

MICHIGAN FARMER

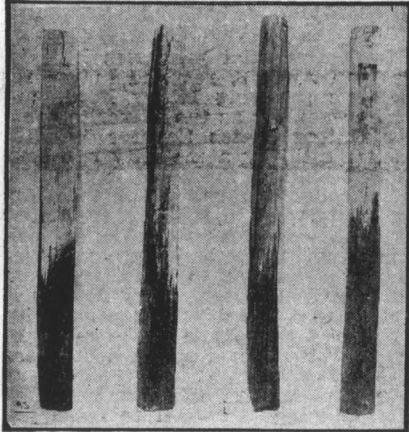
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\$2 FOR 5 YEARS.



Treated Poplar Posts After Nine and a Half Years' Service in Fence Line.

ANY person who has for a decade past purchased wood fence posts for farm use, is well aware of the increase in price that has taken place. There is little prospect of lower prices in the future as the supply of suitable woods for such use is rapidly becoming exhausted. Unfortunately, our native white cedar which produces more than half of the posts used in Michigan, is so slow growing that it cannot be reproduced commercially and the future supply is limited. Many other species that have been tried have fallen short of expectations in rate of growth, durability or ability to withstand the climatic conditions. Undoubtedly prices will continue to rise until wood posts will be too costly for many who desire to use them. There is already evidence that many are trying to reduce the first cost by setting posts farther apart in the fence row, but this can only progress to a limited extent and be practiced successfully.

It seems probable that increased scarcity will cause changes principally along two lines. First, the various substitutes for wood posts will gain in prominence. Both concrete and steel have been used with sufficient success to warrant further recognition of them. The principal disadvantages of concrete posts are their cost, susceptibility to frost heaving, extreme weight, difficulty of handling and crumbling after a few years' use, which has re-

The Fence Post Problem

By W. I. GILSON.

sulted from errors in the process of manufacture. These few objections are more than offset by various advantages such as great length of life, fire and weather-proof qualities and uniformity of size and color, making them particularly adapted for fences along highways and in other prominent locations. Added to these, is the fact that concrete grows stronger with age while wood posts gradually weaken until they finally give way at the ground line.

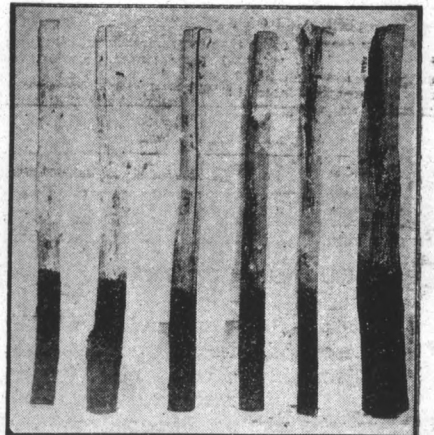
A weighing of these relative advantages and disadvantages leads to the conclusion that while there are many qualities to be wished for in concrete fence posts, which are not possessed at present, the advent of greater numbers of them will be welcomed to lessen the demand for wood. Metal fence posts have been used with considerable success although comparatively few are now in use.

There are those who realize the many superior qualities of wood, such

as its wide range of adaptability, who would consider its being replaced by substitution as parting with an old friend. Although the processes are not very generally known among farmers at the present time, there are practicable methods of increasing the durability of wood posts to make them rival the most promising substitutes. A more extensive practice of these methods will be the second result of increasing scarcity of durable fence post woods.

Crude Treatments Supposed to Increase Durability.

Before entering into a discussion of the methods of treatment, some mention should be made of crude methods in vogue aiming to increase the life of posts. It is rather popular belief that a post set with the small end down will last longer than when in the opposite position. There is nothing to warrant this belief, as moisture can travel up or down in wood with equal ease. The method decreases natural



Tank Treated Willow Posts After 9 1/2 Years' Service in Fence Line.

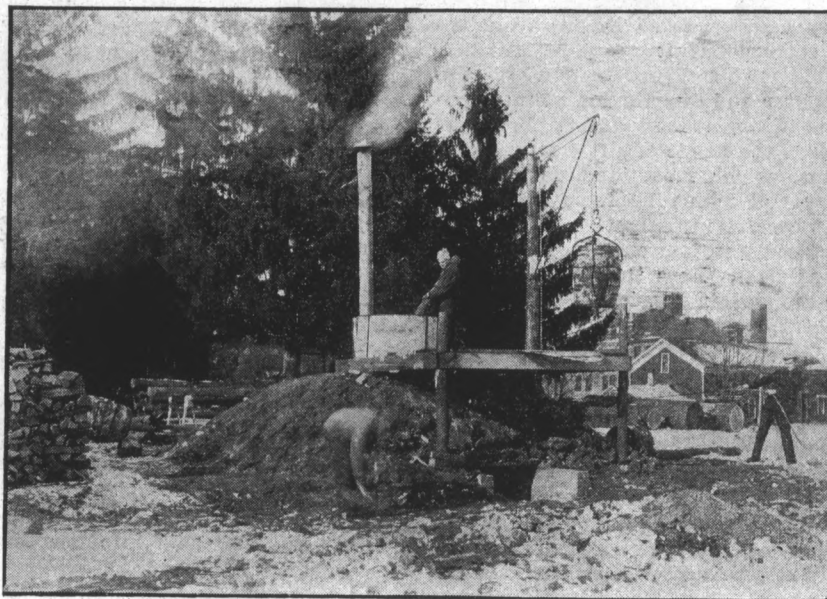
durability because the post is smaller at the ground line than if set with the large end down, and will rot off more quickly.

Another practice is to pack the hole around the post full of stone. This has some value in keeping the wood drier, and in preventing the growth of rank vegetation near the wood which would tend to harbor moisture and to foster decay. It is very questionable if the increase in natural durability is sufficient to pay for the extra labor involved unless stone are plentiful and near at hand.

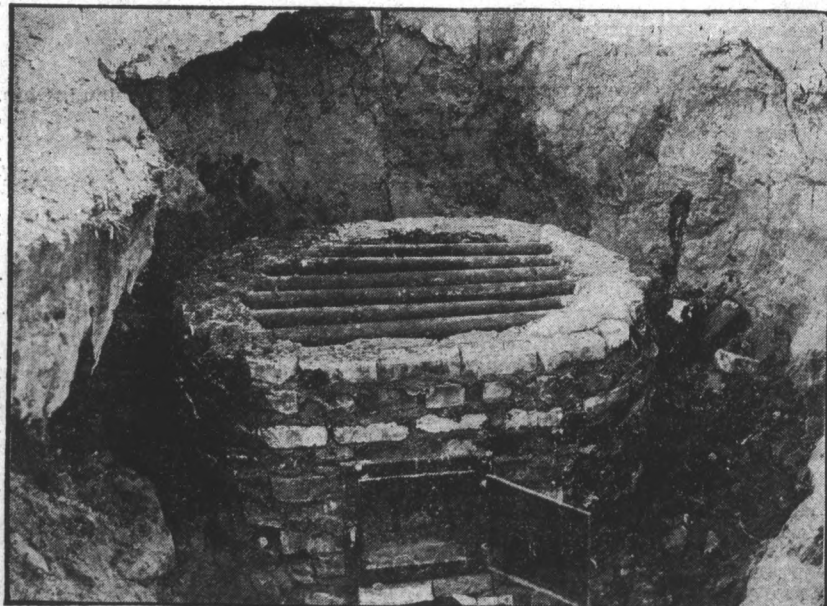
A practice involving the same principles as the latter method is to set the post in concrete, and this has some real merit in that it materially increases durability. It is particularly advised for end posts in wire fences which are rather difficult to replace without considerable effort. A precaution is necessary, however, to slope the surface of the concrete away from the post so that water will not collect in a depression next to the wood.

Charring the surface of the portion of the wood which is to be placed in the ground is another crude method in use. This increases durability to some extent as decay producing organisms will not attack the post as long as a complete band of charred wood remains intact. The posts must be thoroughly seasoned first or the heating

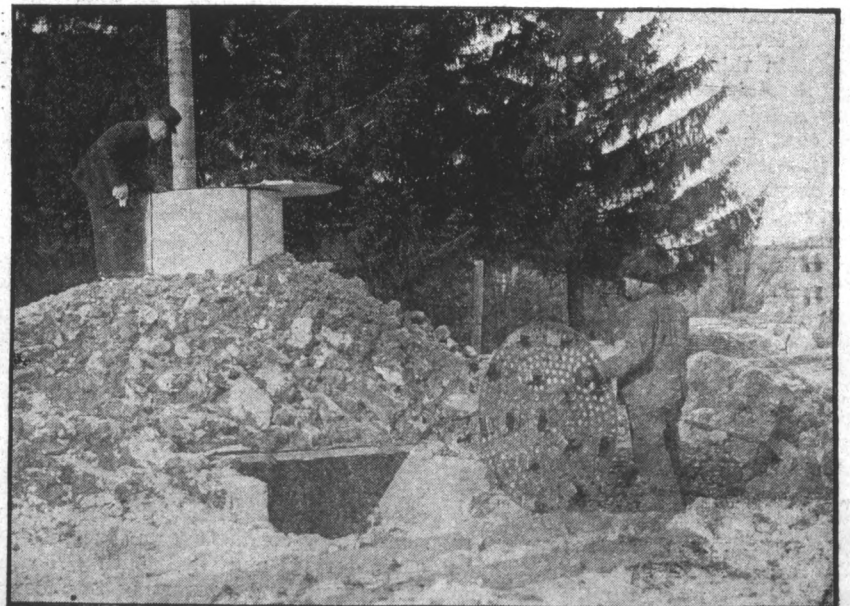
(Continued on Page 515).



Placing the Posts in a Vertical Tank for Creosote Treatment.



Archwork of Masonry to Support a Vertical Cylindrical Tank.



A Heavy Grate Should Protect the Bottom of the Tank.

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DETROIT, APRIL 15, 1916

CURRENT COMMENT.

Guaranteed Advertising. The readers of any farm paper are paid a compliment by the manufacturers and dealers who advertise liberally in that publication. Other things being equal, the amount of advertising carried in any publication of this class depends upon the readers' ability and willingness to purchase advertised goods, as judged by the advertiser himself. By their liberal patronage of our columns, reliable advertisers have extended a merited compliment to the farmers of Michigan whom they have addressed through our columns, by judging them to be liberal and discriminating buyers of quality goods. We believe that this compliment has been returned by the liberal purchase of advertised goods by Michigan Farmer readers. This is a compliment to the publishers, in that it implies that readers have confidence in the goods which are advertised in the Michigan Farmer.

In the censoring of our advertising, every precaution is taken to protect the readers' interests, and while errors may sometimes be made, even after the most careful scrutiny, such cases are rare indeed, and we desire at this time to again take the opportunity of assuring the reader that we guarantee our subscribers against fraud on the part of advertisers and solicit just and consistent complaint from any who may feel that they have cause for same in any transaction with a Michigan Farmer advertiser.

The City Milk Supply. In another column of this issue will be found a continuation of the discussion of the milk

inspection problem from the disinterested standpoint of a scientist who has had a broad practical experience in official observation of the very factors involved in this discussion. We again urge the dairymen of the state to carefully follow these discussions, to the end that they may familiarize themselves with every phase of this question as viewed by the various interests involved. As before noted, this discussion was opened for the reason that the milk inspection service inaugurated by cities has not apparently been a complete success so far as the betterment of the product of the contributing dairies is concerned. As charged in the article above mentioned as appearing in this issue, this inspection service has largely been aimed at the means by which the milk was produced rather than the end or object of the milk itself.

