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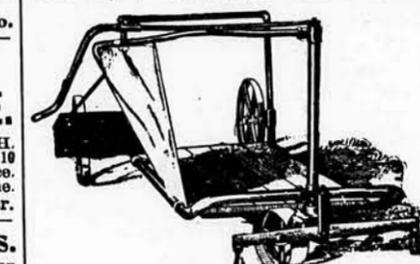
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Agricultural Matters.

SOIL FERMENTS IMPORTANT IN AGRICULTURE.

By H. W. Wiley, Chief of the Division of Chemistry, United States Department of Agriculture, from the Yearbook of the United States Department of Agriculture for 1895.

(Continued from last week.)

SEEDING THE SOIL WITH NITRIFYING ORGANISMS.

In former paragraphs the conditions favoring the development and activity of nitrifying organisms have been briefly set forth, but the presence of all these favoring conditions will prove of no advantage in a soil which is practically sterilized. In such a case, however, if a few organisms can be supplied a practically sterilized soil will, after a time, by the natural growth and distribution of nitrifying organisms, become fully impregnated with the nitrifying germs. The question naturally arises, is there any artificial way in which the seeding of the soil may be accelerated? The answer to this question is undoubtedly affirmative. In experiments which have been conducted in this department, and of which notice will be made further on, it has been fully demonstrated that different soils differ in the most marked degree in the number and vitality of the nitrifying organisms which they contain. As a rule, the richer the soil or the more highly fertilized it has been and the more fully cultivated, the greater will be the number of the organisms which it contains and the higher the degree of their vitality. It is thus seen that in a field which contains all the elements of fertility, but which by reason of unfavorable conditions, as, for instance, having previously been a swamp or marsh deficient in nitrifying organisms, may be practically sterilized, great benefit may be derived by spreading over it as evenly as possible a little soil taken from a rich garden which has been kept in excellent cultivation. The amount of plant food added in such a soil would not be of any great importance, but the nitrifying organisms thus distributed would rapidly grow in the favorable environment in which they were found and the inert nitrogen of the field be thus speedily prepared for the wants of the growing crop.

The action of stable manure is another instance of the great benefit which is derived from manuring a field with nitrifying organisms. It is well known that the nitrifying ferments of decomposing stable manure are particularly numerous and vigorous. The production of ammonia in a pile of stall manure is often so rapid as to be distinctly noticed by the passers-by from the odor produced. It has long been a matter of wonder among agronomists to find stall manure, when scattered over a field, producing fertilizing results far in excess of what could be expected from the quantity of plant food contained therein. In the light of the facts set forth above, however, these results are no longer surprising. In the distribution of the manure large numbers of a particularly vigorous species of nitrifying organisms are incorporated with the soil, and these and their progeny continue to exercise their activity upon the inert nitrogen of the soil when the more easily nitrifiable portions of the stall manure are exhausted. This result brings to the attention of the scientific agronomist an entirely new factor in the process of fertilization. Even in poor soils chemical analysis often discovers quantities of plant food which seem amply sufficient to produce remunerative crops. The true theory of fertilization, therefore, not only looks to the addition of appropriate plant foods to a soil deficient therein, but also to the making available the stores of plant food already present.

FERTILIZING FERMENTS.

When a soil is practically free from albuminoid bodies and contains but little humus, the attempt to develop a more vigorous nitrifying ferment would be of little utility. Even in a soil containing a considerable degree of humus, it may be found that its nitrogen content has been so far re-

duced as to leave nothing practically available for the activity of nitrification. In such cases the only rational method of procedure is in the application of fertilizers containing nitrogen. In other cases where the lack of fertility is due to the extinction or attenuation of the nitrifying ferment, remunerative results may be obtained by some process of seeding similar to that described above. It is entirely within the range of possibility that there may be developed in the laboratory species of nitrifying organisms which are particularly adapted for action on different nitrogenous bodies. For instance, the organism which is found most effective in the oxidation of albuminoid matter may not be well suited to convert amides or the inert nitrogen of humus into nitric acid. We have already seen the day when the butter-maker sends to a laboratory for a ferment best suited to the ripening of his cream. It may not be long until the farmer may apply to the laboratory for particular nitrifying ferments to be applied to such special purposes as are mentioned above. Because of the extreme minuteness of these organisms the too practical agronomist may laugh at the idea of producing fertility thereby, and this idea, indeed, would be of no value were it not for the wonderful facility of propagation which an organism of this kind has when exposed in a favorable environment. It is true that the pure cultures which the laboratory would afford would be of little avail if limited to their own activity, and it is alone in the possibility of their almost illimitable development that their fertilizing effects may be secured.

NUMBERS AND KINDS OF NITRIFYING ORGANISMS.

In regard to the numbers and kinds of organisms which take part in the oxidation of nitrogenous bodies our knowledge is limited. It has already been noted that a great many species take part in the production of ammonia. The purely nitrous and nitric ferments seem to be of a more limited character, but it must not be forgotten that scarcely a beginning has been made in the investigation of these bodies, and it is entirely probable that great differences in their nature will be established. It is not at all likely, for instance, that a nitrifying organism such as exerts its activity in an ordinary soil under ordinary conditions would belong to a species which was capable of development and work in an entirely different medium. There are in the arid regions indubitable evidences of strong nitrifications in the presence of highly alkaline salts. While it is true that a slight alkalinity favors the ordinary form of nitrifying activity, it is likewise certain that such organisms would be practically paralyzed if subjected to the alkaline environment of the arid plains. It is therefore highly desirable that the investigation of these organisms be pushed to the widest extent, not only for the scientific value of the investigation, but also for its practical utility in scientific farming. This is one of the objects kept in view in the investigations which the department has undertaken in respect of the extent and character of the nitrifying ferments in the typical soils of the United States.

FERMENTS OXIDIZING FREE NITROGEN.

In the preceding paragraphs the attention of the reader has been briefly called to the action of those species of ferments which attack nitrogen in some of its forms of combination. Since nitrogenous food is the most expensive form of nutriment which the plant consumes, it is a matter of grave importance to agriculture to know the full extent of the supply of this costly substance. It is evident that the continued action of nitrifying ferments finally tends to exhaust the stores of this substance which have been provided in the soil. The quantities of oxidized nitrogen produced by electric discharges in the air and by other meteorological phenomena, and which are brought to the soil in rain waters, are of considerable magnitude, but lack much of supplying the ordinary wastage to which the stores of soil nitrogen are subjected. Even with the happiest combination of circumstances

it is not difficult to see in what way the available stores of nitrogen could be diminished to a point threatening the proper sustenance of plants, and thus diminishing the necessary supplies of human food. The examination of the drainage waters which come from a fertile field in full cultivation is sufficient to convince the most skeptical of the fact that the growing crop does not by any means absorb all the products of the activity of the nitrifying ferments. Nitric acid and its compounds, the nitrates, are exceedingly soluble in water, and for this reason any unappropriated stores of them in the soil are easily removed by heavy downpours of rain. Happily the living vegetable organism has the property of withholding nitric acid from solution, either by some property of its tissues or more probably by some preliminary combination which the nitric acid undergoes in the plant itself. This is easily shown by a simple experiment. If fresh and still living plants be subjected to the solvent action of water, very little nitric acid will be found to pass into solution. If, however, the plants are killed before the experiment is made, by being exposed for some time in an atmosphere of chloroform, the nitric acid which they contain is easily extracted by water.

The losses, therefore, which an arable soil sustains in respect of its content of nitrogenous matter must be supplied either by the addition of nitrogenous fertilizers or by some action of the soil whereby the nitrogen which pervades it may be oxidized and fixed in a form suited to the nourishment of plants. The discussion in regard to the possibility of fixing nitrogen in the soil has been carried on with great vigor during the last two decades. The proof, however, is now overwhelming that such fixation does take place. It would not be proper here to enter into a discussion of the processes by which this fixation is determined, and, in fact, they are not definitely known. One thing, however, is certain, viz., that it is accomplished by means of micro-organisms or ferments similar, perhaps, in their nature to those already mentioned, but capable of absorbing, assimilating and oxidizing free nitrogen.

METHODS OF OXIDIZING FREE NITROGEN.

At the present time it is sufficiently well known that this operation takes place in two ways. In the first place, there are found to exist on the rootlets of certain plants, chiefly of the leguminous family, colonies of bacteria whose function is known by the effects which they produce. In such plants, in a state of maturity, as was mentioned above, are found larger quantities of organic nitrogen than could possibly have been derived from the soil in which they were grown or from the fertilizers with which they were supplied. Cultural experiments in sterilized soils, with careful exclusion of all sources of organic nitrogen, have proved beyond question that this gain in nitrogen is found only in such plants as are infected by the organism mentioned. The logical conclusion is therefore inevitable that these organisms, in their symbiotic development with the plant rootlets, assimilate and oxidize the free nitrogen of the air and present it to the plant in a form suited to absorption. Attempts have been made to inoculate the rootlets of other families of plants with these organisms, but so far without any pronounced success. There are, however, certain orders of low vegetable life, such as cryptogams, for instance, which seem to share to a certain degree the faculty of the leguminous plants in acting as a host for the nitrifying organisms mentioned. The observation above recorded becomes a sufficient explanation of the fact that the fertility of fields is increased by the cultivation of leguminous plants, which would not be possible except they could develop some such property as that which has already been described.

Another order of organisms has also been discovered which is capable of oxidizing free nitrogen when cultivated in an environment from which organic nitrogen is rigidly excluded. It seems

Over Thirty Years Without Sickness.

Mr. H. WETTSTEIN, a well-known, enterprising citizen of Byron, Ill., writes: "Before I paid much attention to regulating the bowels, I hardly knew a well day; but since I learned the evil results of constipation and the efficacy of



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Medal and Diploma at World's Fair.
To Restore Strength, take Ayer's Sarsaparilla.

probable, therefore, even in soils which bear crops not capable of developing nitrifying organisms on their rootlets it is possible that the actual stores of available nitrogen may be increased. This fact explains the observation which has frequently been made that in fields which are not cultivated but which remain in grass there may be found an actual increase in the total amount of nitrogen which is available for plant growth. As will be seen further along, the soil is also infested with an organism which is capable of destroying nitric acid and returning the nitrogen which it contains to the air in a free state. It seems almost certain that in every complete decomposition of a nitrogenous organism a part of the nitrogen which it contains escapes in the free state. Were it not, therefore, for the fact that this free nitrogen can be again oxidized and made available for plant growth the total stores of organic nitrogen in existence would be gradually diminished, and the time would ultimately come when their total amount would not be sufficient to sustain a plant life abundant enough to supply the food of the animal kingdom. Thus the earth itself, even without becoming too cold for the existence of the life which is now found upon it, might reach a state when plant and animal life would become practically impossible by reason of the deficit of nitrogenous foods.

Much less is known concerning the character and activity of the organisms that oxidize free nitrogen than of those which feed upon organic nitrogen. It cannot be doubted, however, that these scarcely known ferments are of the greatest importance to agriculture, and the further study of their nature and the proper methods of increasing their activity cannot fail to result in the greatest advantage to the practical farmer.

(To be continued.)

Breaking Prairie Sod.

EDITOR KANSAS FARMER:—Mr. J. L. Heisey, of Kansas City, Mo., writes as follows: "I expect to buy some raw prairie land and would like to have a crop off of it next fall, by plowing six to eight inches deep this fall, so it could be worked next spring. Would three horses do it? Would the sward rot sufficiently to work well in the spring? Please give us your opinion at once and oblige."

I can only answer from the standpoint of the condition of the sward in Allen county, and I should not advise him to break prairie sod any deeper than two inches, for the simple reason that all rotting or decomposition is due to the minute organisms or bacterial fermentation, and these bacteria or

minute organisms do their work only when the soil has reached a warm temperature, and always best near the surface, hence deep breaking of sod is to be avoided.

Twenty-five years ago it used to be the fashion to let the sod lay idle all the season in order to rot it. Modern farming has changed all this, and it is now the custom to break quite early in the spring, smooth the furrows, crease thoroughly with a disc set to only crease and not sew dirt. Crease this sod two or three times, going in different ways, then sow thirty to forty pounds of clean flax seed per acre or one-half bushel of pure German millet seed.

Many break sod late and drill in broomcorn. Of all these kinds, millet is to be preferred, as it seems to leave the soil in the most friable condition. From my own experience, in this county, I should not attempt any other crop. In central and western Kansas the sod is not so tough, and it is possible that wheat or rye could be made to pay the first time. To do a perfect job I should prefer to break in May and sow millet. Should my friend carry out his plans I will give him a valuable pointer, and that is, be sure to do all the tillage possible; by that I mean to put the crop in the soil with an abundance of harrowing of the surface. C. J. NORTON.

The Stock Interest.

THOROUGH-BRED STOCK SALES.

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

SEPTEMBER 17—W. H. Wren, Poland-Chinas, St. Joseph, Mo.
OCTOBER 1—E. E. Axline, Poland-Chinas, Oak Grove, Jackson Co., Mo.
OCTOBER 23—Gudgell & Simpson and J. A. Funkhouser, Herefords, Independence, Mo.
OCTOBER 30—J. R. Killough & Sons, Poland-Chinas, Richmond, Kas.

HOG CHOLERA.

I have read about a certain mixture being a good remedy for hog cholera. Please inform me what it is composed of, and whether or not it is compounded and kept for sale, and if so, where?
Franklin Co., O.

Mrs. A. HARD.

The following is the formula for compounding the hog cholera remedy recommended by the government: Wood charcoal, sulphur, sodium sulphate and antimony sulphide, one pound of each; sodium chloride, sodium bicarbonate and sodium hyposulphate, two pounds each; pulverize and mix thoroughly. The dose is a large tablespoonful for each 200 pounds weight of hogs treated, to be given only once a day, being stirred into a soft feed made by mixing bran and middlings, or middlings and corn meal, or ground oats and corn, or crushed wheat, with hot water. These articles are so common and cheap, it is doubtful if anybody keeps them on sale already mixed. Any druggist can fill the prescription at a few minutes' notice. One recommendation for this remedy is that hogs are fond of it. If too sick to eat, the remedy should be mixed with hot water and stirred until cool enough, and then the animal be drenched with it. The report recommends the medicine highly as a preventive, for which purpose it should be put into the feed of the whole herd occasionally, but in smaller quantity than for sick animals. It is said to be an excellent appetizer and stimulant for the process of digestion and assimilation, so that it causes the animals to take on flesh rapidly and assume a thrifty appearance. It is generally conceded by scientific investigators that hog cholera and swine plague are caused by separate and specific disease germs; but that for prevention and cure, so far as known now, the same remedies are advised to be applied, and under the circumstances, in speaking of these diseases in a general manner, it is sufficient to include both under the designation of "hog cholera." In view of the great losses by the disease in the United States—variously estimated at from fifteen to twenty-five million dollars annually—it is pertinent to inquire about means of prevention.

First, close inbreeding may so weaken the system as to make the animal readily receptive of the germs of the disease. Breeding immature sows is

another dangerous feature to invite disease. Improper diet—as of all corn—is a fruitful promoter of hog cholera. The needs of the system should be studied, and such variety of foods be provided as the welfare of the animal requires. Any experiment station would be glad to point these out to inquirers. Shutting pigs up except for a few weeks previous to slaughtering, and putting rings in their noses if they run out, are both detrimental to their welfare. They are provided by nature with snouts to root with, and to prevent the exercise of this function, is to place them in an unnatural and dangerous condition. We do not know all the things they gather from the earth to preserve and promote their health; and this is one of the objects they were given snouts for. Shut hogs from the earth awhile, and then let them out and they will eat fresh earth. We do not know but that at times this is necessary to their health. Get the right feed and be sure it is clean. "Feed rot and you get rot." Impure drinking water is just as apt to produce disease in swine as in human beings. The hog is very sensitive to storms and cold. He should be protected from both. A physician in Massachusetts became famous as a doctor for children. For the sake of outdoor work, and to interest and relieve his mind he also engaged in growing pork. Hog cholera swept off his herd. This set him to studying the situation. Then he set about giving his pigs the same good care he did his young human patients, and from that date he met with grand success in the porcine line, and this is the only key to success.

It is somewhat problematical if a cure for this disease, when well seated, is found yet. Prevention should earnestly engage our attention. A case is reported where a badly-afflicted hog fell on a live electric wire. He struggled awhile, arose, and walked off and became a well animal. It is claimed the shock killed the germs of the disease, something on the principle of the "X rays." The Giles County Record, of Pulaski, Tenn., May 15, has a half-page article headed, "It's Found at Last," referring to an alleged hog cholera cure. A man came to the place in March and interested the local agricultural society in making the test. They selected twelve farmers who had cholera in their herds, furnished the medicine, and then had those who used it report in person to a committee of the best citizens of the village on a certain day. The meeting was held in the directors' room of a local bank. I append the substance of the committee's report after hearing all the testimony: "Where the medicine was used as directed it was successful, but several failed to follow directions. When the farmers become better educated in the use of the medicine the per cent. of losses will be so small that it will be found practically certain in all cases." The committee seem to be so eminently respectable citizens that I am inclined to believe a remedy "is found at last." It is on sale in various places in Tennessee. I presume the Record (which is not interested) would respond to inquiries, as also the Pulaski postmaster.—Dr. Galen Wilson, Willow Creek, N. Y., in *Practical Farmer*.

He Loved His Horse.

A gentleman's love for his horse was shown in a crowded street. A crowd gathered around an old horse with more load than he was able to haul, and neither whip nor coaxing moved him, when a gentleman stepped to the old horse's head and spoke to him. The old horse recognized him and rubbed his nose on his old master's shoulder, who patted him kindly as he said, "Poor old Joe! I never thought you would come to this; but you shall not starve and work like this again," and turning to the driver said: "How much do you want for this horse?" Hesitating a moment, he said \$40, which the gentleman quickly paid him amid the shouts of the delighted crowd, for, said some of the crowd, "He loves his old horse." The gentleman told him to unhitch old Joe, and he led him away as proud as if he had bought a knee-actor.

Likes the Red Hog Best.

I have had a large experience during the past thirty years in seven States of our Union selling all kinds of live stock at auction and consequently have been a close observer. A word about hogs. During the fall of 1895 the hogs of our country were largely swept out of existence by the cholera. I have noticed one fact in my travels that might be worthy of mention, and that is that the disease seemed to confine itself to the Poland-China, the Berkshire and Chester White breeds. In all my observations I have failed to see a Jersey Red or Duroc hog that had the disease. At one of my sales I sold some two hundred Durocs and not one of them had the disease, while the other hogs over the same county were being almost totally cleaned out by the cholera. I have noticed in handling Poland-China shoats that they appear to have but little muscle and are unable to make a vigorous kick or squeal. They hang limp and torpid in your hand and do not seem to make any exertion, while the red hog will make a resistance that is worthy of admiration. Now, there must be some cause for this morbid inactivity of the black hog. What is it? I believe it is over inbreeding. The black hog has been inbred to such an extent without crossing that he is nothing but a keg of lard. He is opposed to exercise; he is not a rustler; he just eats and lies down—a big chunk of fat, having scarcely any of the organs of muscle, blood, circulation, or anything that goes to make him an active hog. He is becoming a physical imbecile by this fat-breeding process. If you want proof of this, note the price of lard in Chicago and the price of mess pork. If the Poland-China breeders would get the old "hazel-splitter" male and cross on their females they would improve their lard caddies. The red hog, in my opinion, is the best all-round hog.—H. B. Allison, in *Breeder's Gazette*.

