ESTABLISHED IN 1863. VOL. XXXVII. NO. 28.

TOPEKA, KANSAS, THURSDAY, JULY 13, 1899.

SIXTEEN TO TWENTY PAGES—$1.00 A YEAR.

BREEDERS' DIRECTORY.

Cards will be inserted in the Breeders' Directory as follows: Four line card one year, $16.00; six lines, $23.00; ten lines, $30.00; each additional line $3.00. A copy of the paper will be sent to the advertiser during the continuance of the card.

SWINE.

D. TROTT, ABILENE, KAS., famous Duroc-Jerseys and Poland-Chinas.

M. H. ALBERTY, CHEROKEE, KANS., DUROC-Jerseys and Pig Teeth Clippers.

DUROC-JERSEY HOGS—Registered Stock. Send stamp for 64-page catalogue, illustrated. Prices and history.
J. M. STONEBRAKER, Panola, Ill.

KANSAS HERD OF POLAND-CHINAS—Will sell U. S. Tecumseh 20368, he by old Black U. S. 4209, and a few of his gilts bred to Black Chieftain. Inspection preferred to description. Also two nice fall boars. Address F. P. MAGUIRE, Haven, Kans.

J. U. HOWE, Wichita, Kans., Maple Avenue Herd of pure-bred Duroc-Jersey hogs. Choice stock for sale. Reasonable prices. Personal inspection and correspondence invited.

KAW VALLEY HERD OF POLAND-CHINAS—1899 pigs from the following prize-winning boars: Perfect I Know, Chief I Am, Gem's U. S. Chief and Dick Wainwright. M. F. Tatman, Rossville, Kans.

Silver Spring Herd Poland-China Hogs.
Headed by HADLEY'S MODEL T. Bred sows, gilts and boars of choicest breeding for sale. Address WALTER ROSWURM, Council Grove, Kas.

V. B. HOWEY, TOPEKA, KAS.
Breeder and shipper of thoroughbred **Poland-China** and **Large English Berkshire** swine and **Silver-Laced Wyandotte** chickens.

CRESCENT HERD POLAND-CHINAS.
Boars and gilts for sale.
S. W. HILL, Hutchinson, Kas.

POLAND-CHINA SWINE.
Chief I Know and Hadley Jr. strains.
J. H. TAYLOR, Rhinehart, Kans.

Mains' Herd of Poland-Chinas.
Chief Tecumseh 2d, Klever's Model, U. S. Model, Moorish Maid and Chief I Know strains. A selected lot of bred sows and young stock for sale at very reasonable prices. Over thirty years in the business. Stock equal to any. Satisfaction given.
JAMES MAINS, Oskaloosa, Jefferson Co., Kas.

RIDGEVIEW FARM HERD OF
BERKSHIRES
Young boars and gilts bred in the purple for sale at prices that would astonish the natives. We keep nothing but the best. Get our prices and be convinced.
MANWARING BROS., Lawrence, Kans.

VERDIGRIS VALLEY HERD—Large-Boned Poland-Chinas.
Three hundred head, six good spring boars, good bone, large and growthy, very cheap. Six June boars, very heavy bone and fancy, four of them will make herd-headers. Twenty yearling sows and spring gilts, bred, good ones, at from $12 to $15. One hundred and fifty of the finest fall pigs we ever produced. For sale cheaper than you ever bought as good pigs before. WAIT & EAST, Altoona, Wilson Co., Kans.

RIVERDALE HERD of Chester White swine and Light Brahma poultry. J. T. LAWTON, BURRTON, KAS., proprietor. All stock guaranteed. I can also ship from Topeka, my former place.

T. A. HUBBARD,
Rome, Kansas,
Breeder of
POLAND-CHINAS and LARGE ENGLISH BERKSHIRES. Two hundred head. All ages. 25 boars and 45 sows ready for buyers.

W. P. GOODE & SONS' HERD OF POLAND-CHINAS, Lexena, Kans.
We are offering boars ready for service at lower prices than ever. Sows and Gilts safe in pig also very low. And we own the best bred son of Chief Tecumseh 2d 9115. Will take a few sows at low service fee. Write quick. We will please you sure.

SWINE.

SUNNYSIDE HERD POLAND-CHINAS
BRED FROM LARGE-BONED, BROAD-BACKED, LOW-DOWN, MATURED STOCK.
Sanders, Short Stop, Corwin, Black Bess, Black U. S. and *Tecumseh Blood.*
Choice Young Stock for sale.
M. L. SOMERS, Altoona, Kans.

F. L. and C. R. OARD, Proprietors,
HEDGEWOOD HERD OF POLAND-CHINAS
VASSAR, KANSAS.
Popular Blood. —— Individual Merit.
Brood sows of the most popular strains and individual merit. The best that money can buy and experience can breed. Farm one and one-half miles south and half mile east of Vassar, Kas., on Missouri Pacific railroad.

M. C. VANSELL,
Muscotah, Atchison, County, Kansas,
Breeder of Pure-bred Poland-China Swine and Shorthorn Cattle of the most desirable strains.
For Ready Sale Thirty Poland-China Bred Sows
One and two years old, bred for fall farrow; very choice; price low if ordered soon; must make room for 170 pigs now on hand. Come and see or write.

THE WILKES QUALITY HERD OF
POLAND-CHINA SWINE.
Thos. Symns, Prop., Hutchinson, Kas.
Herd boars, Darkness Quality and Reno Wilkes. For ready sale 45 very choice pigs out of Bessie Wilkes, Beauty Sedom, Chief I Know, Standard Wilkes, Ideal Black U. S. and Chief Tecumseh 2d sows. Farm one mile west of Hutchinson, near Star Salt works.

H. W. CHENEY, North Topeka, Ks.
POLAND-CHINAS
of the fashionable prize-winning Chief I Know strain. Cheney's Chief I Know at head of herd. Pigs for sale. Prices low.

D. L. BUTTON, North Topeka, Kas., breeder of
Improved Chester Whites.
Stock for sale. Farm 2 miles northwest of Reform School

Wamego Herd Imp. Chester Whites and Poland-Chinas.

Mated for best results. Also **Barred Plymouth Rock** chickens and eggs for sale. Correspondence or inspection invited. Mention FARMER.
C. J. HUGGINS, Proprietor, Wamego, Kas.

SIR CHARLES CORWIN 14520

HEAD OF HERD.
We breed POLAND-CHINA HOGS of the latest and best blood. Full of prize-winning blood. **Largest hog-breeding farm in the West.** Prices the lowest.
ELM BEACH FARM, WICHITA, KANSAS.

BELVOIR HERD
HEREFORDS
OF THE VERY BEST BREEDING.
Herd bulls: Princeps 66683, Ben Butler 54079, and McKinley 68926. Ten yearling bulls and a few females for sale.
STEELE BROS., Belvoir, Douglas Co., Kans.

R. S. COOK, Wichita, Kans.,
.....BREEDER OF.....
POLAND-CHINA SWINE.
The Prize-Winning Herd of the Great West. Seven prizes at the World's Fair; eleven firsts at the Kansas District Fair, 1893; twelve firsts at Kansas State Fair, 1894; ten firsts and seven seconds at Kansas State Fair, 1895. The home of the greatest breeding and prize-winning boars in the West, such as Banner Boy 28441, Black Joe 28603, World Beater and King Hadley. FOR SALE—An extra choice lot of richly-bred, well-marked pigs by these noted sires and out of thirty-five extra large, richly-bred sows. Inspection or correspondence invited.

SWINE.

U-Need-a POLAND-CHINA BOAR.
Silver Chief Jr., a *fancy yearling* boar by Silver Chief by Ideal Black U. S., the $1,000 boar. Dam of King Butler and One Price strain. Only $25. Fall boar by Knox All Wilkes, dam granddaughter of Ideal Black U. S., and also of Geo. Wilkes. He is a dandy, only $15. Spring boar by Seldom's Look, grandson of Look Me Over, dam by Knox All Wilkes, and a great-granddaughter of Ideal Black N. S. and Geo. Wilkes; a crackerjack, only $15. Do not wait, for they will go quick. First come first served.
DIETRICH & SPAULDING, Richmond, Kans.

CAP-A-PIE HERD OF
Poland-Chinas
Geo. W. Falk, Richmond, Mo.,
Is still doing business at the old stand, where, for the past fifteen years, he has been breeding and selling a class of hogs that have been winners at the leading State fairs, and have been topping the markets in Chicago and Kansas City—the end of all hogdom. Has constantly on hand boars large enough for service and sows bred and unbred. Write for prices, which are always reasonable.

CATTLE.

CENTRAL KANSAS STOCK FARM.—F. W. Ross, Alden, Rice Co., Kas., breeds pure-bred Short horns, Poland-Chinas and Barred Plymouth Rocks. Stock for sale.

ENGLISH RED POLLED CATTLE—PURE-BRED. Young stock for sale. Your orders solicited. Address L. K. Haseltine, Dorchester, Green Co., Mo. Mention this paper when writing.

NORWOOD SHORT-HORNS—V. R. Ellis, Gardner, Kas. Rose of Sharons, Lady Elizabeths and Young Marys. Richest breeding and individual merit. Young bulls by Godwin 115676 (head of Linwood herd). Sir Charming 4th now in service.

H. R. LITTLE, Hope, Dickinson county, Kans., breeder of Shorthorn cattle. Herd numbers 100 head.
FOR SALE:
TWENTY-FIVE SHORTHORN BULLS OF SERVICEABLE AGE.

D. P. NORTON,
Breeder of Registered Shorthorns,
DUNLAP, KANSAS.
Imp. British Lion 133692 and Imp. Lord Lieutenant 120019 in service. Sixty breeding cows in herd. Lord Lieutenant sired the second prize yearling bull at Texas State Fair, 1898, that also headed the second prize herd of bull and four females, any age, and first prize young herd of bull and four females.

SILVER CREEK HERD
SHORT-HORN CATTLE.
Scotch and Scotch-topped, with the richly-bred Cruickshank bulls, Champion's Best 114671 and Gwendoline's Prince 130913, in service. Also high-class **DUROC-JERSEY SWINE.** Can ship on Santa Fe, 'Frisco and Missouri Pacific railroads.
J. F. STODDER, Burden, Cowley Co., Kans.

BELVOIR HERD
HEREFORDS
OF THE VERY BEST BREEDING.
Herd bulls: Ben Butler 54079, Princeps 66683, and McKinley 68926. Ten serviceable bulls and 10 yearling heifers now ready for sale. All good ones. Inspection invited. STEELE BROS., Belvoir, Douglas Co., Kans.

CLOVER CLIFF FARM.

Registered **Galloway Cattle.** Also German Coach, Saddle and Trotting-bred horses. World's Fair prize Oldenburg Coach stallion, Habbo, and the saddle stallion, Rosewood, a 16-hand, 1,100-pound son of Montrose, in service. Visitors always welcome. Address
BLACKSHERE BROS., Elmdale, Chase Co., Kas.

REGISTERED
Galloways
FOR SALE!
IN LOTS TO SUIT. 12 2-year-old bulls, 20 yearling bulls, balance cows and heifers. Inspection desired. Call on or address,
J. M. LOWE, 311 Mass. Bldg., Kansas City, Mo.
J. R. LOWE, Blue Springs, Mo.

CATTLE.

MEADOW BROOK SHORTHORNS—Headed by the Scotch bull, 20th Earl of Valley Grove 122381, a son of Lord Mayor. Breeding cows by such bulls as Imported "Thistle Top" and "Earl of Gloster." A car lot of high grade cows for sale.
F. C. KINGSLEY, Dover, Shawnee Co., Kans.

ROCKY • HILL • SHORTHORNS
Five yearling Scotch and Waterloo bulls for sale. Now offer one choice seven-eighths Scotch by the Linwood Lord Mayor, which we had reserved for service in our herd. Send for catalogue.
J. F. TRUE & SON, Newman, Kans.

POULTRY.

FRENCH POULTRY YARDS—
FLORENCE, KANS.
Houdans. $1 per sitting of 13.
E. FIRMIN, Proprietor.

BARRED PLYMOUTH ROCKS.
E. R. Lock's Barred Plymouth Rocks are still in it. Twice in succession my birds have won all of the prizes where shown. Write me for prices on stock Eggs $1 to $2 per 15. Catalogue free for writing.
E. R. LOCK, Hutchinson, Kans.

Partridge Cochins and White Leghorns
at Hutchinson show took sweepstakes in Asiatic and Mediterranean classes (silver cup and silver tea-pot). Eggs, after May 1, $1 per 15. Write for descriptive circular. Address, J. W. Cook or Carrie A. Cook, Hutchinson, Kans.

CHOICE BREEDING COCKS AND COCKERELS.
Fifteen White P. Rocks, 15 Silver Wyandottes, 20 Brown Leghorns, 10 Light Brahmas, 10 S. S. Hamburgs, 10 Black Langshans, 5 Black Javas, 12 Pekin drakes. All strictly first-class. Some are scored by Hewes and others.
A. H. DUFF, Larned, Kans.

H. T. FORBES L. C. FORBES.
....Breeders of....
THOROUGHBRED BUFF COCHINS
Eggs and stock from prize-winners at Kansas State Poultry Show, January, 1899. Write for description and prices. Address
H. T. & L. C. FORBES, Topeka, Kans.

PRIZE-WINNING LIGHT BRAHMA CHICKENS
...EXCLUSIVELY...
Our record for 1898-99: Won 5 out of 6 first premiums at State show in Topeka, including sweepstakes, in January, 1899. Won 6 out of 7 first premiums, including sweepstakes in Asiatic class, at Sedgwick (Kansas) show in December, 1898. Won 6 out of 6 first premiums, including sweepstakes, at Butler County show, held in ElDorado, December, 1898. Eggs $1 to $3 per sitting. Also breeders of Red Polled cattle. Address
CHAS. FOSTER & SON, ElDorado, Kans.

200 BREEDERS—
Also SPRING CHICKS.
Barred P. Rocks, White P. Rocks, Partridge Cochins, Buff Cochins, Light Brahmas, Black Langshans, Black Javas, Silver Wyandottes, White Wyandottes, S. S. Hamburgs, Brown Leghorns, White Leghorns, Pearl Guineas, and Pekin ducks. All our fine breeders of this season, and our earliest spring chicks will go at half price during summer. Write me your wants. Circular free. A. H. DUFF, Larned, Kans.

ROCKS WHITE and BLUE BARRED
Five Pens—Three Barred, Two White.
One pen headed by E. B. Thompson Ringlet cockerel; one by a grand Lash cockerel; one by a bird of the Conger strain. My White Rocks are from Madison Square Garden winners—large, pure white birds. Eggs, $1 for 13, $2 for 30, $3 for 50, $5 per 100. White Guinea eggs same. Write for descriptive circular and prices. Printed recipe for making and using Liquid Lice Killer, 25 cents. Address
T. E. LEFTWICH, Larned, Kans.

EGGS AT HALF PRICE.
I am now selling **Eggs for Hatching** at one-half of former price. There's plenty of time yet to get out a lot of good chicks, if you "get a move on you." Send for circular giving matings and prices of eggs for 1899. Its free for 1 cent stamp.
I also sell all kinds of **POULTRY SUPPLIES.** If in need of anything, write me for prices.
Guide to Poultry Culture, catalogue and price list sent for 10 cents (silver or stamps). It tells all about feeding and raising chicks and may be worth dollars to you. EXCELSIOR FARM,
C. B. Tuttle, Prop., Topeka, Kans.

SEEDS AND POULTRY SUPPLIES.
Seeds, bulbs and poultry supplies, T. Lee Adams, 419 Walnut street, Kansas City, Mo.

Agricultural Matters.

EARLY AND LATE PLOWING.

From advance sheets of Bulletin No. 89, Kansas Experiment Station, by Profs. J. T. Willard and R. W. Clothier.

Two experiments, one in the summer of 1897, and the other in the summer of 1898, have been carried out to determine the relative effect of early and late plowing on the moisture-content of the soil.

In 1897 four plats were laid off, numbers 1 and 3 plowed July 30, and numbers 2 and 4 about October 1. The soil in plats 1 and 3 appeared extremely dry, and turned up hard and lumpy when plowed. They were disked, planked, disked, and harrowed with the Acme harrow, at various dates, previous to August 14, when they were harrowed with a spring-tooth harrow which left them in good condition. No further treatment was given them, except on August 31, when they were again harrowed with an Acme harrow.

The moisture was determined in all the plats at irregular intervals until August 21, a composite sample, made up of six, being taken from each plat. From this time on, samples were taken twice a week until the close of the experiment, October 13. Heavy rains occuring the latter part of October brought the plats to nearly the same degree of moisture.

At the beginning of the experiment the average moisture in plats 1 and 3 was 13 per cent, while plats 2 and 4 contained 13.8 per cent. At the close of the experiment, October 13, plats 1 and 3 contained an average of 12 per cent of moisture, while plats 2 and 4 contained only 8 per cent, a difference of 4 per cent in favor of the early plowing. A close study of the record, however, discloses the fact that there are striking variations at times in the percentages of moisture.

On August 14, immediately after the last rain before the period of drought, the early-plowed plats contained an average of 16.9 per cent of moisture, while the late-plowed plats contained only 13.8 per cent. This gives the early-plowed plats an advantage of 3.1 per cent upon entering the period of drought, a difference which they little more than maintained, having only 4 per cent more at the close of the period.

The average percentages of moisture in the plats during the whole period probably yield the most reliable conclusions. The early-plowed plats contained an average of 11.7 per cent of moisture during the whole period; the late-plowed plats contained an average of 9.3 per cent, a difference of 2.4 per cent in favor of the early plowing.

In the foregoing, we have referred to the plowing July 30 as the "early plowing." It is so only relatively. The soil having had its moisture reduced to such an extent as to cause the field to turn up cloddy, there being less than 14 per cent, the plowing was evidently not done early enough. Plowing to be early enough to give its greatest advantage must be done before the summer drought which we almost always have, begins. This will usually require that it be done during the first half of July. To obtain more definite results, if possible, and results based upon observations upon soil plowed while still charged with moisture, a similar experiment was performed in 1898.

Three long, narrow plats were laid off adjoining each other. The first one was disked June 27, in order to see if moisture might be profitably conserved by disking early in the season, in cases where the plowing can not be done until later in the season. The second plat was left untreated until August 23, when it was plowed and harrowed till the surface was in fair condition. The third plat was plowed July 7, harrowed July 8, and planked July 14. The moisture in each plat was determined twice a week, composite samples being taken for every determination.

The results can be studied best by selecting periods between rains. At the beginning of the experiment, July 7, the plats contained practically the same percentage of moisture. On August 2, a date which is very near the close of a four weeks' drought, plat 1 contained 18.6 per cent of moisture, plat 2, 15.3 per cent, and plat 3, 20.9 per cent. This is a difference of 5.6 per cent in favor of the early plowing compared with the late. The disked plat shows a difference of 3.3 per cent in its favor. The average per cent of moisture for the period is as follows: Disked plat, 21.1 per cent; late-plowed, 18.5 per cent; early-plowed, 22.1 per cent. This shows a difference of 3.6 per cent of moisture in favor of the disked plat when compared with the late-plowed plat, which had not been treated up to that date.

A study of the next period, extending from August 9 to September 3, inclusive, shows results equally as interesting as those of the first period. At the beginning of the period the disked plat contained 20.6 per cent of moisture; the late-plowed plat, 19 per cent, and the early-plowed plat 24 per cent. At its close the moisture in the disked plat had dropped to 12.3 per cent; the late-plowed plat contained the same amount, while the early-plowed plat contained 15.6 per cent, a difference in its favor of 3.3 per cent. It had a difference of 5 per cent in its favor at the beginning of the experiment, so that it has really lost more moisture during the period than either of the other two plats The average percentage of moisture for the period was as follows: Disked plat, 16.3 per cent; late-plowed plat, 15.4 per cent; early-plowed plat, 20.6 per cent. Compared with the late-plowed plat the early-plowed plat has a difference of 5.2 per cent of moisture in its favor. If crops had been planted upon these plats about August 9 the average percentage of moisture for the whole period is perhaps the most important point to be considered. If they had not been planted, however, till September 3, then the relative percentage of moisture in the plats at the date becomes the most important point to be considered, for the moisture in the disked and late-plowed plats is becoming low enough to endanger safe germination of seeds.

The results obtained in the third period, extending from September 17 to October 3, inclusive, are fully as interesting as those obtained in the first two periods. It will be remembered that plat 2 was plowed on August 23, and harrowed till the soil was in fair condition. Heavy rains fell on several dates between September 3 and September 17, so that the soil in all the plats was pretty thoroughly soaked with water. Nevertheless, the early-plowed plat entered the third period with almost 3 per cent more moisture than either of the other two plats. On September 17, the beginning of the period, the disked plat contained 24.2 per cent of moisture, the late-plowed plat contained the same amount, and the early-plowed plat contained 27 per cent. At the close of the period, October 3, the disked plat contained 15.9 per cent of moisture, the early-plowed plat the same, and the late-plowed plat 20 per cent, a difference in favor of the late-plowed plat of 4.1 per cent. These results become more striking when we consider the total amount of moisture lost from the plats during the period. The disked plat lost 8.3 per cent, the early-plowed plat lost 11.1 per cent, while the late-plowed plat lost only 4.2 per cent. This complete reverse from the results obtained in the first two periods of the experiment was due to the fact that the hard rains of the several rain periods, which plats 1 and 3 had passed through, had run the soil particles together and had at length re-established connection for capillary attraction between the surface and the subsoil, while the one period which plat 2 had passed through was insufficient to accomplish this result to any great extent.

The experiment indicates that the disk harrow may be a valuable means of conserving moisture, especially if it is used soon after the last rain preceding a period of drought. A fair comparison between disking and early plowing can not be made from this experiment, because the good effects of the disking were largely obliterated by a heavy rain which fell on July 3, before the experiment with early plowing began. The results of the two experiments of 1897 and 1898 certainly show that, so far as the effect upon soil moisture is concerned, early fall plowing is certainly much better than late, and especially is this true when there is a drought through the months of July and August. In addition to this the much better condition of the soil obtained by the early plowing should have considerable weight towards inducing farmers to push their fall plowing as early in the season as possible. The experiment of 1898 also strikingly illustrates the fact that all effective methods of culture to preserve moisture must break the connection for capillary attraction between the surface and the subsoil and the culture must be repeated after every heavy rain to continue the effectiveness of the treatment.

Wealth of the United States.

Mr. M. G. Mulhall, a statistical philosopher, has considered the relations of the development to the several sections of the country. To present these facts in a clear light he divides the country into five sections, designated as the New England States, the Middle States, the Southern States, the Prairie States, and the Pacific States. The first group is clearly defined by long usage. The Middle States in his estimate are New York, New Jersey, Pennsylvania, Delaware and Maryland. The Southern States are the two Virginias, the two Carolinas, Georgia, Florida, Alabama, Mississippi, Louisiana, Texas, Arkansas, Kentucky, and Tennessee. Ohio, Illinois, Missouri, Indiana, Iowa, Michigan, Wisconsin, Minnesota, Kansas, Nebraska, and the two Dakotas comprise the Prairie group, and the balance are the Pacific States.

