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## Agricultural Matters.

### IMPROVEMENT IN THE CHEMICAL COMPOSITION OF THE CORN KERNEL.

From Bulletin No. 55, Illinois Experiment Station. By Prof. Cyril George Hopkins.

#### INTRODUCTION.

The many different uses which are made of corn and the enormous value of the crop to the United States in general, and to the State of Illinois in particular, may certainly be deemed sufficient reason for investigating the possibility of making improvements in the chemical composition of this important grain. The nature of any desired improvement will, of course, depend upon the use which is to be made of the crop produced. For example, if corn is grown for the manufacture of starch, glucose sugar, sirup, or alcohol, it is desirable that the grain contain a high percentage of carbohydrates, and that the percentages of its other chief constituents, protein and fat, should be reduced as much as possible. If corn is to be used as feed for growing animals or manufactured into corn flour for human food, a higher percentage of protein will certainly increase its value. If it is to be used chiefly for fattening stock, perhaps an increased percentage of fat would be an improvement.

That the chemical composition of corn can be changed seems reasonably probable from the changes which have been produced in some other plants, notably in the sugar beet.

#### PRELIMINARY STUDY.

Before the work reported in this bulletin could be begun, it was necessary to make a chemical study of the corn plant, and to devise methods for conducting experiments with the object of improving the composition of the grain. It is known that the mineral content of plants can be changed to some extent by the addition to the soil of mineral materials in a form readily available to the plant, but that the temporary change thus effected would have an appreciable hereditary tendency seems very unlikely. The method of procedure which seemed most promising is based upon the common method of making improvement in animals, namely, selecting the best examples of the desired type and breeding successively and under the best conditions from that stock, retaining from each generation only the highest types obtained. This is practically the method by which the sugar content of certain varieties of beets has been increased from less than 5 per cent to 12 or even 16 per cent. A small portion of a beet is analyzed and, if it is found to be sufficiently rich in sugar, the beet is then set out as a "mother," or seed beet. From the seed produced beets are grown and another selection of seed beets is made on the basis of their sugar content. But the kernel of corn is not sufficient in quantity to make a complete chemical analysis by any practical method, and certainly the same kernel could not be used for analysis and also for seed.

Early in the year 1896 the writer began a special study of the chemistry of corn. Although, in the latter part of that year, all of the analytical records of the work were destroyed by fire, some valuable knowledge of the subject had been obtained. Among the important facts which the results obtained had indicated were:

1. That the ear of corn is approximately uniform throughout in the chemical composition of its kernels.
2. That there is a wide variation in the chemical composition of different ears of the same variety of corn.
3. That these conclusions are correct has been fully shown by some more recent work.

#### PLAN OF EXPERIMENTS.

The uniformity of the individual ear of corn makes it possible to determine very approximately the composition of the grain by analyzing a sample consisting of a few rows of kernels. The remainder of the kernels on the ear may then be planted if desired. The wide variation in composition between different ears is a very important factor in the work of selecting seed, as a starting point is thus furnished in each of the several lines of desired improvement. The general plan of the experiments to improve the composition of corn was to make analyses of samples from a large number of ears, select for seed those ears which were found to contain a high percentage of a desired constituent, plant in an isolated field (to avoid cross-fertilization from other corn), and grow the crop under as good field conditions as possible. From the crop obtained a large number of ears are selected, and samples of each ear are analyzed, seed being taken, as before, from those ears which are found to be highest in the percentage of the constituent which it is desired to increase. Each year this process is repeated.

While it may require ten or twenty years' work to enable one to form a very definite

opinion as to the extent to which it is possible to influence the chemical composition of corn, it is believed that the data and results thus far obtained may be of practical and scientific interest.

#### GENERAL EXPLANATIONS.

All work reported in this bulletin was done upon a single variety of corn, commonly known as Burr's White. It has been grown for several years by this station with precautions to keep the variety pure and distinct.

The analytical methods employed have been described in detail in Bulletins 43 and 53 of this station. They are based upon the methods of the Association of Official Agricultural Chemists.

By the term ash is meant the mineral matter which remains after the organic matter is burned.

Protein consists of the nitrogenous organic matter. It is the chief constituent necessary to the growth and repair of the animal body.

The fat is the material extracted from corn by ether. It is practically pure corn oil.

The carbohydrates consist chiefly of starch, but include also the small amounts of other allied substances found in corn, as sugar, fiber, and pentosans.

Unless otherwise stated, all results are reported on the basis of dry matter, or water-free substance.

#### SELECTION OF SEED CORN BY ANALYSIS.

From the 1896 crop of Burr's White corn grown upon the experiment station farm, two bushels (163 ears) of good, sound ear corn suitable for seed were taken. From each ear a sample consisting of three rows of kernels, lengthwise of the ear, was taken for analysis. The data obtained from the analysis of the 163 samples appear in Table I. [Table I is not reproduced here. It shows that the protein varied from 8.25 per cent to 13.10 per cent; the fat from 4.10 per cent to 6.02 per cent; and the carbohydrates from 79.86 per cent to 85.49 per cent. The ear which contained the highest per cent of protein also contained next to the highest, viz, 5.51 per cent, of fat, and was in all respects a remarkably valuable grain.—Editor Kansas Farmer.]

Plans were made to carry on four separate experiments to change the chemical composition of corn: (1) To increase the protein content. (2) To decrease the protein content. (3) To increase the fat content. (4) To decrease the fat content. It is of course manifest that, if the percentages of protein and fat are increased, the percentage of carbohydrates is decreased, and vice versa. From the lot of 163 ears, four different sets of seed corn were selected on the basis of chemical composition.

1. A set of twenty-four ears whose percentage of protein was comparatively high.
2. A set of twelve ears each of which contained a low percentage of protein.
3. A set of twenty-four ears high in fat content.
4. A set of twelve ears low in fat content.

#### OUTLINE OF EXPERIMENTS.

In the spring of 1897 the four sets of corn which had been selected were planted on four different fields, or plots, each of which was fairly well isolated from other cornfields in order to avoid cross-fertilization by corn of different chemical composition. For convenience these four plots are called: (1) High-protein plot. (2) Low-protein plot. (3) High-fat plot. (4) Low-fat plot. Invariably the seed planted in each row was all taken from a single ear; so that the high-protein plot, for example, contained twenty-four rows planted with seed from the twenty-four ears selected for that purpose.

In the high-protein and high-fat plots the seed containing the very highest percentage of the desired constituent was planted in the middle rows, the remainder of the seed being planted in approximately uniform gradation to either side. In the low-protein and low-fat plots the seed containing the very lowest percentages of protein and fat, respectively, was planted in the middle rows. This arrangement may be clearly seen by referring to the tables.

By planting plots of both high-protein and low-protein corn, or of both high-fat and low-fat corn, results may be obtained which show the influence of selected seed, as independent and distinguishable from the effects due to the influence of the season.

The plots were given ordinary cultivation, and a good crop of corn was grown on each. When the corn was harvested a set of ten good ears was selected from each row, excepting from some outer rows. From some of the middle rows duplicate sets of ten ears each were taken from the same row, as will be seen from the tables, the analytical data from such rows being given in duplicate in all cases. Two rows of kernels (lengthwise of the ear) were taken from each of the ten ears and mixed to form a composite sample to represent the good corn grown on each row.

#### EXPERIMENTS TO INFLUENCE THE PROTEIN CONTENT OF CORN.

The results from the experiments to

change the percentage of protein in corn will be first considered. The tables are arranged to show the percentage of protein in the dry matter of the seed planted and the crop produced. For reference, the station laboratory serial numbers of all samples analyzed are also given (see Tables 2 and 3).

TABLE 2.—Protein in Corn Planted and Harvested on High-protein Plot in 1897:

Plot row No.	Corn planted.		Corn harvested.	
	Corn No.	Protein, per cent.	Corn No.	Protein, per cent.
1	94	11.89	270	9.61
2	86	12.07	275	11.07
3	230	12.10	280	10.94
4	213	12.40	285	11.48
5	100	12.28	290	10.85
6	119	12.38	295	11.04
7	227	12.63	300	11.46
8	153	12.51	305	11.57
9	175	12.68	310	11.17
10	84	12.79	315	11.14
11	110	12.81	320	11.16
12	126	13.87	325	11.60
13	92	12.96	330	11.31
14	177	13.06	335	11.07
15	188	13.10	340	11.44
16	232	12.76	345	10.89
17	87	12.40	350	10.67
18	204	12.57	355	10.34
19	105	12.36	360	11.48
20	141	12.42	365	11.05
21	172	12.38	370	10.75
22	222	12.34	375	10.86
23	147	12.31	380	11.07
24	208	12.05	385	10.88
			390	11.73
			395	10.76
			400	11.30
			405	11.53
Plot averages.		12.54		11.10

TABLE 3.—Protein in Corn Planted and Harvested on Low-protein Plot in 1897:

Plot row No.	Corn planted.		Corn harvested.	
	Corn No.	Protein, per cent.	Corn No.	Protein, per cent.
1	151	9.31	410	10.59
2	114	9.12	415	10.39
3	83	9.08	420	10.36
4	225	9.15	425	10.10
5	116	8.38	430	10.73
6	145	8.25	435	9.90
7	99	8.40	440	10.36
8	215	9.22	445	10.20
9	185	9.33	450	9.89
10	164	9.36	455	10.24
11	113	9.30	460	11.20
12	193	9.47	465	12.24
			470	10.44
			475	11.02
			480	11.25
			485	11.11
			490	12.07
			495	11.68
			500	11.58
			505	12.26
			510	11.20
			515	11.97
			520	12.33
			525	12.30
			530	9.64
			535	9.93
			540	10.65
			545	11.05
			550	9.89
			555	10.22
			560	11.08
			565	10.29
			570	11.72
			575	8.76
			580	11.43
			585	11.73
			590	11.18
			595	10.94
			600	13.62
			605	11.55
			610	10.99
			615	11.07
			620	9.18
			625	11.40
			630	12.24
			635	10.06
			640	11.02
			645	10.78
			650	11.28
			655	11.09
			660	12.85
			665	11.17
Plot averages.		9.03		10.55

It is observed that the average composition of the corn from the high-protein plot shows a protein content of 11.10 per cent, while 10.55 is the average percentage of protein in the corn from the low-protein plot, indicating that the difference, .55 per cent, may be ascribed to the influence of the seed selection. On account of the plan, or order, in which the seed corn was arranged in the plots, that is, with the corn of highest protein content in the central rows of the high-protein plot, and the corn of lowest protein content in the central rows of the low-protein plot, we might expect to find a somewhat wider average difference in protein content if we consider only the corn grown on the central half of each plot. From rows 7 to 18 of the high-protein plot we find the average protein content of the corn produced to be 11.12 per cent, while 10.21 is the average percentage of protein in the corn from rows 4 to 9 of the low-protein plot, thus showing an average difference of .91 per cent.

From each set of ten ears from the 1897 crop, four of those which appeared most suitable for seed corn were reserved for further use. These amounted to 112 ears from the high-protein plot and forty-eight ears from the low-protein plot. From each of these ears a sample consisting of three or four rows of kernels was taken for analysis, only protein and dry matter being determined. Tables 4 and 5 give the percentage of protein in the dry matter of these samples. The laboratory numbers of these samples of single ears afford ready reference to the row of the plot in which they grew and to the seed from which they were grown. Thus, to each four ears are given the four numbers immediately following the number given to the composite sample of ten ears from the same row. For example, the composite sample from ten ears from row 1, high-protein plot, 1897, is given No. 270, as will be seen by reference to Table 2; and the four samples of single ears from the same row are numbered 271, 272, 273, and 274 (Table 4). Table 2 also shows that these ears grew from corn No. 94, which contained 11.89 per cent of protein in the dry matter; so that the complete pedigree of each ear is kept from the beginning of these experiments.

While, as has already been shown, the protein content of corn from the high-protein plot averages higher than that from the low-protein plot, attention is called to the wide variation in the percentage of protein in corn from different ears grown in a single season, in the same plot of ground, and from seed of nearly uniform protein



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content. This is especially marked in the ears from the low-protein plot (Table 5). For example, corn No. 458 contains 8.22 per cent of protein and grew from seed No. 185 which contained 9.33 per cent of protein; while corn No. 466 contains 13.98 per cent of protein and grew from seed No. 113 whose protein content was 9.30 per cent.

Of course the pedigree of the individual ears used for seed in 1897 was not known, and possibly some variations may be due to hereditary influences; but it seems probable that the wide variations are caused principally by local differences of soil conditions. Some efforts to obviate this difficulty are discussed farther on.

In order to retain hereditary influences the seed for the high-protein plot for 1898 was all selected from corn which grew from seed of high protein content the previous year. On this account corn with high protein content from the low-protein plot was rejected for seed. Likewise seed for 1898 for the low-protein plot was selected only from corn which grew upon that plot in 1897.

TABLE 4.—Protein in Samples of One Hundred Twelve Ears of Corn Grown on High-protein Plot in 1897:

Corn No.	Protein, per cent.	Corn No.	Protein, per cent.
271	8.82	341	11.65
272	8.42	342	11.35
273	11.60	343	10.60
274	8.34	344	12.16
275	12.83	345	11.63
276	10.46	346	12.26
277	9.95	347	8.76
278	10.96	348	10.69
279	12.62	349	11.39
280	10.43	350	10.59
281	9.87	351	9.65
282	11.58	352	8.83
283	10.97	353	11.08
284	11.08	354	11.39
285	10.23	355	9.12
286	12.99	356	11.63
287	11.52	357	9.98
288	10.44	358	10.45
289	11.02	359	11.89
290	11.25	360	12.01
291	12.07	361	9.51
292	11.68	362	11.43
293	11.58	363	11.76
294	12.26	364	11.75
295	11.20	365	9.46
296	11.97	366	11.17
297	12.33	367	8.67
298	12.30	368	10.47
299	9.64	369	10.92
300	9.93	370	9.32
301	10.65	371	12.28
302	11.05	372	9.31
303	9.89	373	11.00
304	10.22	374	12.23
305	11.08	375	1.99
306	10.29	376	12.10
307	11.72	377	9.26
308	8.76	378	9.70
309	11.43	379	9.18
310	10.94	380	12.46
311	11.18	381	11.14
312	10.99	382	10.03
313	11.07	383	13.27
314	9.18	384	9.94
315	11.40	385	11.78
316	12.24	386	11.30
317	10.06	387	11.08
318	11.02	388	11.23
319	10.78	389	10.92
320	11.28	390	9.72
321	11.09	391	11.14
322	12.85	392	10.44
323		393	12.72
324		394	12.80
325		395	11.17

TABLE 5.—Protein in Samples of Forty-eight Ears of Corn Grown on Low-protein Plot in 1897.

Corn No.	Protein, per cent.	Corn No.	Protein, per cent.
411	11.37	441	10.25
412	11.47	442	10.28
413	11.36	443	11.40
414	11.15	444	9.34
415	8.88	445	8.84
416	9.26	446	11.27
417	11.62	447	9.05
418	10.43	448	8.95
419	9.60	449	10.80
420	9.93	450	10.07
421	12.45	451	12.13
422	10.43	452	10.16
423	11.46	453	10.22
424	8.29	454	8.22
425	10.19	455	11.92
426	9.69	456	11.61
427	10.98	457	10.85
428	9.67	458	10.04
429	9.91	459	11.68
430	12.85	460	13.98
431	9.38	461	12.55
432	10.03	462	13.89
433	10.97	463	12.19
434	9.28	464	

In planting the corn in 1898, the same general plan of the previous year was followed. Good crops of corn were grown. Sets of ten ears each were taken from each row, duplicate sets being taken from some rows, as will appear in the tables. Composite samples to represent each row

(Continued on page 4.)



## The Stock Interest.

### THOROUGHbred STOCK SALES.

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

SEPTEMBER 22—Allen Park, Poland-Chinas, Columbia, Mo.  
 SEPTEMBER 27—Hamp B. Watts, Herefords, Fayette, Mo.  
 SEPTEMBER 29—W. N. Winn & Son, Poland-Chinas, Springfield, Ill.  
 OCTOBER 2—M. C. Vansell, Poland-Chinas, Muscotah, Kas.  
 OCTOBER 14—Gus Aaron and John Bollin, Leavenworth, Kans., Poland-Chinas.  
 OCTOBER 17—George Bothwell, Shorthorns, Kansas City, Mo.  
 OCTOBER 18—H. C. Duncan, Shorthorns, Kansas City, Mo.  
 OCTOBER 19—Thos. W. Ragsdale, Shorthorns, Kansas City, Mo.  
 OCTOBER 20—John Burrus, Shorthorns, Kansas City, Mo.  
 OCTOBER 28—E. E. Axline, Poland-Chinas, Oak Grove, Mo.  
 NOVEMBER 1—W. T. Clay, Shorthorns, Kansas City, Mo.  
 NOVEMBER 2—T. J. Young, Shorthorns, Kansas City, Mo.  
 DECEMBER 6-7—Armour, Funkhouser, Sparks, Herefords, Kansas City, Mo.

### WOUNDS OF LIVE STOCK.

Among the other qualifications of the farmer, he must be something of a surgeon. That is, he must know how to treat wounds that are liable to occur among his live stock. In a recent edition of the Illinois Agriculturist, published by the Agricultural Club, University of Illinois, we find an article by D. McIntosh, professor of veterinary science, which gives some directions which we think our readers ought to have before them:

"Wounds are of four kinds, clean-cut, torn, bruised, and punctured. A clean-cut wound, lengthwise of the muscle, is the easiest to manage. First, see how deep it is and that there is no foreign substance in it, then stop the bleeding by applying hot or cold water. If a large artery has been cut, tie it. Put a teaspoonful of carbolic acid into a quart of water and let a little of this run over the cut surface. If the wound is not deep, the edges of it can be drawn together by either silk thread or catgut steeped in the above solution. If, however, the wound is across the muscle, or an inch or more in depth, do not stitch, because the cut ends will move below the stitches.

Torn wounds should have the bleeding stopped as above mentioned and then cleaned by letting water run over them. Do not try to sew them up. If it should assume an unhealthy appearance, use acetate of lead, half an ounce; sulphate of zinc, half an ounce; carbolic acid, one drachm, and water, one quart. Clean the wound with water and apply this lotion twice a day.

Punctured wounds are the worst of all because they are liable to have foreign substances, such as hair and pieces of wood within, causing inflammation, mortification, and death. Probe the part to find the depth and direction of the wound, see if there is any foreign substance in it and remove it. Clean it as well as possible, then dip a piece of soft muslin in a solution of carbolic acid, three drachms; water, four ounces; press this to the bottom of the wound, let it remain a few hours, draw it out and put in a fresh one, and do this three times a day. When it begins to matter the danger is passed. Clean it out twice a day and inject a little of the carbolic acid lotion used for cut wounds.

Bruised wounds, if bathed with acetate of lead, half an ounce; water, one quart, several times a day, will not inflame. Sometimes matter will collect and the parts will swell up and be soft and puffy. In this case open it and inject a little of the following twice a day: Zinc chloride, two drachms; water, one quart. If it leaves a thickening rub with the following every second week: Binioidide of mercury, one drachm; lard, one and one-half ounces.

For old, unhealthy sores, such as are made my constant rubbing, and will not heal, remove the cause and apply a little terchloride of antimony with a feather. In three days a scab will come off and if it looks soft and spongy, apply a little more of the antimony every three days until the part becomes healthy. Then use zinc oxide, one ounce; lard, two ounces; rubbing on a little once daily. When the bruises are below the knee, in what is called the low order of tissue, more care will be required. Usually a low form of inflammation sets in, a yellowish discharge begins, and the surrounding parts swell and becomes hard, the center of the wound 223 up, and we have a very bad blemish. The first thing to do in case of a barbed-wire cut on these parts is to put the animal where it can be kept quiet. Bathe the leg every half hour for the first twenty-four hours with a lotion made of acetate of lead, half an ounce; sulphate of zinc, half an ounce; tincture of arnica, two ounces; water, one quart. After the first twenty-four hours, bathe it three times a day. If it fills up higher than the skin, apply a little bichloride of mercury with a smooth piece of stick, but do not use more at a time than will lie on a dime, as there is danger of the poison being absorbed. If

the animal is fevered or its legs swell from standing give the adult horse half an ounce of nitrate of potassium three times a day in drinking water or a bran mash for a few days, and give half this quantity to a yearling. If in an unthrifty condition give the following: Sulphate of iron, four ounces; nux vomica, two ounces; mix and divide into twenty-four doses, one to be given twice a day in a mash, and half the quantity for a yearling.

### Export Cattle for British Market.

Judging from quotations in the principal British centers, where the beef of this continent is sold, the Canadian beef is a great deal below the quality of that produced by our neighbors to the south of us. I, for one, can not see why we should not send over as good heaves as the States are able to do, but that is one thing and the doing of it another. If calves were raised according to the following method there would be less complaint about the quality of the beef sent to England. I will first deal with the suckling calf. Say that it has seven months with its mother. When it is taken from its mother, I would give it one suckle per day for another month, and besides good hay, one meal per day of turnips. When it is thoroughly weaned, give it in addition to its turnips and hay, one good feed per day of green cut oats. Started in this way it is bound to make rapid gain all through the first winter. When spring comes and it goes out on the pasture, let it have one feed every night of green oats or good hay. It should be housed for the first month or so, after getting out on the pasture, or until the grass gets good, when it will not care to come in for extra feed. When the weather begins to get cold and stormy, before commencement of winter, put it up at night, and give a feed of good hay, until such time as the best of the grazing is over for the season.

During the second winter feed hay and green oats morning and noon, hay in the evening, and give the same treatment during the succeeding spring and fall, as recommended for the previous spring and fall. Next and last season that you have to feed it, give during the winter one feed of hay in the morning, and at noon and evening green cut oats, and observe the same care, as already mentioned, during the first month after turning to pasture, if you have not previously shipped. During its whole life upon the farm let there be plenty of a salt and sulphur mixture in a box where the animals have ready access to it.

I will now speak of the hand-fed calf. Give it new milk until 6 weeks old, or even a little longer. After that skim-milk as long as you please, and when it begins to eat give it a little bran and chop with just a sprinkling of salt among it. In the case of its being calved before the spring, give it the finest hay that you have got, and when it is out to pasture give it one pound chop and bran at midday (that is to make up for the loss of the new milk), increasing the supply as the calf ages until the fall, when it may have three pounds of chop until it is stabled for the winter, then treat same as suckler in the feed all along.

Do not feed at any time, but always have stated times and keep to them. Keep calves comfortable but by no means allow them to get too warm. Give water first thing every morning and don't allow them to go hanging around the stables or the bluffs for food. They will take all the exercise they want when put out for water. If you allow them to hang around the bluffs you will not make anything out of your summer's labor. What I have said so far applies to good grade cattle. It is always best to allow no stranger to go about the stables, as stock do not settle the same afterwards as they do when the regular attendant, whom they know, goes in and out of the stable.

