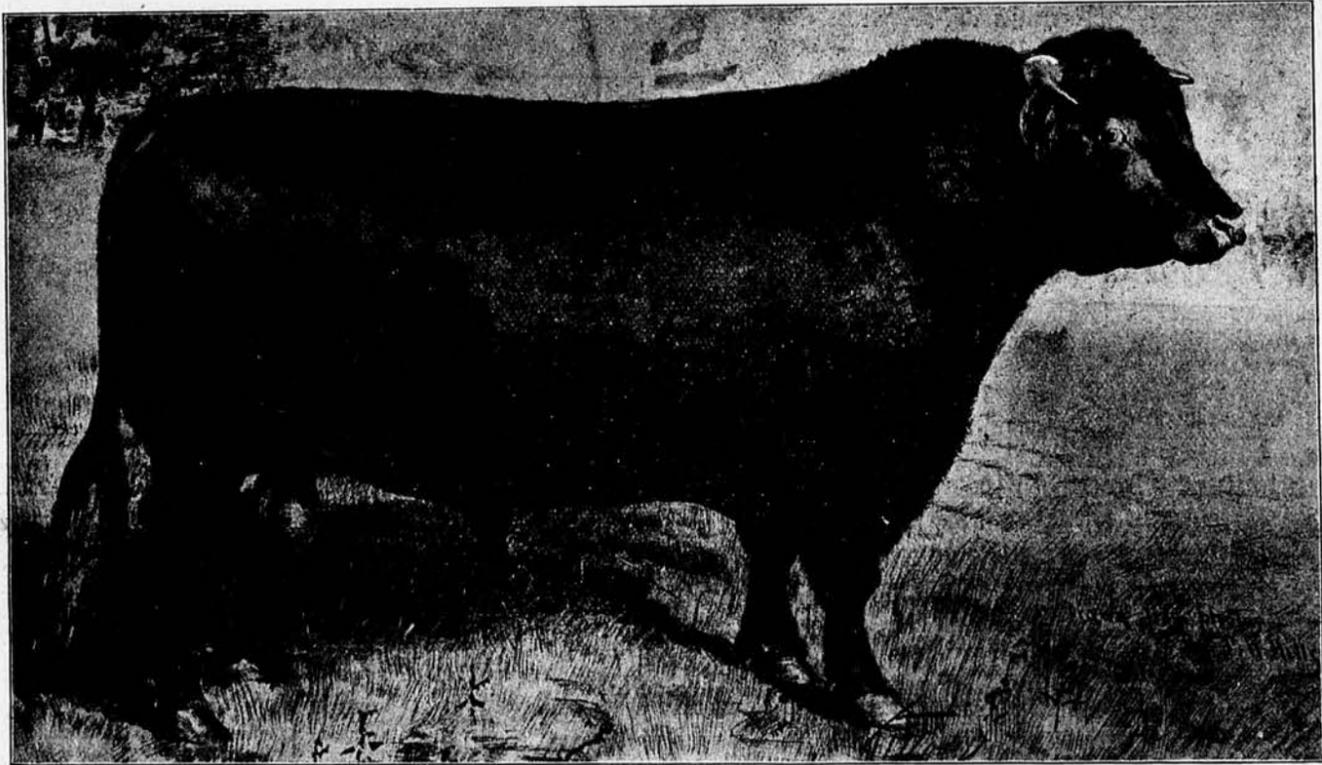


KANSAS FARMER

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TOPEKA, KANSAS, THURSDAY, JUNE 20, 1901.

ESTABLISHED IN 1863.
\$1.00 A YEAR.



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The prize-winning herd bull, owned by T. K. Tomson & Sons, Dover, Kans.

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SWINE.

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

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Duroc-Jerseys.
100 head for this year's trade; all eligible to record.

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DUROC-JERSEYS. WICHITA, KANSAS.
Farm 2 miles west of city on Maple Ave.

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Breeder and shipper of Poland-China hogs, Jersey cattle, S. L. Wyandotte chickens. Eggs in season.

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POLAND-CHINA STOCK FARM.
Only choicest individuals reserved for breeding purposes. J. M. GILBERT, Busby, Elk County, Kans.

FAIRVIEW HERD DUROC-JERSEYS
Has 80 pigs of March, April, and May, 1901, farrow for this season's trade at reasonable prices.
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PARKDALE STOCK AND FRUIT FARMS
THOROUGHbred HEREFORD CATTLE.
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POLAND-CHINAS. Extra Good Fall Boars and Sows.
Fancy Strains.
DIETRICH & SPAULDING, Richmond, Kas.

Riverside Herd of Poland-China Swine.
Commodore Dewey No. 46187 head of herd, assisted by a grandson of Missouri's Black Chief. Young stock for sale reasonable. All stock recorded free.
M. O'BRIEN, Liberty, Kans.

Ridgeview Farm Herd of Large English Berkshires
Sold out of everything but fall pigs. Place your orders for them now. Silver Laced and White Wyandotte eggs for sale, \$1.50 per 15.
MANWARING BROS., Lawrence, Kans.

SWINE.

KANSAS HERD OF POLAND-CHINAS has some extra fine spring gilts, some January gilts, and sows 18 months, bred to Sen. I Know, by Perfect I Know; and some nice fall boars by Sen. I Know and U. S. Tec. Address **F. P. MAGUIRE**, Haven, Reno Co., Kans.

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Three extra fine males left; one September, and two October farrow. Prices away down to close out. **NEWTON BROS.,** Whiting, Kans.

CHERRY GROVE FARM DUROCS,
From best prize-winners. One spring boar, also fall and winter pigs for sale.

WARE & POCOKE, Station B, St. Joseph, Mo.

D. L. BUTTON, North Topeka, Kans., Breeder of Improved Chester Whites.
Stock For Sale.
Farm is two miles northwest of Reform School.

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Two hundred head. All ages. 25 boars and 45 sows ready for buyers.

Verdigris Valley Herd POLAND-CHINAS.
Large-boned, Prize-winning. We have for sale 80 head of fall pigs—the best grown out lot we ever raised. We can furnish herds not akin, of any of the fashionable strains. We have several that are good enough to fit for next fall's shows. Prices reasonable. Nothing but good ones shipped on orders.
WAIT & EAST, Altoona, Kans.

High-Class Poland-China Hogs
Jno. D. Marshall, Walton, Harvey Co., Kans.,
Breeds large-sized and growthy hogs with good bone and fine finish and style. **FOR SALE—**Thirty October and November gilts and 15 boars, also 100 spring pigs, sired by Miles Look Me Over 18879. Prices right. Inspection and correspondence invited.

SWINE.

A FEW POLAND-CHINA PIGS FOR SALE.

Fine individuals. "Chief I Know" and "Look Me Over" strains. **R. J. CONNEWAY, Edna, Kans.**

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Has some show gilts bred to I. B. Perfection (25172 S.). Others bred to Black U. S. Best (21767). Also a fine lot fall pigs for sale. Prices reasonable.
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We now have for sale 10 good young boars 8 months old, and 8 bred gilts—fine well-developed sows, and a choice lot of September, October and November, 1900, pigs for sale cheap. Write me for prices on what you want.

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Prospect Park Herd of Thoroughbred Poland-China Hogs
Perfect We Know, a son of Chief I Know, the sweepstakes boar at the Omaha Exposition, at head of herd.
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Telephone address Pearl, Kans. **RHINEHART, KANSAS.**

MAPLE GROVE HERD OF Registered Poland-Chinas.
HIRAM SMITH, Colwich, Sedgwick Co., Kans.
Headed by the grand boars Black Chief 42367, Ideal U. S. 48259, and assisted by Perfect I Am Vol. XXIII, grandson of Perfect I Know 19172, grandam the great sow Anderson's Model 43611, mated to a lot of choice selected sows of the most noted prize-winning families. A fine lot of fall pigs ready to ship.
Inspection or correspondence invited.

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The prize-winning herd of the Great West. Seven prizes at the World's Fair. The home of the greatest breeding and prize-winning boars in the West, such as Banner Boy 2841, Black Joe 2868, 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.

Poland-China Hogs.

Herd headed by I Know Perfect 48263 O., sired by Chief I Know 37167 O. A few gilts for sale, also two 2-year-old sows that will be bred for August or September farrow and one 3-year-old sow by King Breckenridge. **W. E. NICHOLS, Sedgwick, Kans.**

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Herd headed by Big Joe 7363, and others. A few male pigs of March and April farrow. S C. B. Leghorn eggs.

Pure Bred Poland-Chinas

I have 25 choice October pigs that I will sell for \$10 and \$12.50 for the next 30 days, sired by Corwin I Know 18448, and Hadley U. S. 20186; dams equally as well bred, all good colors. I am also booking orders for choice spring pigs sired by Logan Chief 2d 24427, and Proud Tecumseh 24655. My hogs have good heads, small fancy ears. Come and see them or write.

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Express Office, Leavenworth.

CATTLE.

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.

MEADOW BROOK SHORTHORNS—Some fine young stock, 20th Earl of Valley Grove at head of herd, for sale. Breeding of the best, in color unexcelled.
Address **F. C. KINGSLEY, Dover, Shawnee Co., Kans.**

ROSEDALE HERD OF HOLSTEINS.
C. F. STONE, PROPRIETOR, PEABODY, KANS.
Home of Empress Josephine 3d, champion cow of the world. Gerben's Mechtchilde Prince at head of herd. Young bulls and heifers for sale.

RED POLLED CATTLE LARGEST HERD IN AMERICA.
S. A. CONVERSE, PROPRIETOR, IMPORTER and BREEDER, CRESCO, HOWARD CO., IOWA.

CATTLE.

POLLED DURHAMS 10 bulls from 6 to 30 months. A few females. All stock recorded free in two records. Correspond at once before too late. **A. E. BURLEIGH,** Knox City, Knox Co., Mo.

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2d Grand Duke of Hazelhurst 15091 heads the herd.

POLLED DURHAMS! THIS LITTLE AD. will direct you to the largest as well as the best Scotch bred Polled Durham herd of cattle in the United States. **150 Fine Duroc-Jersey Pigs.** **F. F. FAILOR,** Newton, Iowa.

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A few choicely bred young bulls, spring yearlings, for sale at very reasonable prices. Also 2 Shropshire and 1 cross-bred Shropshire-Cotswold buck. Address **JAMES C. STONE,** Leavenworth, Kans.

ALFALFA MEADOW STOCK FARM

1,300 acres. Pure-bred stock only. Herefords, Poland-Chinas, Light Brahmas and Belgian hares. Stock of all kinds for sale. Pedigreed hares, \$2. **O. B. WHITAKER,** Proprietor, Shady Bend, Kansas.

HEREFORD BULLS FOR SALE.

Five registered bulls, choicely bred, their sires being Lincoln 47095 by the great Beau Real and Klondike 72001 by the Beau Brummel bull, Senator. Their dams are daughters of Stonemason, Star Grove 1st, and Lincoln. I will price them very low to an early inquirer. Address **ALBERT DILLON,** Hope, Kans.

Norwood Shorthorns. **V. R. ELLIS** Gardner, Kans.

Sir Charming 4th at head of herd. Cruickshank top crosses on best American families. Young stock for sale.

Maple Leaf Herd of Thoroughbred

SHORTHORN CATTLE

And **POLAND CHINA SWINE.**

Farm is 2 miles south of Rock Island depot. **JAMES A. WATKINS,** Whiting, Kans.

ROCKY HILL SHORTHORNS.

Herd headed by Sempstress Valentine 157069, son of St. Valentine 21014, and Mayor 129229, grandson of Imp. Salamis and Lord Mayor. Young bulls for sale. **J. F. TRUE & SON,** Newman, Kans.

Shorthorns and Poland-Chinas.

Two good bulls, Scotch-topped, 7 and 11 months old. A good lot of fall hogs, and young sows bred for September farrow. Prompt response to inquirers. **O. E. MORSE & SONS,** Mound City, Kans.

Breed the Horns off by using a

RED POLLED BULL.

CHAS. FOSTER & SON, Butler Co. Ka.

Breeders of Red Polled Cattle, Herd Headed by Powerful 4582. Pure-bred and grades for sale. Also prize-winning Light Brahmas.

REGISTERED HEREFORDS.

THOS. EVANS, BREEDER, Hartford, Lyon County, - Kansas.

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Herd Bull, Imported British Lion, 133692.

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ALLENDALE HERD OF

Aberdeen-Angus Cattle

The Oldest and Largest in the United States.

Splendid recently imported bulls at head of herd. Registered animals on hand for sale at reasonable prices at all times. Inspect herd at Allendale, near Iola and La Harpe, Allen Co., Kans., and address Thos S. Anderson, Manager, there; or

ANDERSON & FINDLAY, Prop's, Lake Forest, Ill.

Recorded Hereford Bulls

FOR SALE.

The get of Marmion 66646 and Anxiety Wilton A-45611, 10 to 24 months old. These bulls are large, and good individuals, and of the best of breeding. Inspection invited. **Fred. Cowman,** Lost Springs, Kans.

Breeder (not dealer) of Hereford Cattle.

125

RAVENSWOOD SHORTHORNS,

C. E. LEONARD, BELLAIR, MO.

Males and females for sale. Inspection especially invited. Lavender Viscount 124755, the champion bull of the National Show at Kansas City, heads the herd.

ED. PATTERSON, Manager.

Railroad and Telephone station, Bunceton, Mo.

SUNFLOWER HERD

SCOTCH AND SCOTCH-TOPPED,

SHORTHORN CATTLE,

POLAND-CHINA SWINE.

Herd Bull, Sir Knight 124403.

Herd Bulls, Black U. S. 2d 25582 S, and Sunflower Black Chief 23603.

Representative stock for sale. **ADDRESS**

ANDREW PRINGLE,

Rural Route 2, Eskridge, Kans.

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Silver Creek Herd

SHORTHORN CATTLE.

GWENDOLINE'S PRINCE 190918 in service, a son of the \$1,100 cow Gwendoline 5th. Best Scotch, Bates and American families represented. Also bred

High Class Duroc-Jersey Swine.

Can ship on Santa Fe, Frisco and Missouri Pacific railroads. **J. F. STODDER,** Burden, Cowley Co., Kans.

BLACK DIAMOND STOCK FARM

Has for Sale a Few

CHOICE GALLOWAY BULLS,

Bred by a World's Fair winner. Also a few English Fox Terrier pups of finest quality.

FOR SALE OR TRADE - A 15-acre suburban property in Des Moines, Iowa. Information promptly furnished by the owner.

J. R. HIGGINS, Keswick, Keokuk Co., Iowa.

H. N. Holdeman,

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BREEDER OF PERCHERON HORSES

And **HOLSTEIN FRIESIAN CATTLE.**

Representing Josephine, Mechthilde and Parthena families. Poland-China hogs. Son of Missouri's Black Chief at head of herd. B. P. R. and B. L. H. chickens. Eggs in season, always guaranteed as represented.

H. M. SATZLER,

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BREEDER OF

HEREFORD CATTLE,

BERKSHIRE SWINE,

COTSWOLD SHEEP,

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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 BROTHERS,** Elmdale, Chase Co., Kans

SYCAMORE SPRINGS STOCK FARM.

SHORTHORNS.

H. M. Hill, Prop., La Fontaine, Kans.

No Shorthorns for sale at present, but will have a few young things in the spring. Personal inspection of our herd invited.

CORRESPONDENCE SOLICITED.

MT. PLEASANT HERD OF

SHORTHORNS.

Herd headed by Acomb Duke 18th 142177. Herd composed of Young Marys, Galateas and Sanspareils. Young bulls for sale.

A. M. ASHCRAFT, Atchison, Kans.

Inquire at **R. F. D. No. 3,** Ashcraft & Sage Livery Barn, Main Street.

H. R. LITTLE,

HOPE, DICKINSON CO., KANS.

BREEDS ONLY

The Best, Pure-Bred

SHORTHORN CATTLE.

Herd numbers 135, headed by ROYAL Crown 125698, a pure Cruickshank, assisted by Sharon Lavender 143002.

FOR SALE JUST NOW 16 BULLS of serviceable age, and 12 bull calves. Farm 1 1/2 miles from town.

Can ship on Mo. Pac., R. I., or Santa Fe. Foundation stock selected from three of the great herds of Ohio.

C. F. WOLFE & SON, Proprietors.

HORSES AND MULES.

PERCHERON HORSES.

J. W. & J. C. ROBISON, Towanda, Kans.

Importers and Breeders. Stallions for sale. Send for Catalogue.

PERCHERON HORSES and

ABERDEEN-ANGUS CATTLE.

GARRETT HURST, Breeder, Zyba, Sumner Co. Kans. Young stock for sale of either sex. All registered.

Don't fail to take advantage of our

"Blocks of Two" offer.



STEELE BROS., Belvoir, Douglas Co., Kansas.

Breeders of **SELECT**

HEREFORD CATTLE.

Young Stock For Sale Inspection or Correspondence Invited

SCOTT & MARCH,

BREEDERS OF PURE BRED

HEREFORDS,

BELTON, CASS COUNTY, MO.

BULLS in service. HESIOD 29th 66304, Imp. RODERICK 80155, MONITOR 58275, EXPANSION 93663, FRISCOE 93874, FULTON ADAMS 11th 83731. HESIOD 29th 66304 Twenty-five miles south of Kansas City on Frisco, Fort Scott & Memphis, and K. C., P. & G. Railroads

Sunny Slope Herefords

...290 HEAD FOR SALE...

Consisting of 200 bulls, from 8 months to 4 years old, and 90 yearling heifers. I will make very low prices on bulls, as I desire to sell all of them before May 1. Write me, or come at once if you want a bargain.

C. A. STANNARD, Emporia, Kansas.



GUDGELL & SIMPSON,

INDEPENDENCE, MO.,

BREEDERS AND IMPORTERS OF

Herefords

One of the Oldest and Largest Herds in America.

ANXIETY 4th Blood and Type Prevail.

BOTH SEXES, IN LARGE OR SMALL LOTS ALWAYS FOR SALE



LAMPLIGHTER 51834.

T. K. Tomson & Sons,

* * Proprietors of * *

Elderlawn Herd of Shorthorns.

DOVER, SHAWNEE COUNTY, KANSAS.

GALLANT KNIGHT 124468 in service. How would you like a cow in calf to, or a bull sired by, Gallant Knight 124468? His get won 14 prizes at the National Cattle Show held at Kansas City last October. 100 head in herd. Correspondence and inspection invited.



PEARL SHORTHORNS

HERD BULLS:

BARONURY 2d 124970. LAFITTE 119915.

Inspection Invited

C. W. TAYLOR, Pearl, Kans

VALLEY GROVE SHORTHORNS

THE SCOTCH BRED BULLS

LORD MAYOR 112727, AND LAIRD OF LINWOOD 127149,

HEAD OF THE HERD.

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

Address **T. P. BABST,** Proprietor, Dover, Shawnee Co., Kans

Tebo Lawn Herd of Shorthorns.

—HERD BULLS ARE—

IMPORTED COLLYNIE 135022 bred by Wm. Duthie.

IMPORTED BLYTHE VICTOR 140609 bred by W. S. Marr.

IMPORTED BAPTON MARQUIS bred by J. Deane Willis.

ADMIRAL GODOY 133872 bred by Chas. E. Leonard.

FEMALES are the best CRUICKSHANK families topped from the leading importations and American herds. These added to the long established herd of the "Casey Mixture," of my own breeding, and distinguished for individual merit, constitute a breeding herd to which we are pleased to invite the attention of the public. Inspection and correspondence solicited. Address all correspondence to manager.

E. M. Williams, Manager.

G. M. CASEY, Owner, Shawnee Mound, Henry County, Mo.

Agricultural Matters.

Manuring the Soil.

JOHN FIELDS, OKLAHOMA EXPERIMENT STATION.

INTRODUCTION.

The tendency everywhere in cultivating new soil has been to pay but little or no attention to the conservation and improvement of fertility. It is customary to refer to the fertility of new soils as "limitless, unbounded, and inexhaustible." Enthusiasts speak of the vast natural fertility of the soils and many who till the soil come to believe what they hear and give no heed to facts and the teachings of experience.

SOIL FERTILITY.

By soil fertility is meant, in a general way, its productiveness—its ability to produce a paying crop. Variations in the degree of fertility produce variations in the crops produced. Soil fertility depends upon three things:

1. The supply of moisture. Soils may be either too wet or too dry to produce a crop. They may be too hard or too loose, too coarse or too fine, and thus unable to retain sufficient moisture for crop production.

2. The mechanical condition. Texture, ease of working, tilth, cold, warm, are general terms referring to mechanical condition. The available supply of moisture is greatly affected by the mechanical condition of the soil.

3. The supply of plant-food. By this is meant the chemical elements which are removed from the soil by plants, and which must be present in the soil for crops to be grown and matured. Nitrogen, potash, and phosphoric acid are the principal substances constituting plant-food. (A brief explanation of the function and nature of these substances is given in Oklahoma Bulletin No. 32 and in the Annual Report for 1899.)

It is not the purpose of this bulletin to argue for the practice of manuring and to present a case in its defense. It

ical condition, and consequently the capacity of the soil for water, is altered. For a time, until the soil settles and rains fill it with moisture after plowing, the effect may be harmful. After this condition is met, the results are usually beneficial. It is upon this point that the profitable manuring of Oklahoma soil hinges. The time of application in reference to the periods of ample rainfall and to cultural methods determines whether or not beneficial results will be secured the first season. And since in farm operations, immediate results largely determine opinions of methods, it is thought by some that manuring is not profitable.

EXPERIENCE OF FARMERS.

Among the questions included in an inquiry concerning the experience of farmers in the raising of wheat (Reported in Okla. Bulletin No. 47) was the following: "What has been the result of manuring wheat ground?" To this inquiry, 52 out of 118 reported trials with manure, thus implying that the other 66 had not tried it on wheat land. Six of the 52 reported unfavorable results from using manure on wheat. The following are the condensed statements of those reporting adversely:

"Manured ground grows too much straw; not as good." "Bad results." "I think the land better for wheat without manure while it is new." "Heavy manuring has not proven a success here (Cleveland County) causing too rank straw and, in nearly every instance, late maturing and rust." "Manure on fresh land causes wheat to fall and rust." "It makes too much straw and does not fill."

The following are the condensed statements of those who have good results from using manure on wheat:

"Results better in second year; too much straw the first." "Good results from manure." "Good results from manuring." "Manuring light after wheat is sowed has given best results." "Sometimes it does not do well to manure too heavy." "Light manuring is good, heavy makes the wheat fall." "Heavy manuring makes too much

their application." "Increases the yield one-fourth." "With good results by top-dressing and working in with harrow and disk." "Manuring will increase yield one-fourth." "Top-dressing increased yields one-third, results of plowing under depend on supply of moisture. Manured ground ripens wheat earlier." "Good results." "Where manured, I get one-third more." "It pays to manure." "Paid well." "Good on land manured and plowed early." "Good results." "Farmers will have to manure their land to make wheat profitable." "Fine results." "Use all I can get with gratifying results."

When variations in seasons and soils and the rainfall and temperature of the wheat seeding season are considered, it is remarkable that the results of practical experience so strongly favor the application of manure to wheat lands. The report, "Top-dressing increased yields one-third, results of plowing under depend on supply of moisture," states the case exactly. In seasons when there is an abundant summer rainfall manure plowed under will decay and settle down. On the other hand, in dry seasons, and especially if the soil is not well cultivated soon after plowing, manure which is plowed under will keep the soil open and make it dry out easily. The seed then goes into a dry soil, germinates poorly, giving a thin stand, and starts off the wheat in a weakened condition.

This makes the manuring of land sown continuously to wheat difficult, and in such cases, it would appear that a top-dressing, well worked into the surface of the soil, would be the best and safest practice.

RESULTS AT THE STATION.

The following table taken from Bulletin No. 47 of this station is inserted, being of interest in this connection. An acre has been sown continuously to wheat since 1892. During the first six years, no manure was applied. In the summer of 1898, 15,720 pounds of stable manure were applied to the south half of the acre and in 1899, another application of 11,350 pounds of well-rotted stable manure was put on. Both halves of the acre were treated exactly alike in all other respects. The yields for the last four years were as follows:

WHEAT, HALF ACRE PLATS.				
Year.	Plat No.	Yield Grain Bu.	Per Acre. Straw Tons.	Treatment
1896-97.....	1	17.8	1.13	Unmanured
	2	17.9	1.14	Unmanured
1897-98.....	1	7.0	.57	Unmanured
	2	7.5	.66	Unmanured
1898-99.....	1	30.6	1.65	Manured
	2	12.0	.68	Unmanured
1899-00.....	1	36.8	2.50	Manured
	2	18.1	1.17	Unmanured

In each case where manure was applied, the land was plowed in July and kept well-worked until seeding time. Figured on a cash basis, with wheat at fifty cents per bushel, thirteen and one-half tons of manure produced an increased yield of wheat amounting to a little more than eighteen and one-half bushels worth \$9.25. The residual effect on the soil was such that no manure was applied last fall and it is safe to assume that less than one-half of the benefit from the use of the manure has yet been realized.

The results of manuring wheat land

have been discussed rather fully for the reason that the use of manure on wheat presents peculiar difficulties and possibilities of loss during the first season.

MANURING AND CROP ROTATION.

When a succession of crops is grown the problem of manuring the soil is much simpler than when wheat is the sole crop. Greater opportunities are afforded for choice in the matter of time of application of manure, and there is less possibility of loss because of the drying of the soil. There is practically no danger of loss by leaching when manure is applied in the winter in this climate, and the soil is usually sufficiently dry so that loads may be readily drawn through the fields. It is thus possible to put manure on land that is to be used for corn, cotton, Kafir-corn, castor beans, and other spring crops. If the land is plowed early, the spring and early summer rains will settle the soil and lessen the danger which exists when manure is applied in a dry time of the year. Another factor favoring winter manuring is the more comfortable working temperature at that time of the year and the lack of urgent work that must be done.

As the use of manure becomes more general, discussions as to the best time to apply manure will arise and experiments to test this point will be made. At present, however, the great need is that farmers generally should save and use the manure produced on the farms and put it on the soil. It now matters little when or how—the one great thing is to form the habit of using the manure that is produced in the towns and on the farms.

SOURCES OF MANURE.

As previously indicated, anything that grows on the farm and is in such condition as to decay and become a part of the soil is classed as manure. The passing of feed through animals does not add anything in the way of fertility. When grain and forage are fed, about three-fourths of the plant-food which was in the feed is excreted either in the dung or urine, the amounts varying with the kind of animals. The location of the feed lot should be such that this plant-food can be saved and returned to the soil. Expensive arrangements for the prevention of leaching and loss of plant-food are not necessary. But the manure pile should not be located in a draw, or on the bank of a creek where each rain will wash away valuable plant-food. A level spot or a small alkali spot make ideal places for the

storing of manure until such time as it can be hauled into the fields.

Corn and cotton stalks and other rubbish in the fields are easily cut down and plowed under. This method requires but little more labor than raking together and burning and adds much to the fertility of the soil. When such material is dragged together and burned, both the nitrogen and the organic matter are lost, and both are greatly needed for the perpetuation of soil fertility.

Wheat straw instead of being burned should be used as much as possible and



Cutting Alfalfa, on Col. Guilford Dudley's farm near Topeka, May 18, 1901, Last fall sowings. Photograph by Mrs. Professor Cottrell.

is a fact that the application of manure to the soil is essential to continued, successful crop production, and those who dispute this fundamental principle as a principle, will find nothing of interest in what follows.

The application of manure, on the other hand, is a matter that should be investigated by every farmer and results that seem peculiar are often produced and are difficult of explanation.

MANURING.

Under this general head are two subdivisions:

1. The use of manure produced by animals, and of refuse material, such as straw, corn stalks and the like.

2. Green manuring or plowing under of all or part of a crop grown either solely for this purpose or in part for pasture.

The effect of the application of manure of any sort to the soil is to modify the supply of plant-food, the mechanical condition, and the capacity for holding moisture. In practically all cases, the supply of plant-food is increased and a larger amount of it is placed at the disposal of succeeding crops. The mechan-

ical condition, and consequently the capacity of the soil for water, is altered. For a time, until the soil settles and rains fill it with moisture after plowing, the effect may be harmful. After this condition is met, the results are usually beneficial. It is upon this point that the profitable manuring of Oklahoma soil hinges. The time of application in reference to the periods of ample rainfall and to cultural methods determines whether or not beneficial results will be secured the first season. And since in farm operations, immediate results largely determine opinions of methods, it is thought by some that manuring is not profitable.

Among the questions included in an inquiry concerning the experience of farmers in the raising of wheat (Reported in Okla. Bulletin No. 47) was the following: "What has been the result of manuring wheat ground?" To this inquiry, 52 out of 118 reported trials with manure, thus implying that the other 66 had not tried it on wheat land. Six of the 52 reported unfavorable results from using manure on wheat. The following are the condensed statements of those reporting adversely:

"Manured ground grows too much straw; not as good." "Bad results." "I think the land better for wheat without manure while it is new." "Heavy manuring has not proven a success here (Cleveland County) causing too rank straw and, in nearly every instance, late maturing and rust." "Manure on fresh land causes wheat to fall and rust." "It makes too much straw and does not fill."