In 1850 the wealth of the New England States amounted to $1,129,000,000, and in 1890 it had increased to $5,223,000,000. The wealth of the Middle States in 1850 was $2,256,000,000, and in 1890 it had reached the total of $17,819,000,000. In 1850 the wealth of the Southern States was $2,591,000,000, which in 1870, owing to the war, had fallen off to $2,827,000,000, recovered in 1890 to $9,998,000,000. The Prairie States aggregated in wealth in 1850, $1,127,000,000, in 1860, $3,966,000,000, in 1880, $16,186,000,000, and in 1890 the fabulous total of $25,256,000,000, thus showing an increase of nearly twenty-five fold in forty years, while the New England States increased in the same time only about fivefold, the Middle States about eightfold, and the Southern States about fourfold, though nearly all the increase was in the last half of the period. The Pacific States increased from $33,000,000 in 1850 to $6,811,000,000, or a little more than eighteen fold. Thus it will be seen that in aggregate wealth the Prairie States have exceeded all others.

The gain reduced to the per capita shows the same advantage to this section. In New England in 1850 the per capita wealth was $413 and in 1890 $1,112. In the Middle States in 1850 it was $340 and in 1890 $1,260. In the Prairie States it was in 1850, $208, and in 1890, $1,130. The same ratio of increase holds in population, and in the matter of education it is even greater. These facts demonstrate that the source of power as well as the center of population is moving westward with certain and rapid strides, and that in the near future the Mississippi Valley will be the commercial center of the republic. It is not inappropriate to remark in this connection that the next Democratic condidate for President must reside west of the Mississippi.

Raising Sheep for Mutton.

The demand for good mutton is constantly increasing, and the production of prime mutton for American and European markets is rapidly becoming a permanently established industry of vast proportions in the United States.

As an aid to all persons engaged in this feature of American agriculture, the United States Department of Agriculture will soon issue Farmers' Bulletin No. 96, entitled "Raising Sheep for Mutton."

The bulletin, submitted for publication by Dr. D. E. Salmon, chief of the Bureau of Animal Industry, was prepared by Prof. Charles F. Curtiss, director of the Iowa Agricultural Experiment Station, and says that our rich lands and abundant feeds are well suited to the economical production of superior mutton, and it has been clearly demonstrated that mutton sheep, properly selected, can grow a large part, if not all, of the wool demanded for American manufacturing.

Notwithstanding the apparent contraction of our flocks, the sheep industry has been established on a more permanent and lasting basis. This has been done by making mutton the primary consideration and wool incidental, instead of the reverse, as has generally been the case heretofore.

The results of a number of investigations conducted at the experiment stations, which shed new light on the problems of sheep feeding, are given. Among these are cost of producing mutton, relative cost of producing mutton and beef, food consumed per 1,000 pounds of live weight, and advantages of finishing at an early age.

Other topics discussed are: Lambs preferred in the markets, method of cutting mutton, range lamb feeding, the value of improved blood, what constitutes a good sheep, and essentials of a good fleece.

The bulletin contains eighteen illustrations, and is for free distribution.

A Fraud.

Mr. J. M. Ewart, of Kelly, Kans., sends samples of a plant grown from seed which he bought for alfalfa, and inquires what they are. They were referred to Prof. B. B. Smyth, curator of the Kansas Academy of Science, who reports as follows:

"The plant sent to you for alfalfa by Mr. J. M. Ewart, of Kelly, is Medicago denticulata, toothed medic. It is closely related to alfalfa. It is an annual and has yellow flowers, while true alfalfa is a perennial and has purple-blue flowers. Medic is a weed in the East; but this is the first time to my knowledge it has been reported from Kansas. Even should it escape in this case and become naturalized, as it is likely to, it will probably not be a bad weed, more than melilot or sweet clover now is. Medic is edible by stock, but is hardly worth cultivating as a crop. A seedsman who sells medic seed for alfalfa seed is either ignorant or knavish, and in either case is unworthy of patronage."

Breeders' Annual Report.

The Kansas Improved Stock Breeders' Association has just issued from the press of the Kansas Farmer its first published Annual Report in book form. It contains an introduction by Secretary Coburn, of the State Board of Agriculture, a history of the live stock organizations in Kansas by Secretary H. A. Heath, the full proceedings of the ninth annual meeting of the Kansas Improved Stock Breeders' Association, and the consolidation of the other live stock organizations of the State with it, together with the addresses, papers, and discussions as to the various branches of the animal industry of Kansas and live stock husbandry in general.

It is the first distinctive live stock report ever issued for Kansas and is a veritable live stock manual for the State. The Report also contains the Association's Kansas Breeders' Directory for 1899. As the Association receives no State aid, but is supported entirely by its membership fee of $1 per year, it has been decided to charge a nominal price for the annual report, as follows: Single copy, 25 cents; 10 copies, $1.50; or 100 copies, $10. Address all orders, or applications for membership to H. A. Heath, Secretary Kansas Improved Stock Breeders' Association, Topeka, Kans.

Kansas Fairs in 1899.

Following is a list of fairs to be held in Kansas in 1899, their dates, locations, and secretaries, as reported to the State board of agriculture and compiled by Secretary F. D. Coburn:

Allen County Agricultural Society—C. H. Wheaton, Secretary, Iola; September 5-8.
Anderson County Fair Assaciation—C. H. Rice, Secretary, Garnett September 26-29.
Brown County Fair Association—Grant W. Harrington, Secretary, Hiawatha; August 29-31.
Clay County Fair Association—E. E. Hoopes, Secretary, Clay Center; September 12-15.
Coffey County Fair Association—J. E. Woodford, Secretary, Burlington; September 11-15.
Cowley County Fair Association—W. J. Kennedy, Secretary, Winfield; September 20-22.
Douglas County—Kaw Valley Fair Association—Tracy Learnard, Secretary, Lawrence; September 12-15.
Finney County Agricultural Society—D. A. Mims, Secretary, Garden City; September 12-15.
Franklin County Agricultural Society—E. M. Sheldon, Secretary, Ottawa; September 19-22.
Greeley County Fair Association—I. B. Newman, Secretary, Tribune, October 4-5.
Jackson County Agricultural and Fair Association—S. B. McGrew, Secretary, Holton.
Jefferson County Agricultural and Mechanical Association—Edwin Snyder, Secretary, Oskaloosa; September 5-8.
Johnson County Co-Operative Fair Association—J. M. Warren, Secretary, Edgerton; September 26-29.
Linn County Fair Association—Ed. R. Smith, Secretary, Mound City.
Marshall County—Frankfort Fair Association—C. W. Brandenburg, Secretary, Frankfort; September 26-29.
Miami County Agricultural and Mechanical Fair Association—W. J. Carpenter, Secretary, Paola; September 12-15.
Montgomery County—Coffeyville Fair and Park Association—R. Y. Kennedy, Secretary, Coffeyville; August 15-19.
Morris County Exposition Company—E. J. Dill, Secretary, Council Grove; September 26-29.
Neosho County Fair Association—H. Lodge, Secretary, Erie; August 28-September 1.
Neosho County—Chanute Agricultural, Fair, Park and Driving Association—Aug. Bareis, Secretary, Chanute; September 6-9.
Ness County Fair Association—Sam G. Sheaffer, Secretary, Ness City; September 14-16.
Osage County Fair Association—C. H. Curtis, Secretary, Burlingame; September 5-8.
Osborne County Fair Association—M. E. Smith, Secretary, Osborne; September 12-15.
Riley County Agricultural Society—Charles Kleiner, Secretary, Riley; September 5-8.
Rooks County Fair Association—David B. Smith, Secretary, Stockton; September 19-22.
Saline County Agricultural, Horticultural and Mechanical Association—H. B. Wallace, Secretary, Salina; September 25-29.
Sedgwick County—Wichita State Fair Association—H. G. Toler, Secretary, Wichita; September 25-30.
Wilson County—Fredonia Agricultural Association—J. T. Cooper, Secretary, Fredonia; August 22-25.

The Stock Interest.

THOROUGHBRED STOCK SALES.

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

AUGUST 10—N. H. Gentry, Berkshires, Sedalia, Mo.
SEPTEMBER 27—Hamp B. Watts, Herefords, Fayette, Mo.
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.

A FARMERS' BANQUET.

A few of the addresses delivered at the farmers' banquet given by Col. Guilford Dudley were printed in last week's Kansas Farmer. Others are given this week, for it is not doubted that readers will profit by the suggestions made by the several men from other vocations as well as by farmers. These addresses are placed in the stock department of the paper because, while many other matters were considered, the foundation of the entertainment was an excellent piece of live stock.

The editor may remark in this connection that in addition to his efforts at the banquet to duly sample the balanced-ration beef, through the courtesy of Colonel Dudley he sampled it at home with the assistance of his family. This resulted in an inquiry of the butcher why he did not furnish beef of equal excellence. His reply was that beef of that quality commands prices which the people of Topeka will not pay. It will be remembered that the steers fattened in Colonel Dudley's experiment were sold for export. No doubt farmers generally will be willing to learn how to produce beef which commands too high a price for the purses of the epicures of our own cities, but suited to the tastes and exchequer of John Bull. This is especially interesting in view of the fact that by means of the balanced ration this high-priced beef can be produced at less cost per pound than the ordinary kind.

"AGRICOLA."

BY COL. W. H. ROSSINGTON.

Mr. Toastmaster, and Fellow Horny-handed Sons of Toil: My friend Dudley told me he was going to have a little banquet, and he suggested if it would be possible that I should be here and should prepare a paper. Some days after he called me up by telephone and said he had fixed the time and wanted to know what my subject was. I said, "I have no subject." He said, "Well, you are going to prepare a paper, aren't you?" I said, "No, I don't know how to prepare a paper on subjects that would interest farmers much." He said, "How does 'Agricola' strike you?" And so I am down on this list for Agricola.

Now, I don't know that my friend Dudley knew what he meant when he propounded that name—that subject, if you can call it that. I certainly did not, and I give you my word I am as much in tne dark at this moment as I was then. If he had reference to the old friend of my youth, N. Julius, who bore the surname of Agricola, I could talk for a long time about him; and not he so much as about his nephew, who wrote his life, and made my life miserable. I haven't any grudge against N. Julius, but his son-in-law, Tacitus, discovered a method of writing a Latin language that made it as difficult and undiscernable as hieroglyphics on the tomb of Rameses in Egypt. But Agricola is also a Latin word that means generally a farmer, and I think in the old Latin lexicon that I used, there is, I think, referred to that, as too many words in that language, some seven or eight or a dozen definitions, and I think one or two of them for Agricola is a man who is fond of country life. I think that is how N. Julius got his surname. I think I could be just about such a farmer as our host is to-night. That is, I think I could sit on the top rail of a fence and perspire watching the hired man turn a furrow; but the subject this evening is a practical one. I might say I might have my views of the proper feeding of cattle. They might not meet with the approval of these men here to-night—or of the cattle, and they might produce antagonism, and perhaps lead to a disturbance. I don't think that I will air my views on the matter.

I have lived in Kansas so long, have felt the influence of this State for so many years, where every one of us feels that his life, his success, his daily bread, is dependent upon the success of husbandry, that I have come pretty nearly to regard myself as a pretty intelligent sort of a husbandman, but while I might not intelligently discuss before a practical audience like this, I am a most excellent judge of the finished product when it comes on the table, and in that connection I might make one practical suggestion; and that is that in Kansas we have developed wonderfully of late years the art of breeding and of feeding cattle. But there is one thing yet for us to learn, and that is how to produce food upon our table that is nutritious. I think a word ought to be said in favor of the introduction of the spit and of the grid-iron in the kitchens of Kansas people, and the eternal banishment of the frying pan and the skillet. I remember when I first came here to this State, going around the various country hotels, the young lady with the red hair would come up, and, with a chirpy voice, would ask you, "Beef-steak?" And she would produce something about as thick and about as tough as a hound's ear, and when you complained she would explain to you that she thought it was sufficiently pounded before it was cooked.

Seriously speaking, I think the movement—and I want to simply add my testimony in commendation of that which I did not know—I plead guilty to a deep ignorance—that this beneficent effort that is being made by Mr. Dudley to enlarge the wealth, etc., of the Kansas farmer in cattle-producing, is worthy of the highest commendation. I have always maintained that Kansas, if it has a future at all, is a meat-producing State. It will furnish what Prof. Bailey calls the proteins in the very best and most concentrated form for the rest of the United States if the efforts of the farmers are intelligently directed by the dissemination of the right information and views. I have always thought that the western part of our State was naturally pasture; that it has a climate suited to the nursery of cattle; that the ultimate destiny of our State is not to be a wheat State. We will always raise plenty of wheat, but the great future of Kansas wealth resides in the production of cattle in the western part of our State and eastern Colorado, and the finishing of those cattle by the balanced ration in the eastern part of the State; and that western part of Kansas which has heretofore been regarded as utterly useless, as hopeless, as a place where men can have no possible hope of achieving fortune, is going to be—under intelligent direction from such men as Prof. Bailey and the experts of the agricultural college of our State—is going to be more prosperous and wealthy, is going to produce citizens who are going to be more wealthy and contented than any other part of the State, and ultimately this State is going to be the garden spot of the universe in the way of raising cattle, and the greatest agricultural community in the world.

THE FARMER'S BOY.

BY PROF. B. F. EYER.

It was my pleasure some weeks ago to listen to a baccalaureate address by Bishop Vincent, in which he made an earnest appeal to a class of nearly fifty to select agriculture as their chosen occupation.

Once it might have been truthfully said of our schools that they unfitted the youth for life on the farm or at the workbench. Little Johnny was patted lovingly on his curly head and reminded that if he would go to school he might become a lawyer or a doctor, or even President of the United States. All this has changed. To-day we "feel of his muscle" and proudly bespeak for him a successful career at the forge or on the farm.

The education of to-day dignifies labor. It seeks not to lead the farmer's boy away from the farm, but to better fit him for his duties there. It seeks not to make toil a burden, but honest labor easier and more intelligently done.

"So build we up the being that we are,
Thus deeply drinking in the soul of things,
We shall be wise perforce."

The child of honest toil opens his eyes for the first time upon a world of wonder. He is dreadfully in earnest. The clear sky and verdant landscape, the soft green carpet and the gorgeously colored birds and flowers, all hold his unfolding mentality with keenest interest. He breathes pure air and enjoys a robust body and vigorous mind, only needing guidance and direction to prolong indefinitely his interest in nature implanted in every mind by an all-wise Creator.

He finds many things about the old farm to excite his curiosity. He gathers from the brook curious round pebbles not like any large rock masses he has seen about the farm. He wonders where they came from and how they came to be round. Of course he thinks, or perhaps says, all this to himself. He goes to the pasture after the cows, and sees on his way a large white egg. He attempts to pick it up and finds it has grown up from the ground. He wonders what it is and how it came to grow there.

In the field where the cows are knee-deep in sweet clover-blossoms he chases up innumerable bumblebees and butterflies and wonders what they are doing. He has not heard his father or his teacher, to whom he looks as exemplars of what is fit and proper to think and talk about, say anything of things so small and trifling.

He drives the cows homeward through the lane and beneath the overhanging apple-tree. He picks an apple from the lowest bough and sets his sharp, hungry teeth into the luscious pulp. He finds a worm has been there before him. He wonders how he came there. His father's orchard has a great many wormy apples.

He trudges off to the district school, finding his curiosity about nature and her ways as little satisfied as at home. Thus he goes, seeing and wondering, unsatisfied.

He can not pass over the whole one hundred and sixty acre farm several times per day without seeing a great many happenings, phenomena about which he ought to know, but which pass him by, too often no wiser, no better able to grapple with the enemies of his plants and animals than if nature had never performed an experiment before his open gaze. Indeed, it is this ability to interpret cause and effect that makes a man successful in any occupation or profession.

Educate the farmer's boy. Teach him while he is learning to read and write, about nature and her laws; help him to observe and read experiments in nature's book. Show him the meaning of pebbles, and rocks, and bees, and plants, birds, and flowers. He will love the country and the old farm will be his delight.

We need the boy on the farm. We want him, as he leaves the common school, to know that our State university and agricultural college have wide-open doors to receive him, and that they are interested in his affairs and are seeking to do him good. We want our farmer boy to take his place among the farmers, able to recognize the great value of scientific research and with ability to co-operate intelligently with experiment stations. We also want him to model after our progressive host, who has spared no effort to practically carry out the leadings of modern science and to raise the standard of his fellow-farmers.

Our scientific young farmer who loves not bounty less but skill more, will find opportunities to apply the laws of biology and kindred sciences to the perfecting of fruits and grains for certain and definite ends, whether to increase the proteids or the starches and sugars, or to ensure a "balanced ration."

He will understand and successfully apply Chancellor Snow's chinch-bug "remedy," run down and exterminate the germs of hog cholera, track the rusts and smuts to their winter quarters, and delight to do battle with the hosts that rise up against him.

His preparation for his work makes him a master. With a master's touch each square foot of soil must yield its profit—mother earth is compelled to give him a bounteous harvest. But with it, and over it, and above it all he stands out before his fellow men as the noblest product of education—the good citizen.

THE PROTEIN OF FOOD PRODUCTS.

BY PROF. E. H. S. BAILEY.

In discussing briefly so large a subject as this and so important a one, it is only possible to note a few of the more practical points, and to arrive at a few general conclusions. Protein makes the world move! In order to show why this is so I must recall to your minds the different classes of substances that go to build up the animal body. You will remember that these are spoken of as water, carbohydrates, fats, proteids, and mineral salts.

The water should be pure and clean. The animal can not be kept in good condition if obliged to drink filthy and germ-laden water. He will either not use a sufficient quantity of water because of his instinctive dislike for filthy water, or he will drink the water to the permanent injury of his health. Carbohydrates, including starch, sugar, and cellulose, are eaten in large quantities by both animals and man. Man does not care so much about the cellulose, or woody fiber, as he has developed—by process of evolution, we are led to infer from Chancellor Snow's remarks—a stomach that prefers Oswego corn starch to timothy hay, and chocolate caramels to corn stalks. Starch, cellulose, and sugar in their cruder forms, are found in the fodder of the beef cattle, and in the finer forms in those dishes that tempt the appetite of the epicure. Fats, though present in small quantity in most vegetable tissues, are more abundant in corn and linseed-meal. Our northern explorers, who are trying to take in the North Pole, and to take in at the same time the glory that is shed around a man by the newspapers, live on the concentrated fat known as blubber. This fat is stored away in our bodies against future need, though our friends sometimes unkindly hint that Anheuser-Busch is getting in its work. This fat is nicely mixed—in just what proportions with the lean meat our agricultural college friends will tell us—and commands a fat price on the Kansas City market.

The mineral salts are present in all our food, and there is no danger that we shall not get enough mineral in the system, especially in "the land where the sunflower blooms." Seriously, though, animals are sometimes wiser than men in taking food that contains mineral salts, and if we would eat less fine flour and more of the greens and beet tops and asparagus we should the better build up the framework of our bodies.

And now as to the proteids. When the hearty Scotchman eats his oatmeal cakes, he builds better than he knows. He uses a grain that is rich in proteids or the nitrogenous substances that are so important in nutrition. When the German peasant eats his frugal meal of schwartz brodt and beer, or his neighbor in Russia lives on a similar diet, only with a change of drinks, he builds up his nerve and sinew from the proteid-bearing part of the grain. It may not be very toothsome, but it is extremely nourishing. When our soldiers can get a sufficient quantity of bean porridge, it matters not so much that their beef is embalmed. They can afford to leave it alone, as the beans will furnish a large amount of protein. We are all familiar with the nursery rhyme, "Oats, peas, beans, and barley grows," but did you ever think that these very things are just what "grows" (to use a transitive verb) boys and girls. The first three especially are the concentrated proteids of the vegetable world. From these vegetable proteids we get the animal proteids. We get the brain, and muscle, and vigor that make the world go.

Would you apply this to the fattening of the animal? The starch, sugar, and fats are useful, and animals will not thrive without them, for they furnish the fuel of the body and must be used to give animal heat; but these will not be utilized without the protein bodies. I will not anticipate what our well-balanced (ration) friends will tell us, how we may get for feeding purposes a sufficient quantity of nitrogenous substances into the food by the use of bran, or linseed-meal, or how the corn feed is supplemented by these foods.

One step more brings us to the great domain of animal food. Shall we take our nitrogen from the outer part of the wheat berry, using graham bread and whole wheat, shall we depend on beans and peas and lentils alone for proteids (for this is what the vegetarians do, and they thrive, if they eat enough of such food), or shall we let the animal concentrate our protein matter for us, and eat it in the form of the rare roast beef, the delicious mutton, and the toothsome trout?

The most important nitrogenous foods, in addition to those already mentioned, are milk and eggs. Both these foods are concerned in the life of the young of the animal, and as such they contain the protein matter in the best and most available form. In the egg it is true we have a large amount of fat, but the albumen, as we call this protein matter, is strong and wholesome. If we pick it to pieces chemically, it is found to consist of about the following constituents: $C_{77}H_{120}N_{20}O_{26}S$. This is the purest kind of protein matter with which we are familiar, but there is another albumen in blood, and one in muscle, and one in milk, and so on. These are very complex bodies, and chemists have not learned all about them by any means, but we are gradually learning their constitution.

In milk, the protein we call casein, and when the rennet is added to make cheese, this protein with some other substances is curdled so that it can be strained away from the whey. We leave out one very valuable constituent in the cheese, however, and that is the milk sugar, that goes with the whey and is a valuable food for the fattening of hogs. In some countries the poorer classes of people use cheese to furnish the protein matter of their diet. We are not accustomed to so regard it here. An almost ideal food, as far as nutriment is concerned, has been made by the use of bean soup and cheese with coarse bread. It supplies the place of fresh meat which is so expensive in some parts of the world. Thus the protein of the milk is used to build up the body. I heard a man say this week, "As a man thinks so is he." Is it not often just as true "as a man eats so is he?" We can not expect to see a strong, well-developed animal or man without an

abundance of wholesome, well-proportioned food.

Feed a baby on starch alone and he will starve to death. Feed your Irish laborer on potatoes alone and he will not be able to carry the three-cornered box to the top of the building, where the man does all the work. Feed your cattle on the finest corn of Kansas, and the Kaffir-corn of the prairie if you will, but give them an extra allowance of protein in some form if you would have a healthy development, an all-around development, a development that yields both profit and pleasure.

We need never fear that the body will not take care of the protein matter that we give it. Just as there is a fluid in the system to take care of the starch and change it to sugar in the mouth mill, and a substance that takes care of the fats and shows their particles how they can step into the ranks of other particles in the blood and become a part of that fluid, so there is a place in the animal where the albumenoids are changed into peptones and proteoses.

In conclusion I may say it is the single element, nitrogen, that is the characteristic element of all these protein bodies. We have an abundant supply of it in the air, but it is not available, because, when uncombined, it is very inactive. A little of this nitrogen in the air is changed by the electric discharges to ammonia and nitric acid. This is washed into the soil, the plants take up the nitrogen compounds only through the roots, and then the animals eat the plants; thus, through this long cycle, the protein comes to us. Most of it originally comes from the air.