I feel sure that if the stock we export as beef is attended in the manner I have briefly outlined, or even better, and not in the slipshod style too often followed in the past, live stock would soon be the best paying item of the mixed prairie farm, and that we as farmers would secure an equal, or even a higher price, than the States' farmers do. Let all who have not been too good to their main paying branch of mixed farming start with an improved style of feeding, pay careful attention to the progress made, and compare it with that made under the old usual style of work, in which anything will do to winter export beef on. When you compare results you will ask yourself, where were my eyes before, that I could not see that I was throwing away a more secure gold mine on my own prairie farm than even the wonderful Klondike is, or ever will be, in such an out of the way region?—Prairie, in Nor-West Farmer.

### Nature and Art in Breeding.

Natural selection is exemplified in the breeding of all wild animals. The boss buffalo had to win and maintain his position at the head of the herd by being able and willing at all times to prove his supremacy by the ordeal of battle. He in his turn gave place to the best and most powerful

of the younger generation. The same is true of the other varieties of wild animals or such domestic animals as have run wild, of which Australia and the Western States have supplied recent examples. The vigor of the dam is tested by her ability to withstand the perils and hardships to which she is exposed. The "survival of the fittest" is provided for in this way and the vigor of the offspring from such animals is thus as far as possible insured. Weaklings among their offspring are weeded out in the same way. All that nature asks of her wildlings is to live and reproduce their kind. The faculty of adapting themselves to their "environments" is one means by which the purposes of Mother Nature are carried out. This faculty of adapting itself to its environment is as important for a domestic animal as for those that never knew human control.

The more completely the wild animal is left free to the guidance of its hereditary instincts the more perfectly will it reproduce its ancestral form and qualities. Whenever any animal comes under the control of man it becomes plastic in his hands, and the law of heredity is modified to a greater or less extent by the skill or caprice of its human molder. The process of change from the original type to the type desired by the molder is considerably influenced by the law which scientists call "reversion to type," or "atavism," in which the offspring from the new departure may, after several generations, suddenly and without explainable cause, show very decided resemblances to some ancestor more or less remote.

One of the methods most potent in the hands of the skilled breeder is the selection and mating of two animals of the same breed most likely to produce as the result of that mating an animal more completely in accord with his ideal than he has yet been able to find. It was this skill in selection and mating, amounting, as has been said, almost to genius, that enabled Robert Bakewell to produce in a comparatively short period domestic animals of different kinds so greatly superior in many desirable qualities to anything ever before seen. He was not equally successful in everything he tried his hand on, but in all-round achievements as a molder of domestic animals to the type he sought he has had no equal. Without some amount of this faculty, kept all the time in active exercise, the would-be breeder of pure-bred, or, indeed, of any kind of stock, will be all his life more or less a failure. The very highest skill may occasionally come a good way short of its ideal, and a poorly skilled hand may occasionally turn out something good. But without a whole-souled devotion that grudges no pains and devotes both skill and thought to the work very little can be achieved, and occasionally we find some men saying, "Our stock is running down in our hand." Sometimes a man of this stamp clears out his old stock and begins anew with something more costly. Without a corresponding change in himself, such a change will be futile. Some people say the sire is half the herd. We say the man is a bigger half still.—Nor-West Farmer.

### Principles of Controlling Horses.

Horses are essentially creatures of habit. Of gentle, confiding disposition, but excessively nervous; timid at times, irritable and prone to resist strenuously anything that frightens them, says Our Animal Friends. If, for example, you put a rope halter on an unbroken colt and tie him to a post, the more the rope cuts into the tender skin the greater will be his struggles, while he will soon yield to a halter that inflicts no pain. Through nervous fright, horses sometimes become panic-stricken and absolutely uncontrollable. They suffer also occasionally from what, for want of a better name, may be called "nervous paralysis," when they seem to be physically incapable of motion. This condition is almost invariably the result of brutal treatment, and the only reasonable explanation of it is that the first emotion aroused in the horse by punishment is fear; that when he finds that he can not escape, anger and a spirit of resistance are mingled with his fright and that these combined emotions produce this morbid state.

The horse is quick to take advantage of the ignorance or fear of those who control him. As compared with the dog, he is somewhat slow of comprehension, but he differs from the dog in this also, that he seldom becomes "too old to learn new tricks," and his memory is so retentive that he never forgets what he has once thoroughly learned.

It may also be set down as a rule, with but few exceptions, that he means to do just right; if he errs it is either from ignorance, pain or fright; rarely from stubbornness or vice. This seems to be generally unknown, or at least disregarded, for of all animals the horse is the least understood, the most harshly judged and unjustly treated; and for the least infraction of discipline, is too often brutally punished. If men who train horses would control their

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tempers, and endeavor to ascertain the cause of the animal's misbehaviour, they would find that there is often a good excuse for his actions.

### Harvesting Soy Beans.

The greatest drawback to the bean crop is the lack of any practical means of harvesting it. Beans have not been grown extensively enough to draw the attention of any of the harvesting-machine companies, so no machines have been put out. But beans are a common crop in many sections of the United States, and the writer was surprised to find, a short time ago, that there were ten companies listed in the Buyer's Guide, published by the Farm Implement News, of Chicago, that make bean-harvesters. The attention of the companies has been drawn to the fact that Kansas is coming to be a bean State, and their machines are in demand, and will doubtless be in the market in another year. We are securing samples of several of the machines at the experiment station, and will give them a trial.

However, machines that are to come do not help to harvest the present crop. We have made two machines here this fall that are doing first-rate work. The toughness of the bean-stalk makes the problem much more difficult than if it were soft and easily cut. We have not found it practicable to use a mower or self-rake because it is hard on the machine to run in the loose ground, and with the mower, driving over the beans shells them out. The bean-harvesters made in the East cut two rows, and shove them together in a windrow between where they stood, the cutting being done by heavy knives slanting back at an angle of about 45°, and running under the ground deep enough to cut the roots rather than slide over them.

Any cultivator that can be spread wide enough to straddle two rows can be used to make a machine, and the heavier the cultivator the better, as it will run steadier. The knives of a common gopher weed-cutter, or Tower's cultivator, can be used, but are a little too short. The knives should be not less than two and a half feet long, and three feet is better, as it gives more chance for adjusting. The knives can be fastened to the shank of the cultivator in various ways. If the knives of a Tower's cultivator are used they have an attachment that can easily be clamped to the shank of the cultivator by first bolting a strip of iron on the side of the shank and putting a piece between, thus leaving a place to clamp the knife, and the slant of the knife backward can be easily regulated here. Knives can be made by taking a strap of steel three-eighths inch thick and two inches wide and bending it so as to bolt on the shank, leaving about two feet for the knife, bent back so that trash will not gather on the edge. We have used such knives with fair success where the ground is very clean and the beans are not too heavy. In any case, any machine works better in clean land.

After the beans are cut we rake them immediately with a horse rake, using one horse. The horse can walk between the windrows, rake four rows at a time, and not walk on any of the beans. Our bean rows are thirty inches apart, and of course wider rows would require different adjustment. Beans may be stacked if thoroughly dry, but it is perhaps safest to thresh from the field.

We have seventy-five acres of beans at the college farm this year and know that it is a profitable crop to raise, and we would say, do not get discouraged because they are difficult to harvest. Anything that is wanted real badly will be forthcoming. A practical bean-harvester will soon be on the market and in reach of every farmer. Stay by the soy beans and they will do you good.

J. G. HANEY.

Kansas Experiment Station.

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# IMPROVEMENT IN THE CHEMICAL COMPOSITION OF THE CORN KERNEL.

(Continued from page 2.)

were made, as before, by taking two rows of kernels from each of the ten ears.

Tables 6 and 7 give the percentage of protein in the seed planted and in the crop produced in each row of the plots.

TABLE 6.—Protein in Corn Planted and Harvested on High-protein Plot in 1898.

Plot row No.	Corn planted.		Corn harvested.	
	Corn No.	Protein, per cent.	Corn No.	Protein, per cent.
1	384	11.99	820	11.18
2	386	12.01	830	10.86
3	388	12.10	840	10.64
4	347	12.26	850	11.26
5	332	12.24	860	11.01
6	306	12.33	870	11.24
7	391	12.46	880	11.26
8	281	12.62	890	10.80
9	408	12.80	900	10.55
10	339	12.85	910	10.92
11	394	13.27	920	11.06
12	326	13.02	930	10.67
13	298	13.58	940	10.67
14	289	12.99	950	12.48
15	276	12.83	960	11.74
16	407	12.72	970	11.42
17	307	12.39	980	11.20
18	379	12.28	990	11.34
19	302	12.26	1000	10.77
20	344	12.16	1010	10.96
21	383	12.23	1020	10.47
22	297	12.07	1030	10.33
23	304	11.97	1040	11.58
24	364	11.89	1050	9.78
25			1060	10.72
26			1070	10.95
27			1080	
28			1090	
29			1100	
30			1110	
31			1120	
32			1130	
33			1140	
34			1150	
35			1160	
36			1170	
37			1180	
38			1190	
39			1200	
40			1210	
41			1220	
42			1230	
43			1240	
44			1250	
45			1260	
46			1270	
47			1280	
48			1290	
49			1300	
50			1310	
51			1320	
52			1330	
53			1340	
54			1350	
55			1360	
56			1370	
57			1380	
58			1390	
59			1400	
60			1410	
61			1420	
62			1430	
63			1440	
64			1450	
65			1460	
66			1470	
67			1480	
68			1490	
69			1500	
70			1510	
71			1520	
72			1530	
73			1540	
74			1550	
75			1560	
76			1570	
77			1580	
78			1590	
79			1600	
80			1610	
81			1620	
82			1630	
83			1640	
84			1650	
85			1660	
86			1670	
87			1680	
88			1690	
89			1700	
90			1710	
91			1720	
92			1730	
93			1740	
94			1750	
95			1760	
96			1770	
97			1780	
98			1790	
99			1800	
100			1810	
101			1820	
102			1830	
103			1840	
104			1850	
105			1860	
106			1870	
107			1880	
108			1890	
109			1900	
110			1910	
111			1920	
112			1930	
113			1940	
114			1950	
115			1960	
116			1970	
117			1980	
118			1990	
119			2000	
120			2010	
121			2020	
122			2030	
123			2040	
124			2050	
125			2060	
126			2070	
127			2080	
128			2090	
129			2100	
130			2110	
131			2120	
132			2130	
133			2140	
134			2150	
135			2160	
136			2170	
137			2180	
138			2190	
139			2200	
140			2210	
141			2220	
142			2230	
143			2240	
144			2250	
145			2260	
146			2270	
147			2280	
148			2290	
149			2300	
150			2310	
151			2320	
152			2330	
153			2340	
154			2350	
155			2360	
156			2370	
157			2380	
158			2390	
159			2400	
160			2410	
161			2420	
162			2430	
163			2440	
164			2450	
165			2460	
166			2470	
167			2480	
168			2490	
169			2500	
170			2510	
171			2520	
172			2530	
173			2540	
174			2550	
175			2560	
176			2570	
177			2580	
178			2590	
179			2600	
180			2610	
181			2620	
182			2630	
183			2640	
184			2650	
185			2660	
186			2670	
187			2680	
188			2690	
189			2700	
190			2710	
191			2720	
192			2730	
193			2740	
194			2750	
195			2760	
196			2770	
197			2780	
198			2790	
199			2800	
200			2810	
201			2820	
202			2830	
203			2840	
204			2850	
205			2860	
206			2870	
207			2880	
208			2890	
209			2900	
210			2910	
211			2920	
212			2930	
213			2940	
214			2950	
215			2960	
216			2970	
217			2980	
218			2990	
219			3000	
220			3010	
221			3020	
222			3030	
223			3040	
224			3050	
225			3060	
226			3070	
227			3080	
228			3090	
229			3100	
230			3110	
231			3120	
232			3130	
233			3140	
234			3150	
235			3160	
236			3170	
237			3180	
238			3190	
239			3200	
240			3210	
241			3220	
242			3230	
243			3240	
244			3250	
245			3260	
246			3270	
247			3280	
248			3290	
249			3300	
250			3310	
251			3320	
252			3330	
253			3340	
254			3350	
255			3360	
256			3370	
257			3380	
258			3390	
259			3400	
260			3410	
261			3420	
262			3430	
263			3440	
264			3450	
265			3460	
266			3470	
267			3480	
268			3490	
269			3500	
270			3510	
271			3520	
272			3530	
273			3540	
274			3550	
275			3560	
276			3570	
277			3580	
278			3590	
279			3600	
280			3610	
281			3620	
282			3630	
283			3640	
284			3650	
285			3660	
286			3670	
287			3680	
288			3690	
289			3700	
290			3710	
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## WEEKLY WEATHER-CROP BULLETIN.

Weekly Weather-Crop Bulletin of the Kansas Weather Service, for week ending September 2, 1899, prepared by T. B. Jennings, Section Director:

## GENERAL CONDITIONS.

A week of almost uninterrupted sunshine; some showers occurred in the extreme eastern counties the first of the week, others occurred in some western counties the middle of the week; although the week has been one of the hottest and driest weeks of the season.

## RESULTS.

## EASTERN DIVISION.

Much of the late corn has been damaged by the dry, hot weather, and the ripening of all corn has advanced rapidly. Apples have about all fallen off in Bourbon, are falling in Cherokee and Morris, while the weather has been hard on them in Shawnee. A fair crop of clover is being put up in Atchison. Prairie-haying is nearing completion, and a good crop has been stacked. Wheat-sowing has begun in Chase and Marshall. Leaves of trees are changing color in Wilson.

Allen County.—A dry, hot week, yet plenty of stock water in the western part of county where farmers are plowing for wheat; busy haying and corn-cutting; late corn is damaged by drought.

Atchison.—A dry week; corn maturing rapidly; late corn cut by continued dry weather; a fair second crop of clover being put up; potatoes needing rain badly, some past help; grapes ripe; prairie-haying nearly over.

Bourbon.—Fine rain in eastern part of county on 27th, revived pastures and benefited some late corn, but most of the late corn to far gone to be benefited; flax fair crop; hay fair and about all in stack; apples have about all fallen off; grapes scarce.

Chase.—Corn-cutting well along; harvesting of cane and Kafir-corn begun; pastures getting dry; wheat-seeding begun; alfalfa needing rain.

Chautauqua.—Plowing, haying and corn-cutting continue; stock doing well on grass yet.

Cherokee.—A very dry week, hard on late corn and pastures; haying still progressing, and a good crop; apples falling.

Coffey.—Late corn is being injured by dry weather and chinch-bugs; three-fourths of the corn is made; ground getting too

are injuring late corn and forage crops, and cutting progresses rapidly. Apples are a light crop in Osborne, and are falling in Edwards and Reno. The third crop of alfalfa is blossoming in Saline. Wheat-seeding begins next week in Rush. Cattle, generally, are doing well, but in Sumner they are feeding the cows.

Barber.—Dry, hot week; forage crops damaged from one-third to one-half by continuous drought and heat; plowing is out of the question; water becoming scarce in some localities, but cattle doing well on the range.

Barton.—Corn-cutting nearly completed; farmers busy putting up prairie-hay, and getting ground ready for wheat; dry, hot winds daily, and rain is badly needed; pastures drying up.

Cloud.—Continued hot, dry weather has materially damaged corn.

Cowley.—Continued dry, hot weather; plowing about done.

Dickinson.—A dry, hot, dusty week; much of the plowing done, too dry to finish; corn ripe.

Edwards.—Hot and dry, with high winds; Kafir-corn and cane are about all that remains green; prairie-haying in progress with an abundant crop; winter apples falling badly.

Kingman.—Good weather for curing hay and forage crops, too dry for plowing.

Jewell.—Corn drying up too rapidly, will perhaps be cut short some; pastures drying; live stock generally doing well except some hog-cholera.

Osborne.—Hot, dry, windy week; corn-cutting in progress; a good week for threshing; wheat yielding 8 to 25 bushels; haying in progress; too dry to plow; apples a light crop.

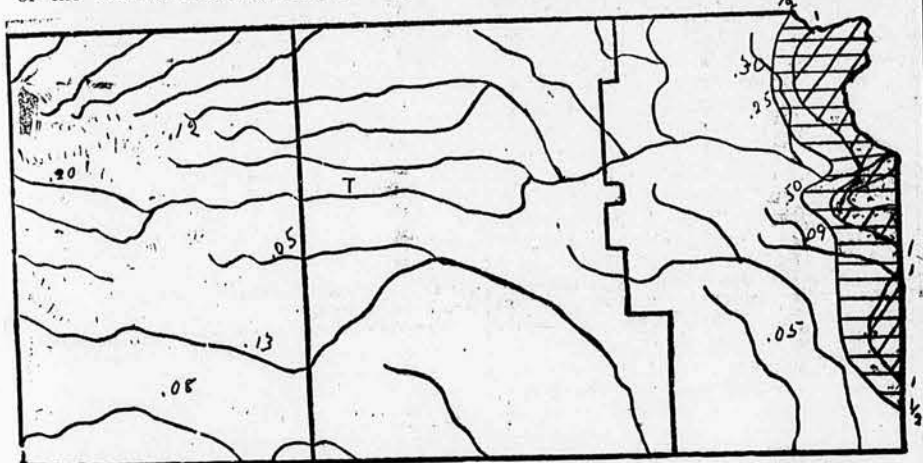
Phillips.—Dry, hot, and windy; late corn and forage badly damaged; pastures drying up; threshing in progress; haying slow on account of windy weather.

Republic.—Corn drying up rapidly; too dry to plow for wheat.

Reno.—Good weather for threshing and prairie-haying which are progressing rapidly; ground too dry to plow; corn ripening and drying rapidly; early cane and Kafir-forage being cut; a good many apples falling off.

Rush.—Plowing suspended with not much over half finished; farmers busy threshing, and putting up feed; much low grade wheat being marketed; corn badly injured by drought and hot-winds; wheat-seeding begins next week; rain badly needed.

Russell.—Ground too dry to plow; thresh-



ACTUAL RAINFALL FOR WEEK ENDING SEPTEMBER 2, 1899.

dry to plow but disking and harrowing are continued; threshing almost finished.

Elk.—Hot, dry and clear; corn drying up rapidly and will soon do to cut; army-worm in some alfalfa.

Franklin.—Corn ripening rapidly, some early corn being cut, but most of it is too green yet; pastures in good condition.

Jackson.—Hot, dry week, favorable for prairie-haying, and ripening corn rapidly, but a little hard on late planted.

Johnson.—Late corn and pastures benefited by good rain on the 27th.

Leavenworth.—All growing crops looking well; grapes ripening, fair crop; pastures short and weedy; stock, condition moderate.

Lyon.—Much corn is matured and is being cut, a heavy crop—a heavy task; an unusually large crop of melons is being harvested.

Marshall.—Corn green for the time of year but is ripening rapidly now and is safe from frost; some late corn will be cut short but the weather is good for haying; wheat-sowing has begun; ground too dry and hard to work well.

Miami.—Corn-cutting progressing; fine crop; haying about finished; very hot and too dry.

Morris.—Corn-cutting in full progress; haying about finished; the first week without rain since May; apples still falling.

Nemaha.—Ground becoming very dry; pastures yellow and bare; late corn materially damaged; ground too hard to plow; good weather for haying.

Osage.—Much early corn being cut; late corn considerably injured and some is being cut for fodder; ground too dry for plowing; worms still working on late corn; cattle doing well and stock-water plentiful.

Pottawatomie.—Fair week for finishing haying and an unusual amount of very fine hay has been put up; corn-cutting progressing rapidly; sweet potatoes being marketed, quality very good.

Riley.—Fine week for haying but too hot and dry for corn.

Shawnee.—Corn ripening rapidly; late corn hurt by weather conditions; pastures getting dry; prairie-hay mostly made, a good crop of fine quality; weather hard on late potatoes and apples; streams drying up.

Wilson.—Corn has matured very rapidly; pastures are drying up; leaves on trees changing color; ground too dry and hard to plow; much corn being cut for feed; flax is making from 3 to 10 bushels per acre.

Woodson.—Grass drying up rapidly; haying about over; late corn will not make more than an average crop.

## MIDDLE DIVISION.

The ground is too dry in much of the division to plow, and is rapidly drying in the other portions. Pastures are drying up. Haying and threshing are nearing completion. Dry weather and hot-winds

ing, and prairie-haying nearing completion.

Saline.—Corn ripening rapidly and corn-cutting being rushed; third crop of alfalfa blossoming.

Sedgwick.—Very dry; no rain; hot winds; corn drying up; no seeding done yet; chinch-bugs very numerous.

Sumner.—Very dry; pastures dried up; farmers feeding cows; plowing progressing, some have finished; threshing nearing completion.

## WESTERN DIVISION.

Late corn has been materially damaged by the dry weather and hot winds, and early corn, in the northern part, ripening too rapidly; late forage crops have been injured by the same cause. Haying continues and a large crop is now in stack. Threshing is still in progress. The range grass, generally, is well cured on the ground, insuring excellent winter pasturage.

Decatur.—Hot and dry with southerly winds, verging on hot winds; a fine week for threshing (except the winds) but hard on corn; probably all corn lightened in test weight, late corn materially so.

Ford.—Fine weather for haying; too dry for plowing; melons very fine and abundant.

Grant.—Early feed is made; late feed badly damaged; with an average winter there is more feed than will be needed for stock.

Haskell.—A pleasant week; some winds, some rain, and some hot weather; cutting feed all over the county.

Morton.—Hot and dry; mean of the maximum temperatures for the week 101°; prairie-haying still in progress—short on river bottoms.

Ness.—Dry and hot; haying progressing; a shower Wednesday night in the eastern part where pasturage is fine with rank growth; range grass cured in southern and western part; gardens about dried up except where irrigated; flies leaving, stock doing better, threshing in progress, yield poor; forage crops "cooked."

Norton.—Hot winds and sun have injured late corn, and damaged the early some, ripening it too rapidly; no fall seeding done; many cattle, mostly heifers, being shipped in; third crop of alfalfa being cut; good crop; pastures fine, and plenty of feed.

Scott.—Hot and dry, no rain since August 6; cane and millet about all cut; grass dry enough to burn; stock doing well.

Thomas.—Nothing to report; dry and hot; hot winds on August 27 and 28.

Wallace.—Dry, hot week; haying in progress, crop large; cutting corn and Kafir-corn progressing; range grass cured well for winter pasture; flies very plentiful.

Please mention Kansas Farmer when writing our advertisers.