Also, as previously stated, we believe that the dairy farmers of Michigan who produce market milk have not succeeded in getting an increased compensation which would offset the hand-

icaps which have been imposed upon them by the milk inspection service. The dairymen contributing milk to Chicago have recently been conducting an organized campaign for better prices for their product, and have succeeded in reaching an agreement by which the price will be advanced to \$1.55 per hundred pounds. Action of this kind, however, has but small relation to the milk inspection problem.

Although the question of price-making as between the producers and distributors is very properly a function of the producers' organization, the same organization can aid its members quite as effectually in the solution of the vexed problem of city milk inspection, provided the membership is largely of one opinion regarding its proper solution. It is to crystallize sentiment upon this subject and arrive at the consensus of opinion among producers that this discussion has been undertaken at this time.

Would Investigate Packers.

A hearing of special interest to the live stock producers of the country was held by the House committee on judiciary last week. This hearing was on the so-called Borland amendment proposing an inquiry by the Federal Trade Commission to determine whether the packers are violating the anti-trust laws in the conduct of their business. Representatives of the meat packers presented their side of the case and representatives of the live stock producers of the country were later heard in support of this amendment, in addition to which they advocated more stringent laws prohibiting the restraint of trade in foodstuffs generally. Jail sentences instead of fines were particularly urged.

The contention of the live stock producers can perhaps be better presented by quoting from the testimony of Edward L. Burke, of Nebraska, representing the American National Live Stock Association, from which the following excerpts are reported by our Washington correspondent:

"The rapid concentration of the slaughter and distribution of meat animals in this country and South America into the hands of a few men, is the feature which most disturbs the producer and which he feels needs the most careful investigation.

"A complete statement of the facts is sufficient. Less than twenty years ago the working capital of the leading concern, Swift & Co., was a little over \$16,000,000, their earnings a trifle over \$2,000,000, and the volume of business about \$100,000,000. It has gradually increased until now the working capital is approximately \$120,000,000, the earnings for 1912 were over \$14,000,000 and the volume of business over \$500,000,000.

"Our association, representing thousands of producers, feels that there exists at this time not only an opportunity, but also an absolute necessity for a searching inquiry and the discovery and application of a remedy for existing conditions by governmental agencies, to the end that both the producer and the packer may receive on the average a reasonable return, and the public may have a continuous and steady supply of meat products at reasonable prices."

While the packers have successfully defended themselves against the charges previously brought by the Department of Justice relating to the joint fixing of prices, this is not the only consideration which should guide Congress in the matter of a thorough investigation of the proposition of the slaughtering and distribution of meats as conducted at the present time.

While there is no doubt that a considerable portion of the profits accumulated by the large packing concerns are the result of legitimate savings made possible by conducting the business of slaughtering and distributing on a large scale and converting into commercial by-products what would otherwise be waste, yet publicity can do no

injustice to a business of this nature. On the other hand, if practices exist which are an injustice to either the producers of live stock or the consumers of meat products, a searching inquiry should reveal them.

If this inquiry develops the need of such an investigation, the present would seem a favorable time to make it. While stock producers are now receiving remunerative prices for their products, consumers are complaining about the high cost of meats of all kinds, and a general inquiry relating to the meat packing situation would be likely to disturb trade conditions less than would be the case were meat prices low or were general consumers less able to buy high-priced meats than is the case at the present time.

Country vs. City Thrift.

Some interesting data regarding the savings of the average man, have been compiled by the American Society of Thrift from available census statistics. According to these figures, only two per cent of the entire population of the country can properly be classed as well-to-do, 93 per cent being barely self-supporting or dependent upon relatives or charity. According to this estimate, of every 100 persons who reach the age of 65 years, 97 are partly or wholly dependent upon others for their support. It is further shown by these figures that 60 per cent of the persons dying in this country leave no estate, and that only nine persons in 100 leave an estate in excess of \$500 when they die.

If these figures are at all accurate, they afford an interesting comparison between general conditions and those which obtain in rural districts. Fortunately thrift is more general among country people than among city people. At the market conference above mentioned, it was conceded by every well informed speaker that country people were good buyers, that they did not mind paying a good price for good articles, but insisted upon getting the worth of their money. This is an indication of thrift, and is an asset which can scarcely be overestimated as a factor in the forming of successful business habits.

HAPPENINGS OF THE WEEK.

Foreign.

The European War.—The western front continues to occupy the center of interest in the European conflict, and operations about Verdun were exceedingly violent last week. The Germans have not given up in their attempt to take this important French position, and have sent fresh corps to bring success. While they succeeded in forcing the French to abandon the village of Bethincourt on the western bank of the Meuse river, they have lost ground in other quarters. The falling back of the French at Bethincourt only served to straighten the French line, which at this point extended into territory held by the Teutons. The Germans immediately threw their strength against the entire Verdun line but the French were able to repulse their foes at every point. There was considerable artillery activity in the region of Dixmude, Belgium, and last week the English were successful in capturing trenches taken from them by the Germans in the latter part of March. The city of Rheims has been systematically bombarded for the past three weeks, but no infantry attacks have been reported. On the Russian front German offensives were repulsed in the regions north of Lake Narocz, and there is renewed fighting near Jacobstadt southeast of Riga. In the Caucasus district the Russians repulsed successive attacks by the Turks on the right bank of the Karadere river and continue their advance in the basin of the upper Tchoruk river. The Austrians and Italians have renewed fighting at several points along that battle front.

Mexican Affairs.—The de facto government of Mexico has proposed a scheme to reduce the Mexican national debt through the donation of labor. The proposal would have each citizen donate one day's wages each month to buy current issues of Constitutionalist bills, which would be destroyed, thereby raising the value of the outstanding currency and reducing the liability of the government.—The Mexican military authorities have offered the American punitive expedition the use of Mexican telegraph and telephone lines.

United States cavalry under Colonels Brown and Dodd are now moving south from Setavo with all speed. Minor engagements with Villa's men have taken place during the past week but there appears to be uncertainty of the present location of the bandit. The American forces have already pushed so far into Mexico that but for the use of the railroads, it would now be necessary either to establish a new base of operations or to break loose entirely from the American border.—Steps have been taken by the Mexican state department to encourage the people of the central states to till their farms more carefully, in order to avoid a crop shortage. A \$1,000 prize is to be given to the planter in each township for the best planted field.

Representatives from municipalities assembled in Berlin Germany this week to discuss the food problem and fix the maximum meat prices and the amount to be allotted daily to each individual and the manner in which distribution will be made.

National.

The preferential primaries held in Michigan April 3, resulted in the republicans selecting Henry Ford, auto manufacturer as the "favorite son," over United States Senator William Alden Smith, by a majority of about 5,000 votes. On the same day in the wet and dry contests where local option fights were on, the dries prevented any of the counties now in the dry columns from going back into the wet list, and added Baraga and Clare counties. From the preliminary reports it appears that the dries had a majority of the total vote taken in the entire 13 counties where local option fights were an issue.

Experiments are being conducted at Johns Hopkins Hospital to learn the value of serum in cases of drowning and asphyxiation, it being contended that by stimulating the blood through the injection of the serum, life may be restored even several hours after the accident.

A compromise agreement has been reached by the Toledo street car company and employees, thus ending the strike which has been in progress for 13 days.

WILL HOLD TRACTOR CONTEST.

The Inter-county Corn Growers Association of Clinton, Montcalm, Gratiot and Ionia counties recently organized for the purpose of encouraging the use of pure-bred seed, the improvement of farm stock and the discussion of all farm problems and to co-operate with the Michigan Agricultural College in the study of scientific farming methods, has designated Saturday, April 22, as tractor day. Several entries have already been received, and others are being solicited, so that the success of the event is assured. A large crowd is expected from the territory covered by the organization.

STATEMENT OF THE OWNER-SHIP, MANAGEMENT, ETC.

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EDGAR H. HOUGHTON, Secy. (Signature of editor, publisher, business manager, or owner).

Sworn to and subscribed before me this First Day of April, 1916.

CLARENCE E. HAMLIN,

Notary Public, Wayne County, Mich.

(My commission expires October 12, 1917).

(Seal).

THE FENCE POST PROBLEM.

(Continued from first page).

will develop checks and expose untreated wood to decay.

The Use of Preservatives to Increase Durability.

Such methods as have been mentioned do not involve the use of any artificial preserving fluid. In order to understand the principles involved in treating timber it is necessary to give some consideration to the causes of decay.

Decay is caused mainly by the action of fungi, which are a low group of vegetable organisms. Visible evidence of them is usually some form of fruiting body, one form of which is commonly known as the toadstool or mushroom. Slender threadlike projections known as mycelium, and to some extent analogous to the roots of higher plants, penetrate the wood and, by secreting a substance which attacks it are able to break down the structure. In order for these organisms to develop there must be present air, sufficient heat, moisture and food supply which is the wood itself. Of these elements, there is no practicable method of controlling either the supply of air or the temperature, so efforts toward increasing durability must be centered on a modification of the moisture or food conditions. The ready access of moisture is largely prevented by the injection of an oily substance. The principal means of preventing decay,



Fence Posts Made of Perishable Woods Should have the Tops as well as the Ground Portions Treated. (la. Ex. Sta. Photo).

however, is by poisoning the food supply by the application of a preservative having toxic qualities.

Common Preservative Materials in Use.

There are a great number of preservative materials in commercial use, among which are coal tar creosote, zinc chloride, copper sulphate (blue vitriol), and mercuric bi-chloride. Creosote is the only one of these which acts as a waterproofer and also possesses the necessary toxic qualities. It is put on the market under many trade names, such as C. A. Wood preserver, carbolineum, Barret's wood preserver, etc., but the substance is in each case essentially creosote. As there are also oil tar creosotes and wood tar creosotes on the market, it is necessary in purchasing to specify coal tar creosote. This latter creosote has higher toxic qualities than either of the other two. During normal times, coal tar creosote costs about two cents per pound when purchased in barrel lots. As 60 per cent of our supply comes from Europe, the price is somewhat advanced temporarily.

Zinc chloride, copper sulphate and mercuric bi-chloride are purchased as solids and dissolved in water to make the treating solutions. They are not adapted for use upon timbers to be placed in contact with the soil, because being water soluble, they soon leach from the wood. Copper sulphate and

mercuric bi-chloride are further objectionable in that they corrode metals and cannot be used in metal containers. Mercuric bi-chloride, because of its very high degree of toxicity, has poisoned animals by their licking the surface of wood treated with it. These water soluble substances are not well adapted for use in the treatment of fence posts.

The Use of Cheap Woods for Treatment.

The value of preservative treatment is not primarily that it makes naturally durable woods last longer, but that it makes possible the use of woods otherwise very perishable when used in contact with the soil. Such woods as poplar, willow, soft maple, beech and many other naturally perishable species are admirably adapted for use when given a preservative treatment. Most of our fence post woods are slow growing, while the majority of those best adapted for treatment are rapid growing and easy to propagate. Their original cheapness makes them cost less with treatment than posts of our leading species do in their natural state.

Brush Treatment.

The so-called brush treatment takes its name from the method of applying the preservative. It is especially adapted for small lots of posts because the process requires no special apparatus.

