it. In Mr. W. P. Harned's Idlewild herd of Short-horns the horn-flies have not been so bad, either this season or last, as they were in 1896. I don't know just why this is, unless the cow-birds have something to do with it. I used to see those birds away back in the 70's, when, a bare-footed boy, I used to drive up the cows at night on the prairies of Kansas. There would be a small flock of those little grayish or ashen-brown birds with the cows every night. Without ever a word or a note, picking a fly here or there, they would come in perched on the cows' backs, fluttering or hopping from this cow to that. Arrived at the corral, perhaps they would hop down onto the ground to relieve cows of the swarms of flies that always collected on their legs and ankles. They always followed the cows as they grazed through the day. And the cows, of course, would fight flies like mad, but I never saw a cow offer any objection to one of those birds, no matter whether it was perched on her head, back or horns or picking flies from off her ankles. And those birds, one by one, seem to have winged their way far away into oblivion. And then, after a time, came the horn-flies, for I doubt if there was a horn-fly in the State of Kansas twenty years ago.

But at last the little friends of my early days, the silent, unassuming little cow-birds, have reappeared here in central Missouri. I notice, however, they seem to prefer the prairies, and cattle running in heavily-wooded pastures never are accompanied by any of these silent friends.

I am sure if Mr. D. P. Norton's family cow only had one of those little birds perched on her back there would be far less horn-flies there.

And those experiment stations, with their titled professors of ornithology, entomology, etc., I think they should tell us of these birds, that we may encourage them to remain among us. For, while there are perhaps two dozen of those birds here in the herd now, I never saw one of their nests yet, and making all due allowance for the horn-fly traps and the various horn-fly dopes that are on the market or may be discovered by learned professors with ponderous titles and of gentle mien in the wiser days to come, still I think that if ever the horn-fly does go it will be into the craw of the cow-bird. I wonder if they could be raised artificially, like pigeons, and shipped to whoever wanted them.

However, I hope Mr. Norton will build a fly trap and let us know of his success. If he will get one black cow and turn in with his herd I think he will find that at least 50 per cent. of the horn-flies in the herd have gathered on this one cow. Why it is I don't know, but it has been my experience that such is the case. A. T. ELLISON.

Bunceton, Mo., July 18, 1898.

The fact remains that a government bond beats an old stocking as a repository of idle money.

After all the fuss made about it, there will be more engagements at summer resorts this season than in Cuba.

WEEKLY WEATHER-CROP BULLETIN.

Weekly Weather-Crop Bulletin of the Kansas Weather Service, for week ending July 25, 1898, prepared by T. B. Jennings, Section Director:

GENERAL CONDITIONS.

A hot week, generally dry, except in the southeast quarter of the State, where fair to good rains fell, the rainfall being heavy from the northwest part of Coffey to the southeastern part of Johnson, in which area it amounted from three to five inches and over. But little wind except on the 19th, during which some local hot winds occurred in the west. The latter part of the week the air was very warm, moist and quiet, nights especially so.

RESULTS.

EASTERN DIVISION.

The condition of corn has improved greatly in the counties south of the Kaw, except in Allen, Bourbon, Chase and Morris, while north of that river corn is needing rain. Flax harvest is over in the central and southern counties, and threshing begun, showing a good yield; flax is ripening in the northern counties. Prairie hay is progressing, with an abundant yield of fine quality. Grapes are rotting on the vines in several of the counties. Peaches are giving much better promise than early in the season. Plowing for wheat is progressing south of the Kaw river, with ground in good condition.

Allen county.—Flax threshing progressing, yield good; corn all laid by, but it needs rain; haying progressing.

Anderson.—The rains helped corn greatly but more is needed; early corn in roasting-ear, late corn doing well under improved conditions; plowing for wheat being pushed; threshing and haying continue.

Atchison.—Corn is growing rapidly but needs rain, is uneven and three weeks late; late corn, and some early, being damaged by chinch bugs; apples, peaches and pears a small crop and still dropping; flax ripening and looks well; wheat poor quality and small yield; early potatoes a very light crop; grapes rotting badly.

Bourbon.—Corn being cut short every day, needs more rain.

Chase.—No hot winds, but corn suffering from dry weather; second crop of alfalfa being secured in good condition; prairie hay abundant and of fine quality, 25 per

of bugs; threshing from shock stopped by rain; plowing for wheat being pushed, ground in good condition.

Morris.—Warm, dry week; early corn is looking very well, late corn growing slowly; flax good; threshing begun, yield disappointing; plowing for wheat and rye being pushed; ground getting dry.

Neosho.—Harvest is over and threshing in progress, the wheat is very light, oats and flax good; hay in abundance and of good quality; apples and plums short crop, peaches medium crop; the rain put the corn in fine condition.

Osage.—Corn greatly benefited by the rains; pastures have improved; tomatoes a fairly good crop; blackberries a poor yield; peaches medium; apples still falling; haying progressing.

Pottawatomie.—Favorable for haying; corn needs rain badly.

Riley.—Corn needs rain, but is doing well; oats poor; good week for haying.

Shawnee.—Better rains in southern than northern part; showers refreshed everything; corn fields look well, most of the corn is tasseling and silking; cattle doing finely; prairie haying beginning.

Woodson.—Corn better in east part than west; flax being threshed, yield is good; corn now promises a fine yield.

Wyandotte.—Corn growing rapidly, beginning to tassel and silk; hay mostly up; early potatoes a fair crop, are being marketed.

MIDDLE DIVISION.

Corn is suffering for rain, except in the southeastern counties, where a fair rain fell this week. Some local hot winds on Tuesday. Threshing is well nigh universal. The second crop of alfalfa is cut and stacked under favorable conditions. Haying is in progress and a good crop is being secured. Forage crops are still in good condition, but everything needs rain.

Barber.—Good growing weather; corn and all feed-stuff needing rain; no reports of chinch bugs; water in streams plentiful; cattle in fine condition.

Barton.—Corn is suffering from dry weather; threshing in full progress.

Cloud.—Hot, dry week has damaged corn; hot winds killed some corn tassels; alfalfa being cured in excellent condition; pastures needing rain; ground getting too dry to plow; apples dropping.

Cowley.—Corn is now in fine condition, much of it assured; haying in progress, a fine crop; threshing progressing, yield now better than anticipated; fruit crop light but quality good; plowing for fall seeding in progress, ground in fine condition.

Stafford.—Good week for threshing, which is in full progress; corn needing rain; too dry to plow.

Sumner.—Corn in roasting-ear; stacking and threshing in full progress, much shriveled grain; plowing in progress; more rain needed.

Washington.—Corn is suffering from drought; hot winds on Tuesday, killing some tassels; very little plowing, too dry; need rain soon to save the corn; no apples to amount to anything.

WESTERN DIVISION.

Harvest is progressing rapidly, and is fully half over; the yields vary. Corn and forage crops are in good condition in the southeastern counties; in the northwestern counties native grasshoppers are damaging late wheat, barley and oats, also the corn and forage crops to some extent. In the central counties much of the range grass is dry enough to burn. The second alfalfa harvest is progressing in Finney. Cattle are in good condition.

Clark.—The rain refreshed everything; no hot winds; cane and grass look well.

Finney.—Local showers Tuesday with some heavy hail, rest of week dry and hot; forage crops beginning to suffer for rain; harvesting of second crop of alfalfa well advanced; range excellent and cattle taking on flesh rapidly.

Ford.—Corn doing finely; warm, dry week; range grass very good and cattle in fine condition.

Gove.—Hot, dry week, everything needing rain; wheat harvest half over; oats and barley in stack.

Graham.—We are getting fairly in want of a little rain.

Gray.—Dry and hot, with but little wind; forage crops and grass beginning to show drought; harvest not yet completed.

Hamilton.—Hot, dry week, favorable for harvesting, but unfavorable for forage crops outside of irrigation—most of the county is under irrigation.

Ness.—Hot, dry week, rains local; harvest nearly over; corn in roasting-ears, but will be very light; forage crops suffering for rain, late seeding a failure; grass dry enough to burn; early millet being cut, about half a crop; gardens nearly dried up; stock fat.

Norton.—Dry; cool wind from the east most of week; corn not damaged and in fine condition where clean, many fields in tassel; threshing begun, wheat yield small, rye some better.

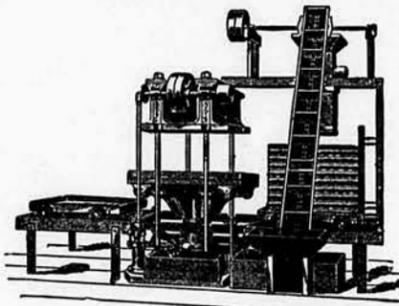
Sherman.—Harvest progressing rapidly, about half done; threshing begun, with good yields in some localities, not so good in others; corn and forage crops need rain; grasshoppers injuring late wheat, and damaging corn in some places.

Thomas.—Hot and dry, but fair week for harvesting; much of the harvesting now done; late oats, barley and wheat being damaged by grasshoppers; corn and range needing rain; cattle doing finely.

Trego.—Wheat harvest well along, yield disappointing; much of the wheat so badly down as to leave enough to seed it; sorghum almost past help; corn still holding out.

Saving Fruit Juices.

There is good money in fruit juices when they are economically and skillfully prepared. Apples, grapes, pears, etc., will quickly rot when they ripen and in a few days will become a total loss on their owner's hands. But the juice of these fruits can be made as valuable as the fruits in their perfect state if extracted in time and it will keep from spoiling practically forever. The latest machine on the market is a small, compact and very strong press, which takes the place of the cumbersome wooden affair erected in bygone days in the orchard, the relics of which are still seen in the orchards of some of the grand old farms in the East. Those big presses were great muscle-developers. In the writer's younger days it took two



husky boys a good ten hours to get out a barrel of cider, stopping frequently in the meantime to drink all we wanted of it.

Now there comes a press on the market so small that it looks like a toy in comparison with the old-fashioned machine, but so strong and convenient that it will far surpass its many predecessors in performance. This new machine is manufactured by J. E. Davis & Co., of 835 Old Colony Building, Chicago. In the very nature of things a cider or wine press must withstand tremendous strains, and if there is any weak spot about it, a break will soon develop.

Mr. Davis, the manufacturer of the new press, has had many years of experience in the business, and he knows exactly what the people want—a machine that can quickly be put in operation, that will do a comparatively large amount of work, that will not break and that is easily cleaned. These are the strong points of the Davis press. It has all the modern improvements; it is made of steel throughout except in a few places where wood is absolutely necessary. The sills and beam, frame holding elevator platforms and leg and the



LAUNCHING THE LIFE-BOAT.

There are greater dangers than those of the angry sea. That dread disease—consumption, kills more men and women in a generation than the sea has swallowed up since the earliest history of navigation.

There is a sure and safe life-boat ever ready to be launched for men and women who suffer from this merciless destroyer. It is Dr. Pierce's Golden Medical Discovery. It cures 98 per cent. of all cases of consumption, bronchitis, asthma, laryngitis, weak lungs, spitting of blood and throat and nasal troubles. It acts directly on the lungs, driving out all impurities and disease germs. It soothes and heals the mucous membranes of the lungs, bronchial tubes, throat and nasal cavities. It restores the lost appetite, makes digestion and assimilation perfect, invigorates the liver, and purifies and enriches the blood. It fills the blood with the life-giving elements of the food that build new and healthy tissues. It tears down, carries off and excretes the diseased and half dead tissues upon which the germs of consumption thrive. It checks the cough and facilitates expectoration until the lungs are thoroughly cleared. It is the great blood-maker and flesh-builder. Unlike cod liver oil, it does not build flabby flesh, but the firm, muscular tissues of health. It does not make corpulent people more corpulent. Thousands have testified to their cure under this great medicine after they were given up by the doctors, and all hope was gone. An honest dealer will not suggest some inferior substitute for the sake of a little extra selfish profit.



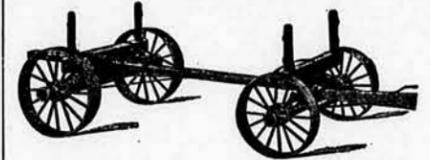
A man or woman who neglects constipation suffers from slow poisoning. Dr. Pierce's Pleasant Pellets cure constipation. One little "Pellet" is a gentle laxative, and two a mild cathartic. All medicine dealers sell them. No other pills are "just as good."

grater are of fine steel and practically unbreakable. No stronger and better press can possibly be put together, and the prices of them are below those generally ruling on the market. Any of our farmer readers with fruit on their lands should send for a circular of the new machine. We can endorse it as all right.

The farmer is admonished to make his farm produce by those who thoroughly understand the art of making men produce, and getting a large share of the production.

Farm Wagon for Only \$19.95.

In order to introduce their Low Metal Wheels with Wide Tires, the Empire Manufacturing Company, Quincy, Ill., have placed upon the market a Farmer's Handy Wagon, sold at the low price of \$19.95. The wagon is only 25 inches high, fitted with 24 and 30 inch wheels with 4 inch tire.



This wagon is made of the best material throughout, and really costs but a trifle more than a set of new wheels and fully guaranteed for one year. Catalogue giving a full description will be mailed upon application by the Empire Manufacturing Co., Quincy, Ill., who also will furnish metal wheels at low prices made any size and width of tire to fit any axle.

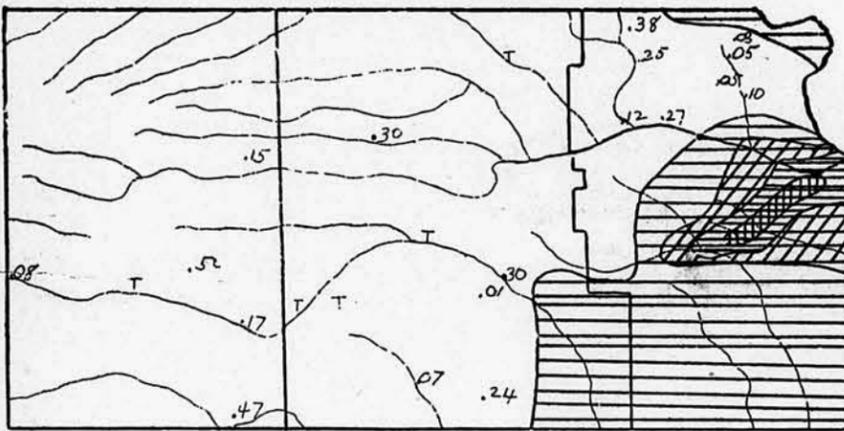
Electric fans to keep you cool are new and timely features of Santa Fe Route dining cars.

Chicago to New York—Quicker Time via Pennsylvania Short Lines.

Under schedule taking effect Sunday, June 26, train No. 20—the Keystone Express, a solid vestibule train of sleeping and dining cars and Pennsylvania standard coaches leaving Chicago Union station daily at 10:30 a. m. will arrive Twenty-third street station, New York city, 2:35 p. m., over one hour quicker than heretofore. For details address H. R. Dering, A. G. P. Agt., 248 South Clark St., Chicago.

Electric fans are cooling. You get them and other seasonable articles in Santa Fe Route dining cars.

P. A. Immel, Camp Point, Ill., is one of the largest shippers of fine driving, coach and carriage horses to the Chicago market. Last spring he bought a pure-bred French Coach stallion with a view to standing him at his home and improving and making more plentiful the supply of fine sorts of horses he buys and ships. Mr. Immel paid \$3,000 for his stallion.



ACTUAL RAINFALL FOR WEEK ENDING JULY 23, 1898.

cent. now in stack; wheat yield unsatisfactory; apples will make a fair crop.

Chautauqua.—A good week for corn, crop greatly improved by the rain.

Cherokee.—Rains stopped threshing latter half of week; everything growing finely; apples short crop; peaches fair crop.

Coffey.—A splendid rain, almost insuring a good crop of early corn and greatly benefiting late corn and all other crops and putting the ground in fine condition for plowing; a fine crop of flax is being stacked.

Crawford.—Corn growing rapidly and promises a good crop, though chinch bugs are in some of it; some wheat and oats still in shock; flax all harvested; plowing for what begun in earnest.

Doniphan.—Wheat not turning out well; corn doing finely; oats good; ground in good condition.

Elk.—Rain came in time to save the corn; some corn injured slightly but a good prospect now for a good crop.

Franklin.—Good rains, greatly benefiting corn, clover and pastures; corn growing nicely; hay mostly cut and cared for; about half the flax cut; oats threshed, light and shabby; some hay stacks scattered by the wind, and stock killed by lightning.

Greenwood.—Rain greatly revived all growing crops; corn and gardens still doing well; threshing in progress, yield light.

Jackson.—Dry weather and bugs are injuring corn; a fine crop of hay being saved in good condition.

Jefferson.—Fine week for corn, with local showers covering most of the county; flax being harvested in good order; apples and peaches still falling badly.

Johnson.—Corn growing rapidly, early corn out of danger; harvest finished except some late flax; flax and blue grass fair yield; rain interrupted threshing; grapes rotting badly; apples, early peaches, and blackberries almost a failure.

Labette.—Corn is doing well but cannot make a full crop; second crop of red clover about ready to cut and is a good crop; pastures good; plowing for wheat progressing, ground in fine condition.

Leavenworth.—Harvest over, threshing progressing, yield less than hoped for; corn improving; early potatoes ripe, good crop; blackberries fair; grapes rotting some; flax good, not gathered; timothy mostly in stack, fair crop; favorable week for work.

Lyon.—All conditions favor a good crop of corn; late corn much benefited by the rain.

Marshall.—Dry, hot week; corn much damaged; wheat and oats all in stack; threshing progressing rapidly, yield fair but below expectations; late potatoes almost a failure.

Montgomery.—Corn doing well but full

Dickinson.—Dry, hot week; prospects for corn growing poorer, some fields gone; rain needed.

Edwards.—Stacking in full progress; hot winds began to tell on vegetation; corn needing rain.

Harper.—Very dry, corn and forage crops suffering for rain; threshing in full progress; too dry for plowing in some portions.

Harvey.—Corn doing fairly well at present; threshing in progress, wheat fair in quality and quantity; hay crop will be good.

McPherson.—A very hot, dry week; corn suffering and must have rain within a few days to make anything, much of it already badly damaged; threshing being pushed, with a fair yield; much plowing has been done but too dry at present; haying progressing.

Marion.—Warm, dry week; corn not suffering materially yet, but rain is needed; oats and wheat yielding in localities better than expected, but low grades.

Mitchell.—Much need of rain, crops will suffer irreparably soon.

Ottawa.—Unfavorable week for everything except stacking and threshing; corn suffering, poorly tended corn about ruined; pastures getting very dry; everything needing rain badly.

Phillips.—Wheat is a good quality and weighs well; corn is needing rain, some pieces already injured by the dry weather and weeds.