I should be inclined to glorify, if I had time, this strange element, nitrogen—so inactive in the air; so strong in gunpowder, in nitroglycerine, in celluloid; so wonderful as a constituent of silk, of wool, of horns, of hides and hoofs, this element, nitrogen, which makes flesh, flesh; muscle, muscle; brains, brains. This nitrogen, which is all around us; which we can not see or feel or taste, but without which there is no protein, no work, no life in the world.

SEED-BREEDING.

BY PROF. GEO. L. CLOTHIER.

The seed-breeder attempts the direction and control of the tendency in the vegetable kingdom to vary in such a manner as to mold plants into definite forms. No doubt every person in this distinguished audience is familiar with the difference in results obtained from handling scrubs and pedigreed animals. Compare in your mind for a moment the Texas cow that gives scarcely enough milk to sustain her calf, with a Jersey that gives her weight in butter in a single year, or compare Shorthorn and Hereford steers that mature in two years, with the scrubs used by our grandfathers for work oxen that did not mature until 6 or 7 years old. You may feed the scrub on a balanced ration, you may purchase oil-meal and bran and chop feed, and add the finest hay for his edification, and yet your steer is only a scrub. You may get a machine and stuff the feed into him, but he can only utilize it to the extent of his scrub capacity. Every feeder is acquainted with these facts.

Kansas soil is rich in plant food almost beyond computation. The first foot of soil on an average Kansas creek bottom has enough of the elements of plant food in it to produce 500 average crops of wheat. The next two feet have more than as much more. The average for the State, of the 10 wheat crops preceding 1899 is only 10⅞ bushels per acre. There is enough nitrogen, the element most likely to become exhausted in soils, brought down in the rainfall to produce nearly one-third of this annual wheat crop. With all this wonderful supply of plant food, the yields of our crops are exceedingly low. I believe this low yield is due to our cultivation of only scrub plants. Our agricultural plants have not the capacity to use the plant food surrounding them. They are like the Texas cow or the scrub steer. There has been very little plant-breeding from which Kansas could derive any benefit. Our cultivated plants are not only scrubs, but scrubs with an "in and in" bred ancestry. Every breeder here knows the effect on animals of constant "in and in" breeding. Mr. Darwin proved that the effect upon plants is even more injurious than upon animals. Wheat, oats, and barley self-fertilize and are consequently about as closely "in bred" as it is possible for living organizisms to be. There are some breeders of cereals in the world who have produced marvelous results by artificial crossing. The Garton Brothers of England are now engaged in this very interesting work. They have crossed winter varieties of barley with the best spring types. They have produced a beardless variety by crossing with a wild species. By crossing cultivated oats with a wild species they have produced naked oats that are wonderfully prolific, and the weight of the oat grain has been increased 60 per cent. They have increased the yields of Indian wheats 100 per cent. By crossing with a wild variety of wheat called spelt, they have produced varieties that do not shatter. Varieties of wheat rich in protein but deficient in yield have been used to remedy the defects of the more vigorous sorts.

In the breeding of animals, the farmer can supply the environment. He can go into England or France and purchase a highly bred animal and bring it to Kansas. He can buy the feeds suited to its appetite and he can provide shelter so that its environments will be similar to those under which it was bred. Man can not do this with plants. He can not control the soil and climate. Hence introduced plants, no matter how well bred, can not flourish under Kansas conditions until they have become accustomed to their surroundings. To get the best results, plants must be bred on the soil where they are to be grown. We might import all the fine varieties that the Gartons or Vilmorin could furnish us, but the chances are that they would be worthless. The average annual wheat crops of Kansas during the past ten years have varied from 22 bushels per acre in 1889 to a little over 3¾ bushels in 1895. I am acquainted with the income for the past five years from a wild grass pasture out in the hills of Wabaunsee County. This pasture keeps during the summer about 150 head of stock, and the number of cattle that could be grazed on the enclosure has not varied 20 head during the five years. Why do we get such differences in results from prairie-grass and wheat? The prairie-grasses have become fitted to their environments and the wheat has not. Both the prairie-grass and the wheat, however, are scrub plants, but the one has not yet become acclimated, while the other has.

A great problem confronting the seed-breeder in Kansas is to find a method for the increase of protein in corn so that it will form more nearly a balanced ration than it does now. The average protein content of the Kansas corn that has been analyzed is 11.86 per cent, the maximum 14.37 per cent, and the minimum 8.44 per cent. An increase of the protein of the Kansas corn crop to 14 per cent would mean an annual gain to the agriculture of our State of several hundred thousand dollars. The average protein content of our wheat is a little over 12 per cent. An increase of 3 per cent would make Kansas wheat superior in value to the No. 1 hard spring wheat of the Dakotas.

The Kansas cereal crops are subject to such great fluctuations in quantity and quality that agriculture has the reputation of being rather uncertain in our State. Any uncertainty in the leading industry of a commonwealth extends its influence into every avenue of business. The seed-breeder should be able almost entirely to eliminate this uncertainty. Such an undertaking will require years of concentrated effort and will need the co-operation of farmers in all parts of our State. It will be necessary to breed up varieties that are adapted to the soil and climate of every county in Kansas. If a uniform yield of 20 bushels of wheat per acre could be annually grown upon all the land devoted to wheat in our State, the crop would be nearly one hundred million bushels. Such a crop is possible, there having been five crops averaging above 20 bushels since 1860. This proves that the fertility of the soil is not lacking.

In order to secure the greatest possible yields from our fertile soil, we must breed up varieties of cereals that can resist hot winds, droughts, and the various plant diseases. We know that certain kinds of plants are more able to resist drought than others. There is no doubt in my mind but that varieties of cereals may be found possessing the same qualities. If any one will originate a variety of wheat with straw so hard when growing that a chinch-bug can not penetrate it with his proboscis, the farmers of Kansas will rise up and call him blessed. I believe that a variety of this description is possible; for I know that there are varieties in existence in which the straw is solid, and I see no reason why the siliceous covering on the outside might not be increased until the plant would be impenetrable to the famous bug.

Gentlemen, I am here to tell you that I believe there are millions in seed-breeding persistently, systematically, and scientifically carried out. I believe the amelioration of plants has more potential wealth in it than is hidden beneath the Rocky Mountain Range. It is supposed that there are about one hundred thousand species of flowering plants in the world. Only a few hundred have been utilized to any great extent in the production of food for the human race. Man has scarcely begun the exploitation of the vegetable kingdom.

The farmers of Kansas can do some good work in seed-breeding. As our worthy host can testify by experience, the breeding of corn is not a very difficult operation. Colonel Dudley is the originator of the most unique, simple, and practical method for the breeding of corn that I know. He selects two varieties of corn that he wishes to use as parents for a new variety. He plants the body of his field with the variety that he intends to use as the male parent, and here and there through this field he puts in single rows of the second variety. When the tassels of this later variety begin to appear, he gets on his horse and rides through the field and pulls all the tassels from this second variety. This operation compels the second variety to receive pollen from the variety of the two. The experiment station has adopted this method, and we now have about twenty-five farmers in the vicinity of Manhattan co-operating with us on this plan. This requires the experience of a specialist. If we desire to change the chemical composition of the cereals we must have the services of a chemist at our command. When it comes to crossing wheat, oats, and other small grains, the technique is very difficult. The work on the clovers and wild grasses presents still greater difficulties.

The Fatted Calf Devoured at Col. Dudley's Banquet.

When we learn to apply science instead of chance to seed-breeding, when we become careful to keep records of pedigrees of plants, when we compel natural environments to help us, then will we make as much progress in a decade as has been made in previous centuries. If any of you think of entering into seed-breeding for a profession, do not deceive yourself into the belief that the work is easy. It is work that requires years of patient toil before paying results begin to come. But when the results do come, they grow with a constantly accelerating rapidity.

In conclusion, let me say that the greatest difficulties in connection with seed-breeding are not insurmountable. These consist first of a lack of interest on the part of farmers, second, a lack of experience on the part of workers, the field being almost absolutely new to the scientific men of America, and third, the lack of money. When the farmers begin to reap an advantage from the work, they will be interested, when the workers dedicate all the energies of their lives to the service of their State, they will gain the experience, and when an interest has been aroused, the needed money, which never will be very great, will be immediately forthcoming. For the earnest student nature will solve all the problems in connection with the technique of the work, and the seed-breeder will be endowed with the power to reconstruct plants almost to suit his fancy. When the soil of our beloved Kansas shall be inhabited only by pure-bred plants, and pure-bred animals only shall graze on her simple method adds 10 bushels per acre to the yield.

Some of the work of seed-breeding re-

well-bred men and women exclusively shall form the population of our great commonwealth.

THE BALANCED RATION.

BY PROF. H. M. COTTRELL.

As to the question whether Colonel Dudley was the inventor of the balanced ration, I do not know that he was the inventor of the balanced ration, but I can say that he was the first man in the West to put it into practice, and the first work that he did here twelve or fifteen years ago, using bran as a basis, has so revolutionized the method of feeding throughout the United States and Europe that bran is double the price to-day that it was before Colonel Dudley's work began. I am told that in the West when they feed their animals, they soak them over night so that they will hold swill in the morning. Colonel Dudley fills the animal up with protein.

I regret that the college has not had money enough to experiment along this line with steers; but while they have not had money to experiment with the steers at the college during the past two or three years, we have been at work with hogs. Last week in our feed lots were hogs having been fed on the balanced ration, which gained 15 pounds during the week, while those fed on the ordinary ration gained but 8 pounds. There has not been a single case during the two years that the balanced ration has not gained this difference.

It is true with the cow. The average Kansas cow gives about 90 pounds of butter a year; while one fed on the balanced ration gives 238. I said that it affected all classes of animals. Take it with chickens. The average hen lays about 65 eggs per year, while a hen fed on the balanced ration will produce 150 to 200 eggs a year. The balanced ration makes earlier maturity. Not only do they make better growth, but they have better health. The great losses that we have had for the past two years in hogs have largely come from the excessive feeding of one food and we find in districts where the creameries have been introduced that the losses are only about one-tenth what they are where they do not get the balanced ration. We get increased gain, and get stronger animals by this feed. Now we want to remember, and I am glad that Colonel Dudley presented his work in this shape, that we are feeding a balanced ration. I was surprised last week when I was in Mr. Wolff's packing-house, to find that he was burying all the blood he had. There is no food except warm milk, that will so stimulate the development of hogs as that blood. We have other foods, too. For the past two years at the college we have been pushing this line of work. For the past year we have

been working with alfalfa, and we find that in dairy lines, in stock lines, and all lines, that is one of the greatest materials we have for use with the balanced ration. You may be interested to know that we are going to take up another line of work with the balanced ration. The highest priced bacon in the world to-day is the Danish bacon. This Danish bacon is simply barley and skim-milk. Now in this section of Kansas you can not raise barley. In the western section, where they can not raise corn, barley is almost a sure crop. They have their creameries. Now, if they will learn to put these two things together it makes that western section of Kansas the fancy bacon-producing region of the world. The Kansas Experiment Station expects to start within a month to feed 250 head of hogs and try that, and I ask the co-operation of all you men to help us. [Applause.]

WHEN TO MARKET OUR CATTLE.

BY H. B. MILLER.

To discuss a proposition of general interest to the farmers and stock-raisers of our State would require too long a time for this occasion, or, should I suggest the kind or breed of cattle that ought to be fed for market, the suggestion would raise a question that has been discussed for many years, and yet opinions differ as widely now as in days gone by.

When we ask the question, "What kind of cattle should we feed?" we are told to feed the best, and in other years we were told to market our cattle whenever they were fat.

In those days we had a better all-year-round market than we have at this time and the answer was usually a good one. It is good in part now, but since then conditions in the cattle business have changed, and the cattle area has widely enlarged. The large pastures in Montana and the far North fatten and fit for market vast herds of cattle that supply the packing-houses and butcher blocks for a few weeks during each fall. Colorado and Utah graze and fatten many more, but they are not ready for shipment till early fall, and then must be marketed before the storms, so prevalent in that section, scatter the herds and reduce them in flesh.

The vast area of Texas, large enough for an empire in itself, New Mexico, and Arizona, fitted only for the cattle and sheep industry—this great Southwest where the buffalo and American Indian once made their home—now grow and fatten the finest of beeves and the best of mutton, supplying our meat markets during the heated summer months, besides furnishing enough canners to last the packing-houses the entire year.

Missouri, Kansas, Iowa, Nebraska, and Oklahoma and a part of Texas and the Indian Territory supply the markets of the world with their choicest meat, fattened and fitted for market in the great corn belt of the United States.

We have the spring and early summer and late fall and winter months in which to ship our cattle without coming in competition with our neighbors, who fatten their beeves entirely on grass and are compelled to market them when in condition, and before their herds scatter and go into winter quarters.

By studying the condition of each section of the country producing meat products, we would come nearer having "balanced markets," and would all get more for our labor and investment. The consumer would buy his meat just as cheaply as now. Then the stock business and farming would be more remunerative, and the class of men who have made the Great West what it is to-day would reap a much better reward for their labor, have better homes and happier firesides, more contentment and less dissatisfaction. It would at least be the means of raising us to a higher plane of living and we would be better fitted to learn the lessons of life without adversity.

True, the combines would have less to enable them to form gigantic trusts to the positive detriment of the honest yoemanry of our country. But both the producer and the consumer would reap a direct benefit by what we could do in this direction if we would only study the situation carefully up to that point where we can realize that there is a "seed time and harvest" in the cattle business.

I suggest that we can afford to prepare our cattle for market during the early summer or late fall months, when we do not come in competition with grass-fatted cattle. The packers and butchers will pay the most for a well-fatted steer when they need it most, and whether the animal is a finished product or not, I would advise selling when the price is at high tide, or in other words when such animal is most wanted.

We, as stockmen, are too much like the cattle we handle, we want to go in herds, to engage in any new enterprise that has proven a success with others, without making any preparation save the investment, and without giving the matter any study whatever.

All may go well for a time till our particular branch of industry becomes overcrowded, and just as our horizon becomes darkened with a threatened adversity, then, like a Texas steer, we see, or imagine we see, something ahead, an evil foreboding, and then we stampede, ship our cattle on a bad and "unbalanced" market—out of time and out of flesh—swelling the receipts at our cattle centers to unprecedented numbers, take from 50 cents to $1.50 per hundred less than value for them, curse the buyers and packing-houses, and call them hard names for taking advantage of the situation, go home and abuse our wife and babies, quarrel with our neighbor, sulk on general principles, pose as scientific farmers, stock-raisers, and cattle-feeders, and declare that the world is turning upside down—everything and everybody going to the bad but ourselves.

Rather, I would have every man a leader in some particular line. Never follow till we have studied the route, marked the boggy places, and prepared ourselves for the business so that we can take up the lines and drive as far from the danger post as possible.

All successful business requires careful preparation, why not ours? Sometimes we use too much muscle and not enough brain. Too many farmers do not use enough of either. They farm and look after their stock by proxy, sitting around on dry-goods boxes, whittling lamp-posts on street corners, frequenting the "loafers' retreat" or "bummers' roost," quitting their fields because it is too wet or too dry, too hot or too cold. These farmers never make a success in anything except in their especial line, grumbling and fault-finding, and they are a positive detriment to any legitimate business.

I think we should work with a purpose in view, in whatever vocation we engage. We will soon be called on to supply a larger area than ever before, with breadstuff and meat. Our commerce will grow on land and sea, and the result of our late and present great conflict, that so unexpectedly called us to arms, will be to open a wider gateway for the American people and for American commerce, so that in the coming days America will be, what it has been her destiny to be from all time, the world's great center.

To succeed as farmers and stock-raisers and feeders we should do our work in season and do it well.

If we do this, the great dial of time will mark an era in our lives never excelled nor ever equalled by any people.

KANSAS AGRICULTURE, ONE OF OUR THINGS.

BY EX-GOVERNOR GEO. W. GLICK.

Toastmaster and Gentlemen—I do not know that I can say anything that will especially interest you this evening. I came here as I always would, at the invitation of an old friend, one that I have known about forty years, and when I first knew him he was marshaling the Kansas boys in the Kansas regiment and sending them forward to protect the honor of our State and the integrity of the American Union. [Applause.] Coming from a friend of so many years, under no circumstances could I resist it, but I requested of him, and insisted, that under no circumstances should I be expected to say anything. I preferred to eat his beef, to admire the work that he has done in the interest of the Kansas farmer rather than to take up the time of some one who could say something that would be of special interest to you, but I see he has disregarded my wishes and has assigned to me "Kansas Agriculture, One of Our Things."

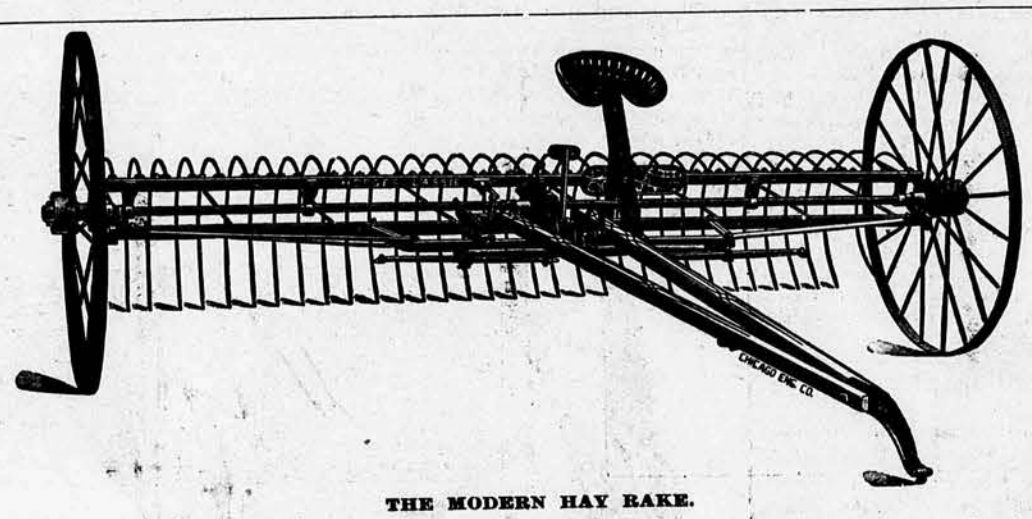
Now, it is true that agriculture is one of our things, and that doesn't mean only the raising of corn and of wheat and of potatoes, but it comprehends the entire circle of what the agriculturist does, what he is to do, and what he will always continue to do in the State of Kansas. Stock-raising is just as much the interest of the agriculturist as the raising of wheat. The stock-raising and the raising of cereals is the combination which is perfecting the work of the agriculturist and sending the product to the markets of the world, and getting in return for it that for which we are very anxious, value received for the product of our labor. Now we are peculiarly situated in Kansas. Take the map and look at the history of certain conditions of the world, and you will find that we are in a circle, in a territory that has we are in a circle, in a territory that has no rival, that has no competitor on the face of the earth that compares with it. While Kansas may be on the extreme west of that territory, she occupies a position that is equal if not superior to any other part. It is contiguous to good markets; she has a soil, a climate, that can produce anything that is produced in the North Temperate Zone. She is superior to a large part of the territory of the North Temperate Zone, and as a corn-producing country she has no competitor on the face of the earth. That makes her the center—a part of the great center—of country that will furnish the cattle and the hogs and the mutton for the markets of the entire world.

Now another thing—that being one of our things—we have a great deal to learn in connection with this matter, and we have established one of our things in Kansas. I have the satisfaction, and I look back to it with a great deal of pleasure, and that is organizing the agricultural college of the State of Kansas, and of the State university. I was in at the wake or at the triumph of all those institutions, and I feel a deal of interest in them, as does our friend, General Dudley, and others. It makes me a little hot when you call him Colonel Dudley; he is General Dudley. [Laughter.] When you go back in history you will find that I am right about it. Now we want the agricultural college to investigate those matters, and we want the professors up there to investigate, and I want them to increase the protein in corn; increase the protein in wheat and in oats. That is what we want them to do. With corn with 10 per cent and 12 per cent of protein—suppose you increase it 3 or 4 per cent and make it 13 or 16 per cent—you will feed your steer in eighty days more successfully than you will in the ordinary way in one hundred. That is what we want done in the agricultural college, and they are doing it there, and I am glad to bear testimony to the valuable work that is being done there in a great many directions. A great many things that are matters of interest, are a matter of discovery. Some of the greatest discoveries that we know of are simply a matter of accident. When a man is searching for one thing it frequently happens that he discovers another thing that is of more value than that for which he was searching. Professor Snow discovered a method by which we can destroy chinch-bugs and we succeed in destroying nearly all of them when we have wet years. So it goes in other things, and while it is true that the college is one of our things we must aid and insist upon building up that college because all of its interests, all of its efforts are directed in the interest of the farmers of the State of Kansas. We want them to have graduates there. We want them to have young men being educated there so that that college will furnish three or four or a half dozen educated young gentlemen in every township in the State of Kansas to aid in the education of the balance of us who can not attend that college.

Now there is another thing—one of our things—in the State of Kansas. The elegant gentlemen of Kansas are the farmers, and in that we simply imitate the old patriots of this country. When the Government calls for troops to defend her against foreign invasion or against enemies at home, who respond? and who are able to march twenty-four hours a day? It is the brave young men who come from the farm, the young men who get up at 5 o'clock in the morning and work till the sun sets. When you call upon them to shoulder a musket they never lag by the wayside. They love the flag of their country. When this Government calls upon Kansas for aid and assistance, you can always count upon the farmers of the State of Kansas to respond. Every young fellow is loaded up with patriotism and the love of his country, the love of his flag, and the love of his home, and he is ready to sacrifice any and everything in the interest of that home and of that country that gives him protection and secures him against any wrong being perpetrated by any class of people or any nation.

Kansas is an agricultural State. Her prosperity depends upon it, and hence the necessity of educating all of our people in those lines. We are not a manufacturing State; we are not a commercial State, and hence our prosperity depends upon the produce of the farms, upon the farm, and upon the produce of our herd, and when we unite our efforts in building up those institutions that teach the best method, the newest methods, and the successful methods we are accomplishing much, and very much, to secure the prosperity to all of our people.

Now, gentlemen, I have said what I have said here under protest, and if it doesn't suit all of you, just make your kick to my old friend, General Dudley.



THE MODERN HAY RAKE.

We are presenting herewith a cut of the renowned Hodges "Lassie" self-dump, all-steel, one- and two-horse hayrake. It is the product of the Acme Harvester Company, of Pekin, Ill., and may be said to be a fair representative of that old and well-known concern.