List of Kansas Fairs for 1896.

Following is a list of fairs to be held in Kansas during the present year, their dates, locations and Secretaries, as reported to the State Board of Agriculture and furnished by Secretary F. D. Coburn:

Allen County Agricultural Society—H. L. Henderson, Secretary, Iola; September 8-12.
Anderson County Fair Association—George Patton, Secretary, Garnett; September 1-4.
Brown County Exposition Association—E. H. Hays, Secretary, Hiawatha; September 15-19.
Chase County Agricultural Association—H. F. Gillett, Secretary, Cottonwood Falls; September 15-18.
Cloud County—Concordia Fair Association—Homer Kennett, Secretary, Concordia; September 29-October 2.
Coffey County Fair Association—J. E. Woodford, Secretary, Burlington; September 15-19.
Douglas County—Sibley Agricultural Association—Wm. Bowman, Secretary, Sibley; September 16-18.
Finney County Agricultural Society—D. A. Mims, Secretary, Garden City; October 6-9.
Franklin County Agricultural Society—Chas. H. Ridgway, Secretary, Ottawa; September 22-25.
Greeley County Horticultural and Fair Association—I. B. Newman, Secretary, Tribune; September 8-9.
Jackson County Agricultural and Fair Association—S. B. McGrew, Secretary, Holton; September 14-18.
Johnson County Co-operative Fair Association—C. M. Dickson, Secretary, Edgerton; September 15-18.
Johnson County Fair Association—W. T. Pugh, Secretary, Olathe; August 25-28.
Linn County Fair Association—Ed. R. Smith, Secretary, Mound City; October 6-10.
Miami County Agricultural and Mechanical Association—Geo. P. Leavitt, Secretary, Paola; September 29-October 3.
Montgomery County—Southeast Kansas District Fair Association—D. W. Kingsley, Secretary, Independence; October 13-16.
Morris County Exposition Company—E. J. Dill, Secretary, Council Grove; September 22-25.
Nemaha Fair Association—John Stowall, Secretary, Seneca; September 8-11.
Neosho County Agricultural Society—H. Lodge, Secretary, Erie; September 8-11.
Neosho County—The Chanute Agricultural, Fair, Park and Driving Association—R. O. Rawlings, Secretary, Chanute; September 1-5.
Ness County Fair Association—Sam G. Sheaffer, Secretary, Ness City; September 17-19.
Osage County Fair Association—G. W. Doty, Secretary, Burlingame; September 1-4.
Osborne County Fair Association—F. P. Wells, Secretary, Osborne; September 15-18.
Riley County Agricultural Society—R. C. Chappell, Secretary, Riley; September 15-18.
Rooks County Fair Association—David B. Smyth, Secretary, Stockton; September 8-11.
Saline County Agricultural, Horticultural and Mechanical Association—H. B. Wallace, Secretary, Salina; October 7, 8, 9.
Sedgewick County—Kansas "State Fair"—C. S. Smith, Secretary, Wichita; September 22-25.
Wilson County—Fredonia Agricultural Association—J. H. Edwards, Secretary, Fredonia; August 25-28.

The English government pays from \$170 to \$200 apiece for the cavalry horses it's taking in great numbers from Canada.

Young men or old should not fail to read Thos. Slater's advertisement on page 15.

Nervous

People wonder why their nerves are so weak; why they get tired so easily; why they do not sleep naturally; why they have frequent headaches, indigestion and

Nervous Dyspepsia. The explanation is simple. It is found in that impure blood feeding the nerves on refuse instead of the elements of strength and vigor. Opiate and nerve compounds simply deaden and do not cure. Hood's Sarsaparilla feeds the nerves pure, rich blood; gives natural sleep, perfect digestion, is the true remedy for all nervous troubles.

Hood's Sarsaparilla

Is the One True Blood Purifier. All druggists. \$1.

Hood's Pills cure Liver Ills; easy to take, easy to operate. 25c.

One Fare.

One fare for the round trip to Abilene, August 3, 4 and 5, and to Topeka, August 9, 10 and 11, via the Union Pacific from points in Kansas. For full information call on or address F. A. Lewis, city ticket agent Union Pacific system, 525 Kansas avenue, Topeka, Kas.

Unequaled Service

Denver to Chicago via Kansas City is given via the UNION PACIFIC and Chicago & Alton railways.

Through Pullman Sleepers, Pullman Dining Cars and Free Reclining Chair Cars leave Denver Daily. The Union Pacific is the great through car line of the West. Ask your nearest ticket agent for tickets via this line.

E. L. LOMAX,
Gen. Pass. and Ticket Agent,

41 Omaha, Neb.

For the Biennial Encampment

of the Knights of Pythias, Uniform Rank, at Cleveland, August 23 to 30, the Nickel Plate Road will sell tickets, available on all trains August 22, 23 and 24, from Chicago to Cleveland and return, at \$8.50 for the round trip, good returning until August 31. This is a saving of \$1.50 on the round trip as compared with other lines, and our passenger service includes fast trains, drawing-room sleeping cars and unexcelled dining service. For further particulars address J. Y. Calahan, General Agent, 111 Adams street, Chicago, Ill. 125

Special Inducements

are offered to passengers traveling via the Nickel Plate Road to Cleveland on occasion of the biennial encampment Knights of Pythias, Uniform Rank, at Cleveland, August 23 to 30, inclusive. A smooth roadway, quick time; a train service that is unapproachable and that affords all the comforts available in travel, besides being \$1.50 lower than rates offered by other lines. For this occasion tickets will be on sale August 22, 23 and 24 at \$8.50, Chicago to Cleveland and return, good returning until August 31. J. Y. CALAHAN,
General Agent, 111 Adams street, Chicago, Ill. 126

Ho! for Cripple Creek.

Remember that the Chicago, Rock Island & Pacific is the only line running directly from the East to Colorado Springs, the natural gateway to the Cripple Creek District. Colorado Springs lies at the foot of Pike's Peak at its eastern base, and Cripple Creek is part way down the southwest slope of Pike's Peak and near its western base. Two all rail routes from Colorado Springs are offered you. One by the Midland railway up Ute Pass, via Summit, to Cripple Creek. Another over the Denver & Rio Grande, via Pueblo and Florence, to Cripple Creek. Take the great Rock Island Route to this wonderful gold mining camp. Maps, folders and rates on application. Address

JNO. SEBASTIAN, Gen'l. Pass. Ag't.,
Chicago.

Important to Breeders.

Every one interested in improved stock should have the *Breeder's Gazette*, of Chicago, as well as the *KANSAS FARMER*, which we furnish for the price of one—both papers one year for only (\$2) two dollars; or we will supply the *National Stockman and Farmer*, of Pittsburgh, Pa. (the best general farm and stock journal in this country, price \$1.50), and the *FARMER*, for \$1.50. Send for sample copies to the papers direct, and save money and get a big benefit by sending your subscription to *KANSAS FARMER*, Topeka, Kas. No progressive farmer or breeder can afford at this low price to be without this great trio of farm magazines.

Irrigation.

METHODS OF IRRIGATION.

From report of Charles W. Irish, in Yearbook of the United States Department of Agriculture for 1895:
AMOUNT OF WATER USED IN IRRIGATION.

Thirty years ago, when the first settlement was made where now stands the town of Fresno, Calif., well water was obtained by digging sixty to eighty feet deep. Since that time the water of Kings river has been brought out over the delta for irrigation purposes, the effect of which has been to fill up the subsoil to such an extent that over a very large area the ground water is within a few feet of the surface, and in order to have dry cellars in the town they must be cemented. The old wells, eighty feet deep, are now full of water to within six feet of the surface. This condition of the subsoils of the delta has brought about a great change in the method of irrigation, and has greatly lessened the quantity of water used for that purpose. At first the dry soils took the large amount of a miner's inch per acre, applied throughout the year. This is equal to one cubic foot of water a second applied to fifty acres during the entire year, which quantity would cover that amount of land fourteen feet five and three-fourths inches deep in that time, and then it no more than sufficed for the purpose of crop production on those thirsty soils. Now, with few exceptions, the water is not applied all over the surface, but is allowed to seep through the soil from ditches alongside of or passing through the fields. This is very effectual in all the sandy alluvial soils of the region, and the quantity used is very small, for it is estimated by those who are capable of judging that one cubic foot a second now suffices for the irrigation of 500 acres.

In Kern county and about Bakersfield much very sandy soil is found, and on the north side of the ancient channel of Kern river there is the same character of subsoil as in the case of the Kings river delta. Here, also, when the region was first settled, well water was only to be had by digging about sixty feet for it, while now, after about twenty-five years of irrigation of the surface, the ground water ranges only twelve to twenty feet below the surface about Bakersfield. West of that town, from seven to twelve miles, it has in many places come to the surface. Where such is the case no irrigation is needed for orchards that are on ground five or six feet above it. Quite the contrary condition exists over all the irrigated country to the south of the old river channel for no ground water has ever been found under it at any reasonable depth, nor does the subsoil fill at all by reason of the irrigation of the surface. Hence the maximum quantity of water is used in the irrigation of these lands, amounting to as much as a cubic foot per second to 100 or 150 acres.

The maximum quantity applied to the lands on the north side of the old channel is one cubic foot a second to 250 acres, the supply supposed to be continuous throughout the year, and this will cover 250 acres thirty-four inches deep in that time. The former quantity stated as applicable to the south of the old river channel in the same length of time will cover 100 acres eighty-seven inches deep and 150 acres fifty-eight inches in the space of one year.

The agricultural and horticultural products have a wide range, the principal being wheat, oats, barley, corn, potatoes (two crops a year), alfalfa (six crops a year), pears, cherries, peaches, apricots, plums, prunes, raisins, table and wine grapes, olives and figs. Citrus culture is not far advanced, but a good beginning has been made.

The Riverside district is the leading orchard region of the State, owing to the wide area developed in such cultivation. It comprises a great extent of country, ranging from Los Angeles eastward to Beaumont and Benning, and from San Bernardino southward to San Diego. The soil of its valleys is very sandy, much of it being a rich, black, sandy loam. That of the bluffs

and high table lands bordering the valleys consists of adobe clays, with a mixture of sand and gravel.

In the Redlands district the soil consists of a stiff, red clay, with a coarse, sharp granite sand intermixed. It is from the color of the soil that the town derives its name. In general, the subsoils of this district consist of clays, gravel and sand, in varying proportions, but with a very open texture, so that the high lands are deeply underdrained.

About the town of Riverside much light sandy soil is found, and this characteristic occurs in many other places on the high lands. As the light soils alternate with those of heavy clay, these conditions have led to the use of varying quantities of water in irrigating them.

The sandy soils take up the most water, and the clayey ones the least, the former parting with it the most rapidly, and therefore needing the most frequent application of it. A cubic foot per second is applied to 150 acres, which would cover that area fifty-eight inches deep in one year. This is the allowance for the light sandy soils, while the heavier soils receive the same quantity of water to 250 acres, a year's supply at this rate each covering that area to a depth of thirty-four inches.

The rainfall of this district varies greatly. For the interior of this district the rainfall ranges at about the minimum. Small as it is, ten inches or less, it is considered very valuable to the farms and orchards, notwithstanding the amount of water used upon them artificially. It falls during the rainy months, and its good effects extend to the following June. When deficient, as it sometimes is, the want is seriously felt.

The principal agricultural products are wheat, barley, potatoes, beans, sugar beets, alfalfa, and common garden crops; the horticultural are oranges, lemons, limes, peaches, apricots, nectarines, grapes, cherries, plums, raisins, olives, English walnuts, and the hard and soft-shelled almonds.

HOW IRRIGATION IS PRACTICED.

For the spreading of the water in the process of irrigation there are in California four methods in use. These are (1) by flooding, (2) by basins or checks, (3) by furrows or ditches in place of the checks, and (4) by furrows run in a parallel system.

In all these methods the water to be used must be brought in the main ditch to the highest side of the field which is to be irrigated, and taken from the main by notches cut in its side.

Irrigation by flooding.—For the purpose of the first method, the water from these notches is conducted over the surface of the field by helpers, who are furnished with long-legged rubber boots and long-handled shovels. Their business is to wade into the flood of water as it flows along and cause it to spread evenly over all the surface of the field. This is done by putting, by means of a shovel, little dams across the current when it flows too freely, and removing clods and slight ridges which obstruct it. This is a work requiring great watchfulness to prevent the water from cutting channels in the field, which danger increases with the slope of its surface and also to avoid the leaving of dry spots, for unless these be very small in diameter, they will receive no benefit from the irrigation, owing to the tendency of the water to pass into the earth in perpendicular lines and not to spread horizontally to any considerable extent.

The quantity of water used in this method of irrigation must be large enough to cause a flow across the entire field. If it cannot be had in sufficient quantity for this, the field must be divided into sections by laterals from the main ditch, so that the quantity which can be used will be sufficient to flood the sections completely in succession. For the reason that quite a large proportion of the water used in this method is liable to be lost as wastage at the lowest sides of the field, it is prudent to begin, in the case of a divided field, with the uppermost section, in order that the surplus may be carried into the next lower lateral and

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All right; you need CHEAP Power. One Cent per Horse-power per Hour is CHEAP. Weber Gasoline Engines run anything. "Economy in Power" is our motto. For catalogue and testimonials address Weber Gas & Gasoline Engine Co., 459 Southwest Boulevard, Kansas City, Mo.



added to the quantity which will be let out of that lateral upon the succeeding lower section, and so on.

When, in flooding the land, the plan by sections is used, it saves much of the water which is lost by working without them, for the reason that the operator can graduate the quantity applied, making it less and less, as the successive sections are flooded, by the amount of the surplus which comes down to them from the upper ones. The lowest section will need but a small amount over the surplus coming to it from above.

While this method is the most wasteful of the water used, it is considered by all who have had large experience in such matters to be the most effective of all plans for irrigation, as well as the cheapest.

Irrigation by furrows.—The method, by furrows, is used largely in the irrigation of orchards, and is applicable to all crops planted in rows. The furrows are usually made with a plow; there are some contrivances by which several furrows can be made at once.

For orchards it is usual to make the furrows two and one-half feet apart from center to center and to make the system cover all the space between the rows of trees, going one way through the orchard to within two and one-half feet of the trees on either side of the space furrowed.

In case of other crops and gardens, the number of furrows and their distance apart will be governed by the distance between the rows of plants. This is the most simple and economical method in the use of water for irrigating purposes, and is the one to use in all cases in which the water supply is small. The furrows are filled with water from end to end. That this may be done, they must be level throughout their extent. When the supply given them has been absorbed by the soil, another can be given them, and so on until the proper quantity has been furnished.

In all these methods the field irrigated should have a border embankment thrown up all around it on its boundary line, to prevent the water from escaping to the lands adjacent, in which case it might cause serious damage. Then, too, there should always be provided an escape ditch through which the surplusage can be carried off to a stream or waste canal.

It is usual among irrigationists to use the term "irrigating head" when speaking of the quantity of water to be handled in irrigating a given field.

It is found in practice that the smallest quantity of water that can be made to flow far enough to be useful is one-half a cubic foot a second. This quantity is chiefly applied to the irrigation of gardens and very small fields. For field irrigation the quantity for one man to "handle" varies from one and a half to six cubic feet a second, which quantities would be called one and four irrigating heads, respectively.

The average of the usage in this regard is about one and a half cubic feet, or one irrigating head, a second. After the water has been applied in any case, and the soil has come into condition to permit of it, a careful and thorough cultivation of the surface must be given. In the case of most soils this is imperative, in order to prevent "baking;" that is, a hardening and drying by the sun's heat; also to prevent undue evaporation, which a finely pulverized condition of the surface holds well in check. Such cultivation also keeps the ground clear of weeds, which otherwise grow rapidly on irrigated lands.

Homes for the Homeless.

The opening of two Indian reservations in northeastern Utah to settlers opens up over three and one-half million acres of fine agricultural and stock-raising land for home-seekers.

The Uintah and Uncompahgre reservations are reached by the only direct route, the Union Pacific system, via Echo and Park City. E. L. LOMAX, G. P. & T. A., U. P. system, Omaha, Neb.

Every man should read the advertisement of Thos. Slater on page 15 of this paper.

Irrigation vs. Manuring.

Some forty-five years ago Hon. Levi Bartlett, of Warner, N. H., visited Wilson farm, owned by George W. Sanborn, the father of the writer, and wrote up for the *Country Gentleman* the system of irrigation pursued by him. It was then the only farm east of the Mississippi valley on which irrigation was carried on extensively for the production of the staple farm crops. It probably remains thus distinguished. It was established in the boyhood of the writer, about thirty-seven years ago, and covered upward of 100 acres of mowing ground, to which alone, until recently, it was applied.

Since Mr. Bartlett's visit I have wandered to the sunset side of the Rocky mountains, and in Utah conducted experimental and practical irrigation for the Agricultural college of Utah. In that State its use contemplated only its power to mitigate, or rather to destroy, the evil effects of deficient rainfall, and it is applied to all crops. On the farm of the writer its use has been mainly with reference to its fertilizing value. It was for this purpose alone that the system was introduced by its originator here. Until my return from Utah and the assumption of active charge of the farm, irrigating waters have been applied to grass alone. In this respect a change is being inaugurated, while its use for fertilizing alone is no longer its aim. At present its use is confined to something less than 100 acres, but more than this extent is contemplated for the near future.

This preliminary statement of the extent and design of irrigation at Wilson farm is of value, for its irrigation stands out alone for a vast area of our country, and will serve those who are now discussing the subject with reference to its application. In view of the fact that irrigation for gardens is now being introduced in the East, and is much discussed, one phase of recent information brought out in the course of our irrigation should serve the public, namely, the influence of these years of irrigation on the fertility of the soil.

The waters of New England brooks are crystal pure, and when applied for fertility they must, if anything is given to a hungry soil, be used in large quantities—in quantities that lead to percolation from the soil. The question at once rises whether percolating waters that are relatively pure at the time of application will not, in passing through fairly fertile soil, take from the soil more than they will part with. This question has its scientific and fascinating side, which at this time will pass unmentioned, that the influence of thirty-seven years of irrigation on the same piece of ground by the use of very pure waters may stand out distinctly and furnish its practical suggestions to the public contemplating irrigation.

On the re-occupation of the farm, in 1894, a section of some six acres that had been irrigated for the time mentioned, and devoted to grass without manure of any kind for over half a century, was planted to potatoes. This crop was irrigated after the fashion prevailing in Utah, but for sundry reasons no special lesson is to be drawn from this year's work that relates to irrigation. Last year the ground was in oats and irrigated. Both the oats and the potatoes extended above the canal over ground of similar character that had had similar treatment for the past half century. The crop of the present year is clover, alsike and red clover, extending, as previous crops, above the canal. This gives a rare opportunity to compare irrigated versus unirrigated areas unmanured for a long period, to determine the influence of irrigation on fertility of soil. Probably nowhere else, with water as poor as that used, can a similar comparison be made that will as distinctly give information on this most important question.