Reno.—Hot, dry week; good weather for threshing, which is progressing rapidly; yield of wheat good, quality generally good; corn beginning to suffer seriously, some fields firing in spots; some millet and second crop of alfalfa cut; cane and Kaffir have made a fine growth but are now needing rain badly; apple crop a failure.

Republic.—Hot, dry week with no rain; corn much damaged; threshing is progressing slowly.

Rush.—Harvesting about concluded and threshing progressing, estimates of yields being considerably reduced; no rain for over two weeks and corn and sorghum are needing it.

Russell.—Wheat harvest ended, threshing well under way, yield less than expected; corn suffering for rain, also millet and sorghum.

Saline.—A hot, dry week; corn standing drought well but badly in need of rain; second crop of alfalfa mostly stacked.

Sedgwick.—Corn making fine growth in central and south part, suffering for rain in north part; ground too dry to plow; securing an excellent hay crop.

Smith.—A dry, warm week but no hot winds; some corn, poorly tended, is badly hurt, especially in south part; a good week for threshing and saving small grain.

Sheep Department.

Conducted by J. CLARENCE NORTON, Moran, Kas., to whom all letters should be addressed.

Sheep Talk.

Wool is low, but will go higher and it is a good time to hold on to it.

Sheep are high and likely to be higher, which all helps the man who has a few to sell.

Inquiries are coming in about rams. It is time for breeders who have breeding stock to sell to advertise the fact in this department.

I have just finished putting up forty tons of clover hay off of twelve and one-half acres of land, and the sheep I winter are assured of plenty of roughness with this and thirty-five to forty acres of shredded corn fodder.

An inquirer says he has plenty of feed, lots, sheds, etc., but has no money or sheep, and he wants to know if any commission firms advance money to buy sheep and take paper on the sheep. I presume there are such, and they should advertise in these columns, as there are many others in this same fix.

We recognize the fact that sheep are looking up, and we are very glad to note it. There are not enough sheep on the farms of the West and we need more. Farmers should talk sheep, think sheep, keep and sell them, feed them and learn all that they can about them, for they constitute one of the most profitable branches of the live stock interest.—Wisconsin Farmer.

The Lincoln sheep is said to have the longest fleece of the three English long wool breeds, Lincoln, Leicester and Cotswold. The fleece of the Leicester is of a little shorter staple and has a grayish tinge, while the Lincoln fleece, when clean is silvery white. The Cotswold alone of the three has a heavy foretop. It has a white fleece like the Lincoln, though it is shorter and inclined to be wavy, the Lincoln fleece hanging in flakes or locks. The three are in fineness as follows: Lincoln first, Leicester second and Cotswold third. All are luster wools, as coming in smooth, glossy surface, as compared with the felting wool of the several Merino families. In the trade they are known as the braid wools.

Tom McGill, of Huntley, Mont., who exhibited a fleece at the World's Fair and received a bronze medal and diploma, this year has a fleece that weighs twenty-one pounds. It was shorn from a 4-year-old wether, the get of an Oxford buck and a graded French Merino ewe. It is clean and bright, very free from grease and of excellent staple. Experts pronounce it equal to Australian. C. O. Gruwell, of Yellowstone county, has a fleece that weighs twenty-three pounds. It was shorn from a Merino wether and, while two pounds heavier than the McGill fleece, is greasier and of inferior quality, though above the average. Both fleeces will be exhibited at the Omaha exposition. It is believed that they are the two heaviest and best fleeces ever seen in the State.

The sheep pastures and ranges have been uncommonly good this year, but there is always a time in August when they become poor, and, if grazed hard then, they suffer damage that they will not recover from for several years. The sheep should be allowed the run of the stubble field during this period and they will not only do well, but the pasture receives the much-needed rest and the words in the stubble field receive a check. Those who have large stubble fields will soon be in the great market centers buying up "feeders" which they will start on their stubble fields, so keep an eye on the stubble growth, and when it is good, then will be a good time to send to market such sheep as you do not care to winter. They will find a ready sale then. This period occurs about August 15 to 30 here, and buyers and sellers should be looking around.

A. C. Norwood, of Las Animas, Bent county, Colorado, writes: "The sheep business has prospered greatly here the past decade. In 1880 there were very few sheep in this part of Colorado. At that time sheep were bred for wool alone, feeding for mutton being unknown. It was commenced here about six years ago and has grown from mere nothing to the leading industry in this part of the State. There were 50,000 sheep fed around here last season, mostly lambs. Every one here is now breeding for mutton, it being much more profitable than wool growing. Good profits have been made in the mutton and lamb business here since 1892, and not a cent on wool during that time. By losing sight of wool and breeding for mutton the sheep business here has been brought up from a losing one to the

most profitable industry in the country, a change resulting from the free use of mutton rams on the native or fine wool ewes. The Shropshire, Hampshire Down and Cotswold bucks are now heading most flocks. Our best lambs are raised here on alfalfa and get to be large and heavy. But many are brought here from New Mexico and they feed well but are lighter than the Colorado natives."

Gossip About Stock.

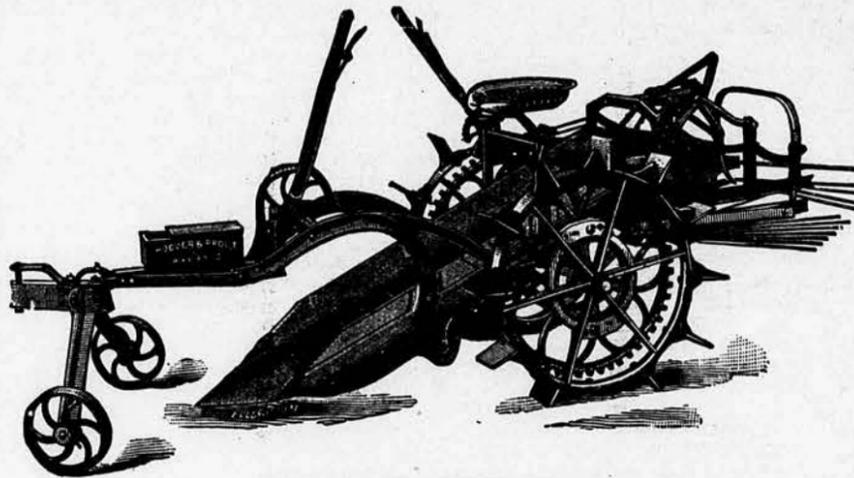
Mr. H. B. Waggoner, of Sni Mills, Mo., has for some years been breeding Poland-Chinas. His herd, headed by Joker Wilkes 2d 20630 S., contains some of the good blood. A draft of over fifty head will be sold at auction, August 19, including Joker Wilkes and Tecumseh U. S. 41791, both of which are illustrated in the catalogue.

C. J. Huggins, Wamego, Kas., reports that the Chester White and Poland-China hogs at his place are in unusual form and his offerings at the present time will surpass anything he has ever been able to offer. He has a number of Poland-China gilts, bred to Trot's Black U. S., for sale at very reasonable figures. Has a number of males of both breeds old enough for service. They are large, low down, heavy-bodied, big-boned, broad-backed fellows.

H. W. McAfee, of Topeka, Kas., sold to Edgar Boice, of Wyoming, the noted Clydesdale stallion, Knight of Scotland 4276. He is one of the largest and best bred stallions in the State. His colts speak louder than words. Also sold him Kansas Boy and Peter and two large work horses and a Jersey cow. They, with a fine Clyde stallion bought of Frank Ricks, were shipped by U. P. railway, Friday, July 22, to Cheyenne, Wyo., to his 155,000 acre ranch, on which are about 2,000 horses and 5,000 cattle. It

\$1,000, or A's Chief by Chief Tecumseh 2d, dam by Trio Chief, out of U. S. Girl by Black U. S. This grand May yearling (illustrated in the catalogue) possesses wonderful smoothness and is an ideal in color and markings, is included in the sale list and should go to some herd of more than ordinary merit. His litter sister possesses similar quality and will doubtless develop into a valuable brood sow. Joe Wilkes, a September boar by Black Joe, dam by Western Wilkes; second dam, Lydia Wilkes, is illustrated in the catalogue. He deserves to pass into good hands and will prove a good investment. Two December boars by Model Boy, dam Black Rose 14 by Heyl's Black U. S. by Black U. S., are a credit to the breeder. A pair of September gilts by Modern Wilkes, dam Fashion Wilkes by Western Wilkes, are of extremely fine quality. Fashion Beauty, their grand-dam, is a massive brood sow of remarkable scale. She might be neater in the head and ear but her evenness of flesh, her depth, length and thickness, combined with her breeding and career as a breeder, make her a notable factor in the offering. The yearling sow, Alta Wilkes by Dandy Wilkes, dam by King Butler, is illustrated, as is also Queen of the Chiefs (yearling). The latter is the choice of her owner, though others who have visited the herd claim equal merit for Alta Wilkes. Queen of the Chiefs is full sister to H. and B.'s Tecumseh, sired by Chief Tecumseh 2d, dam Belle O., the \$700 sow owned by Mr. Heyl, the litter of which sold for \$1,650, three selling at weaning time. Rarely is an offering so uniformly good. It should be remembered that ten sows, bred to Model Boy, sold at Higginville, January 4, at an average of \$105.

There is an institution over in Lathrop, Mo., called the Lathrop bank, of which Clifton George is cashier and Chief I



THE HOOVER POTATO DIGGER.

Manufactured by Hoover, Prout & Co., Avery, Ohio.

it hoped he will soon return, as his visit was a very acceptable one.

The herd of Short-horns owned by T. J. Young, Lathrop, Mo., was inspected by our representative last week. Mr. Young's herd numbers seventy head, principally Phyllises, with some Young Marys, headed by Crown Prince of Oakwood. Twenty-three or more of his get demonstrate his ability as a breeder of uniform, vigorous and beefy calves, all red in color. The development of the bull has been watched with interest, and Mr. Young is especially fortunate in his selection.

From Macomb, Mo., under date of July 11, 1898, a correspondent writes Cannon Chemical Co., St. Louis, Mo., as follows: "Gentlemen:—I have used your Canoline for over two years. I find it good for everything—the best I ever saw. I have killed more than a quart of ticks on horses by putting a teaspoonful in a pint of water and rubbing it on; it killed every one. Have made a dip of it and dipped young turkeys and chickens for lice; it killed the lice but did not hurt the fowls. Nothing equals it. Yours truly, J. A. McMaster."

A Farmer representative last week visited the herd of Poland-Chinas owned by E. E. Axline, of Oak Grove, Mo., whose "ad." appears this week in another column. Few farms are so well equipped and fewer still so well stocked with animals of general merit as this one—the home of Model Boy and Western Wilkes. The herd numbers nearly two hundred head, with all of the leading strains of blood represented. Mr. Axline began breeding Poland-Chinas in 1882, and has by the introduction of good blood, good feed and sound judgment gained for himself a place among the foremost breeders of Poland-Chinas. It is of special interest at this time to call attention to the consignment for the combination sale at Kansas City, August 16. The females are all bred, either to Model Boy, for which Mr. Axline paid

Know president and principal financial backer, and it is always apparent that Mr. George "banks" heavily on this worthy support. After visiting the breeding farm of Mr. George, we wish to make brief mention of some of the leading animals of the herd, which numbers 200 head. There is no Poland-China boar now in service which is held in higher esteem than Chief I Know. His get are extensive prize-winners. In 1895 the Chief I Know herd won sweepstakes at Des Moines, Omaha, Springfield and St. Louis. Not shown in 1896. In 1897 they won at Des Moines, Omaha and Springfield, twenty-one firsts, seven seconds, four thirds and five sweepstakes premiums. The large show herd now being fitted will doubtless win greater honors. Among the more choice sows may be mentioned Lady U. S. (16720), dam of the famous sows, Nemo L. and Lady U. S. 2d, and the boars, M.'s Black Chief (sold for \$500) and U. S. Chief 2d. Gossick's Choice (49062), daughter of Lady U. S. and one of the famous litters. She is the dam of a spring litter by Chief Perfection which are of the exact breeding of Chief Perfection 2d. She is carrying a litter for early fall farrow by Chief I Know. My Expectation (43980) by Expectation by Hadley, dam by Free Trade, was a first-prize winner at Wisconsin State fair in 1896. She has a fine spring litter by Chief I Know; is dam of probably the best yearling show sow, and is herself one of the best individuals in the herd. Miss Longfellow 6th (37502) by the World's Fair winner, Longfellow, has five representatives in the show herd, and also a fine representative in the sale consignment. She has a choice litter by U. S. Chief 2d. An especial attraction in the sale offering is Beauty Corwin (42943), dam of perhaps the best pig sired by Chief I Know last year, and sold to A. B. Cox, Kingsston, Mo., for \$101. She raised nine out of ten farrowed this spring by Chief I Know and is safe in pig again for fall litter. Belle Corwin (29797), litter sister

Horse Owners! Use

GONBAULT'S



Caustic Balsam

A Safe Speedy and Positive Cure

The Safest, Best BLISTER ever used. Takes the place of all liniments for mild or severe action. Removes all Bunches or Blemishes from Horses and Cattle. SUPERSEDES ALL CAUTERY OR FIRING. Impossible to produce scar or blemish. Every bottle sold is warranted to give satisfaction. Price \$1.50 per bottle. Sold by druggists, or sent by express, charges paid, with full directions for its use. Send for descriptive circulars. THE LAWRENCE-WILLIAMS CO., Cleveland, O.

with the famous Faultless Queen Corwin, is considered by her owner the largest sow in the world. Though large and massive, she is remarkably smooth and active. She raised a fine litter by Chief I Know and is safe in pig to him again. Best of '97 I Know (49056) by Chief I Know, dam Miss Longfellow 6th, farrowed nine fine pigs by U. S. Chief (now dead) and raised eight of them, and is now being fitted for the show ring. A very fine spring litter by Chief I Know have for their dam Lily Langtry (38191) by Sir Charles Corwin, dam by Longfellow. Hands Off U. S. (46510) has four representatives in the under year show herd, and has a spring litter by Matchless I Know. As a brood sow it is doubtful if she has a superior. A large, finely finished sow and a mother of show pigs is Lady Perfection (49060) by Chief Perfection, now safe in pig to U. S. Chief 2d to farrow soon. The dam of some of the best things in the herd and winner of first prize at the Iowa State fair in 1896 is My Lady Lightfoot 39th by L.'s Tecumseh. The young boars are being fitted for show and reveal a pleasing combination of style, quality and vigor.

Horse Notes.

F. C. Warren, Fox Lake, Wis., has purchased the Percheron stallion James Madison 16169 from M. W. Dunham, Oaklawn farm, Wayne, Ill.

Two weeks ago, C. J. and Harry Hamlin, owners of the Village farm, East Aurora, N. Y., shipped a choice consignment of horses to Europe for sale. In the lot was the remarkably handsome coach horse, King Cole, got by Chloris (a son of Mambrino King), out of a French Coach mare. The others were all well-bred trotters for speed or speed-producing purposes. King Cole should bring a long price.

Dufor & Co., exporters of horses shipping to Antwerp, and A. McHattie, shipping to Glasgow, Scotland, have recently purchased half-bred French Coach geldings for shipment abroad.

Biers & Peterson, Tonica, Ill., recently sold a half-bred French Coach mare on the Chicago market, to Dufor & Co., for export to Belgium, for \$180. She is a chestnut, sixteen hands, 1,175 pounds, and has plenty of good action. When shaped up she will certainly command a fancy price.

A few weeks ago Taylor & Co., Wellman, Iowa, shipped a pair of half-bred French Coach geldings to the East Buffalo market and sold them at auction to R. Howarth, for export to London, for \$575. The geldings had abundant action, were nicely matched and had plenty of substance. Of late many fine pairs, got by French Coach stallions, have been disposed of on that market. A pair bred in Canada brought \$400, a pair shipped from Illinois brought \$450, and several other pairs from \$400 to \$500. These horses ranged close to the 1,200-pound mark in weight and were, without exception, taken for export.

Digging Potatoes.

A man can dig potatoes by hand. He can also cut his hay with a scythe, harvest his grain with a cradle and thresh it with a flail. He does not do any of these things, however. Why? Because hand labor is too expensive and too exhaustive. Further than this, he knows from experience that the labor can be performed in a better way by machinery. These things are no less true of digging or harvesting potatoes. There is little work on the farm that calls for more arduous, backaching labor than digging potatoes. Many men have been deterred from producing this valuable and money-making crop solely from the difficulty of harvesting it.

The Hoover digger, made by Hoover, Prout & Co., of Avery, O., is a very superior machine. Write them for catalogue. The price has again been reduced.

The electric fans now operated in Santa Fe Route dining cars are desirable and seasonable accessories to an already unsurpassed service.

The Home Circle.

EBBED.

Saw you not how the tide came in?
Thus Love once softly came my way.
So shy, at first, as if perchance
It feared what welcome would await.
Then seeing I was more than kind
(Although I knew not I was kind),
Love came a little nearer me,
And then a little nearer still.
He crept and meekly kissed my feet.
(Ah! where was my good angel then?)
Soon he began to tone his song.
(Ah, would it had not been so sweet!)
My glad heart heard, and then I knew
That echo lived within my heart,
The song beguiled, Love, bolder grown,
Was stealing kisses from my lips,
And whelming me with bliss too dear,
Till I became the worshipper.

Saw you not how the tide went out?
So Love then softly stole away.
At first he did not want to go,
It still was sweet to stay with me,
I knew not it might be too sweet
Till it, alas! was much too late.
Love went apace—then laughing came
As if he never thought to go.
Next time he farther went, too far;
He came not back so far, that time,
Nor did he laugh, or even smile;
Or if he smiled, a frown o'ercast
The smile of cold reflected light.
My lips were lonely long ago;
My heart knew not the dear embrace.
Love was yet at my feet, 'tis true—
But only there to haste away.

The high tide hides uncanny things—
Some crawling, creeping, helpless things
Which ne'er may find the sea again.

—Walter Lenoir Church.

THE BRITISH ISRAELITES.

Mr. Chamberlain's suggestion of an alliance between the United States and Great Britain did not cause a bit of surprise to the members of the British Israel Association, or British Israelites, as they are known. The association has members in the United States as well as in Great Britain. They believe that this alliance was foretold by the prophets of old, as was also the present war with Spain. This is said to be the beginning of a great European war, which will bring about an alliance between Russia and the various Latin countries of Europe, and an alliance between Great Britain and the United States. The British Israelites declare that the Americans and English are descended from the ten lost tribes of Israel, and that the war will fulfill the prophecy of Jeremiah, xxx:6, that "the world shall be gathered together against Israel," and there shall be a time of great tribulation and fear.

This time is referred to in the prophecies as "Jacob's Trouble," and in the books of the adherents of this cult is also called the great "war-woe." They say also that these wars and rumors of wars are some of the signs by which Christ told his disciples that they were to know the second coming of the Lord was near. Some of the British Israelites have so much faith in their own interpretation of the prophecies that they expect the millennium to arrive with the close of these wars, in about three and one-half years.