## Gossip About Stock.

J. W. Shepherd, of Chanute, sold one of his Duroc-Jersey boars 6 months old, which received first premium at Fredonia and Erie fairs, to J. H. Stineberger of Erie.

Ex-Governor Crawford advertises for a farmer to rent his splendid farm at Baxter Springs, Kans. The right kind of a man—one who understands farming and stock-raising—can get a most desirable situation. Look for his announcement in the "Special Want Column."

W. S. Young of McPherson, Kans., is the inventor of a patent dehorning and branding chute which has proven so much a success that he has calls to all parts of the State, especially where dehorning is necessary. He has for sale all the best modern clippers, knives, or saws used in dehorning, or he will sell the outfits complete to those who desire to do their own work.

A new firm of Shorthorn breeders, the individuals of whose herd indicate a well-adhered-to and fitting ideal, both in breeding and buying, is, becoming favorably known among the farmers and cattlemen of Miami County, and the fair of that county has already been the scene of several of the new herd's triumphs. The firm's name is Glenwood Stock Farm, C. S. and W. V. Nevins, proprietors.

Sam W. Hill, Hutchinson, Kans., owner of the Crescent Herd of Poland-Chinas writes: "Hogs are doing fine. Guy Darkness becomes more a favorite every day. Sows for sale bred to him for September and October farrow. I want to sell some of my sows as I haven't room for all my coming litters. I solicit correspondence, and I promise you that I'll do buyers lots of good. If I don't sell at private sale satisfactorily I will probably have a public sale last of October or first of November."

The Zumbro Valley Stock Farm of Shropshire sheep, owned by the well-known breeder and importer, W. J. Boynton, Rochester, Minn., is advertised in this week's Farmer. Mr. Boynton has 450 registered Shropshires of the very best type which he will sell at reasonable prices in lots to suit purchasers. He makes a specialty of selling foundation flocks, and will no doubt have a number of new flocks started in Kansas to the credit of his magnificent herd. His show herds at the leading State fairs are unusually victorious.

The swine and sheep exhibitions at the Iowa State fair last week had remarkable sales of stock at satisfactory prices, several booking orders for nearly all their surplus stock at home after closing out sale stock with them. Several swine-breeders told the Farmer representative that they could have sold from 20 to 30 more than they did. One Duroc-Jersey breeder, C. H. Searle, Edgar, Neb., sold 50 purebred pigs one day of the fair to C. W. Cook, Odebolt, Iowa, at \$15 each. Over 20 individual sales brought from \$25 to \$40 each. All that is necessary now to have big sales of hogs and sheep is to have good stock and advertise.

A forthcoming sale which bids fair to attract a great deal of attention is that advertised by Allen Park, of Columbia, Mo. Mr. Park has succeeded in breeding a model herd of Poland-China swine which shows the blood of Black U. S. 4209, Model '96 1st, Tom Corwin 2d and other noted prize-winners. The sale is advertised to be held at Columbia, Mo., on September 22, and all who attend may confidently expect to have the chance of purchasing the finest animals to be found in the State of Missouri. Mr. Park's farm is two and one-half miles east of Columbia, on the Columbia and Cedar Creek turnpike. Having sold his farm, Mr. Park offers the whole herd without reserve.

The death recently of old Priceless 30169 reduces the number of service boars in the herd of C. P. Shelton, of Osawatomie, Kans., to three, and also calls attention to an emphatic proof of the correctness of a theory which many breeders are now following. This theory, which Mr. Shelton, with others, holds, is that the value of mature sires in producing more vigorous pigs warrants keeping them in such flesh as insures their extended usefulness. Priceless dies at the age of 8 years and yet he "has pigs a-coming." His fourth year found him at the height of his usefulness, and yet in his seventh year his get was more than satisfactory. On the day Priceless died, Mr. Shelton received a letter from M. C. Vansell, of Muscotah, who knew the boar and his pigs for the past season, proposing terms for securing the use of him.

The closing-out sale of J. H. Bayer, of Yates Center, Kans., whose advertisement is now running in the columns of the Farmer, will be a chance for breeders, feeders and dairymen alike. Mr. Bayer breeds Shorthorns, but he raises the milking kind and among 125 head of grades offered are many that will find future usefulness at the stall. The herd of registered animals, at the head of which stands John Patton 11661, is the pride of Mr. Bayer, but he finds, after the years of labor and expense, which even the most fortunate breeder must put in his business, that rest is more to be desired than future achievement, and he is shaping his affairs with that in view. The cows Mr. Bayer offers are mostly Bates and Bates topped, and his herd bull, bred by T. P. Babst, of Dover, Kans., goes with them. The sale will be held at Mr. Bayer's farm, two miles from Yates Center, on September 19. For terms, see the announcement in this issue.

A herd of Ohio Poland-Chinas, "born and raised" in the neighborhood made famous by the names of Hadley and Hendricks, Kiever and Welch, is one of the good things the Farmer takes pleasure this week in advertising to its readers. The herd, which has received honorable mention in these columns before, is that of C. P. Shelton, of Osawatomie, Kans. Mr. Shelton has already made a name and a place for his business in the hog economy of his section by two successful midwinter sales, in which he advantageously disposed of the accumulation from as many years of breeding in this State. Mr. Shelton's attempt the past season to raise extra early spring pigs was rendered disastrous—as in the case of many another breeder—by the unusual severity of the weather. However a herd of prolific sows and a quartet of vigorous boars soon filled up the gap and Mr. Shelton is now able to engage the attention of any one looking for a good pig. Not at all to its detriment, this herd contains some features not commonly found in the herds of the West, and one is the very strong representation it carries of the blood of old One Price. An effective concentration of this is found in

the chief boar of the herd, Priceless 30169, by One Price, who shows in his pedigree double crosses of old U. S. Success, Tom Corwin and Cora Shellenberger, and whose great vigor and excellence as a sire are attested by the fact that now, at 8 years of age he has sons and daughters yet to come, by the sows in Mr. Shelton's herd whose relationship was distant enough to allow the cross. To enable him to keep this grand old boar in his herd Mr. Shelton is making use of the following assistant sires: 900 Fine 35562, a Miami Valley prize-winner of Wilkes, Osgood and Tecumseh blood, and himself 6 years old; Sixteen to One 41627, by Welch's Black U. S., by Old U. S. and out of a One Price dam, who, on account of his numerous get, will be parted with for the right kind of consideration; Chief Fortune, by Kiever's Chief Again, by Chief Tecumseh 2d, by Fortune and thence directly to Old Black U. S. This latter boar Mr. Shelton considers his best and is putting him in the place of old Priceless. Mr. Shelton has also a March boar, a grandson of Kiever's Model and by Model Look, who is a find for some one hunting a finely bred and equally well made pig for breeding. The pig is a grandson of Chief Again and his grandam, Graceful 2d, comes at the bottom of a straight line of Gracefuls six generations in length. Of the sows in this herd extended mention is impossible. A seeker for the best and most fashionable blood would not be disappointed, and a lover of old-time favorites would be delighted with two grand old Black Bess sows bred by the pioneer firm of Shepherd & Alexander. One of these, Winning Bell, though in breeding flesh, shows a most excellent back, side and ham, and a head and ear, far from impossible, even in a modern show ring. She is a credit to the sterling family she represents.

The farm known as Walnut Hill Stock Farm that lies adjoining Fayette, the county seat of Howard County, Missouri, has been the home of the successful business man and breeder, Hamp B. Watts, since 1877. His father, Benjamin Watts, came to what is now known as Howard County from Clark County in 1822, hence Hamp is to the manor born in old Howard. He founded his present herd of white-faces in 1886 with imported and Gudge & Simpson bred animals. These females and their produce were bred to the imported (in dam) Fair Boy 2d 15660, that came to this country through Thomas Clark, of Illinois. Fair Boy 2d 15660 was by Adforton 15667 and out of Wilding 4th 15661. Among the sires that succeeded Fair Boy 2d 15660 was Rare Boy 44644 by Cherry Boy 26495 and out of Rarity 11487, a daughter of Assurance 4589. In 1894 the breeding cows consisted of the daughters of the aforementioned sires and several recruits during this and the succeeding year, among which were 5 heifers sired by Flagstaff 4th 48316, a grandson of The Grove 3d 2490. The maternal grandsire was Prince Edward 7001, he a son of Lord Wilton 4057. This draft of 5 was in breeding a combination of the blood of The Grove 3d, Lord Wilton and North Pole 8946, the bull in his day and time so highly prized by Gudge & Simpson, the well-known breeders at Independence, Mo. Beginning with the herd then in 1895 no females have been added, hence the reader will have an idea of the breeding of the herd, especially of the more mature females that will go into the coming public sale, on Wednesday, September 27, 1899. Nearly one-half of the offerings that go into the sale are the sons and daughters of Beau Donald 58996, bred by Gudge & Simpson. Mr. Watts secured him in his early yearling form, prizing him both for his individuality and breeding. The sire of Beau Donald was the world's fair winner, Beau Brummel 51817, that headed the herd that won second, four animals of either sex, under 4 years old, the get of one sire. The dam of Beau Donald was Donna 33735, a daughter of Anxiety 4th 8904, and out of Dowager 6th 6932. Donna was always regarded one of the very best breeding cows in the Gudge & Simpson herd. Beau Donald was a denizen of Walnut Hill for about four years, and was reluctantly parted with August 12, 1897, going to W. H. Curtice, of Eminence, Ky., for \$1,000. In 1897 at the Kentucky State Fair he won first as best beef bull, all breeds competing. In 1898 he won first best aged bull at Ohio and Indiana State fairs, and his breeding, individuality and extra strong Hereford character sons and daughters sold him to Mr. Curtice for the even \$1,000, ranking him the highest priced bull sold in the State, and at a time, too, when the best of white-face bulls were not bringing more than one-third Beau Donald did, namely \$1,000. Nearly half of the sale offerings are the get of this great sire.

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## The Home Circle.

### THE HEATHEN CHINEE.

[Something over a quarter of a century ago this poem made its author famous.—Editor.]  
Which I wish to remark—  
And my language is plain—  
That for ways that are dark,  
And for tricks that are vain,  
The heathen Chinese is peculiar,  
Which the same I would rise to explain.

Ah Sin was his name;  
And I shall not deny  
In regard to the same  
What that name might imply,  
But his smile it was pensive and childlike,  
As I frequently remarked to Bill Nye.

It was August the third,  
And quite soft was the skies;  
Which it might be inferred  
That Ah Sin was likewise;  
Yet he played it that day upon William  
And me in a way I despise.

Which we had a small game,  
And Ah Sin took a hand;  
It was euche. The same  
He did not understand;  
But he smiled as he sat by the table,  
With a smile that was childlike and bland.

Yet the cards they were stock'd  
In a way that I grieve,  
And my feelings were shock'd  
At the state of Nye's sleeve,  
Which was stuff'd full of aces and bowers,  
And the same with intent to deceive.

But the hands that were played  
By that Heathen Chinese,  
And the points that he made,  
Were quite frightful to see—  
'Til at last he put down a right bower,  
Which the same Nye had dealt unto me.

Then I looked up at Nye,  
And he gazed upon me;  
And he rose with a sigh,  
And said, "Can this be?  
We are ruined by Chinese cheap labor!"  
And he went for that heathen Chinese.

In the scene that ensued  
I did not take a hand,  
But the floor it was strewn'd  
Like the leaves on the strand,  
With the cards that Ah Sin had been hid-  
ing  
In the game he "did not understand."

In his sleeves, which were long,  
He had twenty-four packs—  
Which was coming it strong,  
Yet I state but the facts;  
And we found on his nails, which were  
taper,  
What is frequent in tapers—that's wax.

Which is why I remark—  
And my language is plain—  
That for ways that are dark,  
And for tricks that are vain,  
The heathen Chinese is peculiar—  
Which the same I am free to maintain.  
—Bret Harte.

### BULL AND GRIZZLY FIGHT.

"Some years ago, as agent of a big firm of cattle speculators," said a well-known Pennsylvanian, "I spent a good deal of time in the great Northwest. One day, having time on my hands, I thought I would get rid of it pleasantly by a trout trip to a stream that lay a few miles south from our camp. The weather had been hot and dry for some time, and when I got over to the river I found the headwaters were not much better than dry land, all the moisture I could find being little puddles here and there in the bed. So I concluded the best thing for me to do would be to march right to camp. There was a heavy thicket along the north bank of the stream some distance above where I came out on the dry bed, and a few cottonwood trees were standing, maybe a hundred yards back from the bank. As I turned to retrace my steps I saw a small herd of wild cattle standing off to my right. Among them was a small bull, a splendid specimen of his kind. He and the rest of the herd were eyeing me with suspicious curiosity. I didn't like the appearance of the bull, for he had a way of lowering his head, throwing dirt with his fore feet and uttering an ominous sort of bellow that seemed threatening. I turned and walked away, moving toward the cottonwood trees. Glancing back over my shoulder I saw the bull coming along after me. I increased my speed and so did he, until I was running my fastest and the bull was doing his best behind me. I can't say exactly how it was done, but it wasn't many seconds before I found myself in one of the cottonwood trees, out of the reach of the bull, who was immediately under the tree, pawing dirt and acting as if very mad.

"The bull pawed and grumbled a few minutes, and then turned and walked toward the thicket, on the creek side of which there was a water hole. The other cattle went on quietly grazing where I had first seen them. I suppose the bull started toward the thicket to get a drink at the water hole, but he never got the drink. I saw him push his way into the thicket, and the next instant I could see that he had got into trouble of some kind, and that trouble proved to be a grizzly bear. A fierce struggle followed in the thicket. The tops of the bushes swayed to and fro, and I could hear the heavy crash of driftwood as the two powerful animals fought. A cloud of dust rolled up from the spot. It was not distant over

100 yards from the tree in which I had taken refuge. Scarcely two minutes elapsed before the bull broke through the bushes. His head was covered with blood and great flakes of his flesh hung from his fore shoulders. But instead of showing any signs of defeat, he seemed literally to glow with defiant rage. Instinct had simply prompted him in his retreat to seek an open space. He was lithe and wiry, yet wonderfully massive about the shoulders, combining the finest qualities of strength and symmetry. For a moment he stood glaring at the bushes he had retreated from, his nostrils distended and his whole form fixed and rigid. But scarcely had I time to note all this, when the bear, a huge, repulsive-looking brute, broke through the bushes into the opening. He was the most formidable specimen of his kind I had ever seen, and my sympathies were at once with the bull, in spite of his belligerent attitude toward me a few minutes before.

"When the bear made his appearance out of the thicket the bull did not wait for his charge, but, lowering his head to the ground, rushed madly upon the bear. The latter seemed to appreciate the abilities of the bull and summoned all the wariness of his nature to his aid. He waited until the bull was almost upon him and then sprang aside with marvellous quickness, seized his assailant's horns in his powerful grasp and pressed the bull's head down against the ground by his great strength and the weight of his enormous body, biting the bull's nose and tearing the flesh from his cheeks and shoulders with his long, sharp claws.

"Presently both animals paused in their desperate struggle, but the bear did not relax the hold he had obtained on the bull. The cessation in the struggle had probably been of ten minutes' duration when suddenly the bull made one desperate lunge, broke the embrace of the grizzly, hurled the bear off from his head and backed away some 10 paces. The bear lifted his huge head and stood ready for the next assault. The herd of cattle had by this time gathered in from the plain and surrounded the combatants, mooing and bellowing and pawing up the ground, and maintaining a terrified neutrality. The bull did not remain at rest a moment after backing away for a new charge, but, rendered furious by his wounds, he gathered all his energies and, with a resounding bellow, rushed with impetuous force and ferocity upon the bear. The latter attempted to use the tactics that had served him well at the first onslaught, but the second charge of the bull was irresistible, in spite of the bear's terrific blows with his paws, and the grizzly went down in the dust before his crazed antagonist and vainly tried to defend himself. The bull thrust his horns under the bear, caught him in the belly with one of the sharp weapons, and with one furious sweep of his head ripped a great gash in the grizzly's under side. The grizzly rose to his feet and with a howl closed with his foe and for a long time the two fought.

"While the fight was going on two eagles appeared from some mysterious eyrie and sailed and circled above the scene of the conflict, leisurely and gradually dropping nearer to the earth. Almost simultaneously with the appearance of the eagles I saw the heads of half a dozen hungry wolves emerge from the bushes where the fight had begun. I knew that the battle must soon end, and that the eagles and the wolves had scented the contest from afar, and knew by their infallible instinct that it must result in choice prey for them. The presents of these hungry birds and beasts of prey added to the terror of the conflict.

"The desperate struggle continued. The ground was torn up and covered with blood for many feet around. Both animals were grievously wounded. It was plain that neither could hold out much longer. Maimed and gory, they fought with the certainty of death, the bear rolling over and over in the dust, vainly trying to avoid the fatal horns of his adversary, and the bull ripping, thrusting and tearing the grizzly with irresistible ferocity. At last, as if determined to end the conflict, the bull drew back, lowered his head and made a third terrific charge, but blinded by the stream of blood that poured down his face, he missed his mark, stumbled and rolled headlong on the ground. In spite of frightful injuries and great exhaustion, the bear turned quickly and sprang upon his prostrate foe. He seemed to have been suddenly invigorated by this turn of the battle in his favor. With merciless sweeps of his huge claws he tore the flesh in great masses from the bull's upturned side. The advantage the bear thus obtained over the bull seemed to be understood by the herd, and the bellowing increased, dirt was thrown about in clouds and one big cow drew near the struggling animals. I believed for a moment that she intended to go to the aid of the herd's prostrate leader, so fierce was her aspect and actions, but she simply circled around the bear and the bull, bellowing and pawing. In the meantime both eagles and the wolves grew impatient of the delay in the battle's ending.

The former would now and then swoop down, as if to hurry up the finish, uttering harsh cries, and some waiting wolf would steal from his covert and make a closer reconnaissance, snapping and snarling in apparent disappointment.

"The bull and the bear rolled over and over. Nothing was now to be seen but a heaving, gory mass, dimly perceptible through the dust. As to weight the two fierce and determined brutes must have been about equally matched. The bear had the advantage of greater agility and the expert and telling use of two terrible weapons, his teeth and claws, while the bull represented more inflexible courage and greater power of endurance. The unfortunate result of the bull's last charge on the grizzly indicated that the latter's qualities would in a few minutes more settle the fight against the bull, and I was in momentary expectation of seeing such a termination, when, to my astonishment, I saw the bear relax his efforts, roll over from the body of his prostrate foe and drag himself feebly away from the spot. The grizzly had no sooner abandoned his attack on the bull than the latter was on his feet, bearing himself as erect and as fierce as ever.

"Giving his head a shake he lowered it for the fourth time, and again charged. When the dying bear had dragged himself away from the bull the eagles actually swooped down upon him and the wolves sprang from the thicket into the opening and prepared to pounce upon him. The bull scattered the impatient birds and animals as he swept on his final charge against the grizzly, and they hastily departed, shrieking and snarling. The cattle again added their bellowing to that of the bull and acted as if they understood the favorable turn the fighting had taken. As the bull hurled himself against the grizzly the latter braced himself for a last desperate struggle. He struck out wildly with his paws and the bull fell back with the force of the grizzly's blows. The bear sank to the ground, writhing in agony. The indomitable courage of the bull here prevailed. Blinded and crippled as he was, he dashed wildly at his foe again. With a last frantic effort the bear sought to make his escape, scrambling and staggering through the dust. But it was useless. His great strength was gone. The bull plunged his horns again and again into the huge form of the dying brute as he lay stretched helpless in the dust. The bear's muscles quivered and contracted. He drew his immense paws up once or twice in convulsive clutches, raised his huge head, gave one agonizing groan and fell back dead. The victorious bull raised his head, gave voice to a deep bellow and, shaking his head triumphantly, turned and walked away.

"His progress was slow and painful and he stopped and turned at short intervals and listened as if to know whether his foe would renew the battle. He walked nearly a hundred yards with the herd gathering and bellowing about him. Presently his head dropped from its proud position. He spread his legs apart as if to brace himself against the weakness that was telling upon him. Suddenly he fell as if he had been shot, a mangled, bleeding mass, and was soon dead. When I climbed out of the tree to leave the scene of that terrific combat the herd of cattle had disappeared on the plain and the eagles and the wolves were screeching, snarling and fighting over the mangled carcasses of the bull and the bear.—New York Sun.

### Reed Family Recipes.

The following have been proven by the Reed family to be entirely reliable, and are given here for the benefit of "Home Circle" readers:

#### CAKES.

Mrs. Hoyt's Cake.—One-half cup butter, two cups sugar, two-thirds cup milk or

water, three cups flour, three teaspoonfuls baking powder, whites of six eggs.

Del's Sponge Cake.—Six eggs, heaping coffee saucer of flour, heaping coffee saucer sugar; stir well; flavor; beat whites and yolks separately.

Cookies.—One-half cup butter, one-half cup sour milk, one cup sugar, one teaspoonful soda, one egg; salt; nutmeg if desired. Frosting.—One teaspoonful of gelatine dissolved in one-half cup boiling water and made stiff with sugar.

Mrs. Bunough's Cake.—One cup butter, three cups sugar, four and one-half cups flour, one cup milk, seven eggs, one-half teaspoonful soda.

Coffee Cake.—One cup molasses, one cup sugar, one cup butter, one cup coffee, four cups flour, two eggs, one teaspoonful soda, one-half cup raisins or currants, small teaspoon cloves, small teaspoon cinnamon.

Striped Cake.—Two-thirds cup butter, two cups sugar, one cup sweet milk, three eggs, three cups flour, two teaspoons baking powder; essence of lemon. Put half in two square tins and bake. To the other half add: One cup chopped raisins and a little citron, one tablespoonful molasses, one teaspoonful cinnamon, one-half teaspoonful cloves, one-half teaspoonful allspice, one teaspoonful flour. Bake and put cakes together in alternate layers, with jelly or icing between; powdered sugar on top.

Drying preparations simply develop dry catarrh; they dry up the secretions which adhere to the membrane and decompose, causing a far more serious trouble than the ordinary form of catarrh. Avoid all drying inhalants, fumes, smokes and snuffs and use that which cleanses, soothes and heals. Ely's Cream Balm is such a remedy and will cure catarrh or cold in the head easily and pleasantly. A trial size will be mailed for 10 cents. All druggists sell the 50 cent size. Ely Brothers, 56 Warren St., N. Y.

The Balm cures without pain, does not irritate or cause sneezing. It spreads itself over an irritated and angry surface, relieving immediately the painful inflammation. With Ely's Cream Balm you are armed against Nasal Catarrh and Hay Fever.

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### SIXTEENTH YEAR.

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## The Young Folks.

