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The Evolution of Economic Beef Production.

ALTHOUGH cattle were used for beasts of burden, and for the milk and meat that could be obtained from them at an early period, the matter of producing meat at a low rate of cost does not seem to have met with much consideration until within the last century. In our own country the matter of producing beef economically did not attract much attention until within the last score of years, and the adherents of the old system of maturing cattle before fattening them, have seen fit to dub the modern method of producing beef from young cattle, as making "baby beef." When first begun it was quite common to hear the matter spoken of in a derisive manner, and many erroneous and exaggerated statements have been made, written and published, to prejudice the consumers against it. Notwithstanding the many prejudices created, the custom has grown until the fashionable meat produced to gratify the fastidious tastes of the exacting consumers, comes from young animals. It is the rich, juicy beef from young cattle, the savory flesh of the well fattened lambs, the sweet pig pork, and the milk-fed broiler chickens, that are called for and sell for high prices.

Improvements were Necessary.

It is generally conceded that our domestic cattle are lineal descendants of the native cattle of Europe and Asia. Just what those native cattle were and how they looked, can only be conjectured by examining the fossilized remains and the bones found in the swampy lands of those countries. Prof. Winchell, the paleontologist, tells us that during man's first advent in Europe, he had as companions the cave bear, the cave hyena and the cave lion. He farther states that these "gradually gave place to gigantic Herbivores. Three kinds of wild oxen, two of which were of colossal strength, and one of these was maned and villous (fine haired, shaggy), like the Bonnassus (Bison)."

It is very evident that cattle in the early days were greatly modified and reduced in size by domestication. Even the Romans, with all their knowledge of the arts and sciences that assisted them in their agricultural pursuits, did not establish any fixed type or breed.

In 1710, in the Smithfield, England, market, the average weight of beef cattle was 370 pounds each. Toward the middle of the eighteenth century a revival of interest in live stock was led by Cully, the then leading authority on live stock in England. After 1745 Bakewell began his career as an improver of live stock, the Collings and a host of others enlisted in the work, and much was accomplished as can be shown by the records at the Smithfield market. A fact is worthy of mention, that while the average weight of cattle had been increased about 40 per cent at 1795, the period of time required to reach the market weights had been shortened from five to four years.

Another point to which I wish to call attention was the great stress and credit given

to roots, fed in connection with the forage feeds. A case is recorded that Mr. Charles Colling fed a four-year-old steer to 1,890 pounds on hay and turnips alone.

Improvements have continued for a century under the careful hands of intelligent and skillful breeders. The size of bone, in proportion to the amount of meat carried, has been reduced. The legs have been shortened. The whole animal has been made more symmetrical and the percentage of choice cuts of meat has been increased. Instead of feeding the animals along slowly in early life, making a thin rim of flesh, and then overlay it with fat to fit it for market, as was the

ancient custom, we have learned to develop the animal while young and intermingle the fat and lean. By utilizing the characteristics of appetite and capabilities of rapid development that have been fixed by a century of breeding with that purpose in view, we are able to accomplish as much in making growth and weight, in 12 to 15 months as did the breeders of the last of the eighteenth century in four or five years. And what is more, the meat from our young well developed animals is more palatable and nutritious than the leathery cuts from the slowly developed animals.

It would not be practical to recommend

every farmer who may desire to make beef cheaply, to invest in some one of the several beef breeds as the cheapest and best cattle with which to operate. In the first place, there would not be pure-bred animals enough to supply all who might seek to secure them. In the second place, every farmer is not situated so that he can, nor is he so constituted and educated that he can maintain the animals to a high standard of excellence and successfully handle them. It is practical, however, for every community where it may be desired to raise beef cattle, to secure and keep a pure-bred sire, of some one of the beef breeds, from which to raise calves that can be fed to popular market weights in a period of time not exceeding eighteen months, and make a liberal profit on nearly, if not all of them.

In using a pure-bred sire one should keep in mind some important facts: "The sire will impart to the offspring the external conformation, the frame-work so to speak, the appetite which will enable them to consume a good deal of feed, and the capabilities of growing rapidly while young. The dams should be, as we express it, "large and roomy," with large vital organs to enable them to impart constitutional vigor and staying qualities throughout the entire period of feeding.

In feeding calves to secure rapid growth and good weights in a short period of time, it may be well to keep in mind some potential facts in regard to the matter: A calf well started soon after birth will have an advantage over the one that has been scrimped early in life. A constant growth is necessary, both for profit and quality of meat. Lean meat, such as the market demands, is made during the growing period, and can be made cheaper during the first year, than is possible to produce it later in life. Young animals make fat readily and intermingle it with the lean, making the sweet savored, juicy meat that satisfies the taste of the cultured appetites of the discriminating epicures who demand the best that can be produced.

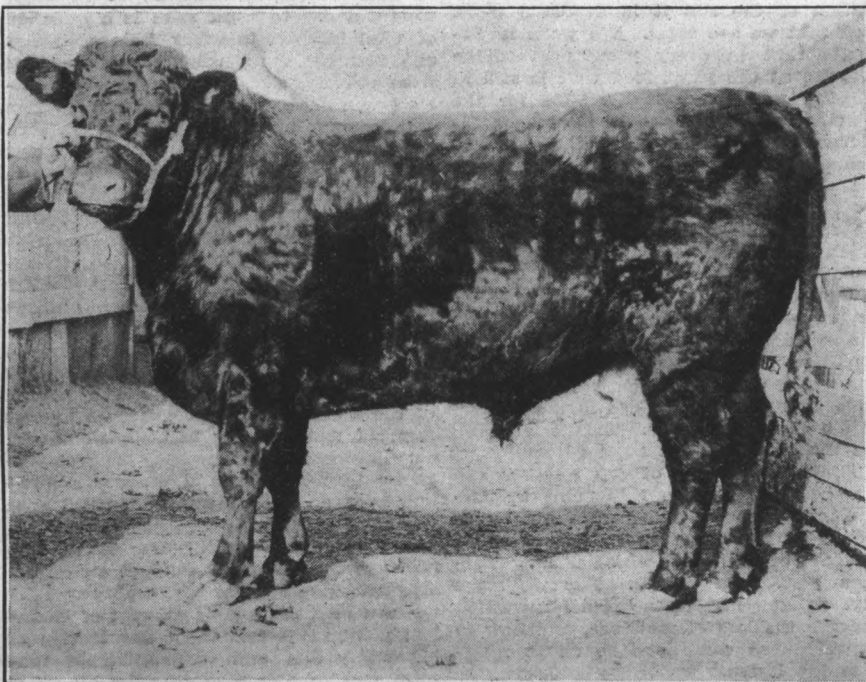
Silage for Beef Cattle.

By no other method yet discovered can feed be stored so easily, be furnished in so cheap a form and be readily available at all times of the year as in the silo.

In several ways silage has advantages over raising roots, which are highly prized by our English cousins; and the good results are as apparent and profitable. It is succulent, a necessary characteristic; is palatable, easily digested and assimilated. It helps to make summer conditions, as far as desirable and reliable feed is concerned, at all times of the year.

A man who wishes to make beef quickly and cheaply will make no mistake if he builds two silos, one for winter use, and another to supplement the unreliable pasture. He can keep the flesh growing on his animals as surely as the dairyman can keep up a constant flow of milk from his dairy cows, if he will be as persistent in feeding and caring for them.

Wayne Co. N. A. C.



Red Jacket, Pure-bred Shorthorn Steer Sold in Detroit Yards at \$12 per cwt.

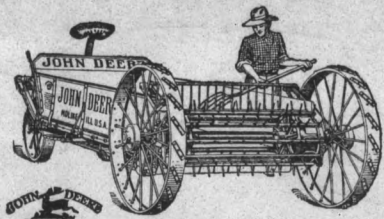
This steer was bred and fed by John Lessiter's Sons, of Oakland county. He was calved June 3, 1910; sired by Red Sultan 269243 and out of American Beauty 4th. He was kept growing from a calf and was finished on roots, silage, snapped corn, oats and barley ground together with cottonseed meal added, and clover hay for roughage. He weighed 1680 lbs. in the Detroit yards and was sold for the Lessiters by Bishop, Bullen & Holmes to the Michigan Beef Company for \$12 per hundred, the highest price ever paid on the Detroit market for beef on foot. This steer dressed 60 per cent of live weight. The carcass was bought by Adolph Marx and hung in his Broadway market for a Christmas beef display.



The Silo is an Essential Factor in Economic Beef Production. Silos on the E. M. Starkweather Farm, Wayne Co.

John Deere Spreader

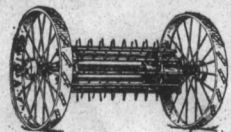
The Spreader with the Beater on the Axle



Take any manure spreader you have ever seen, remove all the clutches and chains, all the countershafts and stub axles, do away with all adjustments and mount the beater on the rear axle.

Rebuild the spreader so that the top of the box is only as high as your hips. Make it stronger. Remove some two hundred trouble-giving parts and throw them away. You will have some sort of an idea of what the John Deere Spreader, the Spreader with the Beater on the Axle, is like.

The Beater on the Axle



The Beater on the Axle

The beater and all its driving parts are mounted on the rear axle. This construction is patented. You cannot get it on any other spreader made.

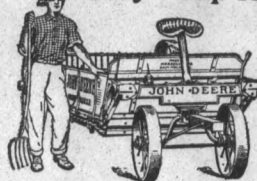
Power to drive the beater is taken from the rear axle through a planetary transmission (like that on automobiles). It is positive, runs in oil, and does not get out of order.

Few Working Parts

The John Deere Spreader is so simple that there are no adjustments. It has some two hundred less parts than the simplest spreader heretofore made.

There are no clutches to throw it into gear. The lever at the driver's right is moved back until the finger, or dog, engages a large stop at the rear of the machine. All the chains and adjustments have been done away with.

Only "Hip-High"



Easy to Load

Because the beater is mounted on the rear axle, it is only "hip-high" to the top of the box. Each forkful of manure is put just where it is needed. You can always see into the spreader.

Roller bearings, few working parts, the center of the load comparatively near the horses, and the weight distributed over four wheels, make the John Deere Spreader light draft.

Spreader Book Free—Tells about manure, when and how to use it, how to store it, and a description of the John Deere Spreader. Ask for this book as Package No. Y. 5.

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Moline, Illinois

Make Farm Work Easy For Man and Horses.



Heider eveners distribute the load so every horse pulls an equal share. That means better work from each horse, easier work for you. They are made for 2, 3, 4, 5 or 6 horses. The 4-horse plow eveners work four horses abreast on gang, sulky and disk plows, 1 horse in furrow, 3 on unplowed ground. Heider 3-horse eveners for wagon, manure spreader, grain drill, or any implement with pole.

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Maintaining Farm Fertility—III.

CROPS depend upon the preparation of the ground to receive the seed as much as they do upon the nature of the soil. Soils that are naturally poor frequently yield larger crops than superior soils if they are given better tillage. All soils may be greatly improved by tillage. It is claimed by many agricultural leaders that the annual yield of farm products in this country could be more than doubled in ten years by a more intensive system of culture.

Essential Factors in Tillage.

Plowing is the foundation of tillage. As a rule, we are plowing too shallow to obtain the best results, but the deepening of the soil should be gradual, for turning up too large quantities of sub-soil and turning the organic matter under so deep that the air, heat and water cannot act favorably upon it has ruined the productivity of much soil for years.

Farm crops are greatly benefited by deep seed beds. On a well drained field deep plowing is beneficial during both wet and dry seasons. In wet seasons the water is carried down below the root zone and the crop is not injured. On wet soils shallow plowing is preferable; it keeps the water near the surface where it will run off or be evaporated. Deep soil has greater crop producing capacity than shallow soil, even if both are alike in chemical composition. A soil nine inches deep will hold twice as much water as soil only six inches deep. Deep soil furnishes ideal conditions for plant roots to go down after food and moisture.

In selecting plows, harrows and cultivators we should study their construction. In the process of tillage or manipulation of the soil it is available plant food that we are after. We want implements that in every process of tillage will get at the plant food that is still in the soil and make it available for the growing crops. There is no reasonable excuse for a man to spend money for commercial plant food until he has made use of that which is abundantly under his feet. The chief object of tillage is the further liberation of the plant food which still exists very abundantly in our land.

Surface Tillage Conserves Moisture.

After we have thoroughly manipulated our soil and put it in the finest possible condition for the reception of the seed and various fertilizing elements the next important object of tillage is the conservation of soil moisture. Tillage is one of the most successful means of combating the injurious effects of dry weather and I want to emphasize this point in particular because it is possible for us to reduce in most instances from 25 to 50 per cent of the losses which usually come from periods of drouth. But we must have a knowledge of the principles which underlie the loss of moisture, and how to control these conditions so as to minimize the losses.

How does moisture leave the soil? There is always an upward movement of water in the soil. The more severe the drouth and the higher the temperature the more rapid becomes this upward movement, and consequently large amounts of moisture are lost and our crops are injured unless we understand how to prevent this loss of moisture. Water in the soil rises by the principle termed capillary attraction. It is rather difficult to explain, but it is a fact, however, that there are passages all through the soil through which the water is constantly seeking the surface. Now one of the great objects of the tillage in dry seasons is to hold back, or keep down this moisture; at least to so control it that it shall pass through the plant that is upon the soil rather than pass out and be lost without going out through the plant. The roots of plants penetrate the soil to certain depths and take up the moisture that is constantly pressing upward towards them. Fine tilth, fine culture at the surface, will so seal over the openings of these capillaries that it will be possible in a dry season to carry a cultivated crop through very successfully. The drier the season the more frequent should be the cultivation. The cultivator should be run over the surface until it becomes as fine as it is possible to make it. We should cultivate the surface frequently because we can make such a fine condition of the soil that we can put it in the form of a mulch and the moisture as it presses to the upper layers of the surface soil, will be held underneath this mulch.

Adding Vegetable Matter Increases Fertility.

Now another thing that will aid largely

in this whole matter, both in obtaining a larger amount of plant food, and also in helping to control the moisture, is the incorporation of vegetable matter in the soil. We are now confronted by the same problem as all older agricultural countries have faced, that of growing profitable crops on soils, from which the readily available fertility has been removed by improper systems of farming. Soil problems are always local, and yet the general features are the same everywhere. We shall, of course, have to work out our own problems, but we shall make a mistake if we do not take advantage of the experience gained during years of effort and strife in countries some of which were rich in the beginning but more of them made so by the hand of the farmer. As a rule, in such countries the greater amount of artificial fertilizers used the greater the insistence on a proper base of humus to work with. The chemical plant foods have two functions: Often it is to stimulate a crop to make a rapid growth and establish large plants that can do more business later in the season; again it is to supply a component part in the soil that is either lacking or deficient. Properly used chemical plant foods give very quick and profitable returns; used on land deficient in humus they help to exhaust the small quality that is already present. On poor lands chemical plant foods should serve as an aid in establishing clovers and grasses to form the basis of future operations.

Farms Must be Made More Self Sustaining.

Getting and returning a basic supply of humus-forming material, or in other words, a soil to work with is a question of vital interest to every farmer. Years ago farmers could usually find supplies from outside, either from villages or cities or by buying feed from other farmers and feeding it to live stock on their own premises. Today the majority of farms must be more self-sustaining and it is in the main the way future farming must be conducted. Sometimes a great deal may be taken from land, more than is actually in it in the first place, or returned in the shape of manure, but it takes time and crop rotation to bring about such processes. If farm manure be depended upon entirely no great advance is possible, except by such heavy applications as are seldom at the command of the farmer. When we discuss intense farming it is usually in connection with small farms where necessity compels the owner to make the land produce a maximum or go out of business. Is it not possible for the man who has a big farm which will store fertility for him while it returns a profit, to conduct an extensive intensive system of farming and by the use of a reasonable amount of chemical plant foods and the concentration of his cultivation and application of manure receive better returns for his labor than he does at present? In this connection he must follow a better rotation of crops and devote more attention to growing grass and clover to form a substantial base of humus for the successful use of his fertilizing materials. A heavy sod should last well through the rotation of cultivated crops, if they are to be made successful. The grass and clover crops not only furnish excellent food for live stock, but they may be considered from the point of preparation for a money crop such as corn, potatoes and wheat. By the use of limited quantities of chemical plant foods the grasses would be encouraged to endure and the whole make-up of the grass and clover fields after the harvesting and pasturing period would be a better, thicker, richer sod of far greater value than it would have been if no chemicals had been used. Perhaps some of our readers will give their experience on this matter of using fertilizers to encourage the growth of a heavy sod to last well through the rotation of cultivated crops.

New York. W. MILTON KELLY.

MORE ABOUT THE HUNTING NUISANCE.

Supplementing the article of Mr. John Jackson, of Ottawa county, in a recent issue, regarding trespassing of hunters on farms, can safely say that during the last few years our \$800 worth of personal property has been lost by farmers of Mecosta county by trespassing hunters, horses, cattle and poultry being shot besides damages to fencing, etc. I believe it would be policy to petition the legislature to enact a law with more se-

vere penalty, including both fine and imprisonment, discretionary with the court, for trespassing by hunting or otherwise on farm lands in Michigan.

Mecosta Co.

A. McLAUGHLIN.

FARM NOTES.

Building Up a Depleted Soil.

I have 40 acres of sandy land with clay subsoil which lays rolling but not hilly which was pretty well run out when I got it. I had five acres of this in corn last year and sowed it to rye to plow under. I don't want to take a crop off this land until I can build it up in first-rate shape and I would like some advice as to what to plow under for that purpose. Now please give me some advice as to the rotation of crops to improve this five acres first as a trial and I will let you know how I succeed. I farmed it for two years, the first year getting four bushels of red kidney beans per acre and last year I grew 25 bushels of ear corn per acre. I want to plant this ground to peaches in a year or two and raise some corn and other crops while the trees are growing, and I want to show my neighbors that this land can be placed in a fertile condition with your help.

Muskegon Co.

R. F.

It is difficult to give specific advice which is best suited to the local conditions without knowing more about them. The main thing, however, in improving land of this nature, if naturally well drained as one would presume it to be from this inquiry, is to improve its mechanical condition by adding vegetable matter to it and at the same time improve its content of available plant food. This can be done in a number of ways requiring varying amounts of time and expenditure of money.

If one could grow leguminous crops to plow down the desired result would be more quickly accomplished. On soils that do not readily grow clover, sand vetch has been found to be a valuable soil improver but has some disadvantages, the most serious one of which is that the seed is rather expensive. If one desired to use this crop the best plan would be to plow down the rye when it reaches a maximum growth in the spring and keep the soil worked to form a good seed bed, then sow rye and sand vetch about the middle of August. If this is done it would be a good plan to get some pure culture from the Bacteriological Department of the Agricultural College at East Lansing, and inoculate the seed to insure the presence of the proper bacteria in the soil. It might also pay to use a light dressing of commercial fertilizer to encourage a good growth of rye and vetch. This could be plowed down the following spring in time for a late cultivated crop such as potatoes; and with a liberal application of commercial fertilizer should enable the growing of a fairly good crop of potatoes. Then the land could be seeded to clover the following spring, either with a light seeding of oats or barley, or without a nurse crop with fair prospects of getting a good stand.

It is quite possible, however, that this soil is acid as a good many Michigan soils of this character are. In that case the application of lime, either one ton or more of ground limestone per acre or half the amount of caustic lime would produce an alkaline reaction favorable to the development of the bacteria necessary to the success of the clover plant.

There are many other plans which might be equally good or better than the one given. For instance, the rye could be plowed down in the spring, lime applied if needed and clover sown on a good seed bed in midsummer with a fair prospect of getting a stand, or buckwheat could be sown when the rye is plowed down and this turned down in the late fall or early spring for some other crop. It should be borne in mind that the sooner this land can be gotten into condition to grow clover the more rapid will be its improvement, as the clover will not only add vegetable matter to the soil but will find the mineral element of fertility deeper down in the soil and will at the same time store up nitrogen for the use of future crops through the bacteria which form nodules on the roots. It will probably be advantageous also to use some fertilizer on this land when it is gotten into good mechanical condition, unless stable manure is available.

The particular method of accomplishing these results is not material so long as the same is suited to this accomplishment, for which reason it is difficult, as above stated, to lay down any hard and fast rule to follow for this task of improving a depleted soil. The problem is really an individual one in each case and the farmer who becomes interested in it and does not lose sight of the underlying principles above enumerated is certain to reap ultimate success.

SOY BEANS IN OHIO.

Soy beans in this section are a rather new legume, scarcely any being grown here until this year. However, we have been planting them at different times for ten years. We grew them heretofore for hay, but last year we planted a quantity of them between the corn hills with the intention of putting them along with the corn in the silo. We hoped to cut the corn and beans together and thereby have ensilage rather rich in protein, a very necessary food constituent, but other corn had to be put into the silo to get the ground ready for wheat.

This year we planted all of our corn intended for the silo with the wheat drill. This was done that more corn would be gotten on the same ground. A few beans were planted in with the corn. The plan worked admirably.

A field of about five acres was planted to Mikado soy beans. About six feet of a 31 foot silo was filled in with corn exclusively. The second morning of filling, teams and men were sent to the bean field to load the beans that were previously cut and raked. There were about seven loads of beans. These were loaded and hauled into the barn and thrown on a pile near the ensilage cutter. As the corn was being fed into the cutter a man on the bean pile would throw in an occasional fork full of soy beans; in this manner the beans were distributed evenly through the silo for about 20 feet. The silo cutter cut the corn not over one-fourth of an inch long and the beans were also cut quite fine.

We feed ensilage to the cattle as soon as the silo is filled and in this way the ensilage will be fed down to the soy

much nitrogen and some humus to the soil. They are not only valuable for a stock feed but a soil stimulant as well. The value of this leguminous plant is hard to estimate. There are many varieties of soy beans and some of them grow in any latitude.

We are greatly impressed with this plant and have been trying each year to grow more of them and are encouraging our friends to do the same thing. We believe those who are short of hay or feed could to advantage grow a patch of this splendid plant. At least try a few and learn from actual experience of their worth.

Ohio.

I. G. SHELLABARGER.

SOY BEANS IN MICHIGAN.

I was interested in the inquiry of W. Y. D., of Oakland county, about the soy bean. Not wanting to depend altogether on my alfalfa for hay, as last season was the first cutting, I procured the United States Department of Agriculture's bulletin No. 372 on the soy bean and decided to try this, to me, new legume.

My soil was a good sandy loam, plowed about the 15th of May. I then drilled in about 200 lbs. of fertilizer to the acre on the lighter spots and sowed them 28 inches apart about the 5th of June. The seed was not a good quality as the seed firm had sold out and I had to take the sweepings from the floor after they had threshed the several different varieties. I could count five different kinds of seed. I inoculated the seed with culture from the United States Department of Agriculture and drilled them on a warm cloudy day.

The beans came up slowly and made a



Soy Beans at the Proper Stage of Growth to be Cut for Hay.

beans in the coldest weather, when it is needed most for the cattle and sheep. By putting soy beans in the silo, ensilage with much protein is secured which is not the case when all corn is used and it is hoped less high-priced protein feeds will need be purchased this year than was the case in former years.

Soy beans are not at all difficult to grow. The photo shows a field of about two acres when in about the right stage to cut for hay. It will be noticed that they have a large amount of foliage. This particular variety grows very upright and are easily cultivated with the riding cultivator.

The ground for soy beans is prepared the same as for corn and we plant them with the wheat drill, about 26 inches apart. Twenty-eight or 30 inches would be better. This would make them easier to cultivate. The beans are mowed with the two-horse mower and raked with the side delivery hay rake and loaded by hand. We have used the hay loader but don't believe it is practical.

When making hay of the beans they should be cut just as the seed pods begin to start. Cut the beans and allow them to cure in the field. In short, take care of them the same as the hay grasses. If the beans are wanted for seed cut them just before the pods burst open. Allow them to cure in the field and then haul to the barn. If they are piled too thick before they are thoroughly dry they will mold and thereby spoil the seed germ.

Practically all five stock eat soy beans and we have never had any trouble by feeding them in our limited operations. We feed them exclusively to cattle and sheep and a very few to swine.

Soy beans are a legume that will add

slow growth as the weather was too cold. They were cultivated shallow only once and should have received more as the weeds got a good start during the cool germinating period. When the weather warmed up the soys made a good growth and showed a good dark green foliage, but a cool spell seemed to make them look paler, showing that they want good hot weather.

In the southwest they claim the soys could be successfully raised but for the rabbits, and I guess they like them, for there were about a dozen running around when I finished mowing.

While piling the soys to cure for hay, I happened to think about the inoculation and was surprised to find the nodules on the roots as large as hazel nuts, some roots having as many as six or seven, and again some had none. Probably 85 per cent showed good inoculation.

Although the hay was not gotten up in the best of condition the Shropshires certainly like it and it is relished by the cows. Experiments seem to show that the hay is even richer in protein than alfalfa. Next season I will try and sow a special hay variety on the same ground, as the common varieties, the small black and yellow, make a growth of two to three feet, while the larger varieties will make a four to five-foot growth.

Although the cold in first part and the great amount of rain while curing them was quite a detriment, I am well pleased with my first experience with the soy bean. While I don't think the soy bean will ever take the place of our alfalfa or clover, in times of shortage they will become a factor in the varied production of good old Michigan.

Lapeer Co.

M. M. GIBSON.

70 Bushels Oats Per Acre



WITH A. A. C. Co. Fertilizer on oats I had a yield of 70 bushels per acre of oats 40 pounds to the bushel, struck measure, on land I called very much run down.

There were 12 acres in the field. It was in beans last year and the ground was fall-plowed late for oats, and was well fitted in the spring with a spring tooth harrow and the oats drilled in 2½ bushels to the acre.

I commenced on one side of the field by drilling 100 pounds of Fertilizer to the acre. I increased the Fertilizer at intervals at the rate of 50 pounds each time until I got up to 400 pounds per acre, leaving a drill row unfertilized at each increase. The parts that were fertilized with 100 pounds and 150 pounds each per acre were not as good as that which was fertilized with 200 pounds and over. The unfertilized strips were sorrowful looking sights by the side of the rest and attracted a great deal of attention. These strips were examined by good judges who laid their yield at from 30 to 40 bushels per acre—the yield of the whole field had no Fertilizer been used. That being the case, from 30 to 35 bushels per acre were added by using the Fertilizer.

We pulled up equal distances of rows that grew only seven inches apart, side by side, and took the dirt from the roots and weighed them and found that the fertilized row weighed over two and a half times as much as the unfertilized row. The fertilized oats stood a foot higher than the others and were much stiffer and larger, with over three times as much root as the other.

It pays well to use Fertilizer. It will add 20 to 40 bushels per acre, besides giving you double the straw and ripening your crops from a week to ten days earlier." (Name given on application.)

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are rightly made and supply to growing crops in available form all the plant food elements required.

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No Engine too small for it. Will last a lifetime. Special attachment for grinding discs furnished free. Write for circular.

Pays for itself in one season.

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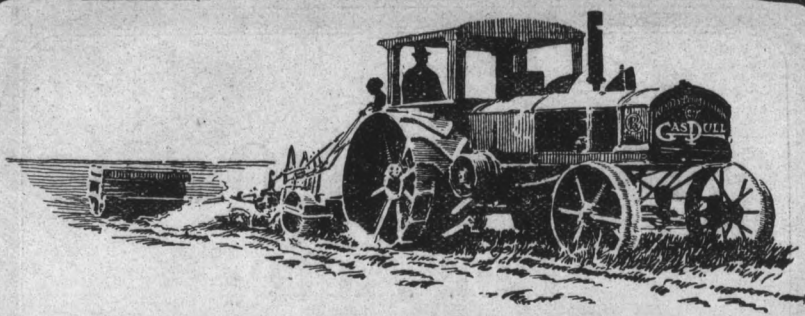


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The greatest piece of literature ever written on the value of manure. Send for your copy today. It couldn't be worth more to you if you paid \$10 for it. Plain facts written by the great soil experts and thousands of successful farmers. Why not learn absolutely free how you can turn your manure pile into gold dollars? Send now for my special 1913 proposition and price—it's **FREE**. Wm. Galloway, Pres., THE WM. GALLOWAY COMPANY 649C1 Galloway Station WATERLOO, IA.



Low Down Easy to Load

BACTERIA—THE FRIENDS OF THE FARMER.

In times past we farmers have always associated bacteria with danger and disease. We have been taught by the scientist and others that the bacteria are very antagonistic to us. Now, it is well that we should come to a full understanding of the true nature of bacterial action and thus better understand their true relation toward us.

In the main, they are our friends and not our enemies, as we have been accustomed to believe. It is quite true that most of the infectious diseases are caused by bacteria but when the truth is known, we find that disease producing germs are comparatively few beside the great swarms of micro-organisms with which the air is filled. We should realize that nearly everything we eat or wear has been nourished at some time in its career by some micro-organism. These micro-organisms at present are considered to be plants although some of them so closely resemble animals in their habits and relations toward each other that it is difficult for us to determine in what great class they fall.

Bacteria and Soil Fertility.

We are wont to ponder on the great ability of the soil to produce crops, year after year, seemingly without fertilizers or other aids, but we do not recognize the fact that without our friends, the bacteria, the soil would be unable to produce crops for any length of time. We should know that before organic matter, as manure, dead leaves, straw, animal remains, etc., can be used by the plant they must be acted upon by no less than three or four different kinds of micro-organisms and seeing this to be the case, our fear of bacteria is somewhat lessened.

It is true that decay will not take place without the presence of living germs. All housewives recognize this fact when they can fruit for they are particular to exclude air as much as possible from the fruit to be preserved and if there is any air remaining, it has been heated to such a temperature that the decay-producing bacteria are killed.

There is only a slight difference between the theory of this process and that of the decay of organic matter. We wish the manure to decay just as quickly as possible after it is put on the land. A certain kind of organism attacks the organic matter or manure and breaks it up, liberating ammonia in the process of getting its food. We never smell ammonia in the stable if it is kept well cleaned and there is no smell of ammonia about fresh manure.

Then after this bacterium has completed its work another nitrifying bacteria attacks a part of the matter which has been broken down by the ammonia bacteria and in its efforts to get food it liberates the nitrites; then in turn another entirely different germ attacks the nitrite material and breaks it up in the form of nitrates which the plant can use.

Nitrifying Bacteria.

The plant can only use food that can be gotten into solution and nitrogen only in the form of nitrates or nitric nitrogen. It is the first element to be used up by the plant and the one with which the good farmer tries to keep the soil well supplied. So we see, the intimacy between these minute plants and those plants upon which the farmer depends, for without the soil, crops would cease to grow. Without crops we farmers would have to go out of business and the cessation of human activities would be sudden.

Of course, we are all familiar with the bacteria which grow on the roots of the leguminous plants but the word bacteria has been so commonly shunned by the farmer and people in general, that we have been accustomed to apply the name "germ" to this particular organism.

The relations between the alfalfa or clover plant and the colonies of bacteria which live on the nodules of the roots of the legume is a very intimate one. In fact, either one would miss the other very much. They mutually help each other to get food. They have entered into an agreement whereby the clover plant furnishes the bacteria with carbohydrates and in turn, the organism secures free nitrogen from the air and changes it into a form of food which is available to the plant.

Get the Bacteria to Work for You.

The fermentation of cider into vinegar is a common phenomenon. Some of us have put the cider barrel down cellar in the dark and left it corked up tightly and then wondered why the cider did not ferment. The truth of the matter is, the barrel being corked up, no bacteria

came in contact with the cider, that is, not in sufficient numbers to start action.

There is no farmer's wife but who is proud of the fact, if she can make the first quality butter, but does she ever reckon with the minute plant who co-operated with her in the making of the prize butter? When the truth is known, the housewife has only proven her skill to make these bacteria work for her and when they cease to work for her she kills them or stops their action. In other words, she is skillful in knowing when to stop bacterial growth in order to get the desired flavor for the butter. Certain amounts of bacteria or bacterial products give the varying flavors of butters and cheeses.

Without the aid of our minute plant friends we would be very seriously handicapped in getting our sustenance from the soil. There are two kinds of bacteria which the farmer should be especially alert for. One of them is a harmful one and the other is very useful. One lives in the presence of air and the other prefers to live where there is no air. The latter breaks up the nitrogen compounds which the careful agriculturist has placed in the soil and the free nitrogen passes off in the air while the other air loving germ is busy breaking up bits of manure and straw into forms which the plant can use.

When we fail to cultivate and stir the soil we are giving the harmful organisms just the kind of condition in which it prefers to live, but if cultivated properly, the land will not harbor the bad germ and the useful ones will thrive.

Ingham Co.

I. J. MATTHEWS.

PASTURING ALFALFA WITH COWS.

Can alfalfa be pastured without hurting it and about with how many cows to the acre?

Monroe Co.

J. W.

Alfalfa does not make as good pasture for cattle and horses as for hogs, because the tramping of the heavy animals on the alfalfa injures the crown, and because the horses and cattle crop the plant too close. The alfalfa ought not to be cut until the new growth starts at the crown. It can be pastured with hogs if too many hogs are not turned onto the field to keep it fed down closely. There should be a large area for the number of hogs pastured and when the alfalfa is ready to cut for hay, cut what is left and make into hay. In this way you can get a good hog pasture and with little injury to the alfalfa, but it must not be cropped closely. There is only just certain times when it can be cut close, and that is when a new growth starts out at the bottom or crown.

Again, cows and sheep fed on alfalfa are quite liable to have bloat or hoven. It is said to be much worse than red clover, and yet it is dangerous to turn cows into red clover when the clover is wet. Many cases are reported, in the west, of hoven where cows have been turned into alfalfa fields. It will be much better to cut the alfalfa and feed it to the cows than to turn them on the crop for pasture. It is too valuable a plant to be injured by the tramping of cows. You can begin sowing the cows quite early. If you have a good stand of alfalfa and the season is favorable you will probably get three good cuttings of alfalfa hay, and with such a plant as this you cannot afford to run any risk of injuring by pasturing.

COLON C. LILLIE.

DO SUGAR BEETS INCREASE SOIL FERTILITY.

I have before me Senate Document No. 890, entitled "Sugar at a Glance," prepared by Truman G. Palmer, in which the statement is made that raising sugar beets does not exhaust or impoverish the soil, but on the contrary, fits the soil for better cereal crop to follow, and makes the claim that the average yield of the four crops, wheat, corn, oats and barley, were increased 44.6 per cent by being rotated after sugar beets. I would like to know if this is the experience of Michigan sugar beet raisers? Will they who have had experience in this line of farming please answer? Does the sugar beet, notwithstanding its heavy draught on the soil, of nitrogen, phosphoric acid and potash, leave it in better condition for succeeding crops? May I not suggest that the increase of cereals after beets, might be due to highly fertilizing the land previously to sowing the beets, which was not exhausted by the beet crop but left it in better condition for following crops.

Jackson Co.

T. B. HALLADAY.

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HOW THE LABOR PROBLEM WAS SOLVED ON ONE MICHIGAN FARM.