It is safe to estimate the grass grown above the irrigation line before 1894 as not one-fourth of that grown below that line. The crop of oats, though these had, as well as the potatoes, been fer-

tilized with chemicals, was estimated to be double above the canal that found below. The first crop of clover for this season is held to be fully double, on the irrigated section, that found on the un-irrigated area. Something of this effect of irrigation is no doubt due this year to its influence in overcoming drought, but not for the crop of oats last year. Neither the physical nor the chemical composition of the soil appears to have been injuriously affected by these years of percolating waters of irrigation. These waters have been applied in heavy quantities from early spring to a short period prior to harvesting the grass crop.

Is it not somewhat singular that the Yankee genius of the farmers of the humid sections of this country has failed to comprehend the value of irrigation, in view of the old world's experience with the system, and that even now, when irrigation is in the air, that only gardeners are appreciating it? Even these are but merely dabbling with it, and then solely from the standpoint of water as an antidote to drought.—Prof. J. W. Sanborn, in *Country Gentleman*.

The Austin Current Motor.

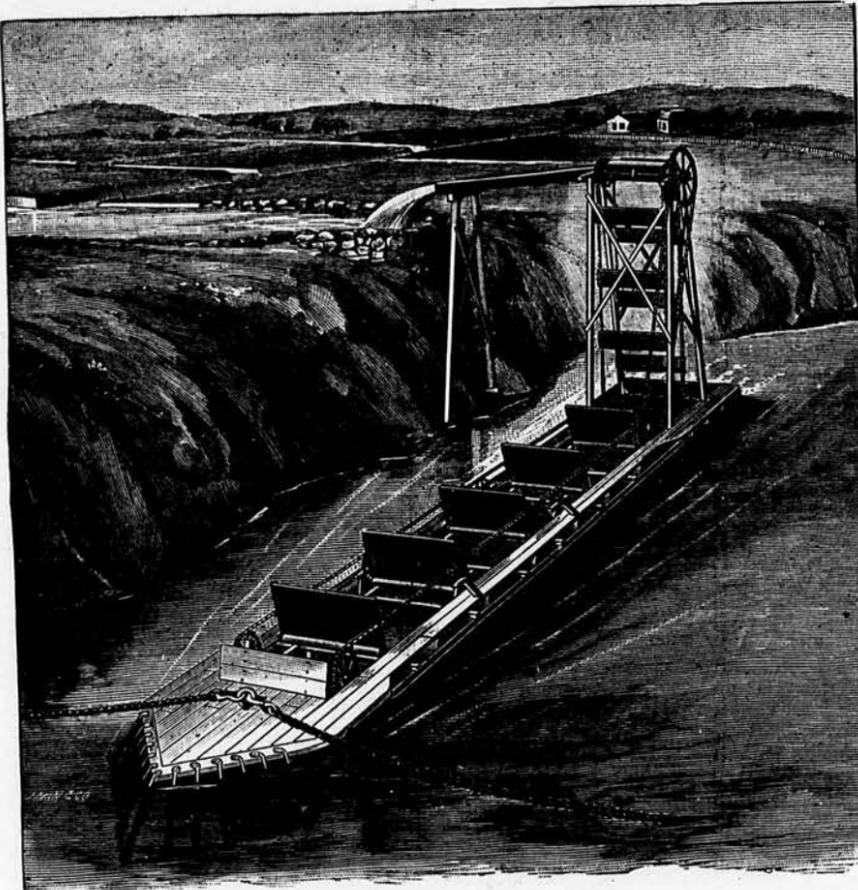
The name "Current Motor" is applied to mechanism that utilizes the power of the stream or current of a river in such a way that it can be applied to operate machinery. Several crude attempts have been made in

and consequently to the amount of water that can be pumped by the Austin Current Motor, are the dimensions of the paddles, the number of them and the force of the current.

The machine, which is anchored in the river, consists of a pontoon carrying two endless chains, to which are pivotally attached at suitable distances reversible paddles having floats at their upper ends that buoy them up in their course through the water. By an ingenious device these paddles enter and leave the water in such a way that they do not detract from the efficiency of the machinery, but on the contrary rather add to it. To the wheels put in motion by these cables is attached an elevator carrying large buckets, which, on entering the water to fill themselves, add to the generation of power and are so arranged that when they reach the top of the elevator they discharge their contents with the least possible friction into a trough, there to be conveyed to the shore, where a reservoir has been constructed to collect the water and distribute it through canals and lateral ditches to the land.

The first outlay for a current motor of this description is, comparatively speaking, not large, particularly when the enormous enhancement of the value of the land is considered, and the cost of running it is nominal. It works incessantly day and night without an attendant, and if the capacity of the reservoir is sufficient a large volume of water is accumulated to be used at the proper season.

For full particulars write to the F. C. Austin Manufacturing Co., Chicago, Ill.



THE AUSTIN CURRENT MOTOR.

the past to accomplish this, but it remained for the F. C. Austin Manufacturing Co., of Chicago, Ill., to be the pioneers of a practical current motor.

Rivers have been utilized to run machinery by damming them and using a water wheel, but this necessitated the expense of the construction and maintenance of the dam and was only available where the conditions were favorable, which necessarily very much limited their use. The current motor, however, can be used without a dam, in any river, in any location in the river, where the water is deep enough to admit it.

There is almost no limit to the use to which the power generated by a current motor can be applied. For example, it may be used for generating electricity for electric lighting purposes, and for various machines used on a farm now run by steam, but its chief use will be in connection with irrigation and mining.

There are many localities in the West, and in fact all over the country, where the land adjacent to the river is too high to admit of the water being conveyed to it through ditches by means of gravity. Under such conditions the land is now generally not irrigated, particularly in the arid regions, except to a limited extent in those localities where vegetables and fruit are raised, where the value of the crop compensates in a measure for the expense of pumping water by steam or gasoline engine, both of which require fuel and an engineer. To such localities the Austin Current Motor will prove a boon.

This motor has been experimented with and tested thoroughly and its practicability demonstrated. The only limits to its power,

Gossip About Stock.

A successful live stock breeder finds that he can winter stock hogs entirely on large red mangels, fed raw. He tried it on two brood sows and they did as well as other swine that ate bran, middlings and beets. He considers mangels "the cheapest hog feed on earth."

J. A. Worley, of Sabetha, Kas., writes KANSAS FARMER, imparting the information that he has three red Short-horn bulls for sale which will exactly suit our Colorado inquirer. As Mr. Worley's stock is always of the best, we do not doubt that he can suit any purchaser, both in line of Short-horns and Poland-China swine.

Every sheep should be dipped some time in the fall to insure comfort by freedom from insects during the winter. Cooper Dip will benefit the sheep greatly and cause a heavier growth of wool. It is without doubt the best all-around dip on the market. The United States government has just purchased a large parcel in preference to any other, for use on Indian flocks.

A very important public sale of Poland-China swine will be held, early in September, at Hutchinson, Kas., consisting of a very choice draft of swine from the Quality herd, owned by Willis E. Gresham, also from the Standard herd, the property of Lawrence Nation, of Hutchinson. A member of the FARMER staff has recently visited these herds and finds several interesting swine facts to relate, which will be deferred until next week, when definite announcements regarding sale can be made.

Our live stock field man reports a late visit at the Vernon County herd of Poland-Chinas, and among other things states that the herd is in excellent condition and numerous sales being made. Last week eight October gilts (four each) were selected to recruit the Tower Hill herd and the Clover Leaf herd at Fort Scott. The gilts were the get of Silver Dick 14180 S., and they were good ones, belonging to the same breeding as were the five yearlings that lately went to Texas from the Tower Hill herd. Mr. Turley has an extra lot of youngsters coming on and ready to go out to new masters, whose merits ought to be better known by the breeders of the West.

The Pleasant Valley herd of Poland-China hogs, the property of E. A. Bricker, Westphalia, Kas., has renewed its breeder's card in the FARMER, and in doing so Mr. Bricker says: "I am having many inquiries through the KANSAS FARMER. My herd is in fine condition, and I am now fitting a herd for the fair. I have now on hand sixty spring pigs, the best I have ever raised, consisting of Free Trade, Wilkes, Chief Tecumseh 2d and Black U. S. families. I have sold Tecumseh's Grand and will now sell Wilkes 3d. I have some choice sow pigs out of Widow McGinty by Free Trade and sired by Guy Wilkes that will make hot competition for somebody at the fair this fall. Also a number out of Lady U. S. by Tecumseh Grand and other equally well-bred dams."

Among the late sales made by Mr. B. R. Adamson, proprietor of the Tower Hill herd of Poland-Chinas, at Fort Scott, were five yearling gilts at \$50 each, that were personally selected by Mr. Stell, of Stell & McFadden, Paris, Texas. They were a choice lot that were sired by Silver Dick 14180 S., that is the herd boar doing service in Mr. J. M. Turley's Vernon County herd, at Stotesbury, Mo. These gilts were an extra fine lot and were grown out by Mr. J. T. Gilmer, Mr. Adamson's professional herdsman, and went to the Lone Star State to reinforce the noted Paris show herd. Mr. Geo. R. Wasson, of Mound City, Kas., who knows a good thing when he sees it, visited the Tower Hill herd last week and selected a Free Trade boar to cross on his Wilkes sows. There are two boars that Mr. Adamson has concluded to let go, both extra good ones—U. S. Butler 13938 S. by Last Look 2d 18399 S., a grandson of Old Success 277 S., and out of Bess Butler 81475 S., she by Bill Tecumseh 11202 S. and out of Black Bess 76351 S. This richly-bred fellow has about fifty youngsters now in the herd to his credit—that belong to the mellow, smooth and easy feeding kind. The other one is the yearling, Dick Bland 16045 S. by Silver Dick 14180 S. and out of White Face 35335 S. He is a litter brother of the gilts that went to Paris, Texas. Like his sisters, he is a show yard animal and a credit to both his breeder and sire.

Topeka announces that her Fall Festivities for the Grand Army of the Republic, to be held during the week September 23 to October 3, is not merely a reunion of the old soldiers but a reunion of all Kansans. It will be a week full of pageantry, floats, tournaments, carnival pranks, military, civic and flower parades, illuminated processions and campfires presided over by famous American statesmen, including Bryan and McKinley, who have both promised positively to be present. The Topeka daily newspapers are filling their columns about the preparations that are being made and the whole town seems to be stirred

with a civic pride. The capital city wants to prove to her fellow-citizens that she is the most agreeable and munificent entertainer in Kansas, and it looks as if she were going to be fully equal to the occasion.

Weather Report for July, 1896.

Prepared by Chancellor F. H. Snow, of the University of Kansas, from observations taken at Lawrence:

The past month has been an average July except in the matter of rainfall, which has been considerably above the average. The temperature, cloudiness, humidity and barometer were all slightly higher than the average. The run of wind for the month was somewhat below the average.

Mean temperature was 77.50°, which is 0.18° above the July average. The highest temperature was 97.5°, on the 3d; the lowest was 59° on the 8th, giving a range of 44.5°. Mean temperature at 7 a. m., 74.30°; at 2 p. m., 86.17°; at 9 p. m., 75.37°.

Rainfall was 6.15 inches, which is 1.62 inches above the July average. The entire rainfall for the seven months of 1896 now completed is 22.9 inches, which is 0.85 inch above the average for the same months in the twenty-eight years preceding. Rain in measurable quantities fell on ten days; in quantities too small for measurement on three days. There were four thunder showers during the month.

Mean cloudiness was 38 per cent. of the sky, the month being 2.18 per cent. cloudier than usual. Number of clear days (less than one-third cloudy), fifteen; half clear (from one to two-thirds cloudy), thirteen; cloudy (more than two-thirds), three. There were three entirely clear days, and two entirely cloudy. Mean cloudiness at 7 a. m., 43.06 per cent.; at 2 p. m., 44.19 per cent.; at 9 p. m., 26.77 per cent.

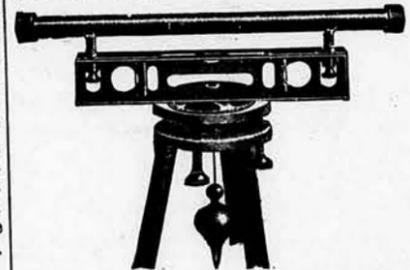
Wind was southwest thirty-one times; northwest, four times; north, seven times; south, fourteen times; northeast, eight times; east, twelve times; southeast, seven times; west, no times. The total run of the wind was 7,560 miles, which is 579 miles below the July average. This gives a mean daily velocity of 244 miles, and a mean hourly velocity of 10.16 miles. The highest velocity was forty miles an hour, between 3 and 4 p. m. on the 23d.

Barometer.—Mean for the month, 29.125 inches; at 7 a. m., 29.148 inches; at 2 p. m., 29.114 inches; at 9 p. m., 29.113 inches; maximum, 29.276 inches, at 7 a. m. on the 11th; minimum, 28.891 inches, at 2 p. m. on the 19th; monthly range, 0.385 inch.

Relative humidity.—Mean for the month, 72.72 per cent.; at 7 a. m., 78.96; at 2 p. m., 58.41; at 9 p. m., 80.80; greatest, 98, on four different occasions during the month; least, 38, at 2 p. m. on the 9th. There was no fog during the month.

Leveling Instrument.

In laying off land for irrigation, a matter of first importance is to determine the levels. The KANSAS FARMER has desired to offer its patrons a reliable, low-priced instrument for this purpose, and has finally secured the one herewith illustrated. It is



manufactured by L. S. Starrett, a well-known and reliable manufacturer of fine mechanical tools at Athol, Mass., who warrants it to be true in every respect.

The price of the instrument is \$12.50 at the factory. By a special arrangement we are able to furnish it to subscribers, together with a year's subscription to the KANSAS FARMER, delivered at any express office in Kansas, charges prepaid, at the manufacturer's price. Send orders with money to KANSAS FARMER Co., Topeka, Kas.

Many of KANSAS FARMER readers are familiar with the New York Tribune, the paper upon which Horace Greeley expended the best labors of a lifetime. We have perfected arrangements by which we can furnish one year's subscription to KANSAS FARMER and New York Weekly Tribune for \$1.25, received at this office.

It is easier to sell Shetland ponies than it is 1,200-pound horses. Let a man stop in a town of about 10,000 inhabitants with a car-load of Shetland ponies, and in less than two hours every boy in town will be around to see the ponies. Well, of course, some of the boys have the pony fever right away and nothing will give them relief but a pony. It is not long generally before they show up with their folks, and when you have sold one the rest go easy.

Home-Seekers' Excursions--Cheap Rates via Burlington Route.

On August 4, 18, September 1, 15, 29, October 6 and 20, the Burlington Route will sell excursion tickets at very low rates to points in Kansas, Nebraska, Wyoming, Utah, Black Hills and other territory. Ask your ticket agent.

L. W. WAKELEY, G. P. A.,
St. Louis, Mo.

One Fare to Cleveland and Return.

For the biennial encampment of the Knights of Pythias, Uniform Rank, at Cleveland, August 23 to 30, the Nickel Plate Road will sell tickets August 22, 23 and 24 at \$3.50 for the round trip, Chicago to Cleveland and return, being \$1.50 lower than via other lines. Tickets available on all trains, returning until August 31. Further information cheerfully given on application to J. Y. Calahan, General Agent, 111 Adams street, Chicago, Ill. 124

Low Excursion Rates to the East, via "Burlington Route."

HALF RATES.

National Republican League, Milwaukee, August 25 to 27.

Ask ticket agent for tickets via Vestibuled "Eli" to Chicago, and via Vestibuled Limited to St. Louis.

Both trains supplied with the most modern equipment.

L. W. WAKELEY, Gen'l. Pass. Ag't.,
St. Louis, Mo.

Thos. Slater has a message for every man on page 15.

The Home Circle.

THE TILT AT SPICER'S STORE.

This morning, down at Spicer's store, when I went after tea, I met a dapper little man as neat as neat could be; He'd got into an argument somehow with Ezra Stone, And Ezra had the hardest time a-holdin' of his own.

But little schooling Ezra had, and that was long ago; Over the hills that year we trudged together through the snow; He'd sooner wash the faces of the girls till they were red Than get the simple rule of three, the teacher often said.

The argument at Spicer's store was waxing pretty warm, And Ezra, in his feeble way, was standing by the farm; The other said: "The farmer's boy, beyond his patch of corn, Ne'er makes a page of history and dies of homage shorn."

That riled me, Hannah, and I said—I couldn't keep it back— "Just pardon me a moment, sir, my name is Joshua Black; I don't pretend to college lore, I have no sage's brow, I graduated years ago behind the farmer's plow."

A little smile went round the crowd and that encouraged me, And then I took the floor against the man from Manatee; I told him that the greatest men the world will ever know Bare-footed walked behind the plow in boyhood long ago.

I took him back unto the days that tried the souls of men, And spoke of one who helped to drive oppression to its den— A brave Virginia farmer's boy who on his native heath Defied a king and shouted: "Give me liberty or death!"

I told him, too, how farmer boys had fought to make us free, From Washington to brave Paul Jones who won upon the sea; The men who took the brightest jewel from royal George's brow Were the boys who in the furrows cool held down the olden plow.

I told how Garfield felled the trees which dared the winter gales, How Webster took the grain to mill, how Lincoln split the rails; How when the long day's work was done these patriots of might Before the flaring taper studied far into the night.

It would have pleased you, Hannah dear, had you been there to see How flustered grew from time to time the man from Manatee; I kept my temper all along, nor did I fly the track, The little crowd at Spicer's store seemed proud of Joshua Black.

I asked him if he'd heard of Grant, whose hands once held the plow, And lived to see the brightest laurels of fame upon his brow; And then I mentioned Henry Clay, Kentucky's farmer lad, Whose eloquence aroused the world as none before it had.

My arguments I clothed with proof, for it was there for me; He said he could not meet them, did the man from Manatee; And I added as a clincher, wife, the words I utter now: "Sir, the men who run this country are the boys who held the plow."

Around me, as I argued there, old mem'ries seemed to swarm, And again I was a little boy on "Elderberry farm;" The recollection makes me proud, though I am old and gray, These horny hands of toil I call my badge of rank to-day.

"Hail to the boys who hold the plow from sun-kissed shore to shore!" So said the man from Manatee I met at Spicer's store; We parted there, the best of friends, and ere he went his way He said that, like a champion true, I'd fairly won the day.

—T. C. Harbaugh, in Ohio Farmer.

A Legend of the Opal.

There is an ancient legend that says a woman's living heart was once imprisoned in a milk-white stone, and the throb of its passion and its pain shone through the half opaque surface, and made it dart and flash, and flutter with flame color, and rose and violet and golden tints. Sometimes it beat high with hope, and the surface was radiant with light; frequently sorrow oppressed it, and its rays were fainter and less glowing. There seems no more beautiful or more fitting association for the lovely opal to have. - It almost has life in its center, and no matter how small the stone, if it be of pure origin the colors are as perfect and as varying as in larger specimens.

Brightening Nickel.

Rub nickel silver with flannel soaked in spirits of ammonia to keep it bright, and then polish with a leather.

Hall's Hair Renewer cures dandruff and scalp affections; also all cases of baldness where the glands which feed the roots of the hair are not closed up.

BRAVE MOTHER IBRAHIM.

A French Woman Soldier Who Has Been in Many Battles.

A woman 73 years of age is an active and useful member of the French army. She has been wounded many times, seriously in many cases, but appears to have many years of activity still before her.