There are many people in New York who devote their lives to the propagation of this idea. They give public lectures and write books on the subject. They believe that these international conflicts will result in establishing the Anglo-Saxon race, the English and Americans, in possession of Palestine and proving that they are the descendants of the ten lost tribes. Their arguments in support of their theory are various. One of them is the story of the stone of Scone, which rests under the coronation chair of Great Britain. The stone, which is also called Jacob's Pillow, is said to be the one that Jacob's head rested on at Beth-El when he saw the vision of the heavenly ladder. The story is that this stone, the ark of God, and the harp of David were brought to Erin by the Princess Tea Tephi, daughter of Zedekiah and Princess of the line of David. According to the legend, this princess, with Jeremiah, her uncle, came to what is now the Spanish peninsula, where an attempt was made to steal from her the ark and stone. To preserve them she was obliged to flee to Erin. Jeremiah and the princess hastily embarked with their precious burdens, and, though they were buffeted by storms and often nearly wrecked, their faith was strong that all would be well in the end, as God had promised that the seed of David should never die. At last they landed in Erin, and Jacob's Pillow once more found a resting place. According to the old histories, on this stone the monarchs of the house of David have been crowned for 2,450 years. There is a tradition that whenever a true king was crowned the stone was silent, but that when a false king, or pretender, took his seat upon it, the stone groaned aloud, "with a noise like thunder." From the

princess, Queen Victoria's descent is traced through the kings of Ireland and Scotland.

IN SUPPORT OF IRISH LEGEND.

It is argued in support of this Irish legend that if Jeremiah never was in Ireland it is difficult to explain why Irish history and tradition abound in references to him, while no notice of him is taken in the bardic and other literature of England, Scotland and Wales. Tradition has it that Jeremiah is buried in Ireland and that the ark of God and the harp of David also rest there. From the harp of David has descended the far-famed Irish harp whose melodies are supposed to summon the fairies. Permission has been obtained to make excavations for these ancient relics and some money has been subscribed for that purpose by people in sympathy with British-Israel ideas. There are in Ireland the ruins of an ancient palace, which is said to be that of the Princess Tea Tephi, whose husband, Heremon, was himself a prince of the tribe of Dan, one of the ten lost tribes of Israel. These two figure prominently in the genealogical tree of Queen Victoria, which has been prepared by a British Israelite.

British Israelites say that Rev. F. R. A. Glover, one of the best-known advocates of these doctrines, having made investigations which convinced him that Queen Victoria was descended from King David, obtained an audience with her and stated his belief to her. Thereupon, the story goes, she conducted him into a private apartment and, drawing aside a curtain, showed him an elaborate genealogical tree, beginning with the Psalmist and tracing his descendants, through the Princess Tea Tephi, down to Queen Victoria herself.

Some objection has been made to this on the ground that the promise was that there should always be "a man" to reign on David's throne, overlooking the fact that the Hebrew word for man includes the woman and is used in reference to either sex. But in Ezekiel xvii:22 are the words: "I will crop off from the top of this young twig a tender one and will plant it upon a high mountain and eminent." Dr. Glover says that this tender twig refers to a woman, the Princess Tea Tephi, and through her down to Queen Victoria, thus making Queen Victoria a lineal descendant of King David.

The British Israelites add that no one must assume from this that Queen Victoria has any trace of Jewish blood, for the house of Israel is not the house of Judah, and while all Jews are Israelites, all Israelites are not necessarily Jews; that the word "Jew" is only an abbreviation of the word "Judahite" and simply means a descendant of the man Judah. It is recorded in I Kings xii that the Hebrews were divided into the house of Israel and the house of Judah. That the house of Israel was carried away captive by the King of Assyria about 700 B. C., and that the house of Judah was carried away to Babylon 605 B. C. After seventy years spent in captivity the house of Judah returned to Palestine; but the tribes of Israel did not return and they have ever since been referred to as the "ten lost tribes."

LITERATURE ON THE SUBJECT.

There is quite an extensive literature on this subject. Some of the books are interesting, and all tend to prove that the British empire and the kingdom or house of Israel are identical. While it is clear that the covenant birthright blessings entailed on the house of Joseph or Israel have not been fulfilled to the Jews, it is shown that every promise made to Israel has been fulfilled to Britain. According to the Bible, God gave Abraham and his seed certain special blessings exclusively. These blessings the British people throughout the world enjoy to-day; therefore, it is argued, the British people must be of the seed of Abraham. It was foretold by the prophets that the house of Ephraim-Israel, in the "latter days" should be "a great and mighty nation" (Gen. xviii:18). Great Britain is undisputably great and mighty. In another prophecy it is said that the seed of Abraham shall "possess the gates of his enemies" (Gen. xxii:17.) It is a peculiar characteristic of Great Britain that she possesses great strategic positions in various parts of the world, which give her an advantage over her enemies. Two of these, among many others, are the gate of the Mediterranean and the gate of the Red sea. Another prophecy was that a "nation and a company of nations" should be of Israel (Gen. xxxv:11.) Great Britain and her dependencies form one nation; yet, with her colonies, on which the sun never sets, she may truly be called a "company of nations." The Lord promised Abraham that he would multiply his seed "as the stars of the heaven, and as the sand which is upon the seashore." (Gen.

GOLD DUST

THE BEST WASHING POWDER

xxii:17.) The increase in population of the Anglo-Saxon race in Great Britain and her colonies and the United States is without a parallel in history. Isaiah says that the Lord shall gather the remnants of his people from "the islands of the sea" (Isa. xi:11). "The north country is also spoken of as the place from which they shall come (Jer. xxiii:8). Balaam, prophesying happiness to Israel, said that his seed should be "in many waters," and the words of the Psalmist, "I will set his hand also in the sea, and his right hand in the rivers," may well apply to the great maritime nations of Britain and America, whose flags are flying in every port of the world. The Lord's people were to have "the heritage of the heathen" (Psa. cxi:6). Great Britain is in possession of a heathen empire in the East larger than the continent of Europe.

Some stress is laid on the fact that the British lion is the same beast represented in the heraldic emblem of Israel, the lion of David. Various correspondences of custom are also referred to as proofs of the identity of the Anglo-Saxon race and Israel. One of these is the observance of the Sabbath. It is stated that the Anglo-Saxon and the Jews are the only people who really observe the Sabbath; that while to the people of continental Europe Sunday is a day of recreation and amusement, to the inhabitants of Great Britain and America it is a day of rest, during which they abstain from both toil and pleasure, and its observance is provided for by law.

In the Episcopal prayer book the church speaks throughout as if she were Israel. Jehovah is blessed as the "Lord God of Israel." In the "Magnificat" the Lord is magnified that he, "remembering his mercy, hath holpen his servant Israel; as he promised to our forefathers, Abraham and his seed, forever." Again it says, "Make thy chosen people joyful. Oh, Lord, save thy people, and bless thine inheritance." All these specific terms belong to Israel and to no other people.

ANGLO-SAXON PROTECTION OF JEWS.

It is further pointed out in corroboration of these arguments that the Anglo-Saxons have protected the Jews, whereas other nations have persecuted them. During the reign of the present British sovereign there have been a Hebrew sheriff of London, a Hebrew mayor and a Hebrew prime minister of England. In America Hebrews have the same rights and privileges as other citizens.

In proving that the ten lost tribes found their way to the British isles, traces of their northwesterly journey have been pointed out. There is declared to be a remarkable similarity between the names of rivers and cities "beyond the Euphrates," where Josephus said the ten tribes then were, and the names in use among the Israelites. The rivers Danube and Dnieper (Danieper) suggest the presence of the tribe of Dan, and Denmark, from which region the English name and language were brought into Britain, may have been originally "Dan's Mark."

The members of the British Israel Association deduce this program out of the prophecies: The Turkish empire will be broken up, and England, with her ally, America, will occupy Palestine as she has occupied Egypt, and a partial return of the Jews to Palestine will take place under the protection of the Anglo-Saxon race. "In those days the house of Judah shall walk to the house of Israel, and they shall come together out of the land of the north to the land that I gave for an inheritance to your fathers" (Jer. iii:18). That the two houses of Israel shall return together is shown in Ezekiel xxxvii:19: "Be-

hold, I will take the stick of Joseph, which is in the hand of Ephraim, and the tribes of Israel, his fellows, and will put them with him, even with the stick of Joseph, and make them one stick." As many persons believe that Great Britain's final conflict over the Eastern question will be with Russia, which is the Gog of the prophecies, the program so far tallies with the possibilities. It is said in the Scriptures that Gog shall come from her place out of the north parts, with many people with her, and shall come up against the people of Israel (Ezek. xxxviii:15-16). Some other predictions are interpreted to mean that this struggle will continue for three and one-half years, and until Israel (the Anglo-Saxons, Great Britain and America) is almost overcome, when the Lord, in final fulfillment of the prophecies, shall descend and roll back the armies of Gog, destroy Israel's foes, and establish his kingdom upon earth, which will be the millennium.—New York Sun.

How to Make Noques.

Noques are made from a light sort of pastry, rather after the fashion of dumplings; they are somewhat extravagant where eggs are scarce, as they require a great number. In Germany they are made both salt and sweet, to be served with game, different kinds of soups, etc., or with cream or custards for the pudding course. The noques to be eaten with meat, etc., are less extravagant than the sweet ones.

Noques Served with Game.—Grate the crust of some white rolls, and cut them into small dice to the weight of about six ounces; have the same weight in good beef marrow, and cut it up in the same way, stir into this four whole eggs; let it stand for a quarter of an hour, and work into the mixture a little more than one ounce of flour; let this stand for half an hour. Form the paste into small balls; boil them slowly for fifteen minutes in some stock; takethem out and strain them, cover them with hot butter, sprinkle them with grated bread-rasplings, and serve them around the meat.

Noques with Custard.—Put into a shallow saucepan about two ounces sugar with the grated rind of one lemon; over this pour a pint and a half of milk, and let it boil once. Beat to a froth the whites of six eggs, with just over two ounces powdered sugar; when the milk is boiling, drop a tablespoonful of the white-of-egg mixture into the liquid, forming balls nearly as large as an egg, but do not let them adhere to one another. After two minutes take them out with a strainer; put them into a hot dish; pour off any superfluous milk, retaining only as much as will be needed for the number of persons at table; with this milk and about six yolks of eggs make a thick custard, flavored as desired, and serve it over the noques.

Browned Noques.—Beat about six ounces butter to a cream; into this stir ten eggs, one by one, and after the first, third, fifth, seventh, and ninth, a heaped tablespoonful of good dry flour, so as to use five of the latter; when the eggs are well incorporated with the butter and flour, add the whisked whites of six eggs. Put into a shallow baking dish some boiling milk; into this drop large tablespoonfuls of the mixture to form separate noques; cover the dish, stand it over hot embers, cover the lid with the same, and let them braise till the milk has been absorbed and the noques are slightly colored all over. Take them out carefully and serve them with any kind of rich custard.—London Queen.

Cool and comfortable dining cars on Santa Fe Route are obtained by use of electric fans.

The Young Folks.

LINES TO KATE.

There's something in the name of Kate
Which many will condemn,
But listen now while I relate
The traits of some of them.

Communi-Kate's intelligence,
As we may well suppose;
Her fruitful mind is ever bent
On telling what she knows.

There's intri-Kate, she's so obscure,
'Tis hard to find her out;
For she is often very sure
To put your wits to rout.

Prevari-Kate's a stubborn maid,
She's sure to have her way;
The cavilling, contrary jade
Objects to all you say.

There's alter-Kate, a perfect pest,
Much given to dispute;
Her prattling tongue can never rest,
You cannot her refute.

There's dislo-Kate, in quite a fret,
Who fails to gain her point,
Her case is quite unfortunate,
And sorely out of joint.

Equivo-Kate no one will woo,
The thing would be absurd;
She is so faithless and untrue
You cannot take her word.

There's vindi-Kate, she's good and true,
And strives with all her might
Her duty faithfully to do,
And battles for the right.

There's rusti-Kate, a country lass,
Quite fond of rural scenes;
She likes to ramble through the grass,
And through the evergreens.

Of all the maidens you can find,
There's none like edu-Kate;
Because she elevates the mind,
And aims at something great.

Written for Kansas Farmer.

YOUNG FOLKS IN THE OLD COUNTRY.

BY ANNA MARIE NELLIS.

NUMBER 31.

TOWARD THE RHINE.

From the summit of the Brocken we started at 8 o'clock, June 13, on our return trip by the shortest path, which is too steep for ascending. It required two hours of time for us to reach Ilseburg, but we enjoyed the beautiful scenery every step of the way; the air was cool and refreshing, making the journey, for us, very pleasant indeed.

At Ilseburg our wheels furnished us conveyance back to Goslar, thence by cars we returned to Hildesheim, at about 7 o'clock in the evening. We went to our hotel, where we had stayed Sunday evening, and enjoyed a fine rest till the next morning, when we took the train westward for Cologne, on the river Rhine. After a slow but very much enjoyed ride through a pleasant country, we reached the ancient city—the "Rome of the north"—at 7 o'clock in the evening. The shining steeples could be seen a long distance away, nearly an hour before we reached the city.

The evening was so very fine that we immediately mounted our wheels and began an inspection of this famous place, and rode for nearly an hour before we remembered we had not selected a stopping-place. However, we were near the Cathedral, around which we had wheeled nearly a dozen times, gazing upwards until we had become "a stiff-necked people," trying to grasp with the eye and the mind the hugeness and magnificence of this grandest of church edifices. We learned there would be early mass celebrated at 7 o'clock in the morning, to which we would go, and then we wheeled to the nearest hotel, within a block of the Cathedral, where we engaged rooms while we should be in the city. This was Hotel St. Gereon, at Christophstrasse 8. I mention this so as to have the name and address in print for my own especial benefit, for we enjoyed our accommodations greatly.

COLOGNE CATHEDRAL.

A 7 o'clock in the morning we were at the main entrance of the big Cathedral and joined the stream of early worshippers who were beginning the day with religious exercises. Nearly all had prayer books in their hands and our party of four had two Baedeker guide books, which looked quite solemn, and answered our purpose quite as well. In European countries there are many classes of rich and poor—aristocracy and plebeians, "plutocrats" and "serfs"; but in Cologne Cathedral we noticed that there seemed to be no distinction of persons, but all were on a common level. Over at the right we saw a butcher's boy with his board on which he carries meats to his employer's customers. He had stopped to say his prayers before going to work. His board lay on the floor beside him and he was on his knees with rosary in hand; close beside him was a hand-

somely dressed military man in splendid uniform, also on his knees. To the left was a fat old German woman without bonnet; her dress was of coarse material and she wore wooden shoes, which showed plainly as she kneeled before a saint or two and devoutly prayed, her market basket being deposited at her side. Almost touching her was a lady, dressed in silks with many jewels, kneeling, while back of the lady was her maid who attended her at morning service. Similar contrasts we noted in other parts of the big room. Soon the monks appeared at the altar—nearly twenty of them—and for a half hour chanted the mass in a monotonous manner, which was not at all pleasing to the ear. The altar boys diffused the incense smoke and the morning service was finished, and we had the chance to visit nearly every portion of the Cathedral. This Cathedral is situated near the bank of the river, and is considered the handsomest Gothic structure in all Europe. The present building was begun in 1248 and completed in 1880. A building which required 632 years in its construction ought to be large, and so it is. Its total length is 512 feet, breadth 231 feet, length of transept 282 feet, walls 150 feet, and highest point of the roof 201 feet. The central tower over the transept is 357 feet high, while the main towers reach a point 512 feet above the ground, the greatest length and greatest height being equal.

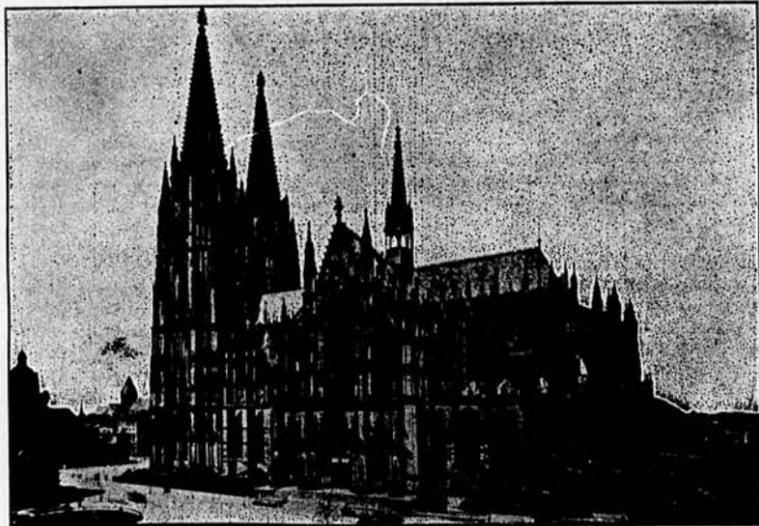
This was not the first church on this location, but as early as the time of Charlemagne there was a church on the same space of ground, though not so magnificent as the present edifice. Of course the carpenters and stone ma-

main sanctuary. The interior is supported by fifty-six pillars, 145 feet in height, and the room is 390 feet in length. The area is 7,399 square yards (from these figures one can gain a faint impression of the gigantic proportions). There are but a few benches or pews in this immense church room. In the center of the nave and at the side of the transept are seats, but not more than a small fraction of what one might expect in such a large room. The greater part of the worshippers stand or kneel throughout the services.

We visited the seven choir chapels which are behind the altar, ranged in a semi-circle. These chapels are mostly occupied by the sarcophagi of dead bishops, cardinals, martyrs, saints, etc. The fourth in the semi-circle row is known as the chapel of the three holy Kings, before mentioned, and the heart of Marie de Medici is buried under a stone in front of this sacred tomb, in which are deposited the remains of several archbishops.

In the sixth—St. Michael's chapel—is the celebrated "Dombild"—a large winged picture painted by Lochner, prior to 1450, representing "the adoration of the magi" in the center and St. Ursula and St. Gereon on the wings; the latter saint is the one our hotel was named for, or he was named for the hotel—I really didn't get the "straight of it."

After seeing all that was on exhibition, a trip to the top of the towers was proposed, but only my brother and his friend undertook it, while myself and sister sat down and rested. When our committee returned they reported having enjoyed a magnificent view of



Cologne Cathedral.

sons were not always at work during the 632 years, for during long intervals nothing at all was done. In 1796 the French were having matters about their own way in Germany and they converted the unfinished Cathedral into a hay magazine, and often stabled their horses in it, and its ruin was made more complete by stripping off the lead roofing to mold bullets to shoot at the Germans who had furnished the lead. But it is a long lane that has no turning, so we are informed by an old adage, and in 1871 the Germans captured enough French cannon to mold into a huge bell which weighs twenty-five tons, and it hangs in one of the high towers. It requires twenty-eight men to properly set it in motion to make a doubtful kind of music for the French who live but a short distance to the westward.