The man shown in the accompanying portrait entered a certain state one day, got a job as a farm hand the next day, and has held that same job for 39 consecutive years. The man who hired him has been dead for 12 years, but this farm hand is still working for his children. The woman in the picture is the hired man's wife, and they are Mr. and Mrs. James DuBois, who live on a farm in Hillsdale county, Michigan, the same farm on which he started work four decades ago.

There isn't a farm subject much more important nowadays than that of the farm hand. There has been a dearth of farm help, and good help has been still scarcer. The experience of this man ought to interest every farmer who must have more help than himself and his family afford.

The man who employed this hand and kept him for such a long time was J. H. Smith, the father of Prof. H. R. Smith, now with the Minnesota State College,

the man who originally hired him; he has the grandchildren about him, and by all he is treated like one of the family.

If you were to talk to Prof. Smith he would tell you that some of his own best ideas were originated by this man who, in the capacity of a hired hand, has worked for the same family for such an unusual length of time. Some of his first impressions, which always are the lasting ones, came from his working along with the farm employee. In all it ought to furnish a salutary lesson in the preservation of the right kind of relations between a farmer and his hired man.

Illinois.

J. L. GRAFF.

KILLING SPARROWS WITH POISONED GRAIN.

Please advise the best way to kill English sparrows with poisoned grain. Allegan Co. W. K.

The best way to kill sparrows with poisoned grain without endangering useful birds, poultry, etc., is to lure them to some favorable spot for several days in succession by scattering a little grain on



Mr. and Mrs. James DuBois, Employed on the Same Farm for Forty Years.

and one of the best known and most accomplished of our agricultural experiment station workers. It was Prof. Smith who happened to mention the service of this long-time farm hand.

Mr. DuBois says that the relations of employe and employer were always of the pleasantest, that he was treated more like a confidential friend than a farm hand. He was sent to fairs to get ideas, and he says that on many such occasions he was accompanied by the young man who is now a professor in the study of agriculture, and that the two were accustomed to pick out the prize winners ahead of the judges. He was sent to Buffalo and New York with carloads of cattle and in other ways was trusted in the same confidential relations as was the eldest son of the family.

Prof. Smith, at the late International show, where he gave one of the most interesting lectures on the program of educational features, mentioned the advantage of furnishing farm hands good living quarters because it is best to have such workers live on the farm where they work. This man DuBois got the use of a good house and, of course, much of his living came from the farm, and in addition he was paid about \$250 a year in cash.

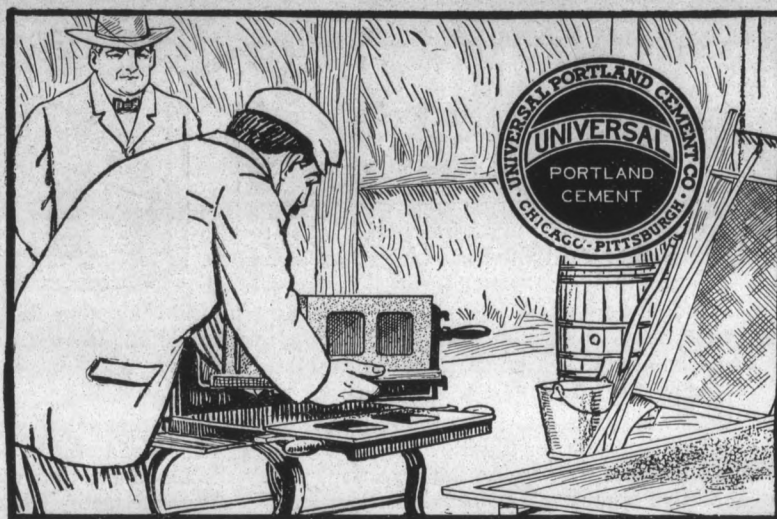
This farm hand is nearly 70 years old, he is now working for the children of

the ground. They will soon become accustomed to this practice, and if it is scattered at the same time each day they will assemble in considerable numbers to partake of it. When they have become accustomed to this feeding ground, a similar amount of grain previously soaked in strychnine and carefully dried may be scattered. Previous experience will indicate just about how much grain the flock which collects will eat, and a little less of the poisoned grain should be fed to insure that it will be well cleaned up. Ordinarily, the whole of this poisoned grain will be eaten and most of the sparrows will die within a short distance of the feeding place, and others will not get far away. If the practice is made of distributing the grain over only a small area any that is left can be gathered up.

Prof. Barrows, of M. A. C., who recommends this method in his "Michigan Bird Life," states that there is no danger of any animals, which may eat the poisoned sparrows which may die at a considerable distance from the place of poisoning, becoming poisoned thereby.

Likes the Farmer's Progressiveness.

You have taken one more step in the right direction. Your very progressive paper is most worthy of the support and co-operation of every intelligent farmer. —Fred Farley, Gladwin, Mich.



Making Concrete Blocks in Winter

Any kind of concrete work can be done satisfactorily in cold weather, if proper precautions are taken. Many farmers plan to do such jobs in winter, when they have more time than later in the season.

If you contemplate doing any building with concrete, you can easily make the concrete blocks now, and erect your structure in milder weather. The blocks may be made under shelter — without the discomfort of working in the open — and weather conditions need not interfere with the work.

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gives unvarying results in concrete construction. It is uniform in quality, strength and color. Booklet containing instructions for doing concrete work in cold weather will be sent upon request.

Write us for help in any kind of concrete work you may want to do.

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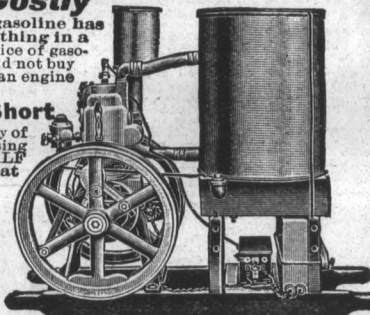
In buying your farm engine, remember this: gasoline has become terribly expensive, and you can't use anything in a gasoline engine BUT gasoline. In six months, the price of gasoline has nearly doubled. Still going up and up. You would not buy a horse that would eat ONLY OATS—WHY, then, buy an engine that uses ONLY ONE FUEL?

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Automobile users are fast exhausting the world's supply of gasoline. Hence the enormous and constantly increasing price. The 1,200,000 automobiles in 1913 will use up almost HALF A BILLION GALLONS OF GASOLINE. Think how that will further push up the price!

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THE AMERICAN SEEDING-MACHINE CO. INCORPORATED, SPRINGFIELD, OHIO, U.S.A.

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Kow-Kure is the one remedy that is essentially a medicine—a preventive and cure for the ills of cows only. It has wonderful medicinal properties that act on the digestion, purify the blood and tone up the generative organs. Thousands of delighted customers testify that Kow-Kure is a positive cure for **Scouring, Bunches or Red Water**; especially valuable in cases of **Abortion, Barrenness, Retained Afterbirth, Milk Fever or Lost Appetite**. Here is a sample of the letters that come in every mail:

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Dear Sirs: I have found that it always paid to feed Kow-Kure whenever my cows went down on the quantity of milk. I have cured several severe cases of milk fever, one that a veterinary gave up and said would not live until morning. I gave her a dose of Kow-Kure once in two hours all night, and in three days she was giving a pailful of milk. I have cured several cows that were down and could not get up. I recommend it as the best cow medicine on earth.

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Wm. E. STARKEY.

Kow-Kure is not a stock food; it is a medicine. It does not stimulate temporarily—it repairs. Be sure you have a supply constantly on hand. Use it according to directions to cure and to prevent sickness. Sold by most feed dealers and druggists in 50c and \$1.00 packages. Ask your dealer for a copy of "The Cow Book"—free—or send to us.

DAIRY ASSOCIATION
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\$2 The Price You Get for About 8-lbs. of Butter Puts This Big SEPARATOR

Then the machine itself will earn the other easy payments before they are due. You have the machine to use twice a day on your farm. You get one-fourth to one-third more cream—have fresh, warm skim milk for the calves, pigs and chickens—make work easier for the women folks and before you realize it this big money maker is all paid for out of your extra cream profits. You don't feel the cost at all, especially at our low factory-to-farm prices of only \$24 and up.

NEW BUTTERFLY

New Butterfly Cream Separators are sold direct from the factory to you. No agents' commission—no dealers' profits to pay. No interest—no extras. You save half. For example—\$24 (payable only \$3 down and \$2 a month for 12 months) buys the New Butterfly Junior No. 2—light running, easy cleaning, close skimming, durable. GUARANTEED A LIFETIME. Skims 95 quarts of milk per hour. Made also in four larger sizes up to No. 5 1-2, shown here. Free colored folder tells which size you need.

30 DAYS' FREE TRIAL—LIFETIME GUARANTEE

We ship any machine we make on 30 days' FREE TRIAL—allow you to use it on your own farm—test it in every way. If you are not fully satisfied, send it back at our expense and we will refund all you have paid, together with freight charges both ways, so you will not be out one penny. You can't afford to miss this opportunity to get a cream separator. You take no risk. Write for FREE CATALOG FOLDER and Factory Price List TODAY.

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Read this letter sent to me from P. H. Sells, of Garwin, Iowa: "We wore out a high-priced separator which is the only kind we ever had and I would not give this Galloway for a half dozen high-priced separators, and they sold me their No. 1 for \$65.00 and asked me over \$100.00 for the size of your No. 14, so I saved \$45.00 by buying your No. 14 and think we have a better one." I have hundreds of other letters to prove that the Galloway

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is the equal of any on the market at any price, and I save you \$20 to \$45 cash. I give you 30 to 90 days' free trial to prove quality. "I have never found one as well constructed, as close a skimmer" is the comment of Cornelius M. Hunter, of El Reno, Okla. Theodore Casper of Dodgeville, Wis., says he "wouldn't trade it (the Galloway) for any of those high-priced separators." So, any way you look at it the Galloway takes the banner for Quality and Price. Send a postal today for my separator book—my special offer to 10 or more men in every township, and I will also send my big 6-color catalog of my general line, new handsome, complete, truthful, convincing—all free and postpaid. Write me today. Address: Wm. Galloway, President, THE WILLIAM GALLOWAY CO., 643CW Galloway Sta., Waterloo, Iowa. Stocks on hand at Kansas City, Council Bluffs, St. Paul and Chicago. Prompt shipments.



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Corn and Cottonseed Meal properly balanced makes finest ration for Dairy Cows and Beef Cattle. Our booklet "Science of Feeding" free on request. Write to headquarters for prices on best quality. Owl Brand. F. W. BRODE & CO., Memphis, Tennessee.

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Dairy.

VALUE OF AND HOW TO ESTIMATE WEIGHT OF SILAGE.

I have a chance to buy silo 30x12 ft., half full of corn ensilage. What is best way to figure on it and how many tons will it go to the foot? About what would it be worth per ton?

Oakland Co.

T. D.

There is no market price for corn silage so it is difficult to say how much one can afford to pay for it. In cow testing associations the cows are charged \$3.50 per ton for corn silage. It is usually figured that three tons of corn silage is worth as much as one ton of timothy hay; that is, the food nutrients in one ton of timothy hay would amount to as much as the food nutrients in three tons of the average corn silage. It is probably worth the \$3.50 per ton which we charge our cows in the cow testing association. At any rate, the cows pay for it and give us a profit besides.

It is estimated that corn silage will, on the average, weigh 40 pounds per cubic foot, and consequently if you will find the number of cubic feet in your silo and multiply by 40 it will give you the number of pounds of silage. Of course, silage won't weigh quite 40 pounds to the cubic foot in the upper part of the silo but it will weigh a little more in the bottom part of the silo, making the average about this figure. If your silo is 12 feet in diameter a foot in depth of ensilage in the silo would equal about two and one-half tons, or there would be in the neighborhood of 40 tons of silage in the silo if it is half full, because the lower half of the silo will be packed closer and will contain more tons than on the average for the whole silo. I should think it would be safe to figure that there would be 40 tons of silage in the silo.

Of course, the price of \$3.50 per ton which we charge the cows in the cow testing association is for silage that is right close at hand, at the feeding alley door. Now if one had to buy silage that was a mile away and had to haul it that would make a difference, he couldn't afford to pay as much as for silage that was right at the feeding barn.

GROUND RYE AND CORN-AND-COB MEAL FOR COWS.

I would like to get some information in regard to a ration for cows. We feed ground rye and corn meal ground, cob and all, with some oil meal. Also feed cornstalks and hay. Now the question is how much oil meal should we allow for each cow per feeding morning and evening with the other grain? We also have a limited supply of carrots.

Ottawa Co.

D. H. P.

I don't like to feed ground rye in large quantities to dairy cows, but fed in moderation it is all right. Corn and cob meal is good, and there is nothing better than oil meal if fed in moderate quantities. I would suggest that you mix 100 pounds of ground rye, 150 pounds of corn-and-cob meal, and 100 pounds of oil meal together. Mix it thoroughly and feed this to the cows. I would begin gradually to feed this to the cows, gradually increasing the food until I fed each cow as many pounds of grain per day as she produced pounds of butter-fat in a week—in the meantime, of course, watching each cow carefully as you gradually increase the amount of feed. If you find that when you increase the feed that the cow does not respond with a little more milk then I would stop feeding that cow more grain. On the other hand, if I had a cow that would still increase the flow of milk I would not stop at the limit of feed measured by the number of pounds of butter-fat which she produced in a week, but would gradually increase until I found out the cow's limit, then drop back just a little bit and hold her there. This combination of a grain ration fed with corn stalks and hay for roughage ought to give very good results. It would be better, of course, if you had some succulent food to feed in connection with that and, so far as they go, there would be nothing better than the carrots. If I only had a small quantity of these carrots I would feed them in a limited way, that is, feed only a small amount at a time and make them last as long as I could. That would be better than it would be to feed a larger mess for a short time and then have none at all. After I got out of carrots if I couldn't get some other kind of roots to feed I believe I would buy a little dried beet pulp or some wet

beet pulp to feed in connection with the dry food ration, for I am sure that your cows will do better. The succulency of these foods seems to have the effect of keeping the digestive tract in good condition and enables the animal to consume more of the dry feed, and not only consume more but enables them to digest and assimilate more of it and consequently makes them more profitable.

WILL SILAGE MAKE THE CATTLE DROOL?

I have a new silo, built last summer, and filled it with corn. I opened up my silo a week ago. There was only about two inches of rotten silage and a little more that was mouldy except along the edges where it settled away from the walls a little after I quit tramping it. I had covered it with six inches of wet straw and chaff when done filling. Now when I opened it I threw the rotten stuff together with what good silage would naturally get scraped off, out in the barnyard and the cattle and hogs nosed around and ate some of it. Now my cattle seem to drool, that is, the water seems to run from their mouths. What would you think the cause of it? The way I feed is to first give cattle hay in the morning, then milk and then give silage. Should silage be fed first? I give stalks at noon and hay and silage at night. The young cattle seem to drool more than the cows.

Tuscola Co.

F. W. C.

I do not think Mr. C. need have any great anxiety about his cattle drooling at the mouth. I don't think there is anything in the silage that caused them to drool. I know that sometimes different kinds of feed seem to make all kinds of stock drool at the mouth, or causes a greater secretion of saliva. For instance, I have noticed before now when horses were on white clover pasture that they would drool at the mouth some, but no injury, so far as I ever knew, resulted from it. When our cows and young cattle, both, know that it is time to be feeding silage, when they are waiting for it, before the man can get to them, they are hungry, of course, and anxious to get it, and they begin to drool at the mouth.

BEST FEED TO BUY TO FEED WITH CORN SILAGE.

What is the best feed to buy to feed with silage for milch cows? The silage contains plenty of corn.

SUBSCRIBER.

No mention is made of the roughage to be fed in this ration, and this will make a difference with the kind of grain fed. For instance, if you have clover hay to feed you don't have to buy so much protein in the grain ration as you would if you feed timothy hay and cornstalks. Not knowing this, one can't very accurately combine a ration. Supposing, however, that the ordinary feed of mixed hay and cornstalks is the roughage, then you want a ration which is pretty rich in protein. I would suggest at present prices that you buy wheat bran, oats, and gluten feed. Grind the oats and mix them with wheat bran half and half by weight. Then mix half as much gluten feed as you have bran and oats. Or, mix in the proportion of 200 lbs. of bran, 200 lbs. of ground oats, and 100 lbs. of gluten feed. If you prefer you can feed cottonseed meal in preference to gluten feed, but then I would only feed about half as much. I would feed this cottonseed meal separately, giving each cow a definite amount so that I would know exactly what each cow gets.

WHAT TO SUBSTITUTE FOR COTTONSEED MEAL.

Have noticed the question that some do not altogether favor the use of cottonseed meal for dairy cows and having had result with a few cows not exactly satisfactory myself, I would like to know how you are feeding your dairy cows now. I lack clover hay for my cows but have excellent silage, stalks and straw.

Oakland Co.

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At the present time the only grain that I am feeding my dairy cows is ground peas and oats. I calculated to raise quite a quantity of peas and oats every year, and we mature them, thresh them and grind the grain. I think there is no grain in the world any better than peas and oats. The peas are rich in protein and help to balance up the ration quite satisfactorily where we feed clover and alfalfa hay. I will not have enough peas and oats to carry me through, and I intend, at present prices, to feed ground oats and gluten feed. We can make a splendid ration out of ground oats and gluten feed and at a more economical price at the present market price of things than we can by feeding oil meal. Otherwise oil meal is an excellent substitute for cottonseed meal.

HOW MANY COWS CAN BE KEPT ON A 54-ACRE FARM?

I own 51 acres of land; over half is muck and black loam land. I want to know how many cows I would be able to keep on it by keeping my cows in the year round and feeding ensilage? Would it be profitable for me to keep 25 or 30 cows and plant the same ground in ensilage corn every year by manuring it about every other year? I have one 12 x30-ft. silo. How large a one would you advise me to build?

Macomb Co.

E. C. D.

It is impossible for me, or anybody else, to tell how many cows Mr. D. could keep on his 51-acre farm. It is simply a matter that is up to him for it all depends upon the man in charge. I can give him some idea of what other people have done who practice intensive dairying on small areas of land, and I see no reason why he could not accomplish the same thing, but not knowing him personally I can give no opinion as to whether he could accomplish as much as someone else or not.

Rev. Deitrick, who purchased a farm of 15 acres near Philadelphia, gradually worked the crop producing power of this little 15 acres, and by the way, there was only 13 acres of it under the plow, the other two acres being used for a yard and buildings, to such an extent that he was enabled to keep 17 milch cows and sufficient young stock to keep his herd good, besides his team, upon this farm. Not only that but he actually sold hay from the farm, having more than necessary to maintain the stock. He did not, however, produce any grain for the stock. He purchased that entirely. One can readily see that by beginning on rather a small scale, buying the grain, carefully saving the manure and putting it on the land, and increasing the number of cows and other stock as fast as possible, thus increasing the manure, that one will have a sufficient amount of manure in a short time by this system of farming to make the land rich and produce abundantly, and this Rev. Deitrick did. In a way he had a rotation of crops. He would plow down clover stubble that had been heavily manured for corn for silage, and he put this corn for silage in after he had taken out the crop of hay that year. Then he would seed the corn ground to rye. He would mow that rye the next year for hay and then put it into corn again. Occasionally he seeded the corn ground to clover, either late in the fall or early in the spring. The ground being so rich he could get a good crop of clover hay the same year that he seeded it. On most of the land he tried to raise two forage crops each season, and he succeeded in accomplishing it to a large extent. Now it is simply marvelous to think that a man could raise enough forage crops on 13 acres to keep 17 head of milch cows and a number of young cattle and the team necessary to work the farm and deliver the milk. If I remember correctly, the last year he operated this farm he kept 34 head of live stock and raised sufficient forage for all of them, besides having some to sell. You see, in purchasing the grain he added an immense amount of plant food to the farm every year, and it is simply marvelous how much land will produce when you furnish enough available plant food. The trouble with most of our land in Michigan is that there isn't enough available plant food in it to grow luxuriant crops, we haven't got the stable manure to make it rich, and we are afraid to buy commercial fertilizer to do it with, and consequently we go on raising ordinary or medium crops when maximum crops could be produced.

There are other instances on record where men have kept on quite a large farm as many as one cow for each acre of land. For instance, a man with a 40-acre farm could keep 40 cows. A man with 100 acres of land can keep 100 cows on that farm and raise practically all the feed with the exception of a certain amount of grain purchased to balance the roughage. In this kind of farming, of course, every effort is made to grow roughage for the cows. I don't know whether it is the most profitable thing to do or not. It seems to me that on a dairy farm it is a good thing to have one cash crop, something to do, as it were, "between milkings." It economizes time better. And yet these men have made a marked success in farming by practicing intensive dairying.

Now Mr. D. need have no fear about keeping up the fertility of his land if he will only apply enough stable manure. You don't even have to grow any grass to do it if you don't want to. Prof. Roberts, of Cornell University, raised corn on the same field for 14 years in

succession and the last crop of corn was better than the first. But he covered the field over every year with stable manure. Where we haven't the stable manure then, of course, we must raise a good sod so that we can turn this sod under and keep up the vegetable matter in the soil.

I believe that Mr. D. can, if he tries his best, in a few years work up his farm so that he can keep one cow or more to the acre.

Now with regard to a silo. At the present time I take it that he hasn't a large number of cows and that he is going to purchase more. I never would build a silo larger than 15 feet in diameter, and then I would get my capacity out of height. A 12-foot silo does very well but in a small silo you never can get the ensilage to pack in quite as close as you can in a larger one. I wouldn't want to build a silo less than 12 feet in diameter, and for my herd I prefer 15 feet in diameter. My best-sized silo is 15 feet in diameter and 50 feet high, and if I were in Mr. D.'s place and wanted to figure on capacity for the future I would build a silo 15 feet in diameter, say 30 feet high, and then figure if I wanted more silage than this later on, that I would add 10 or 20 feet to this silo, as I needed it. This would be much better than building a new one, and it makes better ensilage. The deeper you can get the silo the better the ensilage is, because it packs closer.

ENSILAGE SPOILING. CAUSE. CAN ANYTHING BE DONE TO SAVE IT?

Will you please advise me in regard to our silage? We put in a silo last fall. The frost hit our corn quite hard and it stood several days afterwards before we cut it. Then it laid on the ground a couple of days before we could get a cutter to come and fill it. The fodder was real dry. We run in about three-fourths inch stream of water while filling, or as much of it as we could get up the blower. We tamped it in with one man, using a distributor. The silo is 12 x30-ft. We feed off about three or four inches per day; have fed down about eight or nine feet. Of course, we have no experience as to what it ought to be but we think it is spoiling. All around the outside about a foot in it comes out in chunks or flakes and is dry or burned out and all filled with a white mould. Inside of that foot it is damp and hot with spots that are all rotten and dark colored and kind of mushy like. If it is spoiling can we do anything to stop it and thereby save it? We write you because we feel that you were able above any other person in the state give us correct advice.

Eaton Co.

S. C. C.

From the description it would seem that the ensilage has certainly spoiled somewhat, especially around the outside. Those spots in the center that have turned black and mushy are also spoiled. I am of the opinion that this could have been avoided if the ensilage had been tramped more carefully while the silo was being filled and if a sufficient amount of water had been applied at the time. Where a silo is only 12 feet in diameter and you run the corn in pretty fast one man alone in the silo will have very little time to tramp it. He simply carries the distributor around and that is about all the tramping it gets. Now his dry corn is light and bulky and it won't settle down very good, especially the top one-third of the silo. There isn't weight enough to it to settle down to exclude the air, and it is bound to spoil more or less. I apprehend that after you get down into the silo farther where it is packed quite thoroughly from the pressure of the corn above that this loss will not occur. It would seem that this amount of water applied to the corn at that time would make it sufficiently moist to pack well, but if the corn wasn't well tramped down when being put in much of this moisture would work down through the silage toward the bottom. As I say, it is quite certain that when you get down further into the silage you will find it in much better shape.

I don't think anything can be done now that will assist much in stopping the loss. If the silage is still not very thoroughly packed on top it would be a good thing to get in there and tramp it thoroughly. The only thing that will stop the spoiling, is to exclude the air, and the only way you can exclude the air is by tramping the silage so it will settle in a compact mass. Under the circumstances you will have to do the best you can and select out that portion of the silage which is not spoiled and feed it. Throw the rest away. When you get down farther I believe that you will find your loss much less, and probably in the last half of the silo it will be eliminated entirely.

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Live Stock.

ENSILAGE AND OIL MEAL FOR FATTENING STEERS.

I wish to know more about feeding silage to fattening steers. Is oil meal a good ration to feed with silage, and if so, how much to each steer at a feed? Ohio. N. V.

Fattening steers should have all the corn silage they will eat up clean twice a day. I don't think it is necessary to feed them three times a day, but I would feed them clover hay or alfalfa hay if I had it once a day, say at noon. They ought to have all of this they will eat up clean. If you haven't clover hay feed them any kind of hay, or even cornstalks as roughage will be consumed and turned profitably into money. Of course, if you have clover hay or alfalfa hay to feed in connection with corn silage you don't need to feed as much oil meal as you would if you have nothing but timothy hay or corn fodder, because these foods are not so rich in protein as the clover or alfalfa hay. Now if you haven't got clover hay or alfalfa hay then I would feed from three to five pounds of oil meal per head, per steer, per day. Begin by feeding a pound per day and gradually increase it. In fact, the more you can get them to eat the faster they will grow and fatten. After you get them well started on the corn silage and the oil meal about the only limit is simply to feed what they will eat up clean. As you near the time of finishing off the steers I think it will pay you to feed them some shelled corn or corn meal in connection with the oil meal. I believe that you will get a better finish and that the cattle will fatten more rapidly in the finishing period than they will if they do not get corn, even though you have plenty of corn in your corn silage. The last month or so that you feed the steers they should have all the corn meal and all the oil meal they can eat as well as all the corn silage and clover hay.

You don't have to worry much about over-feeding fattening steers; simply don't feed them so much that you get them off their feed. Keep them so that they have good appetites, and the more you can coax them to eat up the better and faster they will grow and the more money you can make from feeding them.

COLON C. LILLIE.

BALANCING THE RATION FOR THE HOGS.

In making up a ration for any domestic animal, some consideration should be given to the diet of the animal in its wild state. For instance, the hog in its wild state, when it selected its own ration, fed upon animal as well as vegetable food. Nuts, roots, etc., with grubs, worms and occasionally carrion, made up the balanced ration, for which the hog had a natural craving. Under domestic conditions, the hog is generally forced to subsist upon a straight vegetable ration. This is an unnatural condition, and the desire for meat food is shown in frequent attacks upon poultry and also eating of the young by the sow.

The hog's ration should contain some animal matter, and for this purpose, there is nothing equal to digester tankage. This feed is made from scraps and bones from city markets and butcher shops. This material is cooked under high pressure, and afterwards the grease is pressed out and the residue is ground, screened and placed in bags, ready for feeding.

A number of state experiment stations have conducted experiments, which show that the cost of producing pork can be greatly reduced by feeding digester tankage in connection with grain feeds. The Ohio Experiment Station publishes a report of their work along this line in their bulletin No. 209, which will be sent free upon request. In these experiments, various feedstuffs were used and the results carefully compared. It was found that rapid and economical growth could be obtained by the use of digester tankage with corn alone, and also with corn and middlings.

At this station, a series of experiments were carried on to test the value of feeding digester tankage to hogs following steers. Eight different lots of hogs were selected and fed separately. Four lots were fed digester tankage, and four were not. It was found that the hogs that were fed digester tankage gained 30

to 40 pounds more than those that were not fed digester tankage.

Digester tankage can be fed in any of several ways. At the Ohio Experiment Station, very satisfactory results were obtained by feeding tankage in the form of a thin slop. Some feeders make a slop composed of tankage, corn meal and middlings, while others feed it dry in feed troughs.

The effect of feeding digester tankage to hogs can be readily seen in their general appearance. They have a sleek, glossy coat during the winter months, just as they would have if running on a clover field. Then, too, digester tankage contains considerable bone phosphate of lime, which goes to the building up of the frame-work of the hog. Digester tankage keeps the hogs in good healthy condition, develops the frame-work, and makes a big saving in the cost of producing pork, supplying needed protein as well as adding to variety in the ration.

Wayne Co.

C. T. H. B.

TREAT THE HORSE WITH KINDNESS.

We read in the good book that "The righteous man is merciful to his beast." There is no domestic animal that is more susceptible to kind treatment than the horse. If, from the days of colthood to maturity, he has always been treated with kindness by his master, he will welcome his presence with a friendly neigh, or in other ways plainly show his appreciation of his master's kind treatment. He will come at his call, and perhaps rest his head on his master's shoulder, with the expectation of receiving a caress or some dainty from his hand. When he arrives at sufficient age to be driven and put to work in harness, if he is always gently spoken to, and with patience is taught what is required of him, he will prove to be a gentle and trusty animal.

If, on the other hand, he has always been treated harshly and, when he did not understand so as to obey his master's commands, he has been given kicks, or the whip has been freely used, then if he does not become balky with such treatment, he is very apt to become nervous and easily frightened, and in consequence entirely untrustworthy until his spirit is broken by age. Although autos are coming to be used more every year by well-to-do farmers, and on many large farms tractors are being used to do much of the farm work, yet the general farmer has still got to depend on the horse to plow for his crops, and market his products. This being the case, why should not such a valuable animal always be treated with kindness?

During the winter, when there is little work for the farm horse, it is better to turn him loose in the yard every day, for a few hours, so he can roll and exercise. No matter if his coat does not look quite so sleek, he will be all the healthier and better fitted for work in the spring for such treatment. To drive or work a horse with so tight an overcheck that he is obliged to carry his nose pointing straight forward, the writer believes to be treating this noble animal with unkindness, as every horse so driven plainly shows by his actions.

Ottawa Co.

JOHN JACKSON.

WHOLE OATS BEST FOR HORSES.

Some diversity of opinion prevails as to whether or not it is desirable to crush oats in feeding horses. It is frequently held that the crushed oats are better and more digestible for horses than when fed whole.

The molar teeth of a horse possess great grinding power and horses are able to masticate oats with perfect ease and without any trouble, so there is certainly no call to crush oats with the view to facilitating their ordinary conditions.

It is only when the teeth of a horse are defective, owing to old age or some other cause, that he may experience some difficulty in dealing properly with whole oats, and in that case it is advisable, if not absolutely necessary, to crush the oats. In the case of horses under four or five years old, teething troubles sometimes temporarily interfere slightly with their powers of mastication and when this is so it is desirable to feed the oats in a crushed state.

Illinois.

W. H. UNDERWOOD.

FEEDERS' PROBLEMS.

Wheat as a Grain Ration for Colts.

I have recently purchased a pair of colts five months old and am graining them with wheat, soaked in warm water until it swells. Kindly let me know if this is as good as anything I could use for grain, how often I should feed them and how much at a feed. Also let me know what kind of grain would be best for me to get for milch cows and young cattle, which I have been feeding corn fodder, hay and bean fodder but no grain. Newaygo Co. F. R. B.

In experiments which have been conducted to determine the value of wheat as an exclusive grain ration for horses, it has been found to produce considerable digestive disturbance where long continued. For growing colts wheat is hardly a suitable feed, although it might form a small factor in the ration if properly compounded with other feeds. However, it would be found more satisfactory to feed a grain ration of oats and bran and a little oil meal. Only a small quantity of bran and oats, say a quart or two per day, will be required at first and same can be gradually increased as the judgment of the feeder suggests. Good bright clover hay should be used as a roughage if obtainable. Some feed rich in nitrogen should be used with corn for feeding to cows and young cattle, such as corn oil meal or cottonseed meal, gluten feed, etc. A similar question has been answered through the dairy department of a recent issue.

Cull Beans for Horses.

Will you please give me information as to the value of cull beans for horses? Arenac Co. L. R.

To utilize cull beans for feeding horses they must be cooked, that is, if made any considerable factor in the ration, and for horses that work this would make too large an element of soft feed in the ration to use regularly. We know of no official data bearing upon this subject. We would recommend the use of cull beans for feeding other stock, preferably hogs rather than attempting to use them for horse feed in any considerable quantity.

LIVE STOCK NEWS.

Stockmen owning well-bred feeding cattle are cautioned that where the cattle are doing well and gaining steadily in flesh it is unwise to become panic-stricken and let the stock go simply because the market may be depressed at any particular time. On the other hand, there are stockmen who are disposed to let the opportunity afforded by extremely high prices go by and hold ripe beeves in the hope of doing still better later on, as owners that could have got from \$10 to \$11 per 100 lbs. a few weeks ago did in not a few instances, to their present deep regret. It is always well to accept a good profit when it is offered, even if prices happen to soar higher subsequently, and it is also well to avoid becoming unduly alarmed and sacrificing cattle prematurely simply because for the moment the market happens to be shaky and threatening. Following the liberal receipts of fat cattle at the time of the big stock show in Chicago there was a surfeit of choice beef, and packers' coolers became heavily stocked, and a little later the demand fell off, as it always does around the Christmas and New Year holidays. It is obvious that at such times the aim of stockmen should be to keep down supplies of cattle until such a time as the coolers become somewhat depleted of beef and the demand improves.

On the opening day of the International Live Stock Exposition in Chicago, Masters Clifford and Harold Batchelder, of Warrensburg, Ill., aged 11 and 13 years respectively, had two yearling steers of 1080 pounds average on the Chicago market which brought \$11.25 per 100 pounds, up to that day the highest price ever obtained on the open market for yearling cattle. The youngsters were awfully tickled because the firm handling the steers at the same time as their father's steers, "skint papa." The two steers were dropped from Texas heifers that were on feed, and it was at first Mr. Batchelder's intention to veal them. However, the two boys were allowed to have them and they had entire charge of them from the start, feeding and handling them and paying for the feed, besides buying them from their father. Mr. Batchelder said the boys would use the money received for the steers to buy more calves to fatten.

A. L. Davis, of Dawson county, Montana, was in the Chicago market on a recent day with a shipment of sheep. After 27 years passed in the sheep industry in Montana, he has retired from the range. At one time his sheep holdings aggregated 15,000 head. He said that many Montana sheepmen are closing out their interests and are entering the cattle business, as ranging sheep in his part of the state is becoming too expensive to admit of sure good profits. The table lands on which there was good range adapted for sheep raising are rapidly being taken by settlers, and practically all the fairly good range left is on what is called the bad lands, these being really suitable only for cattle. Farmers on the table lands the past season had excellent crops, wheat going 30 bushels per acre, flax eight to 20 bushels and oats 60 to 80 bushels.

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horse does not need entire rest while using Kendall's Spavin Cure. Light work and careful handling are better than standing in the barn. If the horse was in the pasture not many people would take proper care of him. I use the Spavin Cure a week at least, sometimes three, according to the severity of the trouble. There is enough in one bottle to cure three large Spavins if used according to directions. It is excellent for bruises, both for man and beast. Your Spavin Cure will cure Thoropin in a hurry. With over twenty years' experience with this remedy I know what I say to be true. If one doubts my word he may bring me a horse with a Blood Spavin on one leg, Bone Spavin on the other and Thoropin on both and I can make him a sound horse in six months. What I have done I can do again and what I have done others can do."