### A LITTLE GIRL'S PIECE.

My brother Will, he used to be  
The nicest kind of girl;  
He wore a little dress like me,  
And had his hair in curl.  
We played with dolls and tea-set then,  
And every kind of toy;  
But all those good old times are gone—  
Will turned into a boy.

Mama has made him little suits,  
With pockets in the pants,  
And cut off all his yellow curls  
And sent them to my aunts;  
And Will, he was so pleased, I believe  
He almost jumped for joy;  
But I must own I didn't like  
Will turned into a boy.

And now he plays with horrid tops  
I don't know how to spin,  
And marbles that I try to shoot  
But never hit or win;  
And leap-frog—I can't give a "back,"  
Like Charlie, Frank or Roy—  
Oh! no one knows how bad I feel,  
Since Will has turned a boy!

I have to wear frocks just the same,  
And now they're mostly white;  
I have to sit and just be good,  
While Will can climb and fight;  
But I must keep my dresses nice,  
And wear my hair in curl,  
And worst, oh! worstest thing of all—  
I have to stay a girl!

—Toronto Mail.

Written for Kansas Farmer.

### YOUNG FOLKS IN THE OLD COUNTRY.

BY ANNA MARIE NELLIS.

NUMBER 65.

#### THE SCHATZKAMMER.

On returning to our hotel in the evening of July 19, we learned that an emissary of Franz Josef had made inquiry concerning us, and that later in the day a ticket had been sent to admit us to the royal treasury museum. It "read" as follows:

"Nr. 39 Eintritts-Karte  
in die

Schatzkammer  
des Allerhöchsten Kaiserhauses.  
fuhr Frl. Anna Marie Nellis  
und 4 Personen.

nur gültig fuer 20. 7. 1899. Vorm. 10 uhr."

We had not doubted that it would come; however, we felt happy in the knowledge that we were not to be disappointed, and went to sleep to dream of sorting over the royal diamonds, and "trying on" a royal crown or two.

At promptly 10 o'clock, on July 20, we were at the "hofburg" and ready to present our ticket at the door of the "Schatzkammer." We found the way blocked by some excited people who were vainly trying to inform the guard that he should admit them. They were Americans, a mother and her two daughters, not one of whom could speak German or French; but they were urging the fact in straight United States talk that they had to leave Vienna that day and just simply must see the Schatzkammer now. The guard merely shrugged his shoulders and looked over their heads. One of our party undertook the role of interpreter, and explained to the guard the urgent needs of the three ladies. He then perfectly understood the situation and shrugged his shoulders some more, and that's all he said. The ladies were then advised by us to wait until the next day and send in their cards with request for tickets. But they were determined to see the treasures now or not at all. We mildly suggested that the guard could not make an exception to the rule for their benefit. They, however, went away grumbling about everything foreign, and Austrian foreigners in particular; still the guard remained serene and happy.

Our ticket was honored promptly and we were admitted into a long corridor, passed several handsome soldiers on guard, and were conducted down a flight of steps into a vestibule, where we were delivered to a guide whose duty it was to explain everything in the rooms that we should inquire about. The rooms are not large and only about seventy-five people are allowed to enter on any one day.

We were about to see the relics and jewels of the former "Holy Roman Empire," and we naturally felt a considerable degree of awe in contemplation of the fact. I had also read somewhere that a piece of the "true cross" was on exhibition, with other mementoes of our Savior's life and passing over; and, sure enough, one of the first articles pointed out was this piece of the "true cross." There is only one other larger piece of it shown anywhere, and that is at the Vatican in Rome. In order to render this precious relic easily recognizable at a distance it is set in a cross of silver gilt, of which it now constitutes a portion of the perpendicular. We were not permitted to touch the cross, and possibly we did not show the reverence for it we should have done. While we were looking at it a couple of Polish Christians came in and they prostrated themselves very reverently and devoutly signed the cross on their foreheads and breasts.

But there were other holy relics, among which was a piece of the tablecloth that covered the table at the "Last Supper" of our Lord. It was not a very large piece; it evidently was strongly constructed—it

"wears" well. This sacred cloth is preserved in a "pyx of silver-gilt," so our guide called it, and the little box is ornamented with pearls and precious stones. Then there was a portion of the apron our Savior wore when he washed the feet of His disciples. Both this and the portion of the tablecloth are identified by the will of Emperor Otto IV, which mentions them, and as that was only 1,200 years after the death of our Savior, these relics must certainly be genuine. A fragment from the manger in Bethlehem in which Christ was born is also there; it is covered with gems and pearls. Near these is a tube of pure gold in which is kept a bone of the arm of St. Anna. I felt a keen interest in my name-sake, so I read the inscription carefully, which is as follows: "Istud est brachium Santae Annae, matris beatae Marie," which means: This is the arm (of the arm) of Saint Anna, mother of the blessed Mary. I could not doubt it, because the inscription very plainly says so.

You will remember that St. John, St. Peter and St. Paul were arrested and imprisoned at Jerusalem and in Rome at different times. They were chained to the floor of their dungeons. Well, in this Schatzkammer are three links from the chains which bound the apostles, and each link is marked and identified so plainly that only skeptics could doubt their genuineness. Then there is a piece of the dress suit of John the Evangelist; it is of white silk, showing that he was more particular with reference to articles of his wearing apparel than was John the Baptist, who wore camel's hair. The latter saint is not forgotten, for one of his back teeth is sacredly kept in this place. It is not "gold filled," but it is set in pure gold and diamonds. He was such a plain man, he'd not know how to use it now if it were given back to him in its present condition.

In a vase near by was shown some earth which is said to have been saturated with the blood of St. Stephen when he was killed by wicked men. Next to this is the lance of St. Maurice with a nail of the Holy Cross set in the blade. This was especially interesting on account of the fact that there are comparatively so few nails of the "true cross" in existence.

An article I examined for a long time is labeled: "Evangelistarium"—the book of the Holy Gospels. When Charlemagne was entombed at Aix-la-Chapelle his body was seated in a royal chair of state, and on his knees was placed this "Evangelistarium." When the tomb was opened by order of the Emperor Otto, several hundred years later, the body of the great Charles crumbled to dust when the air reached it, but the book was preserved and it is now shown in the Schatzkammer.

There were other holy relics, but I can not describe them all for I want to mention the coronation robes and jewels of the "Holy Roman Empire." One room is devoted to this collection, and these were formerly worn by the emperors of the Germanic nation, who styled themselves "Holy Roman Emperor" for 1,000 years, to the time of Francis II, in 1806, who was the last one to make this high-sounding claim. There is the imperial crown, the imperial orb, the two scepters, the sword of Charlemagne and the sword of St. Maurice, besides the coronation mantle and articles of imperial wardrobe too numerous to mention. The imperial crown is of pure gold and bedecked with many polished precious stones. The imperial orb is also of pure gold and is surmounted by a gold cross set with brilliants, this was held in the left hand and the scepter in the right during the ceremony of coronation.

The sword of Charlemagne was presented to that great monarch over 1,000 years ago by Caliph Haroun-al-Raschid, the gentleman we often have read about in the book called "Arabian Nights," and the coronation mantle is also of Saracen origin. There are the mantle, the alba, the girdle, the dalmatica, the stole, the gloves, the stockings, the shoes, all of which were very, very interesting, but a description would make this letter too long.

The jewels belonging to the "Order of the Golden Fleece" were beautiful and are said to be extremely valuable from a financial standpoint; and the robes worn by the officers of this order are most regal in appearance.

In another room are the coronation emblems of the present empire—Austro-Hungarian, including the Kingdom of Bohemia. The crown is far more beautiful and rich in appearance than that of the Roman (old German) empire; and the diamonds and other jewels in the room dazzle one's eyes completely. I had thought the display of royal jewels in Dresden was magnificent, but these, in my estimation, are far superior. There was another imperial orb, scepter, collars of the Order of the Golden Fleece, of the Royal Hungarian Order of St. Stephen, star of the Military Order of Maria Theresa, the diamond crown of her late Majesty, Empress Elizabeth, with many other articles fairly covered with diamonds.

One diamond in particular I admired, both on account of its beauty and of its

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historic interest. It is called the "Great Florentine." It was once the property of Charles le Bold (no relation to any one you know in Kansas), Duke of Burgundy. When he met defeat at the hands of the Swiss at the battle of Granson (read Sir Walter Scott's "Anne of Guierstein" and you will know all about that battle), this diamond with the Duke's other jewels became scattered, as he had carried such stuff with him wherever he went. A Swiss soldier found it under a wagon, he looked at it and then threw it away, thinking it was a piece of glass. He afterwards picked it up and sold it to a parish priest of Montaigny for one florin, who in turn sold it for three francs, and after a long time an Italian duke bought it for 11,000 ducats, then Count Fugger, of Germany, purchased it for the imperial treasury of this country, and finally it became the property of Francis I, husband of Marie Theresa, and has since been in the royal Schatzkammer of Austria.

The silver-gilt, jewel-covered cradle of the King of Rome (Napoleon's son) is shown, also a casket containing the keys of the coffins of the deceased members of the imperial and royal house of Austria, who are located in the Capuchin church vaults in Vienna and elsewhere. Without saying anything more of this truly royal collection of interesting objects, we hasten to

#### THE CAPUCHIN CHURCH.

There are very many churches in Vienna grand enough to warrant extended description. No doubt St. Stephen's is the most important and the Votivkirche next, the latter I have not tried to describe. The Capuchin Church, in size and general appearance, would be considered by the stranger as one of the less important; but when one learns that in the vaults underneath lie the remains of many of the monarchs of Austria it assumes a degree of great consideration—to one who makes a specialty of exploring among the tombs and looking upon the outward appearance of defunct royalty.

Besides royalty it has an underground apartment devoted to mementoes of departed monks of the Capuchin brotherhood. In this department the walls and ceilings are decorated with festoons, garlands, rainbows and many other artistic devices formed of skulls, ribs, shin bones and vertebrae of the monks who lived and died during the past 400 years, in the cloisters attached to this very church. This skeleton in the corner with cowl and rosary, we are told, was once Brother Anselm, and that one over there was Brother Joseph, who died 100 years ago and that rack of leg bones, with festoons of ribs above, garnished with skulls, represents a host of brethren who were not of sufficient importance to be separately located in any part of the room. The old monk guide seemed perfectly familiar with them all and touched some of the bones in quite an affectionate manner.

We were next turned over to an old monk, dressed in a long brown gown, with peaked cowl sticking out back of his head, sandals on his feet, a white cord and many strings of beads with crosses depending from his girdle; his face was as solemn as though nothing so frivolous as a smile ever

Although it was mid-day he was provided with a lantern to escort us. We descended to an underground apartment, then through a long corridor to a door with an inscription which informed us that this was the imperial vault. The door was unlocked by our guide and we entered a hallway formed by iron grating, through which we could see many coffins and similarly cheerful objects. Our guide then began his oration, in a funereal tone of voice, telling us the occupants of the place. In the side vault was Archduke Charles, who died in 1847; next was Leopold II, who died in 1892, and on the opposite side was Charles VI, 1740; Leopold I, 1705; Joseph I, 1711; Matthias II, 1619. This last named was the first one to be entombed in these vaults.

In front we saw the large double sarcophagus which contains the Empress Maria Theresa and her husband, Francis I. The latter died in 1765, while Maria survived till 1780. Further down the aisle we saw the sarcophagus of Maria Louisa, the granddaughter of Maria Theresa, but we could not find Maria Antoinette, the daughter, who was beheaded in Paris during the "reign of terror." Her body was not permitted to be taken from France to be placed among the bones of her ancestors in the Capuchin Church vault, but I don't suppose it is much loss to her, for it is an awfully unpleasant place.

Near that of Maria Louisa is the coffin which contains the body of her son, the Duke of Reichstadt, who, as Napoleon's son, was made King of Rome while yet in his jewel-covered silver cradle. He died with only the empty title of Duke, which his grandfather gave him because he was of Austrian royal blood.

The Emperor Maximilian of Mexico, brother of the present Emperor of Austria, lies here, and I touched his coffin and remembered that he was shot by sentence of court martial for trying to transplant crowns on American soil. His casket had fresh wreaths of flowers on it, as the anniversary of his death occurred a few days before, and, according to custom, fresh flowers were brought to express the fact that memory of him was still kept alive in Vienna.

A few feet away is the coffin of Crown Prince Rudolph, who met a violent death ten years ago, during a spree. Those who knew how it was done were not permitted to remain in the land of the living. This coffin is at the farthest end of the dark aisle, and near it is another—a newer coffin; it contains the body of the Empress Elizabeth, Rudolph's mother, who was assassinated in Switzerland last year. Her casket is exactly like that of her son, and between them is a small altar heavily draped in black decorations with a few lighted candles which are ever kept burning there.

Here within a few feet of space are the bodies of the brother, son and wife of Emperor Francis Joseph of the Austro-Hungarian Empire, all of whom met a violent death. Do you think he can be happy? I gazed at the dark objects and thought of the saying: "Uneasy lies the head that wears a crown." I looked up and found that the guide and my companions were away at the other end of the vault, and apparently forgetful of me, were about to shut the door behind them. I ran.



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**KANSAS FARMER CO., Topeka, Kans.**

A copy of Prentiss' History of Kansas has been on the editor's desk for several days and it has been the worse time consumer with which he has met in many a day. Every time an attempt has been made to write something about it the rare interest of the book has so monopolized attention that reading took the time and writing was deferred. So unusual is it for a school history to be an enchanting book that one wishes Prentiss might write all the histories. Another characteristic of the book is that so very much is said in so little space. The book is a fascinating story, a text-book for schools and a ready reference all in one. A copy of it should be in every family in Kansas.

A great exhibition and sale of Hereford cattle will be held at Kansas City, October 23 to 28. The National Hereford Association offers prizes amounting to \$5,000, and many special prizes have been offered by individuals and companies. It is expected that the finest cattle of this fine and popular breed will be at this great show. Some sixty breeders of Herefords will hold a combination sale, during the exhibition, and 300 registered animals will be sold. The times are ripe for this to be the greatest Hereford sale ever held in America and if some of the choice animals to be offered shall bring record-breaking prices no surprise need be felt. To be present at such a sale will be an event to be remembered.

Tables have recently been published by the U. S. Geological Survey showing the value of mineral products in the United States since 1880. The figures show a gratifying increase of totals per year as follows:

1880	\$369,319,000
1881	406,175,552
1882	475,596,259
1883	353,441,073
1884	412,998,105
1885	427,898,680
1886	445,786,594
1887	520,714,474
1888	540,781,936
1889	550,870,845
1890	619,512,173
1891	623,000,644
1892	648,675,681
1893	574,299,586
1894	526,623,593
1895	621,259,000
1896	622,533,216
1897	630,815,992
1898	697,847,788

It appears from these figures that the value of our mineral products has nearly doubled in these eighteen years, notwithstanding the fact that prices of some of the leading products, as of iron, declined about one-half during the period.

## BROOMCORN.

Editor *Kansas Farmer*:—Is the tonnage of broom-corn equal to or greater than that of the season of 1898? If greater, then how much?

MOREY & WINFIELD.

Chanute, Kans.

Accurate information of the broom-corn crop is difficult to obtain. A semi-official estimate several weeks ago placed the tonnage considerably above that of last year. That was a time of general booms in crop estimates and may have been inspired to some extent by the desires of manufacturers. There is a wide difference between the views of sellers and buyers on the great broom-corn market at Sterling, Kans. Last week it was reported from that place that most of the growers had their ideas of price around \$100 per ton, while the

brokers had orders from manufacturers for brush at \$50 to \$60. Most of the crop at Sterling has been harvested, but none sold, and farmers are arranging to store. Some western brush is reported to have been bought at \$60, and a dealer reports that he is getting the Oklahoma crop at \$50. A buyer reports the purchase of over 100 tons at McPherson at \$45 to \$65.

At Arcola, Ill., reports say, most of the old brush has been shipped out, and that several sales of new corn have been made at \$70.

## IMPROVEMENT OF CORN.

The most important bulletin ever issued by any of the agricultural experiment stations is that recently given out by the Illinois station entitled, "Improvement in the Chemical Composition of the Corn Kernel," by Prof. Cyril George Hopkins, chemist of the experiment station. This bulletin will be given almost entire in this and subsequent numbers of the *Kansas Farmer*, and it should be carefully read by every corn-grower in the country.

The purpose accomplished by Professor Hopkins is threefold. First, to prove experimentally that desired changes in the chemical composition of corn can be brought about; second, to define the methods by which they may be effected; third, to make these methods available to the farmer.

The average composition of corn kernels, as given by the U. S. Department of Agriculture, is, in 100 parts: water 10.9, ash 1.5, protein 10.5, fiber 2.1, carbohydrates 69.6, and fat 5.4.

It is generally conceded that the most valuable of these constituents is the protein; next to the protein in value is the fat. For food, for both men and animals, a larger percentage of protein than the average found in corn is necessary. Or, if fed on materials containing no higher percentage of protein than is contained in average corn, it is necessary to consume a large quantity of food to obtain the requisite protein. This burdens the digestive powers with needless work which might well be devoted to the assimilation of larger quantities of the needed substances. Further than this the excessive consumption of carbohydrates produces much heat, and the common saying that corn is too heating a feed for horses, in summer, has a justification in science.

It has been found that the fat, or oil, in corn possesses a much higher feeding value, pound for pound, than the carbohydrates although serving much the same purposes.

From these considerations it is readily apparent that increase in the percentages of protein and fat will add to the value of corn. Prof. Hopkins has set about this improvement. His work has shown that such improvement can be made, and he is making it; that it may be done by seed selection; and that this seed selection may be made by observing easily recognizable characteristics of kernels containing high percentages of protein and fat.

The improvement of corn is brought within reach of the farmer much more readily than is the improvement of almost any other grain. It is found that the entire ear may, for practical purposes, be taken as the individual. One or two rows of kernels may be examined as representative of the ear. Again, corn readily cross-fertilizes so that it does not in nature suffer impairment of vigor as do some of the other grains. If crossing is desired it is readily brought about without tedious technical work.

Professor Hopkins has shown that the protein content of corn may readily and quickly be raised above that of average wheat. Corn has already more fat than wheat. If these changes in composition are brought about without decreasing the yield—and the probabilities are that increase in yield may be made to accompany the other improvements—the value to mankind of this great American cereal will be increased almost beyond estimation.

Illinois is leading off in this great work. Every loyal Kansan must wish that this leading had been done at our own experiment station. But what has been and is still being done at Urbana for the farmers of Illinois in producing corn of high value, suitable to be grown under Illinois conditions, must be done in Kansas for Kansas conditions.

Read carefully the excerpts from the Illinois bulletin in this and following numbers of the *Kansas Farmer* and learn how to select seed corn rich in protein. This knowledge is worth many big round dollars to every farmer.

## Suggestions as to Experimental Work at the State Agricultural College.

H. R. HILTON.

There are many problems in Kansas agriculture yet to be solved and that can be solved only by thorough experimental work.

The experiment station at our State agricultural college has at last taken up the work of investigating the physical

properties of the soil and the conditions most favorable to loss and retention of moisture, and we may now hope for light on some of the problems that have so long vexed us.

The physics of the soil is the A, B, C—the very foundation of the science of agriculture. All the other branches rest on, and cluster around this. It should have been the first instead of the last to have a place in the list of studies, but we are grateful that a progressive work is now so well commenced.

Bulletin No. 89 on "Soil Moisture," by Professors Willard and Clothier, already gives much that is of interest and value from the work of the past three years.

It is especially gratifying to the writer to find, on reading this bulletin, that he was not misleading Kansas wheat-growers when, in 1894, he advised them to follow the harvester immediately with the harrow to conserve the moisture then in the ground till the plow could be put at work. His oft repeated harping about the "dry soil mulch" as a conservator of moisture, and the prompt stirring of the soil after each heavy shower to restore this mulch, also find confirmation in the experiments reported in this bulletin.

But the purpose of this communication is not so much to comment on the information obtained, as to suggest improvements in methods of observation and especially of its presentation to the public.

The study of bulletins from national and State experiment stations, and the crude experiments made personally, prompt me to suggest a few things that should form a part of any plan that may be devised for the purpose of studying the moisture of the soil and making the record of it of permanent value.

(1) All the records of moisture content should be based on the air dry weight of the soil and not on the weight of sample as taken including the moisture. (Complete dryness would be better but it is a tedious and expensive process and would greatly limit the work.)

(2) The air dry weight per cubic foot of all soils sampled should be ascertained and published with the other data. When 12 per cent of moisture is reported we can not determine the quantity without knowing the dry weight of the soil.

(3) The top three inches of soil should always be removed, and the sampling tube driven twelve inches below the new surface. In other words all measurements should be taken at the surface of the moisture or "moisture line" and not at the surface of the soil. The three inches used to form the dry soil mulch should be eliminated for the plant roots do not patronize it. It is simply the protecting cover or roof. It is only the zone of moist soil in which the roots grow that needs to be sampled. Professors Willard and Clothier recognize this weakness in their present plan in "Bulletin No. 89," and surely will be quick to abandon what they show to be so defective.

(4) The danger line should be determined, in each type of soil experimented with, for all staple crops of that locality, i. e., the amount of moisture there must be in the soil before the plant can grow. When the soil is too dry to nourish the plant then it is below the danger line, and it is only the moisture content in excess of the danger point that can be used by the growing crop. Our experiment station can do no more important service to Kansas agriculture than to establish the minimum moisture content for each staple in the soils experimented with.

The average of Kansas soils will retain 3 to 3½ inches of water to each foot of depth, but when the moisture content is reduced to 1½ inches per foot the majority of plants will cease to grow. This would leave a possible 1½ to 2 inches of water to each foot of depth available for plant growth. While we know this much in a general way, we do not know definitely just how much, or how much more or less, the wheat plant needs than the corn plant, or Kafir than either. We want to know what amount of water our staple crops require and what amount of water our different soils are capable of maintaining for the use of the crop, and which crop can be grown most successfully with the minimum water content.

(5) Records of soil temperatures at various depths, as well as of rainfall and relative humidity, should be taken and recorded in connection with a part, at least, of the plat or field experiments and especially on plats where crops are growing.

(6) It is the practice among soil investigators to give the moisture content of the soil in per cents and it is wise to retain this for the benefit of students at home and co-workers at other stations, but in a bulletin prepared to be read by farmers the moisture content of the soil should be expressed in bulk or in quantity also, otherwise the average farmer will fail to grasp the full significance of the lesson intended to be taught.

Bulletin No. 89, page 12, records one plat that, on October 15, contained 12.9 per cent of moisture, and another that had

18 per cent. This shows a difference of 5.1 per cent. What does that difference mean to the average farmer? What is it 5 per cent of? How much better showing does the plat make that had 18 per cent than the one that had only 12.9 per cent? On its face it is nearly one-third better. But let us assume that the dry soil weighs 75 pounds per cubic foot, and it will not vary much from this, and see how it will figure out.