The modern hayrake has become such a common article of commerce that one fails to consider on first thought that there are points of difference and degrees of excellence even in hayrakes. Without drawing any odious comparisons it would seem well, therefore, to point out some of the leading features of this one. The cut gives a very good idea of the general appearance of the rake and conveys somewhat of its utility in wide scope and gather. It is remarkable for basket capacity, which is due in part to the remarkably high wheels—54-inch. Being of the turned pattern, they are remarkably strong, each wheel having 20 spokes of 7-16 inch steel. The axle, which, you will observe, extends the entire length of the rake-head, is made from a piece of cold machine-straightened stiff steel 1¼ inches in diameter. This affords ample strength, stiffness, and enables the rake to carry the large loads which its capacity makes possible.

The teeth are made of the finest obtainable oil-tempered steel with either flat or round point at option of purchaser. Guard teeth are provided which keeps the hay out of wheels and prevents "rolling" or "roping." Rakes are provided with over- and underhanging cleaners as desired. The self-dumping device is simple but substantial and positive, and, since it has complete control of the basket at any angle and all heights, it is invaluable in bunching hay. At a small additional expense this rake is equipped with a new and important device known as the relief spring. It so controls the motion of the rake as to absorb all shock incident to suddenly raising and lowering the rake. This is a compensating spring, which means that it acts—is operative—equally in either raising or lowering the rake.

In addition to making the work much easier, it adds to the durability and life of the rake. The shafts are made so as to be quickly and easily changed into a pole for two horses.

In order to know more fully of the value of this rake and the full line of the Acme Harvester Company we recommend that our readers write these people for their extended catalogue.

The Home Circle.

THE HARP OF SONG.

All day, all day in a calm like death
The harp hung waiting the sea wind's breath.

When the western sky flushed red with shame
At the sun's bold kiss, the sea wind came:

Said the harp to the breeze, Oh, breathe as soft
As the ring-dove coos from its nest aloft.

I am full of a song that mothers croon
When their wee ones tire of their play at noon,

Though a harp may feel 'tis a silent thing
Till the breeze arises and bids it sing.

Said the wind to the harp, Nay, sing for me
The wail of the dead that are lost at sea.

I caught their cry as I came along
And I hurried to find you and teach you the song.

Oh, the heart is the harp, and love is the breeze,
And the song is ever what love may please.
—Ella Wheeler Wilcox, in the National Magazine.

KANSAS LADY OFFICIALS.

The Farmer this week presents, by the courtesy of the Mail and Breeze, a few faces of Kansas women who hold public office. It must not be supposed that the women here represented are the only ones holding public office in Kansas. There are others, and more to follow. Experience has demonstrated the significant fact that women, as a rule, make ideal officials. They attend strictly to their office and take pride in their work. A search-warrant is not necessary in order to find them at their post of duty during office hours, as is too often the case with those "horrid" men, who hob-nob so much on the side that they are seldom in office regularly except on pay-day. Let us have more lady officials, also better male ones.

MRS. JOHN P. ST. JOHN.
Regent Agricultural College.

MISS FRANCES WILSON.
Deputy Treasurer
Allen County.

ELLEN F. KELEHER.
Register of Deeds
Graham County.

CARRIE HALL.
Superintendent Pawnee County.

EDITH BARNETT.
Superintendent Johnson County.

LUCY HOWARD.
Superintendent Republic County.

JULIA B. KING.
Superintencent Cowley County.

MINNIE V. WHITE.
Superintendent Chautauqua County.

SOME KANSAS WOMEN WHO HOLD PUBLIC OFFICE.

Started a Balky Horse.

People near the New York entrance of the bridge saw a balky horse frustrated with delightful ease the other day by a man who openly confessed he had no practical or theoretical knowledge of horsemanship. He was the motorman of a Fourth avenue car bound toward the terminal at the bridge. The horse was one of those angular, cockeyed, ungainly beasts that no amount of currying could make respectable. This particular beast had not been so treated that its natural ugliness was in the least diminished.

It had stopped square in the middle of the track and had spread its feet apart as though its mind was made up to hold the street against the world. In a very few minutes four trolley cars were backed up behind the cart and more were in sight down Center street. Motormen, conductors, truck drivers, assorted citizens, and a policeman stood around and gave the usual advice. The driver kicked the horse once and two or three men called to the policeman to stop him. Then they in turn made humane suggestions about starting a fire under the beast's stomach. A woman said that it would be easy enough for any one to coax him along with a lump of sugar.

The motorman of the fifth trolley car, which had by this time reached the end of the blockaded line, walked up and surveyed the situation.

"Whose car is this?" he asked, pointing to the first car that had come up behind the wagon to which the balky horse was attached.

"It's mine," said another motorman who was fingering the brass handle as though he would like to brain the horse with it.

The motorman from the rear car hoisted the car's front fender and strapped it in place folded against the dashboard.

"Now," he said to the motorman who had claimed the car, "go ahead, very easy." Then turning to the disconsolately profane driver of the horse, he said: "Get up and take hold of the reins."

The car ran forward until the fender reached the tail-board of the wagon. "Now," said the self-appointed master of ceremonies to his fellow-motorman, "start up as fast as you durn please and don't stop until you get to the bridge."

The car started. The wagon started. The horse in the shafts simply had to start. He slid and shoved back for a few minutes and then broke into a helpless gallop. The car came banging along behind, giving the horse no chance to change his mind and balk again. The spectators cheered. The ingenious motorman looked the assembly over with a sneer.

"Say!" he said. "Say! Some people are dead slow, eh?"—New York Sun.

His Little Bill.

"Now, in regard to your little bill, doctor," said the old gentleman, as he dropped into the physician's private office and took a chair.

"Ah, yes," returned the doctor, "I'll be very glad to get the money, I assure you. I'm not very prompt and businesslike in these matters, I'm afraid. I let things run along and run along until I need the money and then I make out the bill and send it in. No doubt some of these items should have been charged up to you months ago."

"I don't care anything about that," returned the old man. "You can take all the time you want about sending your bills in, but hang it all! it strikes me that this one is mighty steep."

"Why, I thought it very reasonable," answered the doctor.

"And some of the items I don't understand," went on the old gentleman. "For instance, here is a charge of $4 for March 6, and as I recall it March 6 was the day you took Sunday dinner with us."

"Precisely," explained the doctor; "and you will recall also that after dinner your daughter was kind enough to sing for me, and that she complained of a little throat trouble and asked me if I thought it was anything serious, to which I replied that I did not."

I recall it," admitted the old gentleman.

"Well," said the doctor, "that $4 charge is for professional advice given on that occasion. I also charged up another $4 for the time your wife asked me how big a dose of quinine it was safe to give a 6-year-old child. You remember the occasion, I suppose. You had kindly invited me to the house for a friendly game of whist, but I did not understand that the invitation included giving professional advice to your family. Another evening when I was calling on your daughter she askeed me what was normal temperature in a human being, and of course I have put down $4 for that. You see, the habit of inviting professional men out socially and then taking advantage of the fact is growing so that many of us, including some of the noted singers and instrumentalists, have taken this method of discouraging it."

"Ah, yes, I see," answered the old gentleman. "The fact is, I didn't understand about it before, but no doubt you are right. I'll just deduct the offsets as soon as I get to my office and then let you know how the account stands."

"The offsets!" exclaimed the doctor.

"Certainly. Looking at this purely from a business point of view, there is, of course, the Sunday dinner to be charged up. That was quite an elaborate course affair, and I should say it would be cheap at $2.50. Then, there is the music. My daughter doesn't rank with some of the opera stars, but she was singing for you alone on that occasion, and naturally the individual cost would be greater than it would be if you were one of a large audience. I should think $10 or $15 would be very reasonable. Then the evening we played whist my wife put in about two hours entertaining you, and she told me afterward that she never in her life had such a hard time to keep conversation from flagging, I don't know what will be a fair charge for that. I'll have to talk it over with her."

The basis upon which a compromise will be reached is problematical, but friends of both still have hopes of keeping the matter out of the courts.—Chicago Post.

People We Live With.

One of the hardships of life is the fact that we have to bear so many unnecessary unpleasantnesses and are the victims of so many profitless and useless tragedies, that are none the less bitter because they are so little and sordid. Do as we may, we can not emancipate ourselves from our surroundings, and even the freest of us are slaves to the whims and caprices of those with whom we live.

Not long ago a gentleman was telling a story about a friend, whose wife, although a good woman, was one of those uncomfortable creatures who are forever fretting and nagging all about her. At last the gardener, unable to stand it any longer, gave notice and quit, but as he was departing he stopped by the gallery, where his master was entertaining several friends. "Good-bye, sor," said he, touching his hat, "I'm sorry for yer, sor. I can lave; yer can't."

Surely such a story voices much of the pathos of our common experience. There are so many times, there are so many places that we can't leave. It is the people to whom we are tied by a thousand bonds of affection, of mutual interest, of duty and responsibility, who have our happiness in their keeping, and oh, the pity of it! they are so careless of their trust, and we have no recourse. We can't leave.

There is in reality no more ungenerous trait in human nature than this taking advantage of the utter helplessness of those of our own household. They can't throw up their jobs and quit. They are bound to stay on and endure us, and we trade upon it. Think of the young girls you have known who put forth every attraction to captivate a man, and then, as soon as the marriage ceremony was over, subsided into listless slovens. It was as much as to say: "Oh, well, he can't leave now, and I won't bother any more to try to please." Think of the men you have known who were veritable Prince Charmings in their courting days, but who, once married, would speak to their wives in a way they would not dare to have used to a good cook who could give warning and leave.—Philadelphia Inquirer.

Written for Kansas Farmer.

Valuable Hints in Laundering.

From my own experience I would always choose Tuesday for wash-day instead of Monday. I could enumerate many good, practical reasons for my selection of Tuesday, but they would not be new or unknown to any housekeeper, so I will take it for granted that every one knows how busy Monday morning keeps us—and it is well on to Tuesday before we are straightened out from Sunday's intervening—clothes to put away, called Sunday clothes, books for the school children, a dozen such extra jobs to be done—so Tuesday we are in a better frame of mind to commence the work. Perhaps the housekeeper would be most benefited by learning a good way to laundry table-linens, doilies, etc. The proper way to wash table-linens, and to have ivory-white damask table-cloths, is to wash them in tepid water with a little borax dissolved in the water and enough pure soap to make a good lather. Very little rubbing is needed when borax is used, for it softens the water and makes the washing comparatively easy. It is far better to have a number of changes in table-linens so as not to have them washed so often. It fades and wears them out and they look dingy pretty soon if washed so often.

It pays to remove all stains before washing table-linens, and the best way is to pour boiling water through the place stained, and keep pouring until all the stain is removed. If your water is not clear put in a teaspoonful of alum to every four gallons. This will cause all impurities to sink to the bottom and leave it as clear as can be. To make starch put a cupful of lump starch in two cupfuls of cold water, stir until smooth, then pour boiling water and cook until done.

S. H.

Chautauqua Lake and Return.

On July 28 the Nickel Plate Road will run an excursion to Chautauqua Lake at one fare for the round trip. Write to General Agent, 111 Adams St., Chicago, for particulars. (23)

The Young Folks.

UNCLE JERRY'S BACKSLIDING.

Old Uncle Jerry Jingles, who loved fishing so that he
Would sneak away on Sundays with his bait and tackle free,
Once tumbled in the water on a broken Sabbath day,
Which scared him into seeing all the errors of his way.

And so he went to meeting and he stood right up and said,
"My friends! I am a sinner and a wicked life I've led.
On Sundays with my jointed rod hid in my trousers I
Would wander off a-fishing and come home and tell a lie."

"Praise God!" the sisters shouted and the brothers groaned "amen!"
"I'll never break the Sabbath," Uncle Jerry cried, "again.
I want to get religion and I want it right away—
This getting drowned on Sunday to my notion doesn't pay."

"Come right up to the altar," called the pastor, "and be blest.
Confess your sins in public and the Lord will do the rest."
"Must I do that—tell everything?" gasped Uncle J. "O, dear!"
And then he whispered something in a handy deacon's ear.

"Is sister Jingles with us?" asked the deacon with a smile.
"If so, will she be kind enough to leave us for a while.
She isn't here, my brother. Now before your strength is spent
Go right up to the altar"—and poor Uncle Jerry went.

Now, Uncle Jerry Jingles wasn't bad as may be thought.
The most of his confession was about the fish he caught
On Sundays when he would have been more happy in a pew,
But still he felt much better when his dreaded task was through.

For several months in winter his religion was all right—
He didn't care for fishing while the fishes wouldn't bite,
But when the spring's glad sunshine warmed the waters that he knew
He didn't feel so happy all dressed up and in a pew.

He seemed to hear the little birds a-calling from the trees,
The music of the brooklets, and the murmur of the breeze,
His mind was on his bobbing float a-dancing on the streams
Instead of on the sermon. He caught fishes in his dreams.

So, on a Sunday morning when the preacher looked around,
Alas, no Uncle Jerry in his Sunday suit was found,
But far away beneath a tree beside a river bright
A tramp-like individual sat waiting for a bite.

A corn-cob pipe was in his mouth, a flask was by his side.
He wore old clothes, a big straw hat and shoes bereft of pride.
He held a pole while on a float he gazed with bliss serene—
'Twas Uncle Jerry, surely—but whatever could it mean.

"O, Uncle, Uncle Jerry! You're backsliding," piped a crow.
A thrush sang, "Uncle Jerry, when you die where will you go?"
"When you get home you'll catch it," chirped a cricket, while the bees
Kept buzzing, "Uncle Jerry! There's One above who sees."

"Keep still," said Uncle Jerry, but they wouldn't. Called a jay,
"You'll be sorry, Uncle Jerry. What will all the neighbors say?"
"How will you meet the minister?" a knowing squirrel spoke.
"Backslider, bad backslider!" all the frogs began to croak.

At last poor Uncle Jerry couldn't stand it any more.
Somehow the fun of fishing wasn't like it was before.
He thought how nice it felt to be dressed up and in a pew,
And wished that he was back again, like all backsliders do.

He wanted to go home. Alas, he couldn't till the night
Lent him a cloak to hide himself from other people's sight.
And then, how could he face his wife's sad and reproachful eyes—
After he had religion he was barred from telling lies.

The next revival meeting found poor Uncle Jerry there
Confessing his backsliding and requesting Christian prayer.
And when the deacons tried his case and took him back he threw
Away his darling fishing pole and nobly filled his pew.

Now Uncle Jerry Jingles is a deacon high and great.
Who wrestles with backsliders when he doesn't pass the plate,
And when he sees a fisherman on Sunday sneak about
He tells how the little birds knocked his backsliding out.

—H. C. Dodge, in Drovers Journal.

SALUTES ON A WARSHIP.

No salute exceeds twenty-one guns, and no salute is ever fired except between sunrise and sunset, when the national colors must be displayed, but it is also usual not to fire salutes before 8 a. m. Whenever the President is embarked in a ship of war flying his flag all other United States ships of war and naval stations near which he passes, fire the national salute.

Side-boys are detailed usually from the apprentice boys. They stand each side of the gangway, in line and salute by touching their caps as the visiting officials come on board and leave a ship by the starboard gangway. Warrant officers, naval cadets, and enlisted men use the port gangway.

After nightfall, all boats coming close to the ship are hailed by the marine sentry or by the quartermaster with the words, "Boat ahoy!" A flag officer answers "Flag;" a commanding officer answers the name of his ship; other commissioned officers answer, "Aye, aye;" warrant officers and naval cadets answer, "No, no;" while enlisted men answer "Hello."

Every officer and man, on reaching the upper deck, salutes the national flag, and this salute is returned by the officer of the watch at hand.

Flag officers are addressed by their titles of admiral or commodore; captains and commanding officers are called "Mr." and not by their official titles, though in addressing them in writing these titles are always used. The surgeons,, however, are usually called "Doctor," and paymasters of any grade "paymaster."

Boat salutes are given by tossing oars, which means holding them upright in the air with the blades fore and aft, or by lying on oars, by which is meant holding the oars horizontal as they rest in the rowlocks. Coxswains of boats stand and salute when passing boats containing officers. All officers and men, whether in uniform or not, meeting a senior afloat or ashore, salute by touching the cap.

When a ship of the navy enters a port of any nation where there is a fort or battery, or where a ship of war of that nation may be lying, she shall fire a salute of twenty-one guns, provided the captain is satisfied that the salute will be returned. The flag of the nation saluted will be displayed at the main during the salute.

National airs of foreign states having war vessels in company with our own will be played by our bands as a compliment.—St. Nicholas.

Origin of "Yankee Doodle."

Every boy and girl knows "Yankee Doodle," but how many of them know how this national song originated? According to an old book, the air was popular long before the Revolution, being then called "Lyda Fisher." It was a favorite New England jig, and it was customary to fit impromptu verses to the tune, such as:

Lydia Locket lost her pocket,
Lydia Fisher found it,
Not a bit of money in it,
Only binding round it.

The tune itself is said to have been sung in Cromwell's time, when it was called "Nankee Doodle," and one of the verses ran as follows:

Nankee Doodle came to town
Upon a little pony,
With a feather in his hat,
Upon a macaroni.

This alluded to Cromwell's riding into Oxford wearing a single plume in his hat fastened in a knot called a "macaroni."

Just before the Revolution the British officers adapted the old song to new words intended to ridicule Yankee simplicity and manner. But the Yankees turned the tables by accepting "Yankee Doodle" as their national air and piping it whenever they repulsed the red coats. When the battle of Lexington and Concord began the war the English,when advancing in triumph, played along the road, "God Save the King," but when the Americans made the retreat so disastrous to the invaders these then struck up the scouted "Yankee Doodle," as to say, "See what we simple Jonathans can do!"

That the air was universally deemed a good retort on British royalists is proved by the fact that it was played by us at the battle of Lexington, when repelling the foe; again at the surrender of Burgoyne, and, finally, at Yorktown surrender.—Philadelphia Record.

The Boy King's Sad Lot.

One of the most interesting figures of today is Alfonso XIII., King of Spain, who belongs entirely and exclusively to the twentieth century. The years that he has passed on this side of 1900 have been few and irresponsible. He does not take up the reins of sovereignty or assume the cares of kingship until 1902, and between now and then revolutions may overwhelm his hapless country.

But he already sits upon a dignified throne, and though at present he is unknown outside his own palace, he has a near prospect of ruling the destinies of twenty millions of subjects.

Few kings, even of Spain, have begun life under worse auspices. His name is unfortunate, his number a pledge of bad luck. His unhappy father was dead before he came into the world, and his mother, the daughter of an Austrian archduke, was confronted with the hateful task of ruling an antipathetic country.

So far the mother has emerged from an impossible situation with a certain distinction, if without much glory. But the son will have a harder task set him than ever fell to his mother's lot, and he will face the music inexperienced and untrained.

His aspect is familiar to every one in Madrid, and his presence has never yet succeeded in arousing enthusiasm. Now and again, as the guard is changed outside the Palace at Madrid, a pale, harassed face is seen gazing from a window.—The London Mail.

Advice Worth More Than Money.

A young man who wished to get into business for himself asked an old Philadelphia millionaire for pecuniary assistance.

"Do you drink?" asked the millionaire.

"Once in a while."

"Stop it! Stop it for a year and then come and see me."

The young man broke off the habit at once and at the end of the year came to see the millionaire again.

"Do you smoke?" asked the successful man.

"Now and then."

"Stop it. Stop it for a year and then come and see me again."

The young man went home and broke away from the habit. It took him some time, but finally he worried through the year and presented himself again.

"Do you chew?" asked the philanthropist.

"Yes, I do," was the desperate reply.

"Stop it! Stop it for a year, and then come and see me again."

The young man stopped chewing, but he never came back again. When asked by his anxious friends why he never called on the millionaire again he replied that he knew exactly what the man was driving at. "He'd have told me that now I have stopped drinking, smoking, and chewing I must have saved enough to start myself in business. And I have."

Love Nature.

Nature has waked up from a long rest. Work and rest is the order of life. Diversion is rest and recreation. The student may learn much during vacation watching the unfolding of plants and the development of insects. The close observer becomes a naturalist. Every boy and girl should love nature. The lovers of flowers are lovers of form and color. A handful of plants may open up a new world. It is surprising how many are satisfied to pass their days in ignorance of the wonderful world about them. Learn the names, the habit and peculiarities of the flora of your section, and exchange knowledge with those you meet. Make your vacation an interesting nature study. Nothing is so diverting; nothing so stimulating. Observe and you will know.—National Student.

A Good Excuse.

A New England rural school-teacher received the following note from the mother of one of her pupils during "sugarin' time:"

"Dear Mam—Please excuze Cyrus William for not coming yesterday which he would of done only he was down to the sugar-lot and he fell into a pan of syrup that had just been boiled down and which was still warm but not hot enough to burn him. But he went in all over and such a mess you never see hair and all. He had to go through three tubs of water and then go to bed while I washed out his things. So he wasn't there. So please excuze, also he would some ruther you didn't mention to anybody that he fell into the sap, he bein' some sensitive and not wishing to be rigged about it."—Harper's Bazar.

Farming in Colorado and New Mexico.

The Denver & Rio Grande railroad, "The Scenic Line of the World," has prepared an illustrated book upon the above subject, which will be sent free to farmers desiring to change their location. This publication gives valuable information in regard to the agricultural, horticultural and live stock interests of this section, and should be in the hands of everyone who desires to become acquainted with the methods of farming by irrigation. Write S. K. Hooper, G. P. & T. A., Denver, Colo.

Inventors requiring money to develop or perfect inventions, patents or ideas of value should communicate with R. G. Ruxton, 195 La Salle St., Chicago, Ill.

KANSAS FARMER

ESTABLISHED IN 1863.

Published Every Thursday by the

KANSAS FARMER COMPANY.

E. B. Cowgill, Pres. J. B. McAfee, Vice Pres.
D. C. Nellis, Sec'y and Treas.

OFFICE:
No. 116 West Sixth Avenue.

SUBSCRIPTION PRICE: ONE DOLLAR A YEAR.

E. B. COWGILL, Editor.
H. A. HEATH, Advertising Manager.

ADVERTISING RATES.

Display advertising, 15 cents per line, agate (fourteen lines to the inch).
Special reading notices, 25 cents per line.
Business cards or miscellaneous advertisements will be received from reliable advertisers at the rate of $5.00 per line for one year.
Annual cards in the **Breeders' Directory**, consisting of four lines or less, for $16.00 per year, including a copy of KANSAS FARMER free.
Electros must have metal base.
Objectionable advertisements or orders from unreliable advertisers, when such is known to be the case will not be accepted at any price.
To insure prompt publication of an advertisement, send cash with the order; however, monthly or quarterly payments may be arranged by parties who are well known to the publishers, or when acceptable references are given.
☞All advertising intended for the current week should reach this office not later than Monday.
Every advertiser will receive a copy of the paper free during the publication of the advertisement.
Address all orders—
KANSAS FARMER CO., Topeka, Kans.

The first new hay of the season was on the Topeka market this week. About thirty loads were disposed of the first day, bringing an average of from $6 to $6.50 per ton.

We have received volume 22 of the American Poland-China Record. This is the second volume issued since the first of the year. Both volumes contain about one thousand pages each. The American has adopted the plan of printing its volumes of a uniform size. Volume 22 is a neat and attractive book, and has the appearance of having been carefully edited. It is evident that the American enjoys a large patronage. Each stockholder of the Record is entitled to the book as a dividend. The price to others is $2.50, carriage prepaid. It can be had by addressing the secretary, W. M. McFadden, at West Liberty, Ia.