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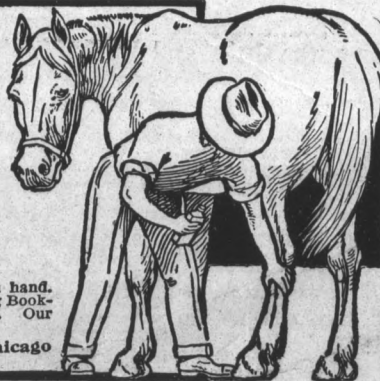
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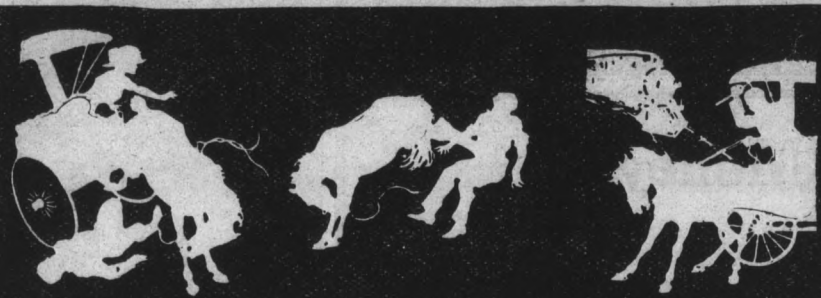
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Veterinary.

Lousy Mare.—I have a mare well along in years that has lice on her hind legs and I might add she has millions of them. R. M. L., Albion, Mich.—Drop 4 ozs. of stavesacre seed in a gallon of boiling water and let it boil gently for two hours, then strain and fill with water to original gallon, then apply to lousy parts of mare two or three times and it will soon kill the lice.

Feeding Question.—I am feeding a six-year-old mare 5 ozs. of oil meal, 2 qts. of oats, four ears of corn and some wheat bran once a day to a mare that was bred in September, and I am told if I continue feeding the oil meal it will injure her as a brood mare. F. M. P., Dexter, Mich.—If you fed her twice the quantity of oil meal and two or three times as often it would do her no harm.

Sharp, Uneven Teeth.—Catarrh—Mamitis.—My nine-year-old mare slavers, eats fairly well, but is losing flesh. She also has a discharge from nose. I also have a cow that has just freshened whose udder is inflamed and caked. W. S. U., Uby, Mich.—Float sharp edges off outside of upper grinders and inside of lower. Give her a teaspoonful of powdered sulphate iron, two tablespoonfuls of ground ginger and two tablespoonfuls of ground gentian at a dose in feed three times a day. Give your cow ½ oz. doses powdered nitrate of potash three times a day and apply hot linseed oil to udder twice a day. She should be kept in a warm, well bedded stable.

Caked Udder.—One-quarter of udder of two-year-old heifer is caked; she is due to come fresh in about a week and her udder has been in this condition for about four weeks. I have applied lard and turpentine which failed to help her. T. F. W., Clinton, Mich.—Apply iodine ointment to udder once a day.

Inflamed Udder.—One-half of my Hereford cow's udder is inflamed and she will not be fresh before the latter part of this month. R. F. R., Clarksville, Mich.—Dissolve 4 ozs. of acetate of lead in a gallon of water and apply to inflamed udder three times a day. Perhaps you are feeding her too much grain and not allowing her to have enough exercise.

Cow Does Not Come in Heat.—I have an extra good cow that freshened early last fall that has not yet come in heat and I would like to know what can be done for her. C. K., Lansing, Mich.—If you will have your Vet. manipulate ovaries, it will perhaps bring on heat. This is best done by introducing one hand into rectum, the other into vagina. Giving drugs to cows of this kind do not produce satisfactory results; however, you might try giving a dessertspoonful of powdered capsicum, a teaspoonful powdered nux vomica and 15 grs. powdered cantharides at a dose in feed twice a day. She should be fed stimulating food in addition to roots, silage and grain.

W. T. M., Bryan, Mich.—See treatment for barrenness in cows in this paper.

Indigestion.—Eczema.—The skin of my sheep seems dry and cracks and I would like to know what can be done to prevent wool shedding. J. L., Otia, Mich.—Give each sheep 5 drops Donovan's solution and 15 grs. bicarbonate soda at a dose twice a day and apply one part oxide of zinc and eight parts vasoline to sore parts of body once a day. Your sheep may have been exposed too much to cold damp weather, causing skin to inflame and chap.

Chronic Cracked Heels.—Stocking.—I have a four-year-old colt that has been troubled with scratches for some time; stocks in both hind legs and his urine is thick. S. R., Bradley, Mich.—His grinder teeth may need a little attention. A temporary tooth, when shed, may interfere with mastication, which, when removed, gives relief. Give ½ oz. Donovan's solution and a teaspoonful powdered nitrate of potash at a dose in feed two or three times a day. Apply the following lotion to sore heels twice a day: Dissolve 1 oz. acetate of lead, 3 drs. sulphate of zinc and 1 oz. carbolic acid in a quart of water. He should have daily exercise and the legs kept dry and warm.

Injured Thigh Bone.—We have a mare that was kicked by another horse that was sharp-shod, injuring bone midway between hock and stifle on inside of thigh. The shoe must have injured bone. H. S., Pigeon, Mich.—Apply one part tincture of iodine and five parts camphorated oil twice a day. If the wound is discharging much, apply one part iodine and ten parts boracic acid twice a day.

Wart on Lip.—I have a colt that has a seed wart on lip and I would like to know what to do for her. A Subscriber, Morrice, Mich.—Apply acetic acid until the wart is almost gone, then apply castor oil daily.

Acute Indigestion.—Colic.—I have a good mare that is subject to colic and it is impossible to give her a drench for she will not swallow it. Whatever you prescribe for her fix it so that it can be given in capsules. W. T. S., Amadore, Mich.—By careful feeding and giving her a tablespoonful of ground ginger and a tablespoonful of cooking soda at a dose in each feed, she may not have another attack. Put 1 dr. powdered opium, 1 dr. ground nux vomica and 1 dr. carbonate ammonia in a gelatine capsule; give it to her at a dose when she has colic. Repeat this every hour or two until she recovers.

Effect of Choking.—Last October we had a mare choke on oats and in order to relieve her we had to pass a rubber hose down gullet. The next day she was sick and remained so for several weeks. She lost flesh and became so weak that

she could scarcely walk, but in time she gained strength slowly. She eats good now, but does not gain in flesh as rapidly as we would like to have her. For a long time she had a bad cough and rattled when breathing. I thought she might need a tonic to assist in building her up. D. O., Elmira, Mich.—When you passed rubber hose down gullet, you injured her. Mix together equal parts of ground gentian, ground red cinchona, cooking soda and fenugreek and give her two tablespoonfuls at a dose in feed three times a day. Her feed should be moistened.

Articular Rheumatism.—About 6 weeks ago my three-year-old heifer's hock joints became very much swollen, causing considerable stiffness and soreness. The swelling has pretty much left one leg, but the other is quite enlarged. She is not much lame and I do not believe she suffers much pain. W. H., Rushton, Mich.—Apply one part iodine and eight parts fresh lard to bunch on hock once a day.

Acidity of Stomach.—I bed my cows with leaves which she insists on eating. Does this indicate that she is out of condition? She never did this before, is fed clover hay and is seemingly in good condition. J. H., Detroit, Mich.—You had better bed your cow with shavings or sawdust; leaves are usually infected and more apt to sicken your cow than other roughage. Give her 1 oz. ground gentian, 1 oz. cooking soda, 1 oz. powdered charcoal and 1 oz. salt at a dose in feed two or three times a day.

Chicken Cholera.—I should like to know if there is any sure cure for chicken cholera. We have lost one hen and one turkey. Mrs. H. N. A., Lapeer, Mich.—No, there is no cure for cholera. Give each turkey one grain salol at a dose twice a day. Clean their roost and change their feed.

Warts on Teats.—I have a cow that is troubled with warts on teats. These warts grow to be about one-half inch long, then dry up, a portion falls off and new ones grow on. S. M., Grand Haven, Mich. Apply acetic acid once a day.

Mange.—Ringworm.—A few of my cows have bare patches on rump and each side of tail and I would like to know if it is a serious ailment. D. J. A., Rumley, Mich.—You should feed your cattle a good quality of food and furnish them clean water to drink; also apply one part sulphur, ½ of a part of carbonate potash and four parts fresh lard to sore parts three times a week. Give each of them a dessertspoonful of Donovan's solution at a dose in feed night and morning.

Bunch on Stifle.—I have a seven-year-old cow which I bought some two months ago that has a hard bunch on stifle joint. I never noticed this swelling when I bought her, but am sure it was there. The pain seems to interfere with her milk flow as she has decreased in yield. E. D., Nottawa, Mich.—Apply one part red iodine mercury and six parts fresh lard to bunch every six or seven days. This medicine will check its growth and reduce bunch.

Tuberculosis.—I have a two-year-old heifer due to come fresh next March which has been troubled with a cough ever since she was four months old. It bothers her less during summer months, than when stabled and eating dry feed. One of my other cows has a cough and appears to be weak. I feed them shredded fodder in morning, four quarts of bran at noon with bean straw and in the evening they are fed shredded fodder or clover hay. B. G. M., Eastport, Mich.—You should have your cattle tested with tuberculin for they may have tuberculosis. If you have no Vet. near you, you had better communicate with veterinary department of Parke, Davis & Co., Detroit, Mich., and they can supply you with tuberculin and tell you how to use it. Or communicate with Dr. Giltner, State Veterinarian of Michigan, East Lansing, Mich.

Feeding Dairy Cows.—Bowel Parasites.—I am feeding my cows 50 pounds of corn ensilage, six quarts of ground oats and two pounds of cottonseed meal at a feed twice a day and I would like to know what you think of this as a dairy ration for milk cows. I also have some lambs that are not thriving and two of my flock died after a very brief sickness. They suddenly stopped eating, eyes grew glassy, the head is turned to one side and they walk in a circle until they tumble down. One of them was only sick a day, the other was sick a week. J. C. D., Jonesville, Mich.—The ration you are feeding cows is a very good one and they should do fairly well on it. If you have some roots, give them a few daily. Mix together equal parts ground gentian, ginger, cooking soda and charcoal and give each sheep half a teaspoonful at a dose in feed twice a day. Also salt them well. They should be well fed and protected from cold, rain or snow storms.

Chapped Teats.—Will you please advise me how to treat a cow with chapped teats? H. S. M., Hemlock, Mich.—Apply equal parts lemon juice and glycerine or apply equal parts compound tincture benzoin and glycerine to sores once or twice a day.

Brain Hemorrhage.—A few days ago I lost a nice two-year-old heifer that was seemingly in a healthy condition and was sick less than 30 minutes before she died. After death I opened her, but found nothing wrong. She did not bloat before death, but breathed as if in great pain. I am anxious to know what caused her death. O. M. C., Wolverine, Mich.—Your heifer died of brain hemorrhage.

It Pays to Advertise.

A. Franklin Smith, Ann Arbor, Mich., a well-known breeder of White Wyandottes, writes us as follows: "I am pleased to say that the results from my small advertisement in your paper have been very favorable and you may continue it another year."

Practical Science.

THE BALANCE OF ACIDS AND BASES.

BY FLOYD W. ROBISON.

The Importance of this Relationship as Shown by the Urine.

One of the very best indicators of the adaptability of a diet to an individual's needs or of the compatibility of a given ration for an animal is the urine. In health the urine has certain definite and regular characteristics and should one learn the characteristics of his own urine during perfect health and adopt those measures which will keep these characteristics prominent and more or less constant he is in a position to exercise a pretty general control of his own health. Students of medicine have studied the urine for some time for evidence of pathological conditions within the body but too infrequently has it been studied for the purpose of preventing the occurrence of pathological conditions. We have not yet reached the stage in civilization where we are willing to employ the physician to keep us well. When we do reach this stage, more attention will be paid in medical schools to the principles of dietetics. Physiological chemistry has meant the chemistry of disease. It will be called later, "Studies in nutrition," and our physicians will begin to pride themselves on their skillfulness in dietetics. Their mission will be to keep people well. Already do we call the physiological chemistry relating to domestic animals, the principles of animal nutrition and how description and significant the term is. Knowing that medical colleges have paid little attention to studies in nutrition, it is perhaps not strange that veterinary colleges have given practically no attention to the study of rations for animals. Little, if any, attention has been given in veterinary colleges to the study of the urine, which as we have stated heretofore, furnishes the very best clues to the animal's general condition of health. By a comprehensive analysis of the urine, not only may we be certain of the existence of a pathological condition within the body but if we study it intelligently we will get the warning signals which, if acted upon in time, will prevent the occurrence of pathological conditions. Especially is this true of diseases due to faulty nutrition, and we have already stated that diseases of nutrition predominate strongly in both man and animals over all other diseases. In the case of man and other mammals nature's best hint of the character of the food she prefers they should live upon is shown in the food product she supplies covering the early period of life.

The Lesson Shown by Milk.

The milk has a predominance of alkalies or bases over acids, and milk is nature's diet during the early life history of both man and mammals. We feel willing to concede then at the start that in the normal food of man and animals, bases or alkalies should predominate. We have shown in previous tables how foods may be selected with this point in mind, manifestly in the human dietary it would be impossible to preserve an excess of alkalies or bases if the diet consists in its major portion of eggs and meats. Neither would we improve conditions in this respect materially by the use of most cereals and especially corn. We have had an opportunity during the last few years to study at some length quite a number of cases of illness among horses, cattle and swine. In a great many of these cases, animals in apparent good health receiving an apparently wholesome diet, have gotten off feed and because no marked symptoms of current well known diseases have exhibited themselves no remedies for the conditions could be suggested. Several cases have been brought quite recently to our notice, cases which exhibited no symptoms which came within the category of the veterinarian because they were nutrition problems and nutrition problems as we say, have been given very little consideration in most of our veterinarian schools.

Corn Promotes Acidosis.

It is a well recognized fact among stockmen that swine, for example, can not be fed too exclusively on corn. We say that corn alone does not produce sufficient bone for hogs. We feel sure that the reason corn can not be used too extensively is because the acids overbal-

ance the bases or alkalies. Consequently nature weakens her basic structure in order to neutralize this acid before harm is done to the organs of elimination and assimilation. Too much corn will cause this same difficulty in a horse although the symptoms may be somewhat different. A hog is a very sick hog before he stops eating. A horse refuses his food at the slightest disturbance of his digestive function. The toxic effect of an overdose of acid through injudicious feeding is not apparent at the beginning of the unbalanced diet. The animal body has various balance wheels whose use is for the purpose of holding the body in equilibrium during cases of temporary mis-adjustment of diet. We have mentioned what some of these ways are. Through a withdrawal of lime from the system for the purpose of neutralization of the acid as is so apparent in the feeding of an excess of corn to hogs. In certain omnivorous and carnivorous animals this becomes more noticeable through the use of ammonia as a base to neutralize the acids produced from an excessive protein diet. If we were to observe the characteristics of the urine from time to time in studying the wholesomeness and adaptability of a definite diet we would be able to observe the advance warning signals which nature shows, by noting the decrease in the nitrogen excreted in the form of urea and its appearance as an ammonia salt. Nature can stand this treatment for a considerable period of time but when the condition is prolonged acidosis sets in and the animal dies. A puzzle to the veterinarian and likewise to the feeder who did not realize that his apparently wholesome diet was strangely out of balance from its standpoint of bases and acids which the feeds contributed.

The Further Significance of the Balanced Ration.

We have been accustomed to consider the balanced ration merely from the standpoint of the proximate principles, that is, protein, carbohydrates and fats. We know the desirability of having a certain more or less rigid balance among these three principles. We know in animal nutrition that there is a limit to the capacity of an animal to perform work on a diet or ration which is grossly out of balance in so far as these three proximate principles are concerned. In the adjustment of the balanced ration we have learned also the desirability of inquiring into the nature of the carbohydrates also, and we have found that it makes a great difference whether those carbohydrates are exceedingly fibrous or not.

The relationship between the acids and bases in foods modifies still further the consideration of a balanced ration. The question of complete digestibility we find is not the sole question but as we have mentioned from time to time, the wholesomeness of a feed, as influenced by factors completely outside the scope of a feed's digestibility, are factors which must of necessity be carefully accounted for.

Influence of Succulent Foods.

From a study of the relationship between the bases and acids and the conclusion we have drawn that the bases in animal nutrition as well as in human nutrition should exceed the acid we have an explanation for the well known wholesome influence of succulent feeds in the ration and for the exceeding great adaptability of clover and alfalfa in the ration of a dairy cow. The excess of bases over acids is very strongly marked in both red clover and alfalfa. Likewise in rutabagas and beet pulp.

In human beings we have attempted to show that the consumption of large quantities of meats and other nitrogenous foods promotes acidosis, in other words, it lays heavy toll upon the capacity of the human system to neutralize and thus eliminate the excessive amount of acid formed. That there is a limit to the capacity of the system to neutralize these acids is shown by the frequency of the appearance of this disease among human beings.

Health and Economy are Accompanying Considerations.

Thus considerations of health join considerations of economy in directing the rigid restriction of the meat diet. In the dairy cow and other domestic animals we

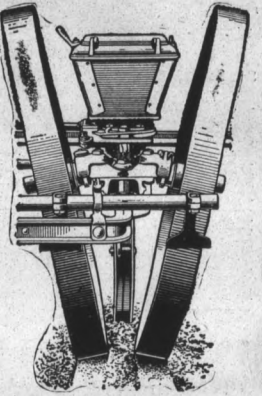
(Continued on page 77).

Get Your Corn In ON TIME

Thousands upon thousands of corn growers lose heavily every year from *delayed* planting. Just as soon as your fields are in proper planting condition you can *rush* work with the **Hayes**. Permits earlier and faster planting, forces quicker and surer growth—important factors in the success of the corn crop.

Hayes Four-Wheels cover where all ordinary open wheels fail. They open at the top and clean themselves. Guaranteed not to clog or carry the corn over, even in wet and sticky soil. Insures a stand even in low wet spots of field and *allows earlier planting.*

Hayes Four-Wheels guarantee surer germination and quicker growth. Wheels pack the dirt from the sides to hold the moisture and leave a ridge on top so that corn sprouts quickly and comes up several days sooner. The ridge gives greater surface for sun's heat and prevents washouts in hilly fields. This method *assists the budding sprout*, protects its vitality and makes stronger and healthier stalks.



GUARD Against Loss From Uneven Planting

Uneven depth of planting means a bigger loss than many realize. It's *especially bad* in cold, backward seasons. Often amounts to several times the cost of a planter in a single year. Avoid a planter that covers part of the corn so deep that no matter how good the seed or how rich the soil many of the hills *never come up*—or leaves other hills uncovered so that the sun and wind *destroy or stunt* their growth.

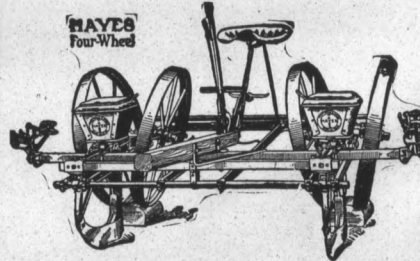
Hayes Four-Wheels regulate depth of planting to the fraction of an inch—this planter plants every kernel *exactly the same depth*. Here's why: Runners set back between the wheels, within 10 inches of the covering point. In going over ridges, dead furrows or uneven ground the shoe *rides and falls* with the wheels. **Hayes** planted corn all comes up at the same time, (proof of even depth of planting) and *allows earlier cultivation.*

THIS Planter Never Misses A Hill

The **Hayes Drop** never fails. It is the simplest, most durable and most efficient ever made. Fewer parts, less breakage and delays. Has no clutch to miss and give trouble. *Never cracks or grinds the seed.* Will drop accurately any size or shape kernel. *No bare spots in Hayes* planted fields. Increased yields soon pay for it.

No matter how fast you drive, the **Hayes** always plants in perfect check. Cross rows straighter than the way you drive. Easiest handled planter. Also shortest coupled, making it the *lightest draft*, and turns in *shortest space*. For these reasons you can plant from *three to five more acres a day* with the **Hayes** and get your corn in *earlier*.

OVER 160,000 Satisfied Users Know



In our Free Booklet of Planter Facts, we make it clear to you why the profits of one season—the time and trouble saved—the increased yield—will more than pay for a new **Hayes**. Think these things over and start investigating *NOW*. Learn the overwhelming advantages in **Hayes Four-Wheel** construction. Take time to find out all the facts before you make your choice. *Ask any Hayes user.*

Can be furnished with perfect working Fertilizer and Cow Pea Attachments, also Stub Runners or Discs if preferred.

WRITE! Begin investigating today by sending for Free Booklet "AC" full of valuable planter facts. A postal brings it.

HAYES PUMP & PLANTER COMPANY, GALVA, ILL.

Hayes Four Wheel Corn Planter



What Size Engine Do You Want?

14 to 15 h. p.—it's all the same to me. I've got a New 1913 Model in all sizes that fairly eats up work on the farm. Runs the biggest job at a cost of a penny or two for gasoline—has no complicated parts—can be operated by a boy—more substantially built, reliable, durable—and with all its superiorities sells at a price of \$50 to \$300 lower than old-style engines.

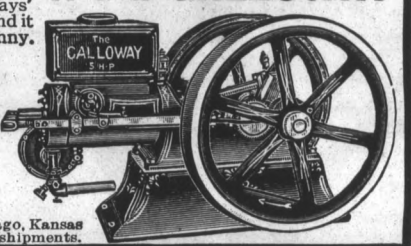
Write your name on a postal and I'll mail you my new engine book and revised price list. Just pick out the engine you want. I'll ship it to you on 30, 60 or 90 days' FREE trial. Then, if you don't want engine, send it back to me. The trial will not have cost you a penny.

\$50 To \$300 Easily Saved

is worth looking into, especially when it's on best quality, New 1913 Model farm engine—permanently guaranteed. Ask for book which tells all. Also Special 1913 Proposition and Prices.

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THE WILLIAM GALLOWAY COMPANY,
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REMEMBER—We carry stocks of all our machines at Chicago, Kansas City, Council Bluffs and Minneapolis—insuring prompt shipments.

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Operate as steadily and constantly as a clock. 6, 9, 12, 18 and 30 H. P. sizes. Buy the LEADER gasoline or kerosene engine for your farm work. On account of its two cylinder opposed construction, it will give full power on a portable truck, without vibration. Mechanically operated valves and Kingston carburetor make for low fuel consumption. Crank shaft guaranteed for life. Largest bearings of any make. Detroit lubricator. Magneto ignition and other good features make an engine without an equal. Portable and stationary types. Especially adapted for silo filling, threshing, electric light plants and work requiring a steady flow of power. Write today for The Book of Farm Power. Right now. It tells all about LEADER engines.



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WE GUARANTEE to stop THE MICHIGAN FARMER immediately upon expiration of time subscribed for, and we will pay all expenses for defending any suit, brought against any subscriber to The Michigan Farmer by the publisher of any farm paper, which has been sent after the time ordered has expired, providing due notice is sent to us, before suit is started.

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DETROIT, JAN. 18, 1913.

CURRENT COMMENT.

In the last issue Agricultural Credit, mention was made of the investigations which were last year conducted by the United States Department of Agriculture to ascertain the sources and extent of different forms of agricultural credit, as indicated in the report of the Secretary of Agriculture for 1912. Other interesting lessons are available from the data given in this report, perhaps the most significant of which is the relation of the farmer to the local general merchant in the matter of credit transactions.

The statistics presented in this regard show that in 47 per cent of the agricultural communities of the country, there is no supply of credit by local general stores. This investigation further revealed that in the remaining 53 per cent of the farm communities running accounts at local stores are had by 59 per cent of the farmers owning their land and 53 per cent of farm tenants. The conclusion was reached from the investigations that country merchants sell goods on credit to more than one-half of farm owners and farm tenants in their community, and this without security. It might be added that in the far larger percentage of cases this credit is given without interest.

This is a burden which the country merchant ought not to be asked to carry, but which, where it is carried, cannot help but bring about a discrimination in prices as between cash and credit customers. There is no doubt that the man who pays cash for his goods is able to buy to better advantage, to say nothing of the feeling of greater independence which this method of doing business inspires in him. There is also the advantage that when cash is paid for goods the total of purchases will ordinarily be smaller, since there is a well known tendency to buy things that we do not actually need when they can be purchased upon credit.

It is a far better policy for the farm owner or farm tenant to arrange for credit at the local bank or through some other source of agricultural credit than to run an account at the local store without any regular date for settlement. But, as noted in our comment in the last issue, it is at present apparently impossible for the local banks to supply all with the credit needed in their community. They can, however, supply an increasing proportion of it from year to year, and every farm owner or farm tenant who has not heretofore done so should become a patron of his local bank after having satisfied himself of the soundness of its financial condition, especially if it is a private institution and not under state or national supervision. As to the general need of larger credit facilities, an inquiry was directed to the

9,000 persons included in this investigation as to whether farmers would be willing to join in forming a credit association along the lines which have been successful in European countries. Thirty-two per cent of the correspondents reported that there were no farmers known by them or to them who would be willing to form such an association, but the remainder of the correspondents reported that about 40 per cent of the farmers were ready to organize such cooperative associations. It is a patent fact, however, that to obtain credit in such an organization as well as from any other source, strict business principles must be followed in order to have the organization successful. Hence, only those farmers, owners, or farm tenants who have become accustomed to promptly meeting their obligations, whether at the local bank or at the local store, as the case may be, would be accepted as desirable members of such organizations where joint liability is incurred by all the membership, which is the principle upon which such credit associations must be founded in order to make their bonds a liquid asset and a safe investment for banks or individuals in all sections of the state or country.

A letter recently received from a subscriber who works on a farm by the year, is typical of a number of similar communications received during past weeks. This man receives a yearly wage of approximately \$300, with such supplementary remuneration as the keep of a cow, a garden spot and fruit and potatoes for the table, doubtless also a tenant house, although this letter does not so state. The problem confronting this inquirer is how much a man ought to save by being economical with only two in the family on this wage. The writer had thought that he could save nearly half the wage, but stated that he would not be able to do so and adds that he has known of men saving quite a little during the year who worked in the city for \$1.50 per day and paid rent.

It is quite probable that some recent investigations of the Department of Agriculture regarding the wages of farm laborers, together with comparisons showing the relative purchasing power between such wages in the country as compared with the city, would prove of interest to many who are similarly situated to the writer of the above mentioned letter. A bulletin has recently been issued by the Department of Agriculture giving the details of the latest of a series of 19 investigations covering a period of 44 years, together with a summary of the preceding investigations.

A comparison of these figures shows that in contracts of hiring by the year there has been an increase in average wage of 78.9 per cent during the 44 years, while from 1890 to 1909 there was a gain of 35.8 per cent. In contracts of hiring by the year with board the corresponding percentage of increase in wage for the first period named was 63.9 per cent. The wage rates of men per day, with board, increased 37.5 per cent in the longer period of time and from 1890 to 1909 increased 32.4 per cent.

In the geographic division of states in which Michigan is located the average rate of wage per month in hiring by the year with board was, in 1909, \$22.22. The fact is brought out in this bulletin, however, that the rates of wage do not express the real wage received by the farm laborer and an attempt was made to get information with regard to the value of supplementary allowances.

In this connection it was found that in 1909 the average monthly value of dwelling, garden and other appurtenances, the use of which was a part of the real wage paid, without board, ranged from \$1.75 to \$5.00 and the amount when wages were paid with board ranged from \$1 to \$4.50 per month. The average value of feed for cow, horse, swine or poultry per month ranged from \$1.11 to \$3.11, the value of pasturage for cow, horse and swine ranged from 65 cents to \$1.61 per month. The value of firewood for family, with use of team for hauling it, ranged from \$1.06 to \$2.39. The occasional use of a team for hauling was valued at from 48 cents to \$1.70, and the occasional use of horse and buggy ranged from 87 cents to \$2.37 per month. The estimated average value of fruit given to the family of the laborers was from 30 cents to \$1.64 per month. The value of stabling or keeping a laborer's horse, where he had one, was estimated at from 45 cents to \$2 per month, and the laundry service where same was part of the

wage, was estimated to range at 75 cents to \$2.00 per month.

The value of these supplementary factors in the wage, however, is more easily computed by both the farmer and the laboring man in the individual case than is the increased purchasing power in the wage rates of the farm laborer as compared with that of the working man in the city. Some investigations of this proposition were made by the Bureau of Labor. While these investigations do not cover conditions up to date, they furnish a basis for estimates which are at least interesting.

For the purposes of investigation the purchasing power of wages, in terms of retail prices for food from 1890 to 1898, was regarded as being 100. For the period of 1899 to 1907 the purchasing power in the case of city workmen increased to only 101.4, but in the case of farm laborers the purchasing power of the wages per month in hiring by the year and season increased to 110.1, while the purchasing power of day rates of wages for harvesting work increased to 111.5, and of day rates for other than harvest work to 115.2. It is estimated that notwithstanding the increase in retail prices of food since 1907, the rate of wages of farm laborers has increased to a degree sufficient to make as a new result a substantial rate of increase.

It is thus fair to presume that the purchasing power of the farm laborers' wage is at least 10 per cent higher, and probably more, than that of the city worker. When the factor of rent and the other supplementary wages received by the inquirer whose problem is above mentioned are taken into consideration there is no question but that he is receiving a much higher rate of wages, so far as purchasing power is concerned, than the man who is receiving \$1.50 per day in the city, and he will probably be able to save quite as much as would the working man who is receiving more than twice as much in money wages in some city industry.

NINTH ANNUAL STATE CORN SHOW.

The Michigan Corn Improvement Association held its ninth annual meeting and contest at the Western State Normal, Kalamazoo, last week, opening on Tuesday morning and closing Friday evening. Satisfactory accommodations were again furnished by the Normal School, while the teaching force and student body lent valuable assistance in carrying out the various programs. An hour or more of each forenoon and afternoon was given up to the presentation and discussion of topics, some of special interest and value to corn growers, others of a more general character. A number of the speakers were prominent local farmers, many of the discussions dealt with conditions peculiar to that section of the state alone, and the whole affair assumed more the character of a local meeting than that of a state-wide organization. One of the best talks of a general nature was that on "Grange Co-operation," by State Grange Master Ketcham who was present on the closing day.

In attendance and number of exhibits the meeting was the poorest ever held by the organization, various causes contributing to the unsatisfactory showing. Among these may be mentioned last year's decision to offer no prizes in the senior classes other than ribbons or certificates of honor; the holding of this show so early in the year as to precede the shows of many of the local organizations, and an apparent lack of appreciation, on the part of the 100 or more local corn-growers' associations of the state, of the advantage and desirability of affiliating with the state association. The exhibits—about 25 in number—were drawn entirely from the southern district and were wholly composed of dent corn. In quality it was probably the best show of corn yet seen at a state show. The judging was done early in the week by Hon. H. E. Krueger, of Wisconsin, the work being performed entirely by comparison and without the use of the score card.

The white cap class was this year regarded the best in the show and exhibitors in this class were ranked in the following order: First, Leo Wooden, Jackson Co.; 2d, Glen Turner, Jackson Co.; 3d, D. E. Turner, Jackson Co.; 4th, Wilfred Jewett, Ingham Co.; 5th, Milton Turner, Jackson Co.; 6th, Harlan Turner, Jackson Co.; 7th, R. A. Park; 8th, Ralph Stewart, Cass Co.

The junior exhibitors in all classes showed in three divisions, No. 1 comprising those between the ages of 16 and 20 years, No. 2 those from 12 to 16 years

and No. 3 those from 8 to 12 years of age. The junior winners in the several divisions of the above class were: Division No. 1, Wilfred Jewett; No. 2, Harlan Turner; No. 3, Milton Turner.

Exhibitors in the white dent class were placed as follows: First, Roy Grossman, St. Joseph Co.; 2d, Artie Jewett, Ingham Co.; 3d, R. D. Simmons, Jackson Co.; 4th, Allen B. Simmons, Jackson Co.; 5th, Rollin Simmons, Jackson Co.; 6th, Paul Gleason, Jackson Co.; 7th, A. W. Jewett; 8th, L. F. Holt, Kalamazoo Co. The junior winners were: Division No. 1, Roy Grossman; No. 2, Artie Jewett; No. 3, Paul Gleason.

In the yellow dent class the leading senior exhibitors were: First, J. Robert Duncan, Kalamazoo Co.; 2d, L. L. Lawrence, Cass Co.; 3d, A. W. Jewett, Ingham Co. Junior winners were: Division No. 1, Clifford Ward, Ingham Co.; No. 2, Artie Jewett; No. 3, Ferris Bradley, Kalamazoo Co.

In the class for mixed lots there were two exhibits, shown by Wilfred Jewett and F. H. Thorn, the awards being placed in the order named.

The grand championship award for best 10 ears in the show went to J. Robert Duncan, owner of last year's championship single ear. The grand champion sweepstakes for juniors was awarded to the 10 ears shown by Roy Grossman. The Michigan Farmer trophy cup, offered for grand champion single ear, was awarded to D. E. Turner, of Jackson Co., on a fine ear of white cap dent.

At the business meeting of the association, held on Thursday, it was the consensus of opinion that the next meeting should be held at the Agricultural College if satisfactory accommodations can be secured. The matter was left in the hands of the directors. The following officers were chosen for the ensuing year: Pres., D. E. Turner, Mosherville; vice-pres., L. J. Bradley, Augusta; sec.-treas., A. R. Potts, Agricultural College; directors, G. D. Grossman, Constantine, C. D. Sudborough, Adrian, and W. F. Raven, East Lansing.

HAPPENINGS OF THE WEEK.

National.

The 15-days' quarantine against sheep for feeding or breeding purposes at the Buffalo stock yards has been raised. The quarantine was declared because of the receipt of several car loads of stock from the live stock yards of Detroit where sheep were affected with an infectious disease.

A rear end collision on the Grand Rapids & Holland Interurban lines resulted in 20 persons being injured, two probably fatally, last Friday evening. A failure to recognize warning signals is given as the cause of the accident.

Wm. Rockefeller, brother of John D., wanted by the Pujo money trust investigating congressional committee, landed at Miami, Fla., from Nassau, where he has been examined by government physicians to ascertain his fitness for reporting before the above body.

The melting of snows and heavy rains along the headwaters of the Ohio river has caused one of the largest floods in the history of that stream. On Sunday the river at Cincinnati passed the 60-foot stage and was continuing to rise at the rate of two inches per hour. At the lower parts of the city, as well as at Dayton, Newport and Covington, suburbs on the Kentucky side of the river, were flooded and between two and three thousand persons were believed to be temporarily homeless due to the invading waters. Commission merchants and warehouse owners whose buildings are along the river side have suffered considerable loss. In some buildings facing the wharves, water is up to the second story. Louisville, Ky., is also suffering, probably over 700 families having been driven from homes along the water front. At seven o'clock Sunday night the water was 35.8 feet high and was rising two feet per hour. Many other river towns are reporting damage to property amounting to thousands of dollars.