The following are the condensed statements of those who have good results from using manure on wheat:

"Results better in second year; too much straw the first." "Good results from manure." "Good results from manuring." "Manuring light after wheat is sowed has given best results." "Sometimes it does not do well to manure too heavy." "Light manuring is good, heavy makes the wheat fall." "Heavy manuring makes too much

straw." "Have manured some hard spots with good results." "Good results." "Good results." "Will increase yield one-half if proper amount is used." "Have manured a few patches with good results." "Light top-dressing with stable manure increased yield." "It makes a large increase in the crop." "Manured three acres last year and think wheat was two bushels better on it." "Good results; would not manure too heavy." "Manured thin land with fifty per cent increase in yield." "Good results." "Better yield." "Manure is all right if not too heavy." "On hard land it is all right." "Manuring is all right but there is not enough of it done." "Good results." "Tried small area great success." "Very good results." "Good results." "Good results." "I have only this to say of manure—that it is the best work that I do to my wheat." "Good results." "You can't get too much. Head the wheat high and let all the litter on the ground to turn under." "Good results." "Think manuring of some kind very essential to invigorate the wheat plant." "Fresh stable manure and ashes, either from wood or straw, have paid largely for

converted into manure to be returned to the soil for the benefit of future crops. It should never be burned.

Farmers near cities and large towns can procure large quantities of manure for only the labor of hauling it. Manure from livery stables is usually very rich, only a small amount of straw being used, and heavy grain feeding being the usual custom. The only difficulty with which the experiment station has met in procuring manure from stables in Stillwater has been inability to haul it away fast enough. It has been a grand opportunity to get something for nothing and the station has taken advantage of it and manured portions of the farm so that they are now in a high state of fertility. Other portions have been left unmanured for comparison, but if the farm were conducted for profit, all of it would have been manured.

GREEN MANURING.

The chief object of green manuring, or plowing under of crops, is to increase the supply of organic matter in the soil and to improve its mechanical condition. Some plants when plowed under actually increase the store of plant-food in the soil. These are known as leguminous crops and those that are successfully grown in Oklahoma are cow-peas, soy-beans, peanuts, and alfalfa. The first of these is best suited for green manuring, but it is preferable to pasture the cow-peas off before turning them under. This can be done successfully by sowing cow-peas after wheat as described in the Annual Report for 1900, page 49.

Some very sandy soils have been benefited by growing a crop of sorghum and plowing it under after it has attained nearly full growth. The land should, of course, not be planted to

seasonal, and annual rainfall of nineteen stations in Oklahoma and Indian Territories, calculated from data furnished by C. M. Strong, Section Director, Oklahoma City, Okla.:

FALL AND WINTER RAINFALL.						
Average of Nineteen Stations.						
October	November	December	January	February	March	Total
2.64	2.02	2.09	1.79	1.12	2.11	11.79
SPRING AND SUMMER RAINFALL.						
Average of Nineteen Stations.						
April	May	June	July	August	September	Total
2.92	4.93	3.84	4.50	2.53	2.27	20.99

Of a total average rainfall of 32.76 inches, 20.99 inches or nearly 65 per cent falls during the months from April to September inclusive. This fortunate distribution of rainfall is the controlling factor in crop production in Oklahoma, and requires study so as to manure without loss the first season.

Generally speaking, manuring of the wheat crop is difficult because of the need of saving all of the soil moisture for the germination of the wheat. And as a general rule, if it is possible to do otherwise, wheat should not immediately follow the plowing under of manure. Green manuring may precede almost any spring crop, for the reason that this process usually diminishes the number of weeds. But applications of stable manure should, in most cases, be followed by some clean culture crop.

If cow-peas are grown for pasture and green manuring, they may follow wheat, being planted as soon as the wheat is cut. They will furnish considerable pasture during the late summer and fall, and may be plowed under during the late fall or winter. The land will then be in condition for a crop of oats, to be followed again by wheat and cow-peas. Stable manure may be

enough to hold tar enough to cover a couple of feet on the lower end of the post. Tar was kept warm. I joined fences with a neighbor on one side who did not treat posts with tar. Every

other post of his fence was one of better quality, being what we call pitch. Having bought him out I went out yesterday and pulled up the posts of our partition fence. There were 40 posts in his part of the fence, 19 of which were rotted off at the top of the ground. There were 89 posts in my part of the fence and only 5 were rotten. Of course I do not know what would be the result of treating hard wood posts, which I suppose most readers of the Stockman and Farmer use, but by thus treating our posts I think we can add another life. Always set the top end of a post in the ground.—A. S. Eneyart, Box Butte County, Neb., in National Stockman and Farmer.

Cement Walks.

There is nothing equal to a good cement walk for beauty, smoothness and durability. Even natural stone will not last as long and can not be laid as smooth. If one has stone in plenty and wants to get rid of them he may dig foundation where walk is wanted a foot deep, more or less, and fill to within four or five inches of level where he wants surface of walk when finished. If he has no stone he may make trench only deep enough to have two or three inches of filling under cement. But in all cases ample drainage must be provided so no water shall stand under the walk as that when freezing would crack and ruin the walk.

Put in foundation of coal ashes, cinders, furnace slag or anything of like nature and pound down firm. If stone is used as indicated level top and ram down solid. Now put planks upon edge on both sides and one on end between and another just far enough to make the first block square and have the tops of all come even and just where surface of walks is desired.

Provide broken stone or coarse gravel or small stones (from size of marbles to goose eggs) where it will be handy and have also a platform on which to mix the cement, which should be movable. Now of any good cement take one part and mix dry with it from four to eight parts of clean coarse sand or fine gravel, depending upon the kind of cement used. Shovel this over and over until thoroughly mixed and then sprinkle and mix until all is nicely wet, not sloppy. It may now be mixed with all the broken stone that it will take and fill spaces when put into the first space or square and rammed down solid. Don't be afraid of ramming too much. When mixed just right and properly wet and rammed the stones will all have gone down out of sight and a smooth coat of cement and gravel remain on top.

This filling should be reasonably even on top and come within one inch of desired surface of finished walk. For

surface coat use one part of best Portland cement to two of clean coarse sand or fine gravel. Mix dry and dampen as before just enough so that when put on walk and well traveled down it shall be a smooth homogeneous solid mass with surface appearing to be all cement. Trowel down smooth and dust clean, dry Portland cement over the surface. You can now take up the plank used as a division piece and move it along for another square.

If desirable to have a driveway cross the walk it will be well just before dusting that part with dry cement to make creases by pressing a rake handle or other round stick of about the same size half its diameter into the surface about four inches apart. This will afford hold for horses' shoes and prevent slipping when they are driven across it.

It is a good plan where it can be done to cover this walk an inch or two with loose dirt for a few days, or if this isn't handy it may be sprinkled a couple of times a day for two or three days.

When such a walk is properly made it will last indefinitely.—J. S. Woodward in National Stockman and Farmer. Niagara county, N. Y.

Canada's Slow Growth.

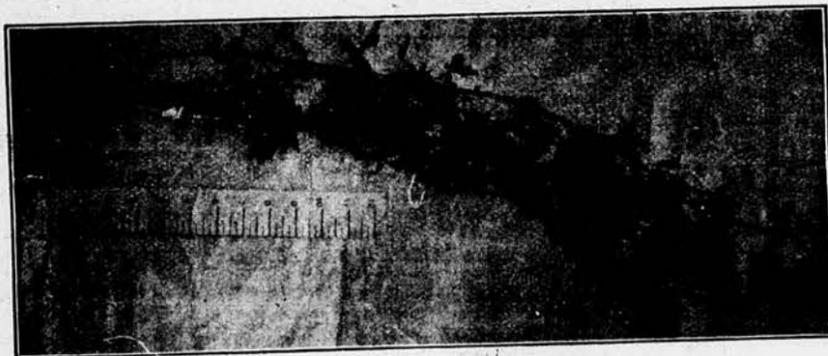
The official organs of the Canadian government are preparing the country for the disappointment in store when the official census returns are made known. Instead of the confident prediction of six million and over, the returns so far completed indicate less than five and a half million inhabitants. According to the estimates based on the statistics of the British Isles, Canada's total should be 5,425,000. Estimates based on the last census of Canada, ten years back, yield a percentage a trifle higher, working out 5,430,000 souls. The evidence points to the shortage between the expected results and the fact as due to the steadily diminishing percentage of births, which in Ontario, is now too well established to be disputed, and the continued emigration of Canadians to the United States.

What Did He Mean?

Riter—Have you read my last poem?
Reader—I hope so.—Philadelphia Evening Bulletin.

Are You Going

to San Francisco with the Epworth League? The Union Pacific will run Special Tourist Sleeping cars every day from July 6th to July 13th, Topeka to San Francisco without change. Rate \$5.00 for double berth. The round trip rate will be \$45.00 and tickets will be good till August 31st, 1901. Stop-overs may be secured at and west of Denver. For other information see your nearest Union Pacific Agent.



Alfalfa cut May 28, 1901, on Col. Guilford Dudley's farm near Topeka. Last fall sowing. Photograph by Mrs. Professor Cottrell.

crops immediately after plowing under a heavy crop of sorghum.

SOIL EXHAUSTION.

As frequently considered, soil exhaustion is taken to mean lack of plant-food caused by continuous cropping without manure. It means much more than that, and includes a change in mechanical condition which hinders the growth of crops. This is brought about in many cases by the loss of organic matter. The failure of a soil to produce a satisfactory crop does not argue that there is a deficiency in the supply of plant-food in the soil.

The application of manure to the soil of the station farm produced such marked results that an experiment was begun last season to determine whether or not the benefit was entirely due to the plant-food in the manure, or was in part produced by the change in the mechanical condition brought about by the organic matter in the manure. No definite results have yet been secured but the indications of the work up to this time are that the application of plant-food in the form of chemicals does not produce as satisfactory results as when applied in barnyard manure.

But few Oklahoma farmers have a thorough appreciation of the extent to which commercial fertilizers are used in the eastern and central western states. The use of artificial manures is crowding westward and many farmers in Iowa, Missouri, and eastern Kansas find their use necessary. It is not the intention to even suggest the desirability of using commercial fertilizers in Oklahoma, except possibly by gardeners and growers of small fruits. On the other hand, the evil day should be put off by caring for and using farm manures while the soil is yet comparatively new. Carelessness in such matters is nothing short of vicious.

WHEN TO MANURE.

As has been indicated, the time of manuring should bear some relation to periods of greatest rainfall. The following tables give the average monthly,

hauled into the fields during the fall and winter, and applied to land that is to be used for corn, cotton, castor beans, Kaffir-corn, sorghum, broom corn, and similar crops.

SOIL MOISTURE.

Attempts to follow Kaffir-corn or sorghum with wheat have very often resulted in failure. "Kaffir-corn ruins the land" is an expression frequently heard in conversation with farmers. When the matter is studied, it is found that, after all, it is largely a question of the supply of moisture in the soil. Kaffir-corn grows a large mass of forage and uses the soil moisture up until the time of wheat seeding, and the wheat goes into a soil without sufficient moisture for the germination of the seeds and the growth of the plants.

Early plowing of land for wheat does little but prepare the soil so that it will take in water and keep it. Working the soil, keeping the surface loose, helps out a dry season by holding the water in the soil. Cultivation at the proper times is much to be preferred to manuring when there is no opportunity for the soil to fill with moisture before a crop is to be planted. The effect of a given crop on the moisture content of the soil has more to do with the yield of the next crop than does the amount of plant-food removed from the soil.

Cultivation and manuring—as much as possible of each—and study and knowledge of the true effect of different crops on available soil moisture are essential to a profitable and improving system of farming. The day of crop failures, worn out farms, and purchase of fertilizers should be put off by the use of things at hand that cost only energy, time, and labor to utilize and possess.

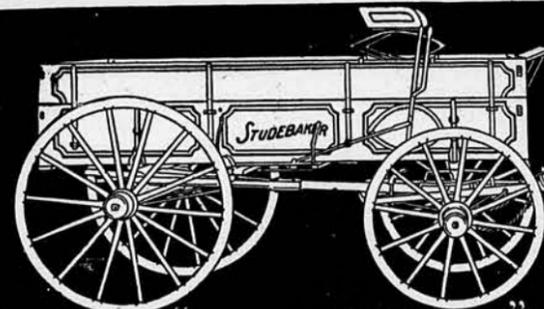
Experience With Tar to Preserve Fence Posts.

In 1893 I made a fence and treated the posts, which were white pine made from young trees just large enough for posts, to a coat of tar. This was done by dipping the end that was sharpened to go in the ground into a vessel deep

FARM WAGONS

The Western Farmer or Teamster who neglects to investigate the new Tiffin Wagon is not alive to his own interest. It runs easier, wears longer and looks nicer than any other wagon. Insist upon having it. If your dealer don't handle it and will not get it for you, write to us. "We will do the rest."

THE TIFFIN WAGON CO.,
Tiffin, Ohio, or Kansas City, Mo.



STUDEBAKER 20TH CENTURY WAGON AFTER FIFTY YEARS.

At the end of fifty years of continuous wagon construction, every one of which has been crowded with conscientious effort for the bettering of our product, we bring out as the accumulated experience of all those years this "Studebaker 20th Century Wagon." There is not the smallest detail or part entering into its make up that is not the best that design, material, workmanship, finish, experience and the advantage of the largest and most complete factory in the world can make it. In consequence it is the best wagon that can be made. Of those who bought the "Studebaker" 20, 20 and 10 years ago many are still using them daily and find them strong, efficient and enduring up to the present. Well, this wagon has all the good features of the old, besides many new improvements. Go Ask anybody who uses a "Studebaker" how he likes it. We will abide by his decision. Go to your nearest dealer and ask to see this new "20th Century Wagon." If you don't find it there write us direct, we'll give you the name of nearest agent where you can see it.

Studebaker Bros. Mfg. Co., South Bend, Ind., U. S. A.

The Stock Interest.

THOROUGHbred STOCK SALES.

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

October 7, 1901—Newton Bros., Duroc-Jersey swine, Whiting, Kans.

October 8-10, 1901—American Berkshire Association Sale at Kansas City.

November 21, 1901—Ernst Bros., Shorthorns, Tecumseh, Neb.

November 20-22, 1901—National Hereford Exchange, E. St. Louis, Ill.

December 10, 11 and 12, 1901—Armour-Funkhouser, Herefords, Kansas City.

December 13, 1901—H. C. Duncan, Shorthorns, Kansas City.

January 28 to 31, 1902, for Sotham's Annual Criterion Sale, at Kansas City.

March 25-27, 1902—National Hereford Exchange, Chicago, Ill.

April 22-24, 1902—National Hereford Exchange, Kansas City, Mo.

May 27-29, 1902—National Hereford Exchange, Omaha, Neb.

June 24-26, 1902—National Hereford Exchange, Chicago, Ill.

The Outlook for the Live Stock Industry in Ohio.

THOS. F. HUNT, DEAN OF OHIO COLLEGE OF AGRICULTURE, BEFORE THE FIFTY-SIXTH OHIO AGRICULTURAL CONVENTION.

During the first half of this century, Ohio and Kentucky, but especially Ohio, was the center of the live stock trade in America. Let us pause here and turn back the pages of history to July 13, 1787, when the Congress of Confederation, assembled in New York City, enacted the famous ordinance of the Northwest Territory. Just fifteen days after this memorable ordinance was enacted, Congress passed an act, which disposed of 5 million acres of land in Ohio at about 10 cents per acre. One and one-half million acres of this land went to the Ohio Company, which the next year established the first permanent settlement in Ohio at the mouth of the Muskingum river. Three and one-half million acres were said to have been "for private speculation in which many of the principal characters of America were concerned," and out of which grew the famous Scioto Company, called by McMaster, the first great land job of the Republic.

The same Congress granted to John Cleve Symmes 2 million acres between the Little and Great Miamis. By every art known to the land agent, the tide of immigration into the Ohio Valley was swelled into a torrent. The canvas-covered wagon with the sign "To Marietta on the Ohio" carried so much of the fresh, young, able blood of the East as to create alarm. One authority estimates that 10,000 immigrants went by Marietta in 1788. In the East anti-emigrant pamphlets were issued. One of these represented a stout, ruddy, robust, well-dressed man on a fat, sleek horse, with the label, "I am going to Ohio," meeting a pale and ghastly skeleton of a man, scarcely half dressed, on a wreck of what was once a horse with a label, "I have been to Ohio."

The Muskingum, the Scioto and the Miami Valleys were soon populated and very productive they proved to be, but it was necessary to do something besides produce. It was necessary to sell. To wagon flour over the Allegheny Mountains on almost impassable roads to New York, Philadelphia, or Baltimore, was largely out of the question.

When that band of 47 immigrants landed on the bank of the Muskingum and began the first permanent settlement of Ohio, Louisiana was a Spanish territory, and New Orleans was a considerable and thriving town, cut off, however, from trade with the Ohio Valley by Spanish arms, which guarded the Mississippi river.

FLOATED DOWN THE OHIO.

On the year before the Indiana side of the Ohio was permanently settled, a general, and of course a colonel, of Kentucky, by name James Wilkinson, determined to raise this embargo, which by diplomacy, that is by downright lying, he succeeded in doing, and in January, 1788, 25 fat boats loaded with flour, bacon, tobacco, butter and hams, guarded by 150 armed, well drilled and officered men, moved out into the Ohio and floated down the Mississippi river to the Crescent City. Thus opened a hazardous but profitable trade to the Ohio valley settlers. It was long before the days of steamboats. To float fatboats down the Ohio and Mississippi rivers was sufficiently hazardous, but to walk back through a wild, and sometimes hostile, country was a task only for adventurous and courageous men. There was, however, no lack of men willing to strive for the profits, and the trade

grew to tremendous proportions, which continued until after the war of 1812.

DROVE TO THE ATLANTIC.

With the amazing immigration into and the development of the Ohio valley it was not many years before the supply exceeded the demand, and it was seen that some other outlet must be found. At this juncture George Renick, of Ross County, proposed driving fat beeves to the eastern seaboard. In 1805 he crossed the Alleghenies with 68 head of fat steers, and drove them into Baltimore in good condition, selling them at a profit. Thus a new industry started, which as the flour trade with New Orleans had formerly done, grew with great rapidity, and continued for many years. In 1817, Felix Renick drove 100 head of fat steers through to Philadelphia, receiving for them \$134 per head. A year later George Renick drove through to New York the first western cattle seen there, which sold for \$69 per head.

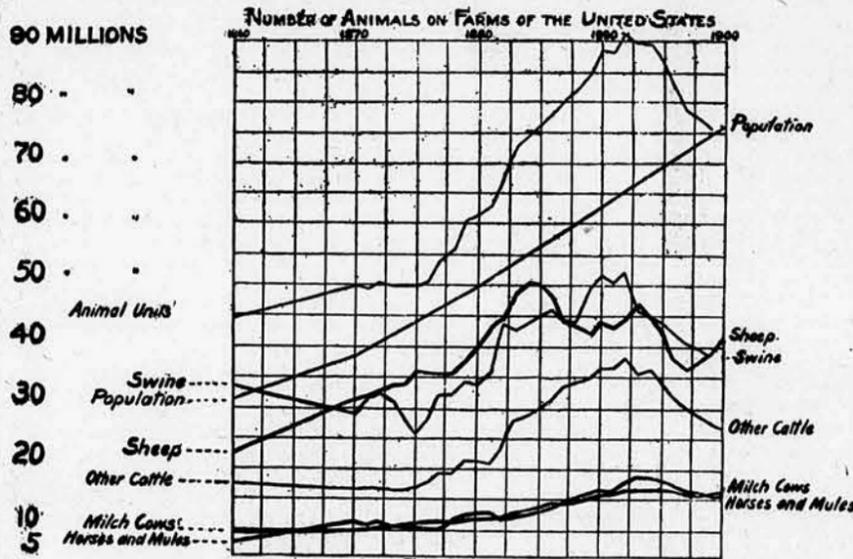
ENGLISH CATTLE.

The Virginia practice of grazing cattle and fattening them out of doors with shock corn was transplanted to this soil and climate, and thus became a fixed custom of American agriculture. Imported with this practice from Virginia were some English cattle, which subsequently exerted a far-reaching influence. They had much to do in making the Ohio valley the cradle of Shorthorn breeding in America. Many were the importations of Shorthorn cattle into this region, but none were more noteworthy, perhaps, than those of the Ohio Importing Company, a company formed in 1833 by about 50 men of the Scioto valley, in which Felix and George Renick were again the leading spirits. In 1836 this company sold at public auction 43 imported Shorthorns at an average of \$803.25. In 1837 the same company sold 15 head at an average of \$1,071.65.

There is not time in a brief talk of this kind to trace the rise and decadence of the dairy industry on the Western Reserve; to tell of the legacy that the farmers of southwestern Ohio, through the establishment of Poland-China swine and the merchants of Cincinnati through the establishment of packing houses, bequeathed to the swine industry of America, nor is there time to do credit to the sheep breeders of eastern Ohio and western Pennsylvania. In 1850 nearly one-fifth of all the sheep raised in the United States were raised in Ohio.

ROADS, CANALS, AND RAILROADS.

In 1825 the national road was com-



pleted into eastern Ohio. In 1832 the Ohio and Erie canal had been built from Portsmouth to Cleveland. The first railroad was built in Ohio in 1836. In 1852 eight hundred and ninety miles of railroad were in operation. These agencies gave the Ohio farmer a market, and right well did he take advantage of it. It was the days of great prosperity for the Ohio farmer. The eastern farmer, on his relatively poor and high-priced land, suffered severely by this competition.

LIKE A THIEF IN THE NIGHT.

But silently as a thief in the night new factors arose to steal away the Ohio farmer's trade. The railroads had pushed their way into the fertile and treeless plains that far ages had lain ready for the plow. On these prairies countless herds could be pastured without cost for land. By 1850, the mower; by 1860, the reaper; by 1880, the self-binding harvester, made possible development of the West, the like of which the world had never before seen. With it came millions of bushels of oats and corn, and millions of tons of hay and straw, which before they had any prac-

Feeding Compound For Live Stock



It is essential for the well-being of all animals that they receive a suitable addition to the ration, not only to restore them if out of condition, but to keep them in the most profitable state of health. This is obtained by **Lincoln Feeding Compound** which is a great improvement upon and desirable substitute for so-called "Stock Foods." Write for literature regarding this cheap and economical preparation.

PASTEUR VACCINE CO., 158 E. Huron St., Chicago.

Branch Office: 622 Whitney Building, Kansas City, Mo

tical value must be turned into animal product. With the consolidation of the railroads in the great transcontinental lines, and with the establishment of steamboat navigation upon the lakes, the live stock industry of Ohio suffered from the same fierce competition of the West that the eastern farmer had been suffering from his Ohio neighbor. The prostration would have been much more serious had it not been for the unparalleled local markets, which the farmers of Ohio enjoy. Those farmers, who realized the change in the situation and adjusted their business to meet it, however, in the last quarter of the century, have gotten along comfortably, and some have made considerable money, but with many who did not the story has been different. Such is the very brief and very inadequate sketch of the live stock industry of Ohio in the past. What of its future?

LIVE STOCK IN THE FUTURE.

Every one knows, who is at all conversant with the live stock industry of this country, that the blood of the live stock man has again begun to boil. During the past year some of the old records in the way of prices have been smashed and new ones made; breeding cattle selling in four figures is again a common occurrence. In December, at Chicago, a car-load of premium steers at public auction sold for fifteen dollars a hundred. The well-named steer, "Advance," champion at the International Live Stock Exposition, sold at public auction for one dollar and fifty cents per pound, or for two thousand one hundred and forty-five dollars. No one claims the steer was worth this money for beef, but it was in no sense a fictitious price. It is an indication of the times. It strikes me as very significant

from the effects of the most disastrous civil war of modern times. It would be intensely interesting to trace the progress of the live stock industry during the past thirty years. Time, however, forbids. I must ask you to take it in at a glance. This line (pointing to the population line) shows that the increase in population has been practically uniform since 1870. In order to compare this increase of population with the decrease of live stock, I have added the number of sheep and swine together and divided the sum by five. The result I have added to the number of horses, mules, milch cows and other cattle. The sum is what I call animal units. A glance at the upper line shows that the number of live stock began to increase sharply in 1875. From that year up to 1892 the live stock of the United States increased more rapidly than the population. Whatever the causes of this increase, it was made possible by the development of the vast country west of the Mississippi River, an area considerably over twice as large as that east of the Mississippi. Now observe what happened.

WAKE UP!

In 1892 we had the largest supply of live stock we have had in forty years. Now we have the least. Do you see it? Are you awake to what this means? Is it any wonder that the live stock man's blood boils? The comparatively slow increase from 1875 to 1892 and the rapid decrease in the past eight years are significant facts. Not only is the home demand increased by virtue of the increased population, but the foreign demand has been increased as well.

Here is an instructive table. It shows our exports of animals and animal products and of bread stuffs in millions of dollars for five-year periods:

Animal Products.	Bread Stuffs.	Total.
1871-75	347	535
1876-80	620	848
1881-85	681	782
1886-90	616	698
1891-95	872	909
1896-00	1,012	1,210

I have purposely avoided values in this discussion, because values are often misleading. We are sometimes the richest in worldly goods when they are worth the least. It is no matter whether a given rib roast cost sixty cents or one dollar, it will serve the same number of guests. The animal values of the live stock of the United States during the past half of the century would not furnish a true guide for predicting the future. In like manner, the value of our exports is not an exact guide to our foreign trade. Export trade may be increased by the rise in prices abroad or a fall of prices at home. It is, however, impracticable to give the exports in quantities. I, therefore, give them in values with the caution indicated.

A COMPARISON.

Comparing the first half of the "seventy" decade with the last half of the present decade, it will be seen that animals and animal products increased about three times, while bread stuffs increased less than two and on-half times. The export of bread stuffs tends to withdraw from domestic consumption products which either directly or indirectly would otherwise be used in producing animal products. It is worthy of notice here that the annual export of animals and animal products during the past five years has been equal to one-tenth the value of all animals to be found any January first upon the farms in the United States during the same period.

THE OHIO MAN IN IT.

This is all very well, but I do not yet see where the Ohio man comes in. Do you? Of course if the Ohio man is not in it somehow, this discussion is of no use or I have got an audience under false pretenses. It is obvious from what I have shown that there is a scarcity of animal products in the United States. Are we in danger of a great famine? By no means. The demand

that men daily ship cream, and sometimes milk, through Columbus to be used in the retail trade of Pittsburg. A gentleman has recently been trying to establish a milk-condensing company in Columbus. He is a commission merchant from Philadelphia. He claims that he is interested in establishing a factory in order that he may have more condensed milk to sell in Philadelphia. If this be true (I do not assert it is true), it is very significant.

A LASTING BOOM.

Is this only a boom? It certainly is a boom, and a boom as well to the live stock man. Is the boom going to burst? Let us get right close to this subject for a moment. Here is a chart that shows the number of domestic animals in the United States yearly for the past thirty years according to the estimates of the United States Department of Agriculture. With these figures I have connected the census returns for 1860. (Here the speaker traced the course taken by each class of domestic animals as shown on the chart.) It is here only necessary to recall that in 1870 the United States had not yet recovered

will cause the supply to be created. Will meat products again be as cheap as before? In this revival of the livestock industry will the Ohio farmer suffer the same fierce, unequal competition that has been his lot during the past twenty-five years?

A DISERTED LAND.

On Sunday, July 2, 1899, I stood on the bathing pavilion of Saltair in the great Salt Lake, gazing over the most desolate and dead country I had ever seen. It was Charles Dickens who said that there was nothing leader than a door nail, except a coffin nail, but Charles Dickens had never seen the Great Salt Lake and its surrounding territory. I said myself, I do not understand how any body of people, religious fanatics though they be, could ever have settled in such a desolate place. Imagine my surprise when I subsequently found it stated that formerly "more than one hundred thousand acres of land that were as inviting to look upon as possible were spread in plain view of all the people of Zion; deep soil of the finest texture and of such fertility that the first crops were marvelous, were finally brought under systems of costly canals; villages with school houses, churches, stores, and fine residences sprung up at close intervals, and there were more town sites located than there are buildings to show for them at the present time." Life and death go hand in hand. The life-giving water used to irrigate these lands took with it the deadly "alkali" which has proven the destruction of so much of the choicest lands of the irrigated sections.

EDIFIED WITH WORDS.