Merit is again appreciated. Mr. F. C. Burtis, a graduate and post-graduate of Kansas State Agricultural College, was for several years the efficient assistant to the professor of agriculture in charge of field work and feeding experiments. He has just been elected professor of agriculture in the Oklahoma Agricultural College at Stillwater. This young and vigorous college has acquired an able and energetic man to head its most important department. Kansas will expect good work from Professor Burtis in his new position and will rejoice at the success which is sure to follow the well-directed efforts for which he has already an enviable record.

LIVE STOCK STATISTICS.

The different live stock and breeders' associations have been actively urging the Government authorities in charge of the twelfth census to secure a more perfect census of live stock for the year 1900.

L. G. Powers, chief statistician, Washington, D. C., in a recent letter to H. A. Heath, secretary Kansas Improved Stock Breeders' Association, says:

"The section of the census devoted to the compilation of agricultural statistics is, at the present time, giving much time and thought to the subject of statistics of live stock for the year 1900.

"In a very short time the preliminary schedule for agriculture will be prepared and printed; a copy of this schedule will be mailed you for your consideration and criticism. Similar schedules will be sent to all the leading agricultural and stock associations, as well as agricultural papers, of the country, with a view of finally formulating the most practical schedule of inquiries possible under the present law."

To C. F. Martin, secretary National Live Stock Association, Denver, Chief Statistician Powers writes:

"I had planned the following divisions of live stock:

"Heifers and steers under 1 year of age; heifers and steers 1 to 2 years.

"Bulls, all ages.

"Cows kept for milk, over 2 years; cows not kept for milk, over 2 years.

"Horses under 1 year; horses 1 to 2 years; horses 2 to 3 years; horses over 3 years.

"Mules, the same four classes.

"Asses, one group for all ages.

"Sheep, two groups, one under 1 year and the other over 1 year.

"The same for swine and goats.

"Under each of these special classifications obtain the number of animals and total value of the same. Further inquiry ascertains the number of pure-blooded animals recorded and the number eligible to record, of all horses, neat cattle, merino sheep, mutton sheep, and angora goats. Further, the value of the animals slaughtered on each farm for home consumption and the amount received from sale of the animals.

"Of wool, wool sheared in the fall of 1899 and spring of 1900, the fleeces, weight in pounds and farm value of the same.

"You notice that this classification which I have outlined makes for the horses, mules, and neat cattle two or three more subdivisions than those which you have outlined in your resolutions. If the objects for which the census of live stock are taken will be fully answered by reducing the number of inquiries it is very desirable to do so.

"I wish you would call the attention of the live stock men of the country, through the press, to the subject and give me the result of their criticisms and suggestions. It is my desire to make the next census as perfect as the same is possible, and to make it as valuable to the live stock interests of the country as practicable. It is desired to make the inquiries the fewest that is possible to meet the needs for which the census is taken. Every additional question beyond a certain number tends to lessen the accuracy of the whole census and also tends to make enumerators careless in their work."

THE PROFITABLE RATION.

The term "balanced ration" has not been in use very long, and every circumstance which brings it into prominence calls forth numerous inquiries as to what a balanced ration really is. The fact that animals fed a balanced ration are fitted for the market in less time and at less expense than those not so fed was demonstrated anew by the recent experiment of Col. Guilford Dudley, of Topeka, in feeding 100 steers. The further fact that the beef produced was of superior excellence and commanded a long price has intensified interest in the balanced ration.

It will be well to notice that a ration that is perfectly balanced for one class of animals may be considerably out of balance for another class. Thus the animal which consists largely of fat requires different food from that suited to a lean-meat animal. It seems almost superfluous to state that meat is built up from the substances eaten by the animal. Chemists have carefully analyzed every kind of meat and have determined what substances it contains. These substances contained in meat are composed of the elements found in feeds, but in somewhat modified combinations. But the substances contained in meat and the substances contained in feeding-stuffs are composed of but few elements. Carbon, oxygen, hydrogen, nitrogen, and sulphur, some or all of them, in various combinations, constitute a large proportion of both animal and vegetable substances. The combinations of these five elements are conveniently and naturally divided into two classes: those which contain nitrogen and sulphur, and those which do not.

It should be noted that these elements are more prevalent in animal substances than in vegetables. There are vast differences in plants in respect to the amount of nitrogen they contain. Some vegetable substances, as sugar and starch, contain no nitrogen. Others, as wheat bran, the cake left after the oil is pressed from flaxseed, cottonseed-meal, beans, peas, peanut, alfalfa, clover, and generally plants whose seeds grow in pods, contain a good deal of nitrogen in the seeds and frequently in the leaves and stalks. Corn contains less nitrogen than is found in wheat. Water contains no nitrogen.

Of animal substances, the fats contain no nitrogen except in their connective tissues. Lean meat and brains, and, indeed, nearly all parts of the animal body except the fat, contain large percentages of nitrogen.

Since the animal builds its body solely from the food it eats and the water it drinks, it is evident that to produce lean meat and brains something besides sugar and starch, something containing nitrogen, must be fed. If there is to be much lean meat there must be corresponding quantities of nitrogen in the feed.

Many of the vegetable and animal substances which contain nitrogen also contain sulphur, and are by the chemists called proteids or protein, while many of those which contain no nitrogen are called carbohydrates. It is important that the farmer who proposes to keep up with the advance-guard of this profession shall familiarize himself with these two terms and their meaning. Carbohydrates consist of carbon, hydrogen, and oxygen. Hydrogen and oxygen are the two constituents of water, and it is to be noted that in all carbohydrates they occur in the exact proportions in which they are united in water. Proteids are more complex compounds and are composed of carbon, hydrogen, oxygen, and sulphur.

The fact that animals can get nitrogen and sulphur into their tissues only by eating it in their food should never be lost sight of. Investigations have shown about the proper proportions of carbohydrates and protein for food for the several classes of farm animals. Most of our grains and fodders contain too little protein in proportion to the carbohydrates. Thus corn is very rich in carbohydrates and contains but a moderate percentage of protein. If corn and fodder, or prairie hay are the exclusive feed of a beef-steer, either he will (1) convert the excess of carbohydrates into tallow—a low-priced product—or (2) he will waste them in the excrement, or (3) he will make less gain than he should. Generally he does all three. On the other hand, if he had been given something richer in protein instead of a part of the corn or instead of the prairie hay he should have put on juicy lean meat, should have utilized most of the carbohydrates in keeping him warm and in producing the proper amount of fat, and should have made liberal gains because of having to digest but little which he could not use, thus being enabled to devote the entire energy of his digestive organization to producing value for the feeder.

Feed thus proportioned to the needs of the animal is called the "balanced ration." The value of the balanced ration is not mere theory. Experiments have been made with all kinds of animals and it has been proven that the best results are attained by the use of the balanced ration. This ration differs in quantity and in proportions of ingredients with the several classes of animals. Thus the pig can use a ration composed more largely of carbohydrates than is suited to the beef-steer. The dairy cow yields large quantities of protein in her milk and she must get it from her feed.

The fact that our most abundant feeds are deficient in nitrogenous substances gives importance to the question of the production of protein-bearing plants. Fortunately several of these are well adapted to Kansas conditions. Fortunately, too, these protein-producing plants are soil renovators and enrichers. Alfalfa and all other clovers, cow-peas and soy-beans, are especially valuable because they can be produced on the farm, they enrich the soil, and they supplement corn in making a balanced ration for any kind of stock. Wheat bran, oil-meal, and cottonseed-meal are mill products which are useful in balancing the ration.

The quantities of each ingredient which ought to be used in forming a balanced ration may be calculated from tables showing the requirements of the several kinds of animals and other tables showing the composition of the several feeding stuffs. Farmers generally may not care to enter into the minutiae of these calculations, but those who are not afraid of "book-farming" will find both interest and profit in knowing just what they are doing. Others may profit by knowing in a general way that corn and prairie hay are too poor in protein to constitute the most profitable ration for any kind of live stock; so that it is always safe to substitute a liberal allowance of alfalfa, clover, oats, barley, wheat, oil-meal, bran, cow-peas, etc., for a part of the usual ration.

PREPARATION OF THE SOIL FOR WHEAT.

Editor Kansas Farmer—The Kansas wheat-grower should begin the preparation of his soil for next year's crop at once. There is no accurate way to calculate the losses that all of our farmers annually sustain from insufficient and untimely preparation of the soil, but there is no doubt that these losses amount to millions of dollars every year.

No plant can grow and thrive in a seed-bed consisting chiefly of dry clods and air-spaces. The plow very seldom leaves the soil in a proper condition for a seed-bed. In order to bring it to the desired condition, the soil must be pulverized, fined, settled, and supplied with a quantity of moisture sufficient to promote vigorous plant growth. This condition can not be secured at this time of the year by preparation that lasts only a few days. Therefore, it behooves the farmers to get the prospective wheat-fields plowed and harrowed as soon as possible in order that the preparation of the soil may be continued long enough to put it in the finest possible condition. If the land is plowed now, any rains that fall between now and the first of September will be largely stored in the soil and a fine seed-bed will be the result. The weathering of the soil will also benefit it by setting free large quantities of plant food for the use of the germinating and growing wheat plants in the fall months.

Early plowing for wheat makes the crop doubly sure, and also gives the farmer the satisfaction that he is pushing his work instead of the work pushing him. Farmer, plow early! GEORGE L. CLOTHIER.

FRUIT CROP REPORTS.

As we go to press we have received from William H. Barnes, Secretary of Horticulture, the following fruit reports:

Geary County.—Apples 40 per cent. Pears 10 per cent. Plums 80 per cent. Grapes 60 per cent. Best apple, Missouri Pippin, 100 per cent. All sorts will produce some.

Wyandotte County.—Apples 5 per cent. Pears ½ per cent. Plums 5 per cent. Grapes 100 per cent. Best apples, Missouri Pippin and Willow Twig. Ben Davis failed entirely.

Brown County.—Apples 75 per cent; Early Harvest 50 per cent; Maiden's Blush 30 per cent; Winesap 50 per cent; Ben Davis 50 per cent. Pears 15 per cent; Kieffer 30 per cent; Duchess 25 per cent; Seckel 25 per cent. Plums 75 per cent; Wild Goose 80 per cent; Golden Beauty 90 per cent; Damson 100 per cent. Grapes 30 per cent; Concord 40 per cent; Moore's Early 35 per cent; Worden 40 per cent.

Elk County.—Apples 50 per cent; Ben Davis, Jonathan, Missouri Pippin, Arkansas Black, Jeniton, Early Harvest, and Red Astrachan 50 per cent. Pears 10 per cent; Kieffer, Garber, Duchess, and Seckel 10 per cent. Grapes 60 per cent; Moore's Early, Worden, Niagara, Green Mountain, and Delaware 60 per cent. Plums, Wild Goose, good.

Barber County.—Apples 100 per cent; Missouri Pippin best. Pears 100 per cent; all varieties. Peaches 75 per cent; Hale Early. Plums, Chickasaw 100 per cent. Grapes, Concord 100 per cent. All trees, excepting old peach, in good condition. Apricots, Moorpark, just ripened a fine crop.

Butler County.—Apples 75 to 80 per cent; Missouri Pippin and Lowell 90 per cent. Plums 50 per cent; Wild Goose. Grapes, Concord, 100 per cent.

Cowley County.—Apples 200 per cent; mostly Missouri Pippin and Ben Davis. Willow Twig, Winesap, and Jenitons failed entirely. Pears 10 per cent; Kieffer, Bartlett, and Duchess. Plums, Wild Goose, 10 per cent. Grapes 50 per cent; Concord, Agawam, Worden, Moore's Early.

Cowley County.—Apples 200 per cent, Winesap, Missouri Pippin, Jeniton, Jonathan, Grimes' Golden, and all early varieties fully 200 per cent; Ben Davis 150 per cent. Pears, Bartlett 100 per cent; Duchess 100 per cent; Seckel 100 per cent; Kieffer, light. Peaches, Amsden 25 per cent; others light. Plums, Japan dead; natives good. Grapes, 100 per cent; generally good.

Harper County.—Apples 150 per cent; all varieties promising. Pears 100 per cent; all varieties good. Peaches 60 per cent; Amsden and Alexander 25 per cent; Crawford and other August varieties are few; late sorts not all good. Plums 100 per cent; Japan hybrids, natives, and Wild Goose. Grapes 150 per cent; white and red varieties are best. With the exception of some late peaches and late cherries, all tree fruits are full. Condition of trees, old and young, exceptionally good. Trees set early this spring are doing finely.

Harvey County.—Apples 60 per cent; Cooper Early 90 per cent; Missouri Pippin 80 per cent. Pears 20 per cent; Kieffer 50 per cent. Peaches, budded 5 per cent; seedlings 3 per cent. Plums 65 per cent; Wild Goose and Miner 80 per cent. Grapes 80 per cent; Concord 90 per cent. The only tree fruit failing is the budded peaches, excepting Amsden, Alexander, and Crosby. All tree, young and old, are in good condition, excepting some blight on old pear-trees.

Marion County.—Hail-storm on May 22 destroyed all tree fruits and damaged the trees greatly. All but peaches had blossomed full and were carrying heavy crops when struck by the hail. This report covers a tract about eighteen miles square.

Pawnee County.—Apples 20 per cent; Missouri Pippin, Winesap 50 per cent; summer varieties 75 per cent. Pears 20 per cent; Seckel and Duchess 35 per cent. Plums 10 per cent; Lombard best. Grapes 100 per cent; Niagara, Concord, and Iona. Old apple and old peach-trees and grap- Old apple- and old peach-trees and grapevines in good condition; all others more or

Republic County.—Apples 25 per cent. Plums and grapes 100 per cent.

Russell County.—Appless 75 per cent. Pears 40 per cent. Peaches 75 per cent. Plums 90 per cent. Grapes 80 per cent. All trees doing well, conditions and weather fine for all sorts.

Sedgwick County.—Apples 75 to 90 per cent; Ben Davis, Missouri Pippin, Winesap, Gano, Cooper, Grimes' Golden, and Jonathan all good. Pears 60 per cent; Duchess, Bartlett, Seckel, Flemish Beauty. Peaches, Champion and Crosby the only ones that fruited. Plum 70 to 90 per cent; Japan No. 1 when cared for; Burbank, Willard, Abundance, good; natives no good;

Grapes 60 per cent; Niagara best, Concord, Agawam, Brighton, and Worden good. All trees, excepting peach, good.

Wallace County.—Apples 25 per cent. Pears 10 per cent. Plums and grapes 25 per cent. All trees looking well and making vigorous growth.

Shawnee Horticulturists.

The Shawnee County Horticultural Society met last Thursday at the beautiful grounds of the State Reform School near North Topeka. The forenoon was showery and threatening so that the special Rock Island train which had been arranged for was abandoned. But a goodly number of well-loaded carriages brought the horticulturists to the grounds; a picnic dinner was enjoyed in the native woods, and the social features of the occasion were such as cultured people may always be depended upon to make them.

The leading exercise of the formal part of the meeting was a paper on Plant Physiology by A. S. Hitchcock, professor of botany at the Kansas State Agricultural College. This paper, which will appear in a later number of the Kansas Farmer, brought out an animated discussion and many inquiries on the points of plant growth and the functions of the several organs of plants.

The next subject, Raising Peaches, was discussed at considerable length, even though Mr. James Purdy, to whom it was assigned, was not present. The question of seedlings was pretty thoroughly handled. President Van Orsdal considered it poor policy to plant seedlings, taking all of the uncertainties as to what will result when one can be sure of good fruit by planting budded trees. Secretary Barnes stated that his reports show many valuable orchards of seedling peaches in the western part of the State.

Reports from several orchardists showed that much winter-killing occurred last winter. E. Marple stated that Early York and Elberta stood the winter better than other varieties.

The next meeting will be at J. L. Entzminger's, Silver Lake, August 10. Following is the program:

Grape Culture, J. L. Entzminger; Plums, Prof. W. H. Hall; Berry Culture, G. W. Van Orsdall; Discussion on Horticulture with Farming, A. M. Coleman.

Prairie-Dogs.

Editor Kansas Farmer—Will you please let me known if there is any relief from prairie-dogs? How is the best way to rid out the towns? If a poison is used, what should one mix it with?

A. W. HILL.

Norton, Kans.

An effective method of dealing with prairie-dogs is to smother them with bi-sulphide of carbon. The usual method of applying this is to make small balls of some absorbent substance like cotton—dried horse manure is sometimes used. The balls are saturated with the liquid and rolled into the prairie-dogs' burrow. The opening is covered with sod. The gas soon fills the entire burrow and destroys every living thing with which it comes in contact.

Bi-sulphide of carbon is explosive and must, therefore, be kept away from fire, lighted pipes, etc. It may be had at drug-stores.

Gophers.

Editor Kansas Farmer—How can I get rid of the pocket-gopher? Are there gopher traps for sale; if so, where? Can bi-sulphide of carbon be used; if so, how?

ALEX. GARDNER.

Richland, Kans.

The Animal Trap Company, 13 Meek street, Abingdon, Ills., advertises in the Kansas Farmer a trap which is reported to be a sure thing on pocket-gophers. Bi-sulphide of carbon can be used as directed elsewhere in this paper for prairie-dogs. The gophers are said to escape the bi-sulphide fumes sometimes by closing their burrows against them as soon as they catch the villainous odor. Gophers have been successfully poisoned by placing strychnine on the freshly-cut surface of a potato—or other vegetable eaten by the gopher—fastening the two surfaces together by a wooden pin and placing the poisoned bate in the gopher's run.

Birds and Telegraph Wires.

Editor Kansas Farmer—Will you kindly tell me through the Kansas Farmer if birds are killed sitting on telegraph wires when messages are being sent? I know the wires of themselves are not hurtful to birds.

J. B. BALSTON.

Palmer, Kans.

Birds sitting on telegraph wire are entirely unaffected by the low electric currents used in telegraphing.

WEEKLY WEATHER-CROP BULLETIN.

Weekly Weather-Crop Bulletin of the Kansas Weather Service, for week ending July 10, 1899, prepared by T. B. Jennings, Section Director:

GENERAL CONDITIONS.

The temperature for the week range from 1° to 3° below the normal, while the rainfall is in excess. In a few western counties the rainfall is less than half an inch, also in Harper, Barger, western part of Pratt, and southwestern part of Stafford. Over the rest of the State good to heavy rains occurred, with very heavy rains in Pawnee, Rush, Russell, Ellis, and the eastern part of Trego, and decidedly heavy rains in the larger part of the eastern division, exceeding seven inches in Woodson, Allen, and Johnson.

RESULTS.

EASTERN DIVISION.

The wheat harvest is generally finished, and threshing and stacking in progress where the weather permits; wheat in the shock has been injured by the wet weather in some counties; threshing discloses a good berry. Oats harvest is about finished in the south, but was stopped by the rains in the north. Corn has made good progress and presents a fine appearance; in the south the early corn is practically made; corn is silking and tasseling in the north; much corn was blown down by the winds Friday. Tame hay was somewhat damaged by wet weather; prairie hay promises a heavy crop. Flax is very fine and is ripening. Millet hay is a good crop.

Allen County.—Seven and one-half inches of rainfall this week has rotted many potatoes in the ground, let the weeds get beyond control, and ruined much wheat in Neosho bottoms south of Iola.

Atchison.—Harvesting and plowing stopped by the rains; much corn and oats blown down; oats harvest begun, crop damaged some by wet weather; early apples small and poor quality; early potatoes unusually fine.

Bourbon.—Some corn very weedy and grassy, but most of it in good condition and growing finely; oats harvest delayed by rains; all grass has made a heavy growth; timothy being cut.

Brown.—Too wet; haying delayed; some corn not yet laid by; wheat mostly cut; oats lodged in places, but generally good.

Chase.—Corn prospects excellent; wheat crop on bottoms good, on upland poor; oats fair to good; potatoes very good; apples, good average crop; grapes, average one-third crop; pastures good.

Chautauqua.—Too wet for work, all right for corn; early corn practically made and a good crop; oats harvest about completed and a good crop saved; threshing retarded by rains.

Cherokee.—Wet week; corn growing rapidly; grain ripens slowly, lengthening the harvest; wheat and oats very weedy and will be hard to save, owing to the excessive rains.

Coffey.—Ground too wet to work; early corn all right; some corn blown down in parts of the county; flax ripening; oats not good.

Crawford.—The heavy rains retarded harvesting, haying, and threshing, and are injurious to wheat and oats in the shock; corn growing rapidly; pastures excellent.

Doniphan.—Heavy rains have stopped corn-planting and damaged corn and oats on low ground; oats look well.

Douglas.—Heavy rains four days out of the seven; winds have blown down much corn, many stacks, and some buildings; much damage by high water; wheat and hay spoiling in the shock.

Elk.—The heavy rains have stopped all farm work; hard wind the 7th blew much early corn down.

Franklin.—Heavy rains; rainfall for week over six inches; corn badly blown down on the 7th; oats are generally cut, yield promises to be fair; crops in general doing well.

Greenwood.—Excellent crop conditions, reinforced by the fine rains, the run off from which was very limited for so heavy rains.

Jackson.—Ground thoroughly soaked; early corn tasseling, some silking; oats being cut, good crop, small acreage; haymaking in progress, much of it light yield; pastures excellent.

Jefferson.—Heavy rains; some damage to all kinds of crops by washing; corn growing very rank.

Johnson.—Harvest stopped by heavy rains; corn looking fine; rain has improved everything.

Lyon.—All things favorable for heavy corn crop.

Labette.—Fine week for growing crops, bad for work; some threshing; oats all in shock; flax harvested; corn in silk and tassel.

Marshall.—Wheat harvested, berry fine; oats harvest begun, stopped by rains, some grain lodged; corn laid by, clean, in fine condition, is tasseling and silking; new hay on market; forage crops the best in years.

Montgomery.—The rains benefited all growing crops, but prevented stacking and threshing; corn growing rapidly.

Morris.—A very wet week, some wheat molding in stack; corn silking and tasseling; millet heading; Kaffir-corn very fine; new hay on the market.

Nemaha.—Wheat harvested; hay damaged by rain, much of it spoiled; oats rusty and much on ground; much corn blown down; corn growing rapidly and the outlook good for more than average crop; millet hay in very good condition; potatoes nearly ripe and a large crop.

Osage.—A good growing week; corn in fine condition; harvesting still in progress; tomatoes will make full crop; roasting ears on market.

Riley.—A cool, wet week; temperature 3° below normal, rainfall 3 inches above normal; corn doing well; too wet for oats, and for cutting alfalfa; much corn blown down Friday.

Shawnee.—Wet week, with hard winds, some wheat in shock damaged, and considerable corn blown down; threshing delayed by rains; pastures and meadows doing finely; clover hay badly damaged; timothy ready to cut; some varieties of apples badly affected by scab.