The presidential electors of the several states met at their respective state capitols on Monday to cast their votes for President of the United States. The electors of Michigan cast their votes for Theodore Roosevelt. This is the second time in the history of the republican party that all electoral votes of this state were cast for a candidate other than for a republican. In 1892 five of Michigan's 14 votes were cast for Cleveland. It was later declared, however, that the law providing for this broken ballot was unconstitutional.

The attendance at the New York auto show is reported to be the largest in the history of the institution.

A great combination meeting of all the suffrage organizations of the country will be held at Carnegie Hall, New York City, on February 17.

An attempt will be made to elect United States Senators in three New England states this week. The states are New Hampshire, Massachusetts and Maine.

The annual report of Buffalo shows that not since 1893 has there been such a large amount of grain handled through that port as during the past season. The shipments aggregate 106,997,118 bushels.

(Continued on page 77.)

Magazine Section

LITERATURE
POETRY
HISTORY and
INFORMATION

MICHIGAN FARMER
AND *LIVE STOCK*
PUBLISHED WEEKLY. *JOURNAL*
ESTABLISHED 1843.

The FARM BOY
and GIRL
SCIENTIFIC and
MECHANICAL

This Magazine Section forms a part of our paper twice a month. Every article is written especially for it, and does not appear elsewhere

Caliph--World-famed Hippopotamus.

By Louse E. Dew.

WHEN Mr. Haggenback shipped the big-horned rhinoceros, "Bombay" to Central Park in 1888, he had no idea of the great favor he was conferring upon America. It did not appear so at the time, for the rhino died a week after his arrival and Mr. Haggenback had to make good the \$6,000 loss. When a young hippo was chosen to take the place of the lamented rhino not even the park commissioners in New York, much less Mr. Haggenback, dreamed that this coincidence was the beginning of the greatest romance in animal history, or that the little lady hippo, afterwards christened "Miss Murphy," had been preparing in Berlin for her life mission as the spouse of Caliph the \$100,000 hippo, and as the mother of the only living family of hippos ever born in captivity.

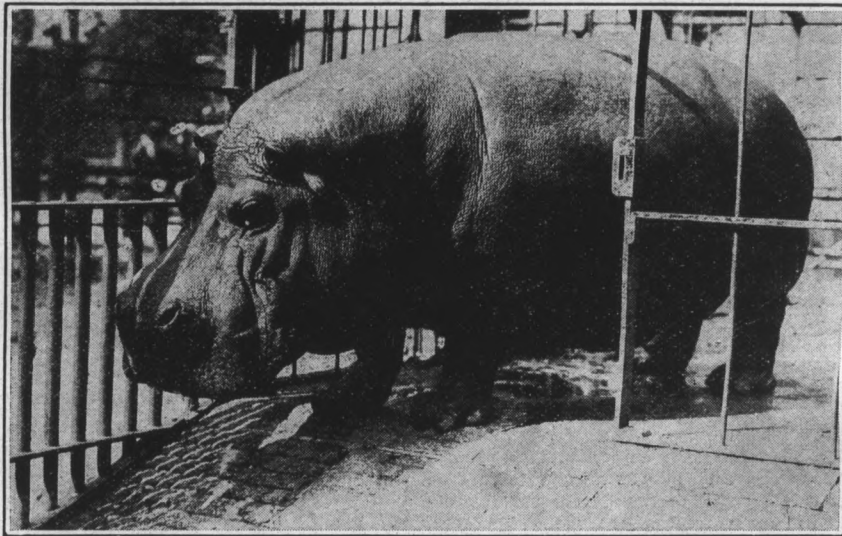
At that time, Caliph was at the Cincinnati (Ohio) Zoo, to which he had been sold by parties connected with the Brooklyn Museum. Born on the River Nile and kidnapped about the same time, the pair of hippos were apparently destined for each other. In due time Miss Murphy's guardians bethought themselves of a consort for the queen who had been the center of attraction in Central Park ever since her arrival on American shores.

And so it came about that King Caliph and Miss Murphy set up housekeeping in the hippo tank in Central Park, April 20, 1888. Eight hippo children were born of this union, five of whom are living today. Two of these, Cyrus and Iris, were bought by Haggenback for his menagerie in Berlin, the pair bringing something like \$35,000, besides an exchange of other animals.

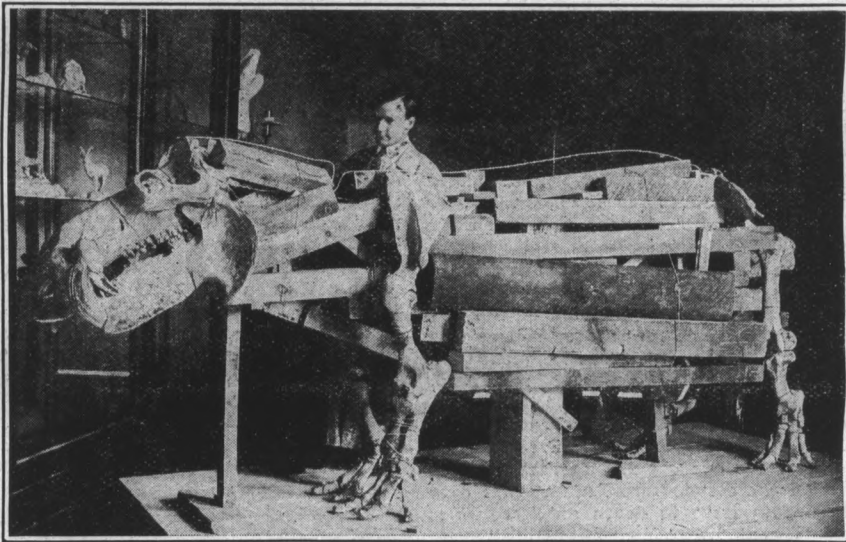
For many years Caliph lorded it over his fellows in Central Park. In fact he had not only proved an unrivalled attraction for the park, but in a measure the menagerie had been stocked and restored by his progeny. The hippo family became the especial charge and pride of keeper Tommie Hoy, between whom and the uncouth monsters there seemed to be a bond of affection and understanding. In fact, Keeper Hoy always declared that every grunt and squeal of the hippos meant something, just like the dots and dashes of the Morse telegraph code. When meal time came around, once in 24 hours, old Caliph always managed to dispose of a bale or so of hay and three or four gallons of apples, potatoes and carrots chopped fine for dessert. At such times there was always a display of the huge jaws which made an opening forty-eight inches from lip to lip. In hippo language Keeper Hoy laughingly interpreted this as "come, oh come and fill me now."

When old Caliph died, in January, 1908, there was as much mourning among the keepers at the park, as if some member of their family had departed. Keeper Snyder appeared at the office of Dr. Bumpus, the director of the museum, and with tears in his eyes announced the death of Caliph. Dr. Bumpus avers that he has rarely seen anything more affecting than the devotion displayed by the keeper who for four days and nights worked over old Caliph in a vain endeavor to save his life. But there was no time to waste in foolish grieving. Old Caliph was an important personage, and it had been decreed, during his illness, that in case of death he must be preserved for the Museum of Natural History. Accordingly a death mask was taken at once while rigor mortis was taking place. This was not a difficult task, as Caliph appeared to be asleep, so natural was his pose.

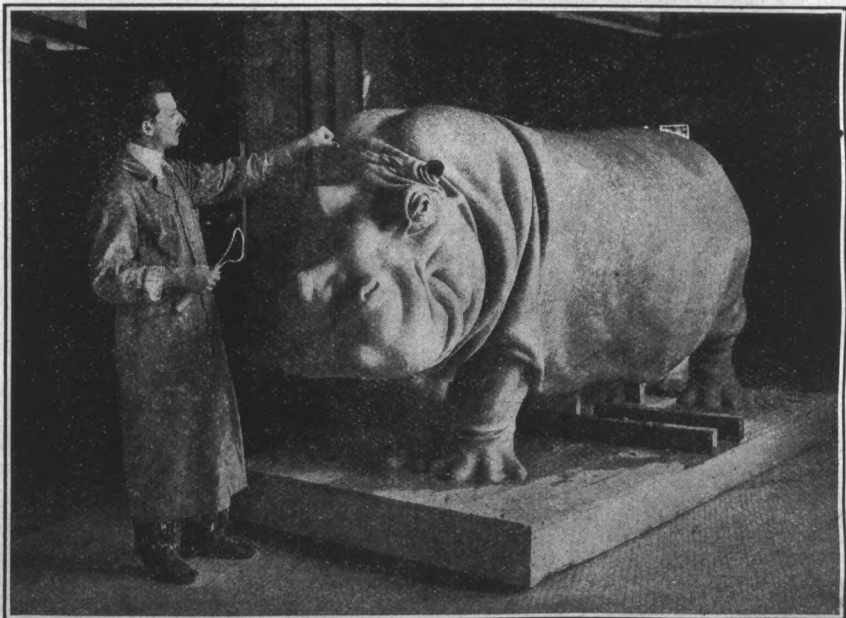
From that hour Caliph disappeared from public view, but after a year of banishment he was brought forth from his temporary tomb in the museum, and now reposes in a mausoleum which potentates might envy—the grand salon of the Old



Caliph—As he Appeared in Life.



Skeleton and Framework—Ready for Modeling.



Putting the Finishing Touches on the Model.

World Hall of Mammals where he guards the entrance with the same haughty mien he wore in life. To accomplish his resurrection, as it were, the greatest piece of work the Museum of Natural History had ever undertaken was performed.

Mr. J. D. Figgins, chief of the department of preparation, gives an interesting account of this process. "After the death mask was made," said he, "the next step was to take measurements. When his hide was removed his skeleton was measured, allowing for removal of skin, which by the way, was from two to eight inches thick and weighed 1,200 pounds. When this skin was trimmed down, it was less than one-eighth of an inch thick and weighed sixty-seven pounds. Imagine shaving down eight inches of skin, weighing 1,200 pounds. It required the services of six men four days.

"The work on old Caliph was the most difficult undertaking of the kind ever accomplished. In fact, it is far more difficult to mount a hippo than an elephant, because of the general shape of the skin of the former—the deep round folds, etc.

"The third process was to clean the skeleton thoroughly, after which a platform of 600 pounds was erected, with a heavy perpendicular beam and horizontal braces to serve as the framework of Caliph's anatomy. At one end the skull was attached at the proper angle; at the proper distance opposite, the pelvis and entire bones of the legs were mounted, wired into exact position, and suspended to the main horizontal beam, all put in place according to measurements.

"The skeleton was then barrelled out with timber spiked on to stiffen the entire frame. Over this was spread modeling clay. After the first layer of clay, the modeling really began, for up to this time we were working on a foundation.

"At this stage the animal was modeled in clay—each fold of skin and each muscle being brought out in the clay, making a duplicate of the hippo as he appeared in life, with the exception of his skin.

"Next, a plaster mold of the animal was made in sections. After the mold was removed from the clay model a thin shell of burlap and plaster was applied to the interior surface of the mold. The several sections were then assembled, which gave the model of Caliph again in light plaster.

"The rods of heavy gas pipe which had been placed in the interior of the legs were made fast to the shell to support it. This manikin was then sized with glue water, and when ready to put the skin on the covering of the manikin, heavy paste was also used. As soon as the paste was applied the skin was poisoned, then sewed in place. At this point the really difficult part began, that of working the skin into the folds. These were all indicated in the skin by innumerable wrinkles, and it was necessary to work this baggy skin into position until all was smooth. This we call 'working away'—a long and difficult task as may be imagined.

"The skin was then nailed to the manikin, in addition to its gluing, all of which was done in the creases of the skin where the nails did not show.

"How many pounds of nails did we use on old Caliph? About ten or twelve. This process was necessary because a hippopotamus skin shrinks tremendously. I tried to prevent undue shrinkage by using precipitate of soap and glycerine. After that it was merely a process of painting him from a live specimen—his consort in life, Miss Murphy, furnishing us the general color scheme.

"Now old Caliph will be the main piece in the Old World Mammal Hall, which henceforth will be the Mecca of many pilgrimages of those who delighted to do him homage in life."

BRAMBLE HILL

By ROBERT CARLTON BROWN.

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Sid hesitated, groped for a finish, and then changed abruptly. "I've simply got to get back into your father's good graces; at least, I must recover what standing I had. That's all there is to it. I'd be so miserable if I were denied the pleasure of calling on you. It's—it's about the only pleasure I have here."

"I'm afraid," she bit her lip and glanced behind uneasily, "I'm afraid he'll forbid your coming to the house for good and all. He may even tell me not to speak to you. That's why I—"

"But wouldn't you speak to me if he told you not—"

"Oh," she said quickly, "you don't know him. Of course, I'd be just as friendly toward you, but if he said—"

"But you're running a risk now. It's mighty good of you. If he did forbid my coming couldn't you once in a while—"

He stopped short, then burst out. "Oh, confound it! Isn't there some way I could regain my lost footing; not that I care what he thinks of me; it's only—"

His gaze was very direct and her eyes were drooping before it. He had drawn closer and was holding to the driving seat at the exact spot where Nathaniel Edgeworth had split the leather that memorable day when Susan almost ran over old Wattles. "Why, you see," continued Sid, "it's only because you are the only girl in Turtle Creek that—why, that—I like one way or another," he blurted out for a finish.

"Oh!" she arched her eyebrows, "that is nice of you. Because there are so few girls in Turtle Creek, you just pick me out as the best under the circumstances."

"No, I didn't mean that at all," Sid squirmed. "You know, it's like this: You've been so bully to me. Here you believe in me when all the rest are rather inclined the other way. You're a trump. It isn't every girl that would stick to a fellow when he—"

"Oh, you are telling me that a friend in need is a friend indeed. That's not so terribly complimentary to me, you know."

"Oh, yes. Don't you see? Anyway, I do appreciate you so much and like you so much that I'd hate to be cut off from the pleasure of being with you. You must tell me some way to regain my lost ground with your father."

Her look was pregnant with meaning. She answered slowly, "There's only one way. Do something toward making that hundred thousand dollars. Then he'll change his mind. Then he'll be afraid that it won't—oh, you understand! It worked before; as soon as you showed a disposition to try and earn that hundred thousand dollars he asked you to come to the house and—"

"Confound it, but you're clever!" cried Sid. "Of course, he doesn't want you to throw yourself away on—what the deuce am I saying?"

Sid was struggling for those elusive words that make and mar fortunes. If he could just say the right thing. If he could only give her to understand that he liked her for herself, and that it wasn't any question of that old will at all. Oh, propinquity makes the poor heart flounder. There she was, so sweet and fresh, so near, and she had come with some risk to herself to meet him alone.

"You know," Sid began the struggle again, her presence affecting him so strangely he could never think of the right words, "it's mighty decent of you to take an interest in a chap like me. I appreciate it, so much. It sort of goes to my head when I think of your coming out here to meet me. I've got something to say. Wait."

He put his hand on her arm as she turned apprehensively and, seeming to sense the presence of an intruder, was making ready to start.

The ends of his fingers thrilled with a shock electrical as he touched her. Then he began to know, began to feel, and be more or less sure just how it was he felt toward her and just what it was he wanted to say. Propinquity is a sly jay, thrusting her head out of her cage and mocking those attracted by her song.

"Yes," she breathed quickly, turning toward him.

"I want to say that I—" he moistened his throat with a great effort and his eyes began to glisten a little as he looked straight into hers. He gulped again. "You're somehow more than a friend.

You've meant more to me than—well, than nearly anybody since—"

"Nearly?" she caught him up with a quick, quivering doubt; a pained look in her eyes.

"Yes, confound it, you see," Sid was squirming again but suddenly impulse seemed to be driving him grandly, like a coach and four. "Yes, I like you better than any—yes, anybody, Susan. In fact, I—"

"Hurrh!"

Sid and Susan jumped guiltily and their hands dropped unconsciously apart at the sound.

It was someone clearing his throat, loudly, persistently, purposely. Both turned with one impulse to the side of the road.

There stood Ewer, Harold Ewer, his face as scarlet as his tie. He looked at Sid like a cherry-pitter contemplating a particularly healthful and flaunting cherry. He cleared his throat again and addressed Susan, his eyes quite cold and calm. "Pardon me, am I intruding? I saw the machine from the road as I was walking by; I just cut through to see if you would give me a lift home," he explained elaborately.

"Surely, Harold. Jump in!" answered Susan, giving one helpless glance at Sid.

Ewer took his place beside Susan confidently, turned with a triumphant look toward Sid, and the machine started off, Ewer sitting stiff beside the girl with an undeniable air of proprietorship.

Chapter XI.—On the 12:32.

Bears bundle up in the hollows of trees, hedgehogs hie their embonpoint into holes, little frogs and lizards wiggle their cold noses far down and pull nice soft blankets of warm mud about their shoulders. The price of apples goes up, oranges are down, the hens lay off and give us fifty-cent eggs, all goods are marked down after Christmas for the sales, ice becomes a drug on the market, red flannel the vogue.

This is winter.

In Turtle Creek the chief change was the renewal of all permanent arrangements, the casting off of temporary customs. There also came a decided boost in the sales of the immortal works of E. P. Roe, Josiah Allen's Wife and Mary J. Holmes, bound in pansy-printed paper covers, the pansies for thoughts.

But the great change, the ceremony which showed winter had really come, the true weather-vane, set above all the cocks on all the barns in all the country round was the winter housing of the village fathers. The real season-senser was Aloisius Stimpson. When he picked up his old hick'ry chair and remarked, "Well, the gol blame birds is all gone, boys; an' the corn's in the barn, an' the air is nippin' right smart; I reckon we better move our old fool carcasses inside around the stove, 'fore Lafe Turner over there gets froze to death an' 'fore Niles Pash's gout turns inter chilblains."

Having said this, he always moved his own chair inside first, and the few hardy followers left at this season followed.

Then Aloisius Stimpson always strode about nervously, working his hands behind his back, chewing violently and evidently passing through the gamut of emotions to which a caged Polar bear is subject. Finally he'd stop before Niles Pash, who ran the store (little enough running it required, better say "ambled"), and remark: "Well, it sorter don't taste right in my mouth. I reckon I'll go back to the dark Heawathy; guess, Niles, yeh can give me some of that gol blame black stuff; an' some Colorady madury stogies. Funny how a feller will go back to the old standbys in winter. Sort o' turn myself out to grass on this here light terbacker in summer." He would stop to break open the little red package of fine-cut Hiawatha chewing tobacco and cram his mouth with it. "Gol darn stuff tastes mighty good, too," he would remark, glancing around at the group.

"'Tis funny how the season do change a feller's taste," a little pocket-eyed gentleman who resembled a Rhesus monkey and whose name was Lafe Turner, would usually remark. "Guess I'll try some of them wintergreen lozengers, Niles," indicating a powder-incrusted bottle beside him. "This here peppermint is too cold in the mouth of winter's. Every time I draw a breath with a peppermint lozenger

in my mouth this time o' year I think it's my last one, it feels so all powerful chilly."

This annual home-flight of the flock was moderately profitable to Niles Pash; with their flannels they changed their habits, which required new stocking up. Then, too, aside from mercenary matters, Niles enjoyed it because things seemed more sociable inside; a storekeeper should be entertained, and there was always an acceleration in the gossip that first week they moved into winter quarters.

All was winter-tight; the open barrels, all but the one containing starch, were nicely topped with close wire netting to rebuke absent-minded fingers, and the prune box was put on top of the coffee canister, so Niles had to place a gouty foot with the utmost care on a split-bottomed chair and hoist himself perilously toward the box when anybody wanted prunes (though why anybody should want prunes)! It was perilous; any time he might fall and break his neck, but then, that would be better than slow starvation. In running a country store with a view to not starving to death it is well to remember always to put everything out of reach of the cat; then the city counselors can't get it.

Everybody being restocked for winter, and Ed Humphrey having drunk all but the fly at the bottom of the hardened cider barrel, several long, weary breaths were always drawn and then Turtle Creek officially sat down to the business of hibernating through the dreary, comfortable, all-but-gossipless winter.

Now spring had come; the second spring after Nathaniel Edgeworth's will had caught the village by its heels and stood it on its head, shaking out every forgotten coin of gossip concealed in the many pockets.

Aloisius Stimpson had put himself out to grass again, as far as his tobacco was concerned. Lafe Turner had gone back to peppermints, and Niles Pash had returned the prune box to its place beside the dill pickles.

It was April. Spring was gently pouring down all around, dripping from the eaves of Niles Pash's porch roof down the back of Ed Humphrey's neck (he still sat at the feet of the fathers, never aspiring to the dignity of a chair).

Wet, it was, but that fine spray of mist which a man may breathe in and expand his lungs upon. It was spring and the morning's mail had bulged with seed catalogs. The Bayview Bugle was out with a whole column of verse dipped from the clear crystal of the poet's spring. Aloisius Stimpson had already put on his lighter flannels and was smoking a milder stogie. Lafe Turner, the Rhesus monkey, had had a hair cut, making him look even more of a primate.

Spring was in the air; plows were in the ground. Bud dropped in to buy a can of paint to embellish his mother's barn. They were cleaning house extensively up at Sam Dunlap's. Hired help everywhere had spring fever. All the crazy quilts in town were being aired in the back yards. Turtle Creek itself was spreading out grandly with the contributed waters from rains above.

Two men in blue shirts trotted by the corner in the drizzle, with their hats protecting some brass instruments they carried.

"More surveyor fellers," said Lafe Turner with a very cosmopolitan air.

"I guess they'll be pretty gol blame busy with that there new railroad this summer. They figger on gettin' it through before fall," said Aloisius Stimpson. "Their franchise kind of crowds 'em, I reckon. Only gives 'em till October."

"Guess there ain't much happiness up to Edgeworth's. Guess Sid Edgeworth ain't tickled to death to see them fellers make the final survey of his land they've condemned, and see 'em breakin' land an' movin' straight toward him," replied Lafe Turner, pushing a brand new "peppermint" lozenge into his mouth with a secretive, behind-handed motion, for fear someone should ask him for one.

"They ain't got the condemnation papers out yet," said Stimpson. "I reckon they'll pay twelve thousand for the land, though. It's surprisin'; but that blame Sid Edgeworth's been so all-fired pig-headed about it I guess they'll give him an extry thousand or two so he won't do nothin' nasty."

"What's he been doin' with hisself all winter, I wonder? Ain't seen him in town but onct or twict since he come home from Chicago, back in November," remarked Lafe Turner.

"Guess he's stayin' pretty close to home," piped one of two ladylike old

THE GREAT UNREST.

BY L. L. DEBRA.

The farmer's son threw down his hoe; "No more of this," said he. "To till the soil is irksome toil; There's more in life for me."

He left the farm; in village schools, A teacher he became. "At last I'm free!" in joy said he; "A farmer's life is tame."

The teacher's son threw down his rule; "I'll none of this," said he. "'Twas good enough for Dad; but, stuff! There's more in life for me."

The city's din he straightway sought; A banker he became. "I'm happy here," said he. "I fear A teacher's life is tame."

The banker's son threw down his pen; "I've quite enough," said he. "This doesn't pay; I leave today; There's more in life for me."

He formed a trust; the gold rolled in; A magnate he became. "Egad!" he cried, "I'm satisfied. By Jove, ain't banking tame?"

The magnte's son threw down his tape; "This life is dull," said he. "My bonds and shares bring naught but cares; There's more in life for me."

Ah! then he wrestled with the soil; A farmer he became. "Now this," said he, "brings joy to me. A magnate? Huh! Too tame!"

men, who were always present, but seldom factors. "Playin' solitaire an' sighin' most of the time, Hornbill tells me. He's plum worried about that boy. Thinks he'll run off an' go back to New York any minute."

"He's apt to play solitaire the rest of his life for all Susie Dunlap cares," remarked Niles Pash, standing in the doorway and winking slyly at Stimpson.

"He's a gol blame ninny to carry on the way he does," Stimpson broke out. "If I had a son that had the chance he had an' didn't make no more of it I'd beat his fool head in jest to show they was some sense left in the Stimpson family. That's what I'd do. I thought for a while he was goin' to get the gal. He could of, if he hadn't been so pig-headed. Not that I'd a liked to of seen it; but he could of."

"He can't now," allowed Lafe Turner. "She don't so much as look at him no more; not since Sam Dunlap seen Sid in Chicawgo. Her father don't let her speak to him no more."

"Guess Ewer's got Susie all right," put in Ed Humphrey. "I seen 'em drivin' through Bayview the other day. Guess Harold was pointin' out some new land an' askin' her about buildin' a house on it or—"

"What in h—l was you doin' in Bayview?" demanded Aloisius Stimpson frantically. (Bayview, he it known, boasted a beer wagon and two saloons).

Ed Humphrey dropped his wandering eye and closed his mouth.

"It's kind of hard for Sid Edgeworth, though, remarked the second ladylike old man. "Don't he even get a cent of that money if they pay twelve thousand dollars for the railroad land?"

"No," explained Aloisius Stimpson severely, always on his mettle as an executor of the Edgeworth estate. "He don't get a cent of that. All he's entitled to is the regular income from the property—about three thousand a year. Of course, if the railroad allows him twelve thousand for the right of way that'll count toward the hundred thousand provided for in the will; but it ain't a drop in the bucket. Besides, in the next two years he won't make twenty-five hundred altogether out of what land he'll have left."

"Then the twelve thousand inverts to the farm?" asked the other, laborably.

"Yes, it reverts to the estate," replied Stimpson. "But it won't do him no good. There's only one bit of advice I've got to give Sid Edgeworth and that is, he'd better get out of town blame quick. He's cuttin' a mighty small figure here now. It's evident he's only hangin' around for his chances to marry Susie, but he ain't got a chance."

"Guess he'll pull up stakes an' light out for good. Ewer's got him beaten six ways o' Sunday," remarked Lafe Turner. "He's coming right along, that boy."

"Yes, he's doin' well; it'll be a first-rate match," began Stimpson. "Ewer'll do a lot with old Nathaniel Edgeworth's money. Wouldn't wonder ef he'd own the county some day—"

"And a senator or two," put in Niles Pash, who had removed the netting from a barrel and helped himself to a handful of his own crackers.

(Continued on page 72).

Bobby's Rich Uncle

BY JANET THOMAS.

Everybody knew that the Kestners were poor and no one had ever heard of their having any rich relations until one day when Richard Avery was bragging, before a crowd of boys, about the new house that his father intended to build which would cost five thousand dollars. Then Bobby Kestner, digging his bare toes into the dirt and thrusting his hands down into the pockets of his patched little trousers, said:

"My Uncle Sam has a house that cost more 'n twenty thousand dollars. He's got more 'n one of 'em!"

The admiring crowd at once turned from Richard to Bobby, and Charlie Burns asked, "Where are his houses?"

But Richard, much vexed, interrupted with, "Oh, go on! Do you suppose Bobby Kestner's got any rich uncle? Look at his ragged clothes! And why didn't he ever say anything about him before?"

"My clothes aren't ragged, they're just patched," replied Bobby. "And I didn't say anything 'bout Uncle Sam before 'cause I just lately found out about him. He's got a great big house in Chicago and New York and Boston and—and—oh, lots of places."

"Why does he have them in so many places?" asked Ted Blakesley.

"'Cause he's got so much business he has to," replied Bobby.

"Well, anyway, your uncle hasn't any fine horse like papa's Blixen. Papa wouldn't sell him for five hundred dollars," said Richard.

"I don't know whether he's got any as good as that, but he's got an awful lot of them. Anyway a thousand, I guess," said Bobby.

"How could he feed that many horses? And what does he use them for?" demanded Richard.

"Is he a farmer?" asked Fred Warner.

"No, he uses these horses other ways, and he has men to take care of them. But he takes lots of interest in farming. And he owns a lot of land out west, hundreds and hundreds of acres with nobody but Indians living on it except a few white folks to tell them what to do. All Indians—just think! Maybe I'll go out to see it some day."

"Oh, gee, Bobby, I wisht I could go, too!" cried Ted.

"You can," said Bobby, generously. "Maybe you can all go some day."

"When we get our new house we're going to have a butler that'll wear a uniform with buttons," said Richard.

"What's a butler?" asked Bobby.

"Oh, he's a man that—that—he works around in rich peoples' houses and looks fine," said Richard.

"Pooh, Uncle Sam's got hundreds of men working in his houses and lots of them wear uniforms with brass buttons on," replied Bobby.

"Well, I don't care, if you've got such a rich uncle, why doesn't he give you some money?" cried Richard.

"Maybe he will some day, but I'll have to work for it. My big brother Ralph gets lots of money from him."

"Why, Ralph works in the postoffice!" cried Fred.

"Yes, that's one of Uncle Sam's houses," replied Bobby with dancing eyes, as he made a dash for home.

LITTLE FARM FABLES.

BY AUNT QUILLIA.

Two Mice and a Mystery.

Two mice, Scamper and Squeaker, were greatly puzzled over a bag that lay in the corner of a barn.

When the sunbeams came in at the westward crevices and stretched lines of dusty gold across the apartment they would eye it quizzically as they ran to and fro. Again when the moonlight came in and lay like sheets of silver on the floor they would examine it more leisurely, all the time wondering why it, like its fellows, did not stand firm and upright against the walls of the barn or some companion.

"I have solved the riddle now," said Scamper one day. "Last night I found a hole in the bottom of the bag and that is the trouble. It is so full of air that it can't stand up."

"That is where you are wrong," replied Squeaker, whose intellect was more logical. "It is air that gives the soap-bubbles and the little bladder balloons at hog-killing time their round, firm forms. Ask Squire Barnhart's children. They will tell you so."

"I am sure I have it now," insisted

Scamper another day. "It is because of that string at the top of the bag. It is tied so tightly that the air hasn't room to expand, or maybe it is that patch near the middle that has something to do with it."

"Oh, pshaw! Wrong, again," sneered Squeaker. "I've seen the madam's sun-bonnet tied so closely that it seemed as if it would cut her head off, and yet in a high wind it was so expanded that it looked like a mammoth puff-ball at the summit of her topknot."

Thus did they continue to argue and puzzle themselves over the mystery until one day Squeaker proved that he had gotten to the bottom of it. "Not that I see any necessity for proving it," he affirmed, "only, being of a scientific turn of mind I like to give the public the benefit of my discovery. The trouble is that the bag is empty. No holes, no strings, no patches lie at the bottom of the mystery."

"Tonight when the hired man came into the barn he stumbled over that bag. Giving it a lift with the toe of his boot he exclaimed: 'You worthless rag, you and old Gouger are off the same piece. You contain no provender and he has no principle. When comparing you this morning the Squire remarked that Poor Richard hit the nail on the head when he said, 'It is hard for an empty bag to stand upright.'"

HOW CORN CLUBS ARE AWAKENING BOYS OF THE SOUTH.

A few years ago the Department of Agriculture undertook to interest southern farmers in growing corn more extensively, not only to increase corn yields

They must keep strict account of labor, fertilizer and all expense put into the crop. The exhibits are judged at the county fair if there is one, if not, in some place at the county seat, in the court house usually. The yields and measurement methods are certified by the boy and two disinterested persons, and the crops are judged by the following points: Greatest yield per acre, 30 per cent; best 10 ears, 20 per cent; best written history of the crop, 20 per cent; best showing of profit on yield, 30 per cent.

The first year (1908) 12,465 boys enrolled in the clubs. Two years later there were 46,225 boys distributed in 600 counties as follows: Alabama, 2,254 boys; Arkansas, 3,663; Georgia, 3,271; Kentucky, 93; Louisiana, 6,696; Mississippi, 6,492; North Carolina, 2,878; Oklahoma, 5,242; South Carolina, 1,741; Tennessee, 1,685; Texas, 10,241; Virginia, 1,969.

More than 100 boys raised over 100 bushels of corn per acre in 1910, the range being from 112 to 228.7 bushels. The average yield of the 100 boys was 133.7 bushels. The boy who raised the 228.7 bushels is Jerry Moore, of South Carolina. But Jerry's crop cost was pretty high, 43 cents per bushel, so he did not win first place. He tried to see how big a yield he could get at any cost, and he certainly got an astonishing one.

The boy who won first honors over all is Stephen G. Henry, of Louisiana. He raised 139.8 bushels on his acre, at the low cost of 13.6 cents per bushel. It is the purpose of this corn demonstration work to get as big yields as possible with the greatest economy.

One of the interesting things about these boys' corn growing contests is that



Jerry Moore, of South Carolina, and a Huge Pile from his Great Crop.

and improve methods of growing, but particularly to combat the cotton boll weevil by crop rotation. Accordingly Dr. Seaman A. Knapp of the Department was put in charge of this enterprise, which is known as the "Farmers' Co-operative Demonstration Work." Dr. Knapp soon found that the boys manifested considerable interest in the work, so he conceived the idea of establishing a special field of endeavor for them.

Accordingly the Southern Boys' Corn Clubs were started as a branch of the demonstration work. The Department's field agents assisted the boys to get their clubs started, and exercise a general supervision of the work. Only boys under 18 years old are eligible to these clubs. Each boy plants his own acre, and does all the work, except that very small boys may hire the breaking done.

many boys who had dropped out of school have been inspired by their success, and the money earned thereby to re-enter school in order eventually to attend agricultural college to make themselves the very best farmers possible. Some have already earned enough to take them through a short course in their state agricultural colleges.

STUDYING THE WINTER BIRDS.—III.

Snowbirds, Sparrows, Larks.

Some winter morning the bird student will observe the fence corners, and other places where weeds have grown rank in the summer, peopled by a company of slate-colored birds about the size of a sparrow. They will be darting here and there, scarcely quiet enough for him to get a good look at them. But he will

note the slate-colored plumage and the light-colored bill. There is no other winter bird to be mistaken for the junco or snowbird, as he is usually called. By careful observation one will notice that the male wears his darker feathers almost in the form of a dress-coat or a "cut-away," distinguishing him very markedly from his modestly feathered mate.

These little birds are thoroughly at home amid the snows of winter. Even the fiercest storms do not seem to daunt them in the least and they hop about among the snowdrifts entirely unconcerned. Nature has clothed them warmly, and as they feed upon the seeds of weeds and grasses they find protruding above the snow, it is no problem for them to live at a season of the year when many other birds find it difficult.

Once in a while, however, this interesting bird is overtaken by a sleet storm or heavy fall of snow that completely covers up his available food supply. Then is the time for the bird student to hang a bunch of his dried weeds and grasses low down on the trunk of his observation tree in such a way that it will just clear the snow. The writer has, at such times, cleared the snow from a square rod or so of ground and scattered seeds and crumbs on the bare earth. His efforts have been rewarded by the presence at times of a couple of hundred of these birds feeding together like so many chickens—and quite as fearless of their benefactor.

It is a common idea that the sudden appearance of these birds indicates a coming storm. The writer's observation does not lead to this conclusion. They come and go, apparently with no heed to the weather, and are quite as likely to be seen during or after a storm as before.

A sociable bird, the junco usually has birds of other species traveling with him—especially in the dead of winter. The tree sparrow is one that quite often frequents his company. This little fellow looks so like the ordinary chipping sparrow, or hair-bird, of summer that some people may be inclined to think that a belated individual has been left behind to endure the hardships of winter. It is not necessary to waste sympathy on this score. The tree sparrow, or winter sparrow, as he is called, is abundantly able to care for himself in winter. He, too, is warmly clad, and like the junco feeds on seeds of weeds and grasses. Perhaps the reason they are so often found together is because their wants are so similar. If one would make sure that it is a tree sparrow and not a chipping sparrow hopping around in the snow, look for the tiny black spot in the middle of his breast. This will identify him without question.