The original Cathedral was celebrated for a very unusual thing, viz., it contained the bones of the "three wise men" who journeyed from "the East" to Bethlehem in the year 4 B. C. I don't know how it happens that their bones have been preserved for upwards of 1900 years; but they were identified by some miracle, somehow, and this Cathedral became their resting place. The "wise men" were called "the three holy Kings," and Cologne is sometimes called the city of the three holy Kings. Well, in 1322 the new choir of the present church was consecrated and the bones of the three Kings were removed to it from where they had been temporarily deposited awaiting a permanent location. The nave, aisles and transept were not consecrated until the year 1848.

Externally this huge edifice has a double range of flying buttresses and intervening piers, and a perfect forest of pinnacles. It is so large that one cannot comprehend all its minute details. Figures of saints and bishops seem to be placed in every niche. Ascending a flight of immense steps, we found ourselves at the entrance to the

city and the river Rhine a long way on either side.

COLOGNE.

This townsite was originally located by Germanicus, from Rome, who established a military camp on the Rhine pretty near the year 1. In the year 51 the daughter of Germanicus, Agrippina by name, induced her husband, Emperor Claudius, of Rome, to establish a Roman colony here. It was then called in her honor, "Colonna Agrippinaensis," and in course of time only the former word was retained and the letter "g" inserted, making it Cologne, and it is spelled in German "Köln."

We saw remains of the old Roman walls, built 1890 years ago. Those old Romans could build stone fence that would last.

Too much space would be needed to tell of the old Roman tunnel, which is forty feet underground and 430 feet long, extending under the river. I want to tell of something more modern—"up-to-date."

"STOLLWECK'S CHOCOLADE FABRIK."

Here we found 2,000 men who are employed daily in making all kinds of chocolate preparations and candy. Many thousands of pounds are sent out every day to supply all parts of the world. On looking out of one of the windows I saw an officer dressed in the green suit with the brass buttons of the custom house department. The guide told me that it was his duty to watch all day to see that no goods were smug-

gled into the factory without paying duty. Cocoa comes from South America and the sugar from North America; it is mixed in Germany and then shipped back to the United States.

Each piece of fine chocolate is stamped with the name of Stollweck. The most interesting part to me was the packing-room; here the candies were all ready for shipping, and we were invited and even urged to try almost every kind made. We accepted the invitation and found them—like the works in the Garden of Eden—very good.

There are many, many interesting things to be told about Cologne, but there are other places on the Rhine to be talked about. After two days of sight-seeing we commenced the real part of our bicycle traveling by starting for the city of Bonn.

Song in Battle.

He got in a midnight uptown "L" train at Park Place, on which a few newspaper men and some belated persons were going home. He seemed proud of the G. A. R. button in the lapel of his coat. As the rest of the passengers had taken seats in groups he went to the end of the car and sat down beside a lone passenger, who had an early edition of a morning paper.

"What's the latest news from Santiago?" he said.

As the man read the story of last Friday's fight telling of the dead and wounded, the veteran's eyes glistened with tears, and when the reader finished the story of how, when the carnage was at its height, the Twenty-first infantry, in order to encourage their comrades, sang "The Star-Spangled Banner," the veteran interrupted with, "Yes, human nature, the same to-day, yesterday and forever."

The man who was reading stopped, looked up in a questioning manner, and the veteran said: "I did not mean to interrupt you, sir, but I was with Grant in the Wilderness, back in '64, with the Ninth corps. We were fighting hard for hours, and seemed to gain not an inch of ground. The fire became hotter, and then the Confederate line was broken. We moved forward, but what few were left of us became exposed to a flank attack, and we were driven back with a heavy loss and much confusion. The leaden hail was flying thick, and we were being routed, when some gallant fellows in the Forty-fifth Pennsylvania began to sing above the noise:

"We'll rally round the flag, boys, rally once again,
Shouting the battle cry of freedom."

"The refrain was caught up and passed along the line for half a mile. The fight increased in severity. We could not see each other except when the burning undergrowth lighted up the awful scene. 'Zip,' 'zip,' went the bullets; the artillery boomed; the guns roared; and yet amid that awful uproar the singing brought order out of disorder, and we drove the enemy back.

"Yes, human nature, the same to-day, yesterday and forever," he said, as he hurried out at his station. "I would, sir, that I were with the boys of the Twenty-first when they sang the grand old song before Santiago."—New York Press.

Tours in the Rocky Mountains.

The "Scenic Line of the World," the Denver & Rio Grande railroad, offers to tourists in Colorado, Utah and New Mexico the choicest resorts, and to the trans-continental traveler the grandest scenery. Two separate and distinct routes through the Rocky mountains, all through tickets available via either. The direct line to Cripple Creek, the greatest gold camp on earth. Double daily train service with through Pullman sleepers and tourists' cars between Denver and San Francisco. The best line to Utah, Idaho, Montana, Oregon and Washington via the "Ogden Gateway." Write S. K. Hooper, G. P. & T. A., Denver, Col., for illustrated descriptive pamphlets.

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We acknowledge receipt from Secretary McFadden of Vol. 20 of the A. P. C. R. The book is uniform in quality and appearance with previous volumes issued by this Record, and is a substantially-bound book of a little over 1,000 pages. All stockholders of the Record Company are entitled to the book free upon request to the Secretary. The American is the only Poland-China Record that issues two volumes a year, and the popularity of the record must in a large measure be due to the evident care in editing and publishing the volumes. The price of Vol. 20 is \$2.50, charges prepaid. It can be had by addressing the Secretary, W. M. McFadden, West Liberty, Iowa, who requests to announce that more than half enough pedigrees for Vol. 21 are now on file, and patrons having pedigrees for that volume should forward them without much delay.

The New York Journal of Commerce estimates this year's American wheat crop at 700,000,000 bushels. Of this probably 65,000,000 bushels will be required for seed, 350,000,000 for bread for American eaters, leaving, according to this estimate, 285,000,000 bushels to replenish reserves and to ship abroad. The reserves are known to be unusually low. Public warehouses and elevators held on July 16 only 10,461,000 bushels of wheat. This is lower than the visible supply has fallen at any time in the last ten years. At the corresponding date two years ago the visible supply was 46,743,000 bushels. The foreign demand continues to absorb much more than current receipts, so that the visible supply still declines at the rate of about 2,000,000 bushels per week. Should this foreign demand continue strong it may be possible to spare from this year's crop, if the Journal's estimates be taken as a basis, about 70,000,000 more than was shipped abroad last year. Should foreign prices not prove sufficiently attractive, 50,000,000 to 70,000,000 bushels may readily be added to the present American warehouse and elevator stocks.

Silberman Brothers, of Chicago, report, under date July 25, that wool sales for the last ten days have been much larger and at much more satisfactory prices than at any time since last February, and in their opinion nothing will prevent a continuation of a good, steady and wholesome trade. Manufacturers are not as yet eager to purchase large quantities at advanced prices. At a little less than late ruling figures they are, however, ready to purchase a big line of all kinds, except coarse grades, which are at present not in demand. They will soon exhibit their spring samples and the future prices of wool will depend largely on the result of sales of manufactured goods. From what they can learn of large dry goods jobbers and clothing manufacturers (with whom they come in daily contact), liberal orders will be placed for all kinds of spring goods. In view of this they feel safe in predicting a very good trade in wool in the near future, and perhaps at much better prices than manufacturers are willing now to pay. With good crops assured, labor well employed in manufacturing and mining districts, with abundance of money lying idle in the banks awaiting investment at a very low interest rate, and domestic wools 15 per cent. under the importing point, there is reason to believe that an advance in prices of wool is likely to follow.

ONE HUNDRED DAYS OF WAR.

The war between the United States and Spain has now been in progress for a little more than a quarter of a year. In this time we have enlisted and placed in the field an efficient army; have greatly enlarged our navy; have provided plenty of money to take care of all our own expenses of war and to feed the helpless population of Cuba; have destroyed the Spanish fleets in Asiatic and in Cuban waters; have maintained a thorough blockade of Cuba and of the chief seaport of the Philippines; have taken the Caroline islands; have taken the eastern end of Cuba, and with it more prisoners of war than we had men engaged in the battle of Santiago, which resulted in their surrender. Our troops are now landing on the Spanish island of Porto Rico, which is expected to fall into our hands within a few days. Reinforcements are still going forward to the Philippines, which islands our forces will take whenever they are ready. In accepting the surrender of the eastern end of Cuba, and with it 24,000 men, we agreed to transport the prisoners of war to Spain and parole them. This idea of getting back home seems to strike a responsive note in the being of the Spanish soldier in Cuba. It is indeed a desirable exchange for present starvation and for fierce battle and certain defeat by the American forces.

The evacuation of eastern Cuba is the beginning of the end of Spain's struggle to hold the island. Unless superseded by an early peace this evacuation is likely to extend as our forces carry the war westward over and around Cuban territory.

There are, however, renewed and persistent rumors of movements on the part of Spain for peace. Our adversary has become thoroughly disgusted on account of disappointed hopes of help from some of the great European powers, and is now saying that, since our government has shown itself a valiant and honorable foe, as well as a magnanimous conqueror, peace proposals will be made to us direct and no nation will get a commission for the negotiations.

If Spain has come to her senses she must by this time recall the fact that in every war ever undertaken by the United States the arms of the great republic have eventually triumphed. Spain should by this time know that the intelligent American citizen, though just from the plow, the shop or the counting-room, becomes at once an intelligent and effective soldier; that the ranks are composed of men capable of leadership, and that however many officers fall, as at Santiago, their places are quickly filled, and as long as there are soldiers in the field the organization is perfect.

But Spain must know by this time also that the cause for which we have gone to war is the cause of humanity and progress, and that this cause will surely triumph over the selfish greed which has reddened with human blood the record of the Spanish nation from its earliest beginnings to the present day. Spain, as a power for evil in a large way, must read her history in the past. The present and the future are for more enlightened and more progressive and more humane peoples.

OUR DAIRY DEPARTMENT.

With this week's issue the Dairy department of the Kansas Farmer passes under the editorship of Mr. D. H. Otis, of the State Agricultural College Experiment Station. The dairy industry in this State is just now in a transition stage from the old, with its limited possibilities and uncertain products, to the new system of creameries and skimming by machinery, with its large output of high-grade goods. Time was when the women of the family did the milling of the grain with hand mills or even cruder appliances. Now the golden grain produced by the farmer is made into better articles of flour, without woman's help, in great mills driven by water or steam, and no one ever suggests that there would be any propriety in re-imposing this work upon the mothers and sisters. A generation is coming in whose ears stories of the heavy work done in the home, resulting in sometimes good and sometimes poor dairy products, will sound as strangely as do now the accounts of back country Mexican methods of making meal.

The Kansas Agricultural College has taken up the work of instruction and experimentation in dairying, with a view of assisting this State to make the transition from the old methods of much labor and small returns to the new, wherein machinery and steam, wherein better breeds and better feeds, wherein improved processes with improved appliances, shall lift dairying out of the catalogue of small drudgeries into the arena of large opera-

tions. Wisely, the college people are studying to show the farmer how to use the cows, feeds and facilities he has so as to grow into modern methods and receive modern profits. In this good work the college will communicate with the farmers through the Dairy department of the Kansas Farmer, thus adding to the value of the "Old Reliable" and promoting the prosperity of its readers.

AS SEEN IN ENGLAND.

The following excerpts from the review of the wheat markets of the Millers' Gazette and Corn Trade Journal, of London, will be found useful in estimating the prospects of the wheat market:

"The weather this week has been of a favorable character for the crops, although not forcing. The crops generally promise a fair to good yield, but the harvest will be rather late, and it is expected that there will not be much new wheat delivered before September. There are, however, rather conflicting opinions regarding the crops. For instance, the Agricultural Gazette states that the weather has been more favorable, and expects an over-average crop, whilst the Mark Lane Express fears that, although 'the aspect of the fields is promising, such promise will be belied.' The reserves of English wheat in the country are almost exhausted, and there is practically nothing doing in the provincial markets.

"In France the weather has been generally favorable for the crops. Cutting is in progress in the south, and a good average crop is expected, both as to quantity and quality. In the north, however, the prospects are not so satisfactory, the recent rains having affected the wheat during the coming into ear and the blooming periods, so that there will generally be more or less delay in the maturing of the grain. The French country markets have been wholly, or nearly wholly, neglected, owing to the want of supplies of home-grown wheat, and they will continue so until the new grain makes its appearance upon the markets. In Paris, on Wednesday, there was but little doing, millers generally contenting themselves with buying only sufficient to cover their immediate wants.

"Belgium.—Not wholly favorable weather reports are to hand from this country, but there are no serious complaints regarding the crop prospects, which are still described as satisfactory.

"Holland.—Groningen advices complain of too wet and cool weather for the progress of the crops, but any serious complaints so far were confined to the hay and potato crops.

"Germany.—Konigsberg advices of July 5 report cold and rainy weather during the previous fortnight; perhaps only little damage has been done, but it is certain that such unseasonable weather must have had the effect of delaying the harvest, which will in all probability be later than last year. The stocks were small and business quiet. At Stettin last week the business done was quite small, millers not buying owing to the bad sale for flour. There was no speculative demand, owing to the wide difference in price between prompt and more distant deliveries. At Berlin there has been a firmer tone in the wheat trade and more doing, mainly owing to a better demand from the interior of Germany. The stocks of wheat at Berlin, Stettin and Danzig on July 1 amounted to 25,000 quarters, against 80,000 quarters at that date last year.

"Austria-Hungary.—Further advices have been received this week confirming the damage done to the Hungarian crops by the severe hailstorms. The latest official estimate is for a wheat crop of 14,630,000 quarters, against the previous estimate of 15,810,000 quarters; last year's crop was 11,260,000 quarters. In Austria prospects are generally favorable, and a good yield is expected.

"Russia.—Crop reports from the Black Sea and Azof districts are, on the whole, quite favorable. In the Volga valley the results will be very poor, a fearful amount of damage having been caused by the drought. The crop will be generally a late one. Stocks in the Azof are very small of most articles, but there are stated to be fair supplies of hard wheat, for which there is little or no demand.

"America.—The American markets, after several fluctuations, close decidedly higher for July, but about unchanged for September and December deliveries. The advices received, both by mail and cable, report a decided deterioration in crop prospects. Thoman estimates the condition on July 1 at 87.3 for winter wheat, against 91.2 on June 1, and spring wheat at 95.3, against 99.4. The Cincinnati Price Current says that the previous disappointment regarding the outturn of winter wheat is confirmed but is not increasingly serious. Shipments are still on a much larger scale

than last year, and the visible continues to decrease rapidly. Receipts at Western points are very small, and amounted last week to 88,900 quarters against 175,600 quarters in 1897, and 298,500 quarters in 1896. In Canada a good crop is expected on a much increased area.

"With favorable weather for the growing crop, the market has remained quiet this week, but with much less favorable estimates regarding the probable outturn of the American crop, there has been more firmness shown at the decline. Meanwhile, the effects of the re-imposition of the French duty of 12s. 2d. are to be seen in the further lowering of prices of cargoes near at hand, as shown by the sale of two March Californians this week at about 32s. 6d. for the U. K., and a steamer of red winter nearly due at 31s. 9d. In France, on the other hand, prices have only slightly risen since July 1, so that the result of the re-establishment of the French duty has been mainly to reduce prices abroad and not to raise prices at home, which may be taken as a sign that the immense imports in May and June, whilst the duty was suspended, and which amounted to 5,700,000 quarters, are found to be sufficient for the wants of France before the new crop becomes available. We thus find that while the price of foreign wheat in England has declined to 31s. to 33s. per quarter, the level in France is maintained at 43s. 6d. to 45s. 6d. per 480 pounds, the difference corresponding almost exactly with the amount of the import duty. Values, therefore, are seen to have settled down to a more stable basis, until at any rate something definite be known with regard to the world's crop of 1898. We know by this time that the total will largely exceed the short crop of last year, but it must not be forgotten that last year's yield was so deficient that a crop this year of 25,000,000 quarters in excess of last year is necessary for the world's ordinary current requirements, and would not justify the recent decline. All that one can say now from present indications, which are liable to much modification if the weather becomes unfavorable, is that the world's crop of 1898 looks like being over 40,000,000 quarters in excess of that of 1897, as the following preliminary estimate of some of the principal crops will show—in excess of last year:

	Quarters.
France	12,000,000
America	12,000,000
Italy and Spain	4,000,000
Roumania and Bulgaria	3,000,000
Austria-Hungary	3,000,000
India	3,000,000
United Kingdom	1,000,000
Total	43,000,000

(One quarter equals eight bushels.)

"The Russian crop is still a doubtful element, and we, of course, know nothing of the next Argentina crop, which is to be reaped at that awkward period for the markets, viz., at the end of the year. If our preliminary forecasts become true, the world will produce in 1898 some 15,000,000 quarters beyond her requirements, a surplus which may justify a return to the 30s. level; but it is very probable that at anything below that level the depleted reserves will be filled up.

"One of the features of the week is undoubtedly the big reduction in the American crop estimates. The Cincinnati Price Current said last week that the crop was not likely to exceed that of 1891, when, according to the most reliable commercial accounts, the yield was about 675,000,000 bushels. This week Mr. Thoman in his July report estimates the probable yield at 685,000,000 bushels."

Who Will Tell?

Editor Kansas Farmer:—Will some reader of the Kansas Farmer give light on the following questions?

1. What is the best plan to exterminate bull nettles?
2. Can alfalfa be successfully grown on land where the surface soil is sandy loam ten to fourteen inches deep and the subsoil is yellow gumbo?
3. Will Amber cane, where sown broadcast, and—after it is grown about fourteen inches high—plowed under, make a good fertilizer? G. L.

Pursuant to the policy of the Kansas Farmer management to make the paper in the highest degree helpful to the people who farm in Kansas, the services of Mr. C. B. Tuttle, proprietor of the Excelsior Poultry farm, have been secured to conduct the Poultry department. Mr. Tuttle is a practical poultryman, who makes his living from the poultry industry. He is well informed in the practical details of the poultry business, and, being a graceful and forceful writer, will present each week a department which will be turned to eagerly and with profit by those engaged in poultry and egg production.

KANSAS HARD WINTER WHEAT.

A firm of grain merchants with offices in Boston, Chicago and Kansas City, writing to the Kansas Board of Agriculture about wheat, volunteers to say in reference to one of the State's foremost products:

"We find the Turkey hard wheat, grown in Kansas, to be in excellent demand for export as well as domestic use, and think if more acres were devoted to its cultivation farmers would be better off, but they should get fresh seed occasionally from its native land."