Wilson.—Corn very promising; flax is fine and is ready to cut, but ground too wet.

Woodson.—No farm work this week; corn doing well; rather wet for potatoes.

Wyandotte.—Corn badly blown down; wheat-stacking stopped; blackberries almost a failure; temperature 2° below normal, rainfall 3 inches above.

MIDDLE DIVISION.

Corn is beginning to tassel in the north, is generally in tassel over the division, and is beginning to ear in the south; early corn is generally laid by. Harvest is nearing completion; some wheat and oats have molded in shock; wheat is a fair crop; oats generally good; stacking begun. Second crop alfalfa is ready to cut and where the weather permits is being cut. Prairie haying has begun in a few counties and promises to be a heavy crop. Fodder crops are heavy. Fall plowing has begun in McPherson.

Barber.—A good week for cultivation, and for harvesting; corn, cane, and Kaffir-corn growing rapidly; roasting-ears, early apples, and peaches on the market; grass on range good and cattle in fine condition.

Barton.—Harvest nearing completion; corn looking fine, and is tasseling.

Butler.—A fine growing week; corn fine; potatoes and gardens good; apples still falling; prairie-haying begun, crop light; oats mostly cut, a half crop.

Cloud.—Wheat harvest about finished; corn tasseling, prospect fine.

Cowley.—Corn looking unusually fine; wheat and oats molding in shock.

Dickinson.—Wheat harvest almost finished, rains injured some grain in shock; oats turning out well; corn in better condition than for many years, early corn earing; second crop alfalfa being cut.

Edwards.—Favorable week for corn; harvesting the light wheat crop progressing; early potatoes about matured.

Harper.—Corn very fine; oats good; wheat about all harvested; pasture and fruits good.

Jewell.—Fine week for growing crops; corn beginning to tassel, and nearly all laid by; wheat all harvested, and a better crop than expected; oats harvest begun.

Kingman.—Good growing weather; corn growing rapidly, mostly tasseled; wheat harvest nearly over; oats harvest well advanced; early apples abundant; peaches ripe.

McPherson.—Harvest over, stacking begun; fall plowing begun; corn in tassel and looks fine; Kaffir and cane in fine condition; haying begun and crop fine.

Ottawa.—A growing week; early corn beginning to tassel; oats ready to harvest, but very weedy; all fodder crops heavy; pastures fine; cattle doing well.

Pawnee.—Harvest delayed by rains; corn promises a good crop, except where grasshoppers are numerous; the feed crop is assured; pastures very fine; cattle in good condition; fruit trees doing well.

Phillips.—Harvest general; corn looking fine; all crops growing nicely.

Reno.—Wheat harvest finished, generally a good crop; oats harvest begun; corn in fine condition, mostly laid by, prospect good for a large crop; second crop alfalfa good, ready to cut; prairie-grass very fine; early peaches in market, a light crop.

Republic.—Corn growing rapidly, mostly laid by; oats harvest begun, fair crop; potatoes are fine.

Rush.—Excessive rains interfering with harvest; corn, and all spring crops are fine; ten days of dry weather are needed to save the wheat.

Russell.—Corn is fine; rains interfering with harvest.

Saline.—A good growing week; corn is fine, early corn tasseling; wheat nearly all harvested and stacking begun, but hindered by rains; chinch-bugs injuring late corn; Kaffir and corghum are fine; prairie-grass promises a heavy crop.

Sedgwick.—Oats mostly cut, a good crop; barley fair; corn in good condition and growing well; prairie-grass a heavy crop; stock doing well.

Stafford.—Corn tasseling, doing finely; harvest general; all crops doing well.

Sumner.—Harvest nearly finished; oats good; wheat poor quality; corn doing well.

WESTERN DIVISION.

Harvest is progressing in the central counties and beginning in the northern, the wheat is filling well, though the straw is short. The second crop of alfalfa is being cut in Ford and Gray and is a good crop. Early corn is in tassel in the central and beginning to tassel in the northern counties, is a good stand and in fine condition; it is silking in Ness. Grass is generally very good and cattle are in fine condition.

Decatur.—A good week; wheat filling well and has improved, harvest just begun; corn good stand, good growth, in very fine condition; everything growing rapidly.

Ford.—All fodder crops are looking fine; second crop of alfalfa being cut, a good crop.

Gray.—Harvest in progress; second crop alfalfa being cut, a heavy stand.

Greeley.—Crops in fair condition; grass poor in localities.

Hamilton.—No rain, everything suffers.

Haskell.—Quite windy, with very little rain, hardly affecting crops yet; grass is green and looking well.

Kearney.—Weather favorable; corn growing rapidly, more promising than for years, acreage light; grass luxuriant, cattle fat.

Morton.—Rains reviving the pastures and meadows and starting cane and Kaffir.

Ness.—A favorable week for growing crops; corn is looking fine, early corn in silk and tassel; harvest progressing well; wheat short, and in some fields thin, but the berry is good; rye not so good; potatoes promise well; live stock sleek and fat.

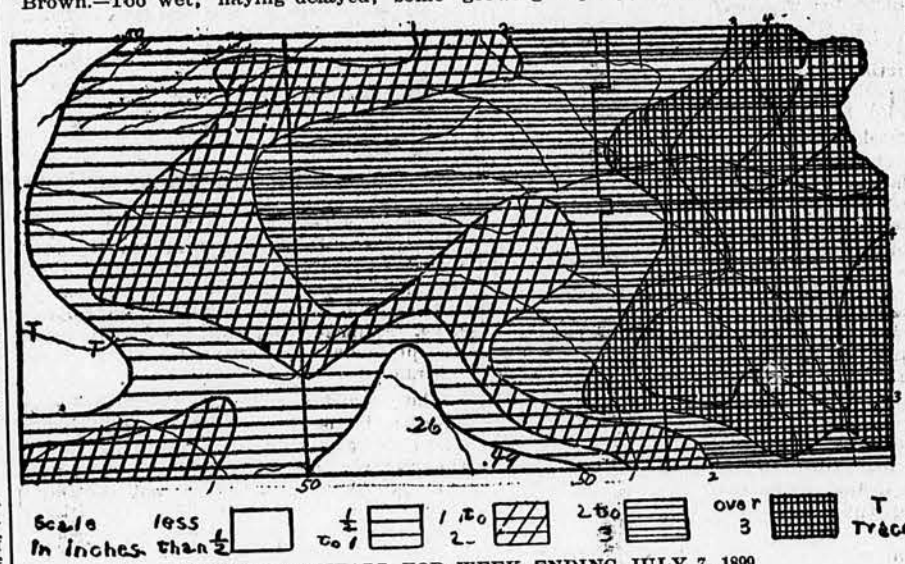
Rawlins.—Harvest in progress; corn, grass, and potatoes growing very rapidly; prospects for a very large corn yield.

Scott.—Wheat turning, filled well, but very short and weedy; not much barley and oats; forage of all kinds doing well; everything looking fine.

Sheridan.—Wheat harvest general, with promise of fair yield; corn growing finely, early corn beginning to tassel; forage crops good; gardens fine; potatoes very good; grasshoppers numerous.

Thomas.—A fine growing week; wheat harvest begun.

Trego.—Too wet for harvesting; fine corn weather; cane and millet look well; grass growing luxuriantly; more wheat reported than was expected; barley very short.



ACTUAL RAINFALL FOR WEEK ENDING JULY 7, 1899.

Ottawa Chautauqua Assembly.

One of the most pleasant locations for a summer outing in Kansas is at Forest Park, Ottawa, Kans., during the annual Chautauqua assembly, which is held this year July 17-28.

Forest Park is one of the most healthful and beautiful camping grounds in the West and the delightful and interesting daily program provides entertainment and information to every member of the family.

The management has engaged Prof. Henry B. Roney, of Chicago, as director of music. With Professor Roney will be the famous baritone, Blatchford Kavanagh, Miss Harriet Dement-Packard, the renowned dramatic soprano, and "Roney's Boys," including violin, vocal, and cornet soloists, all marvelous performers.

The educational work and workers include: Prof. H. B. Roney, musical department; Dr. J. L. Hurlbut, normal department; Dean A. A. Wright, ministers' institute; Dr. S. A. Northrop, morning devotionals; Prof. Vernon P. Squires, literary department; Dr. J. A. Babbitt and Prof. S. B. Knowlton, boys' club; Mrs. Anna Hobbs-Woodcock, young people's and children's classes; Mrs. L. B. Kellogg, C. L. S. C. department; Mrs. Noble L. Prentis, woman's council; Miss Harriet Montgomery, art department; Mrs. Ella W. Brown, W. C. T. U. department; Miss Laura Radford, Y. W. C. A. work.

Chinch-Bugs.

Editor Kansas Farmer—Will you please inform me whether Professor Snow's infected chinch-bugs will do the work they are represented to do, and whether a person can get them now? Please give his address.

JOHN RIEMAN.

Odin, Kans.

Chancellor Snow's chinch-bug infection is effective when weather conditions are favorable. It accomplishes far less in very dry weather than when it is moist. His address is Chancellor F. H. Snow, Lawrence, Kans.

Fred Beeler, of Jewell City, on the 10th inst., purchased from the administrator of the Charles Cross estate 9,400 acres of school land, mostly in Mitchell County, for $5 an acre—$47,000—spot cash. Mr. Beeler is vice-president of the First National Bank of Jewell City.

Horticulture.

IMPROVEMENT OF PLANTS BY SELECTION.

Editor Kansas Farmer:—The above is the title of an article by Mr. H. J. Webber in the Yearbook of the Department of Agriculture for 1898. This article should be read by all persons interested in the subject of seed-breeding, for the author is an authority upon the subject and has done considerable work upon crossing and hybridizing citrus fruits and pineapples.

He points out that in plant-breeding there are two processes, "largely distinct in their nature: (1) the methods of securing variation, and (2) the fixation of desirable variations by methodical selection." His paper is concerned with the second of these processes.

I will give a few gleanings from this article for the benefit of the readers of the Kansas Farmer.

THE UNITY OF THE INDIVIDUAL.

In selecting seed it is important that not merely the seed or fruit but the entire individual should be taken into consideration. Henri de Vilmorin says: "I tried an experiment with seeds of Chrysanthemum carinatum gathered on double, single, and semidouble heads, all growing on one plant, and found no difference whatever in the proportion of single and double-flowered plants." If one were selecting seeds it would be better to choose from a plant which bore uniformly large fruit than to choose from one extra large fruit when the remainder on that plant were small. For this reason corn should be selected in the field from vigorous plants. Some individuals show a strong tendency to revert to inferior ancestors. It is best to discontinue selecting from such plants and choose from another having the same desirable characters but showing less tendency to revert.

IMPROVEMENT OF SEA-ISLAND COTTON BY SELECTION.

This is an example of what may be gained by persistent and methodical selection. Formerly the proportion of lint to seed by weight was about 1 to 5. Now it is frequently 1 to 3. Mr. W. A. Clark, a grower who bred towards a long fiber, has succeeded in increasing the length 25 to 30 per cent and sells his finest grades from selected plants at 50 to 60 cents per pound, while the ordinary product is quoted at 15 to 30 cents. This long fiber is used for adulterating silk and for other special purposes. In a similar manner another grower bred towards a heavier yield.

The method of selecting is interesting. The progeny of a single carefully selected individual is cultivated in a plot by itself. The best plant is chosen for the next year. The seed from the plot sows about five acres, and this then furnishes the seed for the general crop the fourth year. But, since each year the finest plant is chosen from the five hundred for seeding the five acres, there is a constant tendency towards the ideal.

FIXATION OF SEED RACES BY SELECTION.

When, by any method, a sought-for character is obtained, this character must be fixed by constant selection. For example, Mr. Clark succeeded in producing an upland cotton with smooth black seeds (no short hair at the base of the lint) by selecting for five generations. "Mr. Clark selected at random and planted a quantity of smooth, black seeds from the ordinary upland cotton, and the great majority of the resulting plants produced the ordinary tufted seed, but a few had mainly smooth black seed like those from which the plants were grown. Seeds were selected from the few plants which produced mainly smooth black seed, and were planted the second year. This season a much larger proportion of the plants produced smooth black seed, but still many produced the ordinary tufted seed. Seeds were again selected from the plants producing smooth seed and planted the third year, and so on through five generations, when the character was fully fixed, and all the plants came true, producing only the smooth black seed." The author goes on to show that it is often necessary to produce a race which is prepotent to its own pollen in order to offset the tendency to cross-fertilize and hence break away from the established type. The large seed firms counteract this tendency by a system of vigorous "roguing" (a constant destruction of all plants which depart from the type).

EFFECT OF CROSS-FERTILIZATION IN SELECTION.

As stated above the effect of crossing must be guarded against. "In the fixation of hybrids inbreeding is apparently very necessary, but doubtless results in lessened vigor." It is, therefore, best to select a number of individuals possessing the required characters and grow these in a square plot (rather than in a row), thus allowing free crossing, but there will be less tendency to diverge from the type.

LIMITATIONS OF SELECTION.

I can not do better here than quote a few sentences. "In the words of Henri de Vilmorin, 'Cross-breeding greatly increases the chance of wide variation, but it makes the task of fixation more difficult. It, however, gives the raiser the only means in his possession to unite in one the qualities of two different plants while discarding their weak points. . . .' It would hardly be possible to obtain in a lifetime by selection a markedly hardy orange or rose, a fragrant pansy, or a new creation like Burbank's hybrid walnut or raspberry-blackberry hybrid, 'Primus,' although it is just possible that such changes could be ultimately secured by this means. The most feasible and by far the quickest way to secure such decided variations and new creations is by hybridizing different species or sorts."

Space will not permit a more extended mention of the numerous interesting facts presented in this article of 32 pages. He gives numerous examples of successful production of types by selection, such as the sugar-beet, tomato, and sweet pea.

In view of the recent discussion in the Kansas Farmer upon breeding by the selection of strawberry plants it will be of interest to know what Mr. Webber gives upon this point. He cites a number of examples to show that very decided types may be produced in this manner. He sums up his results upon this as follows: "Sufficient examples have been given to show conclusively that selection may play a very important part in the improvement of plants propagated by vegetable parts. Doubtless extremely valuable improvements, particularly increased productiveness and resistance to disease, can be secured by a careful selection of slips, cuttings, buds, etc. Equally as careful attention should be given to the selection of the mother plants from which these parts are taken for reproduction as is given to the selection of the plants used for seed production."

A. S. HITCHCOCK.
Botanist Kansas Experiment Station.

Horticultural Products of the Philippines.

Excerpts from a paper by Frank H. Hitchcock, Chief of the Section of Foreign Markets, United States Department of Agriculture.

(Continued from last week.)

OIL-SEEDS.

Oleiferous plants occur in considerable numbers. Besides the cocoa-palm, there are the mani, or peanut, the lumbang, or candle-nut, the ajonjoli, or sesame, the tangan-tangan, or castor-bean, and the bayang-cambing. The oil from the last mentioned does not become rancid and is, therefore, employed in perfumery for the preservation of essences.

CACAO.

Numerous other plants grow spontaneously in different parts of the Philippines. Their uses have been determined only so far as the natives have discovered their various qualities. The cacao-tree is found, but not in great numbers. It is not so abundant in the islands of Luzon and the Visayas as it is in some other parts of the archipelago. The district of Davao furnishes the best quality. The total quantity of cacao produced does not amount to more than 2,000 piculs (280,000 pounds). It is consumed at home in the manufacture of a very poor grade of chocolate.

COFFEE.

Coffee is grown successfully in the Philippine archipelago, but the plantations are not nearly so well managed as they might be. Great improvements could be made in the culture of this tree on the plantations in the provinces of La Laguna, Tayabas, and especially Batangas, which is the center of production.

The coffee grown in the Philippines resembles that of Java and of Martinique in flavor. Some enthusiasts even go so far as to claim that it is as good as the finest Mocha. The fact is that when properly selected, roasted, and strained, the coffee drunk at Manila is often exquisite. As a general rule, Philippine coffee is not of the best quality. It could undoubtedly be improved by careful selection.

The annual coffee crop of the Philippines formerly amounted to about 100,000 piculs (14,000,000 pounds), valued at 2,000,000 pesos ($1,600,000), but in recent years the production has been much reduced by the ravages of an insect that destroys the trees. A large part of the coffee raised in the islands is exported to Spain.

THE COCOA-PALM AND ITS PRODUCTS.

There are several species of cocoa-palms growing in the archipelago, but the ordinary cocoanut-tree (Cocos nucifera) is the most important. The Indians make use of it in a great many ways, but only the principal ones need be enumerated. The kernel of the nut they use for food, while the liquid the shell contains makes a refreshing drink. If allowed to stand for some time, this liquid forms a very agreeable milky juice that is relished not only by the natives but by Europeans as well. After this juice has coagulated, it is mixed with sugar and made into bonbons, known as cocoa sugar, and also into various other delicacies. By tapping the central bud that crowns the cocoanut-tree, a kind of wine, called tuba, of an agreeably pungent taste is produced. This tuba, when allowed to ferment, produces vinegar, and when distilled, a kind of brandy, that is highly relished by the natives. From the husk of the cocoanut the Tagals make ropes and cords, and a material for calking their boats. From the woody shell they carve spoons, cups, beads for rosaries, and many other articles. The leaves they use to cover the roofs of their houses. Roofs made in this manner are thick and tight, but they have the disadvantage of burning readily, so that in the towns and villages where the houses are thus covered conflagrations spread with great rapidity. The veins and smaller ribs of the leaves are used to make brooms, the midribs serve as fuel, and the ashes are utilized in making soap. The trunk of the palm is made to serve as a pillar to support the houses that its leaves overshadow. Oil barrels, tuba casks, and water pipes are fashioned from hollow sections of the trunk. From the roots the natives extract a red dyeing material that they chew in place of the Areca palm nuts or bonga when the latter can not be procured.

Large quantities of cocoanut-oil are manufactured in the Philippines. This oil is much prized by the natives. The men and the women both use it to anoint the thick growth of hair that adorns their heads, and it thus finds a ready sale at remunerative prices. It is also used in the lamps that take the place of gas burners on the streets, and in those used by the natives and Chinese in their houses.

Manila exports annually about 150,000 pesos ($120,000) worth of cocoanuts to China and British India, and about 30,000 pesos ($23,000) worth of cocoanut-oil to China.

THE BAMBOO.

After the cocoa-palm, with its manifold uses, should be mentioned the bamboo. This tropical plant grows in many different localities, but the more elevated regions supply the hardest and most durable wood. The young and tender shoots of the bamboo make a very acceptable article of food. They are eaten in the form of salads, sauces, and other dishes. In years of long-continued drought they even take the place of rice to a considerable extent.

When the branches of the bamboo are from 3 to 4 months old, they are in the proper stage to be used in the manufacture of hats, baskets, harnesses for buffaloes, etc. Later on, when it has reached its full growth, the fiber is employed for making well-ropes and other cords to be used in water. Ropes made from this fiber are said to withstand moisture for a long period.

SPICES, AND MEDICINAL AND ORNAMENTAL PLANTS.

Of spices, the Philippines furnish cinnamon, nutmegs, pepper, ginger, and marjoram.

Medicinal plants are abundant, but most of them are little known. Among the most familiar are the papaw, which has already been mentioned among the fruits. Several kinds of ipecacuanha occur, and also the dita (Alstonia scholaris), a kind of cinchona, from the bark of which ditaine is obtained, and the parsonia, whose stems boiled in cocoanut-oil form a balsam used for healing wounds.

Aromatic and ornamental plants are not wanting in the Philippine Islands, but as they grow wild in such profusion no care is bestowed upon them. Among such plants may be mentioned magnolias, camellias, clematis, several kinds of roses, dahlias, the Ylang-ylang, from which a sweet perfume oil is extracted, the papua, the jessamine, and many species of ferns and orchids.

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.

EXAMINATION

Butter-Makers' Class at Kansas State Dairy Association.

Examiner—H. Van Leeuwen.
Judge—Prof. H. M. Cottrell.

(Continued from June 29.)

X. Describe the principles of the separation of cream from milk by centrifugal force.

C. H. Goebel—The milk being the heavier will run to the outside of the bowl, and the cream being the lighter will stay on the inside, or in the center of the bowl.

N. H. Skourap—The particles of which milk is composed are separated by gravity, the lighter particles gathering towards the center and the heavier ones gathering toward the outside.

J. E. Musser—The milk is dropped to the center of the bowl, and from there is thrown to the outside of the bowl, the cream going up towards the center of the bowl by reason of its being lighter than the skim-milk, and the centrifugal force throwing the milk to the outside of the bowl.

P. G. Huffman—The cream being so much lighter, the revolutions of the milk in the bowl force the cream to the top.

XI.—Do you cool cream immediately from the separator and reheat to ripen? If so, give your reasons why.

C. H. Goebel—I usually do, but I do not believe that there is any advantage in it.

N. H. Skourap—No, sir.

J. E. Musser—No, sir, I do not cool it below our ripening temperature.

P. G. Huffman—I have tried both ways. As a general rule, we do not cool before ripening.

XII.—(a) To what degree of acidity should cream be ripened to give the best results? (b) Describe your method of preparing a starter. (c) Give what you consider the best temperature for cream ripening both for winter and summer.

C. H. Goebel—(a) I think about .36 of 1 per cent; (b) I take good skim-milk, and pasteurize it by heating from 180° to 200° F.; cool it to 65° or 70°; add the culture, and let it stand for twenty-four hours; (c) 66°.

N. H. Skourap—(a) It would depend a great deal on conditions, but I think that the cream is more liable to be churned not ripe enough than too ripe. (b) As a general rule we need no starter, and when we do we use buttermilk. (c) The best temperature for ripening is about 65° in the winter, and for summer about 58° or 60°.

J. E. Musser—(a) That matter of acidity is a hard subject for any butter-maker to answer. It differs with different cream. We churn from .40 to .45 of 1 per cent; we actually separate at the skimming-station at 50 per cent and have the best results. (b) We take the best sweet milk that we can get; we prefer it skimmed, although we do not always skim it, keep it in a clean place, and when it is a nice velvety clabber we consider it fit for using. (c) About 65° in winter and about 60° in summer.

P. G. Huffman—(a) I think that cream of 35 per cent butter fat ought to be ripened about .6 of 1 per cent. (b) For a commercial starter I would take whole milk and heat it up to about 175°, hold it there for an hour and then add the commercial starter; keep it until it ripens, then use pasteurized cream and put it in and hold it until it commences to sour. (c) I think in the summer time about 65° and in the winter time from 70° to 75° F.

XIII.—Do you favor a commercial starter or a home-made starter, and what per cent should be used during the winter and summer months?

C. H. Goebel—I favor a commercial starter; 20 per cent in the winter and about 15 per cent in the summer.

N. H. Skourap—If I had to use a starter I would use a commercial starter. I would use my judgment as to the amount.

J. E. Musser—If I made butter for a foreign market I would use a commercial starter, and if for the home market I would use a home-made starter. About 14 per cent.

P. G. Huffman—I favor a commercial starter, about 15 to 20 per cent during the winter and about 15 per cent during the summer.