On this basis 12.9 per cent equals about 9.6 pounds of water per cubic foot, or a depth of 1.80 inches of water for each foot of soil—probably too dry to properly nourish the growing crop. If we, however, call the danger line 12 per cent, or 1½ inches, then there is available for the growing plant less than 1 per cent, or ¾ inch of water in the top foot of soil.

The 18 per cent of water in the other plat equals 13½ pounds, or 2.60 inches, of which nearly 4 pounds or 6½ quarts of water per cubic foot or 1.10 inches in surface foot is available for the growing crop. This difference of 5.1 per cent means that one plat showing by the record one-third more water in the top foot of soil, yet it had in reality three times as much available moisture as the other one. It means that one assured a fair crop, the other, none.

The average farmer will miss the important lesson there is in such bulletins as this one on soil moisture, and their educational value will be limited till the supply of available or usable moisture can be shown and expressed in inches, pounds or quarts so that all who read it can comprehend it without being obliged to study it out.

The following table of equivalents was prepared for the writer's own use several years ago to aid him in interpreting the work of investigators, and make them intelligible to minds untrained in scientific formulas and methods, and may prove serviceable to other students in the same field.

The table is based on the soil and water occupying equal space and the cubic foot of dry soil being the same weight as a cubic foot of water, viz, 62½ pounds. Whatever the weight of any soil exceeds 62½ pounds the quarts or pounds or inches will be increased in like proportion.

The supplemental tables will give an idea of the influence the weight of the soil has on the quantity of water at a given per cent.

The work done by the Wisconsin Experiment Station in agricultural physics is worth millions, not only to that State but to the greater part of the Mississippi Valley. In so far as our conditions here resemble those of Wisconsin the work has helped Kansas, but we have many conditions different from those in Wisconsin to which its work will not apply. We must ourselves solve the problems peculiar to Kansas and the State should see that the college has the equipment and means to carry on this very important work in a practical and intelligent way. The time has come to stop puttering, and to broaden the work to correspond with its importance to the State.

Equivalents of Water in a Cubic Foot of Dry Soil, Weighing 62½ Pounds. Air Space Assumed to be 50 per cent.

Per cent of bulk.	Quarts.	Gallons.	Pounds.	Inches
1.	.....	.....	.625	.....
1.6	.....	.....	1.	.....
3.3	.....	.....	2.083	.....
8.33	2.50	.....	5.21	1.
10.	.....	.....	.....	1.20
13.33	.....	.....	8.33	1.60
*12.50	.....	.....	7.61	1.50
125.	7.5	1.875	15.63	3
150.	15.	3.750	31.25	6

\*One-fourth saturation.

†One-half saturation.

‡Full saturation.

Weight of 20 per cent. of Moisture in Cubic Foot of Dry Soil of Different Weights.

Per cent moisture.	Weight of cubic foot dry soil, lbs.	Weight of moisture, lbs.
20	100	20
20	90	18
20	80	16
20	70	14
20	62½	12½
20	60	12

Three Inches of Water on One Cubic Foot of Dry Soil

Depth of water in inches.	Water, per cent of weight of dry soil.	When 1 cubic ft of dry soil weighs, lbs.
3	15.63	100
3	17.36	90
3	19.33	80
3	22.32	70
3	25.00	62.5
3	28.04	60

Hot days followed by cool nights will breed malaria in the body that is bilious or costive. Prickly Ash Bitters is very valuable at this time for keeping the stomach, liver and bowels well regulated.



## KANSAS' MEAT AND EGGS.

Every balancing of her books emphasizes anew the fact that Kansas is preeminently a stock-producing region, and the compilation of assessors' returns just now completed by the State Board of Agriculture, showing the value of meat animals slaughtered or sold for slaughter and the poultry and eggs marketed in the year ending March 1, make an exhibit that is very gratifying indeed.

For animals slaughtered or sold for that purpose the total exceeds fifty and one-half millions, which is one and one-half million dollars, or 3 per cent more than in the previous year. In 1896 the value was \$36,592,057; in 1897, \$37,781,678; in 1898, \$49,123,517, the total for the four years' surplus being \$174,031,049. This year's value is the largest ever reported, and an increase over the figures for 1896 of nearly \$14,000,000.

The twelve counties of Butler, Chase, Greenwood, Jewell, Lyon, Marshall, Nemaha, Osage, Ottawa, Pottawatomie, Wabaunsee, and Washington sold for slaughter animals valued at \$16,636,399, one-third the total for the State, or over \$1,000,000 worth each, while Wabaunsee is credited with having sold \$1,946,971 worth, the largest amount, Pottawatomie ranking next with \$1,689,599, the other counties ranging from that down to \$1,225 in Scott. Brown, Cowley, Miami, Mitchell, and Morris each sold over \$900,000 worth during the year, while 29 others had an aggregate of \$20,629,663, making an average for each of \$711,367.

The value of the poultry and eggs marketed during the year was \$4,241,869, an increase of \$96,136, or 2.26 per cent, also the largest yearly amount ever returned for the State. Counties securing the largest sums from the sale of poultry and eggs are Jewell with \$112,021, Sedgwick \$96,173, Republic \$95,715, Smith \$94,292, Cowley \$94,056, Butler \$88,904, Sumner \$87,234, Nemaha \$85,169, Washington \$84,928, and Neosho \$84,590, while the smallest income reported is \$420 in Morton County.

The following table shows, by counties, the value of animals slaughtered or sold for slaughter, and the value of poultry and eggs marketed during the year mentioned:

Counties.	Value of animals sold for slaughter.	Value of poultry and eggs marketed.
Allen	\$382,405	\$63,067
Anderson	449,310	49,702
Atchison	530,917	34,970
Barber	294,868	16,703
Barton	89,601	55,067
Bourbon	433,634	61,918
Brown	956,822	60,428
Butler	1,293,519	88,904
Chase	1,033,077	18,148
Chuataqua	502,361	27,286
Cherokee	212,927	40,064
Cheyenne	37,838	11,415
Clark	108,474	1,977
Clay	609,650	55,746
Cloud	897,961	76,037
Coffey	786,780	70,079
Comanche	58,265	4,677
Cowley	900,764	94,056
Crawford	363,064	57,745
Decatur	357,223	34,075
Dickinson	696,148	78,103
Doniphan	596,307	28,787
Douglas	512,990	47,220
Edwards	66,895	11,406
Elk	774,922	43,696
Ellis	85,287	15,231
Ellsworth	876,954	43,495
Finney	42,477	4,652
Ford	61,878	13,951
Franklin	554,044	56,853
Geary	383,606	23,600
Gove	40,373	6,434
Graham	125,760	17,851
Grant	11,428	852
Gray	40,664	3,408
Greeley	3,748	1,355
Greenwood	1,599,597	60,185
Hamilton	30,083	2,473
Harper	190,176	27,589
Harvey	342,524	45,098
Haskell	2,664	1,582
Hodgeman	30,082	5,285
Jackson	845,964	54,871
Jefferson	867,448	64,461
Jewell	1,083,097	112,021
Johnson	589,306	42,455
Kearny	15,628	2,796
Kingman	333,342	31,911
Kiowa	30,507	4,618
Labette	302,553	64,821
Lane	6,878	4,574
Leavenworth	510,072	44,879
Lincoln	337,884	54,634
Linn	430,725	64,152
Logan	12,056	4,379
Lyon	1,283,832	75,839
Marion	848,068	76,063
Marshall	1,116,502	75,330
McPherson	677,527	77,110
Meade	44,585	2,460
Miami	909,030	66,978
Mitchell	972,761	76,868
Montgomery	328,986	53,556
Morris	944,128	36,181
Morton	1,818	420
Nemaha	1,621,656	85,169
Neosho	619,846	84,590
Ness	52,403	13,331
Norton	574,534	42,736
Osage	1,129,523	66,926
Osborne	744,298	63,687
Ottawa	1,186,379	36,276
Pawnee	36,108	15,201
Phillips	860,705	73,396
Pottawatomie	1,689,599	62,537
Pratt	195,733	23,323
Rawlins	96,027	23,188
Reno	742,008	77,884
Republic	803,256	95,715
Rice	378,633	63,103
Riley	822,890	56,374
Rooks	223,176	48,041
Rush	62,582	30,848
Russell	204,317	38,340
Saline	419,095	61,867
Scott	1,225	2,184
Sedgwick	867,410	96,173
Seward	44,814	684
Shawnee	852,555	47,001
Sheridan	115,913	15,900
Sherman	37,069	13,001
Smith	872,325	94,292

Counties.	Value of animals sold for slaughter.	Value of poultry and eggs marketed.
Stafford	201,430	31,025
Stanton	2,172	475
Stevens	5,578	798
Sumner	533,806	87,234
Thomas	56,236	16,593
Trego	31,460	8,386
Wabaunsee	1,946,971	53,876
Wallace	8,207	2,252
Washington	1,052,647	84,928
Wichita	8,499	3,739
Wilson	658,031	54,022
Woodson	244,965	29,390
Wyandotte	78,982	14,798
Totals	\$50,533,797	\$4,241,869

## Iowa State Fair.

The Iowa State Agricultural Society last week held its 45th annual State fair or Century Closing Exposition at Des Moines. It was the principal State fair this year west of the Mississippi. The attendance was the largest for many years, and every department contained creditable and representative displays. The buildings for the accommodation of displays seem to be ample, but the condition of the grounds generally, from a sanitary point of view, are very bad and a chaotic condition of things seemed to pertain to the entire grounds. The comfort of thousands of visitors is very much overlooked by the management. The city of Des Moines could greatly improve matters by making a city park of the fair grounds and keeping it in decent condition.

The live stock show was one of the great features of the fair, there being a creditable representation of all classes of cattle, swine, horses and sheep. The display of swine was not as large as formerly, especially of Berkshires and Poland-Chinas, the quality, however, was well maintained. The Duroc-Jerseys and Chester White breeds were well represented, both as to numbers and quality.

The Poland-China exhibitors were all from Iowa and consisted of the following breeders: Harvey Johnson, Logan; W. A. Jones, Van Meter; Samuel McFadden, West Liberty; J. R. Hoover, Oskaloosa; W. H. Harrison, Wright; A. J. Lytle, Oskaloosa; T. J. Kegley, Ames; J. R. McElderry, Fairfield; A. H. Gardner, Mitchellville; B. L. Gossick, Fairfield; Allen Crockett, Independence; C. H. Corbett, J. W. Blackford & Son, Hillsdale; M. W. Bate-man, Monroe; W. S. Bennett, Valley Junction; Miesner Bros., Rienbeck; G. F. Marshall, Monroe; L. Maasdam & Son, Pella; Peter Mouw, Orange City; David Mason, Indianola; A. W. Pringle, De Sota; J. W. Pearson, Mitchellville; G. W. Roberts, Booneville; H. G. Thornburg, Linden; W. Z. Swallow, Booneville; Richey Bros., W. M. Robe, Jesup; Strater Bros., Monroe; W. G. Tittsworth, Avoca.

There were seven exhibitors of Chester White swine, the largest exhibit of Chester Whites ever made at the Iowa State fair. The exhibitors were as follows: M. E. Newburn, Hennepin, Ill.; W. A. Hoover, Oskaloosa, Iowa; B. R. Vale, Bonaparte, Iowa; William Whitted, Monroe, Iowa; T. N. Castle, Albia, Iowa; H. L. Orcutt, Monroe, Iowa, and Canaday, Mo.

There was only a small show of Berkshires this year, many of the old-time showmen not being out. C. L. Funck, of Fairfield, Iowa, John F. Stover, of Crawfordville, Ind., J. W. McConnahey, Monroe, Iowa, and Cassaday & Son, of Denison, Iowa, were exhibitors.

Duroc-Jerseys were well represented by Wm. Roberts, Paton, Iowa; C. H. Searle, Edgar, Neb.; Fred Yetter, of Blandinsville, Ill., and J. W. McConnahey, of Monroe, Iowa.

The display of draft and coach horses was a reminder of the old days when the most attractive live stock displays were centered in the horse rings. The recent importation, by McLaughlin Bros., Alex Galbreath, and Dunham, Fletcher & Coleman, of Percherons and French Coach, were especially fine. Among the equine exhibitors were N. P. Clark, St. Cloud, Minn.; Robert Burgess & Son, Wenona, Ill.; McLaughlin Bros., Columbus, O.; J. E. Miller, Conway, Iowa; Lefebure & Son, Fairfax, Iowa; Dunham, Fletcher & Coleman, Wayne, Ill.; Alex Galbreath, Janesville, Wis.; A. Y. Art, Hartford, Iowa; Manbek Bros., Des Moines, Iowa; W. H. Huegle, Des Moines, Iowa; H. Ousterhout, Boone, Iowa. Jacks were also exhibited from the barns of Reno & Morrison, Yampa, Iowa; W. L. Decow, Cedar Rapids, Iowa, and Geo. E. Morse, Genoa Bluff, Iowa.

The sheep show was large and of splendid quality. Wm. S. Dixon, Brandon, Wis., showed Shropshires, Oxford Down and also Shorthorn cattle; Blakely & Evans had 34 head of standard Delaine; J. R. Hoover, of Oskaloosa, Iowa, had Lincolns; Thos. Taylor, of Waynesville, Ill., had 22 head of American Merinos; Geo. Harding & Son, of Waukesha, Wis., had Cotswolds, Dorsets, and Lincolns, 50 head in all; W. J. Boynton, of Rochester, Minn., had 45 head of Shropshires, and among them some recently imported; W. O. Fritchman, of Muscatine, Iowa, McFadden Bros., of West Liberty, Iowa, McFadden Bros., of Fairfield, Iowa, and Ed Wineland, of Avoca, Iowa, exhib-

ited Shropshires and Oxford Downs. The agricultural college showed about 6 head brought back by Professor Curtiss on his recent European tour.

The paramount live stock attraction was to be found in the cattle barns, especially of the beef breeds, although dairy breeds were well represented.

The Jerseys had the best showing on the grounds in several years, three herds being represented. H. G. McMillan, Rock Rapids, Iowa; I. N. Taylor, Oskaloosa, Iowa, and J. E. Robins, of Greensburg, Ind., were the exhibitors.

The Holsteins made the strongest show that has been out in several years. W. B. Barney & Co., Hampton, Iowa; M. E. Moore, Cameron, Mo.; W. A. McCall, College View, Neb., and I. W. Chappell, Kearney, Neb., were the exhibitors. It was largely Iowa against Missouri in the principal awards.

The Red Polled cattle were well represented by S. A. Converse, Cresco, Iowa; Wm. James, Wyoming, Iowa, and George Carpenter, Reedsburg, Wis.

The Galloway cattle breeders made the best showing for the breed that ever attended the Iowa State fair. The exhibitors were A. Rowland & Son, of Rose Hill, Iowa; T. J. Davis & Son, Triumph, Ill.; W. G. McCandless, Cottonwood Falls, Kans., and Marion Parr, Cookesville, Ill. Kansas was handicapped by not having the herd in show condition.

The showing of Aberdeen-Angus cattle was simply magnificent, and was fully equal to the show made last year at the Omaha Exposition. The show comprised the best herds of the country, shown by the following exhibitors: Wallace Estill, Estill, Mo.; Chas. Escher & Son, Botna, Iowa; A. C. Binnie, Olta, Iowa; W. H. Davis, Triumph, Ill., and the Premier Herd, Dennison, Iowa.

The reputation of the Herefords was well sustained by T. F. B. Sotham, Chillicothe, Mo.; C. G. Comstock, Albany, Mo.; Geo. S. Redhead, Des Moines, Iowa; Peter Mouw, Orange City, Iowa; Z. T. Kinsell, Mt. Airy, Iowa, and A. J. Gettler, Glenwood, Iowa. Sotham was the leading winner, although the Comstock herd divided honors with him in several rings. Mr. Comstock felt quite encouraged with his first advent in the show ring.

The Shorthorn breeders made a grand showing of their favorites. The expert judge, Prof. C. F. Curtiss, has lately returned from England, where he visited the great Royal show, and it was his remark that the Shorthorn show, taking it all the way through, would compare most favorably with the Royal show, and that in some classes the quality was superior. In the awarding of the ribbons it is interesting to note that the Iowa breeders were strong and fully sustained the great reputation of the State as the home of high-class Shorthorns. The exhibitors were as follows: T. R. Westrope & Son, Harlan, Iowa; C. C. Norton, Corning, Iowa; S. H. Thompson & Sons, Iowa City, Iowa; G. H. Burge, Mt. Vernon, Iowa; M. D. Clark, Mt. Vernon, Iowa; A. Carrier & Son, Newton, Iowa; John Cresswell, Bonaparte, Iowa; E. Touet & Son, Osceola, Iowa; E. Funke, Greenfield, Iowa; J. G. Robins & Sons, Horace, Ind.; E. B. Mitchell & Son, Danvers, Ill.; T. J. Wornall, Mosby, Mo., and J. D. Douglass & Sons, Sulphur Hill, Ind. The last four breeders with Messrs. Thompson, Westrope and Norton, of Iowa, made the principal fight for the ribbons, the other breeders having but few entries.

The contest on Thursday for the champion silver cup for the grand beef herd was a battle royal, in which Shorthorns, Herefords and Aberdeen-Angus made a magnificent fight, which soon narrowed down to Sotham's Herefords, Estill's Angus and Wornall's Shorthorns. The final compare was made between the Angus and Shorthorns and finally the silver cup was awarded to Champion Shorthorn herd, owned by T. J. Wornall, Mosby, Mo.

Exhibitors of all classes of live stock, as well as machinery of all kinds, expressed themselves as unusually well pleased with the sales made and interest manifested by the visitors during the fair. All were unanimous in declaring that they never had received so much benefit as they did from their show this year.

## NOTABLE EXHIBITS.

The display of farm machinery, dairy supplies, and mechanical goods of all kinds was simply immense and probably was never surpassed at any State fair ever held.

The showing made by incubator manufacturers in turning out a lot of chickens each day of the fair shows to what extent the helpful hen industry interests the western farmer. The Des Moines Incubator Co., of Des Moines, had the most extensive display of incubators and brooders on the grounds. This company expects to dispose of 15,000 of its celebrated incubators during the coming season, and, judging from the satisfaction of last year's sale, it expects a greatly increased sale in Kansas, which it regards as the leading poultry State.

The Klondike incubator, made in Des Moines, and shown by the inventor, J. L.

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Macy, was a new candidate in the field, which made a remarkable showing for a full hatch and advantages of moisture and ventilation. The Klondike Incubator Company expects to place 1,000 incubators on the market at once.

The Sure Hatch Incubator Company, of Clay Center, Neb., was represented by the president of the company, M. M. Johnson, with several incubators loaded in Nebraska to hatch at Iowa State fair, and, notwithstanding a shipment with heat shut off during transit, a remarkable hatch was made. The company will have 1,000 incubators ready for the early trade.

The Kemp Manure Spreader, made by the Kemp & Burpee Manufacturing Company, of Syracuse, N. Y., gave a continuous performance on the grounds under the auspices of the manager, M. R. Pharis, who was delighted with the reception and endorsement which the farmers gave him in behalf of the success of the spreader in Iowa.

The Iowa Grinder and Steamer Works, of Waterloo, Iowa, made a very attractive display of their Anti-Friction Four-burr Mogul mills for grinding grain with an actual capacity of 60 to 80 bushels per hour; also other mills of different size and capacity. The Bovee Western Steamer, made by this company, was also exhibited by Manager D. W. Bovee, who was highly pleased with the results of his show because of the sales made and interest shown in his line of goods.

## Shawnee County Horticultural Society.

The Shawnee County Horticultural Society holds its regular monthly meeting in the grove at Tecumseh to-day (September 7). Members will bring lunch in baskets, which will be eaten in the grove at noon. The following program takes place in the afternoon, beginning at 2 o'clock: "Apple Culture," Philip Lux; "Landscape Gardening," Harvey Worrall; "Irrigation," H. E. Goodell; "Fruit Canning and Preserving," Miss Lucy Popenoe. Members will bring fall apples, peaches, grapes, and other fall fruits that they desire named by the committee on nomenclature. Also bring flowers suitable for decoration.

## Farmers' Institutes.

The following farmers' institutes, in which professors from the Agricultural College will take part, have been announced:

September 11—Rochester.

September 14—Pontiac.

September 30—Manhattan.

October 7—Olesburg.

October 6—Stockdale.

## New Through Pullman Service Between Denver and St. Louis.

On June 18 the Great Rock Island Route inaugurated through Pullman Sleepers between Denver and St. Louis via Kansas City and the Missouri Pacific R'y. East-bound car leaves Denver daily at 2:35 p. m. on the "Colorado Flyer," arriving in St. Louis 6:15 p. m. the next day. Westbound car leaves Kansas City daily on "Colorado Flyer," at 6:30 p. m., arriving in Denver 11 a. m. next day. This is the fastest through car line between Denver and St. Louis. The cars are broad vestibuled, of the latest pattern and most luxurious type. Advantages in patronizing this service will be: The quickest time, no change of cars, absolute comfort. The best Dining Car Service in the world. For full information see your agent or write

E. W. THOMPSON, A. G. P. A., Topeka.

The "Rock Island" Route has cheap rates, liberal stop-over privileges, through cars, etc., to the G. A. R., Philadelphia. Ask or write "Rock Island" agent for information and one of the Souvenirs, or address, E. W. Thompson, A. G. P. A., Topeka, Kans.



## Horticulture.

### KANSAS EXPERIENCE IN ORCHARD-ING.

From "The Kansas Apple."

F. W. Wilcox, Corning, Nemaha County: I have resided in the State twenty-three years; have an apple orchard of seventy-five trees, all sizes and ages. For market I prefer Ben Davis, Winesap, and Wealthy. I prefer a dark, loose soil, on a hillside with a north and east slope. I prefer good, healthy 3-year-old trees, set in holes dug 2 feet deep and 3 feet across. I plant my orchard to sweet corn, using a cultivator, and cease cropping when I think necessary and seed down to red clover. Windbreaks are essential—would make them of Osage orange. I prune my trees with a saw to give shape; I think it pays. I do not thin the fruit while on the trees. I fertilize my orchard with rotten stable litter, but would not advise its use on all soils. I pasture my orchard with horses, and think it advisable, and that it pays. My trees are troubled with canker-worms, tent-caterpillars and flathead borer. I do not spray. I pick my apples by hand in pails. Sort into three classes, first, second, and cast out. I do not dry any. I store a few for winter market. I do not irrigate.