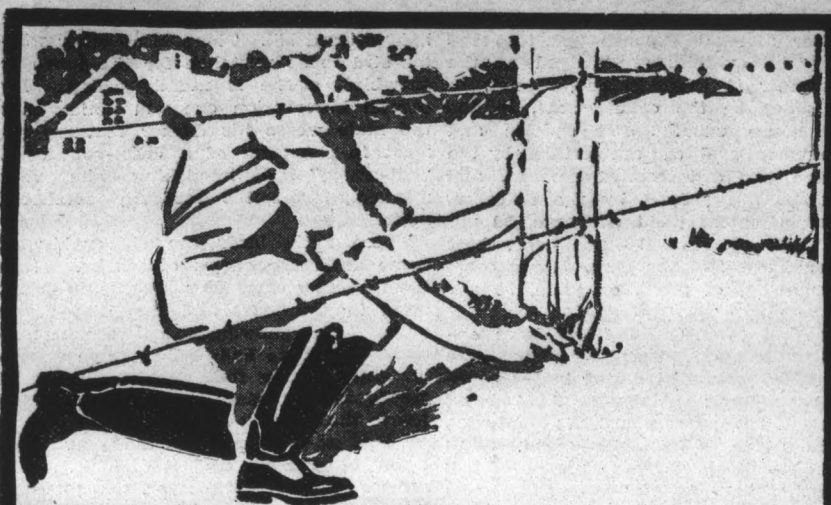
The true snowbird is the snow bunting which the bird student may perhaps see once or twice in a season. He is the only one of our smaller winter birds that has white predominating in his plumage. He is a real visitor from the region of the Arctic circle and is most likely to be seen in the dead of winter. As soon as the ground grows bare in spring he is on his way to the far north, where he spends the summer in haunts little frequented by man. Watch him as he flits about one's premises and it will be noticed that he never perches on a tree. He is exclusively a ground bird, although he will sometimes alight for a moment on the roof of a house or on a fence. Notice also that he does not hop but walks as he gets about over the ground.

Another winter bird often associated with the snow bunting, but shy and wary of human habitations, is the horned lark. These birds, whose home is in Greenland, Newfoundland, Labrador and the Hudson Bay region, visit the northern states in the winter. They will not in all probability come near one's bird tree. One is most likely to see them in the open country, often on a country road. They take wing when flushed, uttering a sharp whistled note. After a wide, rapid flight over adjacent fields they are quite likely to settle again very near the spot from which they arose. The general color of the bird is grey, but close examination shows black and brown in the plumage. A little tuft of feathers on either side of the head, over the eye, gives them their name and permits certain identification that the bird is a horned lark, although of which particular species it is not always easy to tell.

Another bird frequently associated with snowbirds and their kind in the winter months is the fox sparrow. He is particularly fond of the company of the junco and it is no unusual thing to see a fox sparrow in almost every flock of



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these latter birds. To be sure, he looks quite out of place in their company, but in winter it is not always true that "birds of a feather flock together." At this time the matter of plumage is forgotten and the one important matter of food seems to determine the association of the birds.

The fox sparrow can be told from all other winter birds by his brown plumage. With the exception of the middle of his breast he is conspicuously brown, particularly the tail feathers which are a bright rufous. This shade, and cinnamon brown, predominate throughout the back and parts of the sides. His under parts, while streaked and spotted with brown, are whitish. Listen for a moment! "Tseep, tseep," he calls as he hops about in the dry leaves, "tseep, tseep." Yes, he's the fox sparrow. He doesn't sing in winter, but in summer his song surpasses that of any of the sparrows.

MORE ABOUT STEERING SLEDS.

The use of flexible runners controlled by a lever is now the popular device for steering sleds. The runners are made long, and of material that will bend sidewise. The forward ends of the runners are tied together rigidly with crosspieces; but this end of the sled proper may move sidewise independently of the seat which, however, rests upon the crosspieces. To the rear crosspieces, on the other hand, the seat is securely fastened and these crosspieces are strongly bolted to the runners. Underneath the front end of the seat, running crosswise of it and extending about four inches beyond either side of the sled, is the steering lever. This lever is bolted at the center of the seat at a point about three inches in front of the foremost crosspiece, forming a pivot. From the rear of the center point of this lever and securely fastened to it extends a short arm. This short arm is hinged to the front crosspiece so that when the steering lever is moved the force pulls sidewise on the crosspiece and bends the runners. Now by pressing forward against the right end of the steering lever the course of the sled will be changed toward the right and to the left when the opposite end is forced. When sitting, guiding may be done with the feet and when lying down the hands grip the projecting ends of the steering lever to guide the sleigh as well as to hold fast.

BRAMBLE HILL.

(Continued from page 70.)

"Doin' well! Of course he's doin' well. The blame fool ain't got sense enough to do anything else!" cried Aloisious Stimpson, always nettled by the slightest reference to senators or politics.

"I guess when he marries Susie he won't have to do nothin' else for the rest of his life, neither," replied one of the human scarecrows, nibbling a cracker as daintily as a parrot at five o'clock tea.

"Of course he won't!" seconded his companion.

"Why should he?" was the weighty addition offered by the Rhesus monkey.

"Well, the sooner Sid Edgeworth packs up his gol darn perfume bottles, an' shavin' brushes, an' patent leather shoes, an' ladies' hats, an' gambler's ties, an' goes back to New York, why, the sooner the better. That's what I say," remarked Stimpson. "With his college education an' good clothes he ought to make a fine waiter or hired man in one of them swell families. I ain't against seein' a hard workin' feller get ahead; but when it comes to a fine dressed fool, I be."

"Ha, ha!" cackled the Rhesus-faced, who always liked to agree with the powers that be. "Sid'll like that! He's had Mother Hubbard shinin' his shoes on stove polishin' day right along; an' Hornbill bein' wet nurse to him. There ain't nothin' too good for Sidney. Least that's what Hornbill thinks."

"I don't like to see no young man effeminized," announced Stimpson, after a ponderous pause. "But when yeh come to makin' a lady out of a man I draw the line. It tain't that I got a single thing against the feller personal, besides the fact I don't like him, an' he smokes cigarettes, an' I allus did hate them kind of fellers; but I do object to his bein' ladylike an' comin' in an' corruptin' the youth of our town—"

"Like Ed here?" suggested one of the ladylike old gentlemen glibly.

"Yes," said Aloisious Stimpson mechanically, with an oratorical gesture. "Like Ed there!" He raised his hand impressively to continue, then turned as though some coward had hit him in the back with a tomato, glared at the old

men and cried in that elusive, cracked, hay-feverish tone of his, "No! Not like Ed there, neither! He couldn't spoil Ed. Ed's hard-boiled. But I do object to a young feller like Edgeworth puttin' on airs, an' bein' ladylike, as I've said before."

"It does look bad," agreed one of the old-maidenish men.

"He ain't very manly," seconded the other. "Looks as though he wore corsets."

"Wouldn't wonder at all," added the Rhesus monkey weightily.

"Like as not he thinks he's still welcome as the flowers in May up to the Dunlaps," put in Niles Pash with fine sarcasm.

"Welcome as the weevils in the orchard," replied Aloisious Stimpson. "He's settin' a powerful bad example to our youth. He's corruptin' the town, makin' an effigy of virtue in Turtle Creek."

"Well, I ain't sayin' as he's as bad as that, 'cause he stays pretty close to home, ye know," remarked Niles Pash. "But I guess ye won't be bothered much more by Sid; he'll get out now for sure. There ain't no chance left."

Before Stimpson could answer, his attention was distracted by a bent old form sidling past, water dripping through the holes in its straw hat. It turned haltingly and called good morning to the porch party and then continued on its shambling way to the station.

"Wonder what Zeb Wattles is doin' out so early in the mornin'?" asked Ed Humphrey.

"Lookin' fer somebody to give a planer lesson to, I reckon," suggested somebody, the stock joke receiving its full reward in grins.

"He's kep' even more to himself since Jerusha went away, ain't he?" said Lafe Turner.

There was thoughtful silence. Then Niles Pash remarked: "Wonder whatever'd become of that gal, anyway?"

"Well," said Lafe Turner, "Stimpson says she run away with a drummer; Ed says she's gone to be a missionary to foreign lands after givin' up his case as hopeless; Hermann says he wishes she'd gone by train, an' then he'd a known all about it; an' Bud here says she jest run away."

"Well, it's mighty mysterious, anyway," one of the ladylike old gentlemen put in, with a wise waggle of his head.

"I don't believe she's gone to no school."

"Ain't that Hermann now?" cried Ed, shifting to let the water from the eaves drip into his tobacco pocket for a change.

"Sure enough. Looks to be in a hurry! Wonder what's up?"

Like a flock of alarmed prairie chickens, atwitter with excitement, the village fathers bobbed their heads and craned past one another for a look. Sure enough! It was Hermann, with his red bandana dampened down around his neck. His manner was very hurried and, as most sensations came through the telegraph key at the station, the good fathers were agog with anticipation.

Half way to the steps Hermann waved a yellow form in one hand and cried, "What do you think? Jerusha Wattles is comin' back!"

"Jerusha Wattles!" They turned and stared at each other.

"Speakin' of the devil!" cried Lafe Turner, sinking back into his chair, overcome by surprise.

"Yes, sir; comin' in on the 12:32. Telegram here to Wattles. I phoned to Edgeworth's an' told em' to send Wattles down to the station to git it. I knew I wouldn't have time to deliver it and spread the news, too. He just come, an' he's telephonin' now to Sid an' Hornbill from the station, tellin' them to meet the train."

"You don't mean it?"

The remark was quite illogical; one glance at Hermann's flushed face would have shown conclusively that he certainly did mean it.

"Sure enough!" he cried, pointing dramatically to the message he had transcribed in purple ink on the yellow form. "There it is in black and white."

"Well, what do you know about that!" cried Aloisious Stimpson, taking the telegram as though by divine right and reading it with the far-away gaze of a Wall Street operator sensing the pulse of a heavy deal over the tape.

"Comin' back, is she? What fer?" queried one of the fathers.

"Don't know! Can't guess. The telegram is from Chicawgo. Jest says meet her on the 12:32, that's all," replied Hermann.

"Is the train on time?" asked Stimpson, passing the message to his cohorts.

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"Yep. The 12:32's always on time. But there's no hurry; it's only ten minutes to one now," Hermann answered.

"But it might get in earlier?" said Lafe Turner anxiously.

"Nope. She never does."

With varying degrees of preoccupation the village fathers sat idly for some minutes after Hermann had rushed back to the station. The discussion concerning Jerusha's return was desultory.

Lafe Turner had made an excuse and sauntered away. Bud had picked up his paint pail, after the first surprise was over, and trudged on. Ed Humphrey had lurched to his feet and strolled off behind the store somewhere. Niles Pash had gone in to take the money out of the till and stood near the door, fumbling a key awkwardly in his hand.

One of the ladylike old men got up suddenly and actually strolled straight toward the station.

Sid Edgeworth rushed past the store, hatless, hurrying in the direction of the depot. Hornbill followed in three minutes, and Mother Hubbard, without her apron (seeming positively undressed) was at his heels.

Only one old man and Stimpson were finally left on the porch, for Niles Pash had suddenly locked the door, explained that he had to go to look up an express package, and bolted, beneath the glare of Stimpson's all-seeing eye. The remaining father made his apologies to Stimpson and hurried after Niles Pash, doubtless to deliver some forgotten message.

Aloisius Stimpson stood alone on the steps, champing his liver-colored stogie. "Well, I'll be gol blamed!" he cried. "All this fuss over a chit of a gal that run away with a drummer. I'll be gol blamed."

He chewed his stogie a minute, looking toward the station; somehow, the weed seemed tasteless.

There came a prolonged toot in the distance. Stimpson's ears twitched. He looked up the street and there came a rig, the black cloth of it grown green with age. On the front seat was Oley, the yellow of his eyes and teeth showing in an excited gleam as he whipped up the old Edgeworth horse.

"Why don't they get the band out to meet her?" remarked Stimpson to himself.

Another insistent toot from not so far up the railroad track.

Stimpson's hand jerked at his watch pocket. He pulled the timepiece out and glanced at it biliously. "Why, it's the 12:32 all right. Guess I'll stroll over an' see if they got that new engine on her yet. I s'pose it's only curiosity," he muttered as he hurried along toward the station, "but then, it's educational, an' the Vigilant said they was expectin' a new engine on the 12:32 afore the summer's over. Like as not it's on today."

The little station platform swarmed with people. There were three men standing together in a dense crowd at one end and two others grouped together near the middle, so that one could hardly see the crowd for the people. At least, that's the way it looked to Aloisius Stimpson when he sneaked up onto the platform and found all his colleagues assembled—on some important business or other.

There was trembling old Watts fluttering back and forth on the arms of Sidney Edgeworth and Brigadier General Hornbill, peering down the track toward the onrushing train.

With decent oversight the village fathers did not look at each other, only staring at the interested trio in action.

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What would Jerusha be like?

The disgusting train began to slacken speed long before it reached the platform. It didn't just rush in and drop the girl and get it over with. It held everybody in suspense. It puffed and fumed up toward the platform, slid along for a little, chugged with a final spurt of speed and then came to an iron-grinding halt.

It stopped dead and the baggage-car man hollered to Hermann to come and get a trunk and an express package, making some surprised remark about the crowd.

But the crowd didn't hear. It was all agog for a sight of her. Maybe that was her trunk? No, it had the initials "E. W." printed on the end. It couldn't be hers. But who's could it be? She hadn't come.

(To be continued.)



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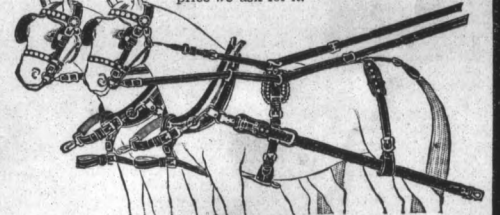
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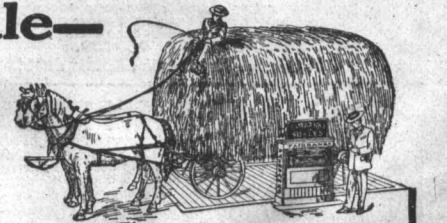
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Woman and Her Needs

At Home and Elsewhere

Do You Make Things Come to You?

"All things come to him who waits," is the way the saying runs, I believe. It sounds well, but unfortunately it isn't true, as thousands of patient waiters can testify. For the benefit of these I should like to offer a little adaptation of the original.

"All things come to him who knows how to hustle while he waits."

You've seen that work out so often that you will be willing to admit it without proof. How often have you seen two men take up farms side by side, with opportunities practically equal, and one forge ahead while the other could scarcely grub out a living. The first one hustled, and hustled to advantage. He used his head as well as his muscle, and headwork counts even more in farming and housekeeping than in office work. "Step lively" was the slogan with one family. Everyone was up at an early hour in the morning and everyone from father to the five-year-old had something to do and do lively and well.

The land was cleared apparently by magic, really by wisely directed human effort. Crops were always gotten in at the right time, because the head of the family studied government bulletins, weather reports and local conditions. The farm produce was sold at the right time to get best prices, for the hustler watched the markets as closely as he watched other conditions bearing on his work. And all the time he worked, not slavishly, but efficiently, with the end in view to pay for the farm, make it productive, keep it up and arrive at his final goal, that of successful, wide awake farming.

The neighbor worked hard, too. In fact, he worked harder so far as long hours and hard muscular labor goes. For he didn't work with his head. He never read anything about improved methods of farming, he didn't have time. He cleared his land in the hardest, longest, oldest way known to man, held off planting for fear of spring freshets and harvested his crops a week or so after his neighbor was through. He was slow and methodical about working, and his children and wife copied him. Meals were always behind in the house, because the woodbox was always left for the wife to fill. The chores were never done until after dark, for no one was ever assigned a certain task and taught to do it promptly and thoroughly. Everyone worked all the time, because no one ever thought it possible to hustle through a task and turn to another, or perhaps have time to play. "Dawdling" was the motto in this home, if not expressed, at least exemplified. When the "step lively" neighbor paid off the mortgage on his home and started in saving to build a new house, the dawdler asked for more time on his debt. He spent his life trying to keep up with the interest, not because he wasn't patient and plodding, but because he didn't know how to hustle.

Hustling alone doesn't get you to your goal any quicker than patient waiting and plodding, for activity misdirected is as bad as doing nothing at all. You've all seen men who were continually bustling about without accomplishing anything, just like a fly in a bottle. You must know how to hustle, you must have the ability to think quickly, judge quickly and wisely, decide how this act will affect tomorrow's work, how that unwise thing may be soonest and best rectified. You must have foresight and hindsight, tact, perseverance and patience, combined with the ability to move quickly if you are to know how to hustle while you wait.

I have always contended that you can get anything in this world you start after if you only know how. You must fix your goal, and make everything else bend to that one thing. And that is why so many fail. There are so many other distractions, so many other things we want to do today a little bit more than we want that thing in the future. Perhaps we've started out to save money for a piano. We see a dress or a suit

we simply can't get along without, and away goes our piano money. So it is with everything we aim to do. We can do it, if we really want to do it a little bit more than anything else, whether it is buying more land, paying off the mortgage, going away to school or only getting new curtains for the parlor. Where there is the desire it can be gratified, if you know how to hustle while you wait.

DEBORAH.

A WOMAN FARMER'S OPINIONS.

Of the many avocations, callings or professions in which women may now engage, farming stands pre-eminent. This is especially true in the state of Michigan, where fertility of soil, climatic conditions, and a healthy, intelligent interest in agriculture as a science, prevails. Old Mother Earth has been good to her sons and daughters in this state. After one has graduated from a University of Hard Knocks and taken a post-graduate course in the school of Wide Experience, The Michigan Farmer is a boon to those who would peruse its columns for information along agricultural lines. With so trustworthy a guide, and with

And above all things else it is essential that you be mistress in your own home. Your farm, be it large or small, is the index of character, and if you would make it the index of your character, it is essential that yours be the dominant note in the management. The hired man too often tries to "run the show," forgetting for the time being that he was hired to do your work as you wish it done. He may be able to give valuable information on farm matters, but when he seeks to dominate, it is better for your peace of mind that you give him his "walking ticket."

Your farm is yours to develop into your conception of your ideal farm. And if yours would be a high ideal you will listen with due respect to those who have made good in this line, which offers splendid opportunities to women who must earn their own living.

DIET.—No. 6.

A Dinner Menu.

How to supply the needed proteins without buying fresh meat every day is a problem that every woman should try to solve these days. The city dweller feels the pinch of high prices and, if she has the right idea of her duties as a wife, is trying in every way to make the income meet the needs and leave a mar-



the laudable ambition on our part to understand the why and wherefore of things, farming offers women an independence which is its own reward. There may be other callings more remunerative, but there are none more healthy. Here the scientist finds an endless series of problems, which challenge his highest skill. Here the botanist and bugologist may revel to their heart's content. And the student of nature will here find knowledge and be content. To feel that you are the owner of a few acres of land, land rich in latent possibilities, and that you possess the key with which to unlock the wealth of grain, of fruit and of flower; to feel that you hold the magic wand with which to transmute a wilderness, rough and crude and wild, into the charming home, with its beautiful gardens, its waving fields of golden harvest, and groves in which the winged warbler sings his merry lay, is to feel that you hold a place among the truly great.

Let it not be thought, however, that farming is all sunshine. There are shades and shadows and sometimes darkening gloom. To be successful requires that you understand farming, the analysis of soils, the why and wherefore of rotation, the pruning of trees, the feeding of stock, the comparative values of different rations and the thousand and one things with which we have to do.

Meat is one of the things that puts up the bills and her task is to get along with as little as possible. The country woman can not get to the markets, and she is tempted to make up the lack of meats by a supply of cakes, cookies, pies and sauces. This is a mistake for the body needs the proteins that are so easily supplied by meat.

The following menus are given with the idea of suggesting ways for each woman to study out her own family's need. Every farm house has salt pork, and nearly every one has ham, or could have it by putting forth a little effort. Milk is usually plentiful, and if eggs were stored, during the days of plenty, they should be. Peas and beans can be raised, and the cellar stocked with winter vegetables as squash, parsnips, beets, carrots, onions, turnips and the like. These foods are much easier prepared than baked goods, and are far better for the health than a steady diet of starches, unrelieved by vegetables with the valuable salts they contain.

The following menu is easily prepared and the average farm house contains everything called for:

Pea Soup	Mashed Potatoes
Salt Pork	Milk Gravy
Baked Squash	Creamed Parsnips
Pumpkin Pie	Cheese
Coffee	

Atwater gives the following analyses of these foods:

	Water.	Pro.	Fat.	Car.	Ash
Pea soup	86.9	3.6	0.7	7.6	1.2
Salt pork	16.2	1.9	86.2	...	3.9
Milk	87.0	3.3	4.0	5.0	0.7
Bread	35.0	9.1	1.6	53.0	1.0
Parsnips	83.0	1.6	0.5	13.5	1.4
Potatoes	75.1	2.1	3.0	17.8	1.5
Squash	88.3	1.4	0.5	9.0	0.8
Cheese	31.6	28.8	35.9	0.3	2.4

No analysis is given for pumpkin pie, but the pumpkin and eggs contain:

	Water.	Pro.	Fat.	Car.	Ash
Pumpkin	46.5	0.5	0.1	2.6	0.3
Eggs	73.2	14.0	12.0	...	0.8

This, even with the five per cent of carbohydrates in the milk, makes a food deficient in carbohydrates, but this deficiency is supplied by the sugar and the flour used in the crust, though, again, the shortening used in the crust brings up the percentage of fats.

A study of the tables will show that the menu is fairly well-balanced. The pork and cheese are rich in fat, but only a small piece of cheese will be taken, and the members of the family who are not outdoors or at hard work will eat but little of the fat part of the pork. Milk is present in the mashed potatoes, the gravy, the parsnips and pie, and supplies a fair percentage of the protein, while the cheese and bread are both rich in this principle.

Such a dinner may take a few minutes longer to prepare at the time, than one where pork, potatoes with the clear pork gravy, bread and butter, pie, cake, doughnuts or cookies form the bill of fare. But the vegetables do not really take so much labor to prepare as the baking of cookies, cakes and doughnuts require. And the needs of the body are better supplied by the "dinner of herbs" and milk than by the dinner made up largely of pastry. A great deal of the indigestion and constipation from which so many suffer is due to the fact that not enough vegetables and fruits are eaten.

A little thought given to the subject will pay the housekeeper, not only in the increased health and temper of her family, but by opening up to her a fascinating field of study.

THE HOME HOSPITAL.

BY HILDA RICHMOND.

As every home, no matter how well regulated, is bound to have some cases of illness, it is well to do a little planning as to how to manage when it comes. One good lady said serenely that she never crossed the bridge until she came to it, but in her case the bridge was not there when she came to the place where it should have been. Nothing, not even the slightest preparations, had ever been made for emergencies, and the patient suffered accordingly. It isn't borrowing trouble, nor even a sign that trouble will come, to have a few things in readiness in case of sickness. It isn't necessary to have a room set apart for illness, though where there are many little children such an apartment is very convenient, but it is a good plan to have a general idea of what to do when a home hospital is necessary.

The guest chamber, if the house affords one, is a very good room to use for the home hospital, provided, of course, that it is not a dark little room tucked away from the sunlight and fresh air. The parlor, where there is the old-fashioned habit of taking the best and sunniest room in the house for this almost useless apartment, will do very nicely for the patient, or any light airy room not too close to the kitchen, and not too hard for the mother of the family to get to from her work, since in these days of no domestic helpers the mother often must be nurse and housemaid combined.

For the sake of cleanliness it is always best to have no carpet on the floor of the room taken for the hospital. For this reason the parlor is peculiarly fitted for this purpose, as nearly all up-to-date housewives have hardwood floors in the best rooms with rugs, or at least a painted border and a rug. It is very easy to roll up the expensive rug and put it away while the room must be used for the patient, thus insuring clean air and also saving the rug from the many accidents sure to happen where someone is ill. A few small rugs should be placed here and there to deaden the noise and make the room more home-like, and these may be taken out of doors to the clothes line and well beaten to free them from dust where it would be out of the question to clean a large one every day. The bare floor may then be easily and quickly cleansed with a damp mop, not a wet one, and the rugs brought in fresh and clean.

In like manner the lace curtains and other draperies may be disposed of while the room is a hospital. If curtains must

be used they can be of cheap, easily washed goods and saved for just this purpose. Many a time a disease has developed into something contagious, that required the burning of all articles, particularly draperies, used in the sickroom, and if a little precaution had been taken the loss would have been slight. Every housekeeper knows that sun and wind play havoc with fine curtains, and as sunshine is absolutely necessary in every sickroom, the curtains or the patient suffer, unless cheap, simple ones are used. All ornaments and dust-catching bric-a-brac must be removed if a sanitary condition is desired, and nothing allowed to interfere with the presence of pure, fresh air every hour of the 24. It is much easier, anyway, to wait on a sick person in a room free from clutter, than to have to move about with caution for fear of upsetting something.

An iron bed is a fine thing in sickness, and there are various other things very desirable for any patient. A commode may be improvised by means of a slop jar under an old chair, a bedside table out of a sewing stand, a screen to keep off draughts by throwing a heavy blanket over an old-fashioned three-panel clothes rack and various other devices procured to add to the comfort of patient and nurse without spending a penny. Just a little forethought before sickness comes will make many handy articles for the home hospital. A rubber sheet may be made out of a few yards of table oil cloth, and this saves many dollars in protecting the mattress. Of course, as soon as all danger of spoiling the bed is past the rubber sheet should be removed, as it makes the patient's back warm and uncomfortable, but often an old cotton pad may be placed over it to avoid this.

A bed pan, a medicine dropper, plenty of old soft white cloths, an easy chair and small things, such as glasses, spoons and cuspidor, should be in every home ready for instant use. Never, never tear up old sheets for carpet rags or discard pieces of worn blankets. For use in the home hospital they are invaluable, and save the good bedding wonderfully. The fringe of a crocheted shawl will irritate and annoy a patient beyond measure by knocking down small articles, but a piece of an old blanket folded snugly about like a shawl is an ideal sickroom wrap. The things that seem trivial to a well person look like mountains to an irritable, tired patient, so the least ornamental, most serviceable articles should be used. Fancy nightgowns and all starched garments should be discarded and everything be comfortable. Then the home hospital will be worthy the name and the patient soon be dismissed.

THE BEST WAY TO MEND TABLE LINEN.

BY ELLA E. ROCKWOOD.

If the thin places are darned before holes make their appearance the usefulness of any piece of table linen will be materially lengthened.

Instead of using ordinary spool cotton for this purpose take ravelings from old pieces of similar linen. If carefully drawn out they answer as well as new threads. Or the trimmings left when straightening the ends in hemming new pieces may be saved for this purpose. A roll of these will be found convenient and the threads are stronger.

It is not necessary to take great pains in this work. Ordinary back and forth stitches will not show in the least after the piece has been laundered. Should the mending process be neglected until a hole actually appears a darn still is better than a patch for a small place. Run the threads both ways as in darning stockings. Embroidery hoops are helpful when the place is worn entirely through as they keep the goods straight.

Fine table linen deserves the best of care. It is too expensive to be treated in any other manner. Considering the wear there is in the better grades it is not an extravagance for a family of ordinary means to possess them. It is, however, inexcusable to permit fine tablecloths and napkins to become stained or torn. The stains will yield to proper treatment before they become set and rents are easily preventable by exercising precaution when handling them on wash day. A bad tear is sometimes made in removing from the line in freezing weather, when the spot under the pin refuses to be released.

Linen towels as well as table linen, are kept in use much longer by resorting to darning over the thin spots. This work requires but a few moments and is well worth while even on the kitchen towels.



Anty Drudge Hears Good News

Anty Drudge—"Good morning, Mrs. Progress. What is the news today?"

Mrs. Progress—"Oh, Anty Drudge, I am so glad to see you. I just have a letter from Mary, and she is delighted with the Agricultural College. She says she has learned about so many new things, and the best of all is Fels-Naptha Soap. I'll have to write and tell her I use it, too; I'm so glad you told me about it."

Incubators for hatching chickens, brooders for raising them, patent churns, fireless cookers—what a long way we have come since our parents' and grandparents' time! But these days there are lots of ways in which work can be made easier for women.

Fels-Naptha Soap saves more time and strength for more women than any other one way. If women would use Fels-Naptha Soap to do their washing, they would get rid of the most disagreeable and tiresome part of it; they wouldn't have to boil their clothes, thus doing away with a hot fire. Fels-Naptha Soap works best in cool or lukewarm water.

Grocers and general stores sell Fels-Naptha. Made in Philadelphia

Keep it in the Barn

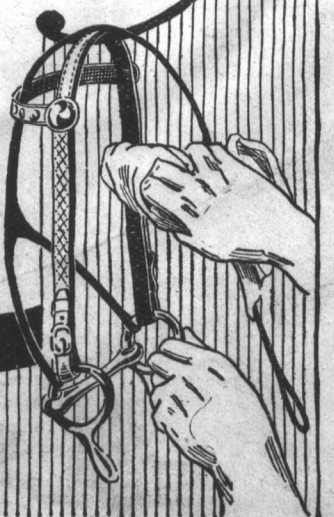
For Harness

Old Dutch Cleanser dissolves the greasy, dirty accumulations where the wear and contact comes. It gets under the uncleanness on hold-backs, traces and collar, and washes it away. Mildewed spots quickly disappear without tiresome rubbing.

Old Dutch Cleanser shortens and lightens all the cleaning tasks in the barn and carriage house. Try it on the carriage top, the grain bins and feed boxes.



Many Other Uses and Full Directions on Large Sifter Can—10c.



Would a Sure and Steady Income Interest You?

Would you be willing to work hard for a few years to have it?

You have read of the splendid apple crops of the Pecos Valley of New Mexico and Texas. You have seen reports of the large profits. You know the results that can be secured by intelligent effort. You know these things, but have you ever sat down to analyze the advantages offered by the Pecos Valley?

Do you realize that most of the apples used in Texas come from this valley? Do you know that there are 4,000,000 people in Texas, all apple-hungry and willing to pay well for good fruit? Do you know that the Pecos has the nearest apple orchards?

Do you know that the Pecos Valley has a particularly favorable climate and soil for apple-growing? It is the nearest apple-growing country, and other apple sections are practically shut out of Texas by the long hauls and expense of transportation.

Do you know that the Pecos Valley has numerous irrigation projects, also artesian wells and abundant underground water, easily available by pumps?

The rich soil of the Pecos Valley responds generously and quickly to irrigation. The splendid climate and abundant sunshine put color and flavor into all crops.

You are not dependent on apples, alone; sweet potatoes, cantaloupes, pears and peaches are good money-makers, and truck farming pays well, too, but next after apples comes alfalfa. The bright, pea-green alfalfa of the Pecos Valley is in special demand and is an easy and profitable crop to grow while the orchard is developing.

Do you know that splendid land, ready for the plow, with water developed, can be bought for \$75 an acre and up, on long time, with low interest?

Are you willing to let this opportunity slip by you? Is there any good reason for

not using the little foresight, energy and hard work that will ultimately make you the possessor of an irrigated apple orchard in the Pecos Valley and all the prosperity that means?

You will find there now—good schools, good roads and many thriving little cities more enterprising and better consumers than larger communities in older sections. You'll get a hearty welcome and won't be lonesome, because orchard homes make close neighbors and the resulting social activity due to common interests.

Write for Pecos Valley folder—it's free—and get the whole story.

C. L. Seagraves, General Colonization Agent,
Atchison, Topeka & Santa Fe Railway,
2295 Railway Exchange, Chicago

N. B.—Homeseekers' Excursions are run twice a month. I will be glad to tell you about the trains and fares.

The Heel that Stands the Grind

They fit your shoe at heel and toe. They are not clumsy or heavy yet stand long, hard wear—more than other rubbers. They are no ordinary rubber. The weak place in every rubber is the heel. Examine closely the protected toe, the extra strong and fortified heels—points where the hard "rub" strikes. Heels have a 3-ply duck heel-plug and extra layers of rubber on outside to prevent it breaking out—making a balanced rubber. That's why they're rightly named "Top-Notch Brand", made and guaranteed under their famous "Cross" trade mark the

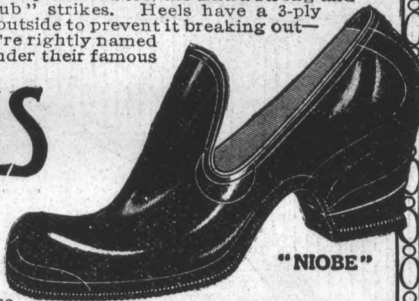
BEACON FALLS

When you find that "Cross" moulded in the instep—rest easy—behind it is quality—and the extreme of wear for your money. Inside—outside—right side—wrong side—the "Cross" guarantees a rubber of reliance.

NIobe—A Storm Rubber, Pure Gum, Brown Lining. A dainty piece of Women's wet weather apparel. **CUPID**—Same as Niobe but low cut. Get them at your dealer's. If he hasn't them, send his name and we'll see that you are supplied. Send for free booklet 12

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Women's "CUPID"



MODEL 1893



Marlin Big Game REPEATING RIFLES

The Special Smokeless Steel barrel, rifled deep on the Ballard system, creates perfect combustion, develops highest velocity and hurls the bullet with utmost accuracy and mightiest killing impact.

The mechanism is direct-acting, strong, simple and perfectly adjusted. It never clogs. The protecting wall of solid steel between your head and cartridge keeps rain, sleet, snow and all foreign matter from getting into the action. The side ejection throws shells away from line of sight and allows instant repeat shots always. New .33-caliber now ready.

Built in perfect proportion throughout, in many high power calibres, it is a quick handling, powerful, accurate gun for all big game.

Every hunter should know all the Marlin characteristics. **The Marlin Firearms Co.** Send for our free catalog. Enclose 3 stamps for postage. 127 Willow Street New Haven, Conn.

A tiny hole made by catching on a nail can be darned in a few minutes, neglected it soon becomes larger and in a few weeks the article is too badly worn for further use. This is one way of keeping expenses down. Take care of the little things. A mended spot hardly shows if neatly done, especially in a fabric like linen, which has a slack twisted thread. But it must be remembered that darning should always be attempted with a similar thread, that is, linen on linen, cotton on cotton.

On dress goods nothing is so satisfactory for mending a rent as threads of the fabric itself. These lose themselves in the weave of the goods and are scarcely perceptible after the place has been pressed.

The wise housewife is careful in little things and does not despise even so trifling an item of the household expense as a kitchen towel.

FURNACE COOKING.

BY MAE Y. MAHAFFY.