Her last adventure was to fall off her bicycle, which she had just learned to ride, and open an old wound. She has already recovered from that little accident.

Mother Ibrahim, as this remarkable old person is called, is the cantiniere of the Second zouaves. She has followed her regiment all over the world, sharing all its perils and hardships. She exposed herself to fire as cheerfully as the bravest soldier in the regiment.

The cantinieres of the French army are famous in song and story, and their services are often very valuable. They carry water and other kinds of drinks and refreshments, and many a wounded soldier has owed his life to their aid.

It is peculiarly interesting to call attention to this old woman just now, because many people are under the impression that women have only begun to do extraordinary things within the past few years. The venerable cantiniere was hard at work, tramping round the world and taking her part in battles, years and years before the present craze about women's achievements was heard of. It will be found on examination that in all ages some women have been in the habit of doing strange things.

Mother Ibrahim was born in Egypt, the daughter of a soldier of the great Napoleon. She married a non-commissioned officer of Turcos, who is now dead.

In appearance she is small, upright and wrinkled. Her eyes are black and lively, her hair is white, but thick. Her whole bearing is military and alert.

Her usual uniform includes a zouave turban and very loose zouave trousers. She was therefore a pioneer of the bloomer movement, although no one thought of her as a great dress reformer.

She also wears the red ribbon of the cross of the Legion of Honor, the military medal and the medals of the Crimea, Italy and Tunis, all of which have been conferred upon her.

She has so many wounds that she can hardly count them. Nine she thinks



MOTHER IBRAHIM IN UNIFORM.

they number. She has been wounded in the left shoulder, in the stomach, in the heel, in the right side. Bullets, sabers and bayonets have inflicted them. She has lost three ribs.

She was present at the assault of the Malakoff in the Crimea, at the battle of Solferino, and took part in the Mexican campaign.

After the battle of Sedan a German soldier smashed her left shoulder while she was attempting to rejoin some men of her regiment, who were being taken prisoners to Berlin. In Tonquin she was picked up, with her arm terribly mangled by three knife cuts. The surgeons wanted to amputate it, but she refused, and to-day she can guide a bicycle with it.

After an accident at Toulon, where she lives, she had to go to Paris to undergo an operation. The evening she left the hospital she was received by

President Faure, to whom she presented the barrel of the zouave regiment, for which he had asked. — N. Y. Journal.

PRETTY LAWN TABLE.

How to Turn the Stump of an Old Tree to Excellent Account.

Stumps of old trees that have outlived their usefulness and been relegated to the wood pile are not uncommonly seen upon lawns, and many attempts are made to turn them to artistic and useful account. The simplicity of the plan illustrated commends itself. The stump is first sawed to a flat surface and then fitted with a top of thick boards of the desired dimensions. Four rustic supports or brackets are placed underneath at the four corners. These should be as much as possible in their natural state, with any little crookedness or knots allowed to show, as they add much to the pretty effect on the whole. The edges, too, of the top board may be given a rustic tone by



RUSTIC PLANT STAND.

tacking to them strips of wood with the bark on them. When the little table is finished and "set" with its dishes and pots of plants, the owner of it is quite sure to stand a little way off and admire it audibly. All summer long it will be a charming abiding place for the choicest house plants, out of the reach of tiny marauders and within sure reach of admiring eyes.—Farm and Home.

TASTE IN JEWELRY.

Glistening Gems Should Not Be Worn Indiscriminately by Women.

Rubies should be worn en masse to be effective. Strong-featured women may affect them, but it is better to have a bushel of garnets than one ruby. Very delicate women who are dark should wear moonstones, with a few small diamonds; if blonde, straw-colored to-paz. Hammered gold is becoming to energetic women. Serious, iron-gray women should wear ornaments of blackened silver.

The sapphire which tones best with blue eyes and black hair is the star sapphire, or "asteria." It is found of immense size. Its sister, the star-ruby, has a gray-violet gleam. These beautiful stones shine, with a morning star of light, like the dull radiance of cat's-eyes. The orientals love them, and say they flash without giving pain. Both these gems are effective for stones cut en cabochon.

Emeralds are nearly always mounted badly; they should be the climax to many other tones of green. The enamels of India show them in the best taste, and they can be associated with jade, chrysoptase, Alexandrite, beryl and aquamarine. The opal has returned to favor, and is becoming to every style. The turquoise mounts wonderfully with the peacock-blue Australian opal. The opal, with its mixture of green, red and milky white, is not only beautiful, but accords with the chameleon idea of three colors combined, which runs riot in dress materials.

A woman who wishes to appear of classic culture should wear ornaments of Castellani gold. The princess of Wales has a wonderful diadem in this work of seed pearls and woven gold. The most distinguished jewel is the pear-shaped pearl; the most patrician, a parure, is of violet-tinted pearls.—Chicago Journal.

Advice to Literary Aspirants.

Elizabeth Stuart Phelps, in telling of her struggles to achieve fame and fortune, says: "Do not write, if you can earn a fair living at teaching or dressmaking, at electricity or hod-carrying. Make

shoes, weed cabbages, survey land, keep houses, make ice cream, sell cake, climb a telephone pole. Nay, be a lightning-rod peddler or a book agent, before you set your heart upon it that you shall write for a living. Do anything honest, but do not write unless God calls you and publishers want you and people read you and editors claim you. Editors do not care a drop of ink for influence. An editor will pass by an old writer any day for an unknown and gifted new one, with power to say a thing in a fresh way. Do not flirt with your pen."

CARE OF MATTRESSES.

How to Wash Woolen Blankets Before Putting Them Away.

The feather-bed is, of course, a thing of the past. It is probably not lamented in many quarters, as it is certainly unhealthy, difficult to care for, and not pleasant to sleep on. Mattresses, blankets, pillows and other articles of bedding, however, require much care to keep odorless and clean.

The main enemies to mattresses are dust, damp and moth, and frequent brushing must be given them, for in an incredibly short time they will harbor dust all along the edges and where the button is fixed. A loose cotton cover over the mattress, made to button neatly at one end, also goes a long way toward keeping it clean. This can be washed and changed as often as need be without much trouble or expense. It is very important to air all the bedding thoroughly. Every article should be daily taken off and laid separately over a chair, and a strong current of air should be allowed to circulate through the room before the clothes are replaced. The mattress should be turned daily from end to end, as this insures it being worn more evenly, and not sinking in the middle.

Blankets are a difficulty to many people, mostly because they cannot make up their minds as to how often they should be washed nor how they should be treated. In many houses they are only washed once a year; but somehow this does seem rather too rare a proceeding. On the other hand, it is really not necessary to have them washed more than twice a year; but they must have proper care in the interval in the shape of airing, shaking, etc. A washing machine is very good for the purpose, especially as they should never be rubbed by the hand. The water should be only lukewarm, and a little soap well lathered in the water is all that will be required. Wring the blankets very dry through a wringer, shake them out, and wash again in the same way, wringing each time, until they are quite clean. Do not rinse them, but pull them into shape and hang them out in the sun, which is a great help to preserving a good color.—Chicago Inter Ocean.

FEED THE NERVES upon pure, rich blood and you will not be nervous. Pure blood comes by taking Hood's Sarsaparilla, which is thus the greatest and best nerve tonic.

Hood's Pills cure nausea, sick headache, indigestion, biliousness. All druggists. 25 cents.



FORTY FOR \$1.00...

For the next 60 days we make this extraordinary offer on our HIGH-ARM SEWING MACHINES. On receipt of \$1 we will send our No. 3 High Arm on 30 days' trial (price \$12.25), or our No. 1 (price \$16.75). Our machines are the best made; our No. 1 beats the world; 10 years' guarantee with each. Deal with a reliable house; buy at factory prices. H. R. Eagle & Co., 70 Wabash, Chicago

LADIES

Know the Certain Remedy for diseases of the Liver, Kidneys and Urinary Organs is

Dr. J. H. McLEAN'S LIVER AND KIDNEY BALM

It Cures Female Troubles

At Druggists. Price, \$1.00 Per Bottle

THE DR. J. H. McLEAN MEDICINE CO. ST. LOUIS, MO.

The Young Folks.

A QUARREL IN THE OVEN.

O, the gingerbread boy and the piecrust girl
They had a quarrel one day;
Together they sat on the oven shelf,
The piecrust fay and the gingerbread elf,
And the quarrel commenced this way:

Said the gingerbread boy to the piecrust girl,
"I'll wager my new brown hat,
That I'm fatter than you and much more
tanned,
Though you're filled with pride till you can-
not stand—
But what is the good of that?"

Then the piecrust girl turned her little
nose up
In a most provoking way.
"O, maybe you're brown, but you're poor as
can be,
You do not know lard from a round green
pea!
Is there aught that you do know, pray?"

O, the gingerbread boy, he laughed loudly
with scorn.
As he looked at the flaky piecrust.
"Just watch how I'll rise in the world!"
cried he.
"Just see how I'm bound to grow light!"
cried she.
"While you stay the color of rust."

So the gingerbread boy and the piecrust girl
They each of them swelled with pride,
Till a noise was heard in the room without.
A cry of delight then a very glad shout;
And the oven was opened wide.

Then the gingerbread boy and the piecrust
girl
Could have screamed and wept with pain,
For a rosy-cheeked lass and a small bright-
eyed lad
Took a big bite of each—yes, this tale's very
sad—
So they'll now never quarrel again.
—Home Queen.

A VILLAGE IN COLORADO.

One Sunday afternoon in September,
Happy Davis and I were rambling among
the foothills of Cheyenne mountain, and re-
turning late by way of a borro trail among
the pines, we discovered the village of
Freetown, nestled in the seclusion of a pic-
turesque valley, almost surrounded by steep,
rocky cliffs where grew the hardy pitch
pine, spruce, cedar, fir and scrub oak.

We had often heard of this quaint habi-
tation but were not aware that it was so
near, or we should have visited Freetown
sooner. To acquaint ourselves with the
denizens of this rural municipality was our
first impulse, and we proceeded without
delay. A good many were out promenad-
ing on the sunny lawns, richly attired in
fur, though the weather was quite warm.
We saw no uniformed police, and supposed
that none were needed, there being no sa-
loons or gambling houses in the town, con-
sequently no drunkenness or crime.

The inhabitants of Freetown, though but
half civilized, all have the same political
and religious views, paying little attention
to the social customs of the outside world,
living harmoniously in the present.

We paused a few moments at a street
corner, where were assembled a number of
citizens engaged in conversation. Concealing
ourselves behind a large rock, as eavesdrop-
pers, we vainly hoped to ascertain the
cause of their enthusiasm, and, perhaps,
catch a little of their village gossip, but
neither Mr. Davis nor myself could under-
stand a word of their aboriginal jargon;
yet, as people will, when they hear conver-
sation in a foreign tongue, we naturally
supposed they were making sport of us.
We loitered in the village until after sun-
set, and finding no entertainment for
strangers, as we were to them, no welcome
to foreigners, we concluded to return to our
ranch.

Being thirsty, we would gladly have ac-
cepted a cup of sage tea or alkali water,
but could not obtain admission to the in-
terior of any of their dwellings, built, as
they are, rudely of earth, with but one
opening, which serves for door, window
and chimney. There were no wells or open
springs outside the dwellings, and those
inside are kept privately for the exclusive
use of the citizens of Freetown.

Mr. Davis and I agreed this was a regu-
lar prairie dog town, and that owls, bats
and pony rabbits are fit companions for
such a people.
JAY VEE.
Carbondale, Kas.

Deepest Hole in the Ocean.

A sounding line from the British ship
Penguin lately touched bottom at a depth
of 30,930 feet in the Pacific ocean between
New Zealand and the Tonga islands, says
the *Youth's Companion*. This is only 250
yards less than six miles. The deepest
previous sounding was made off the north-
east coast of Japan, where there is a pro-
found trough in the sea bottom, the depth
of which at that point measured was 27,930
feet. Mt. Everest (29,002 feet high) set in
this trough would tower more than a thou-
sand feet above the surface of the ocean,
but if dropped into the hole discovered by
the Penguin the giant of the Himalayas
would have its aspiring summit covered
with nearly 2,000 feet of water.

The only sin which we never forgive in
each other is difference of opinion.—*Emerson*.

FOR BRIGHT CHILDREN.

How They Can Make Toy Furniture from
Old Corks.

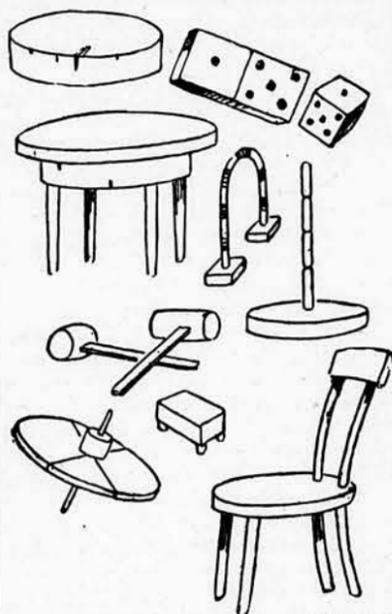
If there's a box of old corks in the
pantry the boy or girl, with a jackknife,
can make a whole set of furniture and
many other interesting things out of
them.

All the tools and materials necessary
are a very sharp knife, a box of matches,
a bottle of thick mucilage, Bob's water-
color paints, a few old calling cards, a
hairpin or two, a pair of stout scissors,
with sharp points, and the pin-cushion.
With these and the corks you can
find a great deal of interesting amuse-
ment.

Perhaps the best thing to begin with
is the cork out of the mustard pot,
which is large and flat. Snip the sul-
phur heads off of four matches, leaving
them square at the ends. Sharpen the
other ends a little, make four holes
with the penknife in the under side of
the cork and stick the pointed ends of
the matches into these. Cut out a
circle of a visiting card somewhat
larger than the mustard cork, paste it
on top of the cork, and there stands
a beautiful piece of nursery carpentry,
table all complete. A small, square bit
of cork that once served to stop the
mouth of a little glass jam jar and
sticking in four matches for feet and
two more on the upper side for a back,
with a bit of cork at the top of these,
one has at once a delightful chair to go
with the table and stool. The next
piece of manufacture might be a tee-
totum, and here Bob's paints begin to
come into play.

Cut a match in half; sharpen one end
a little. Cut a thin slice crossways
from a claret cork and stick the match
through the middle of it, pointed end
first. Cut out a circle of cardboard
four times as large as the cork, and
draw two lines at right angles across
the disk. That will leave it divided into
four quarters, and these quarters are
to be painted blue, green, yellow and
red. Bore a hole in the center of the
disk and slip the blunt end of the
match through it until the cardboard
rests upon the cork. Next cut another,
but rather thicker, slice from the cork,
bore a hole in the center and stick the
blunt end of the match through, press-
ing it down till it touches the card.
This will leave about an inch of match
to be taken between finger and thumb
for spinning this beautiful teetotum.

Cutting long slices through the mid-
dle of the cork leaves pieces which, with



WHAT THE CORK WHITTLERS
MAKE.

the aid of Bob's paints, can be turned
into a beautiful set of dominoes, and by
cutting out square pieces one can make
a beautiful set of noiseless dice to be
used with the backgammon board.

But perhaps the nicest toy of all made
in this shop, which has for its sign:
"Old cork taken in exchange for new
playthings," is the set of parlor croquet.
To begin this heavy but fruitful labor
cut out 18 small squares of cork. Bend
into a curved hoop—a miniature of those
used in lawn croquet—nine hairpins,
and these, with each end stuck into one
of the small squares of cork, will stand
upright and serve as table wickets for
the game. Cut slices crossways from
the vinegar-bottle cork, and into the
middle of each of these stick a match
whose end has been sharpened for the

purpose. This can be painted around
with rings of contrasting colors, as is
done to the goal stakes of lawn croquet.

Next, for the mallets hunt about in
the cork box for four small ones of even
size—those from the small medicine
vials serve nicely if they have not been
stained by drugs. These, if a nice shape,
need no cutting at all. Matches will
serve as handles for these mallets, and a
band of color must be painted around
each, so that players may distinguish
their own mallets. Some nice, large,
old sugar-coated pills would make beau-
tiful balls for this nursery croquet, with
a stripe of paint around each one.—Chi-
cago Record.

DEED OF KINDNESS.

What Some Merry Boys and Girls Did for
a Worn-Out Horse.

The hill was alive with merry boys
and girls on a bright Saturday after-
noon in winter. What fun it was in-
deed to coast swiftly down the icy
slope, and what shouts of ringing
laughter as the sleds flew down the
hill.

Young and old seemed to be having
the gayest time possible. Big boys on
double runners, with rosy cheeks and
sparkling eyes, turned the sharp cor-
ner at the end of the hill to shortly help
drag the heavy carryall up to the top
again.

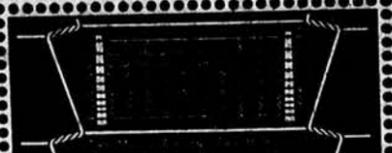
The sun had almost set, and its rosy
light filled the street, but before any
had started to go home a man driving a
large load of wood began to ascend the
icy path. The sleds steered out of the
way as the poor horse tried almost in
vain to go on.

Suddenly he stopped, for he could go
on no further. The road was so slip-
pery that in trying to walk his hind
legs slipped from beneath him. The
man seemed enraged and began whip-
ping the poor creature. As the horse
could not go on the man struck the
harder. Then a little girl, Amy by
name, got off her sled, and, stepping up
to the man, said, politely: "Couldn't I
help you with your horse, sir? The load
of wood seems very heavy for him." The
man looked very much surprised,
but stopped immediately. Amy went
up to the horse, patted his nose gently,
and whispered kindly in his ear. A
number of boys were taking a few of the
logs off the cart, and transferring them
to their sleds to drag up the hill.

Amy then led the horse along, for she
was very gentle, and the noble creature
was perfectly willing to obey her. The
man walked along and really felt much
ashamed, as he ought. At last they
reached the top, and the boys put back
the wood as the load was not too heavy
for a level. As the children all bade
each other good night to go home, the
man turned around, saying: "Many
thanks to ye, my lads, and to the little
missy," which showed how he felt.
Which do you think was the happier
that night, the horse, or the little girl
who belonged to the Society for the
Prevention of Cruelty to Animals?—N.
Y. Mercury.

How a Dog Got Fresh Eggs.

Bob is a fine two-year-old mastiff,
with head and face of massive strength,
heightened by great mildness of expres-
sion. One day he was seen carrying a
hen very gently in his mouth to the ken-
nel. Placing her in one corner he stood
sentry while she laid an egg, which he
at once devoured. From that day the
two have been fast friends, the hen re-
fusing to lay anywhere but in Bob's
kennel and getting her reward in the
dainty morsels from his platter. There
must have been a bit of canine reason-
ing here. Bob must have found eggs to
his liking, that they were laid by hens,
and that he could best secure a supply
by having a hen to himself.



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use seven years still in first-class condition.
Can also be used as a portable fence.
Write for catalogue.

KEYSTONE WOVEN WIRE FENCE CO.,
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OUTWITTED A HAWK.

Clever Maneuver by Pigeons Which
Fooled the Bird of Prey.