In one of the railroad circulars, put out for the edification of the traveling public, occurs the following language: "Immediately after leaving Ogden, the route lies through a valley made productive through irrigation. Next the traveler obtains a splendid view of Great Salt Lake, and afterwards comes the Sierra Nevada Mountains with varied scenery, unrivaled for picturesqueness and grandeur." Only those who have traveled on the fast express train two days and a night or two nights and a day through the frightful desert that lies between the Great Lake and the Sierra Nevada Mountains can fully appreciate the charming omissions in this railway description. Our party left Salt Lake City Sunday night and Monday morning we were still in western Utah. As I looked out upon this country, which, except for sage brush, seemed to contain neither vegetable nor animal life, I was sore puzzled. I said to myself, and then I repeated it to others, "I do not understand how the forty-niner ever could have followed this trail. There is absolutely nothing here upon which either man or beast could subsist." In my youthful impetuosity I stormed up and down the Pullman car repeating the statement with variations. After I had been allowed to display my ignorance sufficiently, a well-informed gentleman said to me, "When the forty-niner came through here the grass was knee high." I looked at him in amazement; not a spear of grass is now to be seen. "Right here in this country we are now passing through what was formerly the feeding ground of the sheep of Utah. They are now up in the mountains," he next remarked. If possible, I looked at him in greater amazement. "Now," said he, "I will explain this matter to you," and this in substance is what he told me: First came the cattle man, who ranged his cattle over this country and sought to control it by buying comparatively small tracts of land wherever water could be obtained. If a ranchman owned the water privileges he was in safe possession as against an other cattle man, of thousands of acres, it may be, that were tributary to the water. The cattle man, however, soon found to his sorrow that he was not in safe possession of this land as against the sheep man. Sheep will go much longer and farther without water. A physician who was also financially interested in stock, asserted to me that they would go thirty days without water. Be this as it may, it has been abundantly proven that they can pasture clear around the cattle man's water privileges. This is death to the cattle man's interest. In the first place, it is well known that cattle will not follow large bodies of sheep; in the second place, the sheep eat the grass too short. But these are the least important things. It does sometimes rain out there. When it does rain, the soil gets a soft, adobe mud, quite different from eastern mud. Sheep must, of course, continue to eat whether it is wet or dry, and eating as they do with an upward lift, when the soil gets into this soft

condition they pull up the grass by the roots. Where the forty-niner found the grass knee high, where only a few years ago thousands of cattle and tens of thousands of sheep fed, the country is a barren waste, which does not now even support jack-rabbits, sage hens or rattlesnakes.

SHEEP VS. CATTLE.

All men may not agree as to the details as they were related to me, nor can I lay any claim to having made adequate observations of a country which is considerably larger than all of the United States east of the Mississippi River by going twice across it on a limited train. The following table, however, from the statistics from the United States Department of Agriculture, shows the extent to which sheep have displaced cattle in the country west of Denver:

WESTERN UNITED STATES IN MILLIONS.		
	Cattle.	Sheep.
1875	1.6	8.2
1880	2.3	12.9
1885	5.6	18.9
1890	8.2	20.8
1895	7.6	19.5
1900	5.9	24.8

This table shows that while sheep have increased less than twenty per cent other cattle than milch cows have decreased over twenty-eight per cent in this western country. Or, to put it another way, while cattle have decreased two and three-tenths millions sheep have increased four millions. Of course four million sheep does not begin to compensate for the loss of two and three-tenths millions cattle.

A NOMADIC INDUSTRY.

Other consequences are quite as important to the future of that country as the loss of live stock. The sheep industry there is thoroughly nomadic. The sheep herder with his covered wagon, his cooking outfit, his dogs and his gun, is a man without any fixed habitation; pays nothing for the use of the land; contributes nothing to the taxes or life of the state. An eastern man, it was asserted, grazes one-tenth of the state of Wyoming by means of these nomadic herdsmen and boasts that he would not own a foot of land in the state, nor even a town lot. His money is spent in the East, while the hen that lays the golden egg is being destroyed in Wyoming. On the other hand, it is asserted that the cattle ranchman had, by necessity, a fixed habitation, paid taxes, was a part of the life of the state in which he made his money and had an incentive to improve its condition.

A HUMANITARIAN VIEW.

There is also a humanitarian side to this subject. In many cases, perhaps the majority of cases, no provision is made for the sheep on the ranges, even in the coldest weather. In the winter of 1899 one man lost 6,000 sheep from starvation. A meeting of sheep men was subsequently held to devise means of avoiding such disasters hereafter. This man, when approached upon the subject, said, "No, sir, I am no fodder man. I am a sage brush man." It was cheaper, he thought, to let the sheep starve, therefore starve they must. The condition in the state of Nevada, which is probably an extreme case, and perhaps not yet typical of other states, may be cited to bring the situation home to the eastern mind. Nevada in the past has had three sources of wealth, viz., pasture, lumber and mining. I have told what has become of much of her pasture on the lower levels. There is still left some pasture higher up in the mountains.

TIMBER GONE.

I rode one afternoon, going from Lake Tahoe to Carson City, down the eastern slope of the Sierra Nevada for perhaps ten miles along a flume, which had formerly been used in transporting timber to the box factory at Carson City. No logs now floated down the flume—the box factory was closed. The boxes were no longer made for lack of timber from which to make them. Standing in Reno, the principal town in the state, I looked out upon the mountains and said, "Your mountains here do not seem to bear any timber." Mackey, the lumber king, had two hundred and fifty men four years cutting timber in sight of this town," was the reply. It is perhaps needless here to remark that the affecting of the water supply is not the least of the consequences which have followed the destruction of these mountain forests.

A DECREASING POPULATION.

In going from Carson City to Reno our train made a stop where I subsequently learned was once a thriving mining town of two thousand inhabitants. Not a sign of a dwelling is now to be seen. With its three principal sources of wealth gone or reduced, it

is not surprising that the state should be decreasing in population.

THE MISFORTUNES OF OTHERS.

Will this country, which has been so ruthlessly destroyed, be again made productive? I sincerely trust so. It is to the interests of the whole country that it should be. Already, as the result of the splendid researches of investigators, methods are being advocated to remove the deadly "alkali" which has been such a demon to irrigation. Men, who have given the subject most careful study, believe that much of the arid ranges can by a proper system of husbandry be made productive again. I am not one of those who finds satisfaction in the misfortune of his neighbor. I believe that the general government should, if need be, do what it can by wise legislation to help this country to a new prosperity. I do not know whether any of the particular forms of legislation that have been proposed are wise or not, nor do I know what would be wise legislation, but I am sure that no selfish interests should be allowed to stand in the way of a judicious and helpful development of that great section. There must be in this country no north, no south, no east, no west. This is aside, however. It has been my purpose to trace some of the larger economic conditions so far as they relate to the live stock interests of this country. In order that we should understand the future it has been necessary for me to state the conditions as they exist.

stock will, of course, be cheaper. The present demand will create a supply, which will bring prices down again, but in the competition that follows for a share of this trade the Ohio farmer now has a somewhat equal advantage, and in the way of local markets, a superior advantage. He is no longer to suffer from the fierce competition incident to the pioneer development of the West.

A party of twelve British artisans will shortly visit the United States to study our methods of industry and manufacture. They are men selected by popular vote from among the leading British industries in connection with a movement organized by Messrs. W. & D. C. Thomson, Dundee (Scotland), through the medium of their popular London weekly, the "Red Letter." It may be remembered that in 1893 this enterprising newspaper firm sent a similar expedition of Scottish workmen to visit the Chicago Exposition and American industrial centers and report their observations to the "Dundee Weekly News," the leading Scottish weekly, of which the firm are also proprietors. In the same year they organized an Agricultural Commission to this country in connection with their daily paper, the "Dundee Courier." Great interest was manifested on the other side in the reports of the delegates, of whom quite a number have since risen to positions of trust and responsibility in their trades or professions. On this occa-

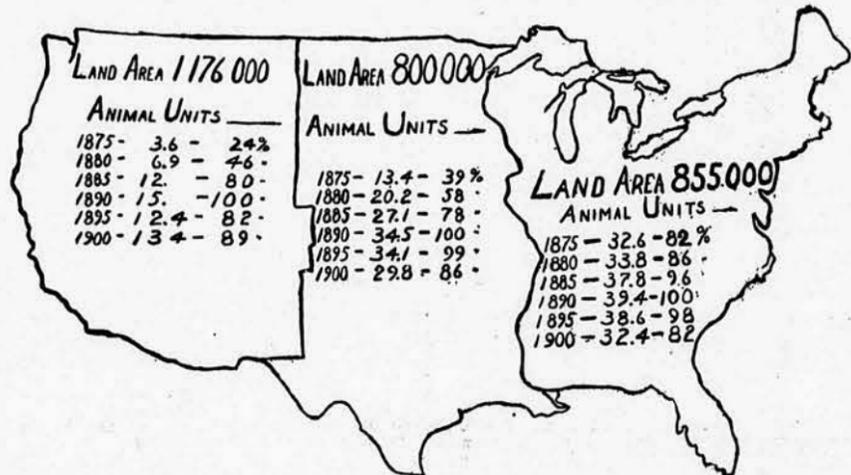


Figure 2.

SUBDUED A CONTINENT.

We started in on the Atlantic seaboard over two hundred and fifty years ago to subdue the continent. In 1800 the United States territorially nowhere crossed the Mississippi River and nowhere touched the Gulf of Mexico, much less had our agriculture and civilization reached these limits. By 1850 we had acquired our present continental limits, Alaska excepted, but the great West and Northwest was agriculturally an undiscovered country. In the past fifty years we have swept a continent with our agricultural operations. In 1875 central Iowa was yet a wilderness. This map shows how rapid was the live stock industry west of the Mississippi between 1875 and 1890 and how it has declined since that time. For two hundred and fifty years we have been able to practice a system of highway-robbery agriculture. The highwaymen's business was profitable while it lasted. During the first half of the century the Ohio valley states with their fresh lands sorely tried the eastern farmers. During the last half of the century the States west of Chicago have enjoyed an immense advantage and the Ohio valley farmers have in turn suffered from this competition. But we have now reached the Pacific coast. The old conditions seem to be forever gone. There are no longer cheap but valuable lands between Chicago and Denver. The cream has already been taken off of the lands west of Denver. There the live stock industry has already reached its highest pioneer development and has declined. It is not my purpose to prophesy, but it would now seem that we have come face to face with a new situation. The western farmer can no longer raise cattle so nearly free from cost. This is a situation that every thoughtful man has known would come sooner or later, but it has come upon us so suddenly as to be almost sensational. In the new era of live stock development, which is now so manifestly in progress, it would seem that the eastern farmer is no longer to wear the handicap which he has worn during the last half of the last century. The young man of Ohio with fifty years before him faces a different situation so far as the rearing of live stock is concerned than did his father fifty years ago. Live

sion the tour of the expedition embraces visits, not only to the hives of American industry, but to the Pan-American Exposition at Buffalo, Niagara and other famous sights are also in the itinerary. The delegates will report their tour of observation in weekly letters to the newspapers conducted by the Messrs. Thomson, who are to defray the entire costs of the expedition. The organization of this expedition may be regarded as an acknowledgment of the superiority of American methods in many fields of mechanical and industrial activity, and the delegates are sure of a hearty welcome on this side.

PROTECTED PIGS PAY

The verdict of thousands of stockmen who use **VESEY'S STAR ANTI-CHOLERA**. It not only protects—it cures cholera hogs. It makes them grow and fatten; it causes early maturity. **SOLD UNDER AN ABSOLUTE GUARANTY.** Pay no money until satisfied with results. Call on or address **ANTI-CHOLERA CO.,** 263 F Exchange Bldg., Kansas City Stock Yards.

FLEMING'S LUMP JAW CURE

LUMP JAW

Easily and thoroughly cured. New, common-sense method, not expensive. No cure, no pay. **FREE.** A practical, illustrated treatise on the absolute cure of Lump Jaw, free to readers of this paper. Fleming Bros., chemists, Union Stock Yards, Chicago, Ill.

DIP MOORE'S HOG REMEDY

and cure Mange and Canker, kill Lice and Fever Germs, remove Worms and **PREVENT CHOLERA**, at a cost of **FEED Five Cents Per Hog Per Year.**

A postal gets particulars and book on "CARE OF HOGS." Address **MOORE CHEMICAL CO.,** 1503 Genesee Street, - - Kansas City, Mo

Save Your Pigs!

Runts are Unprofitable; Dead Hogs a Total Loss.

DR. JOS. HAAS' HOG REMEDY

Is Guaranteed to prevent and arrest disease, stop cough, expel worms. Increase appetite and growth.

Send \$1.25 for trial package, postage paid. Cans \$2.50 and \$5.00; packages \$2.50. State number, age, condition, food of hogs. Special advice free, 25 years experience. "Hogology" pamphlet and testimonials free.

JOS. HAAS, V. S., Indianapolis, Ind.

Gossip About Stock.

The Dr. J. H. Snoddy Remedy Co., of Alton, Ill., will open a branch office for the West at Wichita, Kans., on July 1st. This company seems to have been exceptionally successful in curing hog cholera and the swine plague.

F. C. Kinsley, of Dover, has sold the fine herd bull, 20th Earl of Valley Grove, weight 2,350, to S. S. Benedict, Benedict, Kans. He has also just delivered a fine red bull, out of 20th Earl of Valley Grove, to Col. Geo. W. Veal, at his farm at Ridge-way.

Col. R. L. Harlman, of Bunceton, Mo., the live stock auctioneer who made such a clever address before the last meeting of the Central Shorthorn Breeders' Association, writes the Kansas Farmer that he has already booked more engagements for fall and winter work than ever before at this time of the year. His card appears in this issue and he would be glad to communicate with breeders who contemplate holding public sales this year.

Sam W. Hill, a breeder of Poland-China swine, moved from Hutchinson, Kans., to Oklahoma last spring. He writes: "I am located 11 miles west of Enid. The Rock Island Company is building out west and south from Enid. Road crosses my place on south side. The first town located on road out from Enid is Lahoma, my new post-office. I'm starting the hog business and hope to do a fair business in time."

H. W. McAfee and D. H. Forbes, of Topeka, purchased ten Scotch-topped Shorthorn heifers of Andrew Pringle, Eskridge, Kans., last week. They were very much pleased with the class of animals secured, especially in view of the fact that Mr. Pringle has advanced the price about 25 per cent since the big sale and the report of the great sale at Chicago. Mr. Pringle is somewhat short on pastureage for his large herd, consequently is selling some females at tempting prices.

The Zenner Disinfectant Co., 61 Bates St., Detroit, Mich., have recently gotten out a book entitled "Dipping Sheep for Profit." Among those who have contributed their opinions to this important subject are, Prof. John A. Craig of the Iowa Experiment Station; Prof. C. S. Plumb of the Indiana Experiment Station; Prof. Herbert W. Bumford of Michigan Experiment Station; Dr. A. G. Hopkins V. S. of Wisconsin Experiment Station; Prof. R. S. Shaw of Montana Experiment Station; Prof. J. Fremont Hickman of Ohio Experiment Station; Prof. J. H. Sheppard of Dakota Experiment Station; Dr. G. Howard Davison of New York; Richard Gibson of Ontario; Geo. Harding and Geo. McKerrow of Wisconsin, and Geo. Allen of Illinois. Readers of this paper will receive the book free on request.

Kelser Bros., Keota, Iowa, importers of draft horses, write the Kansas Farmer: "Our last importation arrived at our barns April 20th and consisted of 61 head of Percherons, Shires, and Clydes, ranging from 2 to 5 years of age, and we deem them the best bunch we have ever had the good fortune to land here all o. k. Black is the predominating color and all of them are good, big, rangy horses, in fact are the kind that will please the most fanciful buyers. There has been a very strong demand for first-class horses during the past year and we are naturally preparing for a larger business for the coming year. As the prices for good heavy drafters are constantly going upward in the markets the demand for good heavy draft stallions with proper conformation is also increasing. We are confident that we now have a bunch that will please any and all intending purchasers."

Business has been very brisk at the Weavergrace Breeding Establishment of Mr. T. F. B. Sotham, Chillicothe, Mo. Since last report the delivery of registered Hereford bulls, contracted last October to Mr. Bartlett Richards for his Nebraska Land & Feeding Co.'s ranch, and also 12 registered Hereford bulls for his Bijou Ranch Co., in Colorado of which Mr. Jarvis Richards is president and general manager. The prime young bull, Contender 2d, and twenty young grade Hereford cows with calves by side, to Mr. W. H. Baker, of Kane County, Ill. Mr. Baker has bought these cattle with the intention of raising a car-load of "baby beef" for the Chicago market, annually. The calves this year are by a grandson of Mr. Funkhouser's Heslod, and are certainly of the right stamp for the purpose. It is believed that the next year's crop from Contender 2d will show no deterioration. Mr. Baker was so taken with the Correctors and Improvers at Weavergrace that he has fully determined to have a calf by one of these bulls at the next Weavergrace sale. Mr. S. L. Brock, of Macon, Mo., has sent Beatrice, daughter of Dale, that he bought of Mr. Graves at the Sotham Century Opening sale, to Weavergrace to be bred to Corrector. The purchase of the entire herd (ninety head) of Messrs. Moffatt Bros., Paw Paw, Ill., have rather overstocked even the added acreage at Weavergrace, which taken in connection with the drought now prevailing, has decided Mr. Sotham to sell a number of very choice young cows and heifers at really less than they are worth. Of course it will be understood that the sales of pure-bred cattle from Weavergrace are confined to the Moffatt branch of the herd. All of the Weavergrace cattle proper being reserved for the annual criterion sale which is to be held in Kansas City, Jan. 28-31, 1902.

Stockmen at this season of the year look forward with dread to the regular visitation from the fly pest. The common house fly during the hot weather makes the lives of both men and animals miserable. The horse in the pasture or stable, the cow in the barn, and the hogs in the pig pens are kept so busy fighting flies, that but little time is left to eat the necessary ration of food to nourish the system, which accounts for the fact that live stock in the middle of summer when the grass and forage is at its best often fail to put on flesh, and do not get into good condition until the fall months when the pestiferous flies have paid their final debt to nature. The species of fly known as the blow fly causes incalculable damage to live stock. Among cattle the screw worm owes its origin to a member of the blow family, and all sheepmen have had cause to regret the wholesale destruction which follows the advent of this pest among their

flocks. Another species of fly particularly annoying to cattle is that called the horn fly, and many and various are the means to prevent its annoying live stock. As a sanitary measure the total extermination of flies is to be desired, as many dangerously contagious diseases are spread by flies which after making a meal on an infected carcass carry away germs on their bodies and legs sufficient to set up the disease wherever they may chance to wander. In addition to flies, other parasites such as ticks, lice, and mange mites appear to be most numerous and troublesome during the summer months, so that any preparation which will afford immunity against attack from these pests will certainly be hailed as a god-send by all owners of live stock. Lincoln Dip, advertised elsewhere in our columns, is recommended to keep flies and other parasites from live stock. By washing, dipping or spraying animals in a solution of this preparation, such vermin as ticks, lice and mange mites if present are effectively destroyed, and the animals being kept free from such vermin, will be in a condition to thrive and take on flesh. Maggots in sheep or screw-worms in cattle are easily destroyed with Lincoln Dip, the sores are made healthy and further attacks from blow flies prevented. Live stock owners should address the Pasteur Vaccine Co. and receive full information on the subject.

Attention is directed to the special bargains advertised by the Riverside Stock Farm, owned by D. L. Thisher, of Chapman, Dickinson County, Kans., who has for ready sale, at reasonable figures, 9 head of registered Hereford bulls, 2 years old, that are capable of doing big service. They are strong and vigorous animals of good form and color that are positive bargains for the money asked. Mr. Thisher, who has the largest Percheron and French Coach horse establishment in the state, has on hand a number of fine full-blood Percheron mares, which he is closing out at a very low figure to make room for his registered stock. He has for sale also a few stallions of different ages that will attract buyers when they get a chance to view the stock. Mr. Thisher would also sell a few choice registered Shorthorn females. The writer knows of no western establishment that has at the present time so many horse and cattle bargains for discriminating buyers as Riverside Stock Farm.

The Galloway Show at Kansas City.

Frank B. Hearne, Independence, Mo., secretary of the American Galloway Breeders' Association, has gotten out a preliminary announcement for the Kansas City show and sale, to be held October 18-25. He says: "We want to make both show and sale a success and urge you to assist in every way possible. In reply to the circular letter sent out the first of May, out of nearly three hundred answers all but a very few were in favor of a sale of fifty head. The committee decided to limit the number to fifty and want the best cattle. I ask you to please notify me at once of the number and sex that you will put in the sale and also send me as near an estimate of the number you will have in the show as possible. We will have as good quarters as any of the breeds and are assured of the best treatment at the hands of the Kansas City Stock Yards."

In addition to the premium list in the catalogue there will doubtless be a liberal list of specials. All specials given are to be divided equally among the four breeds. It is expected that the same rates will be secured as last year, viz., exhibitors pay regular tariff rates to Kansas City and all show cattle not sold will be returned free by the railroads. Specially low passenger rates will also be secured. It is not too early to begin now to plan to attend the show and sale. The entry blanks for the show will be ready about July 1st and will be sent on application to this office. The sale cattle will also be selected from those who first send in notice of their desire to make entries. Kindly let me hear from you at once.

Publishers' Paragraphs.

The Belle City Manufacturing Co., of Racine Junction, Wis., seem to have struck the popular idea from the farmer and stockman's standpoint in making fodder cutters and small threshing machines like the Columbia thresher. Their goods are great sellers because of their usefulness and great adaptability to every farmer's use. If not already familiar with them, look up the advertisement in this issue and write for particulars.

A Kansas enterprise—the A. B. Seelye Medicine Co., of Abilene, Kans., has scored a decided success during recent years and to-day enjoys a liberal patronage from the public of their great remedies so popular in so many households. Not a cent of foreign capital was invested in the business, and to the great healing powers of that wonderful specific, Wassa-Tussa, the strengthening properties of Seelye's Nerve and Kidney Cure, and the beneficial qualities of that "Balm of Gilead," Seelye's Magic Cough Cure, are chargeable the stupendous success of the A. B. Seelye Medicine Company.

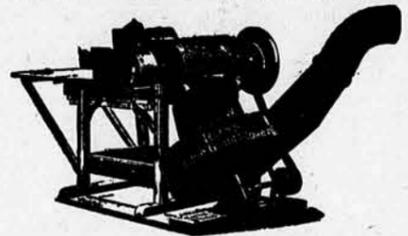
"Little Bob's" (General Lord Roberts) Britain's military hero of many campaigns, in the course of his report on the progress of the war in South Africa, published in the Official Gazette, under date of April 2, 1901, and also in the London Times, says: "Wagons were imported for trial from the United States, and these proved to be superior to any other make of either Cape or English manufacture. The wheels were of hickory and the metal work of steel. They were built by Studebaker Bros. Mfg. Co., who have a great wagon manufactory at South Bend, Ind., U. S. A. The superiority of these vehicles was doubtless due to the fact that such wagons are largely used in America for the carriage of goods as well as for military transport. The manufacturers have, therefore, learned by practical experience what is the best type of wagon, and what are the most suitable materials to employ in building it. It may be added that the wagons in question cost considerably less than the Bristol pattern wagon."

The American Boy for June (Sprague Publishing Co., Detroit, Mich.) presents 32 pages of matter of surpassing interest to boys. There are nearly 100 illustrations. This number leads off with an illustrated editorial entitled "Your Country Wants You," addressed to boys who are this month being graduated from the schools.

The stories are "Timmie O'Flanigan," "Number 20," "Mam'selle La Belle," "Captain Jack Brier's Triumph," "Phil Kearny's Bugler," "Lafe, the Simpleton," "Three Boys in the Mountains," "Gallant John Pelham, the Boy Artillerist," "The Boy Who Won a Laurel Crown," and "That Larkin Boy." Other items appear under the following titles: Beginning to Save, How to Learn Drawing, How Boys Make Money, New Games for Boys, The Daily Life of a West Point Boy, Starting an Amateur Paper, Boys' Exchange, June in American History, The Agassiz Association of Young Naturalists, Boys in the Home Church School Etc., Boys and Animals, and The Boy Stamp and Coin Collector, etc. \$1 a year. Sprague Publishing Company, Detroit, Mich.

Blower Attachment for Ensilage and Fodder Cutters.

The illustration herewith shows the Ross Ensilage and Fodder Cutter with Blower attached, manufactured by the E. W. Ross Co., Springfield, Ohio. This attachment is certainly to be appreciated, and is something that is wanted by the users of en-



silage and fodder cutters. The E. W. Ross Company experimented three years on this attachment before placing it on the market, and will guarantee same to work satisfactorily in every way. Referring to their cutters and other implements, it is not necessary to make any claims for same as they have been on the market fifty-one years giving perfect satisfaction. Their 1901 catalogue illustrates and describes their full line, and will be sent free of charge to all those asking for it.

Schwarzschild & Sulzberger Co. Enter-tain Kansas and Missouri Editors.

During the Manufacturers' Show recently held at Kansas City this great firm of beef and pork packers extended an invitation to the members of the Kansas and Missouri press who were in the city to inspect their plant. About 100 editors availed themselves of the opportunity to familiarize themselves with the details of a great and modern establishment which has a world-wide trade. Intelligent attaches of the firm showed the visitors through the immense establishment and explained the details of slaughter, and the dressing of the carcasses. They were shown the great refrigerating plants and had a chance to see several hundred sides of beef ready for export to Europe. The perfect system of every feature of a wonderful provision factory was an interesting revelation to most of the visitors. After passing through the slaughter houses and meat packing refrigerating department the press gang visited the Harrison Butterine Company's great establishment and sampled the "Danish Special" product which they declared was "good enough butter for anybody," and a much more tasty and dainty article than they had at home. Much prejudice vanished after testing butterine. The inspection was followed by a banquet served in the office employees' dining hall where, among other dainty edibles, were served "American Beauty" meats, the famous brands for which S. & S. have made a reputation in the best markets of the world.



FRANK E. LOTT.

The Wide-Awake Real Estate Dealer, New York Life Building, Kansas City, Mo.



The subject of the illustration herewith shown is Mr. Frank E. Lott, New York Life Building, Kansas City, Mo., one of the most prominent dealers of Kansas and Missouri farm lands. The success that has crowned his efforts was brought about by close attention to business and fair dealing with all who came to his bargain counter for a new home. His fund of information is valuable to those seeking a new location and is given in a booklet that he has just issued, which also contains a list and description of farms he has for sale. If looking for anything from a small fruit or truck farm to the largest ranches on the market it can be found by consulting the large list that Mr. Lott will send free on application. Mr. Lott has over 6,000 properties on his list to select from and he is in a position to furnish to all home seekers reduced railroad rates on short notice. See his advertisement which appears regularly in this paper under the Farm and Ranch list.

Insure your health in Prickly Ash Bitters. It regulates the system, promotes good appetite, sound sleep and cheerful spirits.

Gallant Knight, a Noted Kansas Short-horn Sire.

This week we present on the first page an illustration of Gallant Knight 124468, the bull that heads the splendid Shorthorn herd of T.K. Tomson & Sons, of Dover, Shawnee County, Kans. Gallant Knight was shown for the first time last October at the National Shorthorn Show, and achieved a reputation for the owners, and the State of Kansas, by reason of his get as well as his marked individual excellence. At this show he received one of the 3 votes cast in awarding the Armour cup for champion bull of the breed—the other 2 going to that bull of bulls, Mr. C. E. Leonard's Lavender Viscount. Besides the signal honor he, with his get, won in the same show 15 other prizes, including 2 firsts, 2 seconds, and a sweepstakes. Gallant Knight is by Galahad 103259, used extensively as main stock bull both by Colonel Harris and Mr. H. C. Duncan. His dam was 8th Linwood Golden Drop by Imp. Craven Knight 96923, bred by Amos Cruickshank, and also, in his time at the head of the Linwood herd; his second dam was the 4th Linwood Golden Drop by Imp. Baron Victor 42824, acknowledged the greatest of the imported bulls used at Linwood. The third dam was Norton's Golden Drop by Imp. Underly Wild Eyes 3312, and fourth dam the Imp. Golden Drop by Sir Christopher. There can be little doubt that this combination in the foundation, of what was then the cream of Booth, Bates and Scotch, followed with a succession of such superior Cruickshank tops, has produced a bull who is only beginning to receive due appreciation, and who will never be forgotten. Mr. Hills' sketch, while certainly portraying a magnificent animal, fails to show the wonderful thickness and masculinity of Gallant Knight, and no artist's skill—nothing but an everyday acquaintance with the Elder Lawn herd—can give an idea of his merit as a breeder.

An Angus Event.

A combination sale of Angus cattle was held at Dexter Park amphitheatre, Chicago, last week. The event was under the able management of Mr. W. C. McGavock, Mt. Pulaski, Ills. The top price of the sale was \$1,000, at which figure D. R. Perry, of Columbus, Ind., secured the Queen Mother cow Queen Nancy Bell 7th 30159, consigned to the sale by Willis M. Sturges, General Manager A. G. Leonard of the Union Stock Yards and Transit Company, purchased 2 females at \$600 each. One was a Queen Mother, Queen Superlative 4th 35386, calved January 6, 1899, and consigned to the sale by W. M. Sturges. The other was a Newton Nance, Prairie Queenetto 23224, calved March 28, 1895, sired by Black Abbot 10423, and consigned to the sale by B. R. Pierce & Son. The top price for bulls was \$860, at which figure Silas Igo, of Palmyra, Ia., purchased the 3-year-old Blackbird bull Black King of Woodlawn 31008, sired by Blackcap King 22652, and consigned to the sale by B. R. Pierce & Son. The Blackbird bull, Blackwood Jim, a son of Blackbird Jim, consigned to the sale by M. P. and S. E. Lantz, was secured at \$600 by M. D. Korns, of Hartwick, Ia. The good demand for bulls was one of the features of the sale, 26 head being disposed of at an average of \$224.23, which is remarkably good, considering how bad the bull market has been for several months, and also the fact that the majority of the bulls offered were yearlings. Several bargains were picked up in bulls, one of them being secured by R. Gundry, of Council Hill, Ill., who purchased the Queen Mother bull Trooper B. 39493, a son of Trooper 23254, consigned to the sale by John Barron & Son, for \$130.