Furnaces found in most modern houses may be made to do satisfactory service in cooking numerous dishes, thus saving the additional fuel the stove would consume. A majority of furnaces will accommodate a fair-sized kettle or earthen jar on the ledge between the door and the firebox. When an unusually hot fire is needed it will be necessary to shut off the heat from this compartment in a measure, by placing a piece of sheet iron or asbestos between the fire and the vessel. This should be slightly curved so that it will not fit tightly at the sides, but will permit the heat to enter in a lessened degree.

Potatoes and squash are readily baked, and beans, cabbage, turnips, apple sauce, scalloped potatoes, corn, etc., oatmeal or rice in double boilers, and pot roasts may be cooked thus, being covered closely except such as need browning a bit at the last. They usually require a little more water than when cooked on a stove, but this depends largely on the heat and must be regulated by individual experience. The chief difficulty is in handling the vessels, which become very hot. A tray to slide them on and thick holders should always be provided.

Anyone who is handy with tools can fasten a long handle to the broiler and turn out delicious broiled steak when the fuel has burned to a bed of glowing coals.

HOME QUERIES.

Household Editor:—How do you make a flaxseed poultice?—Home Nurse.

Put the seed in a clean bowl and pour on boiling water until it is thick enough to spread. Then spread a half-inch deep on clean muslin and fold the edges over, so it can not run out.

Household Editor:—How do you make cocoa?—Mae M.

Scald one pint of milk in a double boiler. Mix two tablespoonfuls, level, of cocoa and two of sugar and stir into a pint of boiling water. Let boil five minutes, then turn into the scalded milk and beat with an egg beater five minutes while still cooking in the double boiler. This is delicious served with whipped cream.

Household Editor:—I have always wanted my son to go to college, but now that he is old enough he absolutely refuses to go. I let him stay out this fall and hoped to get him to start in the winter, but he doesn't want to. What would you advise?—Brokenhearted Mother.

There is an old saying, "you can drive a horse to water but you can't make him drink." You might drive your boy to college but you couldn't make him get anything out of it after he got there. If he doesn't want to go, by all means don't send him. It would be simply a waste of money, not to mention four years of his life. Personally, I believe that the college-trained man is best fitted to meet the world, but if you can't interest a boy in school sufficiently to get him to want to go it is a mistake to force him. He will be very likely to "jump classes," cheat in examinations, prove a nuisance to the faculty and learn more bad habits than he will good. If he doesn't want to go to college, find out what work he wants to take up and set him at it.

Household Editor:—Do you really think it is necessary to know about food principles and balanced rations? Our mothers never heard of such things and they brought up their families all right.—Old Cook.

I think the more you know about any subject the better fitted you are to do your work well. Our mothers did not know anything about cream separators and power washing machines and telephones and electric lights, but we do not think that is a good reason for us not to

make use of them. While you may feed your family right and not know a protein from a prairie dog, you are better fitted to feed your family those things which make for good health and perfect development if you do understand the principles of scientific feeding. No stock breeder would think of running a stock farm without some idea of a balanced ration. Are we not as good, at least, as our cattle?

Household Editor:—Is it necessary to feed a baby regularly? My mother laughs at me for feeding my baby "by the clock." She says when we were babies she fed us whenever we were hungry.—Young Mother.

It is just as necessary to feed a baby regularly as it is to eat regularly yourself. You know that the person who is constantly eating between meals is bound to have indigestion sooner or later, and so will your baby if there is no system about the time of feeding. A baby can not take so much as a grown person, so must be fed oftener, but there should be regular intervals between feedings, at first two hours, and longer as the child grows older and can take more at a time. Do not make a sudden jump from two hours to three, but lengthen the time gradually, five minutes a day as baby begins to eat more.

Household Editor:—Is there any way to get woolen which has been badly shrunken, back to its right size?—Molly.

Will someone who has tried tell her experience?

HOW TO MAKE PEANUT BUTTER.

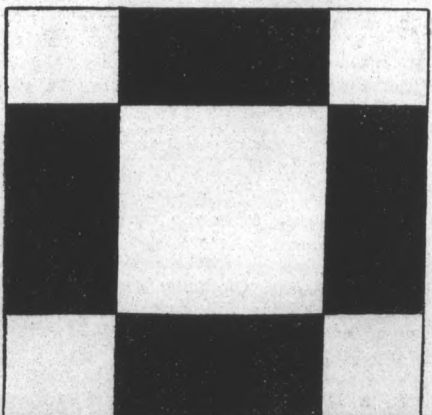
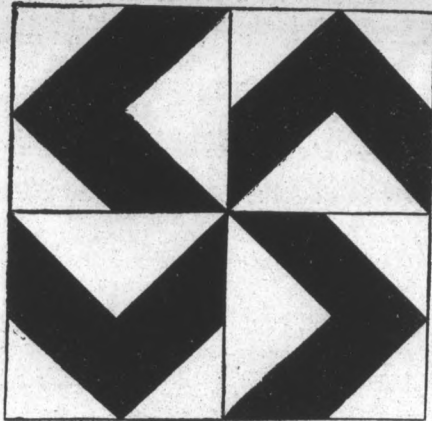
Circular 98 of the Bureau of Plant Industry, Department of Agriculture says:

The growing popularity of peanut butter as a food has led to many inquiries regarding the methods employed in its manufacture. Peanut butter is in reality a very simple preparation, consisting merely of fresh-roasted peanuts ground finely and salted to suit the taste.

Peanut butter was first manufactured and offered for sale as a food for invalids. It soon outgrew this condition of limited use, and its development on a commercial scale has been a general product. It was never intended that this product should be used as a substitute for or a competitor of butter, but as a luncheon delicacy and to add variety to the diet. Peanut butter is a wholesome and nutritious food product and has become a popular article upon our markets. Last year one manufacturer used over 130 cars of shelled peanuts in the production of 6,000,000 small jars of this food. The total consumption of peanuts for the manufacture of peanut butter alone amounted during the year 1911 to approximately 1,000 cars of shelled goods, or 1,000,000 bushels.

QUILT PATTERNS.

Household Editor:—I am sending two quilt patterns for Mrs. G. S. Each should be pieced in two colors only and set to



gether with strips. Number two should be set together diagonally, bringing half-blocks around edge of quilt.

Will you please publish some patterns for tatting?—Mrs. W. M. H.

Mr. Jeffries got 93 bu. of corn per acre

on a tract of land near Clarendon, Ark. Of course, that's some yield; but taking seasons as they come, you could raise as much corn down there on \$20 land as you can on the best corn lands of Iowa or Illinois.



[Frank Tate's corn Camden, Ark.]

Take the case of Chas. E. Crigger of Blytheville. His 200 acres, ready for the plow, stood him only \$3000. "Now I am getting 50 bu. of corn per acre regularly," says Mr. Crigger. Last year my crops brought me \$10,400. You could get twice as much profit from land that cost half as much — along the

Cotton Belt Route in Arkansas and Texas

— besides cutting your winter expenses 'way down, on account of the milder climate.

Frank Tate, near Camden, Ark., told me he made 63 bu. of corn per acre. Mr. Tilson, who owns a Red River Valley farm in East Texas, says his section has the irrigated lands northwest beat a mile for alfalfa. He is getting \$50 per acre from alfalfa on his low-priced land—with no need for irrigation.

These lands won't stay cheap always. They have already doubled in value since 1905; but even this year you can buy at \$12 to \$25 per acre, as good land there as you are farming now. And you'd have every advantage of schools, churches, close neighbors, good local markets, phones, rural free delivery, etc. This proposition deserves serious thought.

On the 1st and 3rd Tuesdays of each month there are low round trip excursions to Arkansas and Texas via Cotton Belt Route, allowing 25 days' time and free stopovers. Go on the next one.

Get our free books!

Written by a farm man who knows farming from A to Z. He traveled over thousands of miles in these sections to learn where the real farm opportunities were—the kind he knew you would grasp if you saw them. He tells you, in plain words, all about them. 100 pages and farm pictures. Send a postal today for your free copies.

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prevent damage to eggs, garden truck, fruits, live stock on road to market. Make any wagon a spring wagon. Soon save cost—produce brings bigger prices—wagon lasts longer—horses benefited—thousands in use—"my wagon rides like auto" says one. Get a pair at dealers. If not at dealer's write us. Insist on Harvey's. 40 sizes—fit any wagon—sustain any load to 10,000 lbs. Catalog and list of proofs free. HARVEY SPRING CO., 752 17th St., Racine, Wis.



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To Students who qualify. Ride around taking orders in "Coey Flyer"—6 cylinder—5 passenger car. We teach you to make big money in automobile business. Easy lessons—free model—no experience necessary. First lesson FREE to everyone answering this ad.

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Cedar Rapids Speed Governor

\$3.00 more butter from each cow per year when separator is operated by our Governor. Ask your dealer or write direct to Cedar Rapids Foundry & Machine Co., Cedar Rapids, Iowa.

Government Farmers Wanted—\$80 to \$75 monthly. Free Living Quarters. Write Ozment, 17 F. St. Louis.

HAPPENINGS OF THE WEEK.

(Continued from page 68).

After lengthy hearings the war department has denied the petition of Chicago for permission to divert from Lake Michigan 10,000 cubic feet of water a second instead of the 4,167 at present authorized. The war department also recognizes the right of Canada to protest against the diverting of this water through the Mississippi river because of the effect it will have on the shipping of the boundary waterway.

A New York city tax commission has suggested the taxing of billboards as a means of raising revenue for the city.

Postmaster-General Hitchcock is asking Congress to provide a different basis of computing payment to railways for transporting mail. He has asked that the law be changed so as to substitute space measurement as a means of determining payment for actual weighing of the material handled. This change is being asked largely because of the establishment of parcels post service.

A census of the 17 state institutions of Indiana under the supervision of the Board of State Charities, shows that the state is boarding 12,448 inmates, the average daily attendance for the year being 11,263. The same report shows that 2,012 officers and employees have been engaged in caring for the institutions and inmates.

The school buildings of Detroit are inadequate to accommodate the children of the rapidly growing city. During the past year the number of school children have increased over 5,000. When buildings under construction are completed the present congested condition will continue to prevail. The educational board declares that seven of eight new buildings are needed immediately.

Former President Castro, of Venezuela, is still held by the federal authorities at New York.

French troops won a victory east of Magador in southern Morocco against a large body of Moors. The vanquished army lost 500 soldiers killed, while the French reported twelve killed and sixty wounded.

The steam ship Uranium, bound from Rotterdam for Halifax and New York, stranded on a reef near Chebucto headlight station, nine miles below Halifax, Sunday. Her 880 passengers were safely removed by a government steamer and a small fleet of harbor craft.

Fire destroyed Burns & Co.'s packing plant in Calgary, Alberta. The loss is estimated at \$2,000,000 and fear is being expressed that there will be a shortage of meat in western Canada, the storage plant being the largest of its kind west of Winnipeg. Between fifteen and twenty thousand carcasses were in the plant at the time.

Saturday and Sunday heavy gales and snow storms swept over the United Kingdom. Many wrecks of small craft and coast shipping vessels have occurred. The storm was the worst in northern England.

Alexandre Millerand, war minister of the French cabinet, resigned without announcement January 12, thereby causing much concern among his political colleagues due to the coming election which occurs on Friday of this week. The action of the high official is an outgrowth of the famous Dreyfus scandal and it is believed it will have an effect detrimental to the interest of the party to which the member belongs.

It practically seems certain that war will be resumed between Turkey and the allied forces. The conference at London has thus far been unable to bring the parties together and the representatives are about to withdraw and report to their respective governments. Should war be resumed Adrianople will be besieged by the allied forces, while the Greeks hope to retain the islands of the Aegean Sea and Saloniki.

Dr. Alfonso Costa has succeeded as president of Portugal. Following his inauguration a desperate political riot occurred at Cezimbra, a place 18 miles south of Lisbon.

BALANCE OF ACIDS AND BASES.

(Continued from page 67).

have heretofore relied chiefly on the economy argument to regulate and control the high protein ration. We now add the argument of the necessity of securing in the ration a considerable excess of bases over acids, which is a health consideration and which coupled with the economical considerations before mentioned, should make the feeder exceedingly careful to provide a good balance in the ration given. In animal nutrition this balance may be secured by feeding larger quantities of clover or alfalfa hay and by incorporating succulent feeds into the ration and by keeping the amount of digestible protein near the minimum requirement. In the human dietary this same is accomplished by using much less quantities of meats and other direct animal foods and by substituting in parts such animal products as milk and the liberal use of fruits of all kinds together with nearly all the various edible vegetables. These considerations likewise in the human dietary necessitate restrictions in the use of bread, and particularly bread made from the modern high patent flours which are so peculiarly deficient in mineral matter, and in which the balance between bases and acids does not promote the excess of alkalies which the human dietary demands.

There is a difference between fruit growing and forestry yet most of the directions for fruit growing are directions for producing rapid wood growth only. This means coming into bearing late and irregular bearing on account of lack of enough available mineral plant food to raise a crop of fruit and to set strong fruit buds in the same season.

POTASH

Two years before the trees are expected to come into bearing the annual application of minerals should begin, using 50 to 100 pounds Murate of Potash and 100 to 200 pounds of bone, acid phosphate or basic slag per acre.

Potash improves the flavor, shipping quality and keeping power as well as the yield of fruits.

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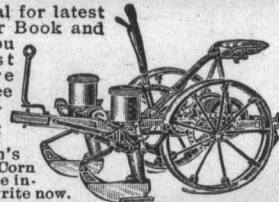
With this Rock Island No. 1 Corn Planter you can actually change the number of grains dropped without stopping, without even moving out of the seat! Can plant extra kernels where soil is extra rich: plant less kernels where soil is thin. Gets a lot more corn and wastes no seed.

It plants just as you want. And all rows straight, regardless of horses' speed. Instantly changed from edge to flat drop or back again. Has positive trouble-proof clutch. Special flexible connection to front frame. Adjustable seat. Adjustable width. Discs or runners. 30 or 35-inch concave, flat or open wheels. Now used by 10,000 farmers. It is no experiment, but time-tried, proven and guaranteed. Costs no more than commonplace planters, but worth a lot more.

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Send postal for latest Corn Planter Book and we will tell you the nearest place where you can see this wonderful planter. Free copy of Prof. Holden's great book on Corn Growing will be included if you write now.

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Does toughest job of tool grinding in a few minutes without hard work. This wonderful tool grinder with its rapid Dymo-Grit (artificial diamond) Sharpening Wheels make 3000 revolutions a minute. No cooling by water or danger of drawing temper. Sharpens everything from a jackknife to a plow point.

LUTHER DIMO-GRIT GRINDER has metal frame, enclosed shaft-drive, dust-proof bearings, runs easy as sewing machine. 25 times faster than grindstone, 10 times better than emery. Special attachments such as forge, milk tester, rip saw, jig saw, lathe, drill, etc., furnished. Fully guaranteed. Send for free book on tool grinding and liberal free trial offer.

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Thousands of farmers have not been able to get a "catch" in the last few years. They have wondered why. Our book tells you. It is full of cash money information. Tells you how to put in the necessary bacteria that your soil lacks on account of continual cropping and how the soil is inoculated. This process provides the necessary bacteria that draw the nitrogen that you lack from the air. Send for this book. Why not start a soil enriching campaign on your farm? Clover wonderfully enriches the soil. We can help you to get a fine stand of Clover—tell you how to meet your particular soil conditions. No cost or obligation on your part. We spend fortunes to tell farmers about "Nitragin" inoculation. Our book "Clover and How to Grow It" is free to you though the information it contains is worth hundreds of dollars to farmers. Get the big 8 cash money 8 crops—make your oat and corn land yield double crops. Send for this new, original free book now. Send 10 cents in stamps to cover postage and handling.

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Herd, consisting of Trojan Ericas, Blackbirds and Prides, only, is headed by Egerton W. the GRAND CHAMPION bull at the State, West Michigan and Bay City Fairs of 1912 and the sire of winners at these fairs and at THE INTERNATIONAL, Chicago, of 1912. WOODCOTE STOCK FARM, Ionia, Mich.

AYRSHIRES—One of foremost dairy breeds, young bulls and bull calves for sale. Berkshire swine. All pure bred. Michigan School for Deaf, Flint, Mich.

GUERNSEY BULL CALVES, YORKSHIRE PIGS. Good Stock.

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10 Registered Guernseys

Cows in milk. Bulls and bull calves. Write today for sale list. G. A. WIGENT, Watervliet, Michigan

REG. GUERNSEY BULL CALVES—large improved Yorkshire hogs, sows bred of the best breeding. Price cheap. JOHN EBELS, R. 10, Holland, Mich.

HATCH HERD HOLSTEINS—Choice sires from ARO dams. Reasonable prices. HATCH HERD, Ypsilanti, Michigan.

HOLSTEIN Bull ready for service. Also bull calves. Sired by 30-lb. bull, A.R.O. dams. Duroe Jersey Boars of st breeding. E. R. Cornell, Howell, Mich.

FOR SALE HOLSTEIN COWS and BULLS.

2 Fine A. R. O. Cows \$400.
1 3-year-old Herd Bull \$250.

Very choice and good enough for most any herd.
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Dam has 19-lb. record in 7 days.
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Have for sale several fine young bulls out of cows with high official butter and milk records.

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Holstein Bull Calf, out of grand daughter De Kol 2nd. Butter Boy 3rd. Sired by best son of Pontiac Butter Boy. Price only \$50. C. D. WOODBURY, Lansing, Mich.

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Sired by Johanna Concordia Champion,

whose sire's dam and dam's dam average 34.06 lbs. butter in 7 days, average fat 4.67%. Also cows and heifers bred to him. I can offer you bulls at bargain prices. Try me and see, and do it quick.

L. E. CONNELL, Fayette, Ohio.

FOR SALE—HOLSTEIN BULL CALF

Born June 5, 1912, sire a son of the King of the Pontiacs from a daughter of Hengerveld De Kol. Dam of calf, an A. R. O. daughter of Sadie Vale Concordia's Paul De Kol, her dam a 20 lb. imported cow. ED. S. LEWIS, Marshall, Mich.

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BULL CALVES—Richest Hengerveld, DeKol and Korndyke breeding. Special prices for quick sale. YPSILAND FARMS, Ypsilanti, Mich., Cole Brothers, Owners.

REGISTERED Holstein Cattle—Two good bull calves. Herd headed by Hengerveld Coin Pietertje. Barred Plymouth Rock Cockerels.
FLOYD F. JONES, R. F. D. 3, Oak Grove, Mich.

A FEW CHOICE Holstein Friesian Bull Calves for sale. A. R. O. Stock. GREGORY & BORDEN, Howell, Michigan.

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Holstein Friesian Cattle—young bulls out of A. R. O. dams and sired by a bull with a 31 lb. dam. W. B. JONES, Oak Grove, Michigan.

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Jerseys—Bulls ready for service, bred for production. Also cows and heifers. Brookwater Farm, R. F. D. No. 7, Ann Arbor, Mich.

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Dairy Shorthorns—Large Cattle—Heavy Milkers. Milk Records Furnished. Bulls all sold. Prices right. A square deal to all.
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FOR Sale, Jersey Bulls, old enough for service, sired by a grandson of Imp. Interested Prince and from cows that produce 400 to 500 lbs. butter annually. A. Newman Rl., Marlette, Mich.

Farm Commerce.

THE NOMID SYSTEM.

A Plan for Distributing Farm Products.

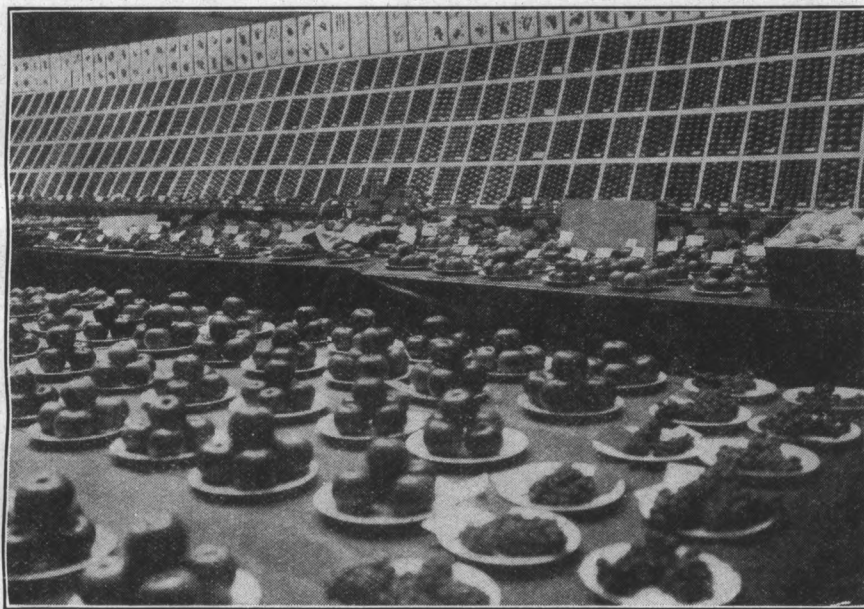
Chapter IV.—(Continued).

Delivering on Public Markets.

The exchange of farm products on public markets is awakening new interest and is becoming far more popular since the high cost of living in our cities and the comparatively low prices paid farmers for their goods, have become an acknowledged reality. Not only have the old markets whose histories run back many years been cleaned up and put in better shape for receiving the wagons of farmers as they come from the country, but new institutions in cities where there were formerly none have been built. City people are crowding to these places and are demanding of their common councils that improved accommodations be provided to help them in the battle against the unreasonable exactions of middlemen. While these markets come in opposition to the interests of the retailers and the wholesalers of any city, there is not one moral nor economical reason why they

number of patrons who stop to inspect and inquire about the goods; while on the other hand the person who is not particular either about himself, or his rig, scarcely gets any attention, except on those days when offerings are few and buyers plentiful.

A movement that promises much benefit to the citizens of our cities and towns is the discussion of the establishment of public markets where car loads of produce, such as potatoes, apples, cabbage, vegetables, etc., can be brought and retailed. The scheme has been tried with such success in an Iowa town and other small places that the plan is certain to be gradually adopted by other municipalities. To the farmers the scheme offers an excellent opportunity for reaching consumers direct, and the transportation charges, which the final buyer is always compelled to pay, will be no more under the plan than where wholesalers ship in car load lots. Civic associations that occasionally give attention to prospective improvements in economic affairs, will no doubt find this proposition and like ones among the questions that will soon be



Proper Grading and Packing of Fruit Are Important Preliminary Steps in Successful Marketing.

should not be multiplied till accommodations are afforded to handle all such products that will naturally be sold through them.

The plan of the public market for the exchange of farm products is admirable. All the conditions for completing transactions are there present. The buyer and the seller meet face to face, and the goods are present that their quality may be known. A price that is regulated by the supply of and demand for the product, can be agreed upon, payment made and the goods delivered to the consumer. There will usually be sufficient products offered that the buyer may secure the kinds of products he wishes and the amounts. These conditions should make the city market of the future a larger factor in city commerce than it now is.

Public markets being under the supervision of some city official, or officials, become available only by complying with such requirements as may be established. These the vendor should ascertain and faithfully comply with. The common councils of cities having markets usually authorize the publishing in booklet form of ordinances relating to the markets, and the city clerk will send copies to those requesting same. A producer who wishes to patronize a market should provide himself with the ordinances if he can easily, or otherwise inform himself as to their provisions.

Those qualities of salesmanship that serve in every merchantile establishment are required in the man who wishes to sell his wares on public markets, i. e., if he is seeking the best results from his enterprise. He should be patient, courteous, progressive and honest. His personal habits should be clean and wholesome and all that is known to belong to him that comes to the eyes of the patrons of the market should have the appearance of neatness. In passing along the rows of wagons on a public market one can readily detect those who are good salesmen and who have taken pains to have their wagons and goods attractive, by the

enthusiastically discussed from the platform and in round-table talks.

By Third Parties.

Many instances could be enumerated where goods are sent direct to the consumer who lives a thousand miles from the grower but it is seldom necessary to go so far for customers. Should one have friends, however, or wish to establish a market out of reach of private transportation, it is possible and practical for him to send his goods by common carriers, i. e., by railroads, express companies, boats, over electric lines, etc. The surprise is, after one has learned the small amount charged by carriers to deliver goods to buyers, that more of it is not done. But the present habit of selling to middlemen is made to appear so easy by the latter that other means of distributing goods are discouraged. Once tried and the margin in prices between those paid by the middleman and those paid by the final consumer understood, more goods will be shipped by the producer and less by middlemen.

Goods should be properly packed where sent to destination by common carrier. Boxes, baskets, barrels, bags and crates are used for this purpose. Potatoes and vegetables are easily placed in bags or barrels and made safe for the trip. But fruit and eggs must be handled carefully. They will carry without loss if properly put up. In another chapter definite instructions will be given on how to pack several of the more important products entering in a trade of this kind.

Packages should be marked distinctly with the name and address of the party to whom the goods are sent. The name and address of the sender ought also to be placed on the package so that in the event of anything happening to the goods the sender may be notified. The character of the shipment ought always to be stamped on the outside of the container where damage may be done by rough handling. This is especially true of eggs.

Upon the receipt of goods the consignee

should make careful inspection of the shipment to determine if any damage has been done. If the common carrier has been responsible for damage, complaint should be made without delay that the company may have opportunity to verify the amount and make settlement. We give in another chapter a discussion of the liability of common carriers.

In handling perishable goods like fruits the keeping qualities will be affected to a large degree by the exposure the goods are subjected to before shipment is made. By maintaining a low temperature around the fruit, or whatever perishable goods are being shipped, decay will be delayed and the shipment will reach its destination in better condition. Often fruits are exposed when lying about the station waiting for the arrival of a train, or boat. An hour's exposure in the hot sun will do more to break down fruit than several days' storage in a cool place. If the consignee desires to hold such goods for any length of time the same precaution should be taken after delivery to keep the products in a cool place.

Returning Packages.

Express companies seek to encourage direct handling of produce by returning crates and other packages for a nominal sum. The usual charge for the return of an egg crate to the shipper is 10 cents regardless of the distance. The same charge is made for the return of crocks in which butter is forwarded. Where delivery is made at the residence of the consignee a convenient plan is to return a crate, or crock, or whatever package the goods are sent in, as each succeeding shipment is made. This arrangement reduces trouble to a minimum.

The United States Parcels Post.

The United States now has a parcels post law. At the last session of the sixty-second Congress the House and the Senate agreed upon a measure that was signed by the President on August 24, 1912. The law became effective on the first day of January, 1913, and has immediately become popular with both country and city people.

What Products Can be Shipped.—The parcels post law provides for the carrying by the postal service of a wide range of products. The act states that hereafter fourth-class mail matter shall embrace all other matter, including farm and factory products, not now embraced by law in either the first, second or third class, not exceeding eleven pounds in weight, nor greater in size than 72 inches in length and girth combined, nor in form or kind likely to injure the person of any employee or damage the mail equipment or other main matter and not of a character perishable within a period reasonably required for transportation and delivery. The restrictions made in the law are such as are necessary for the safety of the employees and the protection of the equipment, other mail matter and the general public; for example, the restrictions would prevent the shipping of explosives, for they may injure the employees, equipment or other mail matter. But butter, eggs, flowers, fruit that will hold up until delivered, nuts, factory products within the limitation specified, etc., may be forwarded by parcels post.

Parcels Post Zones.—Rates of postage for parcels post matter will be charged for according to the weight and distance from the place where the matter is mailed or posted, and "for the purpose of establishing the rates from the several post offices of the country to every other post office the United States and its several territories, excepting the Philippine Islands, shall be divided into units of area 30 minutes square, identical with a quarter of the area formed by the intersecting parallels of latitude and meridians of longitude, represented on appropriate postal maps or plans. Readers should refer to the map published on page 16 of the January 4 issue of the Michigan Farmer.

First Zone.—The first zone shall include all territory within such quadrangle, in conjunction with every contiguous quadrangle, representing an area having a mean radial distance of approximately 50 miles from the center of any given unit of area.

Second Zone.—The second zone shall include all units of area outside the first zone lying in whole or in part within a radius of approximately 150 miles from the center of a given unit of area.

Third Zone.—The third zone shall include all units outside the second zone lying in whole or in part within a radius of approximately 300 miles from the center of a given unit of area.

Fourth Zone.—The fourth zone shall

include all units of area outside the third zone lying in whole or in part within a radius of approximately 600 miles from the center of a given unit of area.

Fifth Zone.—The fifth zone shall include all units of area outside the fourth zone lying in whole or in part within a radius of approximately 1,000 miles from the center of a given unit of area.

Sixth Zone.—The sixth zone shall include all units of area outside the fourth zone lying in whole or in part within a radius of approximately 1,400 miles from the center of a given unit of area.

Seventh Zone.—The seventh zone shall include all units of area outside the sixth zone lying in whole or in part within a radius approximately 1,800 miles from the center of a given unit of area.

Eighth Zone.—The eighth zone shall include all units of area outside the seventh zone.

Parcels Post Rates.—The rate of postage on fourth-class matter weighing less than four ounces shall be one cent for each ounce or fraction of an ounce. On all matter of this class over four ounces the rate shall be calculated by the pound. On all matter mailed at a post office from which a rural route starts, for delivery on such route, or mailed on such route for delivery at any other point thereon, or at the office from which the route starts, or on any rural route starting therefrom, and on all matter mailed at a city carrier office, or at any point within its delivery limits, for delivery by carriers from that office, or at any office for local delivery, the rate of postage shall be five cents for the first pound or a

fraction of a pound and one cent for each additional pound or fraction of a pound. For matter that must go through two or more post offices the postal charges for the several zones mentioned above and for different weights are, as follows:

	*1st pound.	†Each additional lb.	11 lbs.
First zone	\$0.05	\$0.03	\$0.35
Second zone	.06	.04	.46
Third zone	.07	.05	.57
Fourth zone	.08	.06	.68
Fifth zone	.09	.07	.79
Sixth zone	.10	.09	.90
Seventh zone	.11	.10	1.11
Eighth zone	.12	.12	1.32

*For any weight over four ounces and not exceeding 16 ounces; †for each additional pound or fraction thereof.

Parcels Post and Express Rates Compared.—The important question with the American people now that Congress has passed this law, is what reduction will the parcels post rates afford us as compared with the present express rates. In making a comparison of rates it should be kept in mind that the parcels post system offers a more complete system than do the express companies for wherever mails are collected and distributed there parcels may be posted and received. For instance, a farmer may mail a parcel at his front gate and it will be delivered at a residence in the city; whereas with express shipments the parcel must be delivered at some central station, except, of course, in the business sections of our larger cities. This additional service had to be provided for in the parcels post rates. The following table compares the express rates in existence in the summer of 1912 in eastern United States and the parcels post rates:

(Numbers in following table represent cents)											
Weight Limit.	1 lb.	2 lb.	3 lb.	4 lb.	5 lb.	6 lb.	7 lb.	8 lb.	9 lb.	10 lb.	11 lb.
First Zone:											
Parcels post	5	8	11	14	17	20	23	26	29	32	35
Express rate	25	25	25	30	30	35	35	35	35	35	35
Second Zone:											
Parcels post	6	10	14	18	22	26	30	34	38	42	46
Express rate	25	30	30	35	40	40	40	45	45	45	45
Third Zone:											
Parcels post	7	12	17	22	27	32	37	42	47	52	57
Express rate	25	30	35	40	45	50	50	55	55	55	60
Fourth Zone:											
Parcels post	8	14	20	26	32	38	44	50	56	62	68
Express rate	25	35	45	50	55	60	60	70	70	70	75
Fifth Zone:											
Parcels post	9	16	23	30	37	44	51	58	65	72	79
Express rate	25	35	45	60	70	80	80	90	90	90	100
Sixth Zone:											
Parcels post	10	19	28	37	46	55	64	73	82	91	100
Express rate	30	35	45	60	75	90	100	115	115	115	135
Seventh Zone:											
Parcels post	11	21	31	41	51	61	71	81	91	101	111
Express rate	30	35	45	60	80	90	100	120	125	125	150
Eighth Zone:											
Parcels post	12	24	36	48	60	72	84	96	108	120	132

Express rates are the same in eighth zone as in the seventh for parcels up to and including eight pounds; for parcels weighing nine pounds and over the rate varies from 10 to 15 cents above those for the seventh zone, depending upon the distance.

MICHIGAN CROP REPORT.

In answer to the question, "Has wheat during December suffered injury from any cause?" 130 correspondents in the state answer "yes" and 293 "no," and in answer to the question, "Has the ground been well covered with snow during December?" 35 correspondents answer "yes" and 401 "no."

The total number of bushels of wheat marketed by farmers in December at 91 flouring mills was 95,299 and at 66 elevators and to grain dealers 58,458 or a total of 153,757 bushels. Of this amount 91,320 bushels were marketed in the southern four tiers of counties, 48,565 in the central counties and 13,872 in the northern counties and upper peninsula.

The estimated total number of bushels of wheat marketed in the five months, August-December, was 2,750,000.

Ninety-one mills, elevators and grain dealers report no wheat marketed in December.

The average condition of live stock in the state is reported as follows, comparison being with stock in good, healthy and thrifty condition: Horses, cattle, sheep and swine 96. The average prices January 1 of some of the principal farm products were as follows:

The average price of wheat per bushel was 96c; rye 62c; shelled corn 56c and oats 35c. The average price of hay per ton was \$12.60. The average price of fat cattle was \$5.42 per cwt.; of fat hogs \$6.95 per cwt., and of dressed pork \$8.96 per cwt.

The average price of each class of horses was as follows: Under one year old \$53.52; between one and two years old \$86.36; between two and three years old \$129.26 and three years old and over \$168.00.

Milch cows were worth \$46.85 per head. Cattle other than milch cows, under one year old \$14.02; between one and two years old \$23.53; between two and three years old \$35.10 and three years old and over \$44.76.

Sheep under one year \$3.76 and one year old and over \$4.30. Hogs not fattened \$6.20 per cwt.

The prices given are for the state. The price of wheat is 8c higher than one year ago; rye 21c; shelled corn 10c; oats 12c, and hay \$4.72 lower.

The average price of horses, etc., one year ago was as follows: Under one year old \$51.72; between one and two years old \$85.85; between two and three years old \$132.45 and three years old and over \$162.49.

Milch cows were worth \$41.73 per head. Cattle other than milch cows, under one year old \$12.11; between one and two years old \$20.56; between two and three

years old \$31.02 and three years old and over \$39.53.

Sheep under one year old \$3.24 and one year old and over \$3.75. Hogs not fattened, \$5.08 per cwt.

CROP AND MARKET NOTES.

Newaygo Co., Jan. 6.—Weather fine and only a little snow, with no cold weather up to date. Rather dull and not much doing on the farm. No auction sales compared with two last year, so far. Lots of beans in the farmers' hands yet. A good many were frosted and are on the soft order, and some not fit for market are being fed. Some not pulled at all. Prices paid by local dealers: Oats, 30c; corn, shelled, 60c; rye, 50c; eggs, 24c; butter, 28c; pork, live, 6c; dressed, 8c; chickens, 9c; hay, \$10@12; beans, red and white, \$1.80; potatoes, 30c.