James Anderson, Leonardville, Riley County: I have lived in Kansas seventeen years; have an apple orchard of 200 trees from 1 to 15 years old, 4 to 16 feet high. For market I prefer Winesap, Missouri Pippin, Jonathan, and Ben Davis, and for a family orchard Early Harvest, Missouri Pippin, Winesap, Jonathan, and Ben Davis. I prefer bottom land with black loam and clay subsoil, with a southern slope. When setting trees, I dig holes 4 feet in diameter and three feet deep; put black loam in the bottom for the roots. I plant my orchard to potatoes for three or four years, using a plow. I cease cropping at the end of this time, and mow, and leave everything on the ground. Sow red or white clover in a bearing orchard. Windbreaks are essential on the north and south sides of the orchard; would make them of maple, cottonwood, or Osage orange. I have Osage orange on the north and a creek with native timber on the south. For rabbits I wrap the trees. When I see a black spot on a tree I hunt for and dig borers out. I prune off all the interfering branches and water-sprouts. I do this for fruit; it pays. I do not thin the fruit while on the trees. I keep the varieties together when planting. I fertilize my orchard by putting stable litter a foot thick on the north side, which is the highest, and when it rains the liquid from it runs all the way down and fertilizes the trees. I think it beneficial, and would advise its use on all soils. I do not pasture my orchard. It is not advisable, and does not pay. My trees are troubled with canker-worm, and my apples with codling-moth. I have sprayed with all the sprays recommended, and think I have reduced the codling-moth a little. I pick my apples in the orchard by hand from a step-ladder, and sort into two classes, sound, wormy and windfalls. Put the sound ones in the cellar; make cider of the others. I sell apples in the orchard, mostly at retail. They sell the best in town in the winter. My best market is in towns west of here. I have tried distant markets, but it did not pay. I do not dry any. I store a few apples in boxes, barrels, and in bulk, in a cellar. Those that keep best are Winesap, Missouri Pippin, Ben Davis, and Jonathan. Have to repack stored apples before marketing; lose about 10 per cent. The average price has been 50 cents per bushel. I employ men at \$20 per month.

F. A. Schermerhorn, Ogden, Riley County: I have lived in the State thirty-eight years. Have an apple orchard of 4,000 trees from 12 to 37 years old. For market I prefer Ben Davis, Winesap, Missouri Pippin, and Jonathan; and for a family orchard Winesap, Rawle's Janet, Missouri Pippin, Maiden's Blush, and Early Harvest. I have tried and discarded Willow Twig and Smith's Cider on account of blight; and McAfee, Snow and Lawver on account of shy bearing. I prefer rolling land having a clay loam and clay subsoil. I prefer 2-year-old trees, with heads 20 inches from the ground, set in the spring, about 2 rods apart. I cultivate all the time, even in bearing orchards, using an Acme harrow, planting corn; cease cropping after four years; put nothing in a bearing orchard. Windbreaks are not essential if the orchard is large. For rabbits I wrap trees. I dig borers out with a knife. I prune my trees, and think it pays. I do not thin the fruit while on the trees. My trees are planted in blocks—800 Ben Davis in one and 700 Missouri Pippins in another; all bear well. I fertilize my orchard some, but not much. I think it would be beneficial on poor soil, but would not advise it on all soils. I pasture my orchard with horses after the fruit is gathered; can't see any harm. My trees are troubled with canker-worm and root aphid, and my apples with codling-moth. I spray as soon as the bloom falls,

and two or three times afterward, with arsenic, for insects. Think I have reduced the codling-moth. I wash young trees twice during the summer season with diluted soft-soap for borers. Pick my apples by hand, and sort into two classes. Pack in the standard apple barrel, fill with a head press, mark with variety and grade, and haul to depot on wagon. I sometimes sell apples in the orchard by the wagon-load. I ship my best apples, and sell the culls for what I can get. My best market is west. Have tried distant markets and found it paid. I do not dry any. I am successful in storing apples in barrels; Ben Davis and Missouri Pippin keep best. I do not irrigate. Prices last fall were \$2 per barrel or 50 cents per bushel to wagoners. I employ men at \$1 per day and board.

### Causes for Inferior Quality of Muskmelons, and Remedy.

Press Bulletin, Purdue University.

The muskmelon has come to be one of the necessary luxuries of life, and so it should be, and doubtless is, the object of every melon-grower to produce melons of the very highest quality, but there has been much complaint this season, even among the growers themselves, concerning the poor quality of the melons found upon the market. Various causes are given, such as leaf blight, too much rain, a lack of some necessary element in the soil, poor varieties, etc., any one of which would undoubtedly have a tendency to affect the quality of the fruit. The appearance of leaf blight during the growing season always has a tendency to rob the fruit of the necessary amount of nourishment, and cause it to ripen prematurely. This may be prevented in a large degree by spraying the vines with Bordeaux-mixture, two or three times, depending upon the amount of rainfall, before the disease makes its appearance. An excessive amount of rain is undoubtedly one of the chief causes of trouble. It is a well-known fact that during a very wet season strawberries are of a much poorer quality, containing a less amount of sugar, than when the ripening season is comparatively dry. The same is true with muskmelons; the crop may be larger during a wet season, the fruit may be finer in appearance, but the sugar content which gives the melon its delicious flavor is comparatively low. Hence it frequently happens that a variety may give good satisfaction one season, and be very unsatisfactory the next. Thorough drainage, either naturally or artificially, will do much towards preventing trouble from this source. The use of fertilizers rich in potash and phosphoric acid will have a tendency to produce fruit of high quality. Another cause for poor quality in melons is found in the fact that many are picked too green. This is especially true when they are shipped long distances. Like California peaches, they must be picked early in order to hold up until they reach their destination, and also, like California fruit, they lose very much of their richness of flavor which can only come by ripening on the vines. There is much difference between varieties grown on the same soil, because all varieties are not adapted to the same conditions. This has been very noticeable in our experiments for a series of years on a rather sandy loam which is naturally underdrained. Those varieties giving the best results are the small Emerald Gem, Netted Gem, Osage, Hackensack, and Montreal. Paul Jones is a new variety, fruiting for the first time and giving good satisfaction. It is said to be a cross between the Emerald Gem and Osage, and in some degree it contains the characteristics of both. In general, varieties that come the nearest to perfection every year are the ones to grow.

### Winter Muskmelon.

Last year the Department of Agriculture sent to Russia, Siberia, and Eastern Turkey a special agent, Professor Hansen, who procured a large amount of seeds of different species and varieties for trial in the United States. Among them were a number of untried kinds of melons, and the results of some of the tests made with these are proving very interesting. The department has received a specimen of what may be called a winter muskmelon, which is undoubtedly a remarkable production. It grows very much like any other melon, but when frost comes in the fall it is found to be yet hard and inedible, and for this reason it was pronounced worthless by a number of growers to whom seed was sent for trial; but one grower in semi-arid Utah, who has been for some years experimenting along the line of winter melons, recognized it at once and instead of allowing it to freeze and rot on the vines, carefully stored the melons in his cellar to ripen up. A specimen of this melon weighing 17 pounds was sent to Secretary Wilson in February, having just arrived at a ripe and edible stage. It is undoubtedly a wonderful fruit. The body of the rind is a light yellow, streaked with green and the specimen much resembled a small rattlesnake watermelon. The meat proved to be very solid and thick

and edible almost to the rind and the flavor very spicy and delicious.

Fortunately in addition to these saved by the Utah grower the department has a few seeds left over of this variety, and as melon seeds do not deteriorate with age, they will be distributed for further trial this year among the semi-arid States and where irrigation methods are practiced.

Luscious ripe cantaloups in mid-winter are something of an innovation in this country, but it seems probable that they will become a feature of American fruit, as have winter tomatoes or Christmas strawberries from Florida.—Farm and Fireside.

### Growing Telegraph Poles.

Editor Kansas Farmer:—Enclosed you will find a clipping entitled "Growing Telegraph Poles." The article is of vast importance to tree-growers of the West. I have watched the growth and development of the Farlington forests since 1884. At that time the grove was quite young, the first being planted in 1878, the last in 1881 or 1882. The possibilities reached at Farlington are plain, solid facts. It has been demonstrated beyond a question that timber-growing can be made successful. It has also been shown which is the best tree adapted for such purpose, and one that will be ready for a money value in the fewest number of years. It teaches us to accept the words of such veteran tree men as Douglass, Warder, Barney, and Sargent. They builded better than they knew, for it was largely through their efforts that the Farlington forests were established, and the realization of successful timber-growing has become one of the blessings to the people living in a prairie region. From my fifteen years experience and observation in growing timber trees, the evidence presented to me show that the Farlington people made no mistake when they planted the catalpa (Western hardy). Its usefulness puts it far in the lead of any other tree. Its endurance during drought is wonderful, the growth being steady and regular from year to year. It will not attain height with a clean stem unless planted in solid groves, close together. Single trees will be all top with a short stem. Specimens grown close together will be just the reverse. The shade furnished by this system is the one great secret of success. It prevents a rapid evaporation of the moisture. Together with protection from strong south winds during the growing season, this makes it possible for us to follow nature's plan in rearing a forest. It must be borne in mind that there are many other useful trees for timber-growing, but none of them possess the power to resist drought and neglect and make a stately growth equal to the catalpa.

GEO. W. TINCHER.

Topeka, Kans.

The following is the clipping referred to by Mr. Tinch:

Experiment of the Kansas City, Ft. Scott & Memphis Successful.

Some years ago the Kansas City, Fort Scott & Memphis railroad began experimenting in the propagation of forest trees, looking forward to a probable future timber supply for the railroad. Under the direction and instruction of Prof. Sargent, of Harvard University, the company planted about 100 acres near Farlington, Kans., fourteen miles south of this city, of the following varieties of timber trees: White ash, black walnut, wild cherry, Osage orange, ailanthus, catalpa bignonioides, catalpa speciosa.

The annual growth and general appearance of these varieties were carefully noted for three or four years, and a perceptible difference was observed in favor of the catalpa speciosa, and the following is quoted from a report made by J. M. Buckley, roadmaster:

"The catalpa speciosa has certainly proved to be the strongest grower, most tenacious, standing the dry weather better than any other variety, and at the present rate will come to maturity years before any other variety is of sufficient size to be of any utility."

The result was that a contract was made with the late Robert Douglass to plant two sections of land, 1,280 acres, in Crawford County, on the Bourbon County line, entirely of this valuable tree. The railroad company owned one section and Mr. Honewell, a director of the road, the other. The two plantations, when completed, contained about three million trees. The last of these trees were set out about fifteen years ago.

The experiment has resulted in a most unquestionable financial success. Had better judgment been displayed in the selection of land on which the trees were planted an even richer harvest would be in store. A casual observer can easily see that there are many acres of "hard-pan" within these two sections of land, and as "hard-pan" produces inferior corn, it will also produce inferior trees.

On good soil the trees have made notable growths, many of them measuring twelve to fifteen inches in diameter and forty to

fifty feet high. Counting about 1,500 of the best trees to the acre, the average would be about eight inches in diameter and thirty-five to forty feet high. From this observation it is calculated that seventy-five to one hundred valuable telegraph poles can be cut now from every acre of the good land, besides thousands of fence posts.

It is a difficult matter to place a present valuation upon such timber lands, for the trees are just reaching a size whereat practical value begins. Every additional year will add greater wealth in a greater ratio. However, the indications are that with judicious cutting, a thousand telegraph poles could be taken off of each acre within the next ten years, besides a large quantity of fence posts and cord-wood. As telegraph poles of timber as valuable as catalpa are worth in our markets \$3 to \$3.50 each, and fence posts 10 to 15 cents apiece, an approximate idea can be made of the value of a cultivated tree plantation. The whole cost of the land, the trees, the planting, the cultivation, the interest on the capital and the general attention for fifteen years has amounted to less than \$100 an acre.

### Growing Alfalfa in an Orchard.

Ten years ago it was the thoroughly accepted belief among orchardists that alfalfa was detrimental to fruit trees—in fact, that its continued growth in an orchard meant nothing else but sure death to the trees. Even to this day the belief is held by great numbers of orchardists in the Western States. In California the successful orchardist cultivates between his trees almost incessantly, keeping the land free from weeds and blanketing the under soil for the purpose of conserving moisture, but leaving the surface of the ground uncovered, to be dried and baked by the hot sun, the top soil thus being unfitted for producing the best results. The plan or some modification of it is generally followed in Colorado, but many unthrifty orchardists allow weeds to grow unmolested, and in the fall, lump their skinny, wormy fruits in a jungle.

In the Central and Eastern States orchards are in grass much of the time, but the same prejudice exists in these sections against clover among fruit trees as against alfalfa in the West. Whatever may have been believed or imagined as to the incongeniality of trees and alfalfa, the theory is destined to downfall. The evidence is at hand now to show that not only is alfalfa not a detriment when grown among fruit trees, but in many ways it is a positive benefit, lending itself and its properties to the advantage of the trees. It is now becoming an established fact that orchards under irrigation are usually given too much water, especially when small fruits or other crops are grown between the rows.

Whether this crop does or does not produce tendency to blight, the bulk of the evidence goes to prove that orchards so situated as to maintain health and growth without the application of water or with its very limited use—providing soil moisture is not in excess from some unfavorable condition—become the thriftiest, hardiest and most productive. On this sort of land, where moisture can be found at from six to ten feet from the surface, the prominent congeniality of the alfalfa plant and the apple tree becomes apparent. Both need plenty of surface water the first year, a little less the second, and very little or none thereafter. The main features of the plan are, that after trees become old enough to bear and need all the land between them, and that fertilized and renovated, alfalfa may be used as a food-gatherer and distributor.

Alfalfa pushes down into the lower strata, bringing up mineral elements to the surface, capturing nitrogen from the air through its root processes and bringing all together on the surface of the ground to be absorbed in the upper crust, thus giving to the trees the food they need to fill up and mature fruit. Nor is this all. The alfalfa falling on the ground makes a soft covering upon which windfalls may drop with little bruising; it so occupies the soil as to allow no foul growth to creep in; it does away with the work of weeding or cultivating, and keeps the surface cool and porous, furnishing excellent pasture for hogs if the trees are protected. It would be possible, of course, on this system of coöperation between fruit tree and alfalfa plant, to secure a crop of hay or seed during the off years for fruit, but whether this would prove profitable may be questioned. Orchards growing under these conditions have produced magnificent crops of fruit, which for size, quality and coloring, are seldom equalled.—F. L. Watrous, in Denver Field and Farm.

If you eat without appetite you need Prickly Ash Bitters. It promptly removes impurities that clog and impede the action of the digestive organs, creates good appetite and digestion, strength of body and activity of brain.



## In the Dairy.

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

### FEED AND MANAGEMENT OF DAIRY COWS.

By J. H. Grisdale, B. Agr., in Annual Report of the Cheese and Butter Association of the Province of Ontario, 1898.

(Continued from last week.)

4. There is another important factor to be considered besides the food value in purchasing food-stuffs, and that is their manurial value after they have served the milk-producing end. A great many experiments have been conducted along the line of determining what rations give the best results. A short time ago Storrs Experiment Station conducted a series of experiments among some of the best herds in the Eastern States, their aim being to determine the best ratio between the nitrogenous and the carbonaceous parts of the ration. In nearly every case it was found that adding nitrogenous matter to the ration increased the flow of milk sufficiently to make a profit on the increased expenditure. In Iowa we are at present conducting some feeding experiments with dairy cattle, and, though not completed, the same results are indicated. Another factor in milk productions is, however, attracting some attention at that station, and that is the apparently wonderful effect of variety. Some of our cheapest rations are giving results almost equal to those rich in protein. The same effect is being demonstrated in Wisconsin, and is, I think, bound to receive more and more attention in the future. Of course, I do not mean by "variety" changing feed each meal. Cows giving large quantities of milk require rations rich in protein. As the flow decreases the amount of protein may be decreased, and the whole dry matter, too, if it comes to that. Palatability is a most important consideration in feeding dairy cattle, for of a palatable food a much larger amount will be consumed. Then let variety, palatability, and protein be your watch words.

5. Many farmers turn their cattle on pasture in May and feed them nothing extra until they again enter the stables. If a drought comes they think luck is against them, and are resigned to lose \$10 or \$15 per cow, while this loss might easily be avoided by protecting the cattle from the heat and feeding them some green fodder. Even should it not pay while feeding—which it will, however—the keeping of the flow of milk up, will, in the end, much more than return an outlay; and I might say right here, that the feeding of grain in summer, while not always profitable, is very often of benefit in keeping up the flow, not only of that year, but of the next year also. This is especially marked in young stock. At the experiment station in Iowa the cattle are housed and fed during the hot fly period and a good profit made. I would strongly urge the protection of the animals from the extreme summer heat, even should no feed be available. Better protect them during the day and let them eat at night than expose such sensitive, nervous animals as good milch cows to the heat and irritation of flies.

6. Once a ration is settled, the question arises, how shall it be fed? At the Ontario Agricultural College it is the practice to make a sort of hash, the great aim being succulence. This is an excellent method, but is not always the best, and involves a great deal of work. Many cattle when fed a mixture like this spend the time mouthing the food over, picking out the grain, and sometimes even sorting that, and they never seem satisfied. A good way, and one which seems to please the cattle better than any other, is to give the concentrates first and then the roughage to eat at leisure. I have found this to work well, and many experi-

ment stations are feeding the same way. When labor is cheap and feed dear, it will pay to cut the hay, but not otherwise. A little cut hay or chaff mixed with the chop or meal will prevent too rapid eating and thus aid digestion. As to the number of times to feed, it is largely a matter of custom, but once the animals are accustomed to receiving certain feed at a certain hour it is bad to feed any later or any other feed, as they become uneasy, and the effect is always too much in evidence when the milk pail comes around. Salt should also be given daily, about three-fourths to one ounce being sufficient.

7. Water should be given after roughage. It is best to water inside, as then each animal is likely to get all she needs and not be rushed. A large yield of milk needs a large supply of water. Warm water will increase the flow of milk but not enough to pay the expense of warming. A most successful dairyman and State dairy commissioner for Iowa, P. B. Norton, waters his cows by letting the water into the feed-troughs. This is done a short time before feeding, and when the majority of the cows are through drinking the water is shut off, leaving a gallon or so of water in the trough. Into this the ensilage and grain are dumped. He claims excellent results from this system, and I know that he is one of the most progressive dairymen in the State. His is a system for rushing every animal for all she is worth, and this is the system that pays when dairy produce is the sole object. If pure-bred stock are kept, of course other considerations enter with which I may not deal.

8. Warmth is most essential to dairy cattle. Exposure is sure to affect the milk flow most injuriously. In Indiana an experiment was conducted recently where it was shown that the loss from one cow exposed to the weather forty-eight days was \$4.26. But warmth is not to be secured to exclusion of a plentiful supply of good air. Good ventilation is most necessary, and if we are to stamp out tuberculosis from our dairy herds, good ventilation will be the chief factor in its eradication. Take, for instance, our ranch cattle; tuberculosis affections are almost unknown, and, to my thinking, for no other reason than that they have all the good, pure air they can breathe. To think of shutting up cattle in a stable with one or no outlet for foul air or inlet for fresh, save a stray cranny, is nothing short of folly and cruelty to animals, and can never be followed by anything but failure.

Where little attention is paid to ventilation there is usually as little paid to the offensive odors arising from the manure, and these injuriously affect the cow. The care of the manure is by no means the least important of the many problems which confront the dairy farmer. Many farmers seem to consider that a good part of it may be well preserved on the hams of their cows. This is one way of keeping it, but it is a very expensive way. To avoid this, the animals must be well bedded, for if good results are to be hoped for, comfort and kindness are, above all things, necessary. A good plan is to have a covered manure-heap, into which the manure from the horse-barn is also carted and the two mixed, as much straw being used as possible. Another purpose which this manure-heap may serve is as a yard for the cattle. Exercise is essential if health is to be maintained and the greatest profit reaped, yet to turn cattle out in cold winter weather is little short of throwing profit to the winds, and profits are what we are all after. Of course, it is possible to accustom cattle to a short period of exposure, so they will not be very seriously affected by it, but the less the better. The plan I have suggested is one which I have seen tried in one or two cases, and, so far as I could discover, gave excellent results, while Professor Roberts has conducted an experiment which shows conclusively that the plan is a good one.

Now, much that I have said is not new to most of you, probably to none of you, but to some who are starting, or to others who may have got into a rut, I would particularly appeal to do what you can to improve your methods. Much may be done by the stations, but without the hearty cooperation of the farmers it is all in vain. Every step forward anyone of us can take is a gain for the glorious calling of ours—a calling which makes manly, intelligent, and upright men, and the only calling which develops every side of a man's nature.

To the manufacturing dairyman, I have, in conclusion, a few words to say. Upon the product of the farm you are dependent for your whole prosperity, and the greater the amount of raw material you can have produced the greater will be your profit. For who ever heard of a factory closing because there was too much milk?

Now, you have a number of inspectors or instructors, whose duty it is to go around and visit the factories and give individual instruction. Why not extend the system somewhat, and have a few instructors on the care and feeding of dairy cattle, who, in any section where there is poor milk being supplied, would be available to give the individual farmer assistance and instructions that would enable him to pro-

## NEW 20TH CENTURY CREAM SEPARATORS

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duce a better quality and quantity of milk from a given outlay? That this is a practicable plan, I am certain, and by this means the very men who need the help most, men who do not attend our institutes, men who read little and think less, men who have got into a rut axle-deep, would be reached, and who knows how many of them would be roused and made into progressive farmers, such as go to make up our noble country?

Another plan I would suggest, and which I am surprised has not been tried previously, although so far as I can find out it has not, is the issuing of a monthly or weekly slip, each issue to contain a few suggestions, hints on feeding, management, milking, care of milk, and kindred topics. Ours is a business; let us put business principles into it and push it. If a business man goes into manufacturing he does not wait until the Government rustles around and spurs up his supplies of raw material, but he steps in himself and takes a hand. Reach the man in the rut, the others will look after themselves, although constant watchfulness is necessary lest the best of us find himself in a similar fix.

### The Care of Milk.

By W. A. Bothwell, in the Annual Report of the Cheese and Butter Association, of Ontario, for 1898.

In the advanced age of dairying to which we in Ontario have arrived, the care of the milk to be supplied to the cheese factories possibly stands first in importance in the matter of producing a fine product. For certainly without pure, untainted milk to begin with we can not have a fine quality of cheese or butter. In years gone by, when dairymen kept a fewer number of cows, and these during the dairy season were fed on nothing but the native grasses, a much purer quality of milk was procured than is now delivered at our factories. Now, when the herds are larger, and when the milk flow is increased by various foods, some of which produce objectionable flavors, the dairyman must exercise greater care with the milk product. This Canada of ours is

a dairying country. To make the most of our dairy we must produce the best possible results in the quality of the article manufactured.