The consignors were B. R. Pierce & Son, Creston, Ill.; J. P. Hine, Shinrock, Ohio; Willis M. Sturges, Mansfield, Ohio; M. P. and S. E. Lantz, Carlock, Ill.; John Barron & Son, Fayette, Mo.; T. L. Rothwell, Mount Pulaski, Ill.; J. Laure, Etna, Ill.; D. R. Perry, Columbus, Ind., and J. W. Wheatley, Kempton, Ind. The sale was under the efficient management of W. C. McGavock. Colonel F. M. Woods occupied the auctioneer's stand both days, and was assisted in the ring by Colonels Carey M. Jones, R. W. Barclay, Silas Igo and C. C. Plumley. A general summary of the sale is as follows:

46 females brought	\$12,735; average	\$276.84
26 bulls brought	5,830; average	224.23
72 animals brought	18,565; average	257.84

ZENOLEUM Kills Lice, Ticks, Mites, Fleas, Etc. on all kinds of animals and poultry. Given internally it drives out worms. Cures all cuts, wounds, sores, etc. Non-poisonous. Endorsed by leading veterinarians. "Veterinary Adviser" Free. Zenner Disinfectant Co., 61 Bates St., Detroit, Mich.

The Home Circle.

A SUSPICION.

This ol' world is gettin' kind o' foonson,
 'Tain't the plain an' sensible ol' world it
 used to be;
 'Tain't the world that used to jog so peace-
 fully along;
 It likes to to't the whistle now an' rattle
 on the gong;
 An' see the people hustle, of their senses
 nigh bereft,
 Or sittin' up o' nights because they're
 "scart o' gettin' left."
 I hones'ly kin'ly hardly keep from laughin'
 when I note
 How men are talkin' shirt waists, while
 the women want to vote.

I like to see the 'lectric lights a'gleamin'
 near an' far,
 I like to feel the motion of the dasnin'
 trolley car,
 But when it comes right down to steady
 practice, jes' the same,
 I'd rather have the hoss that understands
 an' knows his name.
 They claim to rival sunshine with their
 various patent lights,
 But they haven't fooled the song birds
 into stayin' up o' nights;
 An' I like to watch the day break, an' the
 tinted twilight hour;
 I'm satisfied to get to bed by jes' one
 candle power.

This hustlin' crowd is fond of the excite-
 ment, I've no doubt;
 But, for my part, I'm thoroughly content
 to be left out.
 The great throng keeps a rushin' an' a
 pushin' to an' fro;
 If you ask it where it's goin', why it
 doesn't seem to know,
 There's too many tellin' 'fortunes an' a
 showin' you the way
 To step right out o' poverty to millions
 in a day.
 I never was a hand to criticize an' disa-
 gree—
 But hones'ly, this ol' world's gettin'
 foolish, seems to me!
 —Washington Star.

THE MAN OF THE WEEK.

Jethro Tull.

(Died June 3, 1740.)

"The man with the Hoe" is a type of
 an ancient race. He is companion to
 the other survival of the days of much
 brawn and little brain—the man who
 uses a crooked stick for a plow. The
 Italian gardener who supplies many of
 our great cities with so considerable a
 part of their common vegetables, still
 buys the old-fashioned, brutal heavy hoe
 for his wife and children. He does not
 know that they could do more and do it
 more easily with the light steel hoe
 which is the intelligent farmer's one
 concession to the spirit and method of
 the days before the drill and the cul-
 tivator were made useful and respecta-
 ble by the skill and intelligence of Jeth-
 ro Tull.

Tull was an inventor of agricultural
 implements and an experimenter in
 their use. He was a student of agri-
 culture and agricultural problems,
 bringing to his work the trained intelli-
 gence of a man educated for the legal
 profession, but forbidden by the condi-
 tion of his health to follow his chosen
 calling. He was a man gifted with keen
 powers of observation and the insight
 to discover the relations between ef-
 fects and their causes. He knew how
 to adapt means to ends, to devise the
 right tool for a particular purpose. In
 the best sense, he was a maker of agri-
 culture. He invented the drill and the
 cultivator ("horse-hoe"), and used both
 implements with remarkable success,
 teaching the farmers of England and
 the whole civilized world the advan-
 tages of drilling as opposed to broad-
 cast sowing, and showing the almost
 supreme importance of deep plowing
 and thorough and frequent tillage in
 successful agriculture. His drills, his
 plows, and his horse-hoes were made
 to do particular kinds of work that no
 other implement could do as well. He
 would use the right tool. If it was not
 to be had otherwise, he invented it.
 Men do the same thing to-day; show the
 right man what is to be done, and he
 will make a machine to do it. But such
 men were few in Tull's day.

The inventor of the drill was more
 than an inventor; more than a progres-
 sive and successful farmer; he was
 the most influential agricultural writer
 of his generation, his Horse-Hoeing
 Husbandry reaching a wide circulation
 and great usefulness during his own
 life and the century immediately fol-
 lowing his death. Even now it is in-
 structive as well as interesting.

Tull is especially and justly famous
 for his invention of the drill, his intel-
 ligent and persistent use of the horse
 cultivator, and the valuable book which
 sets forth his practice, his principles,
 and the history of his work. In the
 notes to the Preface of his Horse-Hoe-
 ing Husbandry he says: "I am sur-
 prised to hear that some gentlemen pre-
 tend that I brought the instrument from
 France or Italy, when it is well known
 it had planted two farms with St. Foin

before I traveled, which was not till
 April, 1711, being above ten years after
 making and using my drill."

The origin of this drill is interesting.
 "When I was young," says Tull, "my
 diversion was music; I had also the
 curiosity to acquaint myself thoroughly
 with the fabric of every part of my or-
 gan; but as little thinking that ever I
 should take from thence the first rud-
 iments of a drill, as that ever I should
 have occasion of such a machine or
 practice agriculture."

Having become a farmer, Tull dis-
 covered that broadcast sowing was very
 wasteful of expensive seed. He tried
 sowing in "channels," covering the seed
 very carefully. Successful with ten
 acres, he reasoned that he might do as
 well with a thousand. Unfortunately, as
 it then seemed to him, he had fallen
 upon evil days, "when plough servants
 first began to exalt their dominion over
 their masters," and was unable to get
 them "to plant a row toberably again."
 So he resolved to quit his scheme un-
 less he "could contrive an engine to
 plant St. Foin more faithfully than such
 hands would do." He continues:

"To that purpose I examined and com-
 pared all the mechanical ideas that ever
 had entered into my imagination, and
 at last pitched upon a groove, tongue,
 and spring in the sound-board of the or-
 gan. With these a little altered, and
 some parts of two other instruments
 as foreign to the field as the organ is,
 added to them, I composed my machine.
 It was named a drill; because when
 farmers used to sow their beans and
 peas into channels or furrows by hand,
 they called that action drilling."

After giving an account of the de-
 velopment of his culture practices, Tull
 concludes as follows: "Thus I must
 acknowledge to owe my principles and
 practice originally to my travels, as I
 owe my drill to my organ."

A few extracts from the Horse-Hoe-
 ing Husbandry will illustrate the style
 of its author and his practical wisdom:
 "The chief art of a husbandman is to
 feed plants to the best advantage; but
 how shall he do that, unless he knows
 what is their food?"

"Leaves are the parts, or bowels of
 a plant, which perform the same office
 to sap, as the lungs of an animal do to
 the blood."

"Plants that come up in any land of
 a different kind from the sown or plant-
 ed crops are weeds."

Tull's chapters on tillage and hoeing
 might well have been the inspiration
 of the great revival of interest in thor-
 ough cultivation which the last decade
 has witnessed. Note this: "Another
 extraordinary benefit of the new hoe-
 ing husbandry is, that it keeps plants
 moist in dry weather." Tull was the
 original advocate of thorough and fre-
 quent cultivation. He practiced it and
 proved its usefulness as a censerver of
 moisture and a promoter of abundant
 crops.

Though he professed to have no skill
 as a writer, Tull had an attractive and
 effective style. Witness the following
 lines from his chapter "Of Lucerne," it
 being part of a description of our al-
 falfa:

"Its leaves resemble those of trefoil;
 it bears a blue blossom very like to
 double violets, leaving a pod like a
 screw, which contains the seeds about
 the bigness of broad clover, though
 longer and more of the kidney shape."

The following from his preface indi-
 cates that Tull was as earnest as he
 was modest; that he was a genuine
 hero, sacrificing his own comfort for the
 good of agriculture:

"It is no wonder that the style is as
 low as the author, or the dust that is
 here treated of, since the whole was
 written in pains of the stone, and
 other diseases as incurable, and almost
 as cruel. But fine language will not
 fill a farmer's barn; neither does truth
 need any embellishments of art."

Writing some sixty years ago, Cuth-
 bert W. Johnson paid the following just
 tribute to the inventor of the drill:

"Tull lies buried without even a stone
 to indicate that such a benefactor of agri-
 culture reposes beneath it. * * *

His deeds, his triumphs, it is true, were
 of the quiet, peaceable kind, with which
 the world in general is little enam-
 oured; but their results, their value to
 the land of his birth, were of no mean
 order. His drill, his horse-hoe, have
 saved his country, in seed alone, the
 food of millions; and when used as a
 distributor of manure, it has done, and
 it will hereafter accomplish, still great-
 er things."

The date of Tull's birth is unknown,
 and both January and June are claimed
 as the month of his death. Yet this is
 of little importance. The important
 thing is that he lived nobly and was
 one of the greatest benefactors of agri-
 culture.

Mussolino's Career.

Weeks and months pass, and yet the
 famous brigand Mussolino, who roams
 or roamed in the mountains above As-
 promonte, in Calabria, is still at large.
 The reports of his death are discredit-
 ed. Probably they are circulated in
 the hope of diverting the attention of
 the authorities.

The Italian newspapers, which regard
 the Boers as miraculous heroes because
 they succeeded in escaping capture by
 the British army in the Transvaal,
 might with advantage reflect that for
 the last nine months the Italian Gov-
 ernment has set nearly 500 men—cara-
 bineers, soldiers and police—to hunt
 Mussolino, and that up to now they have
 succeeded only in losing all traces of
 the famous brigand. Since February
 he has not even been heard of, and the
 authorities have not the faintest idea
 where to look for him.

The conditions of the problem are
 similar to those existing in the Trans-
 vaal—a large number of men operating
 over a considerable district in search of
 an enemy perfectly acquainted with the
 locality, agile and favored by the popu-
 lation. Thus the Mussolino "phenom-
 enon" attracted first the attention and
 then the scorn of the Italian public.
 The name "phenomenon" is not mis-
 placed, because Mussolino would long
 ago have been captured but for the ex-
 traordinary social conditions prevailing
 in Calabria.

There should be no misconception
 as to the word brigand. Mussolino is
 not the brigand who stops travelers or
 tourists and holds them to ransom or
 who indulges in highway robbery. For-
 eigners and tourists can go through the
 whole of Calabria with perfect safety
 without ever imagining a brigand to
 be in their neighborhood, unless they
 happen to read the local newspapers or
 to come across unusually large carabi-
 neer or infantry patrols. Mussolino is
 an escaped convict—according to popu-
 lar belief unjustly condemned—who is
 "wanted" both because of his escape
 and because since his escape he has
 murdered nearly all the persons who,
 as witnesses, magistrates or jury, had
 anything to do with his condemnation.
 But if he was unjustly imprisoned he
 was by no means a saint.

At 15 years of age he belonged to
 the mala vita, and was watched by the
 police; in March, 1894, when only 17
 years old, he was imprisoned for law-
 breaking, and three years later for
 housebreaking. At the end of 1897 and
 the beginning of 1898 he was repeatedly
 imprisoned for inflicting wounds on his
 fellow-townsmen. His condemnation
 for attempted murder at the end of 1898
 was merely a logical, though perhaps
 on the evidence an unjust, continuation
 of his criminal career. His escape from
 prison marked the beginning of his mur-
 derous vendettas which were to gain
 for him the title and rank of "grand
 captain" of the Calabrian Picciotteria.

The Picciotteria is something differ-
 ent from the Sicilian Mafia and the Ne-
 apolitan Camorra, though to some ex-
 tent it combines the features of both.
 The Mafia is not a vast organized crim-
 inal society, but rather spontaneous
 grouping together of rowdies and bullies
 in various localities for the purposes
 of defying law, getting justice done to
 its members and sometimes of levying
 blackmail.

The Camorra is less respectable than
 the Mafia, does not, as a rule, commit
 sanguinary crimes, and turns its atten-
 tion to making money in a thousand
 ways for the cowardly rascals who be-
 long to it. The Picciotteria is, like
 the Camorra, an organized association,
 but its sentiments are more like those
 of the Mafia. "One for all and all for
 one" may be said to be its motto. It
 is composed of unruly characters whose
 disposition leads them to set the law
 at defiance and cooperate in securing
 immunity from punishment for crimes
 which they singly or jointly may com-
 mit.

Unlike the Camorra, the Picciotteria
 commits the most daring crimes, includ-
 ing burglary, arson and murder; unlike
 the Mafia it is divided into sections, has
 "tribunals of justice," a treasury, and
 a supreme council. Its members are
 known as picciotti, but among them-
 selves are called frati, or brethren. They
 use conventional language and have or-
 ganized a system of universal espionage.
 Some time ago the government
 struck a heavy blow at the Picciotteria
 by arresting at one stroke and securing
 the condemnation of more than 260 of
 its members, but the glorious exploits
 of Mussolino have caused it again to
 spread, and he is recognized as its head
 with the rank of "grand captain."

While the police and carabinieri are
 searching for Mussolino the Picciot-
 teria acts as police for its "grand cap-
 tain," and keeps him minutely informed

of every movement of every patrol.
 Often picciotti take on themselves to
 "guide" the police, whom they carefully
 lead by difficult routes to places as far
 as possible from Mussolino's where-
 abouts. The celebrated loyalty of the
 Calabrian character renders it impos-
 sible to obtain trustworthy information.
 Mussolino is a Calabrian, and every
 Calabrian would feel himself to be be-
 traying a brother if he gave accurate
 information to the authorities.

Though the district is poor and fabu-
 lous rewards have been offered for
 trustworthy news of Mussolino, only
 two individuals have been tempted.
 These have had to suffer for their defec-
 tion, and the government most unwise-
 ly has made difficulties about paying
 them their rewards. Besides, the auth-
 orities have not a single authentic
 portrait of the brigand, who is often
 able to enter villages swarming with
 carabinieri and soldiers, and, as he is
 known to all the villagers, who refuse
 to betray him, but unknown to his
 would-be captors, he enjoys complete
 immunity.—Rome Correspondence of
 the London Post.

Beware of Ointments for Catarrh That Contain Mercury.

as mercury will surely destroy the sense of
 smell and completely derange the whole
 system when entering it through the mu-
 cous surfaces. Such articles should never
 be used except on prescriptions from re-
 putable physicians, as the damage they will
 do is tenfold to the good you can possibly
 derive from them. Hall's Catarrh Cure,
 manufactured by R. J. Cheney & Co., To-
 ledo, O., contains no mercury, and is taken
 internally, acting directly upon the blood
 and mucous surfaces of the system. In
 buying Hall's Catarrh Cure be sure you
 get the genuine. It is taken internally
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The Young Folks.

THE KANSAS EMIGRANT'S SONG.

(Younger readers may like to know and feel the sentiments that stirred the souls of the early Kansas emigrants, as set forth in the Quaker poet's fine verses.—Editor.)

We cross the prairie as of old
The pilgrims crossed the sea,
To make the West, as they the East,
The homestead of the free.

We go to rear a wall of men
On Freedom's southern line,
And plant beside the cotton tree
The rugged northern pine!

We're flowing from our native hills,
As our free rivers flow;
The blessing of our mother land
Is on us as we go.

We go to plant her common schools
On distant prairie swells,
And give the Sabbaths of the wild
The music of her bells.

Upbearing, like the ark of old,
The Bible in our van,
We go to test the truth of God
Against the fraud of man.

No pause, nor rest, save where the streams
That feed the Kansas run,
Save where our pilgrim gonfalon
Shall flout the setting sun.

We'll sweep the prairies as of old
Our fathers swept the sea,
And make the West, as they the East
The homestead of the free.
—John G. Whittier.

One of These Little Ones.

The little peddler of shoestrings was notable for several characteristics. She was a bright-eyed child and pretty, but that does not serve to identify children even in the Bowery, where the type of the juvenile merchant is comparatively common. It was her clothes which gave her the greatest distinction. Her dress had once been ambitious, for remnants of close-clipped ruffles peeped out of the seams; but the day of its respectability was long past. She was a very, very ragged little girl, and little girls so ragged are uncommon, even in lower New York. Five or six great rents in the dress defied darning, or would have defied it had any attempt been made to gather together the gaping wounds. The dirt of the street was incrusting over the original brown of the cloth, and made a combination which would have been as attractive to the artist as alarming to the sanitarian. Under the skirt of this garment appeared two long, thin legs, incased in stockings many sizes too large for them. These terminated in a pair of boots unsuitable in size and otherwise, for they were evidently the cast-off property of an able-bodied boy many years her senior. The little girl did not seem troubled by feminine vanity. The serious business of life demanded her attention and necessity urged her forward, regardless of slipping feet, to dispose of her wares before night.

"Shoestrings, sir?" The face she turned was bright enough, the skin a clear olive and the hair a rich brown; but it was nothing short of startling for all that. Mature enough for twenty, yet, like a hunted animal, it suggested tragedy. An inquiry as to her age accompanied the purchase of shoestrings.

"Ten years old, sir," came the answer.

"And you go to school, of course?" This to make her talk a little longer, before starting off again on her rounds. "No, sir? I used to go till twelve months ago, but the teacher says my dress is too ragged."

The child seemed frightened by the question, and, mindful of the foreigner's fear of truant officers and the Gerry Society, it occurred to the seeker after information to lead the child into a restaurant where he was known and his reliability could be vouched for. This done by the genial proprietor, who seemed to know the child well, the questioning was resumed.

"You have a father and mother, haven't you?"

"My father's dead. He died two months ago." Food, the familiar room, the kindly face of her friend the proprietor and the evident sympathy of her questioner began to loosen the child's tongue. She volunteered a few details. "I came home from peddling one day and he was lying on the bed, and when I spoke to him he couldn't answer. So they took him to the hospital—and he died. And they never told us when he was buried. I never knew," she insisted, "when they buried my father." A sense of wrong seemed to fill her young soul, but she made an effort to be just. "My mother she was sick. They must have thought it would

frighten her. She was sick a long time, my mother."

"The scared blue eyes were bright with intelligence and the mouth curved into smiles readily enough when once the dread of an "agent" in disguise was removed and she become convinced that her listener was friendly and sympathetic. She felt her wrongs, but she did not whine about them. Having to leave school struck her as the worst of the suffering, for she had all an immigrant's ambition to rise in the world by means of education. "If I don't go to school I'll forget all I know, and I was in the second primary, too," she explained. One wondered at the teacher who had chosen to send the child away rather than take the small trouble of asking among her friends for a decent dress; but there was no doubt that the child's present condition was a little too much for even the democratic atmosphere of a public school. "I ain't got no other dress, and how could I help it?" she not unnaturally complained. As to baths, they cost 10 cents; and 10 cents means more than a day's food.

"I buy my shoestrings for 10 cents," she volunteered, "and I sell them for 12. I sell almost all in one afternoon; but sometimes I take some home. I used to peddle on the Bowery, but they don't buy no shoestrings there. Not one I used to sell. A lady that lives in our house she gave me these boots. No, sir, they don't hurt me 'cept the nails. Oh, there's lots of nails in them. The gentleman that keeps this place he bought me shoes one day, but my sister she went to the Weisenhaus (meaning an orphan asylum), so I gave her the shoes. I was in the Weisenhaus once. They give you lots to eat. I wish I could go back."

A visit to a shoe store revealed the fact that the child's stockings in their better days had apparently been part of some man's bicycle equipment. There were five or six inches to spare, rolled up in the heel of the shoe. By the time she was fitted out she was almost laughing and perfectly garrulous. The promise of a dress in which to go back to school filled her cup of bliss, and she did not resent any number of questions regarding family affairs. There were six children in the family, all under 13, with a new baby. The two boys were in some home; the child herself seemed the support of the family. That morning they had breakfast on "2 cents bread and a penny milk." They would have more bread at night. A charitable society paid the rent. The kindness received had been their salvation; but from various remarks of the child it had hardly been of the sort which warmed the hearts of both giver and receiver. They were just "cases." Perhaps if the good women of the organization felt too keenly the sorrows they see they would be nervous wrecks in a month; but the whole business chilled the heart.

"I like the ladies that live in our house best," said the child, with engaging frankness. "But they're poor themselves, so what can you do! One lady in our house she cooked for us when my mother was sick. She was kind. The ladies from uptown they gave my mother a baby to nurse 'cause its mother she was dead. But my mother she couldn't do it, so she gave it back. They gave her \$2 for doing it, and she kept the baby four days, so she gave back \$1 when she gave them the baby. Since then they ain't come any more." A vision of the charity worker calmly giving to a starving woman two babies to care for rose before the listener. It appeared to be charity behaving itself unseemly, as the apostle declared it did not do.

"You know," went on the little maid, in a hushed voice, "my father died of hunger, I think." Her eyes gleamed brightly as she raised them to the face above her. "I think he died of hunger," she repeated. "And he was only 40. He got sick working in a sweatshop."

There seemed to be nothing lacking to complete the tragedy. The horrors of civilization seemed concentrated. The listener could bear no more, and, making an appointment for another day, sent the child away. The golden-brown hair shone in the sun as he watched her making her way with dangling shoestrings through the crowd. "When she grows up and that bright brain develops," he thought, "the picture of her father lying speechless on the bed, dying of hunger," will grow more and more vivid in her mind. What then? As if to offer an answer a pushcart man brought his wares within range. He was selling books, and the cart was dotted with "Morbund Society and Anarchy."—New York Tribune.

An Embarrassing Caller.

He was waiting at the front door when she went to open it, her curiosity having been roused by a volley of small raps.

Hello!" he said.

"Hello!" she answered, kindly, recognizing him as one of the three small children of the new neighbor who had just moved into the house across the street. He might have been about six years old.

"I've come to see you."

"Indeed! Just walk in."

"My mamma said I might come," he announced, as he followed her through the hall.

"That was very kind of your mamma," she said, trying hard to feel elated.

"Yes," he admitted with condescension. "She said you were lonely and hadn't no little boys to play with. Why don't you have no little boys to play with?"

"Perhaps I like little girls better," she answered, evasively.

Standing on the hearth-rug he considered this statement and then glanced round the room.

"Where's your little girls?" he questioned.

She explained weakly that she hadn't any at present, but that there was a whole orphan asylum near by on which she was at liberty to draw largely. In an unguarded moment she ended by boasting that she might have a dozen assorted orphans if she so desired.

"Get them now!" he demanded, in a tone of suspicion.

"Why, I have company!" she expostulated. "Suppose you take off your coat and sit down in this chair. I used to sit in this chair."

He regarded her and the chair with such terrible eyes that she explained quickly, "When I was little, I mean, just as big as you are."

He accepted the amendment and rocked for a time with an air of much dignity.

"My mamma said I could stay an hour. Is it an hour now," he finally inquired.

"Oh, dear, no! We must have some cake first. Do you like cake?"

"Yes," he admitted, frankly.

He was greatly taken with the cake when it was brought and praised it in warm terms.

"It's good cake!" he declared, when he had eaten the last slice and chased the crumbs around the plate. "I don't think it will make me sick. Some cake does, and then I have to have the doctor. This cake won't."

She became perceptibly more pale.

"Is it an hour now?" he asked after a silence.

"Not yet. Perhaps you had better go, though. Your mamma might be worried."

"She said an hour," he returned, with a look of astonishment at the palpable inhospitality.

There was no hope of abridging the call, and if spasms arrived, produced by excessive cake eating, she must bear the responsibility with fortitude.

"We're awfully poor," he announced, after a pause, during which she had racked her brains for a suitable subject for discourse. "There wasn't enough for the butcher this month."

"No!" she answered, rather startled. "But my grandmother's got lots of money. She's going to give the butcher some," he added, in a tone of triumph.

His hostess got up quickly from her seat and brought two picture books to stop further disclosures. He looked them through in a perfunctory manner, and it was evident that he preferred conversation.

"Did you see my new coat?" he asked, looking up from the last picture. "My mamma made it. She made it out of grand ma's old dress. My mamma can make anything."

"I don't doubt it," his hostess answered.

For the first time in her life she fully realized the magnitude of a mother's power. She bowed down in spirit before the little woman who was able to control three such atoms, and exact of them implicit obedience.

"I suppose you're a very good boy?" she ventured.

"Not very," he admitted candidly.

"I'm not going to heaven."

"No!" she exclaimed in horror.

"No," he replied with a cheerful smile. "Bridget says I'm too bad. She's



going to purgatory, and papa and mamma are going to heaven, and Davie and baby. Are you going there, too?"

"I hope so."

"I shouldn't think you could," he declared, with a critical expression. "Angels don't wear glasses."

"But your grandma wears glasses."

"She isn't quite sure where she is going. I think I'll go along with her."

His hostess had a bright idea.

"What are you going to be when you grow up?" she demanded, briskly. She had been told that this was the correct thing to ask little boys.

"A man," he returned with some contempt.

"Oh, I know that; but what will you do?"

"Work," loftily.

"Of course, but at what?"

He got up in the interest of the moment and stood before her.

"I'm going to be a big policeman, and when a bad man comes, won't I just catch him and take him up!"

She sat in silence after this, while he roamed round the room and examined the furniture. He sauntered back in a tired sort of way and gazed at the inscrutable face of the clock.

"Isn't it nearly an hour?"

"So nearly an hour that when you get your coat on the time will be up. Gently, gently! Why, I believe you are glad to go!"

Truth and diplomacy strove for the mastery, but it ended by his casting up his cap and declaring, "Ain't I just!"

He was very polite at the front door and promised to come again, and then his legs bore him swiftly away.—The Scotsman.

A Foregone Conclusion.

"You think she loves you, then?" "Think! My dear boy, how can she help it?"—Cleveland Plain Dealer.

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to San Francisco with the Epworth League? The Union Pacific will run Special Tourist Sleeping cars every day from July 6th to July 13th, Topeka to San Francisco without change. Rate \$5.00 for double berth. The round trip rate will be \$45.00 and tickets will be good till August 31st, 1901. Stop-overs may be secured at and west of Denver. For other information see your nearest Union Pacific Agent.



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116 West Sixth Ave., Topeka, Kans.

NOTICE EXTRAORDINARY. BLOCKS OF TWO.

The regular subscription price for the KANSAS FARMER is one dollar a year. That it is worth the money is attested by the fact that thousands have for many years been paying the price and found it profitable. But the publishers have determined to make it possible to secure the paper at half price. While the subscription price will remain at one dollar a year, and no single subscription will be entered for less than this price, every old subscriber is authorized to send his own renewal for one year and one new subscription for one year with one dollar to pay for both. In like manner two new subscribers will be entered, both for one year for one dollar. Address, Kansas Farmer Company, Topeka, Kans.

City people were surprised by a rise in the prices of meats last week. Steaks advanced from 1 to 2 cents a pound. The packers promise that no further advance will take place this season. July range cattle will steady the market, but that prices must hereafter rule high will be readily believed by all who read the able paper published in the stock department of this week's KANSAS FARMER.

The Kansas wheat harvest now has the floor. It is a good harvest. Millers in other states are placing buyers at various stations in the wheat belt to secure supplies from first hands. The famous Kansas hard winter wheat is constantly growing in favor as its superiority becomes more widely known.

At the agricultural college commencement last week the degree of Bachelor of Science was conferred upon 58 young men and women who had completed regular courses of study, and the degree of Master of Science was conferred upon 9 who had completed advanced courses of study. The annual address was delivered by President A. R. Taylor of the State Normal School.

Col. M. R. Platt, of Kansas City, who for twenty years has owned one of the largest, if not the largest, herds of Galloways in the world, has notified his long-time friend, Regent Coburn, of his wish to present through him to the Kansas State Agricultural College a pair of Galloway cattle. These may be two heifers, or a heifer and a bull, as the college prefers. This unsolicited generosity and public spirit shown by a citizen of another state toward a Kansas institution can not but attract much favorable attention to Colonel Platt and his herd. The latter, by the way, is a Kansas establishment, being maintained on an extensive Johnson County farm.