The posts to be treated should first be thoroughly seasoned, as water and creosote cannot occupy the same space in the wood cells at the same time. The posts are laid in a horizontal position on some kind of support to keep them off the ground, and the creosote oil is applied with an ordinary paint brush. If the posts are to be set in loose loamy or sandy soils, the portion from the base to about ten inches above the ground line should receive treatment. This is necessary because, in the soils mentioned, decay progresses in wood a considerable distance beneath the soil. In clay, decay extends only eight or ten inches above and below the ground line and posts need only have a band of wood treated extending a few inches above and below the ground line.

In order to secure penetration, it is necessary that the creosote be applied hot. The bulk supply should be heated, but not boiled, in a sufficiently large container, and a smaller bucket be used from which to paint.

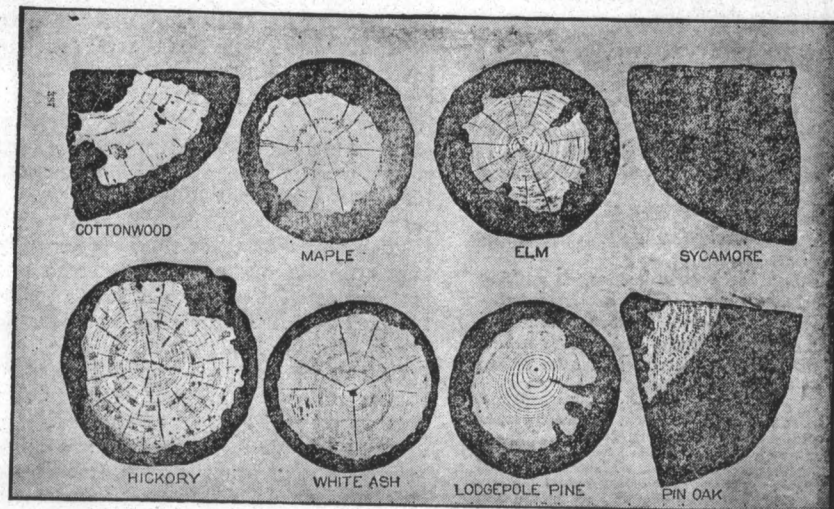
As soon as the liquid becomes cool in the small bucket it should be emptied into the large container and a hot supply again taken out. It is essential to fill knot holes and checks or untreated wood will remain exposed. Two coats are advised, the second to be given after the first has thoroughly dried.

While a complete band of treated wood remains intact, decay will not set in. It is only possible after the coating has been chipped off or when, after years, the creosote has lost its

value as a poison. This treatment will more than double the life of such woods as poplar, willow and soft maple.

The treatment takes about one gallon of preservative, when two coats are given, for each 25 square feet of wood surface, or one gallon will treat the butt ends of approximately five

mounting a metal kerosene barrel on a circular foundation leaving sufficient opening below in which to fire. A very convenient home-made equipment consists of a metal or wood tank, connected with a U-shaped piece of three-inch pipe extending about four feet out from the tank. The free ends are fastened to the tank and open into it near the



Diagrams Showing Relative Penetration of Creosote in Several Pieces of Wood. (Photo U. S. Forest Service).

posts, five inches in diameter. Based upon creosote costing two cents per pound the cost per post is approximately 3.5 cents for the materials, not including labor.

Dipping.

Instead of using a brush to apply the oil, the posts may be dipped in creosote oil to a point about ten inches above the ground line. The creosote should be kept at temperatures from 200 to 215 degrees F., but not raised, as there will be loss from volatilization of the oil. The method is more thorough than the brush treatment because it fills checks and crevasses in the wood more completely. The amount of oils used and cost of treatment will be but slightly greater than by the previous method.

In order to treat only a band of wood extending a few inches above and below the ground line, the method is sometimes modified. The posts are held horizontally over the liquid and slowly revolved while the hot liquid is poured with a dipper over the portions to be treated.

Tank Treatment.

The tank treatment is aimed toward securing deeper penetration and greater absorption of oil than by the previous methods.

The equipment consists of a metal tank so arranged that heat can be applied. The most common form is a vertical cylindrical tank mounted upon an archwork of masonry so that a fire can be built underneath. The size of the tank depends upon the capacity desired but they are usually made to hold twenty to thirty posts. A plant of rather low capacity is made by

base, with one opening about ten inches above the other. The tank sets on the ground, and the oil is heated by an open fire placed under the portion of the pipe farthest from the tank.

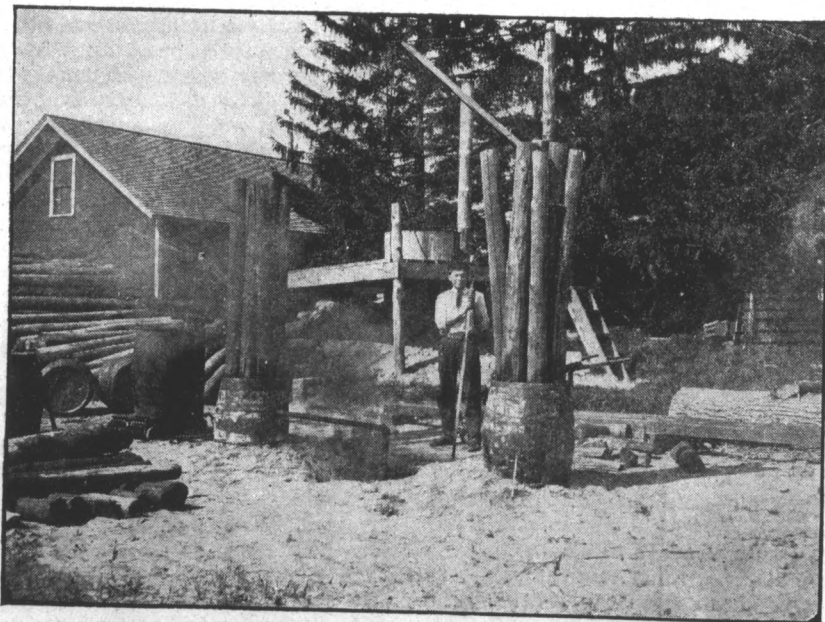
The method of treatment is essentially the same with either type of tank. The creosote is placed in the tank and heated to from 200 to 220 degrees F., then the air-seasoned posts are set in on end. The oil is kept hot for a period of from three to six hours depending upon the penetrability of the wood. The heating process alone secures only a shallow penetration of oil of from one-eighth to one-fourth inch. After sufficient heating, the fire is allowed to die down and the liquid to cool. The preliminary heating drives off much of the moisture in the wood by converting it to steam, and expands the air contained in the wood cells. When the liquid cools, the air in the wood contracts and the suction tends to draw the oil farther in. The length of time to allow cooling to continue depends largely upon the condition of the wood and the absorption desired. The period varies in duration from four to fourteen hours.

Only the butt ends of medium or durable woods need treatment. Very perishable woods, as willow, poplar and soft maple should have the tops treated also in order that they will last as long as the portions in the ground. A dipping or brush treatment for the tops is sufficient. Many treat the tops by setting them top end down in the tank while heating the oil for the succeeding batch of posts.

There is no advantage in treating a post to the center, as when the outer portions have decayed away, the center is too weak to be serviceable in a fence line and breakage soon occurs. The absorption is best determined by weighing a few test posts before and after treating. A small allowance should be made for the moisture driven off by the heating or the apparent results will tend to indicate less absorption than has actually taken place.

To increase the capacity of a plant, a second tank is sometimes used to contain the cool oil, making it possible to run from two to three batches each day. Another modification is to omit the cold bath by simply setting the posts in the open air to dry. This causes the excess oil in the outer wood to be drawn farther in by the sucking action of the air in the interior as it contracts. By this modification, considerable creosote and, consequently, much expense is saved and the results are claimed to be very nearly as good as when more oil is absorbed.

The cost per post for oil alone, based on creosote costing two cents per pound, ranges from 10 to 13 cents per



Creosote in the Barrel to the Left is Heated by an Open Fire Under the U-Shaped Piece of Pipe.

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WM. GALLOWAY, Pres.

Manure Spreader Manufacturing Specialists

FERTILIZER

Muncey Cartage Co., shippers of horse manure and tobacco stems, 450 Grand River Avenue, Detroit Mich. Tel. Grand 821 and 4267.

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post, when the posts are heated and cooled in creosote oil.

Resulting Increase in Durability.

Sufficient data is not at hand to show to what extent the durability of each of our common woods can be increased by applying a preservative treatment. It is safe to say, however, that the two-tank treatment will more than treble the life of woods of medium natural durability. Willow, poplar and basswood have been made serviceable for 25 years.

Preservative treatment makes possible the use of woods that have heretofore been considered worthless for fence posts. The cost of both post and treatment together is less than that of good fence posts in their natural state.

The advisability of farmers purchasing creosote oil together in large lots is suggested to secure a lower price. Treating plants can also be operated on a co-operative plan. Plants of the types described are sufficient to treat many times the number of posts any one farmer will need at one time.

If the methods suggested are more widely put in practice, the drain upon the commercial fence post woods will be lessened by substituting the cheaper and more plentiful species, and the cost of maintaining fence lines will be decreased. Much progress has been made in recent years in developing methods of treatment and in ascertaining results. Those who have conscientiously practiced these methods have reported very encouraging results and are the strongest advocates of preservative treatment of fence posts.

RYE AS A FERTILIZER.

We began to sow rye about fifteen years ago on a piece of loamy, gravelly soil which had been poorly cultivated for several years and was badly run-down. This ground has been, with the exception of one year, planted to a cultivated crop, usually early sweet corn or early potatoes. When the crop was harvested, which was generally quite early in the fall, the land was either plowed or harrowed and sowed to rye, and any manure that had accumulated during the summer was used as a top-dressing on the rye. This land, after producing each year during the past fifteen years, from a fair to some extra large crops, is today in a first-class state of cultivation and is at this time green with rye.

Three years ago land was bought for the institution costing \$50 per acre. On one field, consisting of 22 acres, corn was planted. When corn was off it was thoroughly harrowed and one and one-half bushels of rye drilled to the acre. During the winter the poorer spots in the field were top-dressed with barnyard manure. The rye was plowed under when about waist-high and the field planted to northern-grown white pea beans. From this 22 acres 540 bushels of beans were threshed, or about 400 bushels, hand-picked free from all disease and worth at least \$1.200.

When the rye is sown after corn, beans or potatoes a good harrowing with a spring-tooth is all that is needed to furnish a suitable seed-bed. The work of sowing the crop is very light and where the sowing can be done early in the fall one and one-half bushels of seed is plenty. When sown on rolling or hilly soil it generally prevents considerable washing.

With us, each piece of garden land, however small, is plowed or harrowed and sowed to rye as soon as the crop is harvested, and with a winter like the past one, where the ground has been bare much of the time, if the rye is there it is always ready to take advantage of any warm spell and make a little growth and add a little humus to the soil. Michigan farms would be much more pleasant to look at when the first spring rains came if more of the hills were covered with a blanket of green, if only rye.

GUY CONNER,

Supt. Mich. Reformatory Farms.

That Farm Woodlot

I HAVE read the article on this subject in the Michigan Farmer of March 18 with much interest, and will say I have been aware of the fact that the M. A. C. has persistently preached the doctrine that woodlots should not be pastured. I would not like to detract from the good work which that department has done, and I hope that the College will continue to keep the matter of forest conservation and extension before the people, but I cannot keep from registering a protest against the teaching that one should not pasture woodlots. In my opinion that is one of the first things that should be done to preserve such lots, at least in this section of the state.

Fire the Great Enemy of the Woodlot.