We have to engage in competition with other countries, and there will be little money in the industry for us if we are compelled to take second place. The government is providing dairy schools that the makers may not lack in efficiency. They have provided cold storage shipments, that the product may not suffer in transportation, so that it may reach the market in the best possible condition. So now it rests with the dairymen to give the market a proper start. Surely a business that brings annually to the pockets of the farmers of the country nearly \$17,000,000 is worthy of earnest consideration.

Immediately after the milk is drawn it should be well stirred and aired until the animal heat has gone out of it. It should then be put in a sheltered, airy place, free from all bad odors. This is in the reach of all, as no costly appliances are required—nothing but care.

A few Don'ts. Don't keep the milk in the cellar. This often gives musty, stale flavor. Don't keep it in large quantities over night. Don't put it in cold water until all of the animal heat has been driven off, and not then unless in extremely warm weather, or when to be kept over Sunday. Not only do many kinds of food give the milk objectionable flavors, but impure water is a common source of this evil. Too much stress can not be laid on the matter of providing pure drinking water for the herd. Cows will not drink bad water if good is at hand, and it should be considered little less than a crime to allow them to drink from stagnant pools or drains, when it is possible to obtain better.

Now, these bad flavors lessen the value of our product from 1 to 2 cents per pound, and in the majority of cases the blame rests entirely with the patron. He has entire control of the milk before it reaches the maker. This is one of the points that every maker must look after, and see to it that the patrons do properly care for the milk.

## Mortgage Lifters.

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Do not hesitate to refuse it if it is not in good condition. You can not afford to run the risk of using inferior milk. The best is none too good. A few cans of bad-flavored milk will spoil a whole day's output, and it means a serious loss, not only to the factory but to the maker. It costs as much to haul poor milk as good. It costs the same to manufacture, so by all means let us have it good. If we find a patron who is not caring for his milk as he should, then in justice to the factory, and in justice to ourselves, we must see him and endeavor to find out where the trouble lies, and by all fair means seek to have it removed. But be careful here, as this is a touchy point. All will be right if approached in the proper way, but liable to give us trouble if we do not proceed judiciously. We must be at peace with our patrons. Let there be unity and harmony is an oft-repeated saying, and in no case is it more applicable than in this one.

#### Variation in the Test.

Perhaps everyone is not familiar with the fact that the test varies with each milking, depending on the amount the cow gives. The test is usually lower when there is an increase in the milk yield. For example, let us look at a week's record of Zaena, whose picture appeared in the Farmer of August 17.

Beginning with the 13th and going seven days, we have the following record:

Day.	Time.	Pounds milk.	Pounds Test.	Pounds butter fat.
13.....	a. m.	21.6	2.9	.63
	p. m.	20.7	4.4	.91
14.....	a. m.	22.7	3.0	.68
	p. m.	18.7	3.6	.67
15.....	a. m.	22.4	2.6	.58
	p. m.	19.1	3.9	.75
16.....	a. m.	22.7	3.6	.82
	p. m.	17.7	3.9	.69
17.....	a. m.	22.9	3.4	.78
	p. m.	19.0	4.0	.76
18.....	a. m.	23.9	3.3	.79
	p. m.	16.6	4.0	.66
19.....	a. m.	24.6	3.3	.81
	p. m.	18.6	3.7	.69

It will be seen by the above that an increase in milk means a decrease in the per cent of fat. The more uneven the time is between milkings, the greater difference there will be in the amount of milk given, and hence a greater variation in the test. Our cows at the college give the most milk in the morning, and in the majority of cases the individual test is lower than in the evening. There are at least two reasons for this: (1) The time between the evening's milking and the morning's milking is longer than between morning and evening, and (2) the nights being cooler, the cattle eat better and the flies do not bother so much, hence they secrete more milk. J. A. C.

#### The Farmer and the Grange.

Mrs. Sims' response to the address of welcome at the Oak Grange picnic.

Friends and Neighbors, Brothers and Sisters in the Grange.—We will not say that we are glad to be with you to-day, for it is a self-evident fact we are here, hence the conclusion that we are happy. True happiness is contentment and wisdom, and they should be inseparable. A contented mind is very near to heaven, if it is also a wise mind. The fortunate people who can make a living for themselves living near to nature's heart—close to the mother earth who has always been, and will always be, a tender, loving mother—should by all means be a contented people. They need not necessarily sit down with folded hands and say, "Let the world wag as it will, I'm happy," for such contentment savors of laziness. But be contented with your lot in life knowing that the farmer by his own volition will remove obstacles and obstructions from the traveled road and make for himself and his posterity a right of way to the highest and best that this mortal life can offer. But he can not and will not work alone. He has demonstrated that to gain the greatest good for the greatest number means cooperation between men, not combines to defeat some one else, not organization to "down" some other organization, but cooperation as in a family—brotherly love—contentment only in securing the most good possible to every member of that family. As members of the grange we can understand what that means, and in the grange we will gain the wisdom that should always be the staff of contentment. That "knowledge is power" has been conned over and over by the little tow-headed urchins in the district schools for many long years—but there is good knowledge and bad knowledge—and therefore we want none of it. But wisdom is all good and that we want—that we must have. In the grange is where we shall find it. Then let us extend the right hand of fellowship to our neighbor and say, "Come, let us all be grangers." We have had a season of good things. No one who attended the recent meetings held in our State and listened to the words of wisdom and to the score of facts as told by Brothers Jones and Rhoades can doubt for a moment that the grange is a grand and good thing. Let us rally to the support of an

organization that is instrumental in giving us such a blessing, a rural free delivery, and which is bringing such a pressure to bear as will soon crush the trusts out of existence. Let us do our best to build up an order that has for its cornerstone, Faith in God, Hope, Charity, and Fidelity.

#### Publishers' Paragraphs.

"Canoline" is one of the very best anti-septic and disinfectants on the market, and is advertised in the Farmer by the Cannon Chemical Company, of St. Louis, Mo., a reliable concern that is deserving of the patronage of our readers. Canoline is guaranteed in every way and has the unqualified indorsement of all who have ever used it.

By the recent completion of its new building, 42 by 100 feet, specially built to facilitate the carrying and handling of its particular line of goods, the Kansas City Roofing & Corrugating Company, at 218 and 220 West Third street, Kansas City, Mo., has now three times its former capacity with additional track facilities, and carries the largest stock of corrugated iron and goods of this class of any house in the United States without exception. There is no order too big for this company to handle promptly, and none too small to receive its best attention, while it is able, by reason of the magnitude of its purchases, to quote the very lowest prices obtainable anywhere on tarred felt, prepared roofings, corrugated iron, and kindred products.

McClure's Magazine for September opens with a poem on the Dreyfus affair by Edwin Markham which proves that the mark reached by Mr. Markham in "The Man with the Hoe" was not beyond his reaching again. It is truly a high and noble strain which he strikes here, exhibiting in apt, strong, rhythmic phrase the inner, universal import of the most singular episode of recent history. Following this comes a character sketch of Admiral Sampson, by Ray Stannard Baker, giving many interesting incidents and anecdotes of the Admiral's life as a boy and young man in his home town of Palmyra, New York, and estimates and reminiscences of him by his associates in the navy. It is illustrated with a series of portraits of Sampson and various other pictures.

In an extended area where the germs of blackleg exist, the disease is likely to be very prevalent among young cattle this fall. This is due to the fact that the pastures are in good condition and the germs will therefore be more virulent, and as the calves are fat, they will consequently be more susceptible to blackleg. Good grass and fine calves, even though accompanied by blackleg, are better than drought and thin cattle, for a drought causes heavy expense, while blackleg can be easily and cheaply prevented by vaccination. The Pasteur Vaccine Company's blackleg remedies have been successfully used upon millions of cattle during the last few years, and are well and favorably known throughout the blackleg districts of the country, and millions of dollars have been saved by those cattle-men who have been using them. The Pasteur Company's preparations are furnished in the form of a powder which has to be mixed with water and filtered and then injected; and also in a form which is ready for immediate use. The powder vaccines are supplied to be administered with one application ("single" vaccine), or in two applications ("double" vaccine). The vaccine which is ready for immediate use is, for distinction, called "Blacklegline," and is administered in one application. "Blacklegline" is extremely popular on account of being more economical and its administration so extremely simple. Write for further particulars to the Pasteur Vaccine Co., 52 Fifth Ave., Chicago, or to their agencies at Denver, Colo., and Fort Worth, Texas.

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THE HARRIS-BRED BULL, GALLANT KNIGHT 12446, a son of Gallant, out of 8th Linwood Golden Drop, heads herd. Females by the Crulshank bulls. Imp. Thistle Top 83876, Earl of Gloster 74523, etc. Size, color, constitution and feeding qualities the standard. A few good cows for sale now bred to Gallant Knight. A few young bulls of serviceable age for sale. Address

T. K. TOMSON & SONS, DOVER, KANS.



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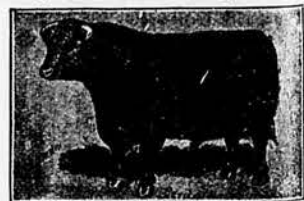
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THE SCOTCH BRED BULLS

Lord Mayor 112727 and  
Laird of Linwood 127149  
HEAD OF THE HERD.



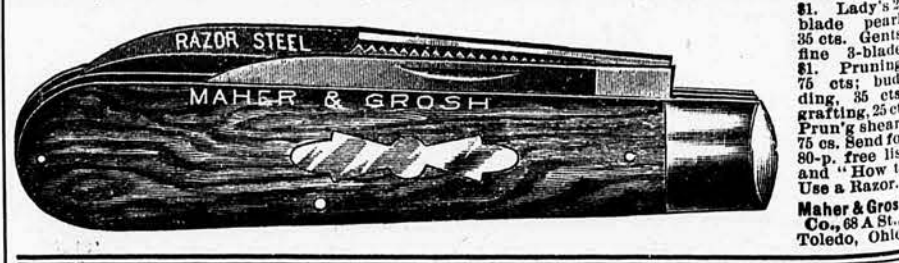
LORD MAJOR was by the Baron Victor bull Baron Lavender 2d, out of Imp. Lady of the Meadow and is one of the greatest breeding bulls of the age. Laird of Linwood was by Gallahad out of 11th Linwood Golden Drop. Lord Mayor heifers bred to Laird of Linwood for sale. Also bred Shetland ponies. Inspection invited. Correspondence solicited. A few young bulls sired by Lord Mayor for sale.

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## MARKET REPORTS.

## Kansas City Live Stock.

Kansas City, Sept. 4.—Cattle—Receipts since Saturday, 10,703; calves, 320; shipped Saturday, 2,168 cattle; 60 calves. The market was generally steady on the best grades. The following are representative sales:

DRESSED BEEF AND SHIPPING STEERS.

No.	Ave. Price.	No.	Ave. Price.
22.....	1,329 \$5.25	77.....	1,113 \$4.70

## WESTERN STEERS.

70.....	1,226 \$5.55	6.....	1,135 \$4.75
89.....	1,134 4.50	51 Tex.....	1,113 4.60
51 fdr.....	971 4.30	50 fdr.....	1,084 4.15
52 fdr.....	937 3.65	1 stk.....	880 3.15

## NATIVE HEIFERS.

1.....	500 \$3.50	13.....	863 \$3.35
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## NATIVE COWS.

1.....	1,400 \$4.00	21.....	958 \$3.50
11.....	1,013 3.40	8.....	1,098 3.15
39.....	831 3.05	9.....	1,062 3.00
2.....	957 2.65	1.....	850 2.00

## NATIVE FEEDERS.

1.....	1,070 \$4.70	25.....	938 \$4.40
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## NATIVE STOCKERS.

1.....	420 \$5.75	1.....	450 \$5.25
6.....	551 4.50	3.....	873 4.25
11.....	800 4.15	2 Jer.....	485 3.50
3.....	416 3.50		

Hogs—Receipts since Saturday, 2,116; shipped Saturday, 969. The market was steady on best and dull on common offerings. The following are representative sales:

29.....	133 \$4.45	76.....	173 \$4.40	34.....	149 \$4.40
17.....	134 4.40	75.....	161 4.35	56.....	123 4.35
21.....	241 4.35	87.....	210 4.30	67.....	235 4.30
53.....	191 4.30	70.....	213 4.30	20.....	153 4.30
64.....	210 4.30	104.....	176 4.30	46.....	223 4.25
30.....	220 4.25	27.....	125 4.25	6.....	186 4.25
90.....	218 4.25	64.....	198 4.25	88.....	29 4.25
76.....	212 4.25	70.....	229 4.25	47.....	231 4.25
8.....	193 4.25	21.....	192 4.25	6.....	228 4.20
3.....	196 4.20	28.....	117 4.00	1.....	120 3.75
3.....	366 3.75	2.....	130 3.50	2.....	220 3.50
1.....	250 3.50	1.....	150 3.25	15.....	157 3.25
11.....	113 3.00	2.....	230 3.00	3.....	126 3.00
29.....	100 3.00	2.....	985 3.00	17.....	210 3.30

Sheep—Receipts since Saturday, 3,220; shipped Saturday, 2. The market was slow and weak. The following are representative sales:

14 lambs.....	70 \$5.20	45 W. lbs.....	61 \$4.80
274 fdr. lbs.....	72 4.65	9 W. lbs.....	55 4.00
5 stk. lbs.....	64 4.00	2 lambs.....	75 3.75
67 sw. stk.....	86 3.35	86 sw. fdr.....	86 3.35

## South Omaha Live Stock.

South Omaha, Neb., Sept. 4.—Cattle—Receipts, 2,700; market active, 10c higher; native beef steers, \$4.85@6.00; western steers, \$4.20@4.85; Texas steers, \$3.75@4.25; cows and heifers, \$3.60@4.25; canners, \$2.25@3.40; stockers and feeders, \$4.00@5.00; calves, \$4.00@6.25; bulls, stags, etc., \$4.00@4.20.

Hogs—Receipts, 1,300; market 5c higher; heavy, \$4.15@4.20; mixed, \$4.15@4.20; light, \$4.20@4.30; pigs, \$4.00@4.30; bulk of sales, \$4.15@4.20.

Sheep—Receipts, 7,900; market shade lower; yearlings, \$3.80@4.10; western muttons, \$3.60@3.90; stock sheep, \$3.40@3.90; lambs, \$4.50@5.00.

## St. Louis Live Stock.

St. Louis, Sept. 4.—Cattle—Receipts, 4,007; market steady to strong; beef steers, \$1.00@6.90; stockers and feeders, \$2.60@4.85; cows and heifers, \$2.40@5.00; canners, \$1.50@2.75; Texas and Indian steers, \$2.50@4.65; cows and heifers, \$2.30@3.50.

Hogs—Receipts, 2,000; market steady; pigs and lights, \$1.40@4.60; packers, \$1.30@4.55; butchers, \$1.50@4.60.

Sheep—Receipts, 800; market firm; native muttons, \$3.50@4.00; stockers, \$2.00@3.25; lambs, \$4.00@5.75.

## Chicago Live Stock.

Chicago, Sept. 4.—Cattle—Receipts, 17,000; market steady; beefs, \$4.50@6.60; cows and heifers, \$1.75@5.00; Texas steers, \$3.25@4.25; stockers and feeders, \$2.75@4.90.

Hogs—Receipts, 21,000; market strong; mixed and butchers, \$1.15@4.60; good heavy, \$1.30@1.50; rough heavy, \$3.90@4.10; light, \$4.20@4.65.

Sheep—Receipts, 24,000; market weak; sheep, \$2.75@4.50; lambs, \$3.50@6.25.

## THE STRAY LIST.

FOR WEEK ENDING AUGUST 24, 1899.  
Gray County—C. A. Dabb, Clerk.

MULE—Taken up by John Baker, in tp. 27, R. 30, June 31, 1899, one black mare mule, harness marks; valued at \$25.

FOR WEEK ENDING AUGUST 31, 1899.  
Montgomery County—D. S. James, Clerk.

MAIRE—Taken up by P. M. Lee, in Cherokee tp., (P. O. Coffeyville), July 26, 1899, one brown pony mare, about 8 years old.

FOR WEEK ENDING SEPTEMBER 7, 1899.  
Ottawa County—W. M. Trullitt, Clerk.

MAIRE—Taken up by E. A. Richards, in Henry tp., August 2, 1899, one brown mare, left hind foot white; valued at \$12.

## Grape Vines

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Death to Ticks, Scab, Mange, Foot Rot and Disease Germs.

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**PREVENT HOG CHOLERA.**

"I received the Chloro-Naphtholeum, and have used it in disinfecting our swine pens, stables and poultry house. Also have used it to sprinkle our hogs about once each week, as a preventive and cure to rid hogs of lice. I have more faith in disinfectants than medicine. We consider your Chloro-Naphtholeum without a rival, and think it should be used by every swine-breeder regularly, as often as once each week."

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We will send you free, our short, simple, practical book on Hog Cholera. Write for it. Ask your local dealer for Chloro-Naphtholeum. If he is not up-to-date, write or telegraph, WEST DISINFECTING CO., 25 East 59th St., New York City.

Sample gallon can sent express paid for \$1.50.

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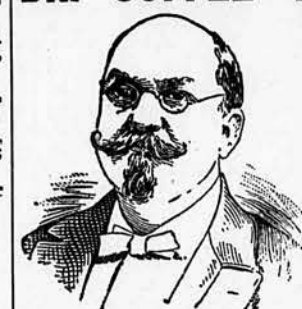
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	Cattle and Calves.	Hogs.	Sheep.
Official Receipts for 1898 .....	1,846,233	3,672,909	980,303
Sold in Kansas City 1898 .....	1,757,163	3,596,828	815,580

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HEALS  
Sores, Cuts, Burns, Stings, Bites.  
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## The Poultry Yard

### AROUND THE POULTRY YARD.

By P. H. Jacobs, in American Gardening.

#### WHEN TO BEGIN WITH INCOUBATORS.

One may properly begin now, as there will be mistakes, and something will be learned before commencing to hatch for market. Many persons begin the regular season in October, so as to have the first lot hatched by the latter part of that month. The chicks will then weigh about a pound and a half by the first week in January, when the upward turn in prices will begin. Just what the prices may be can not be anticipated, but they depend upon the quality. The chicks should be sent to market dressed. The cold weather will be too severe for the shipment alive of such young stock, as some of them may die on the route. There will, probably, at that season, be a difference of 10 cents per pound of dressed chicks, which will more than pay for the cost of dressing them. As there will be but little danger of decomposition in winter, they will keep for any length of time, and the commission merchants' charges will be reduced by shipping the chicks dressed.

#### LICE AND REMEDIES.

Lice in summer make the hens subject to disease. The first signs of lice are with the early sitting hens, in the spring, and when the chicks are hatched off they show the effects of lice very quickly, as lice are sudden or certain death to them if they are not protected. To prevent this, the nests should be movable, so that one can take them outside and scald them, inside and out, and after this is done, whitewash them inside and out, putting a few drops of kerosene oil to each bucket of whitewash used. This should be done at least twice a month. Tobacco is very good to place in the nest, and will not injure the hens in any way. The roost should be anointed with kerosene oil once a week, which prevents lice crawling on the chicks at night, and also prevents scabby-legged chickens, if used often enough. The walls should be whitewashed once a week, when the lice are extremely bad, and the droppings should be removed at least twice a week. Lice often find lodgment in the droppings, and hence a solution of carbolic acid should be sprinkled over the droppings after they are removed.

#### FALL MANAGEMENT IN FEEDING.

As soon as the leaves begin to fall and the grass gradually dies out, the fowls will require more assistance from their owner. Ordinarily, in the summer, when grass, insects, and seeds are plentiful, a flock not only finds an abundance but each fowl is capable of selecting such foods as may be preferred, but when the conditions are not so favorable they may each lack certain foods which they are unable to obtain. Should there be an insufficiency of bulky food the fowl will eat the dried dead grass, which may pack in the crops and cause them to be crop-bound. The majority of poultrymen begin by giving the birds plenty of corn and wheat. Such foods may be allowed with benefit but it is a mistake to expect fowls to thrive on such a restricted diet. One point to keep in view in the feeding of poultry is that all kinds must have bulky food of some kind, the same as cattle, sheep, or swine, and to confine them to corn and wheat, which are concentrated foods, is to "burn them up," if the expression may be used. In the fall, as the summer begins to give way to cold weather, the fowls should have about a pint of grain at night for every twelve in the flock. As the winter advances the allowance may gradually be increased until the quantity reaches a quart. This grain should be given at night. During the day—in the morning—such foods as cooked potatoes, a head of cabbage, cut grass, or clover (scalded), bone, meat, and occasionally a soft mess of bran and ground oats may be given, feeding only in the morning and at night, never at noon. When any of these foods are given the grain ration should be reduced. It is better to give a different food every morning than to have a sameness of diet. Fed in this manner the birds will keep in healthy condition, will lay, will be more contented, and it will be found that the varied foods are more economical than an exclusive diet of grain.

#### SMALL FLOCKS AND LABOR.

There is always a profit derived from a small family flock, because it has two principal advantages compared with the keeping of large numbers. The small flock is a possibility with all, but the management of several hundred fowls is another matter. One advantage of having the small flock is that the item of labor is eliminated, or rather, it is not estimated in the cost of a family flock, for the reason that where only a dozen or more hens are kept they are attended to by any of the members of the family, and but a few minutes are given the fowls, hence the cost of labor can not be estimated nor does it interfere in any man-

ner with the occupation of those who take an interest in the flock, but when one ventures into raising chicks by the hundreds and retains a large proportion to attain the adult stage the labor necessary becomes a more important item than the food. The second advantage in favor of the small flock is that the cost of the food is materially reduced by the utilization of the waste material from the table. The birds are scavengers to a certain extent and assist in converting into eggs substances that would be of no use, while the scraps would be insignificant, if intended as a portion of the ration for a hundred or more fowls. It is the two advantages mentioned that permit one to make several dollars' profit per hen with a small flock and allow only a dollar as profit for each hen in a large flock. Those who have a large number of fowls, and who keep strict accounts of all expenses, find that the cost of food varies but little from that required for a small flock proportionately, and they estimate their profits by the difference between the cost of food and the receipts, when, in fact, the value of the labor is greater than the cost of the food in many cases, which puts a different aspect on the enterprise. Of course, when the owner performs the labor himself he receives the price of that labor in the receipts, but that does not destroy the fact that the labor must be paid for, as the owner may be compelled to sacrifice a lucrative position in some other business in order to give his flocks his entire attention.