CHANGES AT THE AGRICULTURAL COLLEGE.

The regents of the Kansas State Agricultural College transacted much important business at their annual meeting last week. The contract for the new chemistry and physics building was not let because every one of the bids submitted exceeded the amount available. Some changes in the faculty were passed upon. The anomaly of two heads for the chemical department was ended by making J. T. Willard professor of chemistry, and George F. Weide assistant. A change was made in Professor Popenoe's work by assigning him to entomology and zoölogy. Albert Dickens was left in charge of horticulture for the time being. Miss Berry, of Ottawa, was elected to the chair of English during the year for which Professor Lockwood was granted leave of absence. Mrs. John H. Calvin, of Topeka, was selected librarian to succeed Miss Josephine Berry. Chairs not yet filled are mechanical engineering, horticulture, and oratory.

The retention of Professor Cottrell at the head of the farm department was an act of wisdom, as his lifelong familiarity with Kansas conditions and agricultural needs, together with his tireless, aggressive energy, and unselfish ambition to make the farm and station work of the utmost practical value to the agricultural and live-stock interests are qualifications especially requisite in his position, and in this particular institution.

The committee on farm and experiment station made several valuable recommendations, most of which were adopted. This committee consists of Secretary F. D. Coburn, Capt. J. S. McDowell, and Capt. S. J. Stewart. On the recommendation of this committee the following several actions were taken:

(1) The farm department was directed to correspond with leading manufacturers of farm implements, machinery, and motors, with a view to securing the loan by them of the implements and machinery of their make for the instruction of the students of the college during the winter term.

(2) If practicable to obtain them when desired, the farm department was authorized to purchase for the college three or more pure-bred barren cows or heifers of high quality, at beef prices, for slaughter and demonstration before the classes, for the purpose of showing the character and quality of beef afforded by such animals.

(3) The farm department was directed to procure, and fatten, for the college, one lot of not less than 5 hogs, using the ordinary grains and mineral matter therefor, and another similar lot upon which shall be used what is known as a balanced ration, and in February next a third lot is to be purchased that have been fattened in the ordinary way common among farmers. The three lots are to be slaughtered for the purpose of demonstrating to the classes the difference in the character of the meat, size of vital organs, quantity of blood, and strength of the bones, resulting from the differences in feed.

(4) The farm department was directed to purchase for the college, during the month of July next, two steers representing the best beef type; two steers of similar age, representing the dairy type of cattle; and two steers of the common or scrub type; to place these steers, when all shall have been secured, upon a fattening diet, to be continued for not less than six months. These steers, when fattened, shall be subjects for examination, alive, by the classes, and then slaughtered and the carcass cut up by a competent butcher for showing to students why and how the well-bred animals for beef purposes are most profitable. Efforts are to be made to secure at the time of such examination and slaughter, an expert in beef carcasses from one of the recognized leading packing houses to lecture before the classes upon the demands of the market and the qualities which best fit these demands.

(5) The farm department was directed to purchase for the college 50 Plymouth Rock fowls, also 50 Brown Leghorn fowls, and fit up, as economically as is consistent with their proper care, what is known as the "old pig house," for their accommodation and occupancy.

(6) The farm department was directed to make live-stock judging a special feature of the class work in the farmers' short course, in the dairy course, and in the first year of the four year course, and the professor of agriculture was directed to arrange for the service of an expert judge for instruction of the classes in judging, for not less than one week, in each of the following lines, viz.: Horses, beef cattle, dairy cattle, swine, and poultry,

provided such experts can be secured at the cost only of their traveling and hotel expenses. The professor of agriculture was authorized to borrow so far as is practicable, such animals as are needed for the work in stock judging, aside from those owned by the college. It was directed that the farmers' short course be rearranged so that crop production, feeds and feeding, and breeds and breeding, shall come in the first year, and provide that at least two hours per day be devoted to stock judging during the last half of the winter term. The farm department was directed to make such changes in the main floor of the barn as shall adapt it to stock judging purposes, at an expense not exceeding \$300.

(7) The farm department was directed to purchase for the college a trio of Tamworth pigs.

(8) The professor of agriculture and Regent Coburn were directed to purchase for the college, out of the legislative appropriation made for such purpose, such animals as will, with those the college now own, provide it with a trio of registered thoroughbred cattle of the following breeds, viz.: Short-horn, Hereford, Aberdeen-Angus, Galloway, Polled Durham, Red Poll, Holstein, Jersey, Guernsey, and Ayrshire. But, in case they have opportunity to acquire on shares, or by rental for a stated period of years one, a trio, or more of any of these breeds on terms which they consider more favorable than can be obtained by purchase, they were authorized to contract, on behalf of the board, for taking such animal or animals on shares or by rental as they shall deem for the best interest of the college.

The farm committee recommended that the farm department take up the work of seed-breeding and push it with all possible vigor. This plan resulted from the observations made by the committee of the board to visit other agricultural colleges, and from the recommendation of Professor Hays, commissioner of the U. S. Department of Agriculture, in charge of seed-breeding. Action on this recommendation was deferred to the July meeting.

A beginning at seed-breeding was made several years ago at our station by the botanical department. What may have been accomplished is not known outside of the college and station. The committee's plan for the work contemplates cooperation between the farm department and at least 2,000 farmers in various parts of the state. Seed-breeding, or perhaps more properly, plant-breeding, requires the application of some knowledge of botany, just as stock-breeding requires the application of principles of zoölogy. But the improvement of plants by breeding is dependent upon agricultural treatment in much the same sense in which stock-breeding is dependent upon feeding and care of animals. Nobody thinks of placing the stock-breeding of the station in the department of zoölogy, and yet such course would be as rational as to place seed-breeding in the department of botany. There is abundance of experimental work for the botanist to do, work which can not as well be done in any other department. A very important botanical problem not yet solved relates to finding a way to cause beans, alfalfa, etc., to cross fertilize. Such information would be very valuable to the practical seed breeder, standing on a par with the information he obtains from the chemist. If it be suggested that placing this work in the farm department makes this a very large department, it should be remembered that this is an agricultural college, and that agriculture is several times as large as all other Kansas industries together. But the KANSAS FARMER can not believe that men of sufficient caliber to be honored by the State with positions in its agricultural experiment station will be guilty of petty jealousies against the magnitude of the farm department. Better that they devote their energies to the great problems for which solutions are asked of their departments.

It was remarked in these columns last week that the Kansas experiment station has had the Congressional appropriation of \$15,000 per year for the identical period that it has been received by the other State stations. Minnesota is able to report notable improvements in both the yield and the quality of her wheat as a result from seed-breeding at her experiment station. The increase in yield is placed at 2 to 3 bushels per acre. These improvements go directly to the pocket-books of Minnesota farmers. The KANSAS FARMER has for ten years urged the importance of this work for Kansas, and it is time Kansas farmers were receiving some such benefits as are reported in Minnesota. The Illinois station was able two years ago to report

notable improvements in the quality of corn. Fifteen thousand dollars a year ought to do as much for the farmers of Kansas as the same sum does for the farmers of Illinois.

To get these benefits it must be remembered that these problems are practical farm problems to be worked out by the application of science on the farm in Kansas, by Kansas, for Kansas. It is to be hoped that the regents will see the wisdom of the recommendations made by the farm and station committee, and will place seed-breeding, the most important of all the work of the station, upon a practical footing, backed by sufficient energy and money to produce returns which shall reach to the bank accounts of the farmers of Kansas. An increase of one bushel per acre in the yield of Kansas wheat would mean not less than 5,000,000 bushels, say \$3,000,000 per annum for the entire State. An increase of 2 bushels per acre in the yield of Kansas corn would mean not less than 14,000,000 bushels, or say \$3,500,000 per annum for the entire State. While these are two of the great crops of Kansas it must not be forgotten that oats, Kaffir-corn, the clovers, the grasses, and in fact all cultivated crops are susceptible to improvement by breeding. They may be so changed as to better adapt them to the peculiarities of our climate and soil. The Kansas experiment station has lost the honor of being first to demonstrate the practicability of such improvements by plant breeding, but there remains the opportunity to reap financial profit by following the course demonstrated by others. More important than all other experimental work possible to the station is that of plant breeding. This importance rests on the solid basis of the dollars and cents in it. There should not be an hour's delay in placing this work in such shape as to realize results at the earliest possible date.

A Kansas Horse Ranch.

Kansas now has one of the largest horse ranches in the world. It is owned by Capt. W. S. Tough, of Kansas City, formerly manager of the horse and muel market of the Kansas City stock yards. The ranch consists of 30 sections of land, 19,000 acres, located in Gove county, on the Union Pacific railroad, one of the extreme western counties of the state.

Captain Tough has been extending his holding in ranch property in recent years. He first established a ranch between Kansas City and Leavenworth. Two years ago he bought Bismark Grove at Lawrence and turned it into a horse ranch. Three weeks ago he bought a quarter section of land just across the Union Pacific tracks from Bismark Grove, paying \$100 an acre cash for it. This he will utilize in raising feed for his horses. His business has increased so rapidly, however, and the great possibilities for making money on horses has caused him to close a deal which will make him the owner of the largest horse ranch in the world.

The 30 sections of land which Mr. Andrus has sold him are along the Smoky Hill river in Trego County. It is very fertile, is well supplied with water, and is especially adapted for the very purpose for which it is purchased. It will all be put under fence, and divided into fields. The most of it will be utilized for pastures. The rest will be sown with alfalfa. Large stables will be erected to protect the animals in the winter, and a race track will be built to train horses, both for the track and for city roadsters.

Cheap lands, good pastures, and cheap feed are the cause of Captain Tough going so far west to locate his mammoth ranch. If located further east land would cost more and so would feed. The saving in the cost of putting an animal in condition for the market in Gove County more than offsets the shipping charges on the animal to the local market. It is Captain Tough's ambition to make his Gove County ranch the model horse ranch of the world.

Watering Horses.

N. J. SHEPHERD, ELDON, MO.

A small item, yet one that should not be overlooked in the management of the work teams, especially during the summer, is that of giving them water before breakfast. If the watering arrangements are convenient it will take but a few minutes more to water them before breakfast and they will not only relish their food better, but it will be digested better. At this time of the year horses are always thirsty in the early morning and if not watered before they eat will invariably drink more than is good for their digestion, as more or less of the food will be washed into the stomach before being digested.

Brain Markets.

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

The Farmers' Co-operative Grain and Live Stock Association.

This is an age of evolution; the individual is lost sight of, and associations are at the helm. Nearly all of the different railroad systems of the country are in associations called "community of interests," and no longer fight one another. Skilled labor all over the country is associated into a hundred or more different trade unions; every manufactured commodity is controlled by associations; the latest, the plow trust, with 50 millions of capital. The grain dealers of Kansas have an association with headquarters at Topeka, which is in touch with the world's markets, crops, and statistical bureaus. It finds markets for its members and important news to grain dealers is immediately forwarded to them to their advantage.

Now what of the farmers? The farmer is still the same individual he was a century ago. He is between the upper and nether millstone being reduced to dust, he is, so to speak, up against all of these combinations single handed and alone, and is the only man in the world that can not put his own price on the products of his own labor. The success of the world's great captains has been their ability to concentrate and hold a superior force against the weakest part of the opposing forces. In union there is strength.

The Farmers' Co-operative Grain and Live Stock Association is a business organization.

It is incorporated under the laws of the State of Kansas.

It is managed by a board of 9 directors.

Every officer in the association that handles money is required to give bond in some reliable surety company. The amount of bond is fixed by the board of directors.

The Farmers' Co-operative Grain and Live Stock Association is the central organization of the State. It will be known as the State Association.

It is a commission company to sell grain and live stock on commission. The State Association does not buy grain or live stock; its business is to sell for auxiliary organizations and individual members on commission. Confined to a strictly legitimate commission business the grain trust can not affect the State Association by its manipulation of the markets. An advance or decline in the price of grain will in no way effect the State Association. Its promoters have laid for it a firm, solid foundation. Its advantages to the producers are many. It is their own company and is under the control of their own selected agents. The stockholders pay the same commission that they would have to pay any other commission company for selling their grain. It is believed that from the vast amount of business which will be handled by the association that the profits will be sufficient, in time, to enable them to own their own scales, employ their own weighmasters and inspectors of grain; and that they will lease or control the elevators through which they operate.

By concentration of business from the entire State, through the State Association, it will greatly reduce the handling charge and will create a fund sufficient to protect the producers without any extra cost to them and yet leave a sufficient sum to enable the company to declare a profitable and satisfactory dividend to stockholders.

The State Association will be in touch with all the great central markets of the country, with all the cooperative associations in the United States, with large flouring mills and exporters of grain, and will also look after the territory where crops are short, and will assist in placing surplus products where they will command the best prices. It will also keep its members posted regarding markets and other valuable information.

A PROFITABLE INVESTMENT.

If Kansas farmers market 40,000,000 bushels of grain this year the amount paid to commission men at 1 cent per bushel would be \$400,000. On corn and oats they would no doubt pay a like sum of \$400,000 commission. Add these sums together and you have a total of \$800,000 for commissions that you pay on grain alone. Now if our company can secure 1/4 of this business the gross earnings would be \$200,000. Say we expended half this sum in expense conducting sales and employing men to guard our interest in securing

just weights and grades, we would still have remaining \$100,000 in profit to be paid to stockholders in the way of dividends. If our stock were all taken their profits would be 5 times the amount of our capital stock.

We should have half of the business and will have more than that if producers act intelligently. You have it all in your hands to make the company a success and get the money that you invested all back in less than a year's time. Will you take hold like business men, or will you stand back, scared at the figures and go on paying to your enemy?

Farmers and producers have contributed a few cents per bushel, on every bushel of grain sold, toward building the "line elevator" system. The grain dealers hold the titles to the property. Why not support your own organization and in time own your own elevators?

What risk do the farmers take in marketing their own crops? None whatever. The grain dealers deduct the risk from the market price of wheat with a good big margin added.

Every farmer and producer who reads the FARMER should take at least one share of the capital stock of the Farmers' Co-operative Grain and Live Stock Association. They should attend to this now and get the organization in shape to handle this year's crop. We want your help. We need your assistance. Send in your application at once.

There is only one way for the farmers to get fair treatment in the market and that is to own and conduct their own market, through their own agents, and supply their own capital. Are you going to help in this great work? If so we want you now.

If you desire more consideration in the market put yourself in a position to demand it. Don't go around begging for some one to help you. Help yourselves. Support your own organization.

Would you rather contribute to the grain trust than to get justice by patronizing a company of your own? Both opportunities are before you, and if you don't invest in your own company and patronize it, the grain dealers will make you contribute to them.

If you love your wife and children you will invest in the capital stock of the Farmers' Grain and Live Stock Association and help in establishing a system of marketing crops that will give them what belongs to them. You can better their condition if you will do it.

Farmers, wake up! Why are you slumbering, hesitating, when you know we want your assistance? We need your help. Will you sit idly by and let others do for you what you ought to do for yourselves?

One man writes us and says his heart and soul and sympathy are with us; and that he will take stock in the association just as soon as he sees we have made a success. What a benefactor that man is. What a patriot. He will stand back and watch us fight, and just as soon as he sees we have licked the enemy, he is willing to rush to the front. How many are like him? God hates a coward.

The grain dealers back their organization with cash, and you grain producers foot the bills. If you don't help yourselves the grain dealers will make you contribute to them; and every dollar contributed will enable them to increase their oppression.

Do you believe you market your crop in the best possible manner? Do you think you get justice in the market? Do you dress your wife as well as the man who handles your grain? Does she sit idly by while hired servants administer to her wants? Are you as full handed with cash? If not, why not? Don't you work as hard? The grain dealers are organized. The farmers are not. The grain dealers are organized to attend to your business. Farmers should organize and attend to their own business.

The Golden Rule Co-operative Association at Upland, Kans., has \$10,000 of paid up capital stock. Their limitation of stock is \$500 to any one person. They are conducting business on business principles. A man and wife can take \$1,000 stock which is the limit to any one family. The association has over 200 members.

The Farmers' Shipping Association of Kensington has subscribed for 10 shares of the capital stock of the Farmers' Co-operative Grain and Live Stock Association. They have over 300 members, and have been in successful operation for fourteen years. They are cooperative, and know a business proposition when they see it. Geo. E. Smith is president; James Boyd, secretary, and Oliver Sanford is manager. Let other cooperative organizations do likewise.

Our Native Pasture Plants.

Pastoral pursuits were among the first peaceful industries to engage the attention of man, and to-day the pastoral industries of the greatest nations surpass all others in importance and are second to none in actual money value. The great grazing regions of the world are the steppes of Russia, the pampas of South America, the almost boundless pastures of Australia (supporting more than 112,000,000 sheep and yielding 1/4 of all the world's supply of wool), and the vast plains and mountain slopes of the interior of our own country. In a broad sense, these are the world's greatest pasture lands, and the pasturage they supply furnishes the bulk of the world's beef, wool, and other animal products entering into its commerce. The cattle, horses, and sheep of the United States number over 100,000,000, valued at \$1,829,000,000. The vast capital these represent is absolutely dependent upon the greatest of all our natural resources, our grasses and forage plants. These annually sustain industries valued at nearly \$2,000,000,000, industries upon which the very existence of the human race is dependent. The figures giving the value of all our beef consumed at home and abroad, our mutton, our milk, butter and cheese, and the hides and wool, and numerous other animal products which minister to our pleasure and comfort, show a surprising multiplication of industries dependent upon our forage supplies. The amount of hay produced in the United States is estimated in round numbers at 70,000,000 tons—scarcely more than enough to feed our cattle, horses and sheep during three months of the year. This hay crop, valued at \$400,000,000, must be supplemented by 210,000,000 tons from other sources. This amount, or 75 per cent of the hay and forage necessary to maintain our stock, is furnished by our pastures and grazing lands. The question of what does this pasturage consist is thus an exceedingly interesting one, and almost equally interesting, and even more important, is that of how shall this forage supply be maintained and its productiveness and feeding value increased.

While it is true that the bulk of our hay crop, possibly 95 per cent, or even more, is composed of grasses and other plants introduced from foreign countries, it is equally true that the bulk of our pasturage is composed of grasses and fodder plants indigenous to the soil. It may be safely stated that 98 per cent of our pasture plants are natives. This is especially true of the cattle ranges of the West. It will be seen, then, that our supply includes practically all of our native grasses; and many plants of other families upon which cattle depend more or less for subsistence—for the cattle range over all our wild lands, and the grasses with which these lands abound, numbering throughout the country many hundreds of species, every one producing a mite at least of the general forage supply—may be classed with our native pasture plants. To enumerate them all would be wearisome; and we must be content to consider those regarded as of special importance, either on account of their abundance or adaptation to peculiar conditions. Our native pasture plants vary according to the soil and climate, especially as these are affected by altitude and latitude, and, owing to the breadth of our territory and dividing mountain chains, great variation also occurs with change of longitude. We can broadly classify our pasture plants into those of the wooded regions and those of the treeless areas; the former occur both upon the Atlantic and Pacific slopes, and the latter occupy the vast interior of the country.

The characteristic grasses of the wooded areas, or of those regions where the rainfall exceeds 25 or 30 inches, produce a continuous turf or sod, while those of the treeless plains

and foothills of the mountain ranges in the interior and of the desert regions, the so-called bunch grasses, do not form a continuous sod, but grow in more or less scattered tufts or bunches. The western stockman has long been familiar with these bunch grasses of the cattle ranges, and justly prizes them for their nutritious and fattening qualities, while the eastern farmer knows only those grasses which make a clean, unbroken sod and a rich, succulent growth, such as is formed by Kentucky blue grass, the best and most highly prized of all turf-forming species. It is true that bunch grasses occur in the wooded regions of the East, and it is also true that turf-forming grasses are found in the arid, treeless regions of the interior, but such are the exception, and their presence does not conflict with the general statements here made.—F. Lamson-Scribner in Department of Agriculture's Yearbook, 1900.

Preliminary classifications for the second International Live Stock Exposition, to be held at Chicago, November 30 to December 7, 1901, are now ready for distribution and may be had upon application to Mr. W. E. Skinner, general manager of the International Live Stock Exposition, Union Stock Yards, Chicago. Work has been commenced upon a brick building 620 feet long by 130 feet wide, in which will be housed the exhibits of breeding cattle. The building is planned with a view to the comforts of the animals and convenience of the attendants, and will be admirably suited to its purpose. Other buildings will be erected, insuring ample space for all exhibits, and opportunity to view same with ease and comfort. The National Live Stock Association holds its annual convention in Chicago at the same time, and its attendance will doubtless exceed that of last year. Great as was the initial exposition the ideas of next December will witness a greater in many important respects, the outgrowth of added experience on the part of the promoters and increased interest and appreciation on the part of feeders and breeders.

New Tricks.

Wimbleton—"Hello, old man; have you taught your dog any new tricks lately?"

Quimbleton—"Yes; I've been teaching him to eat out of my hand. He ate a big piece out of it yesterday."—Harvard Lampoon.

If warm weather makes you feel weary you may be sure your system needs cleansing. Use Prickly Ash Bitters before the hot weather arrives; it will put the stomach, liver and bowels in order and help you through the heated term.

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to San Francisco with the Epworth League? The Union Pacific will run Special Tourist Sleeping cars every day from July 6th to July 13th, Topeka to San Francisco without change. Rate \$5.00 for double berth. The round trip rate will be \$45.00 and tickets will be good till August 31st, 1901. Stop-overs may be secured at and west of Denver. For other information see your nearest Union Pacific Agent.

FARM BARGAINS—Three hundred acres, 80 cultivated; level productive soil; all tillable; 5-room dwelling; rent house, post-office, church, school and store one mile. Price for quick sale \$2000 (worth double). Write, M. Moore, Moorefield, Ark.

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Summer at Seaside— California.

Among the numerous summer resorts on or near the California Coast are: San Diego, Coronado Beach, Redondo Beach, Santa Monica, Santa Barbara, Santa Cruz, Monterey and Catalina Island. Popular and easily accessible. Boating, bathing, fishing, cycling and riding, golf, tennis.

It costs little or much, as you please. Cheap rates this summer over the Santa Fe.

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TOPEKA, KANSAS.

Horticulture.

Cultivating Orchards During Drouth.
 PROF. J. C. WHITTEN, MISSOURI.

At the present time a consideration of the cultivation of orchards is pertinent. The weather has been very dry over a large part of the State for nearly two months. In fact the weather bureau shows that the present drouth breaks all previous records for this time of year. May and June are usually our wettest months, and yet, in central Missouri less than an inch of rain has fallen in nearly two months. The previous winter was also somewhat dry and the ground contained less than the usual amount of water when spring opened. Added to this, the winter was very mild, the ground did not freeze much and consequently we missed the usual disintegrating and loosening of the soil by frost. This left the ground firm and in a settled condition upon the approach of spring. As a result, where cultivation was not begun early these conditions have combined to render the fruit-trees unusually liable to suffer from lack of moisture and hence the unusual necessity for thorough cultivation at the present time.

It should be borne in mind that the best way to retain moisture in the soil in our orchards is to keep the surface fine by frequent cultivation. The dust mulch on top prevents evaporation of moisture into the air, thus retaining the water in the soil for the use of the trees. A crusted or baked soil allows great quantities of water to pass off into the air, so the moisture of the soil is soon wasted where thorough cultivation is not kept up. This principle in tree culture is not always kept in mind by the grower. In fact many suppose that to cultivate the soil in a dry time has the effect of hastening its drying out. We frequently hear the expression that it is too dry and hot to cultivate. That to cultivate during dry, hot weather will heat and dry out the soil to such an extent that the plants will suffer. It is true that a cultivated soil dries out to the depth to which it is stirred in a dry time; but it is also true that the soil below the dry dust will retain much more water than it would if the surface was not stirred to prevent evaporation.

Recent observations in some of the cultivated and uncultivated orchards in central Missouri, show that where the orchards have been given frequent and thorough cultivation for the past few weeks, the soil just below the dust is moist and the trees are not suffering for moisture. Where no cultivation has been given the soil is baked crusted and is cracking open from the effects of the drouth; the trees are already beginning to suffer from lack of moisture and unless rain soon comes the prospect of good development of the fruit will be much lessened.

Experiments in orchard cultivation which have been carried on by this station for the past six years and which have been outlined in Bulletin 49 show that it is during times of drouth that orchards trees suffer most from lack of cultivation. The devitalizing effects of such a drouth are not confined to the time which the drouth lasts, but are even more apparent the following year or even the second year after. On the other hand during the six years over which the experiments have been carried trees that were given thorough cultivation did not suffer during the most protracted drouths that occurred during that period. They made a uniform growth from year to year instead of fluctuating in their growth as did uncultivated trees.

The present time is one in which cultivation is needed to more than the usual extent. The surface soil should not only be made fine to the depth of 2, or 3 inches, but it should be frequently stirred, to prevent its packing, even though no actual crust forms or no weeds start. Where the land is lumpy, as it is in most cases where cultivation could not be begun until the land had become hard, an especial effort should be made to fine it and to stir it frequently. Such tools should be used where possible as will best fine the lumps, and form a fine dust mulch. In such cases there is little danger of cultivating too much until the rain comes.

In cases where cultivation has not actually begun, precaution should be taken in breaking the ground. Where the earth is hard and baked injury might be done by plowing the ground deep between the rows. At this dry time it would be very unwise to cut off any of the roots of the trees near the surface of the ground. Trees that might suffer no injury from the break-

ing of some of their surface roots during the moist period of early spring would no doubt be seriously injured by cutting them off in plowing during this dry time. The trees need all their root surfaces to gather water enough to keep them in good condition.

It is well to remember then that the cultivation should not be more than 2 or 3 inches deep. For that reason a disc or cutaway harrow will be better than a plow. Where the land is too stony for these soils some heavy harrow, adapted to the particular land in question, is safer than any tool that will go deeper than 2 or 3 inches. Where the land is turned by means of a disc or cutaway it should be immediately fined by means of some light harrow or other tool that will improve the dust mulch and obliterate any bare furrows left by the disc.

Level culture is best. It is very undesirable to ridge the land by throwing the earth either toward or away from the trees. The roots adapt themselves to a given depth. If the soil is ridged it leaves sections of the roots much nearer the surface in the low places and much deeper down where the earth is thrown up into a ridge. The more nearly level the culture the less evaporating surface of the soil that is exposed, also. This is an additional reason for level culture. If the tool used throws the soil one way it is best to reverse it and throw it back at the next working.

If these suggestions are kept in mind in managing the orchards during the present dry time much will be gained. The ideas expressed are not new or untried, in the main, nor is the practice recommended above in any sense an innovation. The experience of the best orchard growers in the State have verified them again and again, and the thrift of many of the best Missouri orchards is largely due to just this kind of treatment.

Fruit, and How to Preserve It.
 "ISHBEL" IN NOR-WEST FARMER.

One of the chief objects of this article is to help the inefficient ones who "never have any luck." I will, therefore, try to give a little of my experience along that line.

I only have a "canning day" when I buy fruit that has to be cooked up at once. All during berry season I preserve as many cans as my oven will hold. I have a baking pan about 4 inches deep—one of less depth will do, but the deeper the better.

RHUBARB.

Rhubarb comes first in the season. You can preserve rhubarb in a great variety of ways. I fill quite a number of jars as full of the plant as I possibly can; then fill up with clear cold water and seal perfectly air tight. In winter I use this stewed up with plenty of sugar, or drain off the water and use the plant for pies.

Rhubarb, preserved with choke cherry juice, is excellent. My boys say it is the nicest fruit we have in the cellar, and we have pears, peaches, plums and grapes. I cut up the rhubarb and use a dipper as a measure. Fill the dipper full of rhubarb and then pour on juice until the dipper is full of juice. To every quart put 3 cups of granulated sugar, and boil until the rhubarb is cooked, stirring pretty constantly. If nicely done, you have a preserve equal to Damson jam.

To can rhubarb, I use only the reddest I can get. I fill the cans as full as possible, and to every quart can I use 12 ounces of sugar and a cup of water, make a syrup and fill up the cans; then close the cans loosely and place in the oven with as much warm water in the bakepan as it will hold. Do this in the morning, and by the time your dinner is over the rhubarb will be cooked. You can open a jar and run a knitting needle down and tell if the fruit is cooked. Take the pan out of the oven if done, and screw the lids on tightly. In an hour or so, if you see that the fruit has sunk very much in the jar, as it sometimes will, you can make more syrup and fill it up while boiling hot. I do this successfully, although some claim it is best to let them alone.

Do not put fruit in the cellar until it is perfectly cold and always try and give them a tighter screw the last thing before putting away. Remember that sugar is not the keeping property—but having the cans air-tight, and keeping them so.

One great object to be attained in canning is to keep the fruit whole, and another is to save all the flavor, which, if cooked in the old way, often escapes in steam.