This wheat is understood to have been introduced by the Mennonites, who settled in central Kansas in such large numbers, in 1873 and 1874, from the southern or Black Sea district of Russia. C. B. Hoffman, the well-known miller and flour exporter, of Enterprise, Dickinson county, says that for a long time its introduction was disparaged by millers and grain buyers, but its hardness and almost unyielding yield caused it to be grown in ever increasing areas, in spite of the lower prices it commanded. "After about ten years some of the progressive millers of the State discovered the superior flouring qualities of this much-despised wheat and adapted their machinery to its proper milling, which required a general remodeling of their plants. From that time they have carried on the manufacture of Kansas hard wheat flours, since become famous in the world's markets as superior to any others in the United States, and equal to the world-famous Hungarian flours made from the choicest growths in Hungary and Bohemia." Mr. Hoffman thinks the best hard wheat is of the variety known as Crimean.

Secretary Coburn was acquainted with the growing of considerable quantities of this Turkey wheat in Franklin county as early as 1874, which millers would only buy reluctantly, on account of its flinty character, something they were not prepared to contend with and could not successfully overcome until they had constructed apparatus for steaming and thereby softening the grain before grinding.

The price paid was usually from 5 to 10 cents below that for softer wheats of like grades. The certainty of its yielding a crop practically every year, and sometimes twice as many bushels per acre as other varieties, caused the farmers to persevere in its sowing, they arguing that a yield of fifteen or twenty bushels per acre of wheat that brought 70 or 75 cents was a more desirable crop than one yielding ten bushels, bringing perhaps 80 cents per bushel.

This is the wheat that of late years Northern millers have been buying quite extensively to mix with the hard spring wheats from the Dakotas, for holding up or enhancing the fame of the Minnesota spring wheat flours.

It is a settled conviction with many observant growers that seed grown from recently-imported wheat is much the most desirable for sowing, as the Kansas climate, in course of time, it is claimed, modifies some of the foreign wheat's more valuable characteristics.

RENO COUNTY'S BUTTER.

Reno county expects to claim the banner for butter-making in Kansas. The reports of the assessors show that 2,405,520 pounds of butter were made in the county during the year that ended March 1, 1898. Cheese-making is not an industry of much importance there, but the same returns show that 23,875 pounds were made. Last year's butter product was an increase of 111.01 per cent. over the year before, when 1,139,977 pounds were made.

At 15 cents a pound, the butter made in Reno county last year was worth \$360,328.

Mitchell county made 902,840 pounds of butter and 19,095 pounds of cheese in the year ending March 1, 1897. The next year it made 1,981,407, a gain of 119.46 per cent.

Cloud county made 657,381 pounds of butter in the year ending in 1897 and 847,061 last year.

Marion county's butter product was 600,878 pounds and Lincoln county's 355,696 last year.

The total butter output of the five counties was 6,259,562 pounds, worth at 15 cents a pound \$938,934.30. The counties named are all in central Kansas. Dickinson, one of the biggest butter counties in the State, has not reported. It is not likely that Dickinson, or for that matter any county, will lead Reno, but several will probably crowd in between Marion and Reno.

Secretary F. S. Hurd, of the State Dairy Association, received word, July 23, that up to that date all the butter so far received for the exhibition at

Omaha had come from Kansas. This speaks well for the pluck of Kansas creamerymen. Minnesota and Nebraska had \$1,200 and \$1,800 appropriations for the dairy exhibit. Kansas had no appropriation and only \$80 in the treasury of her Dairy Association. Secretary Hurd keeps up 100 pounds steam to the square inch day and night.

The Reason for a Low Yield of Corn.

By Geo. L. Clothier, Assistant Botanist, Kansas Experiment Station.

If every stalk of corn in Kansas fields this year were to produce one good-sized ear, the yield would be from 600,000,000 to 800,000,000 bushels. Why are farmers content with one-fourth the possible products of their land? Low yields have become the rule, and farmers have settled down to be satisfied with conditions which they seem to believe irremediable. I believe the conditions that will insure a full crop can be controlled by farmers, at least when we have rain enough. I will venture the assertion that nine farmers out of ten who occasionally get seventy-five bushels of corn per acre can get 100 bushels per acre with but very little additional labor.

There are two causes of poor corn crops. The first is an inherited tendency on the part of the corn plant for some stalks to be barren; the second cause is a poor or uneven "stand" of corn upon the land. The tendency towards barrenness is a difficult condition for farmers to overcome and will require years of study on the part of seed breeders before we can understand how to control this part of the nature of the corn plant. The lack of a good stand can be overcome by almost every farmer. In the cotton districts of the South they learned years ago to plant much more cotton seed than can grow upon the land. After the plants have forced their way through the soil the farmer goes through the field and cuts out the weakly and supernumerary stalks with a hoe, leaving only the thriftest and best stalks standing, properly distributed. One man can thin out three acres of cotton in a day in this way, and I believe the work would not be more tedious in a corn field. But, to do this, some Kansas farmers would be compelled to learn to use a hoe, for I have met numbers of them who make their boast that they have no such an implement as a hoe upon their farms.

The first rule I would lay down is, plant your corn in drills; the second is, to have one stalk grow at a place, and only one; the third is, to have no missed or bare places. If these three rules were carried out to the letter, 100 bushels of corn per acre would be as common as fifty now.

I have begun a series of observations upon the distribution of corn over the ground, which I hope in future to work out to very definite results. I will give some of the figures as far as they have been completed. All of these observations were made upon typical farms near Manhattan, Kas., in one of the best corn-growing districts of the West.

In field No. 1, I took 135 feet of row and counted the stalks and measured the distances between stalks. I found in this row 40 stalks, 24 of which were of the first grade. Average distance apart of stalks, 40½ inches. This row was bare 63 feet, or 46 per cent. of its length. The land in all the fields which I will report is worth from \$50 to \$100 per acre for agricultural purposes.

I took a row 96 feet long in field No. 2. This field promises a yield of 60 to 70 bushels of corn per acre. I found 52 stalks occupying 96 feet, of which 34 were of the first grade. Average distance apart of stalks, 22 inches. I found at least eight places where the stalks were crowded in bunches, and 36 feet, or 37½ per cent. bare.

Field No. 3 was where water had stood on the land early in the season and showed a worse prospect than field No. 1.

In field No. 4, I took 144 feet of row, which contained 65 stalks of corn averaging 26 inches apart. Forty-seven stalks were of the first grade. This row was bare 45 feet or 31 per cent. of its length.

Field No. 5 promises a very large yield and is considered an excellent stand by the farmer who tends the land. Here I took 144 feet of row and found 63 stalks, 51 of which were of the first grade. Stalks averaged 27½ inches apart in the row. This row was bare 36 feet or 25 per cent. of its length.

Field No. 6 contained 85 stalks on 144 feet of row, 50 of which were of the first grade. The stalks were bunched in seven different places and very unevenly distributed throughout the row. Average distance apart of stalks, 20½ inches. This row was bare 36 feet or 25 per cent. of its length.

Field No. 7 had 71 stalks in 144 feet of row, 57 of which were of the first grade. Average distance of stalks apart,

24 inches. This row was bare 33 feet or 23 per cent. of its length.

Here are seven fields of corn in which the loss occasioned by a lack of use of the land varies from 23 to 46 per cent. These are but a few examples of what is the rule over the whole State. I have never yet seen a field of corn with a perfect stand. I believe that a nearly perfect stand could be obtained by drilling the corn nine or ten inches apart and cutting out every alternate stalk where necessary to have a uniform stand of one plant at a place every eighteen or twenty inches. This would require additional labor and seed corn amounting to about 50 cents per acre. I believe this method practiced generally would raise the average yield of the State 40 per cent. Add to this the pedigreed seed corn which we hope to be able to produce in the future, and the Kansas farmer will shortly not only double but treble the productiveness of his acres.

August Notes.

Finish up the plowing for wheat.

Haul out manure on the wheat land.

Cut plenty of fodder in good season.

Teach clots to eat well before weaning.

Breed the ewes that are to bring early lambs.

Sows may be bred early this month for fall pigs.

Rush the feeding of the stock intended for early market.

Stack the straw so that it will keep in a good condition.

Much of the value of fodder is lost by allowing it to get too ripe before cutting.

Drag and harrow the ground intended for fall wheat until it is in a fine condition.

One advantage in putting up fodder in small stacks is that it will cure out quicker.

If the condition will admit, grass and clover can be sown the latter part of this month.

Better cut off and feed some corn to the stock rather than allow them to run down in condition.

One advantage in setting out strawberry plants this month is that if they grow they will yield a fair crop next season.

Cultivation in the orchard should cease sufficiently early to give the new growth of wood plenty of time to mature.

In many sections there is a shortage of the fruit crop, so that it will be an item not to allow any of it to go to waste.

Get rid of all stock that cannot be wintered to advantage. No more stock should be wintered than the feed will keep well.

Commence fattening the old ewes and cows that it is intended to market this fall. They will fatten faster on good pasturage.

In preparing the land for seeding to grass and clover or to sow to wheat it will be quite an item to provide for thorough drainage.

By sowing a patch of rye early, so that a good start to grow can be secured in good season, considerable late pasturage may be readily secured.

If the potatoes are dug spread them out in a loft where they will be in a dark, well-ventilated place.

In sowing wheat, as with all other crops, it will pay to take considerable pains to secure good seed. Under present conditions it is poor economy to risk a crop of any kind with poor seed.

If corn fodder is to remain standing in shocks in the field until fed out, it will pay to put up in good-sized shocks, not less than sixteen hills square. There will be less loss than if in small shocks.

Now is a good time to build whatever shelter is needed for the stock. There is usually time that can be spared to better advantage early this month than later; then, by doing it now it will be ready when needed.

No stock should be wintered unless it will give good returns in growth, work, milk, wool or increase, sufficient to pay well for the food consumed. Better sell now at a less price than to winter unprofitable animals.

Eldon, Mo. N. J. SHEPHERD.

An enemy to health is impure blood, as it leads to serious disease and great suffering. Hood's Sarsaparilla meets and conquers this enemy and averts the danger.

Hood's Pills are the only pills to take with Hood's Sarsaparilla. Cure all liver ills.

"Schley" is "Sly."

There has been a good deal of speculation, not only in naval circles, but among the public at large, as to the origin of Commodore Winfield Scott Schley's name. By some it has been asserted that he is of German descent, and by others that he is a relative of the doughty old hero of the Mexican war. A little while before Schley became a commodore he gave a Tribune reporter a talk which will throw light on the matter.

"At the the time I was a puling, mewling baby, without a name or much more hair than I have now," said the gallant officer, playfully brushing back the locks which so skillfully conceal his bald pate, "my parents were, I suppose, at their wits' end to cudgel up some name appropriate for the marvel of human excellence they undoubtedly thought me to be. The matter did not bother me so much as it does now, for I wisely refrained from giving an opinion on the subject, or at least any that the newspapers would care to publish. At that time, which marks an era in one life, anyway, Gen. Scott was in the zenith of his glory and rotundity. A very great man was Scott at that time—physically and popularly. He was a great friend of my parents, and frequently called at our house. As I said, my parents were cudgeling their brains to find some name good enough to tack on such a morsel of humanity as myself, and while in the midst of their councils one day, the huge shadow of Scott darkened the doorway and cast its robust shade on me. That settled it. The circumstance was regarded as an auspicious omen, and forthwith it was decided that I was to pass through life as Winfield Scott Schley.

"Now, for pity's sake, don't give my last name with a German accent. It's pronounced Sly, plain, commonplace, everyday Sly. That's the way it has been pronounced in my family as long as I can remember or ever heard of. I'm not much on pedigree searching—too many of my acquaintances have stumbled across horse thieves and pirates to make me desirous for that kind of recreation—but Schley is an old Maryland family, though why they have stuck on all those sloppy Dutch consonants I can't tell, but it's Sly I was born and it's Sly I'll be till my hair ceases to come out, then you can call me Dinnis, if you like. So long as I have the proud distinction of drawing a comb over my head with a purpose, I shall most distinctly and positively object to be called Ptschley or any other foreign twisting of the name."

"How do you like the name of the famous fighter?"

"Like it?" said the gallant sea dog. "Why, I can't say that I ever gave it much consideration. I can only say that soon after I became a full-fledged naval officer the old general gave a dinner at the Brevoort House, in Fifth avenue, New York, at which he invited all the young men he could find who had been named after him. It was a great sight. There they were, several score strong, and there is no telling how many more might have been there had they known of it. Anyway, they have turned out fairly well, at least one of them having become a general in the United States army. Well, the old general wound up the dinner in one of his most pompous speeches—such as no one can appreciate unless he has seen and heard him. He said that he felt highly gratified at having his name left to posterity in such promising young hands, and of course we youngsters believed all he said. At any rate, I can't change the name, and I don't believe that I'd want to if I could."—New York Tribune.

Write often to the soldier boys; they are brave, but will get home-sick, and for that ailment there is no remedy like letters from home.

What a persistent, iron-clad thing life is! There are dips, emulsions, soaps, tobacco waters, poisonous powders, myriads of birds; yet lice, ticks bugs and worms abound.

Where, O, where, has my big boom gone, my boom so rich, yellow and fair? Vanished in war clouds, sunk in south seas, bombarded to death! that's where, that's where!—The Klondike.

Emerson wrote of a man who "was so honest that he had to be watched lest he should cheat himself." But, unfortunately, much time does not have to be devoted to such watching.

And now a lot of good, humane people are urging that animals should be chloroformed when any painful operation is to be performed upon them. Well, why not? Man will be that much civilized some day.

An agricultural writer with a gift for artistically prevaricating says that the feeding value of an acre of sugar beets is about three times that of an average acre of corn! The wonder is that such a writer finds a publisher.

In the Dairy.

Conducted by D. H. OTIS, Assistant in Dairying, Kansas Experiment Station, Manhattan, Kas., to whom all correspondence with this department should be addressed.

SALUTATORY.

In assuming the responsibility of editing the Dairy department of the Kansas Farmer, it is with the thought that Kansas is one of the best dairy States in the Union, and if this department can come in touch with our farmers interested along dairy lines and by our mutual knowledge and experience help each other to make dairying more profitable and interesting, we shall be fully repaid for the effort.

It is important to note in this connection that Western dairy products are rapidly coming to the front. In a recent shipment of butter to England twenty tubs of butter were made at the Agricultural College, Ames, Iowa, and twenty pounds of New York butter was selected by one of our foremost butter judges with special attention to meeting the English demand. The butter was sold upon its merits, without the purchasers having any knowledge of the test. In one case the Iowa butter brought 10 shillings and in another case 8 shillings per 100 pounds more than the New York butter, a difference of 1.7 cents per pound in favor of the Western butter. Now Kansas has similar if not superior opportunities to those of Iowa. Our mild winters, cheap feeds, abundant pasture and good stock water all go to make Kansas an ideal dairy State. The latest reports tell us that Kansas butter can be shipped in car-load lots with excellent refrigerator service to New York for \$1.14 per 100 pounds, to New Orleans for \$1.13, San Francisco 72 City of Mexico \$1.30, and to London for \$1.75. When the Danes find it profitable to buy Kansas grain to feed their cows, surely with the proper degree of intelligence and skill we could find it much more profitable. And we need not fear that the dairy business will be overdone in Kansas. If such a thing be possible with the world as a whole, Kansas, with her superior advantages, could well hold her own in the markets of the world.

The creamery business in Kansas has been and is growing very rapidly until now we have about 400 creameries, skimming stations and cheese factories. It is essential that at each factory there shall be a first-class butter-maker, and if a good man is not furnished the patrons have a just cause for complaint. One of our leading Kansas factories is turning out 1,400 pounds of butter per day. The loss of 1 cent a pound on this by employing a poor butter-maker would amount to \$14 per day. But no matter how good the butter-maker may be, it is simply impossible for him to make good butter without good milk. It is very hard for a person who has not had actual experience in a creamery to comprehend this phase of the subject, but it is true, nevertheless. It is the desire of this department to work both in the interest of the patron and the creamery by helping the former to deliver his milk in a good, clean, sweet and wholesome condition. If by delivering an extra quality of milk the butter-maker is enabled to make an extra article of butter and receive therefor an extra cent or two per pound above market quotations, both the patron and the butter-maker will look forward to pay-day with an extra smile.

Next to quality is quantity. Every successful creamery is crying for more milk, and many a patron's check appears lean from the same cause. To get milk we must have a machine that can manufacture it. Now all machines vary in their efficiency, and the cow machine is no exception to the rule. Counting the cost of feed, the labor and interest on the money invested, it will take at least 150 pounds of butter per year to pay for keeping a cow. The cow that will give 200 pounds of butter will return to her owner 50 pounds profit, but the cow that gives 400 pounds will return 250 pounds profit, or five times as much as the former. In other words, one good cow is worth five poor ones. It will be the aim of this department to aid the patron in selecting, rearing and maintaining his cow machines in the best possible condition for profit.

All machines require fuel or feed, and the cow is somewhat particular along this line. It is not enough to have a balanced ration, but that ration must have succulence and variety enough to be appetizing. Furthermore, the feeds should be so combined as to produce the desired effect on the quality of the butter. Some feeds produce a hard and some a soft butter. And not only this, but the cost is a very important element. The students in the agri-

cultural course at the college this last year figured out balanced rations, each containing the same amount of nutrients, that varied in cost from 7 to 22 cents. Here is a difference of 15 cents a day per cow. Perhaps this represents the extreme limits, but suppose the difference averaged only 2 cents; in the course of a yearly feeding period, 200 days, this would amount to \$4 per cow, and with a herd of twenty or thirty cows would make quite an astonishing sum. It is desired to have the feeding problem one of the foremost in these columns.

To those engaged in private butter-making we also wish to lend a helping hand. We have a private dairy equipment at the college and are doubtless familiar with many of the problems connected with private dairying, such as separating milk, ripening cream, churning, washing, salting, working and packing of butter.

This department desires the hearty co-operation of creameries, creamery patrons and private dairymen in its efforts to promote the cause of dairying in Kansas, and we solicit correspondence on any and all questions that would be of interest to the dairy public. We make no guarantee to answer all these questions, but hope to refer those we cannot answer to some one who can, and doubtless there are many questions to come up that we can solve experimentally as soon as our attention is called to them. D. H. OTIS.

Kansas State Agricultural College, Manhattan, Kas.

Keeping Milk Sweet.

Some of the patrons of our creameries and cheese factories have trouble in keeping their milk sweet for the regular daily delivery, and many find the milk of Saturday night and Sunday morning sour on Monday's delivery. The loss from souring on many farms amounts to the loss of a whole day's milk each week—one-seventh of the entire product. How many would be willing to lose one bushel in seven of the wheat and corn raised? The loss of this milk is unnecessary and can be prevented by care that can be given on any farm.