Success to the Man Who Reads and Thinks.

Among the questions asked of creamery patrons by the Kansas Experiment Station is, "What dairy or farm paper do you read?" Out of 77 patrons who answered this question we obtained the following record: Kansas Farmer 5, Orange Judd Farmer 5, Live Stock Indicator 4, Philadelphia Farm Journal 3, American Agriculturist 2, Hoard's Dairyman 1, Farm and Home 1, Farm and Fireside 1, Agriculturist Epitomist 1, and Drover's Telegram 1. There were 53, or 69 per cent, of the patrons who reported that they read no dairy or farm paper.

In looking over the details of the above records it is interesting to note that the best records were made by those who kept posted and studied their business. The highest yield was made by a man who keeps special dairy cows and subscribes for a dairy paper. This patron realized $9 per cow per annum more than the next best patron who reads no paper, and $36 per cow more than the poorest patron.

Because a man subscribes for a farm paper is no guarantee that his cows will yield large quantities of milk, but it has a strong tendency in that direction. No doctor could expect to succeed without keeping himself posted along the line of his profession. It is true that experience is the best teacher, but the tuition is high, and no man can expect to accumulate even a small fraction of the world's experience through his own unaided efforts. If he is to keep himself posted he must learn by the experience of others, and how can he do this except he reads literature pertaining to his profession? Nowhere is intelligence needed more and never can it be applied to better advantage than in dairy farming. In collecting records from various parts of the State we find that where intelligence is applied to the dairy industry the cow is yielding from $60 to $80 in dairy products per annum. Contrast this with $20 to $30 without intelligence and no one need ask if education pays. At the Kansas Experiment Station we find that intelligence applied to feeding will cause calves to gain from 12 to 23 pounds per week instead of 7 to 10 pounds. The man who never reads a farm paper will know nothing about these facts. He will still continue in the old rut, and say he doesn't believe in book farming, that education will not help the farmer, that the men who write for papers know nothing about farming. Some day these men will wake up, feel of their pocketbooks and find that they are behind the times. Sixty-nine of the dairy farmers without a farm paper! Just think of it! No wonder so many Kansas cows produce under 125 pounds of butter per annum; no wonder there are so many complaints about sour milk and about poor calves raised on skim-milk. This is an age when intelligence can be turned into cash; when, as Secretary Coburn says, "Muscle to win must be lubricated with brains."

D. H. O.

Shall the Agricultural College Test Pure-blood Stock?

W. C. Moore, of Junction City, Kans., has recently made arrangements to have a Jersey heifer tested by the agricultural college for the production of milk and butter fat. The college is to have all the milk, for which it is to bear the expense of feed and care and is to do all it can to develop the milk-producing qualities of the heifer.

The college is already making records with common or scrub cows, having obtained as high as 451 pounds of butter from a single cow in one year. Who can tell what the result might have been had we had pure-blood Jerseys instead of scrubs? The college funds have been so limited that there has been but little opportunity to test the blooded stock. A comparison of pure bloods with common stock will be both interesting and valuable to the dairy interests of Kansas and it is to be hoped that others who may have blooded stock and do not have facilities for making records will follow Mr. Moore's example and loan them to the college.

A new 100-stall cow barn is to be erected on the college farm this summer which will furnish excellent opportunities for carrying on the tests. Results would of course be published and the advertisements thus obtained, the value of the calf and the increased productiveness of the cow (which quality would also be transmitted to her offspring) would undoubtedly pay good interest on the investment. Since one Jersey breeder has started the ball rolling let others follow. If Jerseys are better than scrubs let them be placed side by side under the same conditions and tested. It will be one of the very best means of advertising the breed.

Probably there are more Shorthorns in the State of Kansas than any other breed and not a few advertise them as good milkers and general-purpose animals. Why can not the enterprising breeders of these cattle loan representatives of their herds to the college, place them beside the Jersey and the scrub and let the world know what they can do?

If sufficient interest could be aroused in this kind of a test to have a number of representatives of any one breed, doubtless some arrangement could be made to have the college keep a first-class pure-blood sire and raise the calves at a nominal cost. The male offspring from the loaned cows would make excellent sires to head the home herd and the heifers would be prized as valuable additions to the herd.

The college would not undertake a scheme of this kind to make money; simply pay expenses and publish the results for the benefit of the farmers and breeders of the State.

Any one interested along this line please write at once and tell us what you would be willing to do.

D. H. O.

Effects of Changing Milkers.

During the last three months at the college dairy it was found necessary to change milkers several times. In order to see what effect the changes had on the yield of milk, the records of the different changes have been figured out for three days previous to the change and three days afterward.

In all cases the milk yield was increased under the new milker. This ranged from 2.2 to 7.7 per day for the six to nine cows milked by one individual. We understand that these results are contrary to those most often obtained. As a rule the yield is decreased.

We are inclined to think that whether there is an increase or decrease will depend upon the kind of person that the new milker is. If kind and easy with the cows they will increase, and if he is rough, talks sharp and harsh, they will resent such treatment by a decrease in the milk.

The cow, after all, is a machine only so far as the converting of raw material into a more finished product is concerned. In every other sense she is very much alive, and is very much influenced by her surroundings and the treatment she receives.

Harsh treatment and poor surroundings will make the best cow poor, and kind treatment and good care will make a poor cow much better.

J. A. CONOVER.

Horn-fly Remedy.

During the past two weeks, the department of entomology of the Kansas State Agricultural College has been experimenting with various mixtures for combating the horn-fly, the aim in view being to secure a cheap and effective mixture. One of the most promising mixtures is the following. It appears to be both effective and cheap. It is made as follows:

1 cake washing soap.
24 quarts of water.
2 quarts fish-oil.
2 quarts pine-tar.
2 quarts kerosene.

Make fine shavings of the soap, and dissolve them in the boiling water. Put the pine-tar with the kerosene, and add it, together with the fish-oil, to the boiling hot soap-suds. Churn the whole mixture thoroughly for several minutes. When applied with a brush, the mixture repels the flies for about forty hours. It can be made for about 10 cents a gallon. It should be thoroughly stirred while it is being applied.

This coming week, attempts will be made

to improve this mixture. A series of tests are in progress, comparing this mixture with various remedies offered in the market, the results of which will be given to the public in the near future.

PERCY J. PARROTT.

Cleanliness and the Tramp.

I will relate an amusing incident I saw happen in a creamery I visited a short time ago. The creamery was as clean and neat as any could be. There was not a speck of dirt on the floor or about any of the machinery. The door was opened and a tramp came in with muddy boots. It was rainy at the time. He made one step on the inside and stopped as soon as he saw the condition of the room, looked at his muddy feet, took off his hat and apologized for coming in in such a hurry with so much mud on his feet.

If that creamery had been dirty and grimy, as some are, that tramp would not have stopped at the door and apologized, but would have gone in and gotten the buttermilk he wanted without looking at his feet. Brother Buttermaker, do you keep your creamery so clean that a tramp will stop at the door, take off his hat and offer an apology for coming in? If not, try it and see what a difference it will have on the looks of the place, and also on the quality of the product made.—G. B. Lawson, in Creamery Journal.

Scientific Aids.

With a view to encouraging graduates of colleges receiving aid from the United States to pursue post-graduate studies relating to agriculture, the Secretary of Agriculture has addressed the following letter to the presidents of all agricultural colleges:

United States Department of Agriculture.
Office of Secretary,
Washington, D. C., June 27, 1899.

Dear Sir—In my annual report to the President for 1898 I announced my intention of affording opportunities for graduates of agricultural colleges to pursue post-graduate studies in connection with work in the scientific divisions of this Department as far as practicable. In pursuance of this policy I have made an arrangement with the Civil Service Commission for the registration of the graduates of colleges receiving the benefits of grants of land or money from the United States, who may desire to enter the service of the Department as "scientific aids" on the terms stated in the notice of the Commission herewith inclosed.

It seems to me entirely appropriate that the national Government should aid the institutions to which it has already so largely given financial support in the preparation of their graduates for posts of usefulness in this department or in the States from which they come, especially as investigators and teachers along scientific lines. I hope, therefore, that the effort which I am now making in this direction will be but a beginning of the opening up of opportunities for graduate study at the national capital to those of your graduates who are especially fitted to do high-grade scientific work. It will, of course, be understood that under present conditions the Department can admit only a very limited number of scientific aids. Our purpose is to choose from the eligible register those persons who furnish the best evidence of having peculiarly good qualifications for aiding in the work of the Department now in progress. In extending this notice will you kindly explain to your graduates the necessity of making a clear and full statement of their attainments and qualifications in special lines of science? Correspondence regarding application blanks and other matters connected with registration should be had promptly with the Civil Service Commission.

Very respectfully,
JAMES WILSON,
Secretary.

The notice of the Civil Service Commission follows:

SCIENTIFIC AID, DEPARTMENT OF AGRICULTURE, AUGUST 1, 1899.

The United States Civil Service Commission announces that it desires to establish an eligible register for the position of scientific aid, Department of Agriculture.

The examination will consist of the subjects mentioned below, which will be weighted as follows:

Subjects.	Weights.
(1) College course, with Bachelor's degree	50
(2) Post-graduate course and special qualifications	25
(3) Thesis or other literature	25
Total	100

It will be noted that applicants will not be required to appear at any place for examination, but will be required to file with the Commission prior to the hour of closing business on August 1, 1899, their statements and other material which will be required as specified in a special form which will be furnished them by the Commission together with application blank (form 304), in order to have their names entered upon the register which will be made immediately after the date mentioned. Persons who are unable to file their applications prior to August 1, 1899, may file them at any subsequent time, when they will be rated and the names of those attaining eligible averages will be entered upon the register.

For the information of applicants the following statement is made, as received from the Secretary of Agriculture:

First—Applicants will be limited to graduates of colleges receiving the benefits of grants of land or money from the United States.

Second—Each applicant must file with the United States Civil Service Commission, Washington, D. C., a properly certified statement as to the length of time spent in college, the studies pursued, the standing in these studies, the special work it is desired to take up, and the special qualifications for such work, and finally a thesis upon such special scientific subject as the applicant may select, or in lieu of this any literature on scientific subjects published over his own signature.

Third—The length of time any scientific aid may serve in the Department is limited to two (2) years.

Fourth—The salary shall not exceed forty dollars ($40) per month.

The minimum age limitation for entrance to this examination is twenty (20) years; there is no maximum age limitation.

This examination is open to all citizens of the United States who comply with the requirements. All such citizens are invited to apply. They will be examined, graded, and certified, without regard to any consideration save their ability as shown by them in the examination. Persons desiring to compete should at once apply to the United States Civil Service Commission, Washington, D. C., for application blanks (form 304), and special forms.

Gossip About Stock.

W. H. Wren, Marion, Kans., informs the Farmer that he has decidedly the best lot of Poland-Chinas for sale that he has ever raised. For ready sale he has 15 gilts of last summer and fall farrow, sired by What's Wanted Wilkes 20453 and Waterloo Chief 20140; also a fine lot of early spring boar pigs; also two registered saddle stallions.

It is proposed to hold a two days' meeting of the Missouri and Kansas Shorthorn Breeders' Association at Kansas City, Mo., August 22 and 23, 1899. Matters of supreme importance to the Shorthorn breeders' fraternity are to be considered. Breeders who can be present should notify the secretary, W. P. Brush, Station A, Kansas City, Mo., at once, so that the necessary provisions may be made in time for the meeting.

The best opportunity to secure pure-bred Galloway bulls in lot to suit is offered by our advertiser, the noted breeder, J. W. Lowe, Kansas City, Mo.

D. P. Norton, Dunlap, Morris County, Kansas, is meeting with wonderful success in the sale of Shorthorn cattle, and what is still better, his customers are well pleased, judging from the letters that he received which he sent this office for perusal. Mr. Norton may well feel proud of these unsolicited testimonials of his stock and business methods.

Dietrich & Spaulding, proprietors of Highland Herd Poland-Chinas, Richmond, Kans., report as follows: The pig crop is short in our section of the State this year. We have less than one-half our usual amount. What we have are sired by the Dewey among Poland-Chinas, "Knox All Wilkes," Highland Chief, Silver Chief, Jr., and Seldom's Look. We have the finest lot of spring pigs we ever raised and they are selling already. We do not intend to ask large figures, but we will only ship high-class stuff. We recently shipped boar to Oklahoma, two, boar and sow, to Grand Junction, Colo., fine herd boar to Geo. Lynn, Neosho Falls, Kans., Knox All Wilkes, Jr., to James S. Shaw, Plainville, Kans.

The Nickel Plate Road

will sell excursion tickets to Chautauqua Lake and return on July 28, at one fare for the round trip, with return limit of August 29, 1899, by depositing ticket at Chautauqua not later than July 31. Tickets good on any of our three daily trains. Cheap rates to other Eastern points. Van Buren St. Passenger Station, on the Loop. For further information, address the General Agent, 111 Adams St., Chicago. (24)

Notice of Appointment--Administrator.

State of Kansas, Shawnee County, ss.
In the matter of the estate of John S. Firey, late of Shawnee County, Kansas.

Notice is hereby given, that on the 7th day of July, A. D. 1899, the undersigned was, by the Probate Court of Shawnee County, Kansas, duly appointed and qualified as administrator of the estate of John S. Firey, deceased, late of Shawnee County. All parties interested in said estate will take notice, and govern themselves accordingly. J. B. McAFEE, Administrator.

MARKET REPORTS.

Kansas City Live Stock.

Kansas City, July 10.—Cattle—Receipts since Saturday, 5,322; calves, 467; shipped Saturday, 536 cattle; no calves. The market was steady to weak. The following are representative sales:

DRESSED BEEF AND SHIPPING STEERS.

No.	Ave.	Price.	No.	Ave.	Price.
120 J. A.	1,364	$5.40	32 yrl.	757	$5.35
10	1,044	5.30	108	1,163	5.25
58	1,157	5.15	19	1,295	5.10
25	922	4.75	1	640	4.00

WESTERN STEERS.

29	1,397	$5.10	19	371	$5.00
125 T	1,161	5.00	31	941	4.75
1 T	1,390	4.35	26 grs	1,011	4.25

NATIVE HEIFERS.

11	683	$4.65	1	410	4.50
4	855	$4.35	9	684	4.25
1	700	4.00			

NATIVE COWS.

2	1,220	$4.25	3	1,160	$4.00
10	1,047	3.75	5	1,066	3.40
11	734	3.10	2	1,055	2.75
1	900	2.25	1	760	2.00

NATIVE FEEDERS.

1	1,030	$4.90	22	934	$4.70
1	900	4.50	1	1,000	4.25
1 J	900	3.75			

NATIVE STOCKERS.

2	710	$5.00	8	625	$4.85
22	617	4.80	2	410	4.75
8	835	4.45	4	770	4.25
1 J	880	3.75	1 J	710	3.25

Hogs—Receipts since Saturday, 6,559; shipped Saturday, 1,480. The market was strong to 5c higher. The following are representative sales:

69...276	$4.05	74...243	$4.05	72...281	$4.05
76...244	4.02½	70...269	4.02½	72...260	4.02½
57...278	4.00	71...249	4.00	79...243	4.00
55...216	3.97½	88...225	3.97½	51...232	3.97½
71...213	3.95	33...258	3.95	87...207	3.95
73...220	3.95	51...201	3.95	58...440	3.95
74...231	3.92½	73...200	3.92½	88...197	3.92½
55...214	3.90	91...197	3.90	70...224	3.90
84...220	3.90	82...200	3.90	92...199	3.90
89...195	3.87½	82...174	3.87½	92...185	3.87½
86...195	3.85	72...185	3.85	82...190	3.85
103...185	3.85	82...178	3.82½	81...193	3.82½
20...153	3.80	8...155	3.80	63...150	3.80
82...166	3.80	19...142	3.77½	89...165	3.77½
15...151	3.75	9...126	3.75	66...150	3.75
8...138	3.72½	11...137	3.70	15...114	3.70
6...136	3.67½	36...109	3.55	1...400	3.50
4...327	3.45	32...106	3.35	1...340	3.00

Sheep—Receipts since Saturday, 2,522; shipped Saturday, 800. The market was steady and lambs unevenly lower. The following are representative sales:

71 nat. lbs...	64	$5.80	27 nat. lbs...	52	$5.75
1,520 Ar. lbs....	56	5.50	13 nat. lbs...	64	5.00
24 nat. sh...	86	4.35	17 nat. sh....	105	4.25
335 old ew....	82	3.65	72 Ariz.....	50	3.50

St. Louis Live Stock.

St. Louis, July 10.—Cattle—Receipts, 3,500; market steady to strong; beef steers, $4.75@5.75, the outside for fancy; light steers to dressed beef grades, $3.75@5.00; stockers and feeders, $3.25@5.00; cows and heifers, $2.50@5.00; Texas and Indian steers, $3.40@5.00; cows and heifers, $2.30@3.80.

Hogs—Receipts, 2,500; market 5c higher; pigs and lights, $3.90@4.05; packers, $3.85@4.00; butchers, $3.95@4.10.

Sheep—Receipts, 800; market strong; natives, $3.00@4.60; lambs, $4.50@6.25; Texas sheep, $3.75@4.10.

Chicago Live Stock.

Chicago, July 10.—Cattle—Receipts, 21,000; market steady; beeves, $4.60@5.85; cows and heifers, $2.00@5.10; Texas steers, $3.65@4.85; stockers and feeders, $4.00@5.25.

Hogs—Receipts, 42,000; market strong to 5c higher; mixed and butchers, $3.90@4.07½; good heavy, $3.95@4.10; rough heavy, $3.80@3.90; light, $3.90@4.05.

Sheep—Receipts, 15,000; market easy; natives, $3.25@5.40; lambs, $4.00@6.90.

Chicago Grain and Provisions.

July 10.	Opened	High'st	Lowest	Closing
Wh't—July	71¾	72⅛	71½	71¾
Sept	73	73⅜	72⅞	73
Dec	74¾	75⅛	74½	74¾
Corn—July	33½	33⅝	33½	33½
Sept	33¾	33⅞	33⅝	33¾
Dec	23⅛	23⅛	32⅞	32⅞
Oats—July	23⅝	23½	23⅜	23⅜
Sept	20⅝	20⅝	20⅜	20⅜
Dec	21	21	20¾	20⅞
Pork—July	8 65	8 65	8 65	8 65
Sept	8 80	8 90	8 97½	8 80
Lard—July	5 25	5 25	5 25	5 25
Sept	5 37½	5 40	5 35	5 37½
Ribs—July	5 00	5 00	5 00	4 00
Sept	5 10	5 15	5 07½	5 10

Chicago Cash Grain.

Chicago, July 10.—Wheat—Cash, No. 2 red, 73@74½c; No. 3 red, 71@72½c; No. 2 hard winter, 71c; No. 3 hard winter, 70@71c; No. 1 northern spring, 72½@73¼c; No. 2 northern spring, 71½@72½c; No. 3 northern spring, 69@71½c.

Corn—Cash, No. 2, 34c; No. 3, 33½@34c.

Oats—Cash, No. 2, 24½@25c; No. 3, 24c.

St. Louis Cash Grain.

St. Louis, July 10.—Wheat—Cash, No. 2 red, elevator, 74½c; track, 75@75½c; No. 2 hard, 71c.

Corn—Cash, No. 2, 34c; track, 35½c.

Oats—Cash, No. 2, 26c; track, 26½@27c; No. 2 white, 29¾c.

Kansas City Grain.

Kansas City, July 10.—Wheat—Receipts here to-day were 61 cars; a week ago, 166 cars; a year ago, 44 cars. Sales by sample on track: Hard, No. 2, 67@68c; No. 3 hard, 65@67½c; No. 4 hard, 62½@64c; rejected hard, nominally 59@63c. Soft, No 1, 70½@71½c; No. 3 red, 67½c; No. 4 red, 62@64½c; rejected, 62@63½c. Spring, No. 3, 64c.

Corn—Receipts here to-day were 27 cars; a week ago, 53 cars; a year ago, 68 cars. Sales by sample on track: Mixed, No. 2, 32¼@32½c; No. 3 mixed, 31¾@32c; No. 4 mixed, 23½c; no grade, 24½c. White, No. 2, 32¾c; No. 3 white, 32c; No. 4 white, 28c.

Oats—Receipts here to-day were 7 cars; a week ago, 9 cars; a year ago, 12 cars. Sales by sample on track: Mixed, No. 2, nominally 25@26c; No. 3 mixed, 23½c; No. 4 mixed, 20@22c. White, No. 2, 28@28½c; No. 3 white, 28@28¼c; No. 4 white, nominally 26@27c.

Rye—No. 2, nominally 57c; No. 3, nominally 56c; No. 4, nominally 55c.

Hay—Receipts here to-day were 13 cars; a week ago, 63 cars; a year ago, 24 cars. Quotations are: Choice prairie, $6.25@6.50; new, $5.00@5.75. Timothy, choice, $7.50@7.75. Clover, pure, $5.50@7.00. Alfalfa, $6.00@7.00.

Kansas City Produce.

Kansas City, July 10.—Eggs—Strictly fresh, 10c per doz.

Butter—Extra fancy separator, 16½c; firsts, 14½c; seconds, 11c; dairy, fancy, 13c; store packed, 11c; packing stock, 10½c.

Poultry—Hens, 7½c; broilers, 11½c; roosters, 20c each; ducks, 5@8c; geese, 5@7c; turkeys, hens, 7c; toms, 6c; pigeons, $1.00 per doz.

Berries—Gooseberries, $1.35@1.50 per crate. Currants, $2.00@2.25 per crate. Blackberries, $1.00@1.75 per crate. Raspberries, $1.50@2.00 per crate.

Vegetables—Lettuce, home grown, 15@25c per bu. Pieplant, 10c per doz. bunches. Spinach, home grown, 60@75c per bu. Asparagus, home grown, 25@40c per doz. bunches. Radishes, 5c per doz. bunches. Green beans, 20@35c per bu. Peas, 40@75c per bu. Sweet corn, 3@6c per doz. Tomatoes, home grown, 50@60c per peck. Cucumbers, 10@30c per doz. Cabbage, home grown, 50@75c per doz.

Potatoes—Home grown, new, 40@50c per bu.

THE STRAY LIST.

FOR WEEK ENDING JUNE 29, 1899.

Mitchell County—Chas. E. Ewing, Clerk.

COW—Taken up by Theodore Poelma, May 23, 1899, in Solomon Rapids tp., (P. O. Beloit), one dark brown cow, about 8 years old, with white spots on legs, dehorned; valued at $25.

Marshall County—James Montgomery, Clerk.

HOGS—Taken up by T. L. Harper, in Noble tp., June 1, 1899, three black hogs, about 9 months old, weight, about 100 pounds, two sows and one barrow; valued at $13.

FOR WEEK ENDING JULY 6, 1899.

Cherokee County—S. W. Swinney, Clerk.

HORSE—Taken up by Wick Aubert, June 5, 1899, in Pleasant View tp., 1 roan horse, 15 hands high, 9 years old; valued at $30.