The amount of sugar necessary for each quart jar of fruit is as follows:

- ARMSTRONG & McKELVY Pittsburgh.
- BEYMER-BAUMAN Pittsburgh.
- DAVIS-CHAMBERS Pittsburgh.
- FAHNESTOCK Pittsburgh.
- ANOROR Cincinnati.
- EKSTEIN Cincinnati.
- ATLANTIC New York.
- BRADLEY New York.
- BROOKLYN New York.
- JEWETT New York.
- ULSTER New York.
- UNION New York.
- SOUTHERN Chicago.
- SHIPMAN Chicago.
- COLLIER Chicago.
- MISSOURI St. Louis.
- RED SEAL St. Louis.
- SOUTHERN St. Louis.
- JOHN T. LEWIS & BROS CO Philadelphia.
- MORLEY Philadelphia.
- SALEM Salem, Mass.
- GORNELL Buffalo.
- KENTUCKY Louisville.

PAINT SAVES MONEY. It protects your property and improves its appearance. Buildings kept well painted last longer; without protection from weather and sun they will soon decay.

In painting, labor is two thirds of the cost. It is a waste of money to put anything but the best paint on your buildings.

The best paint is Pure White Lead (see list of brands which are genuine) and Pure Linseed Oil. This will protect your buildings longer and better than any other known paint material.

For any color or shade required, use NATIONAL LEAD COMPANY'S Pure White Lead Tinting Colors. Pamphlet sent free upon application.

National Lead Co., 100 William Street, New York.

- Raspberries, blueberries, peaches, 6 ounces.
- Pears, apples, 8 ounces.
- Crab-apples, plums, 10 ounces.
- Currants, 12 ounces.
- Rhubarb, 12 ounces or more.

A nicely rounded off tablespoonful of granulated sugar weighs an ounce and 8 ounces is a common delf cupful.

Test your jars, adjust your rings, then fill full and shake gently to get all the fruit in you possibly can without breaking it. Then glance at your table of sugar and you will get the exact amount of sugar you require; place it in a granite kettle with an equal proportion of boiling water; when the sugar has dissolved and the syrup is boiling hot, put it over the fruit. Use a cup half full and distribute it over all the jars. If the syrup is all used and there is still room for more liquid in the jars, take the boiling kettle and fill up the vacancy. Place on the tops, screw loosely, and put in the deep pan in the oven. If your fire is only a moderate one, it will not hurt the fruit to remain in the oven for 2 or 3 hours till cooked, but screw up tightly the moment it is taken from the oven.

When your cans are getting empty in the winter, and you happen to have a barrel of Talman sweet apples or russets, you can preserve them the same as pears, using the same proportions of sugar. You will find this nice when apples and other fruit are getting scarce.

Construction of Fruit Houses.

A fruit house should be so constructed as to preserve an even temperature. Storage houses are of 2 types: First, those which modify but do not regulate extremes of temperature, and second, those which furnish definite low temperatures. Houses of the first class are generally within the means of the commercial fruit grower. Those of the second belong to the equipment of the fruit dealer. The ordinary storage house is probably a frame building provided with a well drained cellar and having perfectly insulated walls and double doors. Insulation is secured by providing two or more air spaces in the walls. These air spaces should be separated by paper covered partitions. Comparatively low temperatures in these buildings may be secured in the fall by keeping them tightly closed during the warm part of the day and ventilated only on cool nights. Fruit houses of this character will keep out frost so that the grower may hold his fruit till a favorable opportunity for selling occurs. Dry air prevents the growth of fungi, but causes the fruit to shrivel; a moist atmosphere on the other hand preserves the plumpness of the fruit but encourages the development of parasitic plants. Extremes should be avoided. The principal thoughts for the fruit grower to keep in mind in handling his fruit are that it is a perishable article, that its keeping season may be lengthened by careful handling and by low even temperature, and that profits may be increased by placing it on the market in an attractive form.—College of Agriculture Cornell University.

Experience in Handling Small Fruits.

If you wish to handle small fruits you must have patience, and time will bring you the experience. Of patience you must have a large stock to draw from; you must not be disappointed if the berry patch is without profit 3 years out of every 5. You must be able, and have the knowledge, to do the right thing at the right time, if you wish to

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turn your experience to a financial profit, and that is the incentive which urges most of the fruit growers to risk money, land, and labor in a horticultural enterprise.

Start right, get the latest State horticultural report, and learn of the experience of some successful fruit growers of your vicinity. The closer the fruit growers live to your farm the more valuable will be the experience. Do not rely on experience from a distance. What is proper to do in western Kansas, or California, or in the State of New York, might prove to be wrong if done here. Know what you can successfully produce, and of that product what your market wants, and then prepare to supply those wants. If the market wants a red, and very red, strawberry, raise that kind; if a Kansas black cap is not good enough raise a cardinal. In fruit, as well as cattle, any color will do, just so it is red.

If you are raising fruit in a commercial way you need not try to educate the public taste. It demands—and your province is to supply. Appearance, color and size will obscure the lack of a fine flavor, and some other essential qualities. Experience will tell you all of this. You may post yourself thoroughly on the subject of small fruits, get good advice from your successful neighbor, but be careful, you do not know it all yet, at least not enough to write a great book about your specialty. Men who have grown grey in the service will tell you they learn as do beginners, by experience, so go slowly, start on a small scale, and

STARK TREES SUCCEED WHERE OTHERS FAIL.
 Largest Nursery. Fruit Book Free. Result of 75 years' experience.
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ITALIAN BEES....

Full colonies shipped any time during summer and safe arrival guaranteed. It will pay you to try my stock of Italian bees in the Latest Improved Hives. Nothing will double in value quicker.
 A. H. DUFF, Larned, Kansas.

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The Challenge Fruit Press and Colander.
 This press is especially adapted to the working of fruits of all kinds for Fruit Butter, Jellies, Catsups, etc.; is also the best family Lard Press made, and by its use the hands are not burned or stained. It does more work in an hour than can be done in one day with an ordinary colander. Agents wanted in every county. Send for terms and testimonials. Also how to secure one Free. Secure agency early.
 Alanson Bales
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you will find many small details that you never dreamed of, one of which may cut a very wide swath and turn an otherwise profitable business to merely a bit of experience. Your theories may be very good, but your experience will be golden.

When you have produced some fruit handle with care. "Hands off" has by Nature been written on all delicate fruits and you must obey this order, or pay the penalty. If you can by careful and judicious management lengthen the market life of a crate of berries you are a public benefactor, and will receive the grateful thanks from the consumer, as well as the merchant who handles your fruit.

Well filled boxes, nicely faced with a fair sample of the contents is a good advertisement, and an investment that will well repay you for your extra time and labor.

Stamp the crates with your name and address, and, if you care too, it is well to have each box bear your name.

Name your farm and see that nothing but properly graded fruit leaves your place, and you are sure to build up a reputation that will always bring to you plenty of customers, thereby insuring you a ready market.

When you have produced any or all of the small fruits you have benefited your fellow men; have given them a healthful food rich in nutrition and free from germs of disease, which is quite a contrast to some of the meats that are sold to the public. More fruits and vegetables and less meat will produce more happiness, health, and peace. A meat eating people are always a warlike people, and with our civilization we should never have another war. Every farm, no matter how large or how small should have plenty of small fruits; they produce very early a luxury for the table. By planting this year you are reasonably sure for some return next year, you do not have to wait 6 or 8 years for fruit. Apples, and the stone fruits, are good, and very essential to mankind, but while waiting for a crop of these, you can enjoy several crops of small fruits.

Taken as a whole, we believe small fruits have less destructive enemies than the other fruits. So raise small fruits, do not stop with one kind, but have a lot of them; get the strawberry, raspberry, blackberry, gooseberry, blueberry, dewberry, and the currants, they are all good and your experience will be a benefit to yourself and to mankind. As the secretary of the State Horticultural Society truly says, "Horticulture is the beacon light of agriculture," and then we say, plant small fruits.

In the Dairy.

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

Modern Stable Construction.—I.

FORMER UNSANITARY STABLES.

HERBERT SHEARER.

The proper housing of domestic animals is receiving careful systematic consideration as never before. Investigations are being conducted by means of careful, practical experiments by men who are thoroughly conversant with the subject from a practical as well as scientific stand-point.

Mr. F. A. Converse, who has charge of the live stock and dairy departments at the Pan-American Exposition, is a pioneer in this important field. He is demonstrating to the multitude at the exposition by actual working models, how it is possible to build a really good stable for a very reasonable amount of money.

In our northern climate, warmer stables have for years occupied the attention of our best farmers and stockmen, and bank barns have been the outgrowth of the desire to provide comfortable stables that were both warmer and better. The convenience of having all stock under one roof tucked carefully away from the cold with plenty of feed over head, ready at all times to find its way to mangers and food racks by gravity, proved very alluring to ambitious farmers all over the country. Animals housed in these expensive dungeons were not happy, and showed their discomfort in watery eyes, lusterless hair, hot noses, and hot feverish breath with fretful quarrelsome actions, together with their inability to grow or fatten. Too frequently cattle thus housed were attacked by bovine disease germs which were materially assisted in their work of des-

truction by conditions so expensively, though unintentionally, provided. Stockmen thought the trouble was caused by too great a change in temperature by allowing the cattle to go out for an airing or for water each day; to remedy this, water buckets were added to the stable outfit and the stock confined in an abominable atmosphere for weeks at a time. Others differently. The heavy breeds of beef cattle are naturally phlegmatic in disposition, paying but little attention to ordinary disturbances; these suffered less in consequence, though it was noticed that they did not benefit from the quantity of feed as they should. Milch cows of a highly nervous organization are more susceptible to incipient diseases caused by objectionable surroundings than any other domestic animal. Not until progressive scientific men spent much time and money in investigations and experiments was the trouble traced to its true source.

Analyzing stable atmosphere led to the detection of harmful bacteria in incredulous numbers. Scientists engaged in the work were slow to give out the result of their first investigations, thinking that the conditions under which they were working might be abnormal. Prospecting further, and while endeavoring to learn the cause, they found conditions in these cellar stables particularly favorable to the propagation of stockmen's worst enemy. Harmful bacteria delight in a dusty atmosphere, especially when it is impregnated with moisture; when a share of the dampness comes from the moisture laden breath of animals that are obliged to breathe the same air over and over again, bacteria conditions are complete.

Bank barns are always damp and always dusty, for owing to their construction, they never admit sunlight in quantities sufficient to be of any use. Sunlight is destructive to all forms of harmful bacteria, therefore a stable properly constructed should admit the direct rays of sun to every stall if possible.

Great progress has been made during recent years in stable construction, looking to the complete elimination of the troubles as set forth along these lines.

A model stable on the exposition grounds, in which is confined a number of different breeds of the best dairy cattle in America, will demonstrate to the millions of Pan-American visitors how a really good stable that is warm in winter, cool in summer, and sanitary and hygienic at all times, can be constructed at a low cost.

Public opinion, backed by government milk inspection, has resolved itself into a strict censure of dirty, antiquated methods. City milk supply is now traced to its source, the cows examined thoroughly for condition and health, and the stable for cleanliness. If incompetency or indifference has led the dairyman to disobey the state sanitary requirements he is not permitted to ship his milk until he satisfies the inspector that he has mended his ways. This course was made necessary by the rapidly increasing volume of business which is conducted by such a cosmopolitan class of people; comprising, as it does, all grades of producers from the most progressive farmer down the line of small dairymen, to the ignorant huckster. Cleanliness is required by inspectors first, last, and all the time; thus, making the right start for cleanliness, leads to many virtues. A man who is particular about all utensils, his wagon, stable, cattle, and himself, will not tolerate a poor stable, or an unhealthy cow. He may not understand the science of ferments or disease germs, but his milk supply will be good and wholesome, because he robs harmful bacteria of the dirt upon which they thrive.

It is intended in a series of these articles to describe in detail the result of Mr. Converse's experiments along this line.

The Importance of Dairying.

R. C. COLE.

In considering this subject, I will speak first of its importance to the civilized world, then to Kansas, and finally to the Kansas farmer.

When we stop for a minute to consider what dairying is to the civilized world we are amazed at the immensity of the demands for dairy products. Can we imagine, for instance, what would become of the city of Chicago, if for one week dairy products were excluded from it. It is impossible to imagine what would be the result. Then think for a minute the amount of dairy products that must pour into

that city each day to supply the demands. We can scarcely comprehend it, yet this is only one of the hundreds of thousands of cities. Its population is only a mere handful compared to the population of the world. From this we can form a slight idea of the demand for dairy products.

Another point that must be considered is the importance of dairying to the State of Kansas. Every year there are thousands and thousands of bushels of grain shipped out of the State. Thousands of tons of hay and other feeds are also shipped out each year. What does this mean? It means that the very best part, the fertility, the cream of Kansas soil, is being shipped out of the State. The eastern farmers feed this to their dairy cows, sell the products and pay for their feed and living. Besides all this, however, they still have left the greater part of that fertility. It is in the manure, and this they haul out, spread over the land and raise crops. Once their land was almost as good as ours, but now they must have some of our fertility before they can raise anything. If we do not stop this soon and consume our feeds at home, we will have to have fertility shipped to us. Some may think this absurd and that there is no danger. It is not absurd, and there is danger. This should concern every farmer in Kansas. Today there are fertilizers being shipped into some of the eastern counties of Kansas, and I have seen it as far west as Sterling, Kansas. We must consume our feeds at home and it is of great importance to the preservation of the productivity of the State that this be done.

Now we will endeavor to show that this has a deeper interest to the individual Kansas farmer. Some will say: "Wife, if I must consume the feeds I raise, I will feed the steers." Well, all right, but first, have you capital to do this? Have you had experience? And have you got the steers? "No, I am a poor man; my wife makes butter from our 5 cows, and keeps chickens, and sells eggs, and that makes our living expenses. I sell grain to keep up the other expenses." Well, now, see here, isn't your living expenses the greater part, and isn't it easier made? Could not you as well keep a few more old cows and consume that grain and make less of your expenses? Of course you can. Besides doesn't some one make a living raising those steers you were going to fatten? Now you are going to raise some of them. When you get those other cows get a hand separator and get 1½ pounds more of butter fat per hundred, besides having your milk sweet for your calves. Your cows do pay you already, but if you will take better care of them, and of the milk, you can easily double their profits. We have already seen what a demand there is for dairy products so don't be afraid of flooding the market, or that dairying will go out of date.

To sum this all up, we have: 1st. The converting of his grain into milk products, the most economical course for the farmer. 2nd. Kansas demands that her fertility be not shipped away, but instead its representative, the grains, be consumed here. 3rd. There is ever a large demand for dairy products and Kansas can fill the order cheapest and best of all.

Acreage Required for Summer Feeding.

This will vary in different localities and under different conditions. For grain, it is well to count on three or four pounds daily, per cow of corn or Kaffir-corn meal. For 165 days, this would require about 660 pounds or ⅓ of an acre per cow, figuring the average yield at 34 to 35 bushels per acre. On fair pasture, we found that the cows at the agricultural college would consume three and one third pounds of alfalfa per day per head. Call it five pounds so as to be sure to have enough. This would make it 825 pounds per

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cow or one-eighth of an acre, figuring an average yield of four tons per acre.

The amount of green feed needed would vary with the area and location of a man's pasture, together with the climatic conditions, so that it would be next to impossible to estimate his wants in figures.

In a comparative test of soiling and pasturing cows made at the agricultural college in the summer of 1893, it was found that it required an average of 116 pounds of green feed per cow per day, including what little was left as waste. It required 0.71 acres to support a cow on soiling crops 144 days. During the same period it required 3.63 acres to keep a cow on pasture. For a detailed account of this experiment, see dairy page of the KANSAS FARMER for August 2, 1900, or page 22 of Coburn's Quarterly Report on Dairying in Kansas.

It will be comparatively easy for a man, knowing his own conditions, to take the above figures on soiling and pasturing and work out what he wants. In all these estimates of acres, it is well to be on the safe side and allow more than is called for as a protection against an unfavorable year.

D. H. O.

How to Realize the Largest Income From the Farm.

E. W. M'CRONE.

Various causes combine to make Kansas an almost ideal dairy state. Located in the center of a great butter and cheese consuming country, she has unrivaled opportunity to market her products. The short winters, pleasant summers, and abundance of rich pasture grasses are all numbered among her advantages. Kansas is especially adapted to the production of leguminous crops, that are rich in protein. In the entire state, from Missouri to Colorado, there is very little land that will not produce alfalfa, and soy-beans can be raised almost everywhere in the state. Large crops of corn or Kaffir-corn are raised in every county. These feeds produced abundantly and cheaply at home, if properly combined make the very best rations for the production of milk.

A farm of one hundred and sixty acres could be made to support thirty cows. It has been shown here on the college farm that one acre of upland will produce four tons of alfalfa per annum. Then twenty-five acres will produce more than enough hay for thirty cows. Thirty acres of Kaffir-corn at forty-six bushels per acre, the rate it has yielded at the college farm, would supply more than enough grain. If ensilage is used largely in the ration, the amount of both hay and grain necessary would be reduced. If the ration is made up of corn ensilage, Kaffir-corn, soy-beans and alfalfa, enough may be produced on an acre to support a cow

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through the entire feeding period. Then allowing one-hundred and five acres for pasture, there would still be twenty-five acres of the one-hundred and sixty acres left, upon part of which a surplus might be produced to help out in a bad year.

As to profits, some Kansas dairymen have realized an income of five dollars per month from each cow in their herds. One must have good cows of course, to yield so large an income as this, but any farmer may do as well in time by grading up his herd. At five dollars per month from each cow, the income from thirty would be eighteen hundred dollars in a year.

In no other way can a farmer get so much out of his farm, or so large a return for his labor, as in dairying. If he raises grain, he will be entirely at the mercy of the season, if he is a producer of pork, or beef, he will be only in a measure less dependent upon the season. If drought or hot winds come, if he depends upon his grain, he will lose all, while if he is a feeder he must necessarily suspend his feeding operations until a more favorable season. If he has cattle, they must be marketed unfattened, or roughed through the winter without grain. If he has hogs, he can sell those that are marketable, but those that are too small to butcher are sometimes a total loss. Now the dairyman, who uses but a comparatively small amount of grain, would get along very well by using his surplus that he has saved from a good year. And since alfalfa and Kafir-corn fodder seldom if ever failed, the dairyman would suffer little inconvenience.

Bill of Fare for a Kansas Dairy Cow. (Continued from last week.)

PRAIRIE GRASS.

The wild prairie grasses are found growing in every county in the State, and are especially prized in the central and western portions, where tame grass is less certain of success. Many an acre of this valuable grass has been turned under by the plow, whose owner now bemoans the day he touched it. This grass makes an excellent pasture, and will furnish feed when blue grass and other tame grasses are completely dried up.

RATION NO. 16.

The cured hay, although an ideal feed for road horses, is not usually considered as being especially adapted to cows, yet very fair results have been obtained from feeding it. With prairie hay for roughness it is difficult to get the best kind of a ration from home grown grain. By allowing an excess of fat a grain ration of equal parts Kafir-corn and soy-beans does well. Where a milch cow does not have a tendency to lay on fat the extra fat in the above ration will probably do no harm. Prairie hay is not a heavy yielder. A ton and a half per acre will be a good average for the State. At this rate it would require 1½ acres to support an animal, allowing 20 pounds per day per cow. The Kafir-corn area would be 2-5 acres and the soy-beans 1-2-5 acres, allowing 10 pounds of grain to the cow per day.

RATION NO. 17.

An excellent modification of the above ration would be to have the roughness half prairie hay and half sorghum.

RATION NO. 18.

Prairie hay was fed to the milch cows in three different months at the agricultural college with the result that each cow consumed an average of 15 pounds daily in addition to 30 pounds of ensilage apiece. Very fair yields were obtained in feeding this with a grain mixture of 2 parts Kafir-corn, 3 parts soy-beans, and 3 parts bran. The area required is prairie hay 1 acre, ensilage 1-5 acre, Kafir-corn 1-6 acre, and soy-beans 4-5 acres.

RATION NO. 19.

When cottonseed-meal is available a grain ration of 10 to 12 pounds daily of 8 parts oats and 3 parts cottonseed-meal is good to feed with prairie hay. The area for oats equals 1 and ¼ acres per cow. D. H. O.

Summer Feeding.

When cows are filling their stomachs on luxuriant June grass very little feed of either grain or roughness is needed, although cows seem to relish a little dry feed even then. But this condition does not last throughout the entire period of five to five and a half months. It is not uncommon in July and August to see the pastures so short and dry as to furnish but very little feed. The amount of extra feed needed will vary greatly with the season. A good plan is to have a rack that will hold a considerable quantity of hay and let the

cows eat it at will. It is also advisable to feed cows two or three pounds of grain per day apiece. For the best cows the allowances may be increased to six or eight pounds. Since cows get considerable more protein out of fresh grass than from cured hay the grain ration for summer can be more carbonaceous than for winter. Corn and cob meal will answer the purpose very well. If the meal is used without the cob it is well to distend it with a little bran to allow free access of the digestive juices. The value of extra summer feeding is shown in the following comparison made at the agricultural college during the summer of 1898. The college herd consisted of 30 head of common cows and were fed an average of three pounds daily of grain composed of four parts corn and one part bran, together with what alfalfa hay they would eat in addition to pasture. These were compared with 55 head of a similar class of cows belonging to 8 different patrons of the Manhattan creamery, but which had received no extra feed in addition to pasture. On July 5 the college cows were yielding an average of 18.42 pounds per day while the patrons' cows were yielding 12.67 pounds per day. On August 16, six weeks later, the college cows were yielding 17.59 pounds daily per head, while the patrons' cows were yielding only 7.71 pounds per head. This makes a drop of .33 of a pound per day per cow—4.5 per cent for the college cows; 4.96 pounds per day per cow—39 per cent for the patrons' cows. The fact that it is practically impossible to restore a cow to her original flow of milk after she once shrinks should induce us to use every effort to keep up the flow during a critical period like a drought or short pasture, even though for the time being it be at a loss of the feed consumed. D. H. O.

Household Tests for the Detection of Oleomargarine and Renovated Butter.

The U. S. Department of Agriculture has in press and will soon issue Farmers' Bulletin No. 131, entitled "Household Tests for the Detection of Oleomargarine and Renovated Butter." It was prepared by Mr. G. E. Patrick, assistant in the Division of Chemistry. The bulletin describes the method of making renovated, or "process," butter, and refers to the usual methods for distinguishing genuine butter from oleomargarine.

Two household tests are given—the boiling test and the Waterhouse test. The former has been in use for about ten years, and was originally used only for the detection of oleomargarine, but after the advent of renovated butter the test was found to serve almost equally well in distinguishing this product from genuine butter, although not from oleomargarine.

It may be conducted in the kitchen as follows: Take a piece of the sample about the size of a chestnut, put it in an ordinary tablespoon and hold it over the flame of a kerosene lamp, turned low, with chimney off. Hasten the process of melting by stirring with a splinter of wood; then increase the heat and bring it to as brisk a boil as possible. After the boiling has begun, stir the contents of the spoon thoroughly, not neglecting the outer edges, two or three times at intervals during the boiling—always shortly before the boiling ceases. A gas flame, if available, can be more conveniently used.

Oleomargarine and renovated butter boil noisily, sputtering (more or less) like a mixture of grease and water when boiled, and produce no foam, or but very little. Renovated butter usually produces a very small amount. Genuine butter boils usually with less noise and produces an abundance of foam. The difference in regard to foam is very marked as a rule.

The Waterhouse test, designed a year or so ago by Mr. C. H. Waterhouse, at that time dairy instructor at the New Hampshire College of Agriculture and Mechanic Arts, is as follows: Half fill a 100 cc. beaker with sweet milk; heat nearly to boiling and add from 5 to 10 grams of butter or oleomargarine. Stir with a small rod, which is preferably of wood and about the size of a match, until the fat is melted. The beaker is then placed in cold water and the milk stirred until the temperature falls sufficiently for the fat to congeal. At this point the fat, if oleomargarine, can easily be collected together in one lump by means of the rod, while if butter, it will granulate and can not be so collected. The distinction is very marked. The stirring is not, of necessity, continuous during the cooling, but it should be stirred as the fat is solidifying and for a short time before. The milk should be well mixed

before being stirred into the beaker, as otherwise cream may be turned from the top and contain so much butter fat that the test is vitiated for oleomargarine.

This test, in a slightly modified form adapted to household conditions, has been quite carefully studied in the chemical laboratory of the Department of Agriculture, where, under certain specified conditions, it has given satisfactory results in a large number of trials in distinguishing oleomargarine from both renovated and genuine butter. These conditions are essential, since under other conditions renovated butter might be mistaken for oleomargarine. The bulletin contains detailed directions for conducting the test. It is for free distribution and can be obtained on application to Senators and Representatives in Congress, or to the Secretary of Agriculture.

To make cows pay, use Sharples Cream Separators. Book "Business Dairying" and Catalogue 287 free. West Chester, Pa.

A Kansan at the Pan-American.

Since the Crystal Palace Exposition in London, and the earlier ones held in the United States, different nations have vied with each other in an endeavor to outstrip all former attempts at such displays.

The Centennial, at Philadelphia in 1876, blazed the first mile post at the end of the closing century, and directed the attention of every country to the importance of western ideas and western industries.

The Columbian Exposition, at Chicago in 1893, startled the world with our varied resources, and gave us, in 400 years after our discovery, as great a prestige in the world's markets as had been acquired by older nations in their whole history.

The Trans-Mississippi, at Omaha in 1898, although not as extensive as the others, showed marked progress along certain lines, and helped to sustain every advance made in agriculture, mining, and such other industries as tend to magnify our wonderful history.

Former expositions have been open to the world, but the management of the Pan-American wisely decided to limit its scope to the American continent, thereby exhibiting such growth as properly belongs to the new world. By our recent acquisitions of new territories this idea has been strengthened, and gives the visitor a good opportunity to study the geography of our widely different possessions and anticipate the possibility of increased trade relations in the open ports of the world.

The Pan-American was opened May 1, and dedicated May 20, but at this date a few of the exhibits are not yet in place, and will not be until July 1, in fact some of the flower gardens and terraces are not quite complete. Going into the grounds through the Lincoln Park approach the first objects of interest are the 4 massive towers situated at each corner of the triumphal causeway. Each one is decorated with appropriate emblems, and dedicated to justice, truth, civic virtue, and liberty. All the principal buildings are grouped around an open court, similar to that at Chicago in '93. In this are the court of fountains and the fountain of abundance. At the farther end is the stately electric tower, with a torrent of pure water gushing from its base continually during opening hours.

Through the "Penny wise and pound foolish" idea of some of our legislators



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last winter, the visitor is disappointed in not seeing, as in former expositions, the magic name Kansas over any of the exhibits, and this omission is looked upon by Kansans, and others as well, as a serious blunder that may loose to our state many thousands of dollars. Even a horticultural display has been neglected, while our neighboring state, Missouri, has one of the finest exhibitions of apples ever seen at this season of the year. The Continental Creamery Co., of Topeka, will, however, in a few days have an exhibit of butter in the dairy building.

A. E. JONES.

Buffalo, N. Y.

Changed.

Mr. Tile—Your wife used to lecture before she was married; has she given it up now?

Mr. Milds—Well—er—yes, that is, in public.—N. Y. World.

DR. HENDERSON

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WEEKLY WEATHER CROP BULLETIN.

Weekly weather crop bulletin of the Kansas Weather Service, for the week ending June 20, 1901, prepared by T. B. Jennings, Station Director.

GENERAL CONDITIONS.

A warmer week, the warmest yet this season, with fair to good rains over much of the state, but the extreme eastern counties continue dry. A severe hailstorm occurred in Thomas, and hot winds in Hodgeman.

RESULTS.

EASTERN DIVISION.