The souring of milk is caused by bacteria growing in it, and if no bacteria are allowed to get in the milk it cannot sour. Milk in the cow's udder is free from bacteria, but the dust in the air, on the hair and skin of the udder and under side of the cow, dirt on the hands of the milker and in the pails, strainer and cans contain bacteria in large numbers, and milk at the ordinary temperature of summer air supplies the best conditions for the increase of these bacteria. Under favorable conditions the bacteria which cause the souring of milk double in number every twenty minutes. Starting with a single germ in a pail of warm milk, in twenty minutes we would have 2 germs, in forty minutes 4, in an hour eight, in two hours 64, in three hours 512, in four hours 4,096, in five hours 32,768, and at the end of only twelve hours if the growth were unchecked it would require eleven figures to write the number of bacteria that would develop from a single germ. Tests have been made with milk drawn under ordinary conditions which showed that at the close of milking of a single cow there were 500,000 germs in each cubic inch of the new warm milk. Is it any wonder that such milk cannot be kept sweet until delivered at the creamery when so many germs are in at the start and have twelve to thirty-six hours in which to multiply?

In the hot weather of early July, Dr. Paul Fischer, of our experiment station, had milk drawn at the college barn under conditions which kept it free from all bacteria. The milk was drawn into a bottle which had been sterilized, so that all germs on the glass were destroyed. The cow's udder and the milker's hands were thoroughly cleaned and then sterilized with dilute carbolic acid and the milk was drawn into the bottle without exposure to the air. After milking the bottle was corked to prevent access of germs and left on a table in a warm office. At the end of four days the milk showed no signs of any change, showing that when free from bacteria milk does not sour. Dairymen cannot use Dr. Fischer's methods in every-day practice, but the nearer they can come to them the longer their milk will keep sweet and pure. The first step in keeping milk sweet is to get it as free from germs as possible. Tin pails only should be used, as milk will soak into wood and get saturated with bacteria. The pails, strainers and cans should have all joints smoothly soldered and should be smooth and free from rust. Rough places and poorly soldered joints cannot be cleaned, and the old milk and dirt in them make ideal breeding places for germs, and if

the utensils are not thoroughly cleaned after each time they are used these germs infect each fresh lot of milk and make it sour quickly. The dairy utensils should be cleaned by first rinsing in luke-warm water, then by scrubbing thoroughly in hot water, and then should be rinsed and sterilized either by steam or boiling water. Boiling water kills all germs. After washing an exposure to bright sunlight is good, as sunlight is death to germs. Other conditions being alike, milk will sour in from six to twenty-four hours quicker when drawn into utensils carelessly washed than it will if the utensils have been cleaned as directed.

Just before milking the milker should thoroughly wash his hands in hot water, as the dust and dirt on the hands are full of germs, which, if not removed, keep dropping into the milk, and as soon as they reach the milk begin to multiply. At the college we use what is known as the sanitary milk pail. This pail has a top soldered to the sides. In the top a six-inch hole is cut, into which fits a strainer. The strainer can be taken out and washed and the six-inch opening gives ample room for washing the pail. No one who has used this pail and noticed the amount of fine dust and hair from the cow's body which collects on the cover, even with great care in milking, would ever be willing to use an open pail. The cow's udder should be brushed clean with a damp cloth just before milking, so as to remove the microbe-laden dust from it. Care should be taken to have the milker's clothes free from dust and to have as little dust in the air as possible where the cow is being milked. Strain the milk through the ordinary wire screen and then through two thicknesses of cotton flannel or four thicknesses of cheese cloth which have been washed and thoroughly scalded after each milking. The rule, then, is clean dairy utensils, i. e., clean from microbes as well as ordinarily clean, a clean udder, a clean place in which to milk, and a clean milker. These methods will not give milk absolutely free from bacteria, but there will be few in it, tests showing from 165 to 1,500 germs in a cubic inch of the warm fresh milk when carefully handled, instead of from 100,000 to 500,000, when milk is handled in the usual way.

Even the small number of microbes in carefully-handled milk are sufficient to sour it if their growth is not checked. This can be best done on the farm by chilling the milk as soon as it is drawn and then keeping it cold. The germs which sour milk grow best in milk at a temperature of 80° to 100°. At 39° their growth stops entirely, at 50° their growth is greatly checked, and at 60° their growth is slow. In a test made with milk containing 1,500 germs per cubic inch at the close of milking, cooled within ten minutes to 50° and kept at this temperature, at the end of forty-eight hours contained less than 6,800 bacteria per cubic inch—very much less than that found in ordinary new milk and an increase that in warm milk would have been made in an hour. Water in Kansas wells in summer stands at about 57°. With it milk can be cooled and held at 60°, and at this temperature the growth of the souring bacteria is so slow that milk can be kept in good condition for forty-eight hours.

The milk should be cooled as soon as possible after being drawn, as, if kept twenty or thirty minutes before cooling, the microbes in it can double in number before being checked by the cooling. The usual way of cooling is to put a can of milk into a trough of cold water. Usually the milk is stirred a little. With this method the milk near the outside of the can is cooled at once, but it may be an hour or two and sometimes several hours before the milk in the center of the can becomes cool, and all this time bacteria is multiplying in it at a rapid rate. The best method is to use a cooler, such as the Star or Champion, in which the milk flows over a chilled surface in drops and every drop is thoroughly and quickly cooled.

After the milk is cooled the cans containing it should be put in a tank of cold water and the milk not allowed to get warmer than 60° until delivered at the creamery. Where the dairyman has

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a windmill this is easily done by letting a small stream of fresh water flow through the tank. At the college we are keeping the milk in good condition for forty-eight hours without either ice or windmill. The water of our well is 58°. Using this in a Star cooler we can cool our milk to 60°—cooling the milk from thirty cows in fifteen minutes. We put the milk in regular forty-quart creamery can and set the can in a half barrel of water, the barrel being sawed so that the water comes to the neck of the can, and change water night and morning.

Summing up, there are two conditions needed for keeping milk—cleanliness and cold. H. M. C.

A New Market for Butter.

The Breeder's Gazette has a report in regard to butter, from Hon. C. B. Harris, United States Consul, Nagasaki, Japan. Consul Harris reports that butter is imported into that section of Japan in moderate quantities from this country and France, and that the latter country has succeeded in gaining a large share of the trade on account of the care and skill shown in putting up the product in fancy packages. The butter from France is put on that market in one- and two-pound tins, with the name and place of manufacture in bright, attractive colors on the tins, while the American butter mostly goes in two-pound rolls packed in tubs, and that which is sent in tins has a plain printed label that readily becomes soiled and shop-worn and does not present the attractive appearance of the French packages. This one fact has much to do with the price, which ranges from 32 to 40 cents a pound. Consul Harris thinks that we could easily enough control the trade in fancy table butter if our manufacturers would put up their product in "glit-edged" parcels and maintain a uniform quality. He states that importers in Japan are willing to give our butter the preference as soon as they are assured that it will be sent in packages that will be attractive to consumers.

Wake up, Armstrong, Hurd, Hanna, Forney, Nissley, Jensen and the rest of the Kansas creamerymen. Start your printing presses at work on can wrappers for the "Sunflower" brand "Extras" butter and print the colors of the rainbow on every sheet. Get special rates from the Santa Fe, Union Pacific, Rock Island and Missouri Pacific and go in and rout the French.

Why will it not pay our Kansas creamerymen to look up this trade? Thirty-two to 40 cents a pound is a good price for butter, and reasonable freight rates ought to be secured. The market is one that is capable of large developments with the right quality of goods and packages. Any United States Consul in Japan can probably give addresses of reliable firms for receiving the butter. H. M. C.

Fly Notes.

Mr. F. A. Marlatt, of Manhattan, reports that he has been using to good advantage a liquid for keeping off flies, which he puts on his cows with a large atomizer just before milking. The formula for one gallon of this liquid is: Fish oil 2 quarts, crude carbolic acid 1 pint, oil of pennyroyal 1 ounce, oil of tar 8 to 12 ounces, and enough kerosene to make a gallon. Apply with a brush, cloth or atomizer.

Mr. Marlatt says that the flies leave the cow immediately after the liquid is sprayed on and she stands in perfect quiet throughout the milking. It takes less time to spray the cow and milk her while she stands quietly than it does to milk her while she fights flies. Mr. Marlatt states that the cost of the liquid is about 20 cents per cow per month.



The Improved U. S. Cream Separators

In thoroughness of separation take the lead.
In completeness of design and ease of operation excel all others.
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VERMONT FARM MACHINE CO., - Bellows Falls, Vt.

He has one cow and received from her in cash in 1897 for butter \$60, besides all the milk and butter used by a family of four.

Mr. A. Jensen, proprietor of the Manhattan creamery, reports that the flies have irritated the cows to such an extent that the milk yield of his patrons has been considerably reduced and the per cent. of butter fat lowered, the flies causing a double loss.

We have not tried at the college this season any fly-protecting fluid, but when milking throw a light blanket over the cow, and find that this saves much annoyance to both cow and milker and undoubtedly increases the yield.

H. M. C.

Questions and Answers.

I take the liberty of inquiring from you whether there is any work published of an authoritative nature regarding the care of milk and the breeding and care of cows for dairy purposes.

H. C. S.

Answer.—"Wing's Milk and Its Products" is one of the most recent and best works on milk. After this has been read it may be followed by "Woll's Principles of Modern Dairy Practice" and "Russell's Dairy Bacteriology." For the business part of dairying, "Gurlier's American Dairying" is the best. "Henry's Feeds and Feeding," just published, is the most comprehensive work on the subject in the English language, and should be in every feeder's hands. "Miles' Stock Breeding" is the standard work on the science of breeding. "Curtis' Horse, Cattle, Sheep and Swine" gives the history and descriptions of the leading breeds.

The following "Farmers' Bulletins" issued by the United States Department of Agriculture, Washington, D. C., are helpful for the dairyman: No. 22, "Feeding Farm Animals;" No. 29, "Souring of Milk and Other Changes in Milk Products;" No. 42, "Facts About Milk;" No. 55, "The Dairy Herd: Its Formation and Management;" No. 57, "Butter-Making on the Farm;" No. 63, "Care of Milk on the Farm." These bulletins are sent free to any address upon application to the Secretary of Agriculture, Washington, D. C. Send for them to-day, before you put this paper away, so that you will not forget it.

H. M. C.

Milk Your Cows Clean.

The college dairy has recently conducted an experiment showing the importance of clean milking. Five cows that were giving a fair quantity of milk were selected and their milk collected in half-pint bottles, each teat contributing its share to every bottle. These samples were tested with the Babcock test, with the following results:

Cow No. 6 varied from .6 of 1 per cent. to 7.2 per cent.

Cow No. 10 varied from .2 of 1 per cent. to 6.6 per cent.

Cow No. 14 varied from 1.6 per cent. to 5.8 per cent.

Cow No. 15 varied from 1.5 per cent. to 6.8 per cent.

Cow No. 20 varied from .8 of 1 per cent. to 7.8 per cent.

The results show a gradual, although not entirely uniform, increase in the per cent. of fat from the beginning to the last of the milking except with the last two samples drawn. Here the per cent. of fat would take a sudden leap of from 1 to nearly 3 per cent. in the last sample. This shows very clearly how important it is to get all the milk. By averaging the results it was found that the last quarter of a pint was worth from three-fourths to one and a half pints of the milk first drawn from the udder. Moral: Milk clean and get fat.

D. H. O.

There is more catarrh in this section of the country than all other diseases put together, and until the last few years was supposed to be incurable. For a great many years doctors pronounced it a local disease, and prescribed local remedies, and by constantly failing to cure with local treatment, pronounced it incurable. Science has proven catarrh to be a constitutional disease, and, therefore, requires constitutional treatment. Hall's Catarrh Cure, manufactured by F. J. Cheney & Co., Toledo, Ohio, is the only constitutional cure on the market. It is taken internally in doses from ten drops to a teaspoonful. It acts directly on the blood and mucous surfaces of the system. They offer one hundred dollars for any case it fails to cure. Send for circulars and testimonials. Address, F. J. CHENEY & CO., Toledo, O. Sold by Druggists, 75c.

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Horticulture.

HARDY SHRUBS AND PERENNIALS.

There is maintained in New York city a club or association of millionaires and multi-millionaires under the name New York Farmers. These gentlemen gather around a banquet table and discuss or have discussed by eminent specialists various subjects of tillage and farm management. At a recent meeting, presided over by the great railroad magnate, Chauncey M. Depew, Professor Maynard, of the Massachusetts Agricultural College, read the following paper:

Mr. President and Gentlemen of the New York Farmers:—I feel greatly honored by an invitation to this dinner of the New York Farmers and to address gentlemen who have done so much for the cause of education and especially of agriculture and horticulture.

The subject for discussion this evening is one of great importance, for hardy flowering shrubs and plants play a very important part in the decoration of our homes and public places.

Trees and the lawn may be called the foundation or background of the landscape picture, and something of beauty may be produced with them alone; but shrubs and plants are to the landscape picture what the finishing touches of the artist are to the masterpieces in oils or water colors.

With them, we can tone down abrupt masses of tree foliage and trunks in such a way as to give a well rounded, graceful outline to our wooded groups; we can cover our walks and other artificial low objects in the foreground without obstructing the distant views; marking the entrance to short walks, or covering low steps or stairways leading to the dwellings or from one grade of the ground to another.

They serve as an ornamental cover for all kinds of stone work or masses of rocks, filling in among them pleasing natural covers where there is too much of one character—for rocks alone, unless of gigantic proportions, have little attractions. They are gloomy and hard in their aspect and need the graceful climbing vine, the pendant ferns, the bright flowers of our shrubs, or the life and sparkle of water to make them things of beauty.

Abrupt wooded slopes are made beautiful and sliding banks of soil or rock may be covered by them in such a way as to transform barren wastes into places of beauty.

At this point I cannot refrain from referring to the grand and beautiful Palisades along the lower Hudson river, which it was my pleasure to see this morning in a ride to Tarrytown. More grand or beautiful features are not found in the Eastern States or perhaps in any other section of our country, and such features should not be destroyed or marred by the greed of men.

This whole section should be taken under the control of the State, and no so-called improvements or changes should be allowed except under the supervision of men who understand the great value that attaches to such natural scenery and what can be done to preserve or improve them. The preservation of the trees and shrubs is imperative if you wish to keep this grand section from going rapidly into barrenness. With a little expense in encouraging the growth of desirable shrubs, vines and plants, the work of renovating and improving will go on rapidly.

Then, too, these plants are the ideal covering of the ground in forest growths, whose greatest beauty is never realized unless under-shrubs and shade-loving plants are abundant among them.

The borders of our natural or artificial sheets or streams of water do not possess the desired finish or quiet beauty unless more or less covered at intervals with plants and shrubs that grow to perfection under such conditions.

The beautiful masses of color produced by these plants are generally more delicate and beautiful than those produced by our trees or annual plants.

OUR WEALTH OF HARDY FLOWERING PLANTS.

I suppose no country in the world possesses so great a variety of beautiful hardy perennial flowering plants as the United States. The great range of our climate gives us the gorgeous coloring of the northern flower, the luxuriant growths of the tropics; and the many changing conditions of elevation and climate, from the Atlantic to the Pacific, results in a wonderful wealth of perennial growth.

But we are not dependent upon our country alone for the beautiful things we may have about our homes. American enterprise has searched almost the entire earth's surface for plants of a

useful or ornamental character, and our enterprising nurserymen have propagated them until every one may have products of all countries, that will endure our climate at a very little cost.

With all this wealth of material to be had almost for the asking, we often wonder why our homes are not more beautifully surrounded; and yet when we stop to think of the comparatively few species of plants that will flourish on a given soil, we can see how discouraging it must be to the novice, in his attempts to surround himself with those beautiful trees, shrubs or plants, that are such things of beauty when growing under the most favorable conditions.

PLANTS FOR YOUR CONDITIONS.

One of the first lessons, therefore, that we must learn is the nature of our soil and the plants that will best grow upon it. We can, of course, produce to a certain extent a great many conditions of soil and surroundings to accommodate the plants we desire to grow; but in our attempts in this direction we as often make failures as successes, for it requires the greatest skill and insight into nature's laws and conditions to be successful in this work, and such work must often be done at considerable expense.

One of the great causes of failure in planting our ornamental grounds is to be found in the insufficient preparation and fertilization of the soil. If we look about us for beautiful specimens of trees, shrubs or plants in their natural condition, we find that those most perfectly developed are located where there is a wealth of food material continually supplied, and this becomes necessary when we consider that in nature every species must compete more or less with other species for existence.

ROTATION.

Then I think we do not realize how quickly the roots of close planted trees and shrubs exhaust the soil of its food elements. We see this in the succession or natural rotation of plant growth in nature. For a term of years, more or less extended according to the kind, one plant grows luxuriantly under certain conditions, and when these conditions change they die, to have their places taken by other species adapted to the conditions they have produced.

This rotation is most strikingly illustrated by many hardy herbaceous perennials. On a light soil we may have, perhaps, an aster or solidago that grows luxuriantly for a time, but in a few years it has exhausted the plant food or conditions of soil suited to its growth, or the conditions of soil have changed by the accumulation of decaying stems and leaves on the surface and roots in the soil—for more or less of the roots die annually as well as the tops—until the land is fitted for the growth of another species of the same, or another widely different genus.

For another example, we may take a very wet piece of ground. Here we find coarse, rapid growing plants that quickly accumulate organic matter, and in a very few years time the soil is raised to such a grade that it becomes surface drained, and upland growths supplant those originally found in the wet soil. The roots, tubers or cornus of most of our cultivated herbaceous perennials increase and spread over the limited space we allow them so rapidly that we find it necessary to dig them up and replant them after a term of years.

PREPARATION OF THE SOIL.

We can hardly prepare the land too thoroughly by deep working (subsoiling where possible) and pulverizing of the soil; and even then with our close-planted groups we must soon add more plant food and keep up a continued supply, if we would grow the most beautiful specimens.

This is more necessary under cultivation, even, than in the natural plantations, where the growths of leaves, flowers and fruits are allowed to fall and remain about the plants, thus returning a part of that food taken from the soil each year. I have never found a better way of "keeping up" the growth of our shrubs and herbaceous perennials than by putting a neat mound of rich manure about them at the approach of winter, removing it or spreading it about them in the spring. Where the soil is naturally retentive of moisture and not easily affected by drought, I have no doubt that chemical fertilizers would also give entirely satisfactory results.

PLANTING AND GROUPING.

We often defeat our own efforts to produce permanent results by too close planting. The grouping close together of ornamental material, while it is still small, is desirable for immediate effect, but unless thinnings are soon made all the specimens are weakened and we

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have no fine, well-developed growths. This close planting and subsequent destruction seems like a waste of material, but the process is like that of thinning fruit. We often pick from off our trees three-quarters of the plums, pears or peaches and still find, at the end of the season, as large a yield, by measure, as if none had been removed, and the product is many times more valuable.