I will agree, however, that it can easily be overdone. But the great enemy of the woodlot is fire. I have had an opportunity for years to observe hundreds of thousands of acres of all kinds of timbered lands, principally maple, elm, basswood, beech and oak in about the order named as to amounts of each.

Now, when the forests were virgin timber, it was so thick that the very shade at all points aided in keeping down fires, and there were very few people to start fires, consequently the timber had its best chance to thrive. But as the country was cleared up, the woods became full of dead tops and butts, bark, and small trees crushed down by the fall of larger trees, and sooner or later fires got started. Perhaps the farmer was clearing, or camping parties left a fire, or a locomotive set fire to the grass along the track.

Perhaps a high wind carried a spark a long distance and set fire in a log fence, but the fire ran through the woods. Probably it removed the brush heap or rotten log that made the most trouble, but it killed a part of the tree. Maybe the farmer has forgotten the fire, but sooner or later it shows up in a rotten streak. Then there is the excessive tapping of comparatively small trees for sap for syrup.

Now, anyone who has had a chance to observe large tracts of timber land knows that woods where cattle are confined, will not allow the fire to pass anywhere near so readily. Often it will run along a little ways each day and finally die out, while the same woods unpastured would have had a roaring fire that would have about killed the timber.

Fence Off the Poor Spots.

But the suggestion of the author of the other article that a portion of the woodlot be fenced off and allowed to grow a new crop of timber is a good one, but instead of doing that by the whole or a certain fraction of the tract, it would be better to enclose the patches that are lacking in timber. As a general thing, we find that the first people to handle a timber lot are ruthless in the manner of handling it. Men are hired perhaps at so much per thousand feet to cut logs and there is in their minds but one idea and that is to fall timber so as to be able to cut the logs without pinching the saw and allow the most scale of logs in a day. There will be a jumble of tops matted together and later a fire runs through and kills most of the larger saplings left standing over perhaps half an acre or more, then blackberries, raspberries, wild gooseberries and other small vines and bushes come into the spot. These leave a mass of dead branches as they decay after their short lives, and again a fire gets started and the soil is robbed of its humus and a bare spot remains.

Cause and Effect.

Now the picture illustrating the article above mentioned, especially the one on page 379, look to me like results from fire instead of from cattle. The student of forestry sees the decayed tops above and the cattle be-

neath and concludes the poor cattle are to blame. I would ask if it is not true that often the most luxuriant growth of a tree is in one along the roadside where cattle run, or in a barnyard or in an old pasture. Of course, as the light is all around, it has not the benefit of natural pruning, and spreads out to be a thing of shade and beauty instead of a tall tree of commerce.

Where cattle are pastured the small bushes, blackberries, etc., which make so bad a fire trap, are killed down by the stock and if the thin spots are given a chance to fill in, we will not find the stock harmful. But at the same time I would not favor excessive stock pasturing. I have seen stock so pressed for food that they began to ride down shrubs twenty feet high. They crowd the trees over and eat off the leaves and will kill them if left to do it. This is more noticeable in elm timber than in maple, but it is a shame to so starve cattle as to compel them to live in that way.

The state of Michigan ought to set out some of the waste land, or what is now waste land, to rapid growing timber, like Carolina poplar or locust. It would be a great source of revenue in future to the state, and as soon as the timber got large enough to stand the cattle they should be allowed to graze on such lands to keep the fire from killing the trees. It would be but a short time before that would be the case.

Benzie Co.

E. H. ALLEN.

FARM NOTES.

Liming Soil for Clover.

A field of ten acres of sandy soil was in corn last year. Soil quite badly run. I want to sow to oats and seed to clover. Am dressing liberally with manure but will not have enough to go over entire field. Field is level and needs draining. Presume soil is sour so am thinking of using lime. Is land plaster the same as ground limestone? If not, which should I use and how much per acre?

Midland Co.

N. W. W.

If this soil is in an acid condition, it would be better to use a small application of caustic lime when the ground is being fitted for oats; 300 to 400 pounds per acre of caustic lime (hydrated lime is the best form to use), will have a greater effect in the immediate correction of this soil acidity than will a liberal application of the ground limestone.

If the lime can be applied some time before the seed is sown, then ground limestone is the best form to use, since it will produce more lasting results. Ground limestone is chemically known as calcium carbonate, while land plaster is calcium sulphate and is of no value in the neutralizing of soil acidity, its tendency being rather to produce an acid soil than to neutralize same.

A Catch Crop with Oats.

I am to sow 20 acres of oats this spring and follow with wheat in the fall. Is there anything that I could sow with the oats that would come up after the oats are harvested and then plow it under in the fall? Would it be of any benefit to the wheat?

Allegan Co.

M. J.

About the only forage plant which can be successfully sown with oats which will make anything of an after-harvest growth is dwarf Essex rape. However, where the oat ground is intended to be sown to wheat, it would not be a good proposition to try to grow a catch crop of this kind to be plowed down for green manure, since in the ordinary season if oat ground is to be put into wheat, it should be plowed as soon as possible after the oats are removed, in order to conserve the soil moisture and give plenty of time for making a compact seed bed for the wheat. If the plowing were done at once after the oats are cut, the rape would not add very much vegetable matter to the soil.

LILLIE FARMSTEAD NOTES.

Very heavy rains followed by warm weather has started the wheat plant also the clover and alfalfa. Especially the new seeding of clover and alfalfa. The wheat has not been badly winter-killed as yet. If freezing weather is now (April 3), over, the wheat plant will pull through in this vicinity in fair shape. Better than anybody expects. All the latter portion of the winter the ground was bare and it froze hard. Several nights in succession the mercury was hovering around zero. However, Dame Nature did exactly the proper thing to get out of this condition with as little injury as possible. A good heavy snowfall came while the ground was frozen hard and the frost came out of the ground under the snow. You know when a man frosts his nose or ears in winter the very best thing is to pack the injured parts in snow until the frost is removed. The freezing don't seem to hurt but little. That is just what nature did with the wheat plant this March. Now if freezing is over all will be well.

I was very anxious about this because the plant went into winter so small and weak I did not think it could survive much adverse weather conditions. If the wheat can pull through I have little fear of young clover and alfalfa.

Bad Roads.

The condition that helped wheat out nicely was the worst possible condition for our roads. The ground was frozen deep and the snow that followed melted and could not be absorbed by the soil. The result was as fast as

We must insist on something of this sort or we will never have good roads. One will be worn out while we are building another.

Feeding Steers.

Last year we had lots of clover and alfalfa hay that was damaged by wet weather. I did not think we could possibly feed it all out because our cow barn had 11 empty stalls. Therefore, I purchased 11 grade cows. Besides, I had 13 empty stanchions in the horse barn and I resolved to fill them with feeding steers. The idea I had was to feed them silage and this hay with only a little grain. Simply grow them nicely and then put them on pasture and sell them in July.

I had to pay six cents for those from the local drovers. But they were well shrunken. He made me two offers. First, to weigh them up, feed them till July and he would give me five cents for all the gain or pay him six cents and take the market. I was green at this business. Never bought any steers before in my life. But I told him I did not like the five cents idea. So I bargained to take the steers and let him know in a few days what I would do. I asked several men but they did not seem to know much more about it than I did. I wrote Editor Waterbury and he told me to buy outright. Before getting his letter I searched diligently through my library for information on this subject, and I found where Perdue Station had given careful consideration to this very question. They claim that a feeder must get at least 20 cents a month increased price over the purchase price to make anything feeding steers. That is, I must



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the soil thawed it became very muddy and roads have been in a horrible condition. This condition has prevailed, I learn, over a wide territory. Some roads that were nicely graveled last summer and fall are cut clear through to the clay soil and much of the gravel is wasted.

Now, however, these roads should be repaired as soon as conditions will permit. There is no use spending so much money building roads unless they are to be properly cared for afterwards. I will not vote for any more bond issues for good roads unless some systematic policy is carried out for repairing the roads already built. The township authorities or the county authorities should make arrangements so that every rod of permanent road is looked after and repaired at the proper time. The road drag will do the most of it if it is used at the proper time. The trouble is it is nobody's business, or seems to be, while some particular person should be held responsible for a certain length of road. It should be his business to drag it at the proper time. Also, if any portion is wearing uneven, ruts forming, etc., he should repair it at once when the cost will be but little and not have it wait until it is almost beyond repair.

not only get six cents when I sell, but if I feed six months I must have 20 cents per 100 pounds additional each month, or \$7.20 per 100 to get a reasonable profit. Well, I telephoned the man I would buy. If I hold them until August 1 I should have \$7.60 per 100. It is a gamble if I get it. This steer feeding is something of a speculation. Now people who ought to know tell me I ought to feed grain on pasture or I will never get the weight and finish I must have to get \$7.60. Will it pay at present price of grain? If I don't make any profit, provided I don't lose, I shall not be sorry for I will have sold my poor hay to those steers at a fair price and besides I am learning a lesson in cattle feeding.

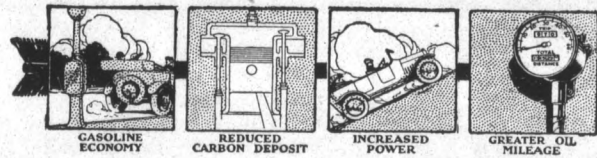
COLON C. LILLIE.

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A grade for each type of motor

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Ask him to empty your crank-case of its present oil and fill it with the correct grade of Gargoyle Mobiloids.

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Gargoyle Mobiloid "Arctic"

In the Chart below, the letter opposite the car indicates the grade of Gargoyle Mobiloids that should be used. For example, "A" means Gargoyle Mobiloid "A," "Arc" means Gargoyle Mobiloid "Arctic," etc. The recommendations cover all models of both pleasure and commercial vehicles unless otherwise noted.

MODEL OF CARS	1916	1915	1914	1913	1912
Abbott Detroit	Arc	Arc	Arc	Arc	Arc
Apperson (8 cyl.)	A	A	A	A	A
Auburn (4 cyl.)	A	A	A	A	A
Autocar	Arc	Arc	Arc	Arc	Arc
Avery	A	A	A	A	A
Briscoe (8 cyl.)	A	A	A	A	A
Buick	Arc	Arc	Arc	Arc	Arc
Case	A	A	A	A	A
Chalmers (Model 6-30)	Arc	Arc	Arc	Arc	Arc
Chandler Six	Arc	Arc	Arc	Arc	Arc
Chevrolet	Arc	Arc	Arc	Arc	Arc
Cole	A	A	A	A	A
Cunningham	Arc	Arc	Arc	Arc	Arc
Detroit	Arc	Arc	Arc	Arc	Arc
Dodge	A	A	A	A	A
Empire	Arc	Arc	Arc	Arc	Arc
Federal	Arc	Arc	Arc	Arc	Arc
Ford	A	A	A	A	A
Franklin	A	A	A	A	A
Grant	A	A	A	A	A
Haynes (12 cyl.)	A	A	A	A	A
Hudson	Arc	Arc	Arc	Arc	Arc
Hupmobile	Arc	Arc	Arc	Arc	Arc
I. H. C. (air)	A	A	A	A	A
Jeffery	Arc	Arc	Arc	Arc	Arc
Johnson	Arc	Arc	Arc	Arc	Arc
Kelly Springfield	A	A	A	A	A
King	A	A	A	A	A
Lincoln	Arc	Arc	Arc	Arc	Arc