Washtenaw Co., Jan. 8.—The new year is bringing a little colder weather and some snow. While the amount was small the icy rain that preceded it had made an ideal bottom for sleighing and we have the first sleighing of the winter. Farmers are already taking advantage of it to do hauling. The mild weather has been a great saver of feed, and stock going through the winter in excellent condition. The market for meat holds good, and those having stock to sell are reaping a good reward, as corn, oats and hay are all cheap. Corn in the ear, 25c a basket; oats, 32@34c; hay, \$12@14. This being a dairy community a large amount of ice is used and there is some speculation as to whether we will get an ice harvest and when. Whole milk selling for \$1.80 per cwt. on 3/4 test, which nets the farmer from that price to \$2.25 per cwt. on the high testers. Hogs mostly sold at around \$7. New milch cows in brisk demand at prices ranging from \$50 @85.

Alpena Co., Jan. 8.—We have had fine mild winter weather with very little snow but getting colder now. Farmers have got their work well done up this year; plowing all done, corn all secure, nothing to do but visit and do the chores. Apples were a good crop but the price was small. Wheat and rye went into the winter with a good top and root growth. All kinds of stock look well and there is an abundance of feed. We had a very good crop of grain, but it was a little damaged with so much rain. Clover seed is all threshed; yield about three to four bushels per acre. Potatoes were good. Farmers are holding for better price. The Long Rapids Grange have quite successful meetings; fine lectures on soil fertility. Prices paid by local dealers: Wheat 90c; oats, 40c; dressed pork, 9c; beef, 8@9c, dressed; hay, \$12; potatoes, 35c.



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Breeders' Directory—Continued.

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DAIRY Short-horns—Large Cattle. Heavy Milkers.

Milk records of all cows kept. No stock for sale at present. W. W. Knapp, R. No. 4, Watervliet, Mich.

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Two yearling heifers for sale. Price \$100 each. Bulls all sold. J. B. HUMMEL, Mason, Michigan.

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Boars ready for service \$16; sows ready to breed \$18; sows bred \$20. Stock guaranteed. B. B. REAVEY, Akron, Mich.

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Best breeding, best type. Satisfaction guaranteed or money refunded. C. S. BARTLETT, Pontiac, Mich.

O. I. C.

TWO BOARS fit to head any herd. Fall pigs ready to ship. C. J. THOMPSON, Rockford, Michigan.

Improved Chesters

Young breeding stock, either sex. Also a few tried sows to be bred for spring farrow and early fall pigs. W. O. WILSON, Okemos, Mich.

O. I. C. Extra choice bred gilts, service boars and spring pigs, not akin from State Fair winners. Avondale Stock Farm, Wayne, Mich.

O. I. C. SWINE Write me for price on Spring Pigs, pairs and trios, not akin. Have a number of service males of good type. Write me describing of your wants. A. J. GORDEN, R. No. 2 Dor, Mich.

O. I. C. Swine, both sexes. Males weighing 100 to 225 lbs. Head registered in O. I. C. Association. GEO. P. ANDREWS, Dansville, Ingham Co., Mich.

O. I. C. Pigs of September and October farrow for sale cheap. JOHN BERNER & SON, Grand Ledge, Mich.

O. I. C's—All ages growthy and large, sows bred. Males ready, 100 to select from. Attractive prices on young stock. H. H. Jump, Munith, Mich.

Reg. Chester Whites—Both sexes and bred gilts, also serviceable registered Holstein bulls. Bargains. RAY FAHAM, Bronson, Mich.

O. I. C's—A fine lot of last spring stock for sale, big growthy type, either sex, pairs not akin. Sired by Grand Champion boar, Scott No. 1. Half mile west of depot. OTTO B. SCHULZE, Nashville, Mich.

O. I. C. Fall pigs, pairs not akin, young sows to farrow in March and April. Holstein bull calf sired by Pontiac Burke 2nd. Fred Nickel, R. 1, Monroe, Mich.

DUROC-JERSEYS—Fall and Spring boars from prize-winning strains. Sows all ages. SPECIAL BARGAIN in summer pigs. Brookwater Farm, R. F. D. No. 7, Ann Arbor, Mich.

LARGE TYPE DUROCS—Spring pigs that are large boned and lengthy. Some open fall gilts of the right sort. Let me tell you about anything you may be in need of or call at MAPLE GROVE FARM, Stockbridge, Michigan.

Duroc Jerseys—For sale; 20 fine service boars of fancy breeding and individual quality. Prices reasonable. John McNeill, North Star, Mich.

DUROC JERSEYS—6 SPRING BOARS FOR SALE. CAREY U. EDMONDS, Hastings, Michigan.

DUROC GILTS—\$20 to \$30. Shropshire Ewes \$20 to \$30. KOPE-KON FARM, Kinderhook, Michigan.

Duroc Jersey SWINE. Spring and summer pigs for sale, both sexes. I pay express, 25 years experience. J. H. BANGHART, Lansing, Mich.

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I have started more breeders on the road to success than any man living. I have the largest and finest herd in the U. S. Every one an early developer, ready for the market at six months old. I want to place one hog in each community to advertise my herd. Write for my plan, "How to Make Money from Hogs." C. S. BENJAMIN, R. No. 10 Portland, Mich.

POLAND CHINAS—Both Western and Home Bred. Either sex, all ages. Prices right. W. J. HAGESHAW, Augusta, Mich.

POLAND CHINAS—Either sex, all ages. Something good at a low price. F. D. LONG R. No. 8, Grand Rapids, Michigan.

POLAND CHINAS Spring boars ready for business. Extra good length and bone. Prices right. L. W. BARNES & SON, Byron, Michigan.

LARGE styled Poland China spring and fall pigs from strong, healthy, prolific breeders, either sex at low prices. ROBERT NEVE, Pierson, Mich.

P. C. BROOD SOWS—bred for April and May farrow. Big bone, prolific. Also boars ready for use. Maplewood Stock Farm, Allegan, Mich.

P. C. BOARS AND SOWS—large type, sired by Expansion. A. A. WOOD & SON, Saline, Michigan.

P. C. BOARS—large type—sired by Expansion 80499 and E. M. F. 83987. Satisfaction guaranteed. R. W. MILLS, Saline, Mich.

LARGE TYPE P. C. HOGS—Largest in Mich. Boars all sold. A few fall pigs. Also some extra large spring gilts to be bred to two of the best young boars I could buy in Iowa. Come or write. Free livery. W. E. LIVINGSTON, Parma, Michigan.

MULE FOOT HOGS—at public sale. From the O'Neil Herd. The popular prize-winning kind. Jan. 28, 1913. Send for catalog. It tells all. C. L. TEVIS, Box B, Milroy, Indiana.

MULE FOOT HOGS—Fall pigs, service boars and bred sows at sale. Best quality, price right. G. C. KREGLOW, Ada, Ohio.

As Good As The Best!—Yorkshires. Gilts bred for spring farrowing. WATERMAN & WATERMAN, Meadow Land Farm, Ann Arbor, Mich.

LARGE Yorkshires—Choice breeding stock, all ages, not akin, from State Fair prize-winners. Pedigrees furnished. W. C. COOK, R. 42, Box 22, Ada, Mich.

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I keep from 4000 to 6000 grade Yorkshire and Poland China cholera immune hogs and am selling prolific brood sows, also shoats weighing from 60 to 150 lbs. at prices that make them desirable on cholera infested farms. Sows weighing more than 100 lbs. are supposed to farrow in April and May. I expect to have several thousand pigs from immune sows and boars for sale next spring.

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LARGE YORKSHIRE SWINE—August farrowed gilts \$29 each. No males in stock. Geo. S. McMullen, Citz. Phone. Grand Ledge, Mich.

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A splendid lot of fall pigs at reduced prices, pairs and trios not akin. Young sows and gilts bred for April farrow. Your money back if you are not satisfied. COLON C. LILLIE, Coopersville, Mich.

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6000 FERRETS FOR SALE—Price list free. Book on ferrets. C. J. DIMICK, Rochester, Ohio.

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Markets.

Realizing the importance to our readers of reliable market quotations we spare no trouble or expense to insure the correctness of the quotations in our columns. Special representatives at all leading market centers insure the subscriber accurate market reports, uninfluenced by any factor of trade. All quotations are correct for the dates on which they are made.

GRAINS AND SEEDS.

January 15, 1913.

Wheat.—Unexpected strength has possessed the wheat market and conditions at the present time point to a steadier feeling in the trade than since last fall. Primary receipts are decreasing and the consumption of wheat is large, millers taking a large proportion of the offerings to manufacture into flour. In fact, the flour men buy heavily upon every sag in quotations which has prevented any large reaction. The Balkan war is another bullish feature, although the effect of the engagement of Turkey and the allies would be but a secondary factor itself were it not that their struggle means a possibility of a general war in Europe. Largely because of this condition abroad the export trade is liberal, thus lending added strength to the market on this side. One year ago the price for No. 2 red wheat was 97c per bu. Detroit quotations are as follows:

	No. 2	No. 1	Red.	White.	May.	July.
Thursday	1.13%	1.12%	1.18%	1.18%	96%	
Friday	1.14%	1.13%	1.19%	1.19%	97%	
Saturday	1.14%	1.13%	1.19%	1.19%	97%	
Monday	1.15%	1.14%	1.20%	1.20%	98%	
Tuesday	1.15%	1.14%	1.20%	1.20%	98%	
Wednesday	1.16%	1.15%	1.20%	1.20%	98%	

Chicago, (Jan. 14).—No. 2 red, \$1.11@1.14; May, 94½c; July, 91c per bu.

Corn.—The tone of this market is strengthened with that of wheat. There is quite a little corn being sold on foreign account. This has been sufficient to give the cereal a firmer position. Primary receipts are a few thousand bushels less than a week ago and about 400,000 bushels greater than for the corresponding period a year ago. The bulge in prices no doubt aided in bringing out larger primary receipts than might otherwise have been the case. One year ago the price for No. 3 corn was 64c per bu. Detroit quotations are as follows:

	No. 3	No. 3	Yellow.
Thursday	49½	50½	50½
Friday	50	51	51
Saturday	50	51	51
Monday	50	51	51
Tuesday	50½	51½	51½
Wednesday	50½	51½	51½

Chicago, (Jan. 14).—No. 2 corn, 49½@50c; May, 51½c; July, 52½c per bu.

Oats.—While this cereal has advanced with the other two major grains the margin has not been so large. Primary receipts for last week were 843,000 bu., compared with 879,000 bu. for the previous week and 353,000 bu. a year ago. Shipments last week were more than double what they were a year ago. The local price for standard oats at this date in 1912 was 52c per bu. Detroit quotations for the week are:

	No. 3	Standard.	White.
Thursday	36	35	35
Friday	36½	35½	35½
Saturday	36½	35½	35½
Monday	36½	35½	35½
Tuesday	36½	35½	35½
Wednesday	36½	35½	35½

Chicago, (Jan. 14).—No. 2, 33½c; standard, 34@34½c; May, 34c; July, 34c.

Beans.—There is no change in this deal and the trade is practically at a standstill. Quotations are nominal. Immediate, prompt shipment and January are quoted at \$2.20 per bu; February, \$2.15.

Chicago, (Jan. 14).—Prices rule a little better in pea beans. Hand-picked are quoted at \$2.55; do. prime, \$2.40@2.45; red kidneys, \$2.50 per bu.

Clover Seed.—Prices have advanced in all kinds of seed since a week ago. Prime spot is now quoted at \$11.95, an advance of 40c; prime alsike, \$12.90, an advance of 15c.

Toledo.—Prime cash and January, \$12.27½; March, \$12.40; prime alsike, \$13.30; all advanced prices.

Rye.—Detroit.—Cash No. 2 steady at 62c per bu.

FLOUR AND FEEDS.

Flour.—Jobbing lots in ½ paper sacks are selling on the Detroit market per 196 lbs. as follows: Best patent, \$5.60; second, \$5.30; straight, \$5.20; clear, \$4.90; spring patent, \$5.10; rye flour, \$4.90 per bbl.

Feed.—Detroit jobbing prices in 100-lb. sacks are as follows: Bran, \$24; coarse middlings, \$23; fine middlings, \$28; cracked corn \$24; coarse corn middlings, \$21.50; corn and oat chop, \$20 per ton.

Hay.—Local trade steady with poorer hays moving slowly. Carlots on track at Detroit: No. 1 timothy, \$14.50@15; No. 2, \$13@13.50; light mixed, \$13.50@14; No. 1 mixed, \$12.50@13 per ton.

Chicago.—Market has improved with the range of prices higher than a week ago. Choice timothy, \$17.50@18.50; No. 1, \$14.50@16.50; No. 2 and No. 1 mixed, \$12.50@14; No. 3 and No. 2 mixed, \$10@12; clover, \$7@11.

New York.—Market irregular; standard do., \$9.70; short ribs, do., \$9.60.

\$20.50 per ton; No. 1, \$22; light clover mixed, \$20@21.

Straw.—Car lot prices on wheat and oat straw on Detroit market are \$9@9.50 per ton; rye straw, \$10@10.50 per ton. New York.—Rye straw, \$19 per ton.

DAIRY AND POULTRY PRODUCTS.

Butter.—Butter values have seen a general decline during the past week and business is less brisk at nearly all points. Elgin sustained a ½c reduction. The local market, however, has held steady with quotations unchanged from last week. Jobbing prices in the Detroit market are: Fancy creamery, 35c; firsts, 32c; dairy, 22c; packing, 21c per lb.

Elgin.—Market firm at 33@33½c. Chicago.—Trade in this market is slow under a 2c decline in prices, notwithstanding the fact that receipts are by no means excessive. Quotations: Extra creamery, 33c; extra firsts, 30@32c; firsts 26@28c; seconds, 24c; dairy extras, 30c; firsts, 26c; seconds, 23c; packing, 12@21c as to quality.

New York.—Prices here have settled down after a loss of 1½c on creameries and 1c on dairies from last week's figures. Creamery extras, 34½@35c; firsts, 31@33½c; seconds, 28@30c; thirds, 26@27c; state dairy, best, 32@33c; good to prime, 27@30c; common to fair, 23@26c; packing, 21@21½c as to quality.

Eggs.—Weather conditions are exerting a strong influence upon the egg market and slight fluctuations are seen with every change of temperature. Locally the feeling is stronger and prices show a gain of 1c over last week. At Detroit current offerings, candied, and cases included, are quoted at 25c per dozen.

Chicago.—Receipts continue liberal and include many eggs of indifferent quality: With mild weather prevailing the demand is limited to fresh-laid goods and the feeling is easier with last week's figures ruling. Miscellaneous receipts, cases included, are quoted at 19@25c; do. cases returned, 18½@24½c; ordinary firsts, 19@21c; firsts, 24½@25c; refrigerators, April, 19c per dozen.

New York.—This market is reported weak; values generally unchanged, the only exception being western gathered whites which show a good gain. Fresh gathered extras, 29@30c; extra firsts, 27@28c; firsts, 25½@26½c; seconds and lower grades, 23@24c; western gathered whites, 28@35c.

Poultry.—Detroit.—Last week's strong advance on chickens is bringing liberal receipts but values continue high as compared with outside markets. Dressed.—Spring chickens, 15½@16c; hens, 15@15½c; turkeys, 19@20c; ducks, 16@18c; geese, 14@15c per lb. Live.—Spring chickens, 14½@15c; hens, 14@14½c; No. 2 hens, 10@12c; old roosters, 9@10c; turkeys, 18@19c; geese, 13@14c; ducks, 14@15c per lb.

Chicago.—Fowls and spring chickens a trifle lower. Supplies moderate and demand fair. Quotations on live are: Turkeys, good weight, 15c; others, 10c; fowls, good, 13½c; spring chickens, 12½c; ducks, large, fat, 15c; do., Indian runners, 12c; geese, full feathered, 13c; do., plucked, 8@10c per lb.

New York.—Dressed stock strong with chickens showing good advances. Fresh killed western chickens, 14@20c; fowls, 14@17c; turkeys, 14@23c per lb.

Cheese.—Market steady; values unchanged. Quotations: Wholesale: Michigan flats quoted lower; business fairly active. Quotations: Wholesale lots: Michigan flats, 16@16½c; New York flats, 18½@19c; brick cream, 16½@17c; limburger, 17@18c.

Veal.—Detroit.—Steady. Fancy, 14@14½c; choice, 11@12c per lb.

Chicago.—Fair to choice, 80@110 higher values. Fair to choice, 80@110 lbs., 12½@13c; extra fancy stock, 13½@14c; fair to good chunky, 11½@12½c per pound.

FRUITS AND VEGETABLES.

Apples.—Considered generally the apple deal has shown improvement. The freeze of oranges in California is likely to increase the demand for apples. Fancy, per bbl., \$2.50@3; ordinary, \$1@1.25.

Potatoes.—Although the deal is weak and draggy, there is a better inquiry than a week ago at unchanged values. Michigan stock in car lots, 50c in sacks, 46c in bulk.

Chicago.—Receipts are less than half the volume of those of last week and the trade is firmer at steady prices. Fancy Michigan stock sold in bulk as high as 46c and sacked at 48c Monday.

New York.—Offerings have been much lighter which has enabled the trade to clean up a little. Prices are about steady. Western supplies are quoted at \$1.40@1.75 per bag.

Onions.—Since the appearance of cold weather there has been a slightly better tone to the onion deal although it is far from satisfactory to the sellers. Detroit prices are unchanged at 55c per bu.

Chicago.—Holders of onions can say nothing good about the deal here. Home-grown yellows are quoted at 40c and whites at 75c per bu.

New York.—Outlook is not the least flattering. Cold weather has aided in cleaning up slightly but it is estimated that from 75 to 100 cars must be handled here daily for the next 60 days which will keep prices down. Yellows selling at 60c@1 per bu; whites, 75c@1, and reds 60@65c.

MISCELLANEOUS.

Provisions.—Ruling prices in Detroit are about steady. Quotations:

Detroit.—Family pork, \$22@23; mess pork, \$18.50; clear, backs, \$20@22; hams, 15½@16½c; briskets, 11@12c; shoulders, 12½c; picnic hams, 11½c; bacon, 15½@17c; pure lard in tierces, 11c; kettle rendered lard, 12c per lb.

Chicago.—Mess pork, Jan., \$18.05; lard standard do., \$9.70; short ribs, do., \$9.60.

Honey.—Detroit.—Steady. Choice to fancy comb, 16@17c; amber, 14@15c; extracted, 9½@10c per lb.

DETROIT RETAIL PRICES.

Detroit Eastern Market.—Apples, cabbage and potatoes made up the bulk of the offerings on the market this week. Apples rule from 50c@1.10 per bu., according to grade and variety. Cabbage is plentiful, white being quoted at 20@25c per bu., and red at 40@50c per bu. Onions are selling at 60@65c per bu; carrots, 25c; potatoes in fairly liberal supply, 55@60c per bu; parsnips, 40c; celery around 20c per bunch. Pork was quoted at \$10.50@11 per cwt. Eggs that were guaranteed strictly fresh were selling at 40c per dozen. Poultry, live, 15c per lb.

In Detroit retail stores apples are quoted at 80c@1.15 per bu., according to variety and grade; potatoes, good quality, 75c; best eggs, 36c. Best creamery butter is quoted at 42c; dressed chickens, good quality, 20@21c.

Grand Rapids.

Jobbers are paying the country trade 24c for eggs and 26c for dairy butter. The potato market shows some improvement. Buyers at Greenville are paying 40@45c. Pork and mutton are a little higher, dressed hogs bringing 9½@10c. In live poultry, fowls are worth 11c; ducks 11c; turkeys 15@17c. The mills are paying \$1.12 for wheat; 51c for corn, and 36c for oats. Beans are quoted on \$1.80 basis to farmers. Hay is selling at \$10@14.

THE LIVE STOCK MARKETS.

Buffalo.

January 13, 1913.
(Special Report of Dunning & Stevens,
New York Central Stock Yards,
East Buffalo, New York).

Cattle.

Receipts, 140 cars; heavy cattle, weighing 1200 and upwards, sold 10@15c lower; handy and medium weights sold strong at last week's prices. Best 1350 to 1500-lb. steers, \$8.75@9.25; good to prime 1200 to 1300-lb. steers, \$8@8.50; good to prime 1100 to 1200-lb. steers, \$7.75@8.25; coarse, plainish 1100 to 1200-lb. steers, \$7.25@7.75; medium butcher steers, 1000 to 1100, \$6.75@7.50; butcher steers, 950 to 1000, \$6.50@7; light do., \$5.75@6.25; best fat cows, \$5.75@6.50; butcher cows, \$5@5.50; light do., \$4.25@4.75; cutters, \$3.75@4; trimmers, \$3.50@3.75; best fat heifers, \$7.50@8; medium butcher heifers, \$6.25@6.75; light butcher heifers, \$5.25@5.75; stock heifers, \$4@4.25; best feeding steers, dehorned, \$6.25@6.75; fair to good stockers, \$5.50@5.75; light common stockers, \$4.50@5; prime export bulls, \$6.25@6.75; best butcher bulls, \$5.75@6; bologna bulls \$4.75@5.50; stock bulls, \$4.75@5.50; best milkers and springers, \$6.50@7; common to fair kind, \$4@5.50.

Hogs.

Receipts, 120 cars; market 10@15c lower; all grades, \$7.50.

Sheep and Lambs.

Receipts, 110 cars; market opened active. Top lambs, \$9.30@9.40; culls to fair \$5.50@8.50; yearlings, \$7.50@8; wethers, \$6@6.25; ewes, \$5.25@6.

Veal Calves.

Market is slow, \$5@11.75.
Cabbage.—Market is about the same locally but in Chicago a shortage of cars has worked a firmer trade.

Detroit.—Per bbl., \$1@1.25.
Chicago.—Holland bringing \$6.50@7 per ton. Red cabbage is scarcer and quoted at \$1.25@1.50 per bbl. Common kinds, 60c per bbl.

Chicago.

January 13, 1913.

Cattle. Hogs. Sheep.
Received today 28,000 53,000 32,000
Same day last year, 17,728 24,927 24,205
Received last week, 58,367 188,552 125,138
Same week last year, 62,069 211,954 142,818

The week starts off today with a late market for cattle, with the exception of butcher stock, which meets with an active demand at firm prices. Steers are neglected, and buyers bid 15c or more lower, little being done at a late hour. Hogs are in very good request at reductions of 5@10c, the top being \$7.32½. Hogs received last week averaged 226 lbs., compared with 211 lbs. a year ago, 223 lbs. two years ago and 209 lbs. three years ago. Sheep and lambs are arriving later than usual because of a railroad wreck near here. There is an excellent general demand, and recently advanced prices are maintained, while prime light-weight yearlings on the lamb order were still higher, bringing \$8.40@8.50.

Cattle prices paid last week looked low to sellers, so far as good to prime lots of steers were concerned at least, when compared with five weeks ago, at which time the extreme range of values for the poorest to the best ruled at \$5.75@10.50, but comparison with former years shows that recent sales were at unusually high figures. It is a significant fact as pointing out the popular taste for the cheaper and lighter cuts of beef because of the unwillingness of the average family to pay extreme prices for prime heavy cuts that the common and medium grades of steers have changed in prices extremely little, if at all, compared with several weeks ago, while there has been a decided slump in price for choice beefs.

Most cattlemen will recall the fact that last year the best cattle sold for \$11@11.25, but it hardly seems probable that such prices will be seen again for a long time to come except when show beefs are sold from the International Live Stock Exposition. Last week saw steers sell for \$5.90@9.40 as an extreme range, with the bulk of the sales at \$7.25@8.75. A medium class sold for \$7.50@8.50, and the best demand centered in this class, while fat butcher stock had a large demand, cows and heifers bringing \$4.60@8.25 and not enough of the prime class offered to go around. Cutters brought \$4@4.50, canners \$2.75@

3.95 and bulls \$4.25@7.50. Even the poorest culling cattle are as much as \$1 per 100 lbs. higher than a year ago, and any attractive feeders come very high, as intending purchasers have found out of late, stockers being held at \$4.80@7.30, while feeders carrying much weight bring \$6.20@7.85, the packing demand for the best steers of the feeder class making them extra dear. Calves have sold at \$4.25@10.85, the best selling extremely well, and moderate sales were made of milch cows on a basis of \$30@85 per head prime Holsteins being scarce and worth up to \$100. Beef cattle averaged 10@15c lower than a week earlier. The best steers sold a week earlier for \$9.60, but no fancy cattle were exhibited last week.

Hogs had some bad breaks in prices last week because of marked gains in the receipts, followed by rallies on smaller offerings and a strong general demand. Eastern shippers continued very much larger buyers than a few weeks ago, the eastern hogs having been pretty well marketed, and between this outlet and a good demand at times from local speculators, the Chicago packers found it no easy thing to hold prices down. The spread in prices was extremely narrow, with a good shipping call for the choicest light hogs, as well as for prime heavies, and light hogs at last topped the market. General conditions are now regarded as favorable for the hog growers of the corn belt, and it is believed that it will pay to hold healthy young hogs to maturity, prices being much higher than a year ago, although below the prices paid two and three years ago. Of course, the unusual cheapness of corn and other feeds is an important factor to be considered. Consumption of fresh pork is as large as ever, and stocks of provisions are small for the time of year. Chicago stocks on New Years being 74,800,099 lbs., against 107,049,871 lbs. a year ago. Stocks held the first day of last December aggregated 48,780,582 lbs. After selling during the week as high as \$7.62½, hogs closed on Saturday at \$6.80@7.35, with one early sale at \$7.40. A week earlier hogs sold at \$7.30@7.60. Pigs closed at \$5.50@7.25.

Sheep and lambs continued to sell at sharply advancing prices last week, touching the highest figures paid since the middle of last year. Good receipts usually found a quick clearance, despite the advancing prices, handy-weight fat lambs, as usual, leading off in the upward movement, with heavy lambs and yearlings that were held too long discriminated against severely by slaughterers. In very few years have such high prices been realized for fat muttons on the hoof, and owners have made unexpectedly large profits, favored by the open winter to recently, and an abundance of cheap feed everywhere. Despite the greatly increased receipts for the week, lambs and sheep had advances of 50@75c per 100 lbs., lambs closing at \$7.75@9.50, culls going at \$6.50@7.50 and prime heavy lambs at \$9.15. Yearlings sold at \$6.35@8.35, prime heavy lots fetching \$8. Wethers sold at \$5.40@6.25, ewes at \$3@5.65 and bucks at \$3@4.

Horses were in improved demand last week, with especially good buying orders from southern, middle western and eastern states for farm workers, with mares of good breedy appearance principally wanted. While ordinary geldings were offered for \$100@125 per head, mares sold particularly freely around \$150@200, with better mares taken at \$225@250. Drivers were wanted at \$100@200 for common to strictly good ones, and drafters were in moderate request at \$175@275 for fair to prime ones, extra heavy drafters being scarce and quotable up to \$300. Wagon horses were taken mainly at \$160@225.

LIVE STOCK NOTES.

Cattle prices are ruling within a very much narrower range than was the case during the highest period of 1912, and seldom has the call for the highest grade of beefs been so limited as at the present time. Small as is the current marketing of prime beefs at Chicago and other leading points, there are enough to satisfy the existing requirements of the packers, who are confining most of their selections to medium grade steers, and to fat cows and heifers. It appears very doubtful whether it is going to pay stockmen to prepare prime beefs for the market, and there are far more who are feeding with a view of marketing medium-priced cattle than of preparing fancy beefs. All along it has been noticeable that fat heifers and cows have held their own in the market far better than steer cattle of a corresponding grade. This has been remarked upon by hundreds of farmers, and they are beginning to pay more attention to fattening female cattle than in the past. These cattle are much surer to pay out than are steers, and cost less money at the start. A great many farmers are roughing cattle through the winter, with the intention of pasturing them next summer, roughage being unusually plentiful nearly everywhere.

Conditions governing the hog trade have undergone the actual change that was so long predicted by experienced men in the business. True, recent reactions in prices have taken place, following the previous upward whirl, but this was inevitable and generally expected by men in the industry for years. While the country's swine supply has been seriously depleted within the last two years by disease and other causes, it is always possible to scare up liberal supplies for marketing for a few days, and this is what has taken place recently, thereby playing temporarily into buyers' hands. Meanwhile the consumption of fresh and cured hog products goes forward as freely as ever, and there is not much chance for any considerable accumulation of provisions in warehouses. Pretty much everything in the hog line finds a ready sale, with about as narrow a range of values as is ever seen.

THIS IS THE FIRST EDITION.

In the first edition the Detroit Live stock markets are reports of last week; all other markets are right up to date. Thursday's Detroit Live Stock markets are given in the last edition. The first edition is mailed Thursday, the last edition Friday morning. The first edition is mailed to those who care more to get the paper early than they do for Thursday's Detroit Live Stock market report. You may have any edition desired. Subscribers may change from one edition to another by dropping us a card to that effect.

DETROIT LIVE STOCK MARKETS.

Thursday's Market.
January 9, 1913.

Cattle.

Receipts, 1428. Market 10@15c higher than last week on all grades and very active at the advance.

We quote: Best steers, \$7.50@8; steers and heifers, 1000 to 1200, \$7@7.50; do., 800 to 1000, \$6@6.85; do. that are fat, 500 to 700, \$5@6.50; choice fat cows, \$5.50@6; good do., \$4.50@5.25; common cows, \$4@4.50; canners, \$3@4; choice heavy bulls, \$5.50@7; fair to good bolognas, bulls, \$4.75@5.25; stock bulls, \$4@4.25; choice feeding steers, 800 to 1000, \$6@6.50; fair feeding steers, 800 to 1000, \$5@6; choice stockers, 500 to 700, \$5.25@5.50; fair do., 500 to 700, \$4.50@5; stock heifers, \$4@4.50; milkers, large, young, medium age, \$5@7; common milkers, \$3@4.50.

Bishop, B. & H. sold Parker, W. & Co. 20 steers av 1096 at \$7.75, 4 cows av 867 at \$4.50, 9 do av 870 at \$4, 1 bull weighing 1140 at \$5.25, 32 steers weighing 843 at \$7; to Bresnahan 5 butchers av 780 at \$4.25; to Mich. B. Co. 13 do av 668 at \$5.75, 3 steers av 816 at \$7, 3 cows av 1000 at \$6, 12 do av 1043 at \$5.85; to Goose 15 cows av 803 at \$4.50; to Sullivan P. Co. 18 butchers av 809 at \$4.50, 3 do av 710 at \$6, 9 cows av 800 at \$4.60, 5 do av 830 at \$4, 2 do av 885 at \$4.25, 1 do weighing 1110 at \$5.25, 2 bulls av 705 at \$5; to Newton B. Co. 2 cows av 875 at \$4, 4 do av 1072 at \$4.30; to Sullivan P. Co. 1 do weighing 920 at \$4, 2 do av 985 at \$6, 1 steer weighing 640 at \$6, 1 cow weighing 940 at \$4, 2 steers av 750 at \$5.25, 2 do av 1035 at \$7.50, 8 do av 734 at \$6.25, 11 butchers av 736 at \$5.25, 1 heifer weighing 800 at \$7.50; to Hammond, S. & Co. 2 cows av 865 at \$4, 7 do av 953 at \$5.50, 1 bull weighing 1610 at \$6, 1 cow av 1000 at \$4, 4 steers av 725 at \$6.50, 7 cows av 721 at \$5; to Goose 2 do av 960 at \$4.50; to Parker, W. & Co. 7 do av 1080 at \$5.25, 5 do av 874 at \$4.25, 1 bull weighing 1380 at \$5.50, 11 cows av 920 at \$4.50.

Roe Com. Co. sold Goose 2 cows av 865 at \$4.50; to Bresnahan 13 steers av 500 at \$4.75; to Newton B. Co. 12 cows av 816 at \$3.95, 1 do weighing 930 at \$4, 5 do av 916 at \$4.50, 22 butchers av 572 at \$5.50, 16 do av 890 at \$6.25; to Sullivan P. Co. 1 bull weighing 1540 at \$6; to Wyness 2 do av 840 at \$5.40; to Parker, W. & Co. 10 steers av 1085 at \$7.75; to Mich. B. Co. 1 bull weighing 1350 at \$6, 6 cows av 1003 at \$6, 1 do weighing 1090 at \$5.50.

Spicer & R. sold Sullivan P. Co. 1 weighing 120 at \$10.50; to Rattkowsky 3 av 107 at \$9; to Sullivan P. Co. 2 av 135 at \$11.25, 2 av 130 at \$11, 4 av 135 at \$10.60; to Burnstine 8 av 130 at \$8, 3 av 150 at \$11, 2 av 130 at \$11, 1 weighing 160 at \$11, 1 weighing 310 at \$4.50, 6 av 150 at \$11; to Goose 2 av 235 at \$4.50, 13 av 130 at \$7; to Burnstine 1 weighing 230 at \$5, 10 av 162 at \$11; to Goose 5 av 120 at \$5.50, 5 av 105 at \$6.50.

Veal Calves.

Receipts, 451. Market steady at last weeks prices. Best, \$10@11.50; others, \$4.50@9.50; milch cows and springers steady.

Bishop, B. & H. sold Goose 1 weighing 200 at \$11.50, 3 av 140 at \$8.50, 3 av 150 at \$9.50, 3 av 105 at \$9.50, 8 av 130 at \$10.75, 4 av 150 at \$11, 3 av 120 at \$10; to Hammond, S. & Co. 2 av 160 at \$11.50, 1 weighing 290 at \$5; to Sullivan P. Co. 10 av 132 at \$10.50; to Shaparo 14 av 140 at \$10.50; to Hammond, S. & Co. 14 av 150 at \$11; to McGuire 18 av 150 at \$11, 11 av 120 at \$10.50; to Hammond, S. & Co. 3 av 140 at \$11.50, 2 av 150 at \$9, 1 weighing 130 at \$11, 2 av 170 at \$11, 2 av 140 at \$9.50, 4 av 145 at \$11.

Haley & M. sold Hammond, S. & Co. 1 weighing 190 at \$11.50, 3 av 150 at \$11.50, 1 weighing 120 at \$11, 6 av 130 at \$11.

Sandall sold Mich. B. Co. 6 av 155 at \$11.50, 2 av 305 at \$4.50, 5 av 125 at \$9, 2 av 300 at \$5.

Sheep and Lambs.

Receipts, 3088. Market 35@50c higher than last week on all grades. Best lambs \$9@9.15; fair to good do. \$8.25@8.75; light to common lambs, \$6@7; yearlings, \$6.50@7; fair to good sheep, \$4@4.75; culls and common, \$2.50@3.50.

Bishop, B. & H. sold Hayes 98 lambs av 65 at \$7.25; to Nagle P. Co. 154 do av 80 at \$8.85, 39 do av 65 at \$8.25, 11 yearlings av 100 at \$5.50, 134 lambs av 75 at \$8.60; to Sullivan P. Co. 10 do av 37 at \$4.50, 9 do av 50 at \$6; to Hammond, S. & Co. 11 yearlings av 95 at \$5; to Sullivan P. Co. 14 sheep av 120 at \$4.75, 7 do av 130 at \$4.25, 4 do av 125 at \$4.50, 13 lambs av 50 at \$6; to Parker, W. & Co. 22 sheep av 90 at \$3.50, 91 lambs av 65 at \$8.60; to Hammond, S. & Co. 8 do av 55 at \$6; to Fitzpatrick Bros. 4 sheep av 115 at \$5; to Nagle P. Co. 29 lambs av 70 at \$8.50, 14 do av 65 at \$7.