The Southern Sportsman told recent-
ly about a flock of pigeons that meas-
ured brains with a hawk and came out
on top in the contest. H. S. Edwards
owned a flock of pigeons which one day
were cut off from their cote by a large
hawk. The pigeons knew that if the
hawk once got above them, one at least
of their number would go to make the
hawk a meal, and so up they flew in
circles, perhaps hoping to go higher
than the hawk. In the rising game they
were no match for the hawk. The lat-
ter kept under the pigeons, and leisurely
followed their laborious movements.

Then came a curious and unexpected
sight to Mr. Edwards. Every pigeon
closed its wings, when they appeared to
be the size of sparrows, and down they
came past the hawk at a terrific rate.
That astonished the hawk. It actually
dodged the dropping birds, and missed
half a dozen wing strokes before it got
in full chase of them. When it got down
to the barnyard not a pigeon was in
sight—some were in the cote, some in
the porch, two in the wellhouse, and one
was in the kitchen. The hawk had been
outwitted completely. It is a question
how the pigeons managed to check their
fall, as they did not slacken up till they
were about 16 or 20 feet above the
ground, when they scattered in all di-
rections to escape the hawk.

What causes bad dreams is a question
that has never been satisfactorily an-
swered; but, in nine cases out of ten,
frightful dreams are the result of imperfect
digestion, which a few doses of Ayer's Sar-
saparilla will effectually remedy. Don't
delay—try it to-day.

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Veterinary Sanitary Science.
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MILK INSPECTION,
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CONTROL AND ERADICATION
of CONTAGIOUS DISEASES.
The curriculum affords young men an opportunity to qualify themselves to become Veterinary Sanitary
Officers for municipal, State or national service, as well as preparing them for the practice of Vet-
erinary Science. Term opens October 1. For prospectus address the Dean.
(Cut this out for future reference.) Dr. S. STEWART, 1406 Holmes St., Kansas City, Mo.

KANSAS FARMER.

ESTABLISHED IN 1863.

Published every Thursday by the

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SUBSCRIPTION PRICE: ONE DOLLAR A YEAR.

An extra copy free fifty-two weeks for a club of six, at \$1.00 each.

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Display advertising, 15 cents per line, agate, (fourteen lines to the inch).
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Objectionable advertisements or orders from unreliable advertisers, when such is known to be the case, will not be accepted at any price.

To insure prompt publication of an advertisement, send cash with the order; however, monthly or quarterly payments may be arranged by parties who are well known to the publishers, or when acceptable references are given.

All advertising intended for the current week should reach this office not later than Monday.

Every advertiser will receive a copy of the paper free during the publication of the advertisement.

Address all orders—
KANSAS FARMER CO., Topeka, Kas.

The New York Journal, which claims to be the only New York daily for the Democratic national ticket, offers a rate which enables us to furnish the KANSAS FARMER one year and the New York Sunday Journal three months, both for \$1.25.

Among the many organizations now coming forward to assist in alleviating or in obviating the ills of people in their associate capacity, there was organized at St. Louis, July 24 and 25, the National Co-operative Congress, with representatives from twenty States.

There is scarcely a doubt but that the coming Republican State convention will nominate Chief Justice Martin to be his own successor. All who desire to see recognized the highest grade of judicial ability, combined with the highest grade of integrity, will recognize this nomination as one most fit to be made and one which, if it were possible, might well be endorsed by the conventions of all other parties.

William H. Barnes, Acting Secretary of Kansas State Horticultural Society, writes, referring to last item, page 488, in FARMER: "If you want asparagus in fall, mow in summer, but it will hurt the next year's crop. Otherwise don't mow until the tops are dead. Some leave all winter as a protection from frost and drought. I mow in February or March, burn, and immediately cultivate thoroughly." Secretary Barnes has had a large experience as a market gardener and is one of the best practical authorities on subjects of this sort.

The poultry interests are rapidly growing in importance in Kansas. The industry is pleasant and profitable. A new county association has recently been formed in the State and is called the Reno County Poultry and Pet Stock Association, with headquarters at Hutchinson. It is made up of bright and enterprising fanciers, who intend to hold their first annual exhibition next winter, at Hutchinson. The officers are as follows: President, F. W. Cooter; Vice President, Mrs. R. F. Meek; Secretary-Treasurer, W. S. Randall, all of Hutchinson.

The Interstate Railroad Commission is in session this week at Chicago, investigating alleged irregularities in the granting of reduced rates from Missouri river points and in connection with rates to the Gulf. It is said that nearly every road leading east from the Missouri river has been secretly giving special rates, rebates, etc., and that much nervousness has existed lest indictments may be returned against railroad officials. The producer is interested alone in fair dealing. Irregularly obtained cuts in rates inure only to the benefit of the shipper, who pockets the extra profits, but because of the uncertainty of the advantage does not advance prices to the farmer.

WHEAT AREAS AS SEEN FROM ENGLAND.

A member of the British Parliament, R. A. Yerburch, has been studying the bread problem as it applies to the people of Great Britain. He finds with some dismay that their own fields are, of late years, producing far less wheat than formerly, and that of the bread for a year their own product now supplies their eaters for only fifty days, leaving over 300 days for which they must look to other countries. He then proceeds to examine as to their prospective wants in the future and the competition which their farmers will have to meet. On the latter point he says:

"If, however, we turn to the admirable reports from the great foreign wheat exporting countries, viz., the United States, Russia and the Argentine, supplied to the Foreign office by our representatives abroad, we shall find that as regards all of them the same tale is told, viz., that we have to look for increased competition. As to the United States, it is said that 'the British agriculturist must probably in the future reckon with the same competition as heretofore in wheat, meat and dairy produce. If anything, the competition would appear likely to become more severe, as either the cost of production will continue to decrease in the same way as hitherto, or, should the United States change their currency basis from gold to silver, the cost of produce will be reduced when paid for in gold.' As to Russia, we are told that 'the point of importance for the present purpose is this, that if the Black sea crop reaches its usual dimensions on an ill-tilled, scarcely fertilized and thinly sown soil, then it must be susceptible, under improved conditions, of a very considerable expansion. And it may be added that the southern steppe region contains a large area of fertile soil which has yet to be brought under the plow.' If we turn to Argentine, we find the figures as to the land capable of wheat cultivation astounding in their magnitude. The writer of the Foreign Office Report 369, 1895, Argentine Republic, says: 'If the statement of Mr. Fleiss, who from time to time was appointed as an expert and official reporter, both on behalf of the national and provincial governments, is correct, it appears that out of a total of 1,212,600 square miles, there are some 240,000,000 acres suitable for the production of wheat. When it is, therefore, taken into consideration that but 15,000,000 acres is the amount now computed to be given over to agriculture, it will readily be appreciated what an immense extent of land there still remains to be tilled.'

"Again, while we have to look for the increased competition in our wheat and flour market of the foreign wheat-producing countries, it must not be forgotten that, as Prof. Long has pointed out, there is in Canada a vast extent of the finest wheat-growing land in the world, which has yet to be brought under the plow.

"Taking these facts into consideration, it is obvious that so far as the importation of sea-borne supplies of food is in question, in place of its decreasing it is probable that it will increase, with a possible decrease in the price of wheat and flour, and that consequently the British farmer cannot look for that rise in price which would make it worth his while to grow more wheat, and so, to some extent, relieve the people of these islands from their dependence upon outside sources for their breadstuffs."

Mr. Yerburch then considers the position in which this dependence places his country in time of war, and the value and strength of the weapon it places in the hands of hostile powers. His conclusions as to possible expansion of wheat production are at variance with the findings of some of the ablest statisticians of this country and will need careful examination before acceptance.

TO KILL BED BUGS.

EDITOR KANSAS FARMER:—Would you please inform me if bisulphide of carbon would be death to bed bugs, as well as mites?
Mrs. K.
Hill City, Kas.

It is an unfortunate fact, associated

with disagreeable consequences, that the detestable bed bug sometimes invades the domain of the best housekeeper. Of course, his appearance is the signal for war, which is soon declared and relentlessly prosecuted to the extermination of the foul invaders, and it is not surprising that readers of the KANSAS FARMER inquire as to every suggested munition of war. Bisulphide of carbon would doubtless kill the bugs if used to the full saturation of everything in the room. But it is a disagreeable remedy for such use. Its odor is at least seventeen times worse than that of rotten eggs, and it is sometimes difficult to get rid of it. Mr. Amos Johnson, of Ellinwood, Kas., used bisulphide of carbon several years ago to destroy prairie dogs. He told the writer that on plowing this field eight years after, the vile smell of the stuff was found to be distinct in the soil.

Burning sulphur in the room is preferable to the use of bisulphide of carbon. Its odor disappears from the bedding in a few days, and in any case it is less offensive than that of the other substance.

But, in general, bed bugs can be exterminated and the furniture be so affected that they will not likely return, by the use of a dilute solution of corrosive sublimate, such as every druggist knows how to prepare. This is a poison and must, therefore, be kept away from the children. But, with this precaution, it may be safely used and is probably the best all-round remedy for bed bugs. Either kerosene or gasoline will kill bed bugs but neither of these has the permanent effect noted of corrosive sublimate.

POSSIBILITIES OF THE RATE WAR.

The industrial and commercial world was surprised, several years ago, by the showing made by a great railroad manager, that the cost of carrying heavy and relatively indestructible freight in car-load lots did not exceed half a cent per ton per mile. Since that time this figure has formed a basis for approximate calculations. The actual cost of carriage is now much less than when the figure was given out. Steel rails now cost not more than one-fourth as much as then. Rolling stock is better and cheaper and labor is not higher. In fact, a half cent buys now about twice as much as it bought then. It will not, therefore, be unfair to transportation companies to assume a half cent per ton per mile as a starting point in considering questions of transportation of grain.

There is now raging a grain rate war among transportation companies, the initiative having been the making of new rates from Kansas points to the Gulf. Rumor has it that this rate war is liable to result in a rate of 10 cents per hundred or \$2 per ton on grain from Missouri river points to New York. The distance is something over 1,000 miles. True, a portion of this distance is by water through the great lakes, but the railroad haul is over the greater part of the distance. A rate of ten cents per hundred to New York would be only one-fifth of the assumed basis of calculations. It is scarcely to be thought that transportation at such rate can be performed except at a loss. Such rate, if made at all, must be soon abandoned. But the announcement of the possibility of such a rate indicates the intensity to which the rate war is likely to attain.

The distance from Kansas to the Gulf is approximately half as far as to New York. The route to the Gulf may be made partly by water via the Mississippi, and is in this respect comparable to the Eastern route, and the Gulf route may, for purposes of the discussion, be assumed in either case as about half as great as that to New York. It is more than 500 miles, but calling it 500, as we called the other 1,000, and assuming for the calculation the rate of half a cent per ton per mile, we shall have, say, 12½ cents per hundred pounds as a rate to the Gulf.

Now, the Eastern roads are backed by enormous capital, and, if they have assumed 12½ cents as the lowest living rate at which the weaker Western roads can do business, it may be that the 10-cent rate suggested is intended

to make them lose money until they become weary of it.

But, with thorough equipments and the large traffic which the future promises, the roads to the Gulf can probably afford to carry grain to tide water from Kansas points at 12½ cents per 100 pounds, or 7½ cents per bushel for wheat and 7 cents for corn. This is much lower than the rates heretofore made, but will probably be remunerative. Kansas products are the bone of contention, and it is not impossible that Kansas producers will be even more favored than those situated some hundreds of miles nearer the seaboard.

The Fear of a Fall.

The London Miller submits the following: It is recorded that Sir Walter Raleigh wrote with a diamond on a window pane:

"Fain would I climb,
Yet fear I to fall."

and when good Queen Bess saw the words she did underwrite:

"If thy heart falls thee,
Climb not at all."

The miller and merchant of the present day, in their way fully as chivalrous and brave, but less romantic than Raleigh, parody these lines by their conduct, and, in effect, say:

"Fain would I buy,
Yet fear I a fall,
So my heart falls,
And I buy not at all."

This is capable of many a paraphrase to account for stagnation in industry and business. The farmer or manufacturer may well say to the applicant for work:

Fain would I hire,
Yet fear I a fall,
So my heart falls me,
And I hire not at all.

And the land is filled with the unemployed. A cessation of falling prices would cure many of the worst ills from which society now suffers.

Success With Sacaline.

EDITOR KANSAS FARMER:—In the last number of the KANSAS FARMER I see a note of C. S. LeBaron, of Dwight, Kas., in regard to sacaline. I bought one ounce of seed of Barteldes & Co., of Lawrence, Kas., sowed in a box in March, of 1895, and kept the same as tomatoes. When two inches high I transplanted into tin cans. In May they were about four and one-half inches high, and after the first rain I placed them in the ground, four by four feet apart, and by September 1 they had bushed out the size of a barrel. I took two cuttings in 1895, and up to this date I have taken three cuttings in 1896 and it is standing three feet high at this date. I had thirty-two strong plants from one ounce of seed. If you can take a few words out of this to do any of your readers any good, do so. My plants can be seen at any time.
HENRY P. RUSH.
Topeka, Kas.

Mr. Rush brought a sample of his sacaline (*Polygonum sachalinense*) to the KANSAS FARMER office. It is about three feet long, with several branches. The stem resembles a branching grape vine of this year's growth. The leaves are much like the leaves of the catalpa tree, except that they are longer. The leaves, even green, have a rather agreeable taste. Leaves, stems and all are eaten greedily by all kinds of stock. Mr. Rush intends to increase his plantings to several acres. He reports that left uncut the stems become woody and reach a height of eighteen feet in a season. The old stems die in winter and new ones come from the ground the following spring. He has not allowed it to go to seed, lest the roots shall be weakened. Mr. Rush is the first Kansas farmer to report success with this new forage plant, and he has conferred a great favor by giving the results of his experience to the thousands of readers of the KANSAS FARMER.

Very low rates will be made by the Missouri, Kansas & Texas railway, for excursions of August 18, September 1, 15 and 29, to the South, for Home-seekers and Harvesters. For particulars, apply to the nearest local agent, or address G. A. McNutt, 1044 Union Ave., Kansas City, Mo.

KANSAS FARMER and Semi-Weekly World (N. Y.), you can have for \$1.65 one year.

Statistics of the Railways of the United States for the Year Ending June 30, 1895.

The Eighth Statistical Report of the Interstate Commerce Commission, prepared by its statistician, being the complete report for the above named period, for which a preliminary income account was issued in December, 1895, has just been submitted, of which the following is an abstract:

On June 30, 1895, 169 roads were reported in the hands of receivers, showing a net decrease of twenty-three during the year. The roads under receivers operated 37,855.80 miles of line, which shows a decrease of 2,963.01 as compared with 1894. The railway capital represented by these roads was nearly \$2,500,000,000, or about 22.20 per cent. of the total railway capital in the United States.

MILEAGE.

The total railway mileage in the United States on June 30, 1895, was 180,657.47 miles, an increase of 1,948.92 miles, or 1.09 per cent. being shown. The increase in 1894 was 2,247.48 miles, or 1.27 per cent., which was less than for any preceding year during the period for which reports have been made to the commission. The Territory and States in which the increase in mileage exceeds 100 miles are Arizona, 247.41 miles; Illinois, 188.70; Pennsylvania, 157 miles; Maine 132.86 miles; Texas 110.41 miles, and Montana, 105.79 miles. The aggregate length of all tracks in the United States on June 30, 1895, was 236,894.26 miles. Included in this total track mileage were 10,639.96 miles of second track, 975.25 miles of third track, 733.12 miles of fourth track, and 43,888.46 miles of yard track and sidings.

EQUIPMENT.

Out of a total equipment of 1,306,260 locomotives and cars, only 362,498 were fitted with train brakes, and 408,856 with automatic couplers on June 30, 1895. The increase in equipment fitted with train brakes was 31,506, with automatic couplers, 51,235. The summaries presented show that almost all passenger locomotives are fitted with train brakes, and 16,712 out of 20,012 freight locomotives have them. The number of passenger locomotives fitted with automatic couplers on June 30, 1895, was 3,893, the increase during the year being 414. It appears that 6,106 passenger locomotives were without automatic couplers. The number of freight locomotives fitted with automatic couplers was 2,039, the increase during the year being 731, but as there were 20,012 locomotives in freight service the deficiency in respect to automatic couplers is marked. On June 30, 1895, the number of passenger cars in service was 33,112, of which 32,384 were fitted with train brakes, and 31,971 with automatic couplers. The number of freight cars in service was 1,196,119, of which 295,073 were fitted with train brakes, and 366,985 with automatic couplers. It appears that the passenger service is well equipped with automatic safety appliances, but that the freight service is greatly deficient in this respect.

EMPLOYEES.

The number of men employed by railways shows an increase of 5,426, as compared with last year, the number of employes being 785,034 on June 30, 1895. In last year's report it was mentioned that the effect of commercial depression upon the pay roll of railways fell most severely upon maintenance of way and structures, and next to this upon maintenance of equipment. The comparative figures presented in the report also show that such is the case. The returns for the present year show that 128 men were assigned to maintenance of way and structures per 100 miles of line, against 123 in 1894. The number of men correspondingly assigned to maintenance of equipment also shows a slight increase, being eighty-eight for 1895, and eighty-six for 1894.

CAPITALIZATION AND VALUATION OF RAILWAY PROPERTY.

The amount of railway capital on June 30, 1895, is shown to be \$10,985,203,125, or \$63,330 per mile of line. The increase during the year was \$188,729,312. Railway capital was distributed as follows: The amount of cap-

ital stock was \$4,961,258,656, of which \$4,201,697,351 was common stock, and \$759,561,305 preferred stock; the funded debt was \$5,407,114,313, classified as bonds, \$4,659,873,548, miscellaneous obligations, \$445,221,472, income bonds, \$246,103,966, and equipment trust obligations, \$55,915,327; the current liabilities amounted to \$616,830,156. Of the capital stock outstanding, \$1,169,071,178, or 23.57 per cent. was owned by the railway corporations, as well as \$437,508,841, or 9.39 per cent. of bonds outstanding.

Stock to the amount of \$3,475,640,203, or 70.05 per cent. of the total outstanding paid no dividend and \$904,436,200, or 16.90 per cent. of funded debt, exclusive of equipment trust obligations, paid no interest during the year covered by the report. In no other year since the organization of the Division of Statistics has so large a percentage of stock passed its dividends, or, except in 1894, has so large a percentage of funded debt defaulted its interest. The total amount of dividends was \$85,287,543, which would be produced by an average rate of 5.74 per cent. on the amount of stock on which some dividend was declared. The amount of bonds paying no interest was \$624,702,293, or 13.41 per cent.; of miscellaneous obligations, \$54,498,288, or 12.24 per cent. of income bonds, \$225,235,619, or 91.52 per cent.

PUBLIC SERVICE OF RAILWAYS.

The number of passengers carried by the railways during the year ending June 30, 1895, was 507,421,362, which shows a decrease of 33,266,837. The number of passengers reported as carried one mile was 12,188,446,271, a decrease of 2,100,999,622 being shown when compared with figures for previous year. The number of tons of freight carried as reported by railways was 696,761,171, which gives an increase of 58,574,618 for the year. The number of tons carried one mile was returned as 85,227,515,891, indicating an increase of 4,892,411,189.

EARNINGS AND EXPENSES.