MODEL OF CARS	1916	1915	1914	1913	1912
Kissel Kar	A	A	A	A	A
Knott	A	A	A	A	A
Locomobile	Arc	Arc	Arc	Arc	Arc
Lozier	A	A	A	A	A
Marmont	Arc	Arc	Arc	Arc	Arc
Maxwell	Arc	Arc	Arc	Arc	Arc
Mercer	A	A	A	A	A
Mitchell	A	A	A	A	A
Moline	A	A	A	A	A
National	A	A	A	A	A
Oakland	A	A	A	A	A
Oldsmobile	Arc	Arc	Arc	Arc	Arc
Overland	A	A	A	A	A
Packard	A	A	A	A	A
Pierce Arrow	A	A	A	A	A
Reo	A	A	A	A	A
Selden	Arc	Arc	Arc	Arc	Arc
Stearns Knight	A	A	A	A	A
Studebaker	A	A	A	A	A
Stutz	A	A	A	A	A
Wells	A	A	A	A	A
White	Arc	Arc	Arc	Arc	Arc
Willys Knight	A	A	A	A	A
Winton	Arc	Arc	Arc	Arc	Arc

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Growing the Blackberry

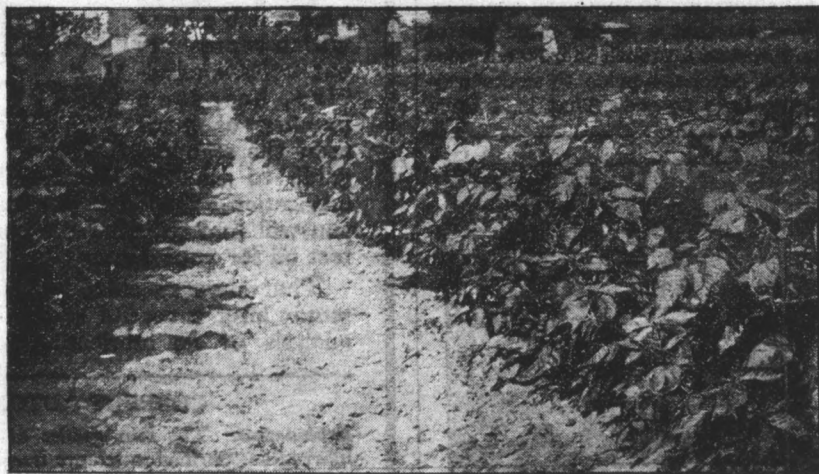
BLACKBERRIES do not have particular soil requirements, and steady cultivation is more necessary than heavy applications of manure. In many sections of this country the blackberry is found growing wild, sometimes in favorable seasons the wild fruit matures well and is good enough to market. However it is apt to be shriveled and seedy, especially in dry seasons, and in case of this kind it has little value. The condition of the wild fruit in the average season brings out the necessary points to consider in raising this fruit in the home garden.

Keep Blackberries Well Cultivated.

The blackberry needs plenty of moisture. Cultivation conserves the water in the soil and enables the plant to mature large juicy berries. The wild berry patch soon becomes a bramble and harvesting is very difficult. Careful pruning keeps the berries in the home garden under control, maintains the vigor of the plants and reduces the cost of harvesting the fruit. In selecting the blackberry site drainage is an important consideration. The wild berries thrive best in bright sunny locations on well-drained southern slopes. The plants receive plenty of moisture but at no time does this soil become swampy. You do not find blackberries

pruning shears in the hands of a careful man will be necessary to obtain the best results.

Blackberries picked for a distant market must be removed from the plants while still firm and acid in taste. They will not stand rough handling and delayed transportation and many shipments are lost by sending out the fruit when too ripe. If sold on a local market within a day after picking the harvest should be delayed until the berries are ripe. The ultimate consumer who purchases berries at the local market expects them to appear on the table the same day as they are ordered and if the fruit is sour and seedy the berry market loses a friend and the demand for blackberries at that market is apt to be correspondingly reduced. The quart box is the best package for marketing the blackberry. Some grocers seem to object to the paper box which has been used by some growers. These boxes usually cost less money than the wooden boxes but when the fruit is held for several days they are apt to stain through with the juice of the berry and not make a good appearance on the market. This trouble will doubtlessly be overcome in the future and a paper box devised which will be a satisfactory shipping package. At present the cost of pack-



Thorough Cultivation is Necessary for Good Results in Blackberry Growing.

thriving in the swamp near your home. Doubtlessly they will be in a sunny fence corner at the edge of the woods in a rich moist loam. In planting the berry in the home garden, while a special soil is not an exact requirement, the conditions under which the blackberry thrives in the wild state should be conformed with as nearly as possible.

The best method of preparing the soil is to plow in the fall and allow the frost to assist in breaking down the rough lumps which will liberate a certain amount of fertility. In the spring a disk harrow and a drag can be used to fit the soil for the young plants. In setting out the plants five feet apart in rows seven feet apart will probably be the best. Some growers advocate setting the plants four feet apart in eight-foot rows as the plants reach out quite a distance and eight feet gives more room between the rows for cultivation.

Pruning the Blackberry.

Blackberry canes live for two years and at the end of the second year all of the old canes must be cut out and burned to give the room to the new growth which will bear fruit. The first year the canes should be pinched back when they reach two feet in length. This causes other shoots to start and makes a strong vigorous plant with a large fruiting surface. The principal is about the same as pruning the peach, you wish to make a low-headed plant with plenty of fruit-producing area.

During the second year the pinching back is necessary when the canes are about three feet in length. Next to harvesting the fruit, pruning is one of the most important features of the berry business and sharp, well-oiled

ages consumes quite a large amount of the berry grower's profits.

The two principal diseases to combat are the cane blight and anthracnose. Spraying has so far had no effect on the cane blight and the best method of control is to use plants that are guaranteed to be free from the disease, and then plant them on ground which has not been used as a blackberry or raspberry patch for several years. All infected canes should be cut out and immediately burned. Healthy plants and a short rotation will assist in controlling the anthracnose, but spraying is inefficient. You can immediately tell anthracnose from the purplish spots on the canes which later become sunken and gray and also from small spots which may appear on the leaves, affecting the petioles and the veins. The cane blight is a wilt disease which causes the young canes to wilt and die and can be detected by the general wilted appearance of the plant.

Generally speaking, there seems to be an excellent local market for the blackberry in many sections where it is not raised on a scale large enough to mean an over-supply. In spite of the diseases which sometimes occur, the blackberry is hardy and will stand a great deal of hardship. It is a plant that responds well to simple methods of pruning and general culture and should be found at least in small quantities in every home fruit garden.

Ingham Co.

R. G. KIRBY.

DRESSING PRUNING WOUNDS OF FRUIT TREES.

Experiments were started by the New York Station in 1911 and conducted

for four years to determine whether any coverings are necessary for the wounds of trees, as well as the effect on the trees of various substances used in treating wounds. The trees used in the experiments were apples and peaches and the substances used as coverings were white lead, white zinc, yellow ochre, coal tar, shellac, and avenerious carbolineum. The dressings were applied when the pruning was done at different seasons of the year and upon wounds of various ages.

From the results of this experiment as a whole, it is concluded that the dressings commonly applied to pruning wounds retard rather than accelerate the healing of the wounds. The effects are the same whether the dressings are applied when the wounds are made or some weeks later, when the cut surface has dried out. The effect of the dressings used are so injurious to peach wood that wounds on peach trees should never be covered. For sprayed orchards at least, it appears unnecessary to apply dressings to wounds under four or five inches in diameter to prevent the entrance of fungi. It remains to be proved whether dressings have any real value in covering large wounds. The injury caused by dressings probably offsets or even overbalances any possible protection against decay.

Of the materials used, shellac was the least injurious and seemed to exert a stimulating influence upon wounds for the first season. Shellac adhered to the wounded surfaces least well of all. Avenerious carbolineum and yellow ochre caused so much injury that they should never be used as dressings. Coal tar in addition to causing injury, disappeared rapidly, either through absorption or evaporation. Tissues injured by using white lead and white zinc practically recovered from the injury by the end of the season. Of the protective substances used, white lead is considered the best

Don't apply lime-sulphur and arsenate of lead during a spell of extremely hot, bright weather; it is liable to cause serious burning.

Don't fail to clean the machine thoroughly after each spraying; it saves much trouble when the time comes for the next application.

Don't think that spraying alone will insure good fruit; pruning and cultivation are equally essential.

TRANSPLANTING BUSHY PLANTS.

Some gardens produce few vegetables of fine quality because of carelessness in setting out young plants from the hot-bed. We follow a simple method which has never failed to produce good results. We do not think it advisable under most conditions to set out tiny, spindling seedlings. By the time the garden is well prepared the hot-bed plants are large and sturdy; sometimes the tomatoes are in bloom if spring is late, and they may be transplanted as safely as tiny plants, ripening fruit for early summer use.

The best-times to transplant are when the sky is cloudy and the air cool; late in the afternoon if weather is clear; just prior to a rain, or soon after a rain. If the sky is clear and the air warm plant in the evening and keep the plants shielded from the sun by paper sacks or leaves for at least twenty-four hours.

When removing the seedlings from the hot-bed keep as much of the dirt adhering to the roots as possible. It is well to puddle them immediately if the roots have not much earth on them. If there is plenty of dirt on them moisten it. It is important that the roots be kept moist for the exclusion of the air. Remove the plants to the garden right away and plant as quickly as possible before the plants begin to wilt.

In transplanting large plants they should be set deep, preferably three or four inches deep, where the soil is

moist. It is well to water the plants, but it should be poured into the hole made for the plants before filling with dirt, then pulverized soil filled in and firmed with the fingers about the stocks of the stems. If the plants are watered afterward it should not be done while the sun is shining, else the soil will bake and form a crust about the plants. If the plants are very bushy or top-heavy it is advisable to stake them.

Plants that have a great deal of foliage, such as tomatoes and peppers, will do better if they are pruned a little. This may be done by pinching, or snipping off some of the lower branches and cutting back a few of the longer branches. However, they should not be pruned too severely or they will become stunted in growth. If there are many blooms pinch off a few of them also.

Large seedlings that have been in the ground several days will resist the blighting influence of frost much better than small ones. In case they should be frosted, keeping them protected from the sun will aid greatly in saving them. Paper sacks may be used for this purpose; when opened they will slip down well over the foliage. Another method that often proves effective is to pour cold water on them before the sun strikes them.

Indiana. J. L. JUSTICE.

TROUBLE DEPARTMENT.

Control of Insects and Diseases.

I would like to ask you to publish the spraying laws of the state of Michigan, as this part of the state is now badly infested by fungous diseases and the oyster shell bark louse. Some farmers claim that there is a law which compels them to spray their orchards. Menominee Co. M. N.

As the laws related to the control of fruit insects and diseases are too long for us to give them space, we would suggest that you write Prof. L. R. Taft, East Lansing, Mich., for a free copy of them.

Briefly, the law is that injurious insects or contagious diseases should be treated by the owner of the trees which same attack. If the owner fails to do this, the township inspectors can go in and destroy the trees or treat the trouble, as they see fit, and have the expense of doing the work spread as a tax upon the property. There is rarely any attention given to neglect in treating fungous diseases, because they are not considered serious diseases. Neglect with reference to the care of little peach yellows or the blight would be liable under this law. All of the scale insects also come under the inspection laws, but the other common fruit insects such as codling moth and curculio, have thus far not been given much attention.

Girdled Trees.

As we have a young orchard of trees that are two years of age, this winter the wild rabbits peeled the bark from them, and I would like to know what will keep them from dying.