Spicer & R. sold Nagle P. Co. 13 lambs av 75 at \$6.50, 24 do av 100 at \$8.40, 31 do av 70 at \$8.50, 44 do av 78 at \$8.65, 25 do av 80 at \$8.75; to Parker, W. & Co. 6 do av 55 at \$6, 53 do av 75 at \$8.50; to Rattkowsky 5 sheep av 120 at \$3.75, 1 do weighing 100 at \$3.50; to Thompson Bros. 10 do av 80 at \$3, 29 do av 95 at \$4.50; to Rattkowsky 2 do av 155 at \$10.50, 2 do av 115 at \$7.50; to Nagle P. Co. 15 lambs av 75 at \$8.35; to Sullivan P. Co. 2 sheep av 110 at \$3.50, 53 do av 130 at \$4.50.

Hogs.
Receipts, 4,689. Market 5c higher than Wednesday; about steady with opening last week.

Range of prices: Light to good butchers, \$7.45@7.50; pigs, \$7.50; light yorkers, \$7.50; stags one-third off.

Spicer & R. sold Hammond, S. & Co. 950 av 180 at \$7.45.

Haley & M. sold same 880 av 180 at \$7.45, 160 av 155 at \$7.40.

Bishop, B. & H. sold Parker, W. & Co. 250 av 150 at \$7.40, 3010 av 170 at \$7.45, 525 av 210 at \$7.50.

Roe Com. Co. sold Sullivan P. Co. 110 av 200 at \$7.50, 425 av 190 at \$7.45, 145 av 180 at \$7.40.

Friday's Market.

January 10, 1913.

Cattle.

Receipts this week, 2262; last week, 1816. Market steady at Thursday's prices. We quote: Best steers, \$8.50; steers and heifers, 1000 to 1200, \$6.75@7.75; do. 800 to 1000, \$6.50@7.50; do. that are fat, 500 to 700, \$5.50@6.50; choice fat cows, \$5.75@6.25; good do., \$5.25@5.50; common cows, \$4@4.50; canners, \$3.75@4; choice heavy bulls, \$6@7; fair to good bologna bulls, \$5.25@5.50; stock bulls, \$5; milkers, large, young, medium age, \$4@7; common milkers, \$3@4.50.

Veal Calves.

Receipts this week, 768; last week, 759. Market steady at Thursday's prices. Best \$10@11.50; others, \$4.50@9.50.

Milch cows and springers steady.

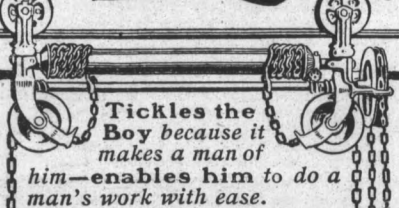
Sheep and Lambs.

Receipts this week, 6791; last week, 8007. Market 25c lower than on Thursday on lambs; sheep steady; best lambs, \$8.50@9; fair to good lambs, \$8@8.25; light to common lambs, \$6@7.25; yearlings, \$6@7; fair to good sheep, \$4.50@5; culls and common, \$2.50@3.50.

Hogs.

Receipts this week, 9432; last week, 11,109. Market steady at Thursday's prices. Range of prices: Light to good butchers, \$7.40@7.50; pigs, \$7.45@7.50; light yorkers, \$7.45@7.50; stags one-third off.

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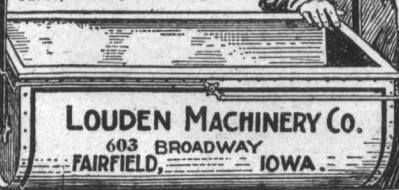
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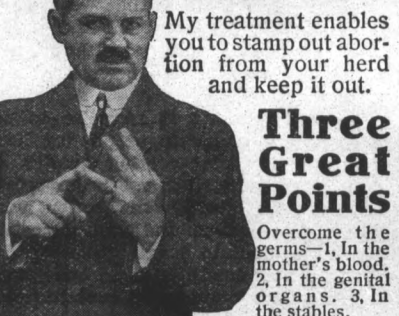
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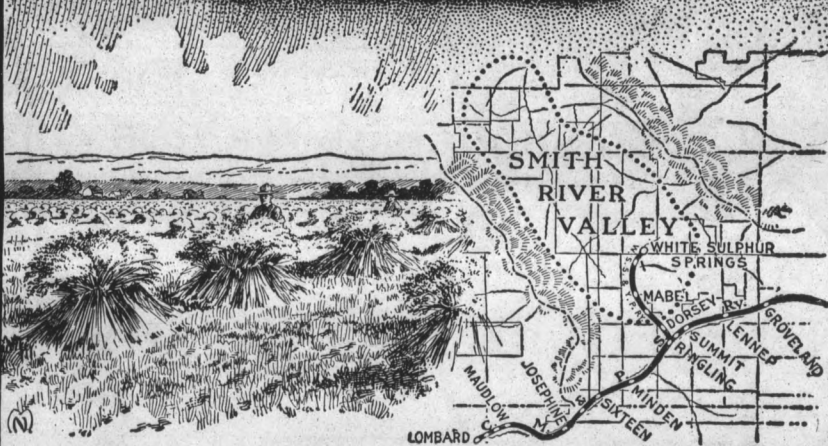
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Care of Ducks During Laying Period.

BY WM. F. PURDUE.

Ducks usually commence laying early in the year—generally some time in January—and they produce eggs pretty regularly into the summer, when most breeds suspend laying until another season. Some individuals many continue to lay until August, while others will begin in September after a resting spell; but as a general rule ducks lay their eggs between early January and the last of June, missing but a few days during that period. They require proper care, however, during the laying season if the maximum number of eggs is obtained.

Dry quarters are very essential. The duck house need never be an expensive structure, but it must be perfectly dry inside at all times. The roof should be water-tight and the floor must be such as will not become damp during wet weather. When forced to sit on damp ground ducks are liable to cramps. A plank floor, raised several inches from the ground, is always most satisfactory. Keep several inches of straw or litter on the floor at all times, putting in a fresh supply frequently. An abundance of bedding insures comfort, and it prevents broken eggs, as these fowls drop their eggs upon the floor. The duck house requires no furnishings in the way of perches or nest boxes.

Laying ducks require good feeding at this season, though one must be careful not to overfeed. A fat duck is a poor layer, producing double-yolked eggs frequently, and a fat drake is unsafe as a breeder. Feed for eggs and not for fat. Three feeds a day of ground grains and cooked vegetables, as turnips, potatoes, beets or carrots, may safely be given until the arrival of grass and insects. Don't make the feed sloppy; just

moist enough to cling together well. Some green food is also necessary for ducks the year round and should be given at least once a day at this season. Chopped cabbage is excellent for this purpose.

If the ration is not too highly concentrated the ducks may be given about all they will eat as long as an abundance of coarse grit is provided. Always give the grit separate from the food; when the two are mixed the ducks may be forced to eat more grit than they require. Place the grit in vessels close to the feed troughs; they will often stop eating to pick up a few pieces of sharp sand or gravel. Drinking water should be near the feed troughs also as they drink and rinse their beaks often while eating.

Five ducks may safely be allowed to each drake. The first two dozen eggs are seldom fertile but after that the fertility runs higher than in hens' eggs until June, when the eggs are no longer safe for incubation. It is best to keep the layers in their house each morning until nine o'clock in order that all the eggs may be deposited there; then they may be given their liberty for the remainder of the day. On cold mornings gather the eggs as soon as laid, as chilled eggs will not hatch. Some of them will probably be covered with floor litter and a search may be necessary to find these.

If the eggs are not placed at once for hatching they should be carefully wrapped in paper and kept in a dry room having a temperature of 50 to 60 degrees F. The albumen of ducks eggs is much thinner than that of other eggs, and for this reason they need to be handled carefully. The sooner they are set after being laid the better they will hatch.

CONSTITUTIONAL VIGOR IN THE BREEDING OF POULTRY.

The most important question before poultrymen today is that of maintaining the constitutional vigor of the flock, and there is no better time for giving this subject serious consideration than the few weeks which yet precede the selection of breeding stock for the coming season's use.

We are continually asking more of the modern hen, in proportion to her live weight, than we are expecting from any other class of domestic animal. A good hen is expected to lay, in a year, about five times her weight in eggs. This means a changing process, on an average, at least every third day of the year, or perhaps every other day.

The effect of such heavy strain is that fowls frequently break down or show the effect of it in lack of vigor in their offspring. I have good reason to suspect that much of the infertility and low hatching power of eggs, weakness in chicks, and mortality in mature stock may be traceable to such breakdowns, due to modern intensive methods and large egg yields. To the hatching, rearing and handling of fowls in large numbers, with the least expenditure for feed and labor, and also to the production of eggs at a season of the year when hens, naturally, do not lay, undoubtedly must be charged the lowering of vitality in many flocks.

Fowls Differ as to Constitutional Vigor and Vitality.

Whatever the causes may be, the fact remains that we have strong fowls and weak fowls in nearly all flocks, and strong strains and weak strains in all varieties of poultry. The truth is that we are unsafe in passing judgment on the merits of any particular variety without first knowing the way it has been bred and handled.

However important it may be to secure a variety or strain of poultry having certain size, high-scoring quality, or productive capacity, it is vastly important to have fowls of strong constitution, with appetites to consume and with digestive power to assimilate large quantities of food. The best condition is to have pure-bred fowls with pronounced constitutional vigor.

In-and-in breeding is frequently resorted to in order to emphasize and develop high productive, or exhibit, or other qualities. Close breeding can be followed with success only when the first consideration is given to mating strong individuals. Too many times the breeder has not had the courage to sacrifice a weak individual because of its other desirable qualities.

By breeding from pullets the breeder is undertaking to reproduce from fowls that

have not yet reached maturity, and that, presumably, with the knowledge that heavy fall and winter laying may have lowered their vitality before the breeding season. When hens begin to moult they cease to lay. The result is they are sent to market, while pullets that were hatched early in the season are kept to replace the hens. This is all wrong. A pullet is not matured until she is at least one year old. Although she may lay, her eggs are not the best for hatching purposes. It is an annual sacrifice—the slaughter of hens—that should cease. If not discontinued the poultry of this country will gradually lose vigor and the average number of eggs laid will decrease also. Pullets may be kept for laying, but for reproducing the stock the best hens should be used. It appears reasonable, therefore, that continued breeding, generation after generation, from pullets instead of hens, has a tendency to shorten the normal length of life of the race of fowls, and, at the same time, to lower its native vigor. On the other hand, the breeding from mature fowls—two or more years of age and still vigorous—should tend toward longevity and an increase in vitality.

How to Choose Strong and Weak Fowls.

With the beginner there is usually too much insistence on a perfect comb with too little attention to other desirable qualities. An even, well-shaped, five-point comb is rare indeed. Some of the highest scoring cockerels that have been produced have had poor combs. In selecting a fowl for breeding, however, choose one having less than five points rather than more than that, as the tendency is toward a greater number.

The actions of a fowl probably best indicate its physical condition. The physically weak is inactive and "dopey," and is more likely to squat than to stand. It does not scratch or forage actively. It is last to get off the perch in the morning, first to go to roost at night, and frequently is found on the perch during the day. The loudness and frequency of the crow of the male, and the song or cackle of the female, are reliable indications of strength. The weak fowl seldom crows, or sings, and is less likely to do so when in the presence of a strong individual of the same sex.

A vigorous male may be known by his generosity and consideration toward the females, as indicated by his calling them and giving to them the tenderest morsel to eat. This is one of the surest indications of physical vigor on the part of the male. The shape of the body, too, is closely related to the health and physical vigor of the individual. The deep, thick, compact body, with large fluff, shows greater vigor than the slender, long-jointed, more delicate body of the same va-

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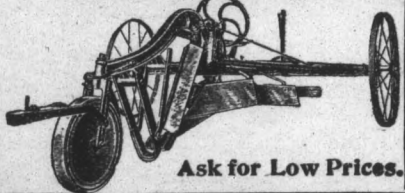
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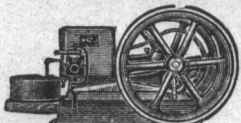
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riety. A fowl of low vitality is likely to have a long, thin beak and head, long, thin neck, long, slender body, long, thin thighs, shanks and toes. The reverse is true of the physically strong. A strong fowl should have medium to large, bright red comb and wattles. The fowl carries its health certificate on top of its head.

The eye is the mirror of the body. It shows condition in health and disease. A good healthy fowl has a bright, clear, round eye, which should stand out prominently. The lids should not droop, giving it the appearance of a snake or turtle eye.

A fowl having a strong constitution has a full development of tail feathers which are carried erect, not drooping from one side to the other. The feathers of a fowl of low vitality grow slowly; they are likely to be dull and ruffled, as compared with the close fitting, smooth, fully developed, bright plumage of the vigorous fowl.

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It is not necessary to remove any of the combs or honey from the diseased colony. The old queen had best be killed—not that she is responsible for the disease, for she is not, but a young Italian queen, reared from choice stock, is worth much more. Buy the best queens obtainable and have each shipped with a three-frame nucleus, so as to run no risk in introducing her into a full colony.

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Two Important Insect Enemies.

The Codling Moth.

The codling moth's family tree runs back to the time when the important events of the day were noted on stone, and the writers were paid by the yard of papyrus they filled. Probably the first record of the work of the present apple worm's ancestors was Cato's mention of the wormy apple about 200 years before the Christian era. It was not, however, until 1728 that the first detailed description of this pest was given, and in 1819 the first American account appeared. It seems that the world waited for an American to give the first suggestions as to its control. In the 1870's Dr. Riley suggested that Paris green was as good for codling moth as it was for the potato bug.

This insect, which does an annual damage of about twelve million dollars a year, spends the winter in a cocoon hidden under a piece of loose bark on the tree, or perhaps in the crevices of an apple barrel or basket. It does not go into the pupal stage, the stage between worm and moth, until spring. After going through that transformation it comes out as a moth, about three-quarters of an inch long with wings spread and of an unpretentious dark grayish brown col-

The Curculio.

This insect was not imported from Europe or China but is a true American, although you would not think so if you try to pronounce its scientific name, *Conotrachelus nenuphar*. This insect is important to the fruit grower because it not only attacks the plum but also the peach, the cherry, and the apple.

The curculio beetle is not beautiful like the codling moth, but is a black or dark brown insect with white and yellow spots on its wing covers. Its back is all rough and humped, and it has a snout or proboscis that is about one-third as long as the beetle itself.

This plum grower's trouble maker passes through the winter in the beetle form, hibernating in convenient hiding places. When the young green fruit has just been formed the female starts about laying eggs. She does this by puncturing the skin of the fruit and runs her snout obliquely under it and works it back and forth until the hole is large enough to receive the egg, which she immediately deposits. Then she cuts a crescent shape slit in front of the hole which will prevent the growing fruit from crushing the egg. All told, she lays about 450 eggs and takes about four months to complete



Gathering Leaves to Enrich Soils for Root Growing.

or. It is not given much toward making her job, although the process of laying public appearances and flies about only under the cover of night.

A few days after it comes out as a moth it starts laying eggs, and it is estimated that each female lays about 75 eggs. These are sometimes laid on apples and branches but most of them are laid on the upper side of a leaf. They look like little white specks and might be mistaken for a little speck of spray. They are a little larger than a pin head. In about eight days the eggs hatch into worms, which seek the nearest apple and enter it generally at the blossom end if it is a first brood worm and more often at the side if of the second brood. After about 18 days of eating and growing the worm leaves the apple, finds a convenient place to spin its cocoon and settles down to a period of rest and change. After about two weeks in the cocoon the lowly worm comes out as a beautiful moth. The life of the codling moth going through all of its changes of form is about seven weeks, except for those that passed through the winter.

A good way to become familiar with the various forms of the moth is to band some trees with a strip of burlap about eight inches wide and just long enough to go around the tree and lap a little.

One small headed nail or one with the head cut off will be enough to fasten the band. The worms will find this a convenient place to spin the cocoons which can be gathered by cutting off the piece of burlap or bark to which they adhere. These cocoons should be placed on a dish with a little moistened earth in it, and a lantern chimney with a piece of netting tied over the upper end placed over it. When the moth emerges from the cocoon it will be confined in this cage. The cocoon and moth forms can be easily studied by this method. The worm form can be found in the apple. The egg form is harder to get familiar with because it is sometimes hard to find.

her job, although the process of laying a single egg lasts only about five minutes.

About four or five days after the egg is laid a little worm hatches out and starts immediately to eat its way into the fruit. Wormy peaches, plums and cherries are the result. After spending about three weeks in the fruit the worm makes its exit and goes into the ground where it forms its cocoon. It stays there about four weeks and then comes out as a beetle. These beetles do not mate and lay eggs until spring.

Like the codling moth, the beetle does its feeding and egg laying at night. During the day it stays under concealment in the thickly foliated parts of the tree. It is a very sly creature and if disturbed it will fold its snout and legs under itself and drop to the ground and play possum. In cool weather it will lie apparently lifeless for nearly 30 minutes. This possum playing can be taken advantage of by spreading a sheet under the tree and then jarring it. The beetles will drop on the sheet and can then be collected and destroyed. This was practically the only method of fighting this pest before spraying came into use. It is still used by many growers in conjunction with spraying.

Spraying is, of course, the best method of control and is used with efficient results without the aid of other methods. Besides jarring the tree, cultivation in July and August helps keep the curculio in check by destroying the cocoons in the ground. Chickens in the orchard will do the same work and more thoroughly.

Stung and wormy fruit are signs of the work of this insect on peaches, plums and cherries. Apples attacked by it are generally small and very knobby, the places that are attacked apparently making no growth after being stung. It certainly makes an unsightly and unsalable apple.

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APPLE NOTES.

Are the summer varieties of apples being planted in the commercial orchard as much as they should be? The early fruit usually brings a good price. Even apples of an inferior quality find a ready sale. And much of this early stock is inferior. If a reasonable amount of attention were given to growing attractive fruit, the demand for both culinary and dessert apples could be largely increased.

At present there seems to be little fear of a surplus in the production of summer apples. They are classed among the perishable fruits, so must be marketed quickly. To be at their best they should not be picked till ripe, so are not suited to a long shipment. This limits the area most suitable for them to a nearby market. Their field of commercial usefulness is considerably smaller than that of the winter varieties. But those fruit growers who are favorably situated will do well to consider the merits of the summer varieties when planting orchards.

One of the favorite summer varieties is the Yellow Transparent. It is a good apple for dessert as well as for cooking. The golden color makes it an attractive fruit for the table, while the flavor is agreeable. The tree begins to bear early, so it can be made use of as a filler among slower maturing varieties. It is a heavy bearer, which is its fault. The fruit is liable to be small. But this fault may be corrected by severe thinning when the tree begins to bear.

Although it has an English name it is of Russian origin, but dropped its foreign cognomen on crossing the Atlantic. An example which many other varieties would have done well to follow. In a list for the home orchard or for a nearby market the Yellow Transparent should be considered, but the skin is too tender for long shipment.

Many foreign varieties have been introduced, but few have proved of much value here, whatever their merits at home may have been. The Yellow Transparent is one of those which have shown themselves worthy of a permanent place in American orchards and it is likely to grow greater rather than less in public favor.

Sweet apples, what is the future for them? Will it be any better than the present? The demand has not been great, so that the market has usually been supplied, even though few sweet apples are grown. As a dessert fruit the sweet apple has no place of importance. A tart fruit is desired, something more than the insipid flavor usually found in the sweet varieties, when it does not border on the bitter.

But it may be that the sweet apple will yet find a place on the table. For baking, some of the varieties are unsurpassed, and when their merits are known they should be in demand for this purpose. Here is the opportunity awaiting the right man—"Grandma's baked sweet apples," such as a man remembers from his boyhood. It might require some advertising and missionary work before a trade could be secured, but that is no more than has been done with some other fruits of less real value.

Apple butter, why should there not be a large market for that made on the farm? Sweet Pearman's are just right. They make a butter such as is not to be compared with the factory product. There are other kinds of sweet apples that may be used for this purpose, too.

Then there is apple and quince sauce, made with just enough of the latter to flavor the former. Sweet apples, of course, as those who really know how to make it will testify.

Boiled cider apple sauce is another product that grandma knew how to make just right, a lost art that ought to be revived. It is made of sweet apples, large, striped fellows that tasted as though they had been grafted onto sugar canes.

It does seem as though the sweet apple ought to include a goodly portion of the orchard some day.

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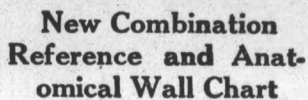
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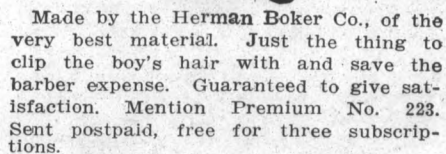
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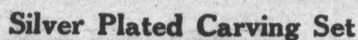
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The farmer, he garners from the soil the primal wealth of nations.

TAXATION.

Address of Associational President McBride, before the recent State Association of Farmers' Clubs.

(Continued from last week.)

The Summer system of taxation, now adopted by some cities, provides for the standardizing of land frontage values and tax them 75 per cent of their sale value and the actual improvements at 25 per cent of cost. Houston, Texas, has adopted the above figures. The Massachusetts method, or the corporate excess tax, as suggested by the State Tax Inquiry Commission for Michigan, is in recognition of this idea. Wisconsin has adopted an income tax law which taxes all incomes over \$800 for the individual who is allowed an added exemption of \$200 income for each additional member of the family. The law is not popular among professional people but appreciated by the great masses of home owners. This year will be the first collection of the taxes under the new law. Wisconsin avoided the apparent unfairness between individuals and corporations in the proposed corporate excess law by including all incomes from whatever source derived. Wisconsin still adheres to the property tax but, where the income tax is of greater amount than the property tax, the former is used and where less the property tax. There seems to be an automatic adjustment of taxation to conditions. A year of unprecedented crop failures would reduce the income tax and of great prosperity increase it. One year it might be the property tax and the next the income tax. These incursions into the tax laws of other states are interesting to see how an attempt is made to reach community or social value creations.

The most interesting and complex conditions of values arise in connection with farm lands. On the mountain lands of the southern states is found the primitive economic man. He raises his own food and clothing and, barring some expenditures for tools, he has little or no exchanges to make with the world. There is no separation of his own skill and labor as a distinct element for he is both the producer and consumer and the analysis would be of no advantage. Finally, when he or his descendants take part more and more in the industrial world, of producing food and raw material and exchanging it for manufactured products and professional services, his skill and labor are made elements of farm or land values. In the Uncompaghe reclamation project, desert land was valueless, nominally if sold under the timber and stone act \$1.25 per acre. The government irrigation project added \$25 per acre to the land and provided water. Instead of being worth \$26.25 per acre it was worth \$50 to \$100 per acre. The rancher or farmer, by the competition among themselves for a place to follow their vocation, were willing to pay the price for land. When loans were sought on these lands the limit of loan was one-half the sale value. Disability or misfortune might destroy the vocational value and that was not a loan value but is made a matter of value for taxation purposes.

Generous minded and well meaning people bewail the fact that the American boy does not stay on the farm and refuse to recognize that the keen American born boy sees the injustice of paying a vocational tax as a farmer, while in all other industries there is an earning or salary allowance which is not taxed. He has advanced out of the primitive economic man on the mountain farm, but the system of taxation has not yet recognized it. What allowance for salary and for fertility maintenance ought the farmer to have excluded, and then reckon farm earnings as is done in any other business? Then on these returns capitalize the farm for purposes of taxation. The New York Experiment Station made an economic survey of Tompkins county and found in many cases that many farms were valueless. That is, they did not pay current wages of operation. In other words, that the same labor if hired, would

have rendered no return from the farm above wages.

The investigations in New York and the experiment in taxation in Wisconsin are exceedingly interesting, and among the first attempts to recognize really physical and chemical facts in their relation to land taxation.

Michigan ought not to be behind our neighboring states and should give this problem some attention. It is almost pathetic that Michigan's constitution prescribes that all property shall be assessed at its cash value and, after delivering this oracle, leaves the subject. The point to these analyses of property values depends on so many elements, like the rapidity of the turnover as in manufacturing or merchandizing, which is not true of agriculture limited by the seasons. Timber holdings involve an automatic interest return without labor and no provision for maintenance. City real estate, with the increasing increment due to increased population, and no impairment or depreciation of value by use, as in agriculture. Mines are worked to depletion and no calculation or intent of restoration, while agricultural fertility must be maintained. The compensation received by the professional classes for their skill and ability is not property and pays no taxes, while the skill of the farmer is merged into the value of his land and is subject to taxation. Farm lands pay taxes on an annual valuation which assumes that the soil is an indestructible asset while its average annual depreciation approximates the interest on its value at current rates.

All students of taxation are agreed that the general property tax is an impossibility from the standpoint of equity and justice. When a state is almost completely an agricultural or mining or some one interest predominant, then the general property tax is reasonably fair. Michigan has so many diversified interests widely spread over the state, mining, lumbering, manufacturing, agricultural and transportation, that it is impossible to apply one rule to all these industries and do justice.

Grange.

Our Motto—"The farmer is of more consequence than the farm, and should be first improved."

THE JANUARY PROGRAMS.

Suggestions for Second Meeting.

Song, by Grange chorus.
Roll call, responded to by quotations from Will Carleton.
Echoes from institutes, by two women and one man.
Recitation.
How to make parcels post a strong bond between producers and consumers.
Recitation.
What are we asking of the legislature this winter? by master, followed by discussion of main subjects named.
What is meant by the "Referendum?" "Recall?" "Initiative?"—to be answered by a woman.
Roll call and recitations selected from Will Carleton's poems.

STATE LECTURER'S PROGRAM AT STATE GRANGE.

Co-operation was the subject upon which the State Lecturer sought to rivet the attention of the Grange during the few hours allotted to the annual lecturers' conference or program which has become a prominent feature of State Grange meetings. The presentation of the subject, however, was preceded by the State Lecturer's annual report in which Miss Buell urged a more general use of the help offered through the State Lecturer's Bulletin, stating that during the past year efforts had been put forth to secure from patrons in each of the several counties, topics fitting the farm and home conditions of every section of the state, thus making the Bulletin more nearly meet the needs of the entire state. A good list of topics was thus secured and has been freely drawn upon. Following instructions from last State Grange, the year's work on legislative subjects was confined almost wholly to a vigorous campaign of education in support of the equal suffrage amendment.

During the last quarter of the year topics were suggested for discussion which, quoting directly from the report, "are receiving so much attention at present and are of such future import that they will need, in the coming year, to be divided and presented, under one phase and another, again and again. Among these subjects are rural credits, parcels

post in extended form, business co-operation and agricultural college extension work. Of necessity, in all of these must the Grange take a deep interest. It does not seem too much to say that the Grange ought also to take an initiative part in reaching the best possible solution of them. In order to further our Grange study of one of these subjects, it will be presented this afternoon in the time set aside for the Lecturers' conference. This is the subject of Co-operation, which will be discussed by one who has given much close attention to it. In no other way did it seem, to the Executive Committee and your State Lecturer, possible to reach so many lecturers and other leaders of our work with light upon this subject—light which the speaker brings from a field where business co-operation is already in effect in scores of communities."

Discussing the training of Grange leaders Miss Buell pointed out that the Grange's force of lecturers, comprising nearly 1,000 persons, undergoes a change almost annually, thus presenting the formidable task of helping all these new local leaders to catch a vision of the opportunity of a lecturer, and to impress them with the demand which our times make upon the Grange to develop leadership for every sort of rural activity. Lecturers have ample opportunity for searching out possible leaders and for testing out those capable of leading in various community activities, and the State Lecturer held that one of the greatest obligations of a State Grange is to strike the scales from the eyes of lecturers and make them see these opportunities; for the trouble with much of our lecture work comes from simple blindness on the part of lecturers—blindness which is due to never having had the light. They should be given light from every available source.

In closing the report the State Lecturer offered the following recommendations:

1. That the publication of the Lecturer's Bulletin be continued with instructions to maintain its purely technical character; that is, to confine it to aiding lecturers to grasp the scope of the Grange field, to informing them upon the current educational efforts of the Grange at large, and offering suggestions in methods of work.

2. That the need of opportunities for wider vision and special help in up-to-date Grange methods be kept ever before the membership at large and that such opportunities be made possible to lecturers wherever funds will permit. Nor is this altogether a matter of funds; if a Grange holds the right idea of helpfulness it can and should encourage its lecturer in the use of good periodicals and books and in attendance upon such meetings, lectures, and entertainments in the vicinity as will stimulate his mental, social and spiritual life.

3. That the time is here when, as the outgrowth of consideration in our programs, State Grange will take favorable action upon the following matters:

(a) Some definite, comprehensive form of co-operation between producers and consumers.

(b) Continued co-operation expressed in sympathy, conference and united action with our rural school teachers and officers (especially in the teaching of agriculture and home economics), with the Agricultural College, extension lectures of the University, traveling libraries, etc.

(c) An agricultural college extension work among Michigan farm women and girls by the employment of a woman field agent.

Aside from several musical numbers the program consisted of a lengthy presentation of the fundamental principles underlying genuine co-operation by E. M. Tousley, secretary of the Right Relationship League. It was a splendid argument for co-operation, which the speaker held to be the greatest reform in the world, but it disclosed no plans, either practical or visionary, for bringing producer and consumer together. At the evening session which followed Mr. Tousley was given opportunity to show, by means of the stereopticon, pictures of a number of co-operative stores now in successful operation, most of these being located in the states of Minnesota and Wisconsin.

COMING EVENTS.

New York State Grange, 40th annual meeting, in Convention Hall, Buffalo, Feb. 4-7, 1913.

Pomona Meetings.

Genesee Co. with Genesee Grange, at Geneseeville, Friday, Jan. 24.
Seward (Baraga Co.) Pomona, with L'Anse Grange, at L'Anse, Saturday, Jan. 25.

DREADED TO EAT

A Quaker Couple's Experience.

How many persons dread to eat their meals, although actually hungry nearly all the time!

Nature never intended this should be so, for we are given a thing called appetite that should guide us as to what the system needs at any time and can digest. But we get in a hurry, swallow our food very much as we shovel coal into the furnace, and our sense of appetite becomes unnatural and perverted. Then we eat the wrong kind of food or eat too much, and there you are—indigestion and its accompanying miseries.

A Phila. lady said:

"My husband and I have been sick and nervous for 15 or 20 years from drinking coffee—feverish, indigestion, totally unfit, a good part of the time, for work or pleasure. We actually dreaded to eat our meals. (Téa is just as injurious, because it contains caffeine, the same drug found in coffee.)

"We tried doctors and patent medicines that counted up into hundreds of dollars, with little if any benefit.

"Accidentally a small package of Postum came into my hands. I made some according to directions, with surprising results. We both liked it and have not used any coffee since.

"The dull feeling after meals has left us and we feel better every way. We are so well satisfied with Postum that we recommend it to our friends who have been made sick and nervous and miserable by coffee." Name given upon request. Read the little book, "The Road to Wellville," in pkgs.

Postum now comes in concentrated powder form, called Instant Postum. It is prepared by stirring a level teaspoonful in a cup of hot water, adding sugar to taste, and enough cream to bring the color to golden brown.

Instant Postum is convenient; there's no waste; and the flavour is always uniform. Sold by grocers—50-cup tin 30 cts., 100-cup tin 50 cts.

A 5-cup trial tin mailed for grocer's name and 2-cent stamp for postage. Postum Cereal Co., Ltd., Battle Creek, Mich.

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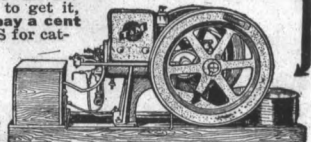
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Take Minnesota as one example: Minnesota is one of the nation's greatest and richest farming states. In the automobile registrations of the fiscal year Overland cars in the entire state of Minnesota show a gain of 98 per cent. The nearest competitor can show a gain of only 87 per cent. and the next only 55 per cent.

In Minnesota towns and villages of 1000 inhabitants, or less, Overland cars, for the year, show a gain of 136 per cent. The Overland's nearest competitor shows a gain of only 104 per cent. and the second nearest a gain of only 73 per cent. And so you find it all over the country.

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The 1913 Overland at \$985 is the exact equal of any \$1200 car manufactured. It has a powerful thirty horsepower motor. Seats five large people comfortably. This car has center control and tires of ample size. The springs are of the finest steel—three quarter elliptic in the rear. The wheel-base is 110 inches. The rear axle is three-quarter floating, drop-forged and fitted with the famous Hyatt bearings; the front axle is an "I" beam, fitted with Timken bearings. Overland brakes are unusually large and strong. It is completely equipped with top, windshield, Warner speedometer, Prest-O-Lite tank, and the very best of everything. Nothing is lacking.

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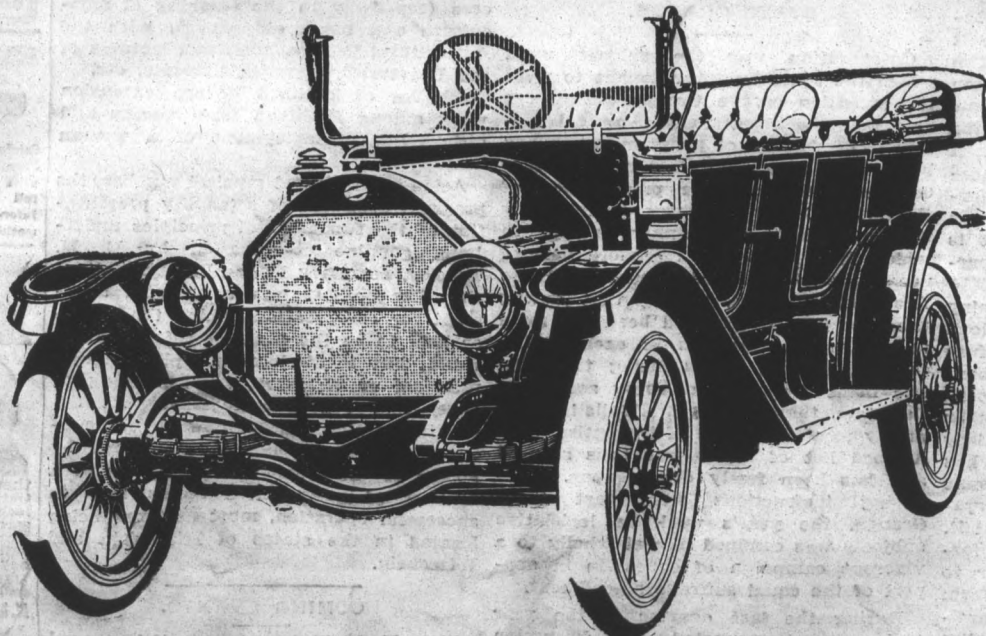
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