#### VARIETY IN GRAIN FOODS.

The various grains differ in composition, and when grain is used as an exclusive food at certain seasons when green materials and meat are not easily obtainable, there will be an advantage in varying the grains. While corn is the staple grain food, yet wheat, barley, oats, and buckwheat should be allowed. Here are five kinds of grain, and if only one kind is given for a day, to be followed by another kind the next day, giving meat one day and a mixed diet of soft food a certain day, there will then be seven rations, or one for each day in the week. Corn may be given morning and night on Monday, oats on Tuesday, meat on Wednesday, wheat on Thursday, barley on Friday, a cooked mess on Saturday, and buckwheat on Sunday. The cooked mess may consist of ground oats, bran and corn meal, of each two parts, and linseed meal one part, added to cooked potatoes, turnips, or even finely-chopped clover that is scalded. The only difficulty with such feeding is that one must have on hand several kinds of grain, but there will be fewer mistakes made in feeding, however.

#### EXPRESS SHIPMENTS.

The best prices are secured when the fowls are killed and sent by express. No matter if freight rates or fast lines are available for dispatch there should be no risks taken. Send by express and get into market as early as possible. It is the fresh, plump fowls that bring the best prices and it is only the choicest that give good profits. It is not economical to work several months in raising fowls and then lose the advantages of the best prices in the attempt to save a small sum in the difference in quick forwarding by express and a slower transportation.

#### PULLETS AND RED COMBS.

When a pullet is about to reach the laying stage her comb becomes a bright scarlet color, enlarges and the pullet is more active in foraging. When the winter approaches look over the pullets and select those with the best combs (as far as color is concerned) and also endeavor to pick out the ones that were hatched early. If some of the pullets are then backward it will pay to dispose of them and retain only the best.

#### Egg Productiveness.

We are all wont to look upon the Leghorn as being the embodiment of egg-production, and it is true there are more good laying strains of this breed than perhaps of any other. The deep bodies of the Plymouth Rocks are also significant of great productiveness, and among the farmers they are considered good layers. Every breeder who has been fortunate in securing a laying strain of the breed that takes his fancy is prone to believe that that particular breed is the best of layers. If he fails to get an egg strain he condemns the whole breed, or contents himself with the thought that they are a fancy or a market fowl. The real fact of the matter is, there is very little difference in the number of eggs the various breeds produce, when you secure an egg strain of each and give them proper care. I have known flocks of Leghorns that did not average over 75 to 100 eggs each, and others that have exceeded the number usually ac-

## When Pain Racks the Body

Frank Long, who lives near Lennon, Mich., says:

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"I gradually became worse, until I thought death would be welcome release. I was finally induced to try Dr. Williams' Pink Pills for Pale People, and after using five boxes, was entirely cured.

"I am confident that Dr. Williams' Pink Pills saved my life. I will gladly answer inquiries concerning my sickness and wonderful cure, provided stamp be enclosed for reply.

FRANK LONG."

Sworn to before me at Venice, Mich., this 15th day of April, 1898.

G. B. GOLDSMITH,

Justice of the Peace.

—From the Observer, Flushing, Mich.

Dr. Williams' Pink Pills for Pale People contain, in a condensed form, all the elements necessary to give new life and richness to the blood and restore shattered nerves. They are an unfailing specific for such diseases as locomotor ataxia, partial paralysis, St. Vitus' dance, sciatica, neuralgia, rheumatism, nervous headache, the after-effects of the grip, palpitation of the heart, pale and sallow complexions, and all forms of weakness either in male or female.

Dr. Williams' Pink Pills for Pale People are never sold by the dozen or hundred, but always in packages. At all druggists, or direct from the Dr. Williams Medicine Company, Schenectady, N. Y., 50 cents per box, 6 boxes \$2.50.

credited to them, 190. Cora A. Rickards tells of a fancier's flock of fine Barred Plymouth Rocks that did not average 50 eggs each in a year, while I have succeeded in getting 200-egg hens from the same variety. Mr. A. J. Silberstein has produced Light Brahmas with unequalled records, although the Brahmas are considered poor layers by many.

The different breeds, however, require vastly different treatment, and the man who thoroughly understands his fowls will be able to secure the best results from the breed of his choice, no matter what that breed. The same treatment that is given a Leghorn will not do for a Plymouth Rock, neither will the methods employed with either of these breeds do for the Brahma, if the best results are to be obtained. The Plymouth Rocks, though active, are not so much so as the Leghorns, and if fed heavily at stated intervals are apt to grow lazy, and wait for their food, rather than scratch for it. My fowls were quite inclined to do this during the early winter. After receiving their morning mash they would bunch up together in a sunny place and wait until the afternoon feed, and some of them seemed to forget that they had duties to perform upon the nest.

The number of eggs began to grow less, and as there was no snow on the ground I decided to omit the morning feed and give them free range. The plan worked admirably, and in a few days the egg supply was materially increased. When snow covered the ground I fed a small amount of grain, under litter, and about mid-day gave them a mash, with another good feed of grain at night. If it were not for the convenience of mixing in clover, animal food and vegetables, I should discard the mash entirely for matured and laying stock, and shall institute some experiments along that line the coming winter. With an occasional feed of green cut bone and chopped raw vegetables, and a liberal supply of clover hay, to be used as litter in the scratching-shed, into which the grain will be thrown, I believe fowls will do better on a whole grain diet than they will where the mash is fed. They will pick the leaves from the hay, and thus supply this most important part of their diet, and as clover costs but little, if any more than straw, I believe it will be a most economical way to winter fowls, with less work and equally good results as though a mash were fed.

#### ABOUT YOUNG STOCK.

There has been a great demand this season for young pullets, 2 or 3 months old, and I believe that a good business could be done in raising this class of stock, if one made it a point to supply a strain of fowls that would lay in winter. Many people who like to keep a few fine fowls do not care to raise chicks on account of the risk of loss and the constant and untiring attention that must necessarily be given

them. In many cases it is cheaper and safer to buy fowls at, say 3 months old, than to buy the eggs and raise them. Just what such chickens are worth is hard to determine, as we do not know for a certainty into what grade of birds they will develop, but pure, standard-bred chicks of any breed will readily bring from 50 cents to \$1 each, and at these prices it will pay to raise them. A Plymouth Rock cockerel at 3 months will bring from 40 to 60 cents on the market, according to the season of the year, and the pullets are certainly worth as much. Chicks that give promise of growing into high-scoring or even exhibition birds should, of course, bring several times these prices.

Prices of broiler chicks have held up well this season, large-sized chicks of the best quality bringing 23 cents in the Philadelphia market until after the middle of July, and as there is little trouble in making a Plymouth Rock weigh two pounds or more at 3 months, the culls have brought as much as some fanciers ask for what they say will make good breeding stock, as I saw some Rock cockerels advertised in one of the poultry papers at \$5 per dozen. This, too, was by a fancier who asked \$2 per sitting for eggs. How a fancier can make money disposing of breeding stock at the price of market fowls, is more than I can understand. I should much prefer to sell all stock to the butcher, that did not come up to a high standard, than to ship it to customers at about the same price, knowing that the purchaser will be dissatisfied when the stock matures. No matter what a man pays, he expects good stock, and if you send him culls, even at market prices, you have injured your reputation without gain to yourself.—Reliable Poultry Journal.

#### \$100 Reward, \$100.

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

When writing any of our advertisers, please state that you saw their "ad." in Kansas Farmer.





## Leading Exhibitions for 1899.

Toronto Exposition—Aug. 28-Sept. 9.  
Ohio State Fair—Columbus, Sept. 4-8.  
Minnesota State Fair—Hamline, Sept. 4-9.  
New York State Fair—Syracuse, Sept. 4-9.  
Wisconsin State Fair—Milwaukee, Sept. 11-15.  
Indiana State Fair—Indianapolis, Sept. 18-23.  
South Dakota State Fair—Yankton, Sept. 25-29.  
Illinois State Fair—Springfield, Sept. 25-30.  
Michigan State Fair—Grand Rapids, Sept. 25-30.  
Texas State Fair—Dallas, Sept. 28-Oct. 2.  
Denver Horse Show—Denver, Col., Sept. 29-30.  
St. Louis Fair—St. Louis, Oct. 2-7.  
Utah State Fair—Salt Lake, Oct. 3-7.  
Hereford Show—Kansas City, Mo., Oct. 23-28.

To balance the finances of the Island of St. Helena, Mr. Chamberlain, the colonial secretary, has authorized the sale of \$30,000 worth of old issues of postage stamps.

## Fruit Farming Along the Frisco.

An attractive illustrated and thoroughly reliable 64-page booklet, devoted to fruit culture along the Frisco Line in Missouri, Arkansas, Kansas, Oklahoma, and Indian Territory, just issued. A copy will be sent free upon application to Bryan Snyder, G. P. A., Frisco Line, St. Louis, Mo.

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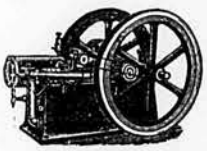
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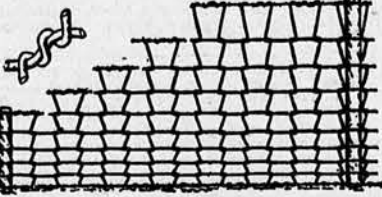
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**FOR RENT.**—A splendid grain and stock farm, with good dwelling house, barn, granery, cribs and other improvements essential.

Three hundred acres of rich bottom land and one hundred and sixty acres of upland, a part in pasture and meadow, and the remainder in a high state of cultivation.

Good sheds and timber shelter for stock; also hay, straw and stalk pasture sufficient to winter 200 head of cattle. The farm is two miles southeast of Baxter Springs and seven miles southwest of Galena, with spring river running through the west side and a beautiful lake in the center. The whole or a part of this farm is for rent, provided the applicant is an honest, industrious, practical farmer, who understands handling stock and caring for farm.

The best of references or recommendations will be required.

For further particulars address or call on  
**SAMUEL J. CRAWFORD,**  
Baxter Springs, Kansas.

**STRAWBERRIES.**—Irrigated plants for fall and spring setting for sale. Write for price list.  
**H. E. GOODELL,** Tecumseh, Kans.

**FOR SALE.**—162 dehorned steers, twos and threes.  
**H. J. Jeffery,** Gradan, Kans.

**FOR SALE.**—240-acre farm, in northeastern Kansas. Improvements new. Address Box 140, Severance, Kans.

**RAMS FOR SALE.**—A few choice thoroughbred Cotswold and Shropshire rams at \$10 per head. Write or call on Geo. B. Bell, Wakarusa, Kans.

**MERINO SHEEP FOR SALE.**—250 breeding ewes and 50 stock bucks. Call or address Mrs. S. A. Jewett, Lawrence, Kans.

**POLAND-CHINAS.**—The best is none too good if the price is only right. I have 15 choice 5-months-old pigs, both sexes, and the price is right. Don't wait.  
**S. S. Spangler,** Ness City, Kans.

**FOR SALE.**—A livery barn with complete outfit, only one in town, has splendid business, but owing to bad health am compelled to have change of climate. Earns \$100 net per month. Address H. B. Duncan, Hope, Kans.

**FOR SALE.**—Twelve yearling grade Shropshire rams \$12 to \$15. Also breeding ewes. E. W. Melville, Eudora, Kans.

**POLAND-CHINA BOARS.**—Large and mellow, broad backs; deep bodies; good ends; bred right and fed right. Prices \$12 and \$15. Gold Bar Sanders 1600 S. and Loch Aerie Tecumseh 20253 S. herd boars; they are superb. Wm. S. Powell, Moline, Elk County, Kans.

**WANTED.**—To sell Polands and Berkshires; all ages. Very cheap. O. P. Updegraff, North Topeka, Kans.

**BOAR PIGS.**—Sired by Hadley Model T 21927 for sale. Walter Roswurm, Council Grove, Kans.

**DUROC JERSEY SWINE.**—Choice registered stock from best of families. For sale by J. C. LEACH, Carbondale, Kansas.

**FLIES! FLIES!**—Send 10 cents, and learn how to make tanglefoot fly paper. Holds all that can get on. Inexpensive; no humbug. Box 267, Newton, Kans.

**FOR SALE.**—10 high-grade Hereford and 10 high-grade Shorthorn bulls, 12 to 20 months old. Address Hugh A. Hodgins, Topeka, Kans.

**PURE-BRED Aberdeen-Angus cows and heifers;** also bull calves old enough to wean, can be got from Conrad Kruger, Norfolk, Kans.

**WE POSITIVELY PAY \$16 a week and expenses,** to men with rigs, to introduce Egyptian Lice Killer and Poultry Compound in country. Address with stamp, Egyptian Drug Co., Parsons, Kans.

**BREEDERS' ANNUAL REPORT FOR 1899.**—The great Kansas Live Stock Manual and proceedings of the Ninth Annual Convention of the Kansas Improved Stock Breeders' Association, contains 125 pages, price 25 cents. Address H. A. Heath, Secretary, Topeka, Kans.

**FOR SALE.**—Imported English Coach stallion and Galloway bulls. W. Guy McCandless, Cottonwood Falls, Chase Co., Kans.

**WRITE TO ALEX RICHTER.**—Hollywood, Kans., how to sub-irrigate a garden, etc., and cost of same. Send him the size or dimensions of your garden, and he will give full information.

**WANTED.**—Every breeder in Kansas to become a member of the Kansas Improved Stock Breeders' Association. Send membership fee of \$1.00 to H. A. Heath, Secretary, Topeka, Kans., and you will receive the Breeders' Annual Report for 1899.

**FOR SALE.**—100 cars cottonseed meal. Also corn and feed. Address Western Grain and Storage Co., Wichita, Kans.

**NO EXCHANGE.**—A daughter of Hadley Jr., dam by Klever's Model, for ten bushels of alfalfa seed on track. F. W. Baker, Council Grove, Kans.

**FOR SALE.**—Imported and full-blood Percheron, Clydesdale and Coach stallions. Good individuals, colors and ages. For further information address W. H. McMillen, Manager, Box 204, Topeka, Kans.

**276-ACRE FARM FOR SALE.**—Only ten miles from the State capital; improved; has never-falling water. \$15.50 per acre if taken soon. Address J. Ferguson, Station B., Topeka, Kans.

**ABERDEEN-ANGUS BULLS.**—Twelve extra individuals of serviceable ages; registered. Wm. B. Sutton & Son, Russell, Kans.

**FOR SALE.**—Hadley Model T. No. 21927. Will take a boar pig of superior breeding and difference. Walter Roswurm, Council Grove, Kans.

**NICHOLS & SHEPHERD** threshing engine for sale cheap. Address R. B. Irwin, Modoc, Kans.

**FOR SALE.**—One pure-bred Hereford bull, also ten high-grade Hereford bulls. For further information, address Mrs. E. A. Leibfried, Emporia, Kans.

**FOR SALE.**—1,500 Angora goats. Young wethers, nannies and kids in lots to suit customer. They will kill all brush. R. C. Johnston, Lawrence, Kans.

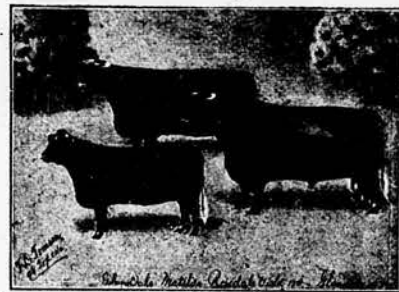
**SEED WHEAT.**—Currell's Prolific, a smooth red wheat, strong straw, has been tried here three years and yielded each year from 25 to 50 per cent more than any other variety. We can supply limited amount for seed. Finney & Co., Neosho Falls, Kan.

**BLOSSOM HOUSE.**—Opposite Union depot, Kansas City, Mo., is the best place for the money, for meals, clean and comfortable lodging, when in Kansas City. We always stop at the Blossom and get our money's worth.

**CEDAR HILL FARM.**

Golden Knight 108086 by Craven Knight, out of Norton's Gold Drop, and Baron Ury 2d by Godoy, out of Mysie 50th, head the herd, which is composed of the leading families. Young bulls of fine quality for sale.

C. W. TAYLOR,  
**PEARL, DICKINSON CO., KANS.**



**GLENDAL SHORTHORNS, Ottawa, Kans.**  
Leading Scotch and Scotch-topped American families compose the herd, headed by the Cruickshank bulls, Glendon 13870, by Ambassador, dam Galanthis, and Scotland's Charm 12724, by Imp. Lavender Lad, dam, by Imp. Baron Cruickshank. Young bulls for sale.  
**C. F. WOLF & SON, Proprietors.**

**HERD BULLS FOR SALE**

**KANSAS LAD 134085,** eighteen months old sired by Duke of Kansas 123126, and tracing to Imp. Orlando and Imp. Golden Galaxy. Also  
**CONSTANCE DUKE 134083,** twenty months old, by Duke of Kansas out of 5th Constance of Hillsdale by 60th Duke of Oxford 55734.  
These two grand bulls should be herd-heads. Come and see them or address  
**B. W. GOWDY, Garnett, Kansas.**

## Your Chance to Buy Bulls AT PUBLIC SALE, September 19.

Eight serviceable animals, including John Patton No. 11561, bred by T. P. Babst, Dover, Kans., now at head of herd, and seven yearling bulls by John Patton, and out of Bates and Bates-topped cows. Also, the best of my herd of

**BREEDING COWS**

and selections from twenty-four head of calves and heifers, besides 125 head of grade Shorthorn feeders and milkers. Terms—7 months at 6 per cent interest; 5 per cent discount for cash. Securities must be approved. Farm eight miles southeast of Yates Center, Kans.

**J. H. BAYER.**

# Sunny Slope Herefords.



**100  
HEAD  
FOR  
SALE.**

**CONSISTING OF 32 BULLS,** from 12 to 18 months old, 21 2-year-old HEIFERS, the get of Wild Tom 51292, Kodax of Rockland 40731 and Stone Mason 18th 42397, and bred to such bulls as Wild Tom, Archibald V 54433, Imported Keop On 76016 and Sentinel 76063, Java 64045.

**40 1-year-old HEIFERS and 7 COWS.**

These cattle are as good individuals and as well bred as can be bought in this country.

Finding that 400 head and the prospective increase of my 240 breeding cows is beyond the capacity of my farm, I have decided to sell the above-mentioned cattle at private sale, and will make prices an object to prospective buyers.

Address **C. A. STANNARD,** Emporia, Kans.

1839.

THE "CORRECTORS" ARE HERE.  
THE "IMPROVERS" ARE COMING.

1899.

## WEAVERGRACE BREEDING ESTABLISHMENT.

The  
Weavergrace  
Past is  
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With the  
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Achievements.

The Weavergrace present will bear the closest investigation and comparison. No Hereford is too good for Weavergrace. Neither time, labor, money nor any other factor within our reach will be spared in an open, honest, energetic effort to make the **WEAVERGRACE HEREFORDS** the best herd of beef cattle in the world. Nothing from the herd offered privately. All reserved for annual spring auction. Three hundred and sixty-four days of the year devoted to the general Hereford interests, one day to the sale of the Weavergrace Herefords.

I have an **Unrivaled List** of registered Herefords (both sexes) and of grade Hereford steers and females on file for sale throughout the country, in my office, New York Building, Chillicothe. There are several great bargains. All are invited to inspect this list, and spend a day at Weavergrace.

Hereford literature on application; also a colortype reproduction (16x22) of an oil painting of **Corrector**, free to all who will frame it.

# Nelson & Doyle

Room 220, Stock Yards Exchange Building, KANSAS CITY, MO.,

Have for sale at all times, singly or in car lots... **Registered Herefords and Shorthorns.**

Cross-bred Hereford Short-horns and grades of other breeds. Bulls and females of all ages

**Stock on Sale at Stock Yards Sale Barn, also at Farm Adjoining City.**

N. B.—We have secured the services of John Goelling, well and favorably known as a practical and expert judge of beef cattle, who will in the future assist us in this branch of our business.

## Dispersion Sale of Poland-Chinas

TO BE HELD AT

Columbia, Mo., on Friday, September 22, 1899.

Having sold my farm and having no accommodations with which to care for my hogs longer, I will sell to the highest bidder my entire herd of Poland-Chinas, ninety head. In breeding and individuality, they are the topper kind.

A RARE CHANCE to get some fine individuals, fancily bred. There will be included, my grand herd boar, Park's Black U. S. 13386 (the greatest living son of Old Black U. S.), Mark Twain Tecumseh, a yearling son of Chief Tecumseh 2d. My entire herd of eighteen brood sows of the best blood lines going, and topper bred on dam side as well. Some open, three with litters by their sides, and others due to farrow soon. There are three by Chief Tecumseh 2d; three by Black U. S.; two by the \$3,600 Look Me Over; one by Best on Earth; one by One Price; one by Chief I Know; one by Chief I Am; one by Park's Black U. S.; one by Chief's Profit; one by Chief Hide-stretcher; one by U. S. Tecumseh; one by Silver Dick; one by St. Patrick, and three fall yearlings by the noted Chief I Am. Also, my entire crop of spring and summer pigs out of the above blooded sows, of which thirty-four are by Park's Black U. S.; twenty-seven by Mark Twain Tecumseh; two by Columbia Chief (he by C. T. 2d), and last, but not least, one litter of seven—five boars and two sows, by Perfect I Know, the champion boar at the Trans-Mississippi Exposition; their dam by Old Black U. S. They are all good ones; some of them crackjack show pigs. Dinner on the ground. Sale under cover; so don't fail to attend same. Come and stop at Powers Hotel at my expense. For illustrated catalogue, giving full particulars, terms, etc., write

**ALLEN PARK, Columbia, Mo. | Col. JAS. W. SPARKS, Auctioneer.**

## Grand • Dispersion • Public • Sale.

65 HIGH-CLASS

## REGISTERED HEREFORDS.

Fayette, Howard Co., Mo., Wednesday, September 27, 1899.

Our entire herd founded in 1886 whose breeding consists of The Grove 3d 2490, Anxiety 4th 9904, Garfield 7015, Lord Wilton 4057, Hesiod 2d 40679. Nearly one-half of the offerings sired by Beau Donald 58996, the bull that left our farm two years ago for \$1,000, and now valued at \$5,000. The offering will consist of 19 bulls and 46 cows and heifers that are owned jointly by myself and son, which we now sell to satisfactorily adjust our partnership interests. Twenty-five of these cows and heifers are bred to calve from September to January 1st, next. The bulls range from 10 months to 2½ years of age. For complete information write for free copy of catalogue.

**HAMP B. WATTS, Fayette, Mo.**

**W. W. WATTS, Manager.**

Colts, WOODS, EDMONSON and SPARKS, Auctioneers.

Fayette is situated on M., K. & T. R. R., 69 miles north of Sedalia, 90 miles south of Hannibal, 100 miles east of Kansas City and 140 miles west of St. Louis.