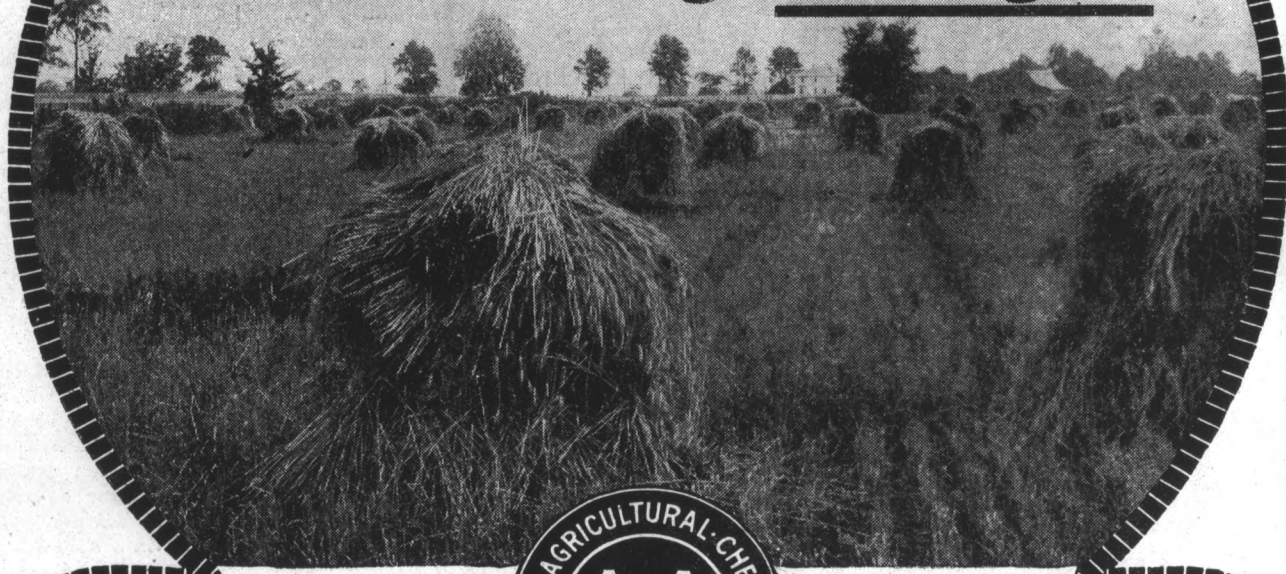
Sanilac Co. J. B.

If the injury to your trees is not very serious, that is, if the bark has not been taken off entirely around the tree, the best way to treat these girdled wounds would be to cut away all of the loose bark and then thoroughly paint over with a liberal amount of pure white lead and oil, having the mixture quite thick.

If the rabbits have girdled the trees for more than an inch or two all the way around the trees, the only way the trees can be saved is to bridge graft them. This is done by taking twigs of the past season's growth, and after sharpening each end, inserting them in small holes on each side of the girdled part. The twigs should be a little longer than the distance between the two holes.

In order to protect the grafts from the weather, the places at which the twigs or cions are inserted should be covered with grafting wax. On two-year-old trees, about two grafts to the tree would be sufficient.

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Wheat	59.86	bush. per acre	10 Prize Winners	48.50	bush. per acre

The crop shown in the photograph was good but not good enough to win a prize.

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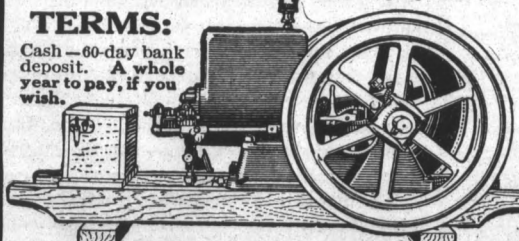
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—to produce more milk than any other ration either home mixed or purchased and do it without giving your cows constipation or udder trouble. Ready to use right out of the sack without any mixing.

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Absolutely free from adulterants and fillers, just like the feed you would mix for yourself, is a special combination of choice cottonseed meal, dried beet pulp, gluten feed, corn distillers' grains, wheat bran, wheat middlings and a little salt, that all ingredients weighed by automatic scales and all thoroughly mixed in huge power driven mixers, so that it is always absolutely uniform, and always good. An extra quart or two of milk daily from each cow may turn a loss into a profit. Try LARRO-FEED for more profits. Sold on "money back if not satisfied" plan, the decision being entirely up to you. LARRO dealers almost everywhere; write if none near you.

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Raise your calves and get the bigger money to which you are entitled. But do not feed the calf whole milk, with butter fat worth \$800 a ton.

RAISE YOUR CALVES

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The Recognized Milk Equal

You get 100 gallons of rich milk feed from 100 pounds of Blatchford's Calf Meal, and it costs you only one-fourth as much. It will make your calf grow fast and well.

Blatchford's Calf Meal is composed of the elements the young calf needs in the most trying period of its life; is thoroughly steam cooked—prevents bowel troubles and other ills due to improper milk substitution.

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Dairying for Profit

What is the value of skim-milk per 100 pounds if fed to pigs at an average market value for such pigs? We are wondering if we can sell our cream and feed the skim-milk on the farm and get greater returns than we now receive by selling all the milk to the local condensary. All our capital is invested in cows, all our rotations are planned for the dairy business, but the price paid does not equal the cost of production. Perhaps you can suggest some other turn for us or some way to reduce the cost of production, so I will give a little statement of our operations. We have about 25 cows and about 225 acres of land. We feed two bushels of silage for each cow per day. One feeding, seven pounds, of alfalfa and one feeding, six pounds, of second growth clover and half a bundle of cornstalks.

We use a set of spring scales for

THE food value of 100 pounds of skim-milk depends upon the value of other feeding stuffs. That is, if corn is worth 80 cents per bushel skim-milk would be worth more, or have greater value than where corn was worth no more than 60 cents per bushel. Not that the milk in the first instance would produce more growth, but that it would cost more to purchase grain to take its place.

Prof. Henry in his work on feeds and feeding averages the value of skim-milk at about 25 cents per 100 pounds. Of course, in numerous instances much more than this can be realized for it. But under average conditions probably the farmer does not realize more than this amount.

The Value of Skim-milk.

Very much depends on what is fed with skim-milk, that is the other foods in the ration. Skim-milk is rich in protein and has a narrow nutritive ratio. It is very valuable to feed with corn or hominy but not very valuable to feed with wheat middlings. It is not a good food to feed alone. A growing young animal should have a ration composed of carbohydrates and protein in the proportion of four or five parts of the former to one of the latter. Skim-milk contains the proportion of 2:1 so when fed alone there is a great waste of protein, the high-priced ingredient of food. There is where the great trouble comes in the average farmer feeding skim-milk. He doesn't use judgment in balancing the ration. With young growing calves or pigs it is possible to get as high as 50 cents per 100 pounds value out of skim-milk, but as I say, it is doubtful if, on the average, more than 25 cents is realized and oftentimes not that much.

Personally I never liked the idea of selling the whole milk off the farm. The condensaries and the market milk people do not allow the farmer enough for the skim-milk. It is worth more to feed to calves and pigs. When cream or butter is sold and the skim-milk properly fed, the waste of fertility is reduced to a minimum. This is well worth considering in America from now on, because one's success, to a great extent, is measured by the amount of manure at his command. And the truths of this principle will appear of more and more importance as the years go by. But sometimes it pays best to sell milk. It all depends on the price. Usually, however, there is not much difference. At least the men who offer the price or fix the price do not calculate there will be much difference. They all figure on the same basis—butter-fat. Even the cheese man figures the price to be paid for milk on the profitable price for butter. Butter is the great market for a large part of our milk. The condensary, the cheese factory, the market milk man all figure the price of milk on the butter value. Whether they can afford to pay more for it or not, they do not intend to pay very much more, at least only enough to get what they want for their several purposes. They know the balance of the milk must go into butter. To be sure, there is a much greater demand for milk for these purposes now than

weighing the milk from each cow so that we can tell how much grain to feed each cow. Each cow gets one pound of grain for every four pounds of milk. The cows that give less than 10 pounds per milking are given no grain unless dry, when they are given the home mixture.

Our home mixture consists of about equal parts by weight of oats, corn on the cob, and wheat, which grew in the field, plus a commercial mixture containing 50 per cent carbohydrates, six per cent fat, seven per cent fibre, 24 per cent protein. The dry cows get the home mixture only. The first two pounds of grain are from the home mixture, morning and night. The balance for the cows that are worth it is taken from the bin of commercial feed. Myself and one man spend most of our time doing chores.

SUBSCRIBER.

ever before, but the dairymen keep putting on more cows and providing more milk, and must sell it.

Prices Vary Little.

The farmer gets just about as much for his milk, whether it is made into butter or cheese, or condensed. The price does vary a little temporarily, but soon swings back to even conditions. If the price of cheese is unusually high more milk will go to cheese and bring the price lower, and so on. There is nothing to prevent manufacturers from producing cheese, or butter or condensed milk, and they change about as the market dictates, thus keeping the price fairly uniform for the different milk products.

Now, whether it will pay our discouraged friend better to sell cream than to sell milk is all a question of what he gets for his milk and what he can get for cream. This important factor he does not give and no one can give him trustworthy advice. On the general market for a series of several years he will find but little difference in the value of his product.

Of course, special markets can be developed for milk, butter and cheese in which good profits can be made, but only a small number of farmers are situated so as to develop such a market to advantage.

Things to Consider.

There are a great many things to think about in the dairy business, and unless one reasons well he is liable to find out after a while that he has made a mistake and that he might better have let well enough alone. It seems to me that selling cream is the best kind of dairy farming. I don't think on the average one gets much more out of his cows, perhaps not so much as a cash asset; but for a series of years, when you take cost of production, cost of marketing, cost of fertility, etc., into consideration it is the best kind of dairy farming to tie to, but many do not agree with me. They look at things differently. They are after the quick dollar and consider the future when they have to.

I can not criticize the discouraged dairyman's way of feeding. He is certainly doing that important job in a very intelligent way. He is not satisfied with his income from his farm. Twenty-five cows to 225 acres, where it is run as a dairy farm, is not cows enough. He should keep more. He is not into the dairy game deep enough. He wants 50 cows and more hired men, and still more. If grain farming is practical in connection with dairying that is different. If he grows large areas of potatoes or other cash crops in connection with the 25-cow dairy, well and good, but 25 cows for 225 acres where cows are the only source of income, is not working at high enough pressure. The income is too low for the investment.

COLON C. LILLIE.

HOME-GROWN VS. PURCHASED PROTEIN FEEDS.

The fact that dairy grains have increased 70 per cent in cost and dairy products increased only 39 per cent in the past 15 years, means that any in-

crease in the price of feeds commonly used in the dairy naturally causes the dairyman to seek some substitute for purchased feeds which will enable him to produce milk at less cost. There are many crops which can be successfully grown and made into hay, as alfalfa, crimson clover, oats and peas, cowpeas and soy beans, which are very rich in that important nutrient, protein, and which will in a large measure take the place of fine feeds in balancing a ration for the farm herd.

In this respect the recent experiment carried on in New Jersey gives an excellent basis for comparison. In order to make a practical study of the economy of substituting home-grown feeds for purchased protein, three feeding experiments, each of about a month's duration, were carried out with milch cows. The home-grown feeds used were alfalfa hay, crimson clover, and cowpea silage; the purchased feeds, wheat bran, dried brewers' grains, and cottonseed meal. In every case the lots compared contained two cows, and the rations were so arranged that practically the same amount of protein was supplied to each lot.