The gross earnings of the railways of the United States for the year ending June 30, 1895, were \$1,075,371,462, an increase of \$2,009,665 for the year being thus shown. Passenger revenue was \$252,246,180, showing a decrease of \$33,103,378, or 11.60 per cent. for the year. Freight revenue increased \$30,502,549, or 4.36 per cent., being \$729,993,462 for 1895.

The expenses of operation for the same period were \$725,720,415, which were \$5,693,907 less than for 1894. The important unit in railway statistics designated as the coefficient of operating expenses, that is, the percentage of operating expenses, to operating income, for 1895, was 67.48 per cent., for 1894, 65.80 per cent. The income from operation, \$349,651,047, though \$7,703,572 greater than it was in 1894, was yet less than for any other year since 1890. The income accruing to railways from investments and sources other than operation, amounted to \$132,432,133. These figures, compared with corresponding ones for the previous year, show a decrease of \$10,384,672. The amount of money at the disposal of railways for fixed charges and dividends is the aggregate of income from operation and income from other sources. This amount for 1895 was \$482,083,180. Fixed charges for the year amounted to \$425,966,921. In 1894 they were \$3,041,389 greater. The deduction of fixed charges leaves \$56,116,259 as net income from which to pay dividends. The amount of dividends, including \$673,957 other payments from net income, was \$85,961,500, from which it appears that the railways of the United States closed the year with a deficit from the year's operations of \$29,845,241, which was met by a decrease in accumulated surplus, or by the creation of current liabilities. The corresponding deficit for the year ending June 30, 1894, was \$45,851,294.

RAILWAY ACCIDENTS.

The number of railway employes killed during the year ending June 30, 1895, was 1,811, and the number injured was 25,696. These figures compared with those of the previous year show a decrease of 12 in number killed, and an increase of 2,274 in the number injured. The number of pas-

sengers killed was 170, the number injured, 2,375. These figures give for the year a decrease of 154, in the number killed, and 659 in the number injured. The smallest number of passengers killed in any of the preceding seven years was 286, in 1890. One employe was killed for each 433 employed, and one employe was injured for each 31 employed. Of the class of employes known as trainmen, that is, engineers, firemen, conductors, and other employes whose service is upon trains, it appears that one was killed for each 155 in service, and one injured for each 11 in service. The number of passengers carried for each passenger killed during the year was 2,924,832, and the number carried for each passenger injured was 213,651. The liability of passengers to accidents is better shown in the fact that 71,696,743 passenger miles were accomplished for every passenger killed, and 5,131,977 passenger miles for every passenger injured. A comparative statement shows that considerable advance was made during 1895 in respect to railway casualties. It is suggested that beneficial results were derived from the fitting of equipment with automatic appliances as well as from the raising of the character of railway service and grade of railway equipment, first noted in the last report.

CONCLUSION.

In concluding his report the statistician renews his recommendations that reports be required from express companies engaged in interstate traffic, from all corporations, companies, or persons owning rolling stock which is used in interstate commerce, as also all corporations, companies, or persons owning depot property, stock yards, elevators and the like, and from all carriers by water whose business influence interstate traffic. The further recommendation is made that Congress be requested to provide for a bureau of statistics and accounts, which, shall have the right of inspection and control over the accounting departments of the common carriers.

Cash Prizes for Boys and Girls.

EDITOR KANSAS FARMER:—The State Temperance Union, Topeka, Kas., can give the boys and girls who are readers of the FARMER something to do—a chance to earn either a cash prize or a nice premium. The plan is given below.

The Press and Pulpit departments have aided for several months past in supplying almost the entire press and pulpit of the State with non-partisan reading matter. We are now arranging for a Public School department, and also for a thorough reorganization of the temperance people of the State. All this requires money, and the needed funds must in some way be forthcoming.

We have decided to give the boys and girls of 16 years of age and under a chance to aid in securing this money, and propose to them the following splendid offer: To the boy or girl who will send us the largest amount of collected nickels, dimes, etc., by September 10, we will, within ten days thereafter, send a cash reward of \$8; for the second largest amount, \$5; for the third, \$4; for the fourth, \$3, and to each of the next five, \$1. To all others who send in collections amounting to not less than \$2 we will send a valuable premium, suitable to either sex.

Send your name and postoffice address at once, plainly written. We will place your name on our list and send you all necessary blanks and information. We will also send instructions which will make it easy for you to collect. Make up your mind to secure one of these rewards. You may be the one to secure the \$8 prize.

T. E. STEPHENS,

Secretary State Temperance Union, 703 Jackson street, Topeka, Kas.

Walnut Hulls for Flies on Stock.

EDITOR KANSAS FARMER:—In my last paper I see a preparation for flies on stock. I believe it is good, but for one that don't want so many things to mix, I think this is better and it is to the hand of all: Take a peck of walnut hulls (green or dry), scald the same in a pail that it can stay in; clean horse

or cow, then sop the tea, when cold, on the back, so it will soak to the skin; when dry, brush your horse. Apply two or three times, and I am sure your cow or horse will have rest. This has sold for \$2. Try it and let your stock rest.

H. P. RUSH.

Topeka, Kas.

Publishers' Paragraphs.

SPRING GRAIN DRILL.—The Ferguson Implement Co., of Kansas City, Mo., this week advertise a drill that will be very much in demand by many farmers because of the advantages of a five-hoe drill with the adjustment, durability, simplicity and lightness of draft of this one. For seeding in corn or trashy ground, the spring grain drill is especially desirable. For further information and prices, address the advertiser as above.

In calling attention to the advertisement of the Hermit Remedy Co., which appeared in the KANSAS FARMER during June and July, we think we do our readers a kindness if they unfortunately suffer from that terrible disease, piles. They are willing to give a written guarantee to cure any case, and will fulfill their agreement in this respect. Our readers will do their friends a favor by calling their attention to this remedy. Write to them for particulars. Address Hermit Remedy Co., L. 183 Dearborn street, Chicago.

The attention of our readers is invited to the new advertisement of the American Well Works, Aurora, Ill. They are among the most extensive manufacturers of well tools and machinery specially adapted to deep wells, and their location makes them very accessible to all parts of the country. The past three years have demonstrated the great importance of water on stock farms, as well as in the city and village, and it is evident to all, now, that deep wells are a prime necessity. This firm publishes an immense cyclopaedia of facts pertaining to deep wells and the many appliances pertaining thereto, which may be bought of them for a nominal price by any who may be interested in the subject. They are also giving much attention to the subject of irrigation, and the West will find it to their advantage to correspond with them.

Eastport, Maine, is in a region of great beauty, whither many people resort in these summer days. It is also a place which has had an unusual history, and one of the most remarkable chapters of that history is told by Mr. William Henry Kilby in the August number of the *New England Magazine*, entitled, "A New England Town Under Foreign Martial Law." It is the story of Eastport in the critical time succeeding the Revolution, when as yet the high powers had not exactly settled where the boundary line was to run, and whether Eastport was to belong to the United States or England. Many of the places identified with the events of that time are still pointed out, and views of them are included among the illustrations of Mr. Kilby's excellent paper. The paper will be read not only by the men and women of Eastport and their summer friends, but by many others who have a taste for curious bits of history. Warren F. Kellogg, 5 Park Square, Boston, Mass.

The continued cry, "low prices, hard times and no money," does not seem to be a stumbling block in the way of success for the DeKalb Fence Co., of DeKalb, Ill. The sale of its product for the season just passed has been the greatest in its history and they are again compelled to increase their capacity in the way of a new building 70 by 315 feet. This company has surely merited this success; they have always used the greatest care possible in the selection of material and the manufacture of their goods and make up no line but what is serviceable, durable and gives perfect satisfaction, not being influenced by prices offered by their competitors on flimsy, light fencing. This policy is a true one and always merits success, because full value and perfect satisfaction is given on every article. Remember this company not only manufactures the largest volume of smooth wire fencing, but the largest and most complete lines of fencing of any one plant, and if wanting a neat, durable yard, lawn or cemetery fence, with or without steel gates, steel posts and rail, cabled field and hog fencing, or cabled poultry, garden and rabbit fencing, write them for their catalogue, which they will mail you free.

If You Would Keep Cool

take the "Twin City Special" any evening from Kansas City, Leavenworth or St. Joseph, on the Chicago Great Western Railway (Maple Leaf Route), and spend a few days at the beautiful Minnesota lakes. Summer excursion rates now in effect. Through sleepers, free chair cars and cafe dining cars. Full information as to desirable resorts in the Northwest will be cheerfully furnished by G. W. Lincoln, Traveling Passenger Agent of the Chicago Great Western Railway, 7 West Ninth street, Kansas City, or F. H. Lord, G. P. & T. A., Chicago.

Horticulture.

DON'T SOW ALFALFA IN THE ORCHARD.

Mr. W. H. Hoxie, of Corning, Iowa, writes: "I am desirous of seeding down an orchard that has just come into bearing, and am thinking some of using alfalfa for that purpose. This plant does well in this section, but as to its desirability in an orchard I am not fully posted. Will you kindly give me your views on the question?" Where it does well the alfalfa does better in the orchard than clover, as it takes such complete possession as to keep out blue grass mainly, and as the years go on it gets thicker and its roots extend deeper. The clovers are biennial and as the stand from seeding gets thin blue grass comes in. It develops nitrogen in the soil and the needed vegetable humus quite as well as the clover. For best results it should be cut when coming into bloom, twice in the growing season, and the crops left on the ground. After the trees come into bearing the second cutting can be omitted, as the growth furnishes a soft matting for apples to drop on, and during the gathering of the crop it gets well flattened for a winter mulch. In the shade under the trees it stands better than clover, but makes a light growth.—*Register, July 17, 1896.*

Don't do it. Wherever it has been tried it has resulted disastrously to the orchard. Alfalfa is a strong root growing plant and a great drinker. It will absorb the moisture from the ground and rob the trees of nourishment and eventually kill the orchard. Where the ground is not too hard its roots will grow to be five or six inches in diameter and twenty to thirty feet long, the main root running straight down, with numerous tendrils in all directions and all of them hunting for water. Alfalfa will take from the ground more moisture than almost any plant that is grown, and for this reason it is injurious to the trees, as it takes the moisture away from them. Pure, clean red clover is the best thing to sow in an orchard. It will keep the ground mellow and moist and instead of robbing the trees will help to supply them with moisture and food. It will be better to mow the first cutting rather early and let it lie on the ground for a mulch and let the second growth go to seed without cutting. What is seemingly lost in crops of hay will be more than made up in crops of fruit. If the clover should run out or get thin, sow more clover seed in early spring and cut it in thoroughly with a disc harrow. The thicker it grows the better, for it will keep out the weeds and keep the ground rich and mellow and the trees will thank you for it by bending their limbs to the ground in order to lay their burden of fruit on the blanket of clover.—*T. W. Harrison, Topeka, Kas., in Iowa Register, July 24, 1896.*

Col. Harrison's advice agrees with the experience of all those who have reported to the KANSAS FARMER. Alfalfa is a great fertilizer, but it is such a vigorous grower that it manages to appropriate to its own use about all the moisture and fertility as long as it is allowed to live. Much of this fertility is stored up in the roots, which, in an old field, resemble somewhat the roots of an Osage orange hedge. When alfalfa is killed, either by drowning—as is frequently the practice on irrigated farms—or by the difficult process of plowing, the roots decay, giving out the disagreeable odor of decomposing nitrogenous compounds. The result is surprising fertility of the soil with corresponding productiveness. The writer has seen cottonwood trees apparently thriving with a thick growth of alfalfa. But if it is desired to try alfalfa in the orchard it should be tried on a very small scale and under conditions of abundant supply of moisture.

Judge Wellhouse, the great apple-grower of Kansas, sows red clover in his orchards when they come into bearing and rolls this down twice a season with a log roller on which are several knives, like the knives of a

stalk-cutter. The clover stand is kept up by the yearly reseeding and the fertility of the land is well cared for, so far as nitrogen and good physical condition go.

About Raising Strawberries.

Strawberries are raised in hills, matted rows, or a compromise between these two methods. Each system has its advantages, and under certain circumstances it is the best. Success with any method depends on the man or woman who has charge of the culture and management of the plantation, whether it be a rod or many acres. Some people are thorough and do good work at whatever they undertake. These are the ones that raise large crops of fine berries and sell them at a high price. As I have written a great deal about raising strawberries, I will now tell how it is done by some of the most successful growers of my acquaintance.

J. G. Buchanan, of Holmes county, Ohio, raises over 400 bushels to the acre by hill culture.

After preparing the land in the most thorough manner, which includes a very heavy covering of stable manure, deep plowing, harrowing repeatedly and then rolling or floating, it is marked out fifteen inches each way, and planted, leaving every third row one way vacant. This is done as early as the land can be worked in the spring. This requires nearly 19,000 plants to the acre. As soon as the planting is done, the wheel hoe is started and kept running, both ways, every few days all summer. One person pulls the tool and one holds it. Of course the blossoms are nipped off the first year, and the runners whenever they start—not after they have grown until they are about ready to root, and have exhausted the parent plant nearly all they can. The wheel hoe does most of the work, but there is a little weeding and stirring around the plants that must be done by hand, as often as necessary.

During August, as many plants as may be needed for the following spring are produced by allowing two or three runners from each plant to root in the spaces. Of course such rows can only be cultivated one way for a time. In two or three weeks these runners are sufficiently rooted to be taken up and set pretty close together, where they stand till the following spring. This makes very strong plants, which contribute much to the success of his method. The bearing bed is very thoroughly protected during the winter.

This is only the outline of the method, but I can assure you that all the details are very carefully attended to. Aside from the preparation of the soil, the work is all done by Mr. Buchanan's children, and they are girls, and the eldest is but fifteen.

Mr. T. B. Terry, of this county, the well-known writer and lecturer on agricultural subjects, is the most successful grower of strawberries by the matted row system that I have any knowledge of. I do not know of any other man in the United States who is more thorough in all he undertakes.

Mr. Terry plants in rows four feet apart, with the plants half as far from each other. They receive perfect attention all the season, and the rows nearly meet in September. About the first of October the rows are narrowed up to two feet, using a line to make them straight and uniform. The plants in the row are then thinned to about six inches apart, all the loose plants being raked up and wheeled off, leaving all in perfect order. This leaves the plants nearly two months of growing weather in which to get strong, and yet it is too late in the season for them to send out runners for them to do any injury. This narrowing up the rows and thinning the plants constitute the chief difference between Mr. Terry's method and that of others, but it is a very great improvement.

J. B. Culp, of Columbiana county, Ohio, makes strawberry-growing an important part of his business, and he allows nothing to prevent his giving it careful attention. He uses for fertilizer, bone meal and wood ashes, all

that the plants require. His plants are set two by four feet apart, and all blossoms and runners are cut off until July. This gives ample room for cultivating and hoeing, and most of the weed seeds within germinating distance of the surface are sprouted by the time that runners are allowed to root. When the plants are full of vigor and sending out any strong runners, a certain number—four, I think—are selected and placed in such positions, near the parent plant, that the row is perfectly uniform. From that time every runner that appears is promptly cut off. This gives sufficient room for thorough culture and each plant becomes a strong hill, able to mature a large quantity of fruit.

Mr. Culp has grown 400 bushels on an acre, and I am informed that he now has four acres, from which he hopes to pick 1,600 bushels next June.

When we consider that these elegant berries bring nearly twice the ordinary price, and the yield is about five times the average, we may expect that ordinary culture will soon cease to yield any profit.—*M. Crawford's Catalogue.*

Fall Planting.

The soil for strawberries should always be rich, and this is especially necessary for fall-set plants, as they cannot send their roots a great distance in search of food in the short time in which they have to grow. Old, well decomposed stable manure is excellent, and plenty of it should be used. It is well to apply it after the land is plowed and then harrow it until the horses have stepped on every square foot. If the bed be small the manure can be worked in with the hoe. If commercial fertilizer is to be used—I always depend on it—it may be scattered on the surface near the plants as soon as they are set. If bone dust be used it may be raked into the surface before planting. The soil should be made firm before the plants are set. This will insure their bearing, and will help keep them from being thrown out by the frost. If one is planting a large patch, which is seldom done in the fall, it is well to roll the soil. This not only makes the bed firm and smooth, but also enables one to see just where the surface is, and to set the plants at the proper depth. In planting a small bed, my plan is to stretch a line where the row is to be and "spat" it down with the back of a spade. This gives a smooth surface with the impression of the line for a guide. If the soil be dry I cover the surface around the plants with a mulch of some kind, and give them one thorough watering. An excellent plan is to cut some grass when it is short and green and scatter it all over the plants. This gives them shade just when they need it, and as the grass dries up they become strong enough to do without shade. If one is using potted plants it is a good way to have the bed prepared some days in advance, and a hole made for each plant. The holes may be filled several times with liquid manure, which will soak into the soil and leave it in fine condition for the plants. In using layers it is a good plan to set them temporarily in loamy soil where they can be watered and shaded for a week. Then, after a good watering, they can be taken up with the soil adhering. These are as good as potted plants. If one wants potted plants without paying heavy express charges he can accomplish it by buying layers and potting them as soon as received. They should then be placed where they can be watered and shaded as they need, until the roots reach the pot. Three-inch pots are large enough. If the roots are too long they may be shortened. This method insures the plants against receiving any check in transplanting, which alone is enough to commend it. After plants are set they should be hoed so frequently that no crust can form on the surface, nor any weeds grow. It is a wise precaution to give fall-set plants winter protection. There is so much bare ground between them that they are liable to be heaved out. On sandy or gravelly soil, where the drainage is good, there is no danger. Even on clay soil the danger is diminished by having good



KENDALL'S SPAVIN CURE

THE MOST SUCCESSFUL REMEDY FOR MAN OR BEAST. Certain in its effects and never blisters. Read proofs below:

KENDALL'S SPAVIN CURE

SHELBY, MICH., Dec. 16, '93.
DR. B. J. KENDALL CO.
Sirs:—I have used your Kendall's Spavin Cure with good success for curbs on two horses and it is the best Liniment I have ever used.
Yours truly, AUGUST FREDRICK.

For Sale by all Druggists, or address
Dr. B. J. KENDALL COMPANY,
ENOSBURGH FALLS, VT.

FARMERS

DO YOU WANT TO BETTER YOUR CONDITION? If you do, call on or address: The Pacific Northwest Immigration Board, Portland, Oregon.

surface drainage and the soil well firmed, and also by setting the plants early enough so that they may become well established before freezing weather comes.—*Horticulturist.*

This season promises to be a good one for fall planting of strawberries. What do producers of plants say?

"Mamma, was that a sugar plum you just gave me?" asked little Mabel. "No, dear, it was one of Dr. Ayer's Pills." "Please may I have another?" "Not now, dear; one of those nice pills is all you need at present, because every dose is effective."

Union Pacific Route.

What you want is the through car service offered between Denver and Chicago via the Union Pacific and Chicago & Alton railroads, which is unexcelled by any other line. Magnificent Pullman sleepers, dining cars and chair cars, run through daily without change, Denver to Chicago via Kansas City.

Jack Needs a Vacation.

All work makes Jack a dull boy. He should leave the office a while this summer, take Jill along, and go to Colorado.

An illustrated book describing summer tourist resorts in the Rocky mountains of Colorado, will be mailed free on application to G. T. Nicholson, G. P. A., A., T. & S. F. railroad, Chicago.