May-wheat harvest is progressing in most of the counties south of the Kaw river, and is beginning north of it, and is generally a good crop. Corn is now in good condition and growing rapidly, except in the 2 eastern tiers of counties, where the drought continues. Oats are ripening, but are a poor crop. Apples are dropping in Jackson and the northwestern part of Shawnee, but are promising in the southern part of the latter. Peaches are promising in Shawnee, but are dropping in Jackson. Grass and gardens need rain except in the northwestern counties. The tame-hay crop is short in the eastern counties. Flax is not in good condition; it is ripening in Allen, is in bloom in Coffey, and beginning to bloom in Woodson. Allen County.—Only 0.28 of an inch of rain in twenty-four days, with some very hot weather; all crops greatly reduced; wheat is cut; oats are ripening, also flax, and promise poorly; potatoes a complete failure; pastures and stock water poor. Atchison.—Drought continues with high temperature and much sunshine; grass of all kinds suffering; corn and potatoes making slow growth; wheat good; harvest begun; clover-hay being secured in good condition. Bourbon.—No improvement in the oats and flax crops; clover and timothy short crops. Brown.—Dry weather is damaging all crops; oats almost a failure in east part; corn being damaged by insects; wheat and hay in good condition. Cherokee.—Dry, hot week, pastures beginning to dry up; raspberries and blackberries drying up; oats ripening, short, light crop; wheat apparently good; cotton growing finely, crop well worked; much of the corn laid by, but it is small yet; tame hay 1/4 crop. Coffey.—A good week; corn in good con-

dition; soft-wheat harvest nearly completed; flax in bloom, but very uneven. Doniphan.—Very hot, dry week; berries and gardens needing rain badly; wheat harvest will begin this week; corn backward, but clean and receiving the second cultivation. Elk.—Rain needed; light showers have done some good. Franklin.—Crops needing rain badly; tame-hay not over half a crop. Greenwood.—Corn clean and growing rapidly, although uneven; Kaffir and cane doing well; some chinch-bugs in places; pastures improving; hay meadows backward; more rain needed. Jackson.—Very little rain this week; gardens about dried up; corn at a stand still, or dying in many fields; some wheat will be cut next week; but little oats will be cut; blackberries and raspberries dried and shrivelled, poor crops; early potatoes very poor; apples and peaches dropping badly. Jefferson.—Very dry week; corn drying up; oats look poorly; rain badly needed. Johnson.—Drought continues; past week hot; wheat ripening rapidly; no good rain since April 12, vegetation dried up. Leavenworth.—Wheat good; corn small; oats poor; peaches and apples falling; pastures and all growing crops needing rain. Lyon.—Corn doing well, and is 1 to 3 feet high; wheat nearly ready to harvest; alfalfa is a heavy crop. Marshall.—Corn late, but growing rapidly; alfalfa and clover having over, good crops; oats will be a light crop; plenty of rain. Montgomery.—A model week for corn, which is now in fine condition; wheat harvest has been general through the week, a large part of the crop now in shock, many farmers have finished, crop generally good; oats damaged, some by high winds first of week. Morris.—A good growing week; corn growing rapidly; some wheat being cut; chinch-bugs numerous; much millet being resown on account of dry weather early in season. Nemaha.—Good growing week; corn growing rapidly and being cultivated the second time; potatoes in bloom, early potatoes on market a good crop; wheat through blooming, and filling out, some of it fallen; oats recovering, and some fair; grass growing well, and pastures good. Osage.—Corn in fine condition, and growing rapidly. Pottawatomie.—Favorable week for all vegetation; wheat harvest is well begun, the yield promises well and the grade

high; corn is doing well; cherries abundant. Riley.—Good rain; wheat will be harvested next week, crop is fair; oats not good; corn growing, clean and fair stand; pastures good. Shawnee.—Corn being rolled, harrowed, and cultivated, and has a fine color; wheat ripening in fine condition; apples, grapes, and peaches very promising in south part, apples dropping in northwest part. Wilson.—Small, local showers in different parts of county, rain badly needed; much of the wheat is now in shock; blackberries will be a short crop unless rain comes soon; pastures drying rapidly. Woodson.—Wheat ready to harvest; corn doing well, some ready to lay by; flax beginning to bloom; garden vegetables are good; blackberries ripening; stock water getting low.

MIDDLE DIVISION.

Wheat harvest has progressed rapidly in the southern tier and begun in many other counties; the heads have filled well, and a good crop is promised, except in Rush, where the dry weather has ripened it too rapidly. Corn has greatly improved under the influence of the warmer weather, and is growing rapidly. Grass is generally good, though in Barton the pastures are drying up. Oats are short, but have improved considerably during the week. Barley is short; but otherwise looks well. The first crop of alfalfa is all in the stack, and the second is growing well. Blackberries are abundant in Cowley.

Barber.—Hot, dry, windy week; wheat harvest in progress; corn in fine condition; pasture good; cattle doing well on range. Barton.—Wheat is nearly ripe and will be a fair crop; oats and barley very short, have been suffering for rain; alfalfa-hay crop is in stack; pastures drying up. Butler.—Better week; corn growing finely, but chinch-bugs doing much damage; millet and small grains doing well; gardens furnishing tables with abundance; orchards better than when last reported; wheat harvest begins next week. Cloud.—Corn improving; alfalfa in stack; cherries ripe, a fine crop; wheat harvest will begin about 20th. Cowley.—A fine week for wheat harvest, stacking begins next week; corn made fine growth; blackberries fine and abundant; pastures fine. Dickinson.—A few fields of wheat cut this week, harvest really begins next week; much of the wheat down, but filling nicely, will have more than half a crop; corn growing rapidly and looks well. Edwards.—Wheat harvest beginning;

wheat sown on fall plowing is badly damaged by the dry weather; in Hodgeman the wheat was injured by hot winds on the 9th; in Thomas there was some damage by hail, and in Rawlins it was considerably injured by dry weather. Corn continues in fair condition in the central counties and is improving in the northern. The crop of alfalfa is nearly all in the stack. Range grass is generally in fine condition, but Norton reports pastures drying up. Hot winds on the 9th damaged most of the crops in Hodgeman County. Clark.—Everything needs rain. Decatur.—Another bad crop week, but everything standing it well, in fact corn is doing well; early wheat well filled, but shows damage in spots; the light rain of 14-15th was general and will do some good. Ford.—Rain needed quite badly, but barley, oats, and wheat look very well; corn has made a very slow growth, but looks well; prairie grass fine; wheat harvest will begin about the last of month. Gove.—Wheat has headed and in some places gives good promise; but it needs rain; oats not growing any; fruit looks fine; grass and cattle in good condition; alfalfa all in stack, was a good crop; spring sown alfalfa looks well. Greeley.—Good rain night 14-15th, was badly needed and will save crops. Hodgeman.—Very dry and windy; maximum temperature on 9th 105; hot wind on 9th, much damage; early wheat burned up; late wheat is badly injured by drought, but in eastern part is filling fairly well; a large amount of forage is not up yet. Lane.—Good rains over north half of county, some hail; wheat is beginning to ripen. Ness.—Windy week; getting dry; light local showers reviving vegetation; some, but rain is needed; wheat, rye, and barley holding their own fairly well, though the straw is short for want of rain; corn growing slowly and of good color. Norton.—Dry week, some light local showers; wheat on fall plowing badly damaged; pastures drying up; corn in good cultivation, but making slow growth. Rawlins.—The drought was broken the night of the 14th; conditions now are, crops much poorer than thirty days ago, though corn has stood the strain better than the other crops; grass good, also potatoes. Sheridan.—Good rains over most of the county; crops in fine growing condition; some of the wheat has been damaged by dry weather, but most of it is good; wet weather has delayed haying, but most of the alfalfa is in stack; corn is clean and growing. Thomas.—Wheat greatly improved by the late rains, but drought and hail had damaged it considerably; corn making good growth now; first crop of alfalfa cut and stacked; Kaffir-corn making fair growth. Trego.—Local rains over a large part of county; grain turning color. Wallace.—Good rain over north half, with wind, which blew off much fruit; too dry in southeast part (the wheat belt), not more than 1/4 crop of wheat; range grass fine; first crop of alfalfa cut, fair crop.

I have had a great deal of experience in this line, and it is all in favor of the second hundred pounds. If it wasn't for keeping the old sows the year round I could raise the first hundred pounds the cheapest and may adopt that plan when somebody invents a pig factory to raise pigs without any sows at all. If I was not raising thoroughbreds and for pork alone. I would buy the pigs at 100 pounds weight and put on the second hundred and keep no brood sows on the farm.

M. F. TATMAN.

Rossville, Kans. Results of Lamb Feeding AT THE WYOMING EXPERIMENT STATION. LUTHER FOSTER.

In December, when the experiment was authorized, good average lambs, such as were most desirable for the work, could not be secured, and it was found necessary to select the one hundred made use of from a bunch of culls. After a week of preliminary feeding, the lambs were divided into two sets equal in number and as nearly so as possible in weight and quality. The experiment began December 28th, and continued for a period of ninety-five days, closing April 2. The two lots had a limited amount of corn and all the hay they would eat. The lambs were slaughtered and consumed in the home market. The butchers were highly pleased with the way they cut up and especially well satisfied with the demand for them. The meat was of excellent quality. The people of Laramie consider it the best mutton ever placed on sale in this market.

FACTS OF THE EXPERIMENT.

Food.	Native hay	Alfalfa hay
lb.	lb.	lb.
Hay eaten daily per head.....	1.06	1.45
Grain eaten daily per head.....	.80	.80
Total food consumed daily per head.....	1.86	2.25
Hay consumed for 100 lbs. gain.....	420	460
Grain consumed for 100 lbs. gain (corn and oil cake).....	317	248
Gains.		
Average weight per head at the beginning of the experiment.....	48.2	47.1
Average weight per head at the close of the experiment.....	72.5	77.9
Average gain per head in 95 days.....	24.1	30.8
Average daily gain per head.....	.253	.324
Values.		
Value of food eaten per 100 lbs. gain.....	\$4.31	\$3.76
Selling price.....	\$4.65	\$4.65
Profit per 100 lbs. gain on food consumed.....	.34	.89

It will be seen that the lambs fed alfalfa ate the more hay, made the larger gains and returned a higher profit. In the above calculations both kinds of hay were estimated at \$6.00 per ton, and corn at 90 cents per hundred pounds.

RESULTS AS A WHOLE.

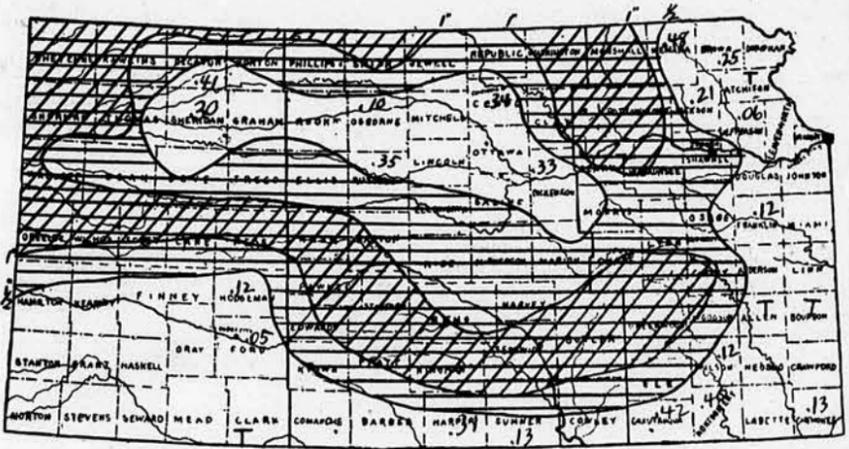
During the latter half of December good lambs for feeding were worth \$4.50 to \$5.00 per 100 pounds on the Chicago market. At these prices the market value of the lambs at the beginning of the experiment would not have exceeded \$2.00 per head. Averaging both sets, the feed eaten cost \$1.13 per head. The selling price at \$4.65 per hundred brought \$3.38 per head, leaving the small net profit of 25 cents per head, and this after allowing \$6.00 per ton for all hay fed, and 90 cents per hundred for the corn. In large quantities both hay and corn could have been purchased at considerably lower prices.

Taking the results given above as a basis of calculation, a farmer, by purchasing grain and feeding lambs, may secure a return of \$11.05 per ton for alfalfa hay, and \$10.38 per ton for native hay.

Pullman Ordinary Sleeping Cars for Tourists

are the most comfortable, commodious means of travel for large parties, intending settlers, homeseekers, and hunting parties. These cars are run on the Union Pacific daily from Nebraska and Kansas points, and are fitted up complete with mattresses, curtains, blankets, pillows, etc., requiring nothing to be furnished by the passengers. Uniformed porters in charge of the cars, are required to keep them in good order, and look after the wants and comforts of all passengers. The cars are new, of modern pattern, and are almost as convenient and comfortable as first-class Palace Sleepers. For full information call on or address, F. A. Lewis, City Ticket Agent, 525 Kansas Avenue, J. C. Fulton, Depot Agent.

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SCALE IN INCHES. Less than 1/4. 1/4 to 1. 1 to 2. 2 to 3. Over 3. T, trace. **ACTUAL RAINFALL FOR WEEK ENDING JUNE 15, 1901.**

wheat in better condition than was expected. Harper.—Harvest in full progress; soft-wheat good; hard-wheat never better; corn still backward, but doing well; late rains have brought out oats and will make a fair crop. Harvey.—Wheat harvest has begun; some wheat benefited by local rains and some injured by fly and chinch-bugs; corn doing well; will be some good oats, majority poor. Kingman.—Harvest progressing; wheat reported better quality, as a rule, than last year; oats helped by the late rains. McPherson.—Wheat turning color, is well filled, harvest will begin next week; oats improved, but short; plenty of moisture. Phillips.—Rain in time to help corn, oats and alfalfa; wheat too far advanced to be helped much. Reno.—Fine growing weather; wheat looks fine, ripening rapidly, harvest begins next week; corn growing rapidly and looks fine, cultivation progressing; second growth of alfalfa looks well; oats doing well; late sown Kaffir and cane good stand. Republic.—Fine growing weather for corn; wheat and rye harvest next week; oats will be short. Rice.—Wheat filling well; fine growing week; large crop of cherries being put up; corn growing nicely. Rush.—Hot weather 9th to 12th materially injured wheat by ripening it too rapidly and shrivelling the grain, recent rains have saved it from further damage and harvesting it with binders will begin next week; oats and barley continue to look well; new potatoes on the market. Russell.—Wheat ripening nicely, harvest begins next week. Saline.—Good, warm, growing week; wheat harvest begun; some bottom land wheat badly lodged. Sedgwick.—Heavy rain on 12th, but ground continues too dry; what harvest begins 17th, will be good crop much better than the oats; corn is good color, but has grown very slowly; pastures rather short, and hay promises poorly. Smith.—What harvest begun in south part, grain filled better than expected; better rains in north part and good growing week; corn doing finely; oats good, but straw short; pastures are fine and stock doing well. Sumner.—Corn laid by though small for time of year; soft wheat cut; some have begun harvesting hard wheat, it will be about all ripe enough by the 17th.

WESTERN DIVISION.

The wheat has headed and in several counties is beginning to ripen; in Norton

Grange Department.

"For the good of our order, our country and man kind."

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

NATIONAL GRANGE.

Master.....Aaron Jones, South Bend, Ind.
Lecturer.....N. J. Bachelder, Concord, N. H.
Secretary.....John Trimble, 514 F St., Washington, D. C.

KANSAS STATE GRANGE.

Master.....E. W. Westgate, Manhattan.
Lecturer.....A. P. Beardon, McLouth.
Secretary.....Geo. Black, Olathe.

Co-operation.

There is no one word that has been more often spoken and written in connection with the grange than the word co-operation. In fact, the grange itself means co-operation, or working together, instead of the old plan of "going it alone." All its lines of work, whether social, educational, political or financial, to be successful, must be by united co-operative effort.

Much progress has been made, and farmers to-day know more about co-operation and how to apply it practically than ever before, and there is no necessity to go over the long list of co-operative enterprises started and being carried on by grange members.

And while there have been progress and success, there have also seen mistakes and failures, but such come to all who are working in untried fields, and the failures are often caused by a departure from the true principles of co-operation, and not through any fault of the principles themselves.

It is said that while the fashions change, from year to year, after a time the old styles come into favor again. So it seems to be with our order; the schemes and plans of so-called co-operation of the early days which were found to be impracticable, like the elaborate system of county and district supply houses of Ohio, and in which hundreds of thousands of good dollars were lost by good patrons are of late appearing again as objects of favor.

Now, the Bulletin believes in true co-operation in business or financial matters as in other things in the grange, and because we believe in true co-operation and don't wish to see the order injured or the ardor of good members chilled, we would caution the younger and rising generation of grange members to study carefully all the foundation truths of real co-operation and "go slow" as the "well laid schemes of mice and men which gang oft a-gleam." "Be sure you are right and then go ahead."—Grange Bulletin.

Who Can Beat This?

We have been hunting for a "model grange," that we could point to as illustrating what the twentieth century grange should strive to become. Have we found it, or can some other grange beat the record that Hamilton has made? Well, no matter. Read this report to your grange, worthy lecturer. It is worth considering, and if Hamilton can do it, why can't you?

HAMILTON—VAN BUREN COUNTY.

I have been requested to answer the following questions: How did you secure your large membership and how do you keep up an interest in grange work, particularly through the summer season?

We put the grange on a solid foundation by building a hall and sheds. We built them so that they did not seem to have cost any one anything at all. We neither worked a miracle nor rubbed Aladdin's lamp. The members simply paid their dues five, ten, or fifteen years in advance and raised money enough to buy the material and then all worked together and put them up in short order. The income from the rent of the hall enables us to declare an annual dividend that equals or exceeds the running expenses of the grange.

Nine years ago we had twenty members—now one hundred and sixty or more. If we want anything for the grange we go to work and get it. We wanted an addition for a stage. Music—social, and literary entertainments raised the \$227 necessary to build it. We wanted scenery and ordered it from a first-class artist. A play brought in \$40—which nearly paid the bill. We wanted to be the banner grange in the state for membership. Work got us there two years in succession. We wanted the Michigan Farmer's prize organ. Work won it. We wanted to break the world's record on regular meetings. We think we have, for we have failed but five times in eight years of having a meeting every Saturday night.

We have one hour for business, one

hour for recess, and one hour for literary work, at each meeting, except in summer when each period is reduced to fifty minutes.

An expression of opinion at a recent meeting as to what had contributed most to our success stood about as follows: Our favorable financial standing. The faithful and efficient work of the lady who for eight years was master. The literary programs. Last but not least the recess with its games, plays, marches, its music, and fun and general good social time for old and young.—A. W. Haydon, in Michigan Farmer.

A Discouraged Grange.

We have a letter from the master of a grange which seems to be temporarily afflicted with the blues. The brother says that a spirit of jealousy has arisen among some of the members and he finds it rather hard to make things go. He wants to know if we can help him. Perhaps what we say won't fit the case of his grange, but his letter leads us to preach a sermonette on the subject at the head of this editorial, and we hope it will at least do no grange any harm.

What is the first thing for the members of a discouraged grange to do? No doubt, the all-important thing is first to "cheer up." Nobody can work well when he feels cheerless. Half the battle is won when you can go at a piece of work with a song in the heart. And isn't there every reason for cheer in grange work? The grange the whole country over is taking on new life. In Michigan we are twice as strong in number of granges and more than twice as strong in membership as we were four years ago. You are not working alone, brothers. Nearly 25,000 patrons in this state know your trials, and are with you heart and soul in your attempt to bring your grange to a fuller success. No patron need feel other than cheerful about the grange nowadays. Your little rainstorm is purely a local shower. The grange sky is clear and bright. So we say, cheer up.

And then what? Why, do just what you would do in your private business—go to work. The busy grange is never a blue grange; the lazy grange is never a cheerful grange. Work will keep up your spirits, work counts, work is contagious.

But you say, This is all very good, but what do you mean by going to work? What plan can we adopt? Be practical in your suggestions.

Well, here goes: The officers of a grange are the persons to whom belongs the responsibility for grange work. If possible, let all the officers get together soon. Let them talk over the situation, see how these petty jealousies can be removed, and, most important of all, lay out a plan of work for the balance of the year.

What shall this plan of work be? We suggest the following:

1. Try to revive the old fraternal feeling in the grange—the spirit of brotherhood, of co-operation, of standing together.

2. Try to set every member at work. Let officers take the lead in this, each officer trying to be promptly in his place at every meeting and doing his full duty—and a little more, if necessary.

3. Use every form of grange work. That is, patronize the grange trade contracts—this will reach the pocket-book. Plan plenty of social times—these will reach the heart. Insist that your lecturer will have a full hour (60 minutes) for her program at every regular meeting—this will reach the head.

Now you've got them. You must keep them. Exchange visits with the nearest granges. If you can, get a stirring grange speaker—Bro. Horton, if he isn't too busy. Have something new occasionally. Variety is a great cheer-bearer. Once the load is started it will go more easily, but it won't run itself. You must keep pulling—not pushing, but pulling. That is, your officers must take the lead. Do your duty. The others will fall in line.

Some one says, the summer time is a hard time to begin the job of cheering up a despondent grange. No, it isn't. If you will plan wisely, you can have more fun in your grange in the next four months than you've ever had before. Have some socials. Plan a picnic—or two. Cheer up. Get them at work. Have some fun, and by fall you'll have a grange born again.—Michigan Farmer.

Patrons will keep in mind the dates for field work of the national lecturers in Kansas, who will be in the several places mentioned on the following days, viz.:

Cadmus, July 20.
Lone Elm, Anderson County, July 22.
Arkansas City, July 23.

Douglas County, July 24-25.
Miami County, July 26.
Olathe, July 27.
Professor Cottrell will also be present at all the meetings.
Will the Kansas Patron please copy?
E. W. W.

An Eloquent Reply.

The ladies of Davis, Chickasaw nation, last month presented Judge John R. Thomas with a box of flowers in token of their appreciation of his services in stopping the sale of intoxicating liquors in that town. Judge Thomas made the following beautiful and eloquent response:

"This is a new and most touching tribute. It tells me of the light of hope in darkened homes, of men saved from the vile temptation of intoxicating drink.

"If I have been able to restore to the women of Davis and the Southern district that protection which the law has always given them, I feel inexpressibly happy.

"That they have come with the entrancing smile of God's best gift as a testimonial of their appreciation shows how truly they read His laws and wisdom, and how, after all, amid the storms of life, the anchor of man's best hope is in the protection of his loved ones. Compared with the other rewards coming to man, it is like the cloud piercing mountain, radiant with early dawn, and nerves my arm and steels my soul to do that which God has told me is right.

"I took a solemn oath that I would see that the law is duly administered; as God has given me to see my duty, I have discharged it. I am but human, and subject to error; but I know this: that as I go down the inclining path of life there will be one spot in which the hope and power of God remains; and whatever the trials, whatever temptations, the banner of law and order shall float on high. No coward or criminal, or maudlin sentimentality shall swerve me from the right.

"I know and feel that in accomplishing the work we have begun I have the help of my brother lawyers, good and honorable men, who love their homes and wives and children. Especially is this true of the district attorney and his able assistant.

"I walked along the streets of this town Saturday evening and saw not a single drunken man. Last Sunday the silence and quietude was only broken by the chiming of the bells in God's temples. This is worth something—this is worth much to me.

"But I hope and trust that this is but a foretaste of the joy which will come by the deflection of money which has been paid into the coffers of these joints to the proper channels of legitimate trade. Women and children have been robbed of their sustenance, and laborers of their earnings. There will not be so many barefoot children. We will not see the look of agony on the faces of wives and mothers, daughters and sweethearts.

"We will see prosperity and happiness, and peace, and security to life, liberty and property. And when the

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...MEN...

Book for men only, explaining health and happiness sent free in plain envelope. Address CHICAGO MEDICAL INSTITUTE, 110 West Sixth Street, Topeka, Kansas.

Tired

that's all. No energy, no vim, no vigor, no ambition. The head aches, thoughts are confused, memory fails. Life becomes a round of work but half accomplished, of eating that does not nourish, of sleep that fails to refresh and of resting that never rests. That's the beginning of nervous prostration.

"I was very nervous and so tired and exhausted that I could not do my work. One dose of Dr. Miles' Nervine quieted my nerves and drove away the lassitude. Seven bottles did wonders in restoring my health."
Mrs. M. E. LACY, Fortville, Ind.

Dr. Miles' Nervine

strengthens the worn-out nerves, refreshes the tired brain and restores health.

Sold by druggists on guarantee.
Dr. Miles Medical Co., Elkhart, Ind.

day comes that we shall demand admission to the sisterhood of states, we can say that our citizenship is strong, and pure, and worthy of the suffrage we seek.

"Carry my loving thanks to these good women, and say that they have touched my heart as only the gratitude of wives and mothers and daughters could."

THE DOLLARS AND CENTS OF IT.

The Stock Breeders' Annual, a valuable bulletin of 40 pages, has just been published by the Kansas Farmer Company, of Topeka, Kansas. The first part consists of a discussion of the values of feeding stuffs, a table of composition and money values of all common feeding stuffs, and a discussion and a table of feeding standards. With this bulletin at hand any farmer who can "do a sum" in arithmetic can determine how to make balanced rations of the feeds he grows on his farm, or, if he has not the necessary materials, the book will show him what he can afford to pay in the market for such feeds as will enable him to make balanced rations suitable for every class of animals on the place. This part of the Annual was written by E. B. Cowgill, editor of the KANSAS FARMER.

It has been made a part of the instruction of the students in feeding at the Kansas Agricultural College, and has been copied by Secretary Coburn in one of his invaluable reports.

The second part of the bulletin contains the Kansas Improved Stock Breeders' Classified directory for 1901, compiled by H. A. Heath, Secretary. An edition of 10,000 copies has been printed. As long as they last any reader of this paper can obtain a copy for a two-cent stamp to pay for postage and mailing.

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The Poultry Yard.

Eggs and Their Uses as Food.

FARMERS' BULLETIN NO. 128, U. S. DEPARTMENT OF AGRICULTURE.

(Continued from last week.)

A COLLEGE EXPERIENCE.

These statements must not be understood as advocating a free use of eggs at any price, but merely as pointing out that even at the higher prices the occasional use of eggs in place of meat need not be regarded as a luxury. This is illustrated by observations made by Miss Bevier and Miss Sprague at Lake Erie College, Ohio, during a dietary study of some 115 women, most of them students. It was found that the amount and cost of certain foods required for a single meal, when any one of them was served, was as follows:

	Amount required.	Price per pound.	Total cost per meal.
	Pounds.	Cents.	
Beef steak	36	17	\$6.12
Mutton chops	45	14	6.30
Hamburg steak	24	12½	3.00
Sausage	30	12	3.60
Bacon	12	9	1.08
Dried beef	4	23	a. 92
Eggs	b 15	c 14½	2.20
Do	b 15	d 16½	2.50

a Milk, butter, and flour required for the dried beef, when creamed, would increase the cost somewhat.

b 15 pounds = 10 dozen eggs.

c Or 22 cents per dozen.

d Or 25 cents per dozen.

BACON AND DRIED BEEF.

At the price at which board was furnished, steaks and chops were too expensive for use as breakfast dishes. Bacon or dried beef was considered cheap. Hamburg steak and sausage were regarded as practicable and were occasionally used. When the investigation was undertaken, the opinion was commonly held that eggs at 22 cents per dozen were expensive, and at 25 cents per dozen so dear that they could not be used, yet it will be seen by reference to the above table that at both prices the amount of eggs actually required to satisfy the members of the club cost less than any of the foods except bacon and dried beef. Observations showed that many of the students did not care for Hamburg steak or sausage and would eat eggs. If any boiled eggs were left, they could be used for garnishing salads or in other ways and therefore need not be wasted, while it was difficult to utilize the remnants of Hamburg steak or sausage in such a way that they were relished. It appears, therefore, that both as regards economy and palatability, the use of eggs in this case as a breakfast food was warranted.

NOT EQUIVALENT.

In the instance cited, it is known that 10 dozen eggs, 30 pounds of sausage, 24 pounds of Hamburg steak, 12 pounds of bacon, and the amounts of the other foods mentioned in the table, were not equivalent as regards the quantity of nutrients furnished, although any of the foods could be used as a breakfast dish in the quantity mentioned and give satisfaction to the club. It must be remembered, however, that other foods were served with the meat or eggs, and that the total amount of nutrients consumed at the meal may not have varied greatly from day to day although the menu was quite different. Furthermore, physiologists believe that the quantities eaten each day need not conform exactly to the accepted dietary standard, but rather that the daily average throughout a considerable period must not vary very greatly from it. A deficiency on one day may be easily made good by an abundance the next. When, as was the case at Lake Erie College, each meal is abundant, the average daily diet corresponds with reasonable closeness to the commonly accepted dietary standard, and the persons consuming it have every appearance of being properly nourished, such substitutions of foods of unlike nutritive value seem justifiable on theoretical as well as on practical grounds. It hardly needs to be said that the instance cited is in accord with the ordinary household practice.

EGGS ARE RELISHED.

Eggs and the foods into which they enter are favorite articles of diet with very many, if not most families, and in this as in other cases the income and the need for economy must determine how far and in what way they are to be used when they are high in price. Judged by their composition and digestibility, eggs are worthy of the high opinion in which they are usually held. Furthermore, they are generally relished. Although the physiological reason is perhaps difficult to find, it is gen-

erally conceded that the attractiveness and palatability of any food must not be forgotten in considering its true nutritive value. Refinement in matters of diet should keep pace with growth in general culture, and foods which please the esthetic sense as well as satisfy the hunger are certainly to be preferred to those which serve the latter purpose only, if they can be provided with the income at one's command.

MARKETING AND PRESERVING EGGS.

In earlier times eggs, if sold at all, were marketed near the place where they were produced. Many are still sold in local markets; but with improved methods of transportation the market has been extended and large quantities of eggs are shipped from this country and Canada not only to distant points in America, but to England and more distant countries. For shipping long distances there are special egg cases, and the shipper should select the kind which is preferred in the market which he desires to reach.

SORTING AND CLEANING.

The shells of new-laid eggs should be wiped clean, if necessary, and the eggs graded as regards size. In some markets brown eggs are preferred to white. It is stated that in the Boston market brown shelled eggs, such as are laid by Partridge Cochins, Dark Brahmans, Barred Plymouth Rocks, etc., sell at from 2 to 5 cents per dozen more than white-shelled eggs, such as are laid by Brown Leghorns, Buff Leghorns, and White and Black Minorcas. In the New York market, on the other hand, white-shelled eggs bring the higher price.