In the first test the ration of home-grown feeds, which was made up of 13 pounds of alfalfa hay and 30 pounds of corn silage, proved both practical and economical when fed in comparison with a ration in which over two-thirds of the protein was derived from wheat bran and brewers' grains. This latter ration produced 4.15 per cent more milk and 4.16 per cent more butter than did alfalfa, the fat content of the milk being the same in each case.

Milk was produced more cheaply on the home-grown ration, the cost being 59.9 cents per 100 pounds while for purchased feeds it was 83.9. On the basis of this test it was calculated that when mixed hay (timothy and red-top) sells for \$16 per ton, and wheat bran can be purchased for \$26 per ton, and dried brewers' grains for \$20 per ton, alfalfa hay is worth \$25 per ton as a substitute for mixed hay, wheat bran, and dried brewers' grains, fed in the proportion indicated above.

The second home-grown ration was composed of 16.4 pounds of crimson clover and 30 pounds of corn silage, and proved of practical value from the feeder's standpoint, since it reduced the cost of milk 18.3 cents per 100 pounds when fed in comparison with a ration in which the protein was largely supplied in the form of wheat bran and dried brewers' grains. Although 18.1 per cent more milk was produced on the purchased ration, the profit was \$1.10 per cow per month greater on the home-grown ration.

In the third test a home-grown ration made up of 36 pounds of cowpea silage, and 10 pounds of crimson clover hay, and six pounds of corn-and-cob meal, costing 17 cents per cow per day produced as much milk and butter as a ration in which two-thirds of the protein was supplied by dried brewers' grains and cottonseed meal, costing 18 cents.

The results are significant in showing that a ration composed of home-grown crops, though costing nearly as much (when the crops are figured at prevailing market prices), may be fully equal as a milk producer to a ration in which the protein is largely supplied by purchased feeds. Home-grown crops were utilized in the dairy at a greater profit than could have been realized by selling them at the market price.

The purchase of concentrated feeds rich in protein may be more profitable from the standpoint of the maintenance of soil fertility, for if all the milk sold from the farm is obtained from foods grown on the farm, the exhaustion of the nitrogen would be in greater proportion than the mineral elements, making it necessary to supply nitrogenous fertilizers in order to maintain the fertility. When the manure is well cared for and properly

used, it is more economical to purchase the nitrogen in the form of feeding stuffs whose extra cost would be returned in increased production resulting from the use of well-balanced rations. The dairy farmer should aim to produce as many of the principal ingredients entering into his profitable dairy ration as is possible, for the greatest profit is obtained by using the most efficient and economical method.

New York.

EARL W. GAGE.

DAIRY PROBLEMS.

Build a Silo.

Would it be advisable in starting dairying with 10 to 15 grade cows, to build a silo? Would it be alright to breed dairy cows to a Red Poll bull so one could use them as beef cattle too, or would it be better to use a Holstein and not use them for beef?

Osceola Co.

SUBSCRIBER.

If you keep cattle, whether for dairy or beef, you need a silo to save the full feeding value of your corn crop. And if you keep cattle you should grow corn because you can produce more cattle food to the acre than with any other crop.

The Red Polled cattle are true dual-purpose cattle, fairly good for both milk or beef. There are some splendid Red Polled cows. Not as large a per cent of the heifer calves, however, will make good cows with this breed as will the Holsteins. The same is true about beef. Red Polls are from beef cattle but not from a distinct beef type like Herefords.

You can sell your surplus Holsteins for beef, everybody does, and they make fairly good beef. The choice cuts, like rib roasts and porterhouse steaks, are not as large as with cattle of better beef conformation. But the meat is good, and they will make good growth for the food consumed.

Udder Permanently Injured.

I have a heifer that injured a teat to such an extent that I dried up that quarter of her udder. In the process the quarter became swollen and hard and finally it broke open, ulcer like, in two places. After discharging it healed up nicely. Will this quarter become normal when she freshens again?

Oceana Co.

J. E. V.

One can never be sure of a case like this. Sometimes nature works wonderful cures. But I should not expect that milk would again be secreted by this quarter of the udder. If she is an extra good dairy heifer she may be a profitable cow with only three good quarters to her udder. There are some splendid cows that only give milk from three teats. Here nature seems to try to make amends and the three sound quarters make up for the lost one. If she is a good heifer, I would keep her another year anyway, and see what the results are.

Mixed Hay for Roughage.

Please advise me in regard to feeding my cows. All the feed I have now is mixed hay, clover and timothy, and plenty of good corn. I can buy prepared feed for \$1.90 per cwt; bran, \$1.45; oil meal, \$2.10, and cottonseed meal at \$2.10. Would you advise me to sell the corn and buy the prepared feed?

Oakland Co.

A. L. D.

Plenty of mixed hay makes a good food for roughage, but, of course, you should have ensilage for a succulent food.

I would not advise selling the corn unless you have more than you can use. But buy wheat bran and mix with corn meal and oil meal. Mix in proportion of 200 pounds of corn meal (chop), 200 pounds of wheat bran and 100 pounds of oil meal. Then feed one pound of grain for every three or four pounds of milk produced. As you have no succulent feeds I believe it would pay to feed some beet pulp. Wet the pulp at noon and feed at night. Feed the equivalent of three pounds of dried pulp in place of three pounds of other feed.

Cottonseed meal at same price of oil meal furnishes protein for less money but it is not as good a feed, especially where you do not have a succulent feed in the ration. COLON C. LILLIE.



Tom—You're not turning as fast as Dad does, Mary.
Mary—No Tom, but we'll get all the cream any way with this lovely new machine. Dad says

"It Skims Clean at Any Speed"

That's what this marvelous new invention actually does.

A fixed-feed separator may skim clean if in perfect order and turned at just the *right speed*. But every member of the family turns the crank at a *different rate*; no one can maintain an even speed *all the time*—it isn't human nature. Every old type separator has an *unchanging inflow* of milk. That's why it loses cream when not turned at exactly the right speed.

THE NEW SHARPLES SUCTION-FEED

Separator gets all the cream because it automatically regulates the inflow exactly in proportion to the separating force—always just right for perfect skimming.

The Suction-feed Separator delivers smooth cream of *even thickness* that churns out more butter of choicest quality. If you sell cream you can *guarantee uniform density*.

You can increase the capacity of the Suction-feed by simply turning faster, and get through quicker if in a hurry. The new Sharples is the only Separator that can be hastened. You can easily pour milk from a forty-quart can into the low supply can. It's the largest found on any separator—and it's only knee-high.

The women folks prefer the Sharples because the simple tubular bowl is so easily cleaned. Has only three pieces—no disks to wash or to get mixed up. The tubular shape gives double skimming force.

The new Sharples is ruggedly built for hard service. It is neat, compact, runs easily and oils itself.

This wonderful machine will earn you a new dairy profit—without added expense. Our new free book, "Velvet" for Dairymen, fully describes the Suction-feed. Your copy is ready. Send for it today. Address Dept. 18.

The Sharples Separator Co.

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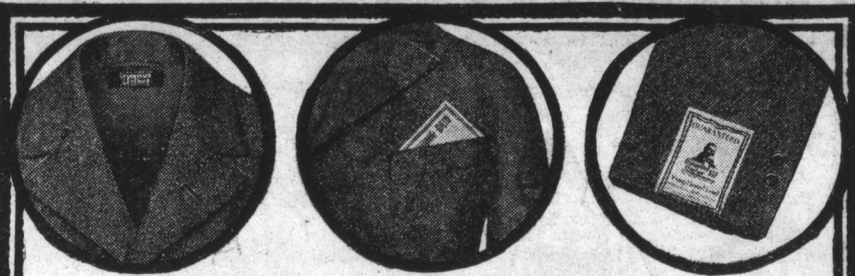
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Big No. 9 wires, open hearth steel heavily galvanized. Bond Steel Post Co.

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You know that the great world-war has sent prices sky-high. But not the price of Styleplus! It remains at \$17, always, everywhere, invariable in face of big world changes. And the Quality is always there, too,—the best in the world for the money!

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Write us [Dept. H] for free copy of "The Styleplus Book."

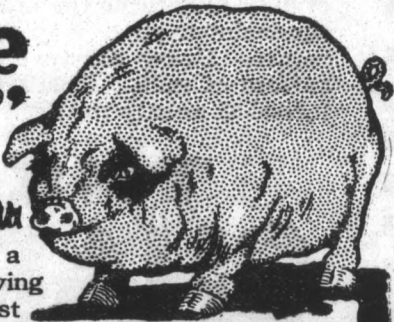
HENRY SONNEBORN & CO., Inc. Founded 1849 Baltimore, Md.

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That's what a fellow said when a stranger suggested a way of saving time in fattening his hogs. To most of us, our own time is worth something. We don't want to waste it doing unnecessary work—especially work we have to do 365 days in the year, like washing the cream separator bowl.

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SANITARY
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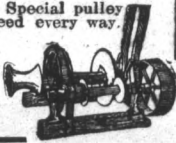
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MADE of highest grade steel plate—tinned and retinned after rivet holes are punched. Pure solder sweated into all inside seams, making surface smooth as glass. Sanitary to the finest degree. Guaranteed capacity—each Sturges Can is built to measure. Saves work in shipping—insures accuracy. Sturges Cans are built with the experience of 50 years in making milk cans. Ask your dealer for them. Write for catalog No. 46.

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The Milk Inspection Problem

By FLOYD W. ROBISON.

PUBLIC opinion and judicial interpretation of the law alike concede that it is the consumer's estimate of the intrinsic merit of any article that should be the measure of the degree of perfection of that article. The courts have decided that any manufacturer of foods makes those products at his own peril. The old legal maxim, "Caveat emptor," or, "Let the buyer beware," has been relegated to the background and the responsibility of the manufacturer or producer of food products has been decidedly emphasized in our modern business dealings.

It is unquestionably true that the lack of a sufficient appreciation of their responsibility in the production and marketing of milk has made it necessary for the consumers to protect themselves by legislation which provides for the appointment and maintenance of a corps of inspection officials whose duty it is to pass upon the wholesomeness of any milk products which are offered for sale.

Sanitary Inspection of Source of Production is Desirable.

In the interests of sanitation the inspectors of the state dairy and food department are empowered by law to enter into any place where food materials are produced, manufactured or stored, with the express purpose of ascertaining if any unsanitary conditions exist thereon. Local boards of health in the various cities are vested by the statutes of their city with authority to prescribe regulations under which milk may be sold in their particular community. For the purpose in hand the city official loses his official power when he sets foot beyond the corporate limits of his city. He is tolerated on the dairy farm simply because the dairyman realizes that it is to his advantage to secure a favorable market for his product, to give the inspector access to his premises.

Courts are Beginning to Consider the Purpose Sought.

There has always been a question in our mind of the strict legality of this proceeding; whether a city milk inspector has any authority in law to refuse to permit the sale of milk within the city on the ground solely that the farm from which the milk is brought has not been inspected by the city milk inspector.

However, on this point, in view of the interests at stake by the consumer, the courts are ever inclined to be exceedingly liberal in their interpretation of the law and when no hardship is shown; when no arbitrary action is taken by the city milk inspector; when there can be no reasonable ground for protest on the part of the dairyman, the courts are not likely to interfere simply to pass upon the abstract legality of a proceeding which it is conceded works no injury to the producer and at the same time does insure a certain measure of protection to the consumer.