Tourist tickets now on sale at reduced rates to Pueblo, Colorado Springs, Manitou and Denver, over the picturesque line, Santa Fe Route.

KANSAS HOME NURSERY now offers choice Berries and orchard fruits of all kinds in their season. Fresh shipments daily by express. Prices to applicants. A. H. Griesa, Box J, Lawrence, Kas.

Garnahan's Tree Wash and Insect Destroyer

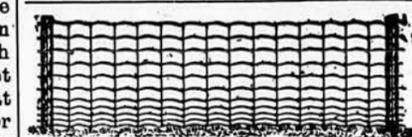
Destroys the bore worm and apple root louse, protects the plum from the sting of the orcutlo and the fruit trees from rabbits. It fertilizes all fruit trees and vines, greatly increasing the quality and quantity of the fruit. Agents wanted everywhere to sell the manufactured article. Address all orders to John Wiswell, Sole Mfr., Columbus, Kas., and Cleveland, Ohio.



CIDER MACHINERY

Hydraulic, Knuckle Joint and Screw Presses, Grinders, Elevators, Pumps, etc. Send for Catalogue.

BOOMER & BOSCHERT PRESS CO.,
399 W. Water St., Syracuse, N. Y.



The Only Buffalo Fence.

The late Austin Corbin firmly believed it to be the Page. He used it freely on his great park in New Hampshire, and when he donated half his herd of Buffalo to the city of New York, he attended personally to having our fence enclose them. Not every farmer owns buffalo, but no one objects to a strong fence.

PAGE WOVEN WIRE FENCE CO., Adrian, Mich.

In the Dairy.

Conducted by A. E. JONES, of Oakland Dairy Farm
Address all communications Topeka, Kas.

PROF. HAECKER DISCUSSES THE DAIRY PROBLEM.

During the past nine months, dairymen in the Northwest have had unusual advantages. Last season we secured, probably, the largest crop that was ever harvested. We had just enough rain during the growing season, followed by a spell of dry weather, which enabled farmers to cut and cure the hay without getting any of it wet.

The yield of grain was something phenomenal; old farms that had been cropped for a quarter of a century yielded enormously. Oats sold for from 10 to 14 cents per bushel, barley 16 to 20 cents, and other grains in proportion. Good prairie hay could be purchased at from \$2 to \$4 per ton and all seemed to be of the best quality. During the whole winter we never had a single occasion to weigh back any hay, notwithstanding the fact that during a portion of the time we fed the coarsest swale hay.

All our feed contained an exceptionally large percentage of protein, the variation being so great that a ration, which I had estimated from a large number of Western analyses would contain a nutritive ratio of 1 to 6.9, was found to contain a ratio of 1 to 5.6.

We purchased our winter's supply of feed for our dairy herd in the fall when, as we thought, prices had touched bottom, paying 14 cents for oats, 16 cents for barley, \$6.50 for bran, \$14 for oil meal, and \$3 for hay; but later in the season the grains mentioned could have been purchased at about 2 cents per bushel less, while bran could be secured for \$4 per ton. As late in the season as March, I noticed thousands of bushels of oats were sold for 14 cents in the southern portion of the State.

Under such conditions it was not strange for the West to produce butter at figures which seemed incredible to those living in sections where a poor or only an average crop was harvested.

The time was when it mattered little to the farmer in the Middle or Eastern States what those in the West were doing, but now, with the splendid facilities for communication between the East and West, by our telegraph and railway systems, our farms are brought side by side with those of the remotest sections of our land. It therefore becomes a matter of considerable importance as to what advantage one section may have over another.

It is not expected that any particular locality will have all the advantages. We are apt to look South and console ourselves with the thought that it is hot down there; they cannot grow good pastures, and they don't amount to much anyway. West, they have so little rain, and it don't come at the right time, and when it does come it don't know when to stop. Up North, they can't accomplish anything, having only two seasons, winter and July. And so we are apt to lull ourselves into that blissful (?) state of mind which Cleveland terms "innocuous desuetude." And it is only by some sharp turn in events that we are awakened and made to think and plan.

Our brethren East do not seem to fully realize the situation. With our vast area of lands that seem to contain an inexhaustible supply of fertility, and with our improved machinery, we are, year by year, increasing the surplus of corn, oats, barley, wheat and rye. We must have an outlet for these products; heretofore farmers have been content to sell them, but of late years prices have touched a point where it does not pay to sell; prices actually below the cost of production, notwithstanding all the advantages which have been cited.

A few years ago we could easily have disposed of these grains by converting them into meat, but now it does not pay. This is no idle statement. During the past six months I have read every report from feeders that I could find, and in nine cases out of ten it appeared from the figures given, or we could read between the lines, that it

did not pay. If it does not pay to grow meat here in this wonderfully fertile West, where can it pay? As a matter of fact, it will not pay anywhere under present conditions; and so the West has pretty unanimously concluded that dairying will bring thrift and prosperity to us once more.

It is indeed fortunate that we cannot multiply cows as we can swine, for if such were the case the dairy business would soon be overdone. With the present prices of grain and mill stuffs, the favorable through freight rates and excellent refrigerator car accommodations, the Northwest will rapidly increase her butter product. The former practice of vealing heifer calves is almost entirely abandoned, the male calves only being used for this purpose.

But the greater portion of the increase in dairy products will come from better feeding and handling; educational work along this line has been pushed with a good deal of vigor. The farmers' institutes, during the past two years, have given special attention to the dairy industry in the Northwest, and this will bear good results, because the information was solicited by the farmers. They were hungry for a better understanding of the best methods of feeding, rearing and management of dairy stock, what and how to provide for summer feed, and how best to conduct dairying. With this eagerness to learn, and a determination to adopt, at once, the best methods, we may look for a marvelous growth in dairy lines. In the light of these things, it will be well for those not so favorably located to prepare for coming events. The time for high prices in dairy products is passed, and every indication points to still lower prices.

There is only one way that the East can compete with the West in milk production, and that is by abandoning the general-purpose cow. The idea that the general-purpose or "granger" cow is good enough, has damaged the dairy industry millions of dollars every year, and the editors and other teachers who have been persistently misleading their constituents on this most important of all dairy questions, will receive a very warm reception by Ananias when Gabriel blows his trumpet for the final round-up.—T. L. Haecker, in *Hoard's Dairyman*.

The Ontario Station, of Canada, says that in a trial of a steam-power milking machine at that station, a man and a boy, using the portable engine for power, milked twenty-six cows in about twenty-six minutes. This is certainly quick work, and for large dairies it would pay if it does the work well. But for the general farmer the old way is not likely soon to be superseded.

Governor Renfrow, of Oklahoma.

The testimonials in behalf of Hood's Sarsaparilla are not only from people who cannot afford costly professional treatment, but they come also from persons in official stations. Nor is Hood's Sarsaparilla praised only by those who have learned in their own experience of its wonderful curative powers, but men of the highest intelligence and soundest judgment are ready to speak in its favor. His Excellency, Wm. C. Renfrow, Governor of Oklahoma, in a recent voluntary letter, writes us: "From its general reputation, I know of none that I would prefer to Hood's Sarsaparilla if we should need a blood purifier or remedy for general debility."

England has more sheep than people. The United States now has about one sheep for every two people. The United States is exporting mutton and England is importing it. This shows the difference between a people accustomed to eat mutton and one that is not.

If the market demands a certain commodity it's foolish to try and compel the market to buy something it does not want. If the demand is for 100-pound lambs and under, why try to force heavier weights upon the market? This is a question worthy of consideration.

An exchange says, to make cattle feeding profitable you must be able to keep them improving constantly, for grain costs money and every pound lost costs as much to replace as it would to have added several pounds had the animal been kept thrifty. The one object is to get them ready for market.

Kalamazoo, Mich., is famous for celery—also as the home of Thos. Slater, whose advertisement appears on page 15.

MAD FOR BLOOD.

A Drunken Western Cowboy Shoots a Score of Men.

Hides Down Women and Babies.

A drunken cowboy recently terrorized a Western town. Infuriated by liquor he dashed through the streets of the village, shooting down men right and left, and cruelly riding his broncho over women and children. The frightened inhabitants of the village fled to their homes and barricaded the doors and windows. Few, if any, were so reckless as to remain on the streets. Those who did were ruthlessly shot down. Nearly twenty people were killed. The infuriated brute knew no mercy, and men and women alike fell the victims to his death-dealing weapons.



Men and women fear and dread an open foe like the drunken cowboy, and at his approach will flee to a place of safety. There is a more dangerous and more deadly enemy that daily rides the streets of every city, village and hamlet, and yet men and women seem not too heed its approach. Its name is consumption. One-seventh of all the deaths in all the world are due to this fell destroyer. Consumption knows neither rank nor station, wealth nor power. It deals out death with an impartial hand. No city is too great, no hamlet is too small, for its terrible mission. All the drunken cowboys of the West if turned loose without a hindrance in the most populous city could not kill in one year one-tenth of the human beings that consumption kills in a day. And yet, men and women do not seem to fear this relentless monster. They do not anticipate its coming. They appear to be utterly heedless of its approach. They seem in the majority of cases to count its coming. They do not flee, they do not even take measures to protect themselves. The tombstones of the victims of this utter disregard of death crowd the cemeteries of every land.

Consumption, like all wasting diseases, has its inception in a disordered digestion and consequent imperfect nutrition. Unlike the blood-thirsty cowboy, its approach is not heralded by menacing shouts and a display of death-dealing weapons. It creeps upon its victims softly, silently, surely. It comes step by step. A little over-work—a little disregard of the laws of health—a few irregularities of habit—a little too much hurry and worry—too little time given to eating and resting and sleeping—a trifling disorder of the digestion—a slight falling off in the appetite—the trouble is unimportant. The victim feels that it would be a waste of time to stop for a minute in the headlong race of modern life to remedy these little troubles. The situation grows a bit worse. The appetite becomes less and less. The food that is hurriedly eaten is no longer properly digested. The organs of secretion no longer perform their proper functions. The gastric juices that aid digestion cease to flow into the stomach and large intestines. Assimilation of the life-giving properties of food ceases. The blood is not properly nourished. Instead of the life-building elements of nutrition, it takes up the poisonous effusions of indigestion. These are carried to and deposited in every tissue and organ of the body. The organ that is inherently weakest receives the largest proportion. Disease, like a skilled pugilist, always strikes at the weak point. Most frequently the lungs are that point. The tissues and the cell walls of the lungs do not receive the right amount of life-giving nutriment. Inert, half-dead tissues are not torn

down and excreted and replaced by new, firm and healthy tissues. The victim soon has a pair of lungs that are made of inert almost lifeless material devoid of nervous or muscular activity. The heedless and reckless victim has now provided the proper soil in his lungs for the invasion and infinite multiplication of the deadly germs of consumption. The microbes of consumption are scavengers and feast and flourish upon improperly nourished tissues. The sufferer has unknowingly provided for them a rich pasture land.

There is a sure, speedy and safe cure for consumption and all the conditions that lead to it. This deadly disease has been frequently pronounced incurable. It is not. Thousands have testified to their rapid and permanent recovery from this most deadly disease, after they had been given up by the doctors and all hope was gone, by the use of Dr. Pierce's Golden Medical Discovery. It cures 98 per cent of all cases of consumption. It is a prompt and never-failing remedy for weak lungs, spitting of blood, shortness of breath, severe cough, bronchitis, asthma, and all kindred affections. It is a cure for all wasting diseases due to indigestion and imperfect nutrition. It corrects all disorders of the digestion, makes the appetite keen and hearty, invigorates the organs of secretion, makes assimilation perfect, purifies the blood and fills it with the elements that build hearty flesh and muscle. It acts directly upon the lungs, driving out all disease germs, carrying off inert matter and replacing it by new and healthy tissues. It is the great blood-maker and flesh-builder. Those who wish to know more of it should write to Dr. R. V. Pierce, chief consulting physician to the Invalids' Hotel and Surgical Institute, at Buffalo, N. Y. All druggists sell it. There is positively nothing else "just as good."

Every home should have an "Emergency Book;" a book that makes the wife and mother a competent physician and a capable nurse for the ordinary ills and accidents of life. Such a book will save in a lifetime hundreds, and maybe thousands of dollars in doctors' bills. It will frequently save a life. There is just one such book published. Just one that covers the field completely and is written in plain, everyday English that any wife or mother can understand. No technical terms. It is Dr. Pierce's Common Sense Medical Adviser. It contains 1,008 pages and 300 illustrations. It covers every possible emergency. Over 680,000 copies have been sold at the original price of \$1.50 each. A new edition is now ready and will be given away absolutely FREE. If you want a copy, in heavy manilla covers, send twenty-one one-cent stamps, to cover cost of mailing only, to the World's Dispensary Medical Association, Buffalo, N. Y. If you prefer a copy in fine French cloth binding, send 10 cents extra, or 31 cents in all.

No Room for Doubt.

When the facts are before you, you must be convinced.

The facts are that the UNION PACIFIC is leading all competitors, is the acknowledged dining car route, and great through car line of the West.

The line via Denver and Kansas City to Chicago in connection with the Chicago & Alton railroad, with its excellent equipment of Free Reclining Chair Cars, Pullman Palace Sleepers and Pullman Dining Cars, demands the attention of every traveler to the East.

Ask your nearest agent for tickets via this route.
E. L. LOMAX,
42 Gen. Pass. and Ticket Agent.

Popular Low-Price California Excursions.

The Santa Fe Route personally conducted weekly excursions to California are deservedly popular. About one-third saved in price of railroad and sleeper tickets as compared with first-class passage.

The improved Pullmans occupied by these parties are of 1896 pattern and afford every necessary convenience. A porter goes with each car and an experienced agent of the company is in charge.

The Santa Fe's California line is remarkably picturesque, and its middle course across the continent avoids the discomforts of extreme heat or cold.

Daily service, same as above, except as regards agent in charge.

For descriptive literature and other information address G. T. Nicholson, G. P. A., A., T. & S. F. Rty., Chicago.

The Veterinarian.

We cordially invite our readers to consult us whenever they desire any information in regard to sick or lame animals, and thus assist us in making this department one of the interesting features of the KANSAS FARMER.

BOILS ON COLT'S LEG.—I have a yearling colt with one hind leg covered with pimples, boils and welts, from the size of a pea to a hickory nut.

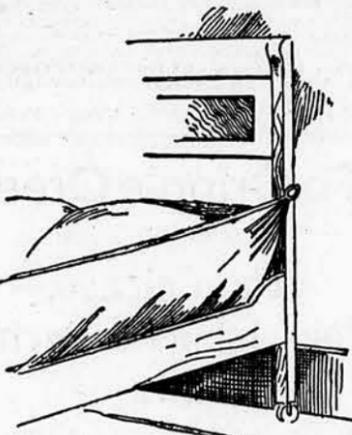
Answer.—The symptoms indicate buton farcy. Call a competent veterinarian and have him examined at once.

TO PREVENT TUMBLES.

A Simple But Effective Device for the Children's Bed.

When little folks graduate from the crib, with its safe, close sides, and come into the dignity of sleeping in a "grown-up" bed, there is apt to be many a tumble upon the floor in the darkness.

Such nervous apprehension is wearying and altogether unnecessary, for there are a number of simple devices for making the children's bed un-fall-outable, if I may so express the idea.



placed against a wall, only the outer side will require a strip tacked to it.

In the upper corners of the strip sew metal rings, and insert hooks in the head-board and foot-board, as shown. When the bed is made up in the morning the strip can be folded in under the quilts, to be removed and hooked up into place at night.

Deafness Cannot be Cured

by local applications, as they cannot reach the diseased portion of the ear. There is only one way to cure deafness, and that is by constitutional remedies.

We will give One Hundred Dollars for any case of deafness (caused by catarrh) that cannot be cured by Hall's Catarrh Cure.

F. J. CHENNEY & CO., Toledo, O.

MARKET REPORTS.

Kansas City Live Stock. KANSAS CITY, Aug. 3.—Cattle—Receipts since Saturday, 8,012; calves, 1,571; shipped Saturday, 273 cattle, 59 calves.

Table with columns: No., Ave. Price, No., Ave. Price. Lists prices for various types of beef steers.

TEXAS AND INDIAN STEERS. 125.....1,035 \$2.75 91.....1,005 \$2.65 25.....929 2.60 104.....958 2.55

NATIVE HEIFERS. 3.....420 \$3.75 1.....1,090 \$3.25 2.....836 3.00 1.....650 3.00

NATIVE COWS. 1.....1,280 \$2.75 2.....1,130 \$2.60 2.....1,030 2.40 53.....912 2.40

NATIVE FEEDERS. 37.....1,070 \$3.30 19.....926 \$3.90 1.....1,020 2.00

NATIVE STOCKERS. 20.....731 \$3.67 14.....701 \$3.30 32.....729 3.30 5.....426 3.25

Hogs—Receipts since Saturday, 4,398; shipped Saturday, 711. The sheep market was steady to strong.

Table with columns: No., Price, No., Price. Lists prices for various types of sheep and lambs.

Chicago Live Stock. CHICAGO, Aug. 3.—Cattle—Receipts, 23,500; market 5 to 10c lower; fair to best beefs, \$3.00 @ 4.50.

Hogs—Receipts, 23,000; heavy a shade lower, light steady to 5c higher; rough packing, \$2.05 @ 2.85; mixed and butchers, \$3.00 @ 3.35.

Chicago Grain and Provisions. Aug. 3. Opened High'st Low'st Closing. Wh't—Aug.... 58 1/4 58 3/4 58 1/2 58 3/4

St. Louis Live Stock. ST. LOUIS, Aug. 3.—Cattle—Receipts, 5,000; market 10c lower; native steers, \$3.50 @ 4.40; Texas steers, \$3.40 @ 3.50.

Chicago Live Stock. CHICAGO, Aug. 3.—Cattle—Receipts, 23,500; market 5 to 10c lower; fair to best beefs, \$3.00 @ 4.50.

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Chicago Grain and Provisions. Aug. 3. Opened High'st Low'st Closing. Wh't—Aug.... 58 1/4 58 3/4 58 1/2 58 3/4

Kansas City Grain. KANSAS CITY, Aug. 3.—Soft wheat was very scarce and a little higher here to-day. Good samples of hard wheat met with fair demand at steady prices.

Receipts of wheat here to-day, 73 cars; a year ago, 54 cars. Sales were as follows on track: Hard No. 2, 2 cars 53 1/2c.

Receipts of corn here to-day, 301 cars; a year ago, 99 cars. Sales by sample on track: No. 2 mixed, 3 cars 21 1/2c.

Receipts of oats here to-day, 43 cars; a year ago, 9 cars. Sales by sample on track: No. 2 mixed, 3 cars 21 1/2c.

Receipts of hogs here to-day, 4,398; shipped Saturday, 711. The sheep market was steady to strong.

Chicago Live Stock. CHICAGO, Aug. 3.—Cattle—Receipts, 23,500; market 5 to 10c lower; fair to best beefs, \$3.00 @ 4.50.

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Chicago Grain and Provisions. Aug. 3. Opened High'st Low'st Closing. Wh't—Aug.... 58 1/4 58 3/4 58 1/2 58 3/4

Receipts of oats to-day, 43 cars; a year ago, 9 cars.