In grouping ornamental material, much more satisfactory results are obtained by planting large masses of one kind in a place, than in making mixed groups, unless the place be very small.

If a continuous border of considerable extent be planted, a large mass of one kind would be planted at the end, to be followed by some contrasting shrubs or plants; not putting those adjoining which flower at the same time, but grouping them at a considerable distance apart, so as to produce as much variety as possible.

PRUNING.

Pleasing results in ornamental planting are often defeated by the methods of pruning often practiced; this work frequently being done with hedge shears, which results in the development, with every pruning, of numerous shoots at the ends, until they become so crowded that no flowers are produced, or, at most, only small and weak ones.

The flowering of shrubs is largely influenced by the time of pruning.

Those that bloom early in the spring, from buds fully developed the previous fall, should be pruned as soon as the flowers are faded; while those that produce flowers upon the new growth must be pruned before growth begins.

Some shrubs produce an abundance of flowers when making a strong growth, while others bloom freely while the wood growth is small; and this fact should be borne in mind when we do our pruning.

The size of the flowers, too, may be influenced by pruning. With plants like the hydrangea, the rose, etc., the fewer strong buds we allow to grow on a plant the larger will be the flowers.

In pruning shrubs I would reach into the center and remove the older and weaker shoots that are being more or less smothered by the stronger ones, at the same time heading in or removing here and there some of those that may be outgrowing their neighbors, so as to give the plant a graceful, well-rounded outline. It is surprising what perfection of growth and natural beauty of form may be produced by a little attention at the proper time.

INSECTS.

Another difficulty we have to contend with is the attack of insects, although this group of ornamentals are not so much injured by these pests as are the trees.

Among the most destructive of these pests are the rose chaffer, rose slug, leaf hopper, leaf miners, scale insects and aphides or plant lice.

REMEDIES.

For all chewing insects like the rose chaffer and larvae of beetles, moths, butterflies, etc., Paris green has become the most used and effectual remedy.

It may be applied with little or no injury at the rate of one pound to 200 gallons of water. For plants with very

delicate foliage, like the flowering peach, etc., the addition of a pailfull of rather thick lime wash to fifty gallons of the solution will prevent injury. Dry Paris green applied with bellows or powder guns is often used, but its use in water is much safer. On roses it may be used until the flower buds are nearly formed, after which there would be considerable danger from inhaling the poison, and the rose bugs or chaffers may be kept from injuring the blossoms by dusting lightly with pyrethrum powder once or twice each day. Powdered hellebore is also used, to some extent, to destroy chewing insects, and is less dangerous but not quite so effectual as Paris green.

Sucking insects, like scales, aphides, leaf hoppers, etc., etc., are destroyed by the use of kerosene emulsion and solutions of whale oil soap.

The standard formula for kerosene emulsion is one-half pound of common hard soap dissolved in hot water. While this is still hot, add two gallons of common kerosene and churn with the garden syringe or hand pump until a thick creamy substance is produced. The emulsion will be more perfect if the dissolved soap is kept on the stove and near the boiling point while the churning is going on. In using, dilute, for winter application, to from five to ten gallons, and for summer use to from fifteen to twenty gallons.

For scale insects, application should be made when the young scales have just hatched out, which, with most species, occurs in May or June.

Whale oil soap is used for the destruction of scale insects in winter at the rate of one pound dissolved in from two to three gallons of water, and for summer application, one pound to five or ten gallons.

Some of this group of plants are injured by such fungous diseases as rusts, mildew, blights, etc.; but not with serious results, except in a few cases. The remedy for most fungous growths is found in some form of copper solution, but much may be done to prevent injury by keeping up a vigorous and healthy growth, through the proper care and fertilization of the soil.

I have briefly reviewed some of the important points relating to the use and care of hardy flowering shrubs and plants, and, if I have not exhausted your patience, will mention some of the most desirable varieties for general cultivation.

VARIETIES.

Among the shrubs of decided merit, and that will succeed under the greatest variety of conditions, may be mentioned the following:

Azaleas.—(Now botanically known as rhododendrons.) Mostly shade-loving plants, that thrive best in a deep, porous soil. Among the best species are the Ghent Japanese or A. Molis and the native species A. Nudiflora, Vasey and Calendulacea.

Barberry.—Bérbesis Vulgaris, B. Purpura, B. Thurberger, B. Siebaldi.

Sweet Spice Bush.—Clethra Aluifolia.

Cornels.—Cornus Florida, C. Alteruifolia, C. Pamculata, C. Siberica.

Hazels.—Corylus Avellana Purpurea.

Japem Quince.—Cydonia Japonica, scarlet, pink and white varieties.

Exochordia.—Exochordia Grandifolia.

Golden Bells.—Forsythia Suspensa, F. Fortuni, the first being especially valuable because of its pendant, drooping habit.

Hydrangea.—Hydrangia Pariculata, Hydrangia Pariculata Grandiflora.

Honeysuckles.—Ionicera Lastarica, L. Japonica.

Mock Orange.—Philadelphus Coronarius, Philadelphus Coronarius Aureus, Philadelphus Grandiflora.

White Funge.—Chionanthus Virginicus.

Purple Funge.—Rhus Cotinus.

Sumac.—Rhus Glabra, R. Osbeskei, Rhus Vernicefera.

Spiraeas.—Spiraea Brunalda, S. Calosa, Spiraea Thurbergi, S. Van Houttii, Spiraea Anthony Waterer.

Snowballs.—Viburnum Opulus (mountain cranberry), Viburnum Opulus, V. Sterilis, Viburnum Plicatum (Japanese).

Lilacs.—Syringa Vulgaris, L. Persica, of which there are a large number of newer sorts, that are great improvements on the old kinds.

Roses.—In addition to the groups of hardy perennial summer roses and other groups now so generally grown, there has recently been introduced many choice hybrids of the multiflora and rugosa crosses that are especially valuable.

EVERGREEN SHRUBS.

This group is especially valuable on account of its winter effect, but must be planted in sheltered places or protected from the burning sun during the winter.

Among the best of these are the rhododendrons, Kalmias, Audromedas, Box and Holly.

CLIMBING VINES.

No grounds with any attempt at naturalness can dispense with climbing vines to cover rocks, arbors or barren slopes.

Among the best are:
Woodbine.—Ampelopsis Quinquefolia, Ampelopsis Vistalin.

Dutchman's Pipe.—Aristolochia Sipho.

Bitter Sweet.—Celastrus Scandius.

Clematis.—Clematis Virginiana, C. Coccinea, C. Paniculata.

Trumpet Creeper.—Fecoma Radicans.

Wistaria.—Wistaria Sinensis.

HARDY HERBACEOUS PLANTS.

Japan Plume Grass.—Eulalia Japonica, Eulalia Japonica Zebrisa, Eulalia Japonica Gracillema, Eulalia Japonica Variegata.

Double Sunflower.—Helianthus Multiflora.

Hollyhock.—Althea Rosea.

Japan Iris.—Iris Koempherii.

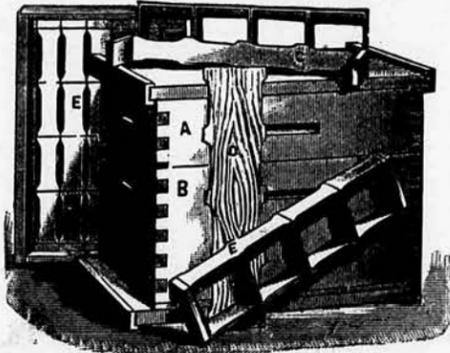
Lilies, peonies, poppies, phloxes, pyrethun, bloodroot, asters, solidagoes, yucas, ferns, Dutch bulbs, etc., etc.

The Apiary.

Conducted by A. H. DUFF, Larned, Kas., to whom inquiries relating to this department should be addressed.

Hives of the Latest Pattern.

Accompanying cut of bee-hive shows the latest improvements in hives at the present time, and bids fair to be the hive of the future for perhaps generations, with but little change if any.



While the principal features of this hive are old, yet some parts of it are practically new, especially the surplus arrangements.

B is the body of hive or brood chamber, and is a hive of itself, and is always used to contain the colony proper, and any addition to it is extra in the way of surplus room. It is called a one-story hive. This department contains eight Langstroth frames, which are in measurement seventeen and five-eighths inches long, and nine and one-eighth inches deep. This body contains about 2,000 cubic inches, which is considered the proper size for a bee-hive. It is used exclusively to keep the bees in from the time they are prepared for winter in autumn until they are strong enough in spring to add upper stories.

A is a super or half story, which contains twenty-four one-pound section boxes, and is used for comb honey exclusively. This super is first added at the beginning of the honey flow, when the colony is sufficiently strong to receive it. They are allowed to occupy this until about half full of honey, when another just like it is added, the empty one placed under the other, which induces the bees to occupy all, or both tiers at once, which they will do, as the one containing the honey is on top.

E, at the back of the hive, is an end view of this same super, and shows the position the section boxes occupy when on the hive. The cut E in front of the hive is a section of the same, being a section-holder containing four section boxes. The "section-holder" is represented lying on the hive and is marked "C." Six of those section-holders, containing four sections each, making twenty-four sections in all, are used in one super, and when two tiers are used, doubling the number to forty-eight. There will be observed at E, representing the four sections, the manner in which foundation starters are used, showing them in the upper part of the section boxes. "D" is a separator, of wood, one-sixteenth of an inch thick, which goes between each two rows of sections, and separates them, thus compelling the bees to make the honey comb straight in the section boxes.

Two bodies (B) are used, one over the other, for extracting. The upper story contains eight frames and is the same

in every respect as the brood chamber. These two stories are used also, or at least should be used, in building up strong colonies in spring preparatory to the honey harvest. A single story is not of sufficient capacity to contain strong colonies or is not large enough to breed up extremely strong colonies and contain the necessary amount of stores that such colonies should have on hand at this period of the season. By the use of two stories thus almost double the strength of colonies may be attained prior to the honey harvest, and this always means an increase in the same proportion to the honey crop. Comb honey for use in the apiary is also secured in this way, and a reserve of it may be kept on hand for the bees when at any time they need it, and it is a very small per cent. of hives that do not need frames of good sealed honey given them in spring and during the time they are breeding rapidly.

Upper stories may be used with these hives to several in number, and surplus honey thus stored over the bees three or four stories high. Some do this with comb boxes also, but it is always best to remove comb honey just as soon as it is sealed over well, for it will become more or less bee-stained and its appearance spoiled to some extent. There is no better place to preserve honey than to leave it on the hive with the bees, except in case of comb honey as stated above. Only in exceptional cases more than two story hives are used, namely, an extra body for extracting, and two supers for comb honey. When these are filled the frames of comb are extracted, and the full completed sections are removed and empty ones take their place.

Will Bees Pay?

Kansas Farmer Apiary.—I bought a colony of bees last March one year ago. I have had all the honey our family could use for all the past year and have sold enough honey and bees to pay all expenses, and now have five colonies left, all of which are rich in stores. My limited experience with bees does not permit me to make comparisons between Kansas and other States of my acquaintance. One thing I am sure of is, that bees do well for me in Kansas.

Sterling, Kas. W. L. BROWN.

Mr. Brown has been postmaster at Sterling for the last four years, and consequently almost his entiretime has been taken up with the duties of the office, so that he had but little time to look after the bees. Neither has he had any experience with bees before. This simply goes to show what can be realized from a few bees, even if our time is largely taken up in other work.

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Sleeping car accommodations can be secured through to New York and Boston at the Wabash ticket office, northwest corner Ninth and Delaware street, or wire to HENRY N. GARLAND, Western Passenger Agent, Kansas City, Mo.

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thorough, well-rounded education of the mind while their eyes are taught to see and their hands to do.

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This I Will Do!

I will pay \$100 reward for any case of colic, horse ail, curbs, splints, knotted cords, or similar trouble, that



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will not cure. It is the used and endorsed by veterinary wonder of the the Adams Ex. Co. age, and every stable should have a bottle always on hand. Locates lameness when applied by remaining moist on the part affected.

FRIEND HANSON: BALTIMORE, Md., Nov. 2, 1895. I wish you would order me one case of Tuttle's Elixir. Tell Dr. Tuttle that where I have used it on my fast horses it has done all that is claimed; in fact, so far as my experience is concerned, I have failed to find anything to equal it. Yours truly, EUGENE LEWIS, Secretary Riverton Live Stock Co.

Tuttle's Family Elixir cures Rheumatism, Sprains, Bruises, Pains, etc. Samples of either Elixir mailed free for three-cent stamps for postage. Fifty cents buys either Elixir of any druggist, or it will be sent direct on receipt of price. Particulars free.

DR. S. A. TUTTLE, Sole Proprietor, 27 Beverly Street, Boston, Mass.

Kansas Fairs in 1898.

Following is a list of fairs to be held in Kansas in 1898, their dates, locations and Secretaries, as reported to the State Board of Agriculture and compiled by Secretary R. D. Coburn:

Allen County Agricultural Society—C. H. Wheaton, Secretary, Iola; September 6-9.

Anderson County Fair Association—C. H. Rice, Secretary, Garnett; August 30-September 2.

Brown County Fair Association—John H. Meyer, Secretary, Hiawatha; September 6-9.

Clay County Fair Association—E. E. Hoopes, Secretary, Clay Center; September 14-16.

Coffey County Fair Association—J. E. Woodford, Secretary, Burlington; September 13-16.

Kaw Valley Fair Association—W. R. Stubbs, Secretary, Lawrence.

Finney County Agricultural Society—D. A. Mims, Secretary, Garden City; September 13-16.

Franklin County Agricultural Society—Chas. H. Ridgway, Secretary, Ottawa; September 20-25.

Greeley County Fair Association—I. B. Newman, Secretary, Tribune; October 12-13.

Jackson County Agricultural and Fair Association—S. B. McGrew, Secretary, Holton; August 29-September 2.

Jefferson County Agricultural and Mechanical Association—Edwin Snyder, Secretary, Oskaloosa; September 6-9.

Johnson County Co-operative Fair Association—J. M. Warren, Secretary, Edgerton; September 13-16.

Marion County Agricultural Society—F. H. Prescott, Secretary, Peabody; September 6-9.

Frankfort Fair Association—C. W. Brandenburg, Secretary, Frankfort; September 27-30.

Miami County Agricultural and Mechanical Fair Association—W. J. Carpenter, Secretary, Paola; September 27-30.

Montgomery County Agricultural Society—D. W. Kingsley, Secretary, Independence; August 30-September 2.

Southeastern Kansas District Fair Association—D. W. Kingsley, Secretary, Independence; August 9-12. (Fair to be held at Parsons.)

Morris County Exposition Company—E. J. Dill, Secretary, Council Grove; September 27-30.

Neosho County Fair Association—H. Lodge, Secretary, Erie; September 6-9.

Chanute Agricultural Fair, Park and Driving Association—Aug. Barelis, Secretary, Chanute; August 16-19.

Ness County Fair Association—N. H. Stidger, Secretary, Ness City; September 1-3.

Osage County Fair Association—W. B. Davis, Secretary, Burlingame; September 6-9.

Riley County Agricultural Society—Jerome Walbridge, Secretary, Riley; September 6-9.

Rooks County Fair Association—David B. Smyth, Secretary, Stockton; September 13-16.

Wichita State Fair Association—H. G. Toler, Secretary, Wichita; September 19-24.

Fredonia Agricultural Association—J. T. Cooper, Secretary, Fredonia; August 23-26.

Osborne County Fair Association—F. P. Wells, Secretary, Osborne; September 20-23.

Saline County Agricultural, Horticultural and Mechanical Association—H. B. Wallace, Secretary, Salina; October 5-7.

Santa Fe Route dining cars are equipped with electric fans.

MARKET REPORTS.

Kansas City Live Stock. Kansas City, July 25.—Cattle—Receipts since Saturday, 5,634; 536 calves; shipped Saturday, 759 cattle; 61 calves. The market was strong to 10c higher. The following are representative sales:

Table with columns: No., Ave. Price, No., Ave. Price. Rows include 18, 20, 21, 22, 23, 24, 25.

WESTERN STEERS. 80.....1,173 \$4.35 42.....1,128 \$4.25 48.....1,032 4.20 43.....1,075 4.15 60.....1,082 4.10 49.....1,019 4.05 120 Tx.....1,055 3.90 156.....1,005 3.60

NATIVE HEIFERS. 12.....735 \$5.00 1.....800 \$4.40 1.....920 4.40 3.....700 3.45

NATIVE COWS. 1.....1,270 \$3.75 3.....700 \$3.65 1.....1,000 3.50 4.....1,055 3.40 6.....821 3.30 1.....1,090 3.25 1.....870 2.85 1.....1,050 2.85

NATIVE FEEDERS. 2.....925 \$4.40 2.....1,130 \$2.85 1.....940 2.75 1.....850 2.50 1.....840 2.35 1.....900 2.25 2.....880 2.25

NATIVE STOCKERS. 2.....925 \$4.40 58.....532 \$4.32 2.....765 4.25 105.....875 4.15 3.....773 3.85 1.....500 3.85 1 Jer.....630 3.00 1.....850 2.50

Hogs—Receipts since Saturday, 4,582; shipped Saturday, 962. The market was strong to 5c higher. The following are representative sales:

Table with columns: No., Price, No., Price, No., Price. Rows include 149, 69, 67, 95, 80, 63, 61, 63, 57, 74, 25, 75, 9, 51, 10, 16, 11, 11, 2, 217.

Sheep—Receipts since Saturday, 2,023; shipped Saturday, 1,305. The market was active and steady. The following are representative sales:

Table with columns: No., Price, No., Price, No., Price. Rows include 6 spg. lms., 21 sh., 40 W. sh., 217 T. fdr.

St. Louis Live Stock. St. Louis, July 25.—Cattle—Receipts, 3,000; market strong to 10c higher: beef steers, \$4.50 @ \$5.80; light weights, \$3.25 @ \$4.25; stockers and feeders, \$3.00 @ \$4.50; cows and heifers, \$2.00 @ \$4.50; Texas and Indian steers, \$3.25 @ \$4.35; cows and heifers, \$3.50 @ \$3.60.

Hogs—Receipts, 2,000; market 5c higher; yorkers, \$3.85 @ \$3.95; packers, \$3.90 @ \$4.00; butchers, \$4.00 @ \$4.07 1/2.

Sheep—Receipts, 3,600; market steady; native, \$3.50 @ \$4.75; lambs, \$4.25 @ \$4.10.

Chicago Live Stock. Chicago, July 25.—Cattle—Receipts, 14,500; market active, fully 10c higher: beefs, \$4.35 @ \$5.50; cows and heifers, \$2.40 @ \$4.70; Texas steers, \$3.60 @ \$4.75; stockers and feeders, \$3.15 @ \$4.65.