MARE—Taken up by W. H. Vickers, June 6, 1899 in Spring Valley tp., 1 black mare, 15½ hands high, 7 years old, no marks or brands; valued at $15.

Labette County—E. H. Hughes, Clerk.

HORSE—Taken up by G. A. Madison, June 15, 1899, in Elm Grove tp. (P. O. Edna), 1 gray horse, 4 feet 8 inches high, marks of medicine on both shoulders, no brands.

FOR WEEK ENDING JULY 13, 1899.

Lyon County—H. E. Peach, Clerk.

STEER—Taken up by M. D. Frost, in Agnes City tp., June 26, 1899, one red steer, 2 years old, branded "F" on left side, and underbit in left ear; valued at $20.

Coffey County—Dan K. Swearingen, Clerk.

MARE—Taken up by G. J. Wheeler, in Burlington tp., (P. O. Burlington), May 25, 1899, one black mare, about 15 years old, weight about 800 pounds, left hip sunken, white in face, breast sore from collar; no marks or brands.

The Poultry Yard

POULTRY EXPERIMENTS.

Excerpts from Bulletin No. 60, Utah Experiment Station, by James Dryden.

(Continued from last week.)

MONTHLY EGG RECORD.

Table III gives the number of eggs laid by each pen during each month, and the total for the year. Table V gives the value in cents of the eggs laid each month, and the total value for the year. The market prices for the eggs are given for each month at the bottom of the table, and it is on these prices that the monthly value of the eggs laid is computed.

TABLE No. III—Egg Record.

Pen.	Nov.	Dec.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Total.
1	33	71	52	49	47	85	102	99	54	85	70	54	801
2	25	66	53	65	70	96	91	98	62	62	59	38	785
3	..	36	35	35	52	83	94	94	85	85	94	61	754
4	..	..	..	10	70	92	80	82	77	88	58	14	571
5	..	..	62	48	52	96	107	101	83	86	99	89	823
6	5	12	24	10	51	66	52	54	47	44	24	1	390
7	..	..	..	..	9	59	74	83	95	83	48	73	524
8	..	1	12	..	3	76	78	64	67	61	25	11	388
9	..	..	9	4	8	98	111	110	102	102	81	20	645
10	..	..	13	42	16	91	115	91	96	72	70	29	635

The falling off in laying of pens 1 and 2 in January and February was caused by the severe colds from which some of the fowls suffered during these months, and partly from other causes already mentioned. Pens 3 and 4 also suffered from the same cause or causes; so, doubtless, was the laying of the other pens injuriously affected. The best single month's record was made in July by pen 10, which laid 115 eggs, or an average of twenty-three per fowl. Pen 9 came second with 111 eggs during the same month. Pen 9 made an excellent record during the four months of May, June, July and August, averaging per fowl over twenty-one eggs per month. Pen 5 laid their first egg on January 1st. The best monthly record, when the money value of the eggs produced is considered, was by pen 1 in December, when they produced eggs worth $1.48. The next best record was made by pen 9 in August, when they produced eggs worth $1.41. It will be noticed that pens 5 and 7, late-hatched pullets, made the best records in October, when the price of eggs was the same as in the month of January.

TABLE No. IV.—Value of Eggs in Cents.

Pen.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.		Oct.	Total.
1	55	148	78	51	40	71	85	82	54	106	88	97	$9.55
2	42	138	79	78	57	80	77	82	62	79	74	57	9.05
3	..	75	52	36	43	77	78	78	85	106	117	91	8.38
4	..	..	..	10	57	76	66	67	77	110	72	21	5.56
5	..	..	93	50	43	80	89	84	83	107	124	134	8.87
6	8	25	36	10	44	55	43	45	47	55	30	2	4.00*
7	..	..	..	..	7	49	62	69	95	104	60	109	5.55
8	..	2	18	..	3	63	65	53	57	76	31	17	3.85†
9	..	..	14	4	7	82	92	92	102	141	100	30	6.64
10	..	..	20	44	13	76	96	76	96	89	88	44	6.42
Price of eggs per dozen	20	25	18	12½	10	10	10	10	12	15	15	18	

*Three hens. †Four hens.

Pens 1, 3, 5 and 7 did not stop laying until November. The following are the number of eggs laid by each of those pens in November, till the close of experiment: Pen 1, eight eggs; pen 3, one; pen 5, fifteen; pen 7, ten. These eggs are added to the number laid in October.

PULLETS VERSUS YEAR-OLDS.

Pen 4 of Brown Leghorn pullets in 1896-7 made a record of 181¾ eggs per fowl, worth $1.88, at a food cost of 62 cents. During their second year, under nearly similar conditions as to feeding and management, they laid 114.2 eggs, worth $1.11, at a food cost of 66½ cents. Pen 3, Brown Leghorn pullets, in 1896-7 made a record of 157¾ eggs, worth $1.68, at a food cost of 61¼ cents. During their second year they laid 150.8 eggs worth $1.68, at a food cost of 62.1 cents. During the first year pen 4 produced eggs at a cost of 4.1 cents per dozen; pen 3 at 4.6 cents per dozen. During the second year the cost was 7 cents and 4.9 cents respectively. The data in full are condensed in table VI. During the first year the two pens, 3 and 4, of year-old hens produced eggs at 9.9 cents (without exercise) and 6.9 cents a dozen (with exercise). These two pens were discontinued during the second year. Taking the average of the two, pens 3 and 4, their returns as pullets were 40 per cent better than as year-olds, figuring on the food cost per dozen of eggs.

TABLE No. V.

Pen.	Cost of Food.		No. of Eggs laid.		Value of Eggs.		Food cost per doz.		P'r ct. profit on food.	
	1896-7	1897-8	1896-7	1897-8	1896-7	1897-8	1896-7	1897-8	1896-7	1897-8
	Cts.	Cts.					Cts.	Cts.		
3. No Exercise	61.2	62.1	157¾	150.8	$1.68	$1.68	4.6	4.9	174	170
4. Exercise	62.0	66.5	181¾	114.2	1.88	1.11	4.1	7.0	203	67
Averages	61.7	64.3	175	132.5	1.78	1.395	4.3	6.0	188	118

A TWO YEARS' COMPARISON WITH PULLETS.

Table VI gives the results for two years with two pens of pullets each year. The averages per fowl are given. The "No Exercise" pullets were pen 3 of 1896-7, and pen 2 of 1897-8. The "Exercise" pullets were pen 4 of 1896-7, and pen 1 of 1897-8. As will be seen, the average profit for the two years on cost of food is $1.12 per fowl for the former, and $1.25 for the latter; in other words, a profit of 178 per cent and 194 per cent respectively.

TABLE No. VI.

	Cost of Food.		No. of Eggs Laid.		Value of Eggs.		Food Cost per doz.		P'r ct. profit on food.		Av'g Profit Per Fowl.
	1896-7	1897-8	1896-7	1897-8	1896-7	1897-8	1896-7	1897-8	1896-7	1897-8	
	Cts.	Cts.					Cts.	Cts.			
No Exercise	61.2	64.4	157¾	157	$1.68	$1.81	4.6	4.9	174	182	$1.12
Exercise	62.0	67.0	181¾	160.2	1.88	1.91	4.1	5.0	203	185	1.25

WEIGHT OF EGGS AND COST PER POUND.

Table VII gives the average weights of the eggs from the different pens. The pen numbers are at the head of the columns. The first line shows the average weight in ounces of each egg. The second line, the weight in pounds per dozen; the third column the total average weight of eggs in pounds laid by each fowl during the year. In the last line the cost per dozen of eggs for each of the pens is given.

TABLE No. VII.—Average Weights of Eggs.

	Pen No.									
	1	2	3	4	5	6	7	8	9	10
Weight of each egg in ounces	2.03	2.05	2.07	1.95	1.67	2.01	1.88	2.30	2.07	2.07
Per dozen eggs, pounds	1.52	1.54	1.55	1.46	1.25	1.51	1.41	1.73	1.55	1.55
Per fowl for year, pounds	20.48	20.11	19 53	13.90	17.01	16.33	12.34	14.37	16.69	16.43
Cost per lb. of eggs, cents	3.29	3.18	3.16	4.80	3.52	4.57	*4.60	6.24	4.95	†4.45

*Eight months. †Ten months.

Contrasting the weight of the eggs of pens 3 and 4 in their first and second years, there is very little difference noted. The eggs from pen 3 as pullets, weighed 1.49 pounds per dozen, as against 1.55 as year-olds. Pen 4 as pullets, laid eggs averaging 1.42 pounds per dozen, and 1.46 pounds as year-olds. Taking pen 3, 30 dozen (a caseful) of second-year eggs would be equal in weight to 31.2 dozen of the first-year eggs. In the case of pen 4 there is less difference; 30 dozen of their second-year eggs are equal to 30.8 dozen of their first-year eggs. The pullets of the second year laid heavier eggs than the pullets of the first year. It is also noted that the pens without the exercise laid eggs of greater weight than those with the exercise. This confirms the results of the previous year. Pen 5 laid a very small egg compared with the other pens of Leghorns. A case of eggs from pen 5 would weigh 37.5 pounds against 45.6 pounds from pen 1; in other words, 30 per cent lighter. This goes to prove that eggs from different strains of the same breed of fowls vary very much in weight. The heaviest eggs were laid by pen 8 of Light Brahma hens, the eggs from this pen being 6.3 pounds per case of 30 dozen heavier than those of pen 1. Pen 1 exceeded any other pen in the average total weight of eggs per fowl for the year, the weight being 20.48 pounds. In food cost per pound of eggs, pen 3 leads, followed by pens 2 and 1, the highest cost being for pen 8.

After January 3 there was a considerable reduction in the amount of mash fed. It was found that they were getting more than they would eat up readily, and that "symptoms" of laziness were making themselves manifest, and it was necessary to reduce the amount of mash in order to induce greater exercise.

By taking the average of the total food for the five pens of Brown Leghorns it was found that they consumed 3.23 ounces per day per fowl. That would mean, on the same basis, 20 pounds total food for one hundred Leghorn hens. The two pens of Brahmas averaged 4.55 ounces per day, equal to about 28½ pounds for one hundred such hens. Pens 7 and 10 of Plymouth Rocks averaged 4.32 ounces per fowl, equal to 27 pounds per day for one hundred hens.

It must be noted, of course, that the amount of food consumed varied at different seasons. This is due largely to the fact that a hen in "full flow" of eggs consumes more food than another such hen that is not laying. It is difficult, however, to make any pointed comparisons from this table as to the effect of different quantities of food on egg production, because other conditions, some of which can not be controlled, affect egg production.

TEMPERATURE OF BUILDING.

A record of the minimum temperature of the building was kept during January, February, and March. This temperature was taken at 7 o'clock in the morning, probably the coldest part of the day. Table VIII gives the daily readings and the means for the month. It will be seen that the thermometer got down to 16° in January, and the average for the month was 25° degrees. February averaged 35° and March 37°. No artificial heat was used.

TABLE NO. VIII.—MINIMUM TEMPERATURE OF BUILDING.

	Jan.	Feb.	Mar.
1	26	29	44
2	26	33	38
3	27	32	40
4	28	34	40
5	29	32	39
6	34	31	38
7	38	39	44
8	32	41	46
9	36	30	37
10	36	27	38
11	32	32	33
12	25	39	37
13	20	39	36
14	25	40	34
15	25	41	36
16	30	44	33
17	32	29	37
18	32	27	39
19	34	36	33
20	34	34	38
21	32	....	40
22	32	....	25
23	31	32	26
24	21	33	31
25	18	42	41
26	16	41	37
27	19	40	34
28	21	42	38
29	29	....	34
30	31	....	37
31	27	....	40
Mean	25	35	37

OTHER EXPERIMENTS.

It has been thought best to defer a report until later on the questions of the fertility of eggs, the merits of different incubators, and the effect of different methods in artificial incubation. These important problems are all in active process of incubation, and we hope to publish a bulletin on the results during the present year.

ADDITIONAL EXPERIMENTS.

During the past year an addition was made to our poultry building which doubles the capacity for experimentation. In the new building a series of feeding experiments are now in progress, and these will be reported at the end of the year.

SUMMARY.

The following summarizes the results of the experiments as detailed in this bulletin. Some comparisons are made with the results reported in Bulletin No. 51:

1. During the year it cost an average of 64.3 cents per fowl for food for two pens of R. C. Brown Leghorn year-old hens. During their first year the cost was 61.7 cents per fowl.

2. As pullets they laid an average of 175 eggs per fowl during the year, worth $1.78; as year-olds they averaged 132.5, worth $1.39½.

3. The average food cost per dozen of eggs was 4.3 cents during the first year and 6 cents the second year, or 40 per cent in favor of first year.

4. During the first year, as pullets, there was a profit of 188 per cent on cost of food, and 118 per cent profit as year-olds.

5. Further experiments are necessary to determine definitely the relative value of fowls for egg production at different ages.

6. The best egg record during the second year was made by a pen of Brown Leghorn pullets, hatched June 10. They laid an average of 164.6 eggs per fowl, worth $1.78, at a food cost of 60.5 cents, equal to 4.4 cents per dozen. The per cent profit on food was 194. Two pens of April-hatched pullets averaged 159 eggs, making a profit of about 184 per cent on food cost. The pen of late-hatched pullets was of a different strain from the others and was reared under different conditions and the results are not, therefore, to be accepted as proving anything as to the best time for hatching.

7. As to the effect of exercise, contradictory results were secured. During the first year of pens 3 and 4 it required 22 per cent less food to produce a dozen of eggs with the exercise than without it. During the second year of the same pens the results are decidedly in favor of the pen without the exercise. The test with pullets during the second year gives inconclusive results on the same question.

8. Exercise had little apparent effect on the weight of the fowl, that little being a slight increase in weight.

9. The eggs from the two pens without exercise averaged 4 per cent heavier than those from the two exercised pens. This confirms results of the previous year.

10. The eggs from pens 3 and 4 weighed 3⅓ per cent more during their second year than during their first.

11. The exercise pens consumed a trifle more food than those without the exercise.

12. The eggs from the two pens of Light Brahmas weighed an average of 1.64 pounds per dozen; those from the five pens of Brown Leghorns averaged 1.46 per dozen; or about 12 per cent in favor of the former.

Note.—The conditions were not all favorable during the year for the highest egg production.

Hot Weather Notes.

Years ago I decided it did not pay to have chicks hatched in July and August, and I still think it does not, unless you have good shady runs for them. By placing their coops under the wide-spreading branches of a large apple tree, and after they are a week old, giving them the run of the orchard as soon as the dew is gone, I find they thrive well. For two weeks I feed them five times a day, giving fresh water each time. After that time they are fed three times, and are furnished larger water vessels, care being taken to keep them always in the shade. Shade and fresh water are two things fowls or chicks must have in hot weather if they thrive. I have a fine lot of sturdy fellows now and thriftier chicks I never saw. We are cultivating part of the orchard and it makes an ideal place for July chicks.

For early hatches we place the brooders on a dry, grassy knoll east of the house, where they get the benefit of the first rays of Old Sol, and, indeed, on to his last. We surrounded each brooder with a low, net wire fence and had no trouble with them wandering away from their home. We taught them a call by repeating it every time we fed them, and now since the fence is removed they come from far and from near at the rap, tap, tap upon the tin vessel I always carry with me.

Even in early spring the sun occasionally shines so hot that the chicks need shade other than provided by the brooders. We made low sheds and they enjoyed being

under them when the sun shone hot, and on top when they wanted a sunning.

I intend having chicks hatch each month and raising them with the mother hen. Let me remind others who will do the same to select a cool, shady place for biddie to spend her three weeks of exile in. I find nothing better than the A coop in some secluded nook where the sun can never find her, unless she has found such a place for herself, where she has had no help in filling her nest.

If so, I think it better to remove the eggs as laid and keep them in a cool place, turning them over every day until she decides she has labored long enough, when I reward her with a clean fresh nest and fifteen of the finest eggs obtainable. I set her in faith and am not disappointed.

Let me again remind you to look well to the comfort of the yarded fowls. See that they have plenty of pure, fresh water in clean vessels. Dig up the soil deep and mellow in the shade, where they can cool their heated bodies by rolling and wallowing. Place nests in out of the way corners, where biddie will imagine she is hidden. If half the yard is in grass give them the waste from the garden, mustard, lettuce, radishes, onion tops, and an occasional basket of weeds—and see how they will enjoy the change.—Mrs. Annie B. Bushong in Reliable Poultry Journal.

There is more Catarrh in this section of the country than all other diseases put together, and until the last few years was supposed to be incurable. For a great many years doctors pronounced it a local disease, and prescribed local remedies, and by constantly failing to cure with local treatment, pronounced it incurable. Science has proven catarrh to be a constitutional disease, and, therefore, requires constitutional treatment. Hall's Catarrh Cure, manufactured by F. J. Cheney & Co., Toledo, Ohio, is the only constitutional cure on the market. It is taken internally in doses from 10 drops to a teaspoonful. It acts directly on the blood and mucous surfaces of the system. They offer one hundred dollars for any case it fails to cure. Send for circulars and testimonials. Address, F. J. CHENEY & CO., Toledo, O.

Sold by all Druggists, 75c.

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.

When writing our advertisers please mention Kansas Farmer.

Special Want Column.

"Wanted," "For Sale," "For Exchange," and small or special advertisements for short time, will be inserted in this column, without display, for **10 cents per line,** *of seven words or less,* **per week.** *Initials or a number counted as one word. Cash with the order. It will pay. Try it!*

SPECIAL.—*Until further notice, orders from our subscribers will be received at* **1 cent** *a word or 7 cents a line, cash with order. Stamps taken.*

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

STRAYED—Bay mare, 3 years old, black points, barb-wire scar on right front leg near breast. Reward for return to F. Tucker, A., T. & S. F. blacksmith shops, Topeka, Kans.

FARM FOR SALE—320 acres, ten miles from Topeka, at $20 per acre. Improvements cost $4,000. 60 acres creek-bottom, plenty timber, water, orchard, and small fruits, evergreens and blue grass in front yard. Address T. J. Nichols, 509 Kansas Ave,, Topeka, 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.

ESSEX SWINE, SHETLAND PONIES, SCOTCH Collies, Great Danes, Fox Terriors at half value for next 30 days. All pure bred and registered. Burton & Burton, Topeka, Kans.

PUPS, SCOTCH COLLIES—Eligible to pedigree. (From registered stock), for only $3 and $5. A. P. Chacey, North Topeka, 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.

FOR SALE—$8.00 per acre for improved 160-acre farm 1¼ miles north of Bushong Station, Lyon Co., Kans. Address, J. B. McAfee, Topeka, Kans.

EGGS FROM PURE-BRED WHITE AND BARRED Plymouth Rocks, $1 per 15. S. F. Glass, Marion, Kans.

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

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.

BERKSHIRE SOWS BRED—To farrow in May. Choicest of individuality and breeding, eligible to registry, at $20. Also two fine boars ready for service. Rutger Farms, Russell, Kans.

POLAND-CHINAS—No better anywhere. Five dollars each. Write for breeding. Hemenway, Hope, Kans.

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

TO 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—Poland-Chinas and Duroc-Jerseys, all sizes. Barred Plymouth Rocks and Single Comb Brown Leghorns. Eggs $1 per 15. Write D. Trott, Abilene, Kans.

FOR SALE—Good hedge posts, in car lots. E. W. Melville, Eudora, Kans.

IF you have timothy, clover, prairie, alfalfa, or millet hay to market, correspond with J. W. Lowe & Co., 1313 W. Eleventh street, Kansas City, Mo. Liberal advances on shipments.

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.

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

FOR SALE—Five pure Jersey bull calves, sired by Stoke Pogis Marigold 41095. See cut and breeding in this issue. Light fawn or gray, black switch, solid color, deep, long, fine back, high at setting on of tails—beauties—$15 to $50. Never a better opportunity offered to breed up your herd. Three pure yearling heifers, guaranteed to be safe in calf to the grandly-bred bull, Stoke Pogis Marigold, are also offered. W. C. Moore, Junction City, Kans.

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

WRITE TO ALEX RICHTER—Hollyrood, Kas., 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.

HORSES.

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

STOKE POGIS MARIGOLD.

1500 lbs. at 2 years, 8 months. Full brother to Grace Marigold, 20 lbs. butter at 2 years old.

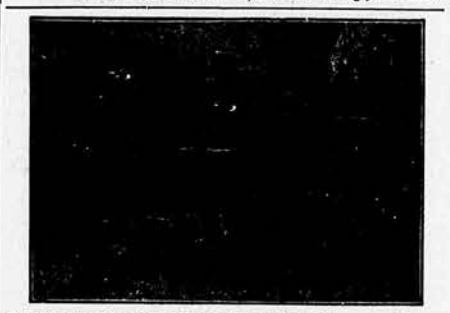
Sire—A son of Ida Marigold (sweepstakes World's Fair cow), 25 lbs., 2½ oz.; sired by a son of Ida of St. Lambert, 30 lbs. of butter in seven days.

Dam—Lady Grace of Upholm, 25 lbs., 5½ oz. (an inbred St. Helier cow), dam of three cows with weekly tests of 20 lbs.

No State Has a Better Bred or Handsomer Bull. He is Better Than His Picture.

(See want "ad.") No Marigold heifers for sale.

W. C. MOORE, Junction City, Kans.



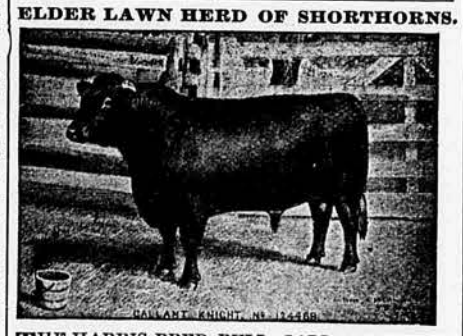
GLENDALE SHORTHORNS, Ottawa, Kans

Leading Scotch and Scotch-topped American families compose the herd, headed by the Cruickshank bulls, Glendon 119370, by Ambassador, dam Galanthus, and Scotland's Charm 127264, by Imp. Lavender Lad, dam by Imp. Baron Cruickshank. Young bulls for sale. C. F. WOLF & SON, Proprietors.

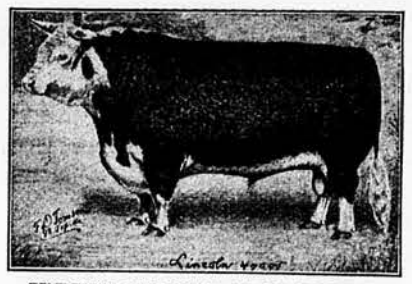
CEDAR HILL FARM.

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

ELDER LAWN HERD OF SHORTHORNS.



THE HARRIS-BRED BULL, GALLANT KNIGHT 124466, a son of Gallahad, out of 8th Linwood Golden Drop, heads herd. Females by the Cruickshank 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.



SPRING VALLEY HEREFORDS.

Lincoln 47095 by Beau Real, and Klondike 42001, at the head of the herd. Young stock of fine quality and extra breeding for sale. Personal inspection invited. ALBERT DILLON, HOPE, KANS.