Sales by sample on track: No. 2 mixed, 1 car 19 1/2c, 2 cars 20c; No. 3 oats, nominally 17c; No. 2 white oats, 1 car 23 1/2c.

Hay—Receipts, 82 cars. The market is weak. Choice timothy, \$7.00 @ 7.50; No. 1, \$6.00 @ 6.50; No. 2, \$5.00 @ 5.50; No. 3, \$4.00 @ 4.50.

St. Louis Grain. ST. LOUIS, Aug. 3.—Receipts of wheat, 139,000 bu.; last year, 109,000 bu.; corn, 290,360 bu.;

St. Louis Produce. KANSAS CITY, Aug. 3.—Butter—Creamery, extra fancy separator, 13c; firsts, 12c; dairy, fancy, 12c.

Eggs—Strictly candled stock, 7 1/2c per doz; southern, 5c.

Poultry—Hens, 6c; roosters, 15c each; springs, 7c per lb.; turkeys, hens, 6c; gobblers, 5c.

Fruits—Peaches, home grown, 25c a peck basket; choice 1/2 bu. boxes are 50c; inferior stock, 30 @ 35c.

Potatoes—Home grown, 12 1/2c per bushel in a small way. Sweet potatoes, 50 @ 75c in a small way; new stock, \$1.50 per bu.

Tomatoes—Choice to fancy, ripe, 45 @ 50c per bu.; inferior and common, 20 @ 30c per bu.; shipping stock, 25 @ 35c.

ROBT. C. WHITE, Pres. W. R. MUNGER, Sec-Treas.

ROBT. C. WHITE Live Stock Commission Company KANSAS CITY STOCK YARDS.

Money loaned to responsible parties for feeding purposes. Market reports free upon application. Consignments and correspondence solicited.

Wm. A. Rogers, Robt. E. Cox, Fred W. Bishop.



Live Stock Commission Merchants. Rooms 265 and 266 Live Stock Exchange Building, Kansas City, Mo.

John Moffett, Manager. L. B. Andrews, Office. T. S. Moffett, W. C. Lorimer, Cattle Salesmen.

MOFFETT BROS. & ANDREWS Live Stock Commission Merchants.

Feeders and stockers purchased on orders. Personal attention given to all consignments. Correspondence invited. Market reports furnished.

References:—National Bank of Commerce, Kansas City, Mo.; Citizens' State Bank, Harper, Kas.; Bank of Kiowa, Kiowa, Kas.

Rooms 67-68 Live Stock Exchange, Kansas City, Mo.

GROWERS OF AND DEALERS IN Cattle, Hogs and Sheep

MAKE YOUR CONSIGNMENTS TO Ben. L. Welch & Co. COMMISSION MERCHANTS, STOCK YARDS, KANSAS CITY, MO. AND EAST ST. LOUIS, ILL.

Stockers and feeders bought on order. Liberal advances to the trade. Write for market reports and special information.

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THE STRAY LIST.

HOW TO POST A STRAY. THE FEES, FINES AND PENALTIES FOR NOT POSTING.

BY AN ACT of the Legislature, approved February 27, 1886, section 1, when the appraised value of a stray or strays exceeds ten dollars, the County Clerk is required, within ten days after receiving a certified description and appraisal, to forward by mail, notice containing complete description of said strays, the day on which they were taken up, their appraised value, and the name and residence of the taker-up, to the KANSAS FARMER, together with the sum of 50 cents for each animal contained in said notice.

Broken animals can be taken up at any time in the year. Unbroken animals can only be taken up between the first day of November and the first day of April, except when found in the lawful enclosure of the taker-up.

No persons, except citizens and householders, can take up a stray. If an animal liable to be taken up, shall come upon the premises of any person, and be falls for ten days, after being notified in writing of the fact, any other citizen and householder may take up the same.

Any person taking up a stray, must immediately advertise the same by posting three written notices in as many places in the township, giving a correct description of each stray, and be must at the same time deliver a copy of said notice to the County Clerk of his county, who shall post the same on a bill-board in his office thirty days.

If such stray is not proven up at the expiration of ten days, the taker-up shall go before any Justice of the Peace of the township, and file an affidavit stating that such stray was taken up on his premises, that he did not drive nor cause it to be driven there, that he has advertised it for ten days, that the marks and brands have not been altered; also he shall give a full description of the same and its cash value. He shall also give a bond to the State of double the value of such stray.

The Justice of the Peace shall within twenty days from the time such stray was taken up (ten days after posting) make out and return to the County Clerk, a certified copy of the description and value of such stray.

If such stray shall be valued at more than \$10, it shall be advertised in the KANSAS FARMER in three successive numbers.

The owner of any stray may, within twelve months from the time of taking up, prove the same by evidence before any Justice of the Peace of the county, having first notified the taker-up of the time when, and the Justice before whom proof will be offered. The stray shall be delivered to the owner, on the order of the Justice, and upon the payment of all charges and costs.

If the owner of a stray fails to prove ownership within twelve months after the time of taking, a complete title shall vest in the taker-up. At the end of a year after a stray is taken up, the Justice of the Peace shall issue a summons to three householders to appear and appraise such stray, summons to be served by the taker-up; said appraisers, or two of them, shall in all respects describe and truly value said stray, and make a sworn return of the same to the Justice.

They shall also determine the cost of keeping, and the benefits the taker-up may have had, and report the same on their appraisal.

In all cases where the title vests in the taker-up, he shall pay into the County Treasury, deducting all costs of taking up, posting and taking care of the stray, one-half of the remainder of the value of such stray.

Any person who shall sell or dispose of a stray, or take the same out of the State before the title shall have vested in him, shall be guilty of a misdemeanor and shall forfeit double the value of such stray and be subject to a fine of \$20.

FOR WEEK ENDING JULY 23, 1896. Shawnee county—Chas. T. McCabe, clerk.

HORSE—Taken up by James Graham, in Silver Lake tp. (P. O. Swinburn), one three-year-old iron gray horse.

FOR WEEK ENDING JULY 30, 1896. Cherokee county—T. W. Thomason, clerk.

HORSE—Taken up by R. W. Miller, in Logan tp., July 10, 1896, one sorrel horse, sixteen hands high, both hind feet white; valued at \$12.50.

HORSE—By same, one bay horse, white hind feet, white spot in forehead, branded S on left shoulder; valued at \$12.50.

Cheyenne county—G. A. Benkelman, clerk.

MARE—Taken up by Jacob Weist, in Cleveland Run tp. (P. O. St. Francis), May 15, 1896, one sorrel mare, 3 years old, branded I inside of larger U; valued at \$15.

MARE—By same, one gray mare, 6 years old, brand and value same as above.

COLT—By same, one yearling mare colt, roan; valued at \$10.

FOR WEEK ENDING AUGUST 6, 1896. Wilson county—T. D. Hampson, clerk.

HORSE—Taken up by W. R. Burkopfle, in Fall River tp., July 6, 1896, one bay horse, fifteen and a half hands high, harness marks on neck and shoulder.

Marion county—W. V. Church, clerk.

MULE—Taken up by August Kohfeld, in Menno tp., June 26, 1896, one bay mare mule; valued at \$15.

MULE—By same, one brown gelding mule; valued at \$15.

STEER—Taken up by T. J. McCandless, in Clark tp., June 13, 1896, one red steer, 2 years old, long cut on under side of left ear.

Cherokee county—T. W. Thomason, clerk.

PONY—Taken up by G. W. Douglas, in Crawford tp. (P. O. Columbus), July 20, 1896, one small gray mare pony, thirteen and a half hands high, about 9 years old, branded J. B. on left shoulder, shod when taken up.

Crawford county—John Ecker, clerk.

HORSE—Taken up by B. P. Bogle, in Sheridan tp. (P. O. Beulah), July 13, 1896, one bay gelding, fifteen hands high, about 4 years old, star in forehead and snip across end of nose, white harness mark on back; valued at \$20.

Some farmers claim that State Fairs have degenerated into more "Agricultural horse-trots," with attendant demoralizing influences. The P. W. W. F. Co. comes to the rescue with a free exhibition of native wild animals, such as Deer, Elk, Buffalo, etc., securely enclosed with the only park fence. Send for particulars.

PAGE WOVEN WIRE FENCE CO., Adrian, Mich.

Counter Attractions.

Some farmers claim that State Fairs have degenerated into more "Agricultural horse-trots," with attendant demoralizing influences. The P. W. W. F. Co. comes to the rescue with a free exhibition of native wild animals, such as Deer, Elk, Buffalo, etc., securely enclosed with the only park fence. Send for particulars.

\$4.00 DO YOU WANT A JOB? SEND \$25.00 PER DAY EASILY MADE STAR HOME FASTENER CO. CHICAGO, ILL.

BRASS BAND Instruments, Drums, Uniforms, Equipments for Bands and Drum Corps. Lowest prices ever quoted. Fine Catalog, 400 Illustrations, mailed free; it gives Band Music & Instructions for Amateur Bands. LYON & HEALY, Cor. Adams St. and Wabash Avenue, Chicago, Ill.

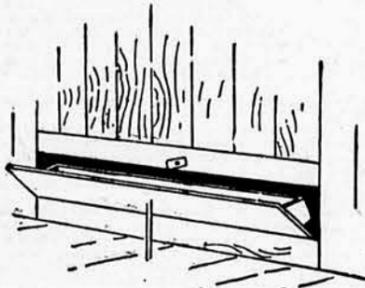
WOVEN WIRE FENCE Over 50 styles. The best on Earth. Horse high, Bull strong, Pig and Chicken tight. You can make from 40 to 60 rods per day for from 14 to 22c. a Rod. Illustrated Catalogue Free. KITSELMAN BROS., Ridgeville, Indiana.

The Poultry Yard

THREE GOOD DEVICES.

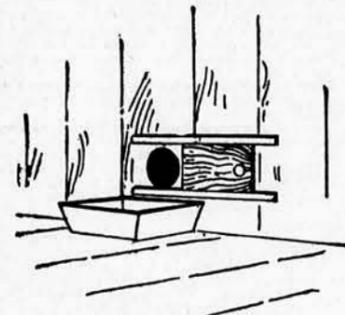
They Are Really Needed on Every Up-to-Date Poultry Farm.

There are many reasons why it is preferable to do as much of the work of caring for fowls outside the poultry quarters as possible. There is thus less disturbing of the fowls, which, in the case of nervous breeds, such as Leg-



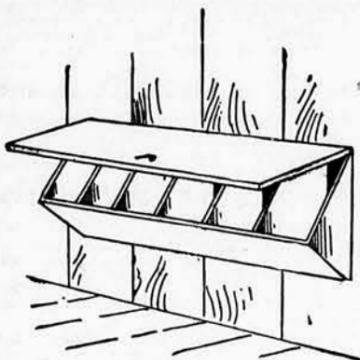
FOR FEEDING.

horns, Spanish, Minorcas, etc., is highly desirable, and in particular there is much less soiling of the clothes and shoes. Three devices are shown herewith that permit the gathering of eggs from outside the henhouse, and the feeding and watering of the fowls, also



FOR WATERING FOWLS.

from the outside. These devices can be used in summer in the case of houses that stand apart by themselves, cutting into the outer wall for this purpose, but they are especially adapted for use where the poultry are kept in a room



NESTING DEVICE.

partitioned off from another room. The dividing partition can then be cut into. Where the poultry house stands by itself alone, however, a little hall can be built just inside the door, from which these devices can be operated. The devices themselves are so plainly shown in the cuts that detailed description is unnecessary.—N. Y. Tribune.

SQUABS FOR MARKET.

A Profitable Industry if Properly and Intelligently Conducted.

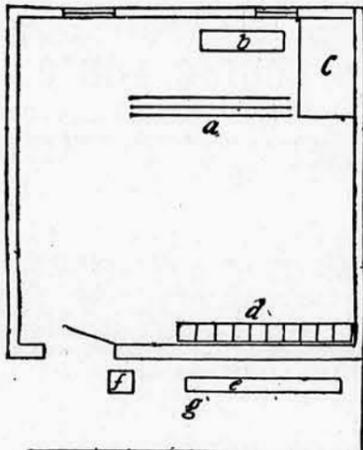
Success in raising squabs for market depends, first, upon a suitable cote. This should be large, airy and provided with plenty of nests. Second, upon proper care, including the keeping of the place clean, providing suitable food—wheat, peas, very little cracked corn and salt, and giving the birds a chance to fly, either in a large wire inclosure or, better still, at large. And third, upon the stock. There is no better foundation for this than the common pigeon, those with white plumage being preferable because white squabs sell for rather better prices than colored. Such birds, crossed with runts or dragoons, the runts being preferable on account of size, will give the best possible stock for squab raising. Doubtless it can be made to pay when a good market for the squabs can be found. From one pair of old birds about six or seven pairs of young can be raised in a season. If there are but six pairs, that will give a pretty good product, and as these birds often bring excel-

lent prices, as much as three dollars is possible to be received as the income from a single pair of old birds. But to receive such a sum it is needful to get a good price for the squabs. Common pigeons can be purchased almost everywhere at 25 to 50 cents a pair. Runts are occasionally advertised, but would be quite expensive to purchase. A good pair of runts would be worth probably \$10. The squab raiser, however, should buy only runt cocks, and these need not be the best ones, so that he probably could get them at two dollars to three dollars each.—H. S. Babcock, in Farm and Home.

THE SINGLE PEN PLAN.

How to Put Up a Desirably-Arranged Poultry House.

Divide poultry into flocks of 25 birds and have pens at least 12 feet square for each flock. I would build 12 or 15 feet wide and long enough to accommodate the number of hens wanted. Construct a walk three feet wide the length of the house, on the north side, and have feed trough and water tank in the walk and nest boxes next to the walk so as not to be obliged to go into the pens except to care for droppings under the roosts. Place nests over the feed trough and screen in front to darken them somewhat. A room in an end of the house will be convenient for grain, oyster shells, road dust, coal ashes, litter and material for setting purposes. Hang a floor 3 by 6 feet about 3 feet above the ground in a corner of the pen and put poultry netting around to shut hens in that want to sit. Make the



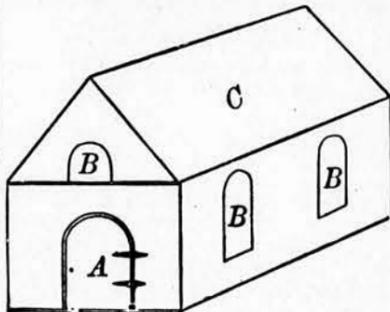
SINGLE PEN PLAN.

building warm. Place two common-sized windows in each pen. Ventilation should be provided at both top and bottom of pens. In the cut above a are roosts, b dust box, c pen for sitting hens, d nests, e feed trough, f water tank, g walk. Make the partitions of netting except 1 1/2 to 2 feet on bottom between the pens.—Asa Child, in Farm and Home.

VERMIN-PROOF COOP.

It Excludes Vermin While Allowing Plenty of Ventilation.

Anybody can make a convenient and handsome coop, as shown in cut, out of a small "goods box." Take a box say 15 inches wide by 30 inches long, and



12 inches high, and with a compass saw cut out the door A. The piece removed will answer nicely for a shutter, and may be hinged as indicated. For ventilation saw out spaces B B B, covering them with screen wire. Make the cover C out of any thin boards. The advantage of such a coop is that it excludes rats and other "varmints," while allowing ample ventilation. I have seen a double coop made on this order out of a box too large for a single coop. Painted yellow for body color, and top red, it was a showy and attractive feature of the poultry yard.—G. W. Waters, in Journal of Agriculture.

- ARMSTRONG & McKELVY Pittsburgh.
- BEYMER-BAUMAN Pittsburgh.
- DAVIS-CHAMBERS Pittsburgh.
- FARNESTOCK Pittsburgh.
- ANGHOR Cincinnati.
- EOKSTEIN Cincinnati.
- ATLANTIC New York.
- BRADLEY New York.
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- ULSTER New York.
- UNION New York.
- SOUTHERN Chicago.
- SHIPMAN Chicago.
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- MISSOURI St. Louis.
- RED SEAL St. Louis.
- SOUTHERN St. Louis.
- JOHN T. LEWIS & BROS. CO. Philadelphia.
- MORLEY Philadelphia.
- SALEM Cleveland.
- CORNELL Salem, Mass.
- KENTUCKY Buffalo.
- Louisville.

NO MISREPRESENTATION on the part of our agents tolerated or of dealers or painters necessary. You know just what you are getting when you have painting done with

Pure White Lead

(see list of brands, which are genuine) and Pure Linseed Oil. Don't be misled by trying something else said to be "just as good." Any desired shade or color may be easily produced by using NATIONAL LEAD Co.'s Pure White Lead Tinting Colors.

Pamphlet giving valuable information and card showing samples of colors free; also cards showing pictures of twelve houses of different designs painted in various styles or combinations of shades forwarded upon application to those intending to paint.

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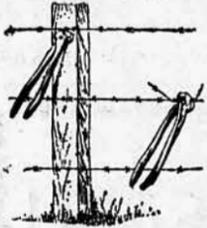
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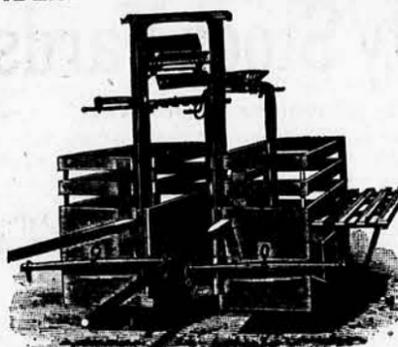
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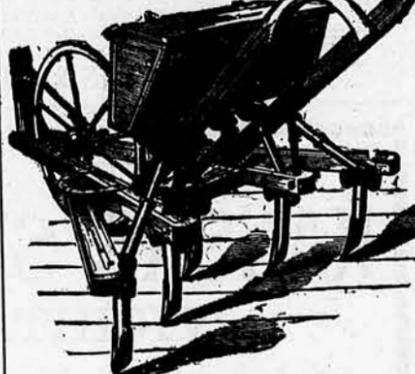
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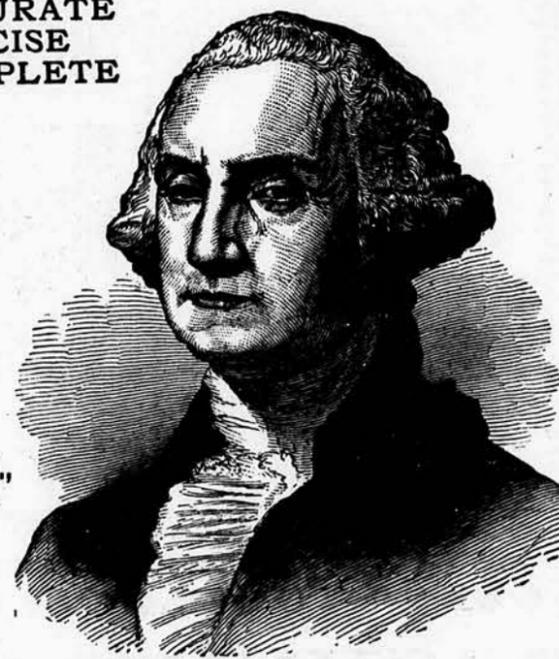
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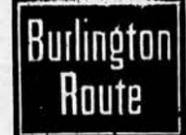
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