Hogs—Receipts, 32,000; market active, 5 to 10c higher; light, \$3.75 @ \$4.02 1/2; mixed, \$3.85 @ \$4.10; heavy, \$3.85 @ \$4.15; rough, \$3.85 @ \$3.90.

Sheep—Receipts, 16,000; market quiet but steady; native, \$3.00 @ \$4.80; western, \$4.00 @ \$4.65; lambs, \$3.75 @ \$6.50.

Chicago Grain and Provisions. Table with columns: July 25, Opened, High'st, Low'st, Closing. Rows include Wh't, Corn, Oats, Pork, Lard, Ribs.

Kansas City Grain. Kansas City, July 25.—Wheat—Receipts here to-day were 498 cars; a week ago, 296 cars, a year ago, 512 cars. Sales by sample on track:

Hard, No. 1, 65c; No. 2 hard, 63 1/2 @ 67c; No. 3 hard, 60 @ 65c; No. 4 hard, 58 @ 61 1/2c; rejected hard, 54 1/2c. Soft, No. 1 red, nominally 74c; No. 2 red, 74 @ 75c; No. 3 red, 63 @ 70c; No. 4 red, 58 @ 61c; rejected, nominally 55 @ 60c.

Spring, No. 2, nominally 68c; No. 3 spring, 60c; rejected spring, nominally 55 @ 58c.

Corn—Receipts here to-day were 89 cars; a week ago, 68 cars; a year ago, 68 cars. Sales by sample on track: Mixed, No. 2, 31 1/2 @ 32 1/2c; No. 3 mixed, 31 @ 31 1/2c; No. 4 mixed, nominally 30c; no grade, nominally 27 @ 28c.

White, No. 2, 32 @ 32 1/2c; No. 3 white, 31 1/2 @ 32c.

Oats—Receipts here to-day were 26 cars; a week ago, 13 cars; a year ago, 19 cars. Sales by sample on track: Mixed, No. 2, 25c; No. 3 mixed, 23 @ 25c; No. 4 mixed, nominally 23c.

White, No. 3, 23 @ 27c; No. 4 white, nominally 24c; no grade, 20c.

Rye—No. 2, nominally 44c; No. 3, 40c; No. 4, nominally 38c.

Hay—Receipts here to-day were 28 cars; a week ago, 71 cars; a year ago, 63 cars. Quotations are: Choice prairie, new, \$5.25; No. 1, \$5.00; choice timothy, old, \$3.00, new, \$3.50; No. 1, old, \$7.00, new, \$8.00; clover and timothy, No. 1, old, \$4.00; new, \$5.50.

Kansas City Produce. Kansas City, July 25.—Eggs—Strictly fresh, 1/2c per doz.

Butter—Extra fancy separator, 15 1/2c; firsts, 15c; dairy, 13c; store packed, 9 1/2c.

Poultry—Hens, 6 1/2c; broilers, 10c per lb.

roosters, 10c each, ducks, 6c; young turkeys, 6c; geese, 4c; goslings, 7c; hen turkeys, 1c; young toms, 6c; old toms, 6c; pigeons, 75c per doz.

Vegetables—Roasting ears, home grown, 6c @ 7c per doz. Cauliflower, home grown, \$1.00 @ 1.25 per doz. Tomatoes, home grown, 75c @ 1.00 per bu. Cucumbers, \$2.00 per bu. box. Home grown peas, \$1.50 per bu. Green and wax beans, \$1.00 per bu. Lettuce, home grown, 80c @ 50c per bu. Onions, new, 40 @ 50c per bu. Beets, 25c per 3 doz bunches. Cabbage, home grown, 65 @ 75c per 100-lb. crate. Celery, 40 @ 50c per doz.

Potatoes—New, fancy, home grown, 30 @ 35c per bu. in car lots.

Chicago Horse Markets. Reported by F. J. Berry, Union Stock Yards, Chicago, Ill.

During the past week the market has been fair for the summer season, with a good demand for everything in its class. There are quite a number of Eastern and foreign buyers on the market, and a good local demand for all good well-broke drivers, and a much better market than we have had any summer for several years in spite of the receipts being heavier than one year ago.

We cannot tell just how long the market will continue as good as it is now, and advise early shipments. We quote:

Epressers and heavy drafters.....\$70 to \$175 1300 to 1500 lb. chunks.....\$55 to \$120 900 to 1150 lb. chunks.....\$30 to \$50 1150 to 1400 lb. farm chunks.....\$50 to \$75 Coachers and fast road horses.....\$70 to \$300 Ordinary drivers.....\$35 to \$70

These prices are for good sound horses, 5 to 8 years old, well broken and in good flesh. Plain, blemished and green stock sells at a discount.

The acreage of wheat is about 16 per cent. above the average, and the condition at the end of June about 10 per cent. above. But what of it? There is no surplus of old wheat to speak of this year.

Send Kansas Farmer Co. \$1.20 and get one year's subscription to your State agricultural paper and Rand, McNally & Co.'s "War Atlas," containing sixteen pages of colored maps—Cuba and Havana harbor, Philippine islands and China, West Indies, Spain and Portugal, North America, United States, Europe, and one page showing flags of all nations.

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Mailed free to any address on receipt of postage, as indicated: "A Colorado Summer," 50 pp., 80 illustrations. 3 cents.

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"Grand Canon of the Colorado River," 32 pp., 15 illustrations. 2 cents.

"Health Resorts of New Mexico," 80 pp., 31 illustrations. 2 cents.

"Health Resorts of Arizona," 72 pp., 18 illustrations. 2 cents.

"Las Vegas Hot Springs and Vicinity," 48 pp., 39 illustrations. 2 cents.

"To California and Back," 176 pp., 176 illustrations. 5 cents.

W. J. BLACK, G. P. A., A., T. & S. F. Railway, Topeka, Kas.

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THE KANSAS CITY STOCK YARDS ARE THE FINEST EQUIPPED, MOST MODERN IN CONSTRUCTION AND AFFORD THE BEST FACILITIES For the handling of Live Stock of any in the World. THE KANSAS CITY MARKET

Table with columns: Official Receipts for 1897, Sold in Kansas City 1897, Cattle and Calves, Hogs, Sheep. Rows include Official Receipts for 1897, Sold in Kansas City 1897, C. F. MORSE, E. E. RICHARDSON, H. P. CHILD, EUGENE RUST.

OLD GLORY has no end of admirers these days. Likewise, men appreciate a fence which knows neither defeat nor retreat. Try it. PAGE WOVEN WIRE FENCE CO., Adrian, Mich. Mention Kansas Farmer.

Advance Fence IS SOLD DIRECT TO THE FARMER. WE PAY FREIGHT AND IS SOLD ONLY THAT WAY. That saves the farmer all the middleman's profit and brings his fence within a price that beats any hand fence machine on earth.

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OUR GREAT OFFER! We are anxious to secure in the next few weeks a large number of new cash subscribers to THE KANSAS FARMER, and also to clear up as many old subscription accounts as possible, and therefore make this offer: We will make a present of this Handsome MAINE Souvenir Spoon, as described above, and a Subscription to THE COLUMBIAN to 1900, to every person paying us \$2.00 on the subscription account of THE KANSAS FARMER, whether to pay bill now due, or two years' subscription in advance, or part old bill and part new bill. Every payment of \$2.00 secures the two presents entirely free. Any subscriber to THE KANSAS FARMER who will send \$2.00 to pay his own subscription one year in advance and one new subscription, may have the advantage of this offer also. Send or bring your money at once and secure the advantage of this great free offer. Address KANSAS FARMER CO., Topeka, Kas

The Poultry Yard

Conducted by C. B. TUTTLE, Excelsior Farm, Topeka, Kas., to whom all inquiries should be addressed. We cordially invite our readers to consult us on any point pertaining to the poultry industry on which they may desire fuller information, especially as to the diseases and their symptoms which poultry is heir to, and thus assist in making this one of the most interesting and beneficial departments of the Kansas Farmer. All replies through this column are free. In writing be as explicit as possible, and if in regard to diseases, give symptoms in full, treatment, if any, to date, manner of caring for the flock, etc. Full name and postoffice address must be given in each instance to secure recognition.

KANSAS STATE POULTRY ASSOCIATION.
President, A. M. Story, Manhattan.
Secretary, J. W. F. Hughes, Topeka.

OUR BOW.

In assuming the management of this department I have three objects in view: First, to assist, as far as lies in my power, in making the Kansas Farmer a power for good to its army of readers; second, to help those of its readers who are interested in poultry culture over some of the hard places which are often encountered in the course of events, and, by a word of advice or a hint thrown out here and there, make the business a pleasure and a success to all concerned; and, thirdly, to assist in raising, if possible, the present standard of the poultry industry in our State to such a level that all engaged therein, be they old or young, large or small, shall reap a bountiful harvest of good from the better care given the flock and hence the greater profit arising therefrom.

With this three-fold object in view, I place my shoulder to the wheel, and shall push in this direction my utmost, feeling assured that if I make any mistakes (not being infallible) a lenient public will make the proper allowance for youth (?), and that the management of the paper will call me down and set me straight in short order.

Now, friends, I want to ask a favor of you the first thing. Look at the notice at head of this department, and note the request therein contained. Let us have an "Inquiry Corner," where all may feel free to ask any reasonable question, and answer those of others when possible. Let us all take hold and make this a feature of our paper, and a help to one another. Let us all be brothers and sisters in one great family, as far as helping others is concerned, remembering that in much consultation there is wisdom, and also that in endeavoring to help others we are ourselves very often the ones to reap the greater benefit.

If you are in trouble over any point in our calling, come to the "Corner," and we will help you if possible. If you are making a marked success in any particular, come to the "Corner" and tell us all about it. We like to hear this kind of reports. If you think you know a better way to do anything than others are following, don't be selfish; come and tell us all about your way, and, if results justify, we will be glad to adopt your plan. Thus we can be mutually helpful and make a pleasure and pastime of much that otherwise might be quite a serious task.

The matter lies largely in your hands, friends, as to whether the success of this department is commensurate with its deserts or not. "The meeting is now open and will proceed to business."

Suffice it to say, in conclusion, that all grades, classes and styles of poultry will stand an equal show, as far as a hearing is concerned. While, personally, I am interested in standard-bred stock only, due attention will be paid to the farmer's mixed flock, though I am glad to know that many farmers are now breeding up to the standard, or practically so. Much improvement has been made along this line during the last few years, but hope that the near future will show a much more rapid and marked improvement. Yours for more and better poultry,

C. B. TUTTLE.

Excelsior Poultry and Fruit Farm, Topeka, Kas.

Poultry Points.

Under present conditions it is no use to undertake the keeping of fancy poultry to sell again as breeders unless willing to keep first-class fowls and keep them in a first-class condition, and, in addition, every opportunity must be taken advantage of for improvement. A careful selection of the best to be kept for breeding will help wonderfully in at least maintaining good quality, while in a majority of cases it will be a great help in improving the flock.

One advantage with poultry-keeping is that it can be combined, or rather made auxiliary to other pursuits on the farm without infringing, and can be made to bring in a handsome return. It is in this way that in a majority of

cases poultry can be made most profitable on the farm. It is an exceptional case when it is best to make a specialty of poultry on the farm, but when kept in connection with the other work of the farm can nearly always be made profitable.

One of the cheapest plans of keeping down vermin is to whitewash everything inside the poultry house frequently and then clean up the droppings regularly and scatter good dressing of sandy loam over the floor. If this is done regularly, not only can lice be kept down, but better health with the fowls maintained, as the lime whitewash will not only destroy lice but will act as a disinfectant, while clean soil is one of the best disinfectants that can be used.

With the early-hatched turkeys in many cases it is an item to get them ready for market reasonably early in the fall. When this is the case it is always best to commence feeding them in good season. Give them a light feed of whole corn night and morning. Commence with a small quantity at first and then gradually increase until, at night at least, they are given all that they will eat up clean. Gradually get them into such a condition that only a short feed with a full fattening ration is necessary to properly finish for market. In addition to securing better fowls in every way when ready to market, feeding them in this way will induce them to come home regularly at night. Then, having them in good condition in good season will afford a better opportunity for taking advantage of the market.

Now is a good time to select a site to build a house especially for the poultry. Poultry must have a comfortable shelter during the winter if they are to be kept healthy and yield good returns, and this shelter should be a separate building away from the other stock. It need not be a fancy or costly house; warm, dry and convenient are the essentials, and with a little planning this may be secured at a small cost. The location should be dry and readily drained. The size must be determined by the number and kind of fowls to be kept. The particular style is more a matter of taste. If it can face south or southeast all the better. If it can be placed convenient to the orchard it will be an item. But make it warm, be sure it is dry, and allow plenty of room. By building in good season now the fowls will have become well accustomed to it by the time it is needed and there will be no risk to run of the fowls being caught in a cold storm because of delay in building their quarters.

Eldon, Mo. N. J. SHEPHERD.

Chicks in Summer--No. 2.

In Kansas Farmer of July 14 we brought the chicks up to the time of beginning to feed grain and dry food. From this time on we find one feed of Johnnycake or corn bread, made with sour milk and soda, the same as for the table, only mixed stiffer and drier, with a tablespoonful of ground bone and the same of ground meat or dried blood added for each twenty-five chicks, and baked in the oven until thoroughly done, once a day, say for morning feed. This cake, when cold, can be crumbled fine and a little grit added and fed this way, or, for variety, it may be soaked in sweet milk and squeezed as dry as possible, and fed with the grit added. Always add grit to soft feed at least once a day.

This grit may consist of any of the commercial products, which can be bought in both chick and fowl sizes. "Mica Crystal Grit" is considered one of the best, or it may be clear glass or white earthenware—like broken dishes—pounded up fine. The object in feeding the grit with their soft food once a day is to be sure they get it; for without some sharp substance in their gizzards to grind up the food, indigestion is the inevitable result, and this will cause bowel trouble or diarrhea. So, if the chicks begin to show signs of this disease, if grit is not being fed as indicated, the sooner its use is begun the better for the chicks and also for their owner. All the medicines in the world will not have the desired effect, if caused from lack of grit.

Again, for variety's sake, the morning feed may be made up of two parts corn meal or finely-ground chop and one part of wheat bran, mixed to a crumbly state with hot water or milk, with the bone, meat and grit added; don't forget these three items. While chicks have been raised, and may be again, without them, yet they thrive so much better and grow so much faster with them that it more than pays to use them. Where plenty of milk is used to mix the food and also given them to drink it will largely take the place of the meat or blood.

The other feeds throughout the day should be of as great a variety as is

possible to obtain, such as millet, cracked corn, broken rice, broken wheat or pin-head oat meal. Some feed ordinary rolled oats, but it is not considered a safe food for the reason that it has a tendency to cause diarrhea, and is liable also to swell in the crop, especially if given all they will eat and all the water they want immediately after. If rolled oats are fed at all it should be used in limited quantities, and water withheld for a while, until the process of digestion has set in. With the pin-head no such trouble occurs, as the oats are cut, not rolled, and do not seem to be so much inclined to swell.

Another excellent feed for the chicks after they are two or three weeks old is scalded wheat or screenings. Take enough wheat for the feed the next time, and pour boiling water over it and cover up tight. This is highly relished by both young and old fowls. Screenings or chaff from a clover seed cleaner or fanning mill, containing a variety of weed seeds, also makes an excellent feed for variety.

Keep a little box of wheat bran in the coop where the chicks can run to it and help themselves when they want to; only see that it is kept perfectly dry. If allowed to get wet and moldy it will cause more injury than benefit.

If this system of feeding and caring for the chicks is rigidly and persistently followed up, and plenty of pure, fresh water given two or more times a day and the water kept in the shade, the chicks will thrive and grow wonderfully, and the foundation will be laid for a vigorous constitution, and, coupled with abundant exercise and cleanliness, will produce fowls that will be profitable either for market or as breeders. Good care, good food of a varied character, and plenty of exercise to develop bone and muscle, will tell, and that largely, in rearing poultry as well as any other animal. And, very often, the difference between a loss and a gain, a failure and an abundant success, lies in the very fact that these minor details, as some might style them, have been strictly attended to.

Next week we will consider some of the more common diseases to which the chick is heir, and the remedies therefor, as recognized by the most prominent breeders and poultrymen.

Oils Cure for Cancer.

Dr. Bye has discovered a combination of oils that readily cure cancer, catarrh, tumors and malignant skin diseases. He has cured thousands of persons within the last six years, over one hundred of whom were physicians. Readers having friends afflicted should cut this out and send it to them. Book sent free giving particulars and prices of Oils. Address Dr. D. M. Bye, Box 25, Indianapolis, Ind.

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CANOLINE (antiseptic and disinfectant) prevents all contagious diseases by destroying all bacilli, microbes, disease germs, foul odors and gases. It will kill ticks, lice, fleas, screw worms, bed bugs, ants, all insects and vermin; cure scab, foot-rot, sores, galls, bites and stings; keep off flies, gnats and mosquitoes. It is non-poisonous. Cheapest and best on earth. One bottle will make twenty or more ready for use. Twenty-five and 50 cents per bottle; or in gallon lots by all dealers; or the Cannon Chemical Co., St. Louis, Mo. Take no substitute.

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"What the people of this country want to do," said an old war veteran, "is to drop a good many other things till they commit the 'Star-Spangled Banner' to memory. I'll bet right now that there are from ninety-five to ninety-eight per cent. of our entire population that cannot repeat our national anthem off hand, and it's a burning shame.

"Let me tell you what happened the night of the Fourth. There was quite a company assembled in the evening to celebrate in a mild sort of way. We had members of the Loyal Legion, G. A. R. men and former members of the navy, with their wives and daughters, and representatives of all the professions, school teachers included. A former officer of the army proposed that we sing the 'Star-Spangled Banner' in chorus. A professor of music played the piano and a fine amateur vocalist took the lead. Say, you ought to have heard that chorus. For the first two or three lines it was grand, for everybody knew what to say up to that point. Then the break came. Some stopped altogether. Others kept yawping 'tum-tums,' 'tal-lalas,' 'yeows-yeows' or 'umity-umity-umps' till I was mad enough to go to war. Finally the leader got to the end of her string and they actually had to look up a book of poems before we could go through with the song.

"What do you think of that? It happened right here in Detroit, and we're up in 'G' as far as patriotism and intelligence are concerned. Yes, sir, the whole big room full broke down, and I've seen the same thing happen at army reunions. I'd like to see a good stiff law requiring everybody to learn the national anthem, and no one who cannot repeat it without a skip should be allowed to vote. That's where I stand on the subject."—Detroit Free Press.

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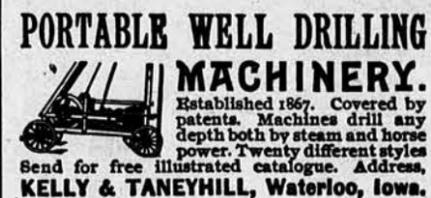
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