THE SURROUNDINGS.

Eggs which are to be shipped, whether with or without a special attempt at preservation, should be perfectly fresh, and should never be packed in any material which has a disagreeable odor. Musty straw or bran will injure the flavor and keeping qualities of eggs packed in it. When shipped, eggs should not be placed near anything which has a disagreeable or strong odor. Keeping eggs near a cargo of apples during transportation has been known to injure their flavor and also their market value. As previously noted, micro-organisms may enter the egg through the minute pores in the shell and set up fermentation which ruins the egg. In other words, it becomes rotten. The normal eggshell has a natural surface coating of mucilaginous matter, which hinders the entrance of these harmful organisms for a considerable time. If this coating is removed or softened by washing or otherwise, the keeping quality of the egg is much diminished. If the process of hatching has begun, the flavor of the egg is always injured.

TESTING.

There are many ways of testing the freshness of eggs which are more or less satisfactory. "Candling," as it is called, is one of the methods most commonly followed. The eggs are held up in a suitable device against light. The fresh eggs appear unclouded and almost translucent; if incubation has begun, a dark spot is visible which increases in size according to the length of time incubation has continued. A rotten egg appears dark colored. Egg dealers become very expert in judging eggs by testing them by this and other methods.

The age of eggs may be approximately judged by taking advantage of the fact that as they grow old their density decreases through evaporation of moisture. According to Siebel a new-laid egg placed in a vessel of brine made in the proportion of 2 ounces of salt to 1 pint of water, will at once sink to the bottom. An egg one day old will sink below the surface, but not to the bottom, while one three days old will swim just immersed in the liquid. If more than three days old, the egg will float on the surface, the amount of shell exposed increasing with age; and if two weeks old, only a little of the shell will dip in the liquid.

LOSS OF WEIGHT.

The New York Experiment Station studied the changes in the specific gravity of the eggs on keeping and found that on an average fresh eggs had a specific gravity of 1.090; after they were 10 days old, of 1.072; after 20 days, of 1.053, and after 30 days, of 1.035. The test was not continued further. The changes in specific gravity correspond to the changes in water content. When eggs are kept they continually lose water by evaporation through the pores in the shell. After 10 days the average loss was found to be 1.60 per cent of the total water present in the egg when perfectly fresh;

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after 20 days, 3.16 per cent, and after 30 days, 5 per cent. The average temperature of the room where the eggs were kept was 63.8° F. The evaporation was found to increase somewhat with increased temperature. None of the eggs used in the 30-day test spoiled.

PRESERVING EGGS.

Fresh eggs are preserved in a number of ways which may, for convenience, be grouped under two general classes: (1) Use of low temperature, i. e., cold storage; and (2) excluding the air by coating, covering, or immersing the eggs, some material or solution being used which may or may not be a germicide. The two methods are often combined. The first method owes its value to the fact that micro-organisms, like larger forms of plant life, will not grow below a certain temperature, the necessary degree of cold varying with the species. So far as experiment shows, it is impossible to kill these minute plants popularly called "bacteria" or "germs," by any degree of cold; and so, very low temperature is unnecessary for preserving eggs, even if it were not undesirable for other reasons, such as injury by freezing and increased cost. According to a recent report of the Canadian commission of agriculture and dairying.

When fresh-laid eggs are put into cold storage with a sweet, pure atmosphere at a temperature of 34° F., very little, if any, change takes place in their quality. The egg cases should be fairly close to prevent circulation of air through them, which would cause evaporation of the egg contents.

Eggs should be carried on the cars and on the steamships [at a temperature of] from 42° to 38°. When cases containing eggs are removed from the cold-storage chamber, they should not be opened at once in an atmosphere where the temperature is warm. They should be left for two days unopened, so that the eggs may become gradually warmed to the temperature of the air in the room where they have been deposited, otherwise a condensation of moisture from the atmosphere will appear on the shell and give them the appearance of sweating. This so-called "sweating" is not an exudation through the shell of the egg, and can be entirely prevented in the manner indicated.

COLD STORAGE TEMPERATURE.

It is stated by Siebel that in practice in this country 32° to 33° F. is regarded as the best temperature for storing eggs, although some American packers prefer 31° to 34°, while English writers recommend a temperature of 40° to 45° as being equally satisfactory. The

amount of moisture in the air in the cold-storage chamber has without doubt an important bearing on this point. Eggs are generally placed in cold storage in April and the early part of May. If placed in storage later than this time they do not keep well. They are seldom kept in storage longer than a year. Eggs which have been stored at a temperature of 30° must be used soon after removal from storage, and are said to have the flavor of fresh eggs. The author cited states that eggs for market, especially those designed for cold storage, should not be washed. Stored eggs should be turned at least twice a week, to prevent the yolk from adhering to the shell.

(To be continued.)

POULTRY BREEDERS' DIRECTORY.

FOL SALE—Choice Single Comb White Leghorn hens, one year old. \$4 dozen. Ella F. Ney, Bonner Springs, Kans.

HIGH-SCORING, PRIZE-WINNING, Cornish Indian Games, W. P. Rocks, Black Langshans. Eggs \$1 per 15. Mrs. J. C. Strong, Moran, Kans.

HENS Setting 6 days instead of 21, and how to make \$500 yearly with 12 hens. 45 Medals, etc., for Wonderful Discovery in horse manure heat. Particulars for stamp. Scientific Poultry Breeders' Association, K Masonic Temple, Chicago.

GEM POULTRY FARM—C. W. Peckham, Proprietor, Haven, Kans. Buff Plymouth Rocks, 2 flocks. Eggs from best flock \$2 per 15. A few choice Burdick cockerels for sale. Pea Comb W. Plymouth Rocks, 2 flocks. Eggs from best flock \$2 per 15. A few choice cockerels for sale. M. B. Turkeys, 2 grand flocks. Eggs \$2 per 11. Young toms for sale.

200-Egg Incubator for \$12.00
Perfect in construction and action. Hatches every fertile egg. Write for catalogue to-day. GEO. H. STAHL, Quincy, Ill.

EGGS .. For .. Hatching.

From Pure-Bred, High-Scoring, Prize-Winning, **WHITE AND PLYMOUTH ROCKS BARRED**...

13 for \$1; 30 for \$2; 50 for \$3; \$5 per 100. Recipe for making and using Liquid Lice Killer, 25 cents. Write for descriptive circular.

T. E. LEFTWICH, Larned, Kansas.

EGGS AND STOCK.

Barred Plymouth Rocks, White Plymouth Rocks, Partridge Cochins, Buff Cochins, Light Brahmans, Black Langshans, Silver Wyandottes, White Wyandottes, Silver Spangled Hamburgs, S. C. Brown Leghorns and Belgian Hares.

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Fine Exhibition and Breeding Stock. Write me your wants. Circulars free. **A. H. DUFF, Larned, Kans.**

MARKET REPORTS.

Kansas City, June 17.—Cattle—Receipts, 5,339; calves, 224. The market was barely steady. Representative sales: SHIPPING AND DRESSED BEEF STEERS.

Table with columns: No., Ave. Price, No., Ave. Price. Lists prices for various cattle categories.

TEXAS AND INDIAN STEERS.

Table with columns: No., Ave. Price, No., Ave. Price. Lists prices for Texas and Indian steers.

SOUTHWEST STEERS.

Table with columns: No., Ave. Price, No., Ave. Price. Lists prices for southwest steers.

WESTERN STEERS.

Table with columns: No., Ave. Price, No., Ave. Price. Lists prices for western steers.

TEXAS AND INDIAN COWS.

Table with columns: No., Ave. Price, No., Ave. Price. Lists prices for Texas and Indian cows.

NATIVE HEIFERS.

Table with columns: No., Ave. Price, No., Ave. Price. Lists prices for native heifers.

NATIVE COWS.

Table with columns: No., Ave. Price, No., Ave. Price. Lists prices for native cows.

NATIVE FEEDERS.

Table with columns: No., Ave. Price, No., Ave. Price. Lists prices for native feeders.

NATIVE STOCKERS.

Table with columns: No., Ave. Price, No., Ave. Price. Lists prices for native stockers.

STOCK COWS AND HEIFERS.

Table with columns: No., Ave. Price, No., Ave. Price. Lists prices for stock cows and heifers.

Hogs—Receipts, 5,355. The market was 2 1/2 to 5 cents lower. Representative sales:

Table with columns: No., Av. Price, No., Av. Price, No., Av. Price. Lists prices for hogs.

Sheep—Receipts, 4,444. The market was slow but steady. Representative sales:

Table with columns: No., Av. Price, No., Av. Price, No., Av. Price. Lists prices for sheep.

Chicago Live Stock.

Chicago, June 17.—Cattle—Receipts, 23,000. Good to prime steers, \$5.30@6.20; stockers and feeders, \$3.00@5.00; Texas fed steers, \$4.15@5.20.

Hogs—Receipts, 24,000. Mixed and butchers, \$5.75@6.07 1/2; bulk of sales, \$5.90@6.02 1/2.

Sheep—Receipts, 20,000. Good to choice wethers, \$3.90@4.25; western sheep, \$3.90@4.25; native lambs, \$4.00@5.10.

St. Louis Live Stock.

St. Louis, June 17.—Cattle—Receipts, 6,500. Native steers, \$3.50@6.10; stockers and feeders, \$2.75@5.00; Texas and Indian steers, \$3.55@5.10.

Hogs—Receipts, 3,500. Pigs and lights, \$5.85@6.95; butchers, \$6.00@6.15.

Sheep—Receipts, 1,000. Native muttons, \$3.25@4.00; lambs, \$5.00@5.50.

Omaha Live Stock.

Omaha, June 17.—Cattle—Receipts, 1,100. Beef steers, \$4.50@5.90; western steers, \$4.00@4.90; Texas steers, \$3.50@4.60; stockers and feeders, \$3.25@4.75.

Hogs—Receipts, 3,800; Heavy, \$5.82 1/2@5.87 1/2; bulk of sales, \$5.80@5.85.

Sheep—Receipts, 5,000. Common and stock sheep, \$3.00@3.60; spring lambs, \$4.50@5.75.

Kansas City Grain.

Kansas City, June 17.—Wheat—Sales by sample on track: Hard—No. 2, 66@66 1/2c; No. 3, 65@66c.

Soft—No. 2, 64c; No. 3, 66@67c. Mixed Corn—No. 2, 42c; No. 3, 40 1/2c.

White Corn—No. 2, 42c; No. 3, 41 1/2c. Mixed Oats—No. 2, 28c; No. 3, 28 1/2c.

White Oats—No. 2, 30c; No. 3, 29 1/2c. Rye—No. 2, nominally 53 1/2c.

Chicago Cash Grain.

Chicago, June 17.—Wheat—No. 2 red, 71 1/2@72 1/2c; No. 3, 67 1/2@71c; No. 2 hard winter, 70@70 1/2c.

St. Louis Cash Grain. St. Louis, June 17.—Wheat—No. 2 red cash, elevator, 69c; track, 71@72c; No. 2 hard, 69@70c.

Kansas City Produce. Kansas City, June 17.—Eggs—Fresh, 96 doz.

Butter—Creamery, extra fancy separator, 16 1/2c; firsts, 14 1/2c; dairy, fancy, 14c; packing stock, 12c; cheese, northern, all cream, 11c.

KEEVER GRAIN CO.

344 BOARD OF TRADE, KANSAS CITY, MO.

Will handle your cash grain or option orders, and guarantee satisfaction. Always at home to letters or callers.

Special Want Column.

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

CATTLE.

Five registered Shorthorn cows, 3 calves, 2 yearling heifers, 2-year-old bull, and 10-month-old bull. Lot for sale very cheap. W. K. Morse, Benedict, Kans.

FOR SALE—Fourteen head registered Shorthorn cattle, 12 cows and heifers, two bulls. E. S. Arnold, Topeka, Kans., Route 5.

FOR SALE—Fifteen young Hereford bulls, from 6 to 16 months old, equally as good as the best in the land. All registered. Address me at Hiawatha, Kans. O. F. Nelson.

FOR SALE—Three registered Shorthorn bulls; solid reds, 14 to 22 months old. F. H. Foster, Mitchell, Kas.

FOR SALE—A few Shorthorn bulls ready for service. A. C. Rait, Junction City, Kans.

FOR SALE—Five registered Holstein bulls, also high grade Shropshire rams and ram lambs. E. W. Melville, Eudora, Kans.

HORSES AND MULES.

FOR SALE—Two hundred horses, all ages, draft stock, good bone and size. Address J. A. Scott, Deer Trail, Colo.

LEAVENWORTH COUNTY JACK FARM.—Seven mammoth jacks for sale. O. J. Corson, Potter, Kans.

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

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FREE A book of statistics, information, and 200 Winders Realty Co., Ottawa, Kans.

C. W. MILLER, Hays City, Kans., has just the good, cheap, farm or ranch that will please you. Write him at once for prices.

FOR SALE OR TRADE—160-acre farm—100 acres in cultivation; 6-room house, outbuildings, 3 miles from Florence, Kans., first-class spring water. Price \$16 per acre. For full particulars, write Jno. Fox, Jr., New Cambria, Kans.

LOTT'S SNAPS.

Send for my new Booklet containing list of farm and home bargains. Can fit you out on anything at any price. Write for it.

Sample Snap.

6 acres Douglas County, Mo., 3-room frame house, barn, fruit, spring, 25 acres in crop—1/3 goes with place. \$450 buys it, perfect title. \$50 down, balance \$50 every six months.

LOTT, the Land Man,

New York Life, Kansas City, Mo.

MISCELLANEOUS.

WANTED—A good housekeeper for family of four, and two or three hands. Strictly moral character required; references exchanged; \$4 per week. Address Box 106, Las Animas, Colo.

FOR SALE CHEAP—Cocker Spaniel Pups. W. H. Richards, V. S., Emporia, Kans.

WANTED—Man and wife to work on stock farm, that have had experience in farming and taking care of stock. Wife to cook for 3 to 5 men and take care of house. Call on or address S. M. Knox, La Harpe, Kans.

FARM HAND WANTED—On dairy farm. Write with reference. Box 166, Clifton, Kans.

FOR SALE—Six pure bred Lewelling and Irish Setter pups; also a fine Lewelling bitch, 2 years old, well broke on quail. Thomas Brown, Route No. 1, Clifton, Kans.

CATALPA POSTS FOR SALE—Well seasoned, light weight posts from trees 16 years old, butt cut, full seven feet long; 2,500 fill one car. Price 6 cents each f. o. b. Wiley, Morris Co., Kans. Address Geo. W. Tinscher, Topeka, Kans.

SCOTCH COLLIE PUPPIES—Of pure breeding. Will be sold cheap if ordered at once. Write now to O. A. Rhoads, Columbus, Kans.

WOOL WANTED—We want, and will pay the highest market price in cash for 500,000 pounds of wool. When you write for prices send us a sample of your wool by mail to Oakland, Kans. Be sure and get our prices before you sell. Topeka Woolen Mill Co.

FOR SALE—Feed mills and scales. We have 2 No. 1 Blue Valley mills, one 600-pound platform scale, one family scale, and 15 Clover/Leaf house scales, which we wish to close out cheap. Call on P. W. Griggs & Co., 208 West Sixth Street, Topeka, Kans.

SILBERMAN BROTHERS YOUR WOOL will pay you just in proportion as you are able to market it well and to your advantage. After having gone to all the trouble to produce good wool it would be a pity to fail in properly marketing it. We can relieve you of that trouble and annoyance and assure the success of your wool producing business. Ours is the Largest Wool House in the West. We have every best facility for grading, storing, packing, and we are always in intimate touch with the largest wool consumers in the country. We make liberal advances on consignments. Wool sacks free to our patrons. Write at once for our Wool Circular—gives latest prices and market conditions. SILBERMAN BROS., 122, 124, 126, 128 Michigan St., CHICAGO, ILL.

MISCELLANEOUS.

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High Grade Agent Wanted.

An established and responsible manufacturing concern, of Omaha, wants an A 1 man to take the agency for its product in several counties in this state. He must be of high integrity and standing, a good business man and a salesman. He must give the business all his time, be a hustler, and willing to work hard to build up a good business.

Men who are idle, who change about or who are not in earnest with a record for success behind them, cannot fill the position. It will be permanent and it will take time and money to break a man into it, therefore, it must be filled right. It will pay \$1500, or more, per year.

Give age, past experience, present business, three business references, and address, Box 25, Omaha, Neb.

The Stray List.

For Week Ending June 6.

Cherokee County—C. W. Swinney, Clerk. HORSE—Taken up by D. McKenzie, in Spring Valley Tp., on May 13, 1901, one brown horse, 10 years old, shod on mane, tall bobbed, shod all round, right hind foot white.

MARE—Taken up by James Murphy, in Lyon Tp., on May 15, 1901, one sorrel mare, Mexican or Texas, shod; valued at \$20.00.

HORSE—Taken up by H. T. Walker, in Lyon Tp., on May 10, 1901, one gray horse, collar marks, shod; valued at \$20.00.

HORSE—Taken up by M. B. Fruett, in Mineral Tp., on April 25, 1901, one bay horse, 10 years old, 14 hands high, branded "J" on left hip and shoulder; valued at \$20.00.

Cowley County—Geo. W. Sloan, Clerk. STEER—Taken up by S. I. Peering, in Silverdale Tp. (P. O. Townsend), on March 25, 1901, one 2-year-old, red and roan steer; valued at \$20.00.

Reno County—Wm. Newlin, Clerk. HORSES—Taken up by Alex Shultz, in Reno Tp., (P. O. Hutchinson), May 24, 1901, one bay gelding, 4 years old, (brand) 4 bars crossed, valued at \$30; one sorrel gelding, 4 years old, (brand) bar L, valued at \$20.

Osborne County—W. H. Mize, Clerk. MARE—Taken up by M. Loehard, in Hancock Tp., (P. O. Osborne), one bay mare, about 9 years old, weight about 1200 pounds, with a stripe in face, valued at \$75.

Nemaha County—A. G. Sanborn, Clerk. MARE—Taken up by John Paxon, in Harrison Tp., (P. O. Goffs), May 14, 1901, one red roan pony mare, 9 years old, it on left hip, valued at \$10.

Marshall County—James Montgomery, Clerk. HEIFER—Taken up by L. W. Chesley, in Vermillion Tp., (P. O. Frankfort), May 9, 1901, one three year old heifer, hole in right ear, left ear cropped, white on top of shoulders and belly, switch end of tail white also hind legs, body red, dehorned, but horn on left side shows stub, valued at \$15.

For Week Ending June 13.

Cherokee County—S. W. Swinney, Clerk. MARES—Taken up by John Paxon, in Spring Valley Tp., May 27, 1901, one black mare, 9 years old, 14 1/2 hands high, blind in left eye, one light bay mare, 3 years old, 13 1/2 hands, one sorrel mare, 3 years old, 14 hands high, blaze face.

For Week Ending June 20.

Rush County—W. P. Hays, Clerk.

MARE—Strayed away from A. T. Sizer, whose residence is section 26, township 19, range 20, Rush county, June 10, 1901, one light bay mare, 2 years old; white spot on forehead, white hind left foot, weight 700 or 800 pounds.

Cherokee County—S. W. Swinney, Clerk.

MARES—Taken up by James Vick, in Lowell Tp., June 3, 1901, one brown mare, 15 hands high, shod all around, 12 years old, no brands, but has been worked; valued at \$30; also, one chestnut sorrel mare, 1 white hind foot, star in forehead, shod in front, sprain knot on left hind leg; has been worked; valued at \$40.

MARE—Taken up by F. A. J. Shaffer, in Garden Tp., June 8, one blue-grey mare, 4 feet 2 inches high, 2 years old; valued at \$14.

Rawlins County—A. V. Hill, Clerk.

HORSE—Taken up by M. Beam, in Union Tp. (P. O. Atwood), May 13, 1901, one bay horse, marked C E; valued at \$15.

Rawlins County—A. V. Hill, Clerk.

MARE—Taken up by Oliver Wilcox, in Logan Tp. (P. O. Atwood), May 28, 1901, one iron gray mare; valued at \$15.

Wilson County—C. W. Ishman, Clerk.

CALF—Taken up by M. L. Somers, in Cedar Tp. (P. O. Altoona), May 6, 1901, one steer calf, red and white spotted; valued at \$14.

Registered Stock, DUROC-JERSEYS, contains breeders of the leading strains.

N. B. SAWYER, - - Cherryvale, Kansas.

GRANGER HERD.

Established 25 years. Over 2000 shipped. Four crosses. World's Fair, 4 highest priced strains of Poland-Chinas. Send stamp. W. S. Hanna, Richter, Kans.

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Burton & Burton, Topeka, Kans.

WANTED—One boy and girl in each town to send for our new combination pen and pencil free. Address, M. S. Co., Genoa, Ill.

A 43-PIECE DINNER SET FOR 25c.

Full sizes; beautiful flower decoration and rich gold bands. Write us at once and we will send a sample set. The Acme Supply Co., P. O. Box 506 East Liverpool, O.

by using Coddington's Self Melting Self Sealing Wax Strings. Very convenient and economical. Inquire of your dealer or send me his name and 45 cents in stamps for 100 strings by mail. Mention this paper. C. C. FOUTS, Middletown, O.

CREAM SEPARATOR \$4.15

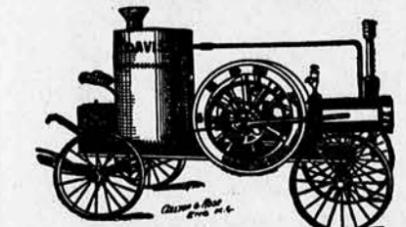
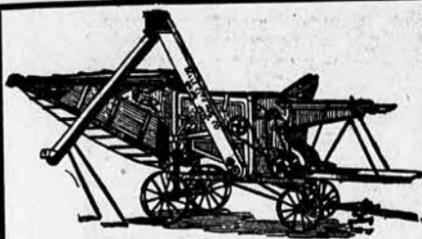
New, Best, Most Reliable; simple and fully tested; sold under positive guarantee. No work, no heat, is automatic. Will save you \$10 a cow per year. We have no agents; we sell direct. Write for particulars; will pay. SIZES: 10-gallon, \$4.15; 15-gallon, \$5.10; 20-gallon, \$6.25. STIMSON & CO., Station "A" KANSAS CITY, Mo.

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O. L. THISLER, Chapman, Dickinson Co., Kans., Importer and Breeder of Percheron, and French Coach Horses, and Shorthorn Cattle.

For Sale—A few Shorthorn heifers, and Percheron stallions; also a Special Bargain on 9 Registered Hereford Bulls, 2 years old, and a few Full-blood Percheron Mares.

When Americans become better acquainted with the charms of a California summer, the tide of travel will change. Go west, not east, to salt water! Go west with the Epworth Leaguers to San Francisco, in July, over the Santa Fe. See the strangest corner of our country en route. Enjoy novel scenes and perfect climate on California coast. Low rates for round-trip tickets. Write for information. T. L. KING, Agent The Atchison, Topeka & Santa Fe Ry., TOPEKA, KANSAS.



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A COMPLETE THRESHING OUTFIT Small in Size, Small in Cost, Large Capacity.

A Portable Gasoline Engine for Any Work—Any Time—Anywhere.

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KIRKWOOD FOR 1900 STEEL WIND MILLS, STEEL TOWERS, PUMPS, and CYLINDERS, TANKS, and FITTINGS OF ALL KINDS.

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A book describing these lands and conditions of entry, SENT FREE. Address... E. W. THOMPSON, A. G. P. & T. A., TOPEKA, KANSAS

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Is being solved in a most satisfactory manner, along the line of the

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WROUGHT IRON PIPE For Steam, Gas and Water. Good as new. Tested, Re-painted, Re-threaded and couplings furnished.

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FREE Send me your name and address on a stamped envelope and I will send you a sample of XOX Stomach and indigestion Cure.

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Ladies Our monthly regulator never fails. Box FREE. Dr. F. E. May, Bloomington, Ill.

BED-WETTING CURED. Sample FREE. Dr. F. E. May, Bloomington, Ill.

50 Shorthorn Bulls For Sale.

The Bill Brook Herd of Registered Shorthorns Have on hand for ready sale, 50 Young Bulls, from 6 to 20 months old; also a few good heifers.

PILES--No Money till Cured

All diseases of the rectum treated on a positive guarantee, and no money accepted until patient is cured. Send for free 20-page book; a treatise on rectal diseases and hundreds of testimonial letters.

FREE TO YOU In order to introduce in every neighborhood THE BEST AND CHEAPEST CREAM SEPARATOR

THE SMITH CREAM SEPARATOR. The only separator on the market that does not MIX the milk and water, and sold under a positive guarantee.

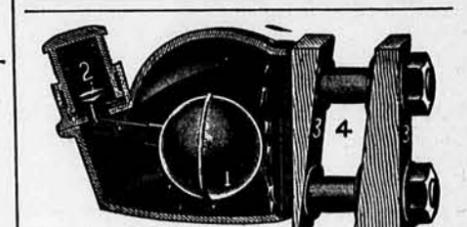
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ORNAMENTAL FENCE 25 designs, all steel. Handsome, durable. Cheaper than a wood fence.

DRILLING MACHINERY FOR WATER, GAS and MINERAL PROSPECTING. Steam or Horse Power. We are the oldest and largest manufacturers of Drilling Machinery in this country.

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Examine one and you will see at once its superiority over any Engine on the market. Practical, safe, simple and economical.



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The valve is governed by a Water Closet Brass Float, which cannot rust, leak, freeze, or allow mud to collect beneath.

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Is Parke, Davis & Company's Blackleg Vaccine Improved. Ready for Immediate Use. No Expensive Outfit Needed.

All you have to do is to put the Vaccine in your syringe, add boiled water according to directions, and inject into your cattle. It will positively PROTECT your cattle from the dread disease, Blackleg, the same as vaccination prevents Smallpox in the human family. Specify Parke, Davis & Co.'s Blackleg Vaccine Improved, and get the kind that is sure to be reliable. EVERY LOT IS TESTED ON CATTLE BEFORE IT LEAVES OUR LABORATORIES. Write for Literature and Full Information, Free on Request. FOR SALE BY ALL DRUGGISTS.

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Solicit Consignments and Execute orders (1000 and upwards) in Futures in the Kansas City market.

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Young bulls, cows, and helpers for sale.

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I have for sale five or six double-deck cars of goats, consisting of Recorded, High-class, Medium-class, old fashioned goats, about one hundred head of choice young bucks, and also two double-deck cars of fine Angora wethers, that are located thirty miles south of Kansas City. I can sell you any class of goats you may want at a reasonable price. Address,

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250 High Grade Angora Does

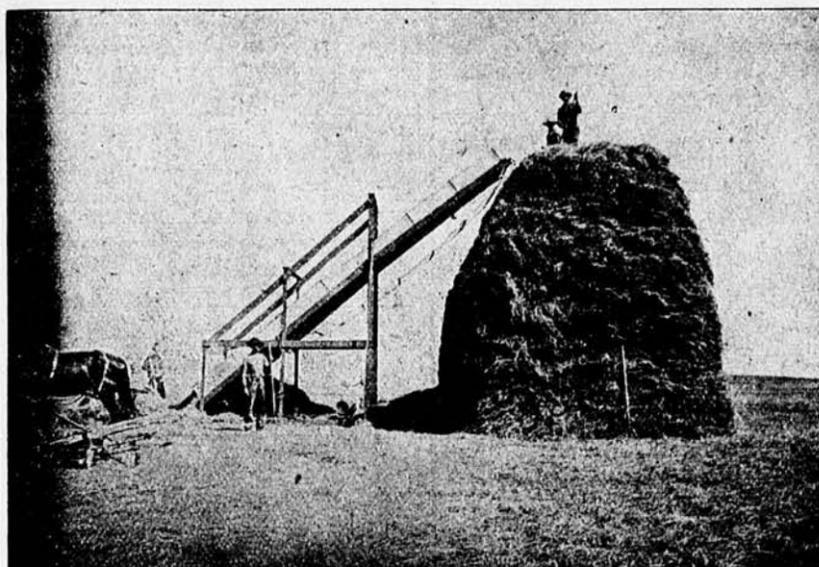
All pure white, thin pendulent ears.

Will sell very cheap if taken soon.

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Have sold for, and am booking sales for leading stockmen everywhere. Write me before claiming dates. I also have Poland-China Swine, Bronze turkeys, B. P. Rock, and Light Brahma chickens. 160 birds, and a lot of pigs ready to ship. Write for Free Catalogue.



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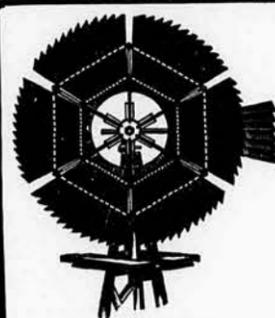
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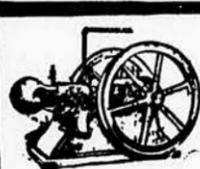
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