Our consideration of this problem, then, should be a consideration involving abuses, and we might say that the question would never arise did not abuses occur.

Inspectors have gone into the country and have concerned themselves many times with very minute and absurd details of the construction of the dairy barn or the construction of the milk house; in other words, have concerned themselves with methods and not results. The consumer in the city is not interested primarily in the number of windows in a farmer's cow barn; neither is he interested in the exact location of the milk house. He is interested in the degree of excellence which pertains to the milk which is produced on that farm and very vitally interested on that point.

The Evolution of Inspection.

A word of explanation should be

here given as to the way in which this modern system of inspection has grown up. The experience of executive officials charged with the enforcement of laws on sanitation, and the experience of dairy experts likewise, has demonstrated that the evils accruing to the dairy business have been caused principally by the dairymen who have operated a one, two or three-cow dairy. It will be obvious, we think, that this is not necessarily always the case. It is possible for a man who operates a one, two or three-cow dairy to observe the same degree of cleanliness, the same precautions in the handling of the milk that are observed on the large dairy farms, but if the vast majority of cases gives one a right to lay down a general rule, then the statement is correct that it is the one, two or three-cow dairy which has seriously interfered with the production of clean, high-grade milk upon these small unit farms. Generally speaking, the small unit farmer has not sufficient capital at his command to make it possible for him to install the equipment and the facilities in his barn which makes easy the production of sanitary milk. At the same time, he is usually the man who, having had limited means at his command throughout his life has not had an opportunity to become familiar with the accepted means of combating the agencies which work against the production of high-grade milk. These conditions prevailed in former years to a much greater extent than they do now. The agricultural press has disseminated the up-to-date information on dairying to such an extent that there are now few dairymen even operating small units who have not a pretty clear appreciation of the means which must be adopted to secure an article of food acceptable to the consumer. Consequently the progressive dairy educators of the country have realized that perhaps the very greatest progress in general through the production of a clean, acceptable milk for city milk consumption can be brought about, not by the inspection of the milk itself, solely, but by carrying the matter on to the individual farm and attempting to enthrone the farmer and convince him that by instituting certain changes which will provide a better system of grooming the cows, cleaning the stable and ventilating it, screening it and building it on a plan whereby its surroundings can be made more sanitary, it would make matters easier for him to produce the type of milk which the consumer demands in the city.

The Evils of Political Appointment.

Through the educational campaign which has been carried on through the press and by word of mouth from our more progressive dairy educators a great degree of harmony and toleration of the other's point of view has grown up between the city consumer and the rural milk producer. Unfortunately with our progress in other lines we have not been able to separate or divorce the business of the country from politics. The farmers of the country who have been so influential in moulding their opinions in various types of legislation have not realized how important it is that the supervision of the products which they manufacture or produce should be placed in hands entirely free from any political influences whatsoever. The man who is empowered by law to pass upon an article of food or drink, something which comes to the attention of every individual in the state, should not only be a competent man, one who has made a life study of the work to which he is called, but at the same time he should be absolutely free from any intermingling of politics. Not only should he be absolutely free from politics but it should be a requisite of his

(Continued on page 539).

Feeders' Problems

Grain for Hogs on Alfalfa.

I have about 17 young pigs. I am going to turn them in a lot of alfalfa pasture, but I have no corn. I have oats. What grain can I buy that will make my pigs do well? What is it that I see so much in the paper about, that you call tankage?

Monroe Co.

S. P. L.

Extensive experiments conducted at the Iowa Station last year, using a large number of hogs and feeding them in many different ways seemed to bring out very clearly that a greater profit will be derived from feeding a full ration of grain to growing pigs on alfalfa pasture.

The greatest profit was secured from hogs fed by what is known as the free-choice system, using a self-feeder and permitting them to eat all the grain they would consume while running on alfalfa pasture. Something of the possibilities of this method of feeding are shown by the fact that after paying a reasonable charge for the alfalfa pasture, with the gain these hogs made at a selling price of \$7 per cwt., they returned almost \$1.00 per bushel for the corn consumed, or to be exact, 98.5 cents per bushel. This ration may be improved somewhat by the addition of a little tankage, which is a high protein food made from meat scraps, blood, etc. Under the free-choice system the pigs would eat less than ten per cent of this feed where fed in a compartment of the self-feeder.

At first thought, the average farmer would question the profit in feeding a

might be enough cheaper than corn to make it a better investment. This is wholly a local problem, the point being that the purchase of corn even at present high prices for the feeding of hogs on alfalfa is a profitable enterprise.

Spring Sown Hog Pasture.

I have five acres of last year's corn stubble which I want to furnish me with pasture for shoats this summer. Soil is average clay and raises good general crops. I expect to divide the five acres into two or three fields. What shall I sow there to furnish pasture for my hogs and how many would this spring-sown pasture usually support? Would barley furnish good hog pasture?

Branch Co.

F. J. B.

There is no forage plant which will give us a great quantity of nutritious green forage for hogs which is adapted to spring sowing as will dwarf Essex rape. This may be sown alone at the rate of five pounds per acre broadcast, or in combination with oats and peas, sowing about one bushel each of these forage crops. For very early sowing this mixture of oats, peas and rape would possibly be advisable. A later sowing of rape alone will supply mid-summer pasture and be available when the first area sown is pastured down.

At the Iowa station it was found that on productive soil, from 10 to 30 hogs per acre could be pastured on forage crops of this kind for several weeks, according to the size and age of the pigs. The peas and oats might be sown on one-half of this area as early in the spring as is practicable,



Good Horses are the Pride of their Owner and are Economy in Farm Work.

full grain ration to growing pigs on alfalfa pasture. It was found in these Iowa experiments, however, that the pigs so fed not only made the largest gain and the greatest profit and returned the most per acre of alfalfa or bushel of corn as the case might be, but that they as well consumed a greater amount of alfalfa or other forage than did pigs fed on a limited grain ration, this being true for the obvious reason that the pigs grew much more rapidly and sooner developed into larger hogs with a greater capacity for the consumption of bulky forage.

Also another advantage in this method of feeding is that the pigs are developed more rapidly and will make market weights and finish much earlier and at a time when pork ordinarily brings a much higher price than it does later in the season when it may be finished on the new corn crop. Consequently, if this experimental knowledge is to be given the weight which it merits, when the extent and scope of the experiment is taken into consideration, it will pay to purchase corn or other feed to give these pigs a full grain ration throughout the season when they are running on the alfalfa pasture.

As to whether corn or other feeds are used, everything should depend upon the price at which same could be purchased. Oats in large quantities cannot be used to good advantage in swine feeding, but barley or salvage grain or some other available feed

and the balance could be kept well cultivated to kill weeds and be sown to rape alone a few weeks later to good advantage.

Fattening up Thin Horses.

What is the best ration for fattening horses that are thin and run down? Saginaw Co. SUBSCRIBER.

It is not an easy proposition to fatten up horses which have been wintered in poor condition and at the same time get good spring work out of them. The best method would be to feed a balanced ration of corn and oats with a little oil meal, with good clean alfalfa or clover hay, or mixed hay if these are not available. A bran mash once or twice a week and a few small potatoes, or other roots if they are available, will help in promoting good digestion and assimilation and aid materially in getting these run-down horses in good condition to do a fair season's work. By running them on grass and continuing a liberal grain ration after the heaviest of the work is over, they can be gradually improved in flesh condition. It is poor economy to have farm horses so wintered as to be run-down and thin in flesh when the season arrives for doing the spring work.

Catalog Notice.

Eureka Mower Co., Utica, N. Y., send upon request a 40-page illustrated catalog describing their line of potato machinery, including planters, diggers, etc., corn planters, weeders, mowers, etc.

NOTE: Even after its experience of nearly a century, Case is not content to publish advertisements unless based on the very latest authoritative information. This is one of a series of messages to farmers, prepared after visiting tractor demonstrations, talking to hundreds of farmers, and carrying on a national investigation through our sales organization and by mail to find the gas tractor needs of the farmers.

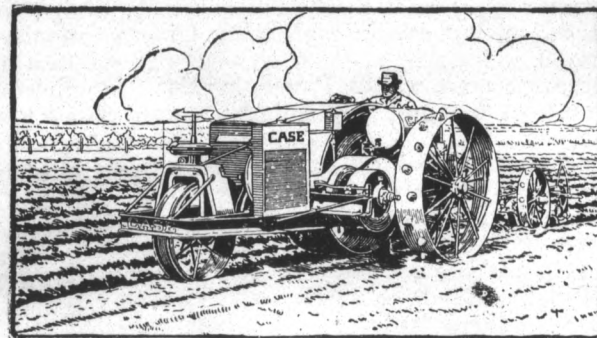
How to Increase Your Farm Profits

With a Case Tractor—there's one for different sized farms—farmers can now make their farms pay more. Wages for men can be lessened. Fewer hungry horses are needed. More work can be done at any given time than ever before—a Case tractor never wears out. It can be kept at work continuously, without sleeping or resting or eating. When idle in the winter it costs neither care nor money.



Investigate Case Features

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From an actual photograph of a Case 10-20

Case—the Pioneer

Case does no experimenting at the cost of its customers. As early as 1892—over twenty years ago—Case Engineers built the pioneer gas tractor in America. Since then, this Company has expended hundreds of thousands of dollars in experimental work, so we can come to you now, as we have in the past, with a proved, dependable machine.



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Whichever size of Case Tractors is suitable for your farm, you can bank on its being the best of its kind in the market, made honestly and conscientiously, to uphold our name and fame. There are four sizes, 10-20, 12-25, 20-40 and 30-60. In the field and in our laboratories we have carried on tests and we know from experience what is best to incorporate in a tractor. In its class, each Case tractor is a masterpiece, embodying all the best features and eliminating the troublesome features. Why be satisfied, then, with lesser quality?

Write today for our catalog.

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(Incorporated) Founded 1842
712 Erie St., Racine, Wisconsin

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We also make a complete line of Steel Stalls for cattle or horses; Water Bowls; Cow, Calf and Bull Pens; Feed Trucks and 26 styles of Carriers. Ask us about Stanchion No. 3—it's a winner.

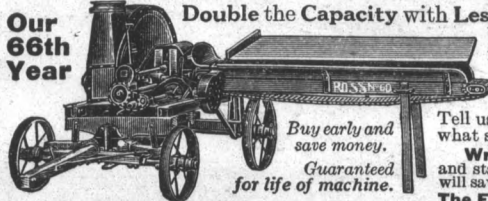
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It is good to sit behind a motor which responds eagerly—bouyantly—to the slightest touch of the throttle.

It is good to know that you need only "step on" the accelerator—and the steepest hills will flatten out like smooth boulevards.

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In a word, it is good to own just such a car as the five passenger Paige "Six-38", or the larger seven passenger model, "Six-46".

Both of these cars are thoroughbreds—every inch of them.

They are just as handsome as automobiles could possibly be, and they

both are easily capable of going 60 miles per hour if you desire to go that fast. But—first and last—they are made for work—*consistent work—day in and day out work.*

Paige owners don't have to make apologies or "offer excuses". Their cars are out of commission at one time only—when they are locked up in the garage at night.

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Let him *prove* his case. Let him introduce you to men who have invested their money in these cars. Listen to their experiences—ask for their honest opinions.

Then, you will know whether Paige cars are reliable under all circumstances.

Then, you will know whether Paige cars are economical to maintain.

Then, you will know whether Paige cars are, in actual fact, "the standard of value and quality".

Do this—while the Dealer can still make immediate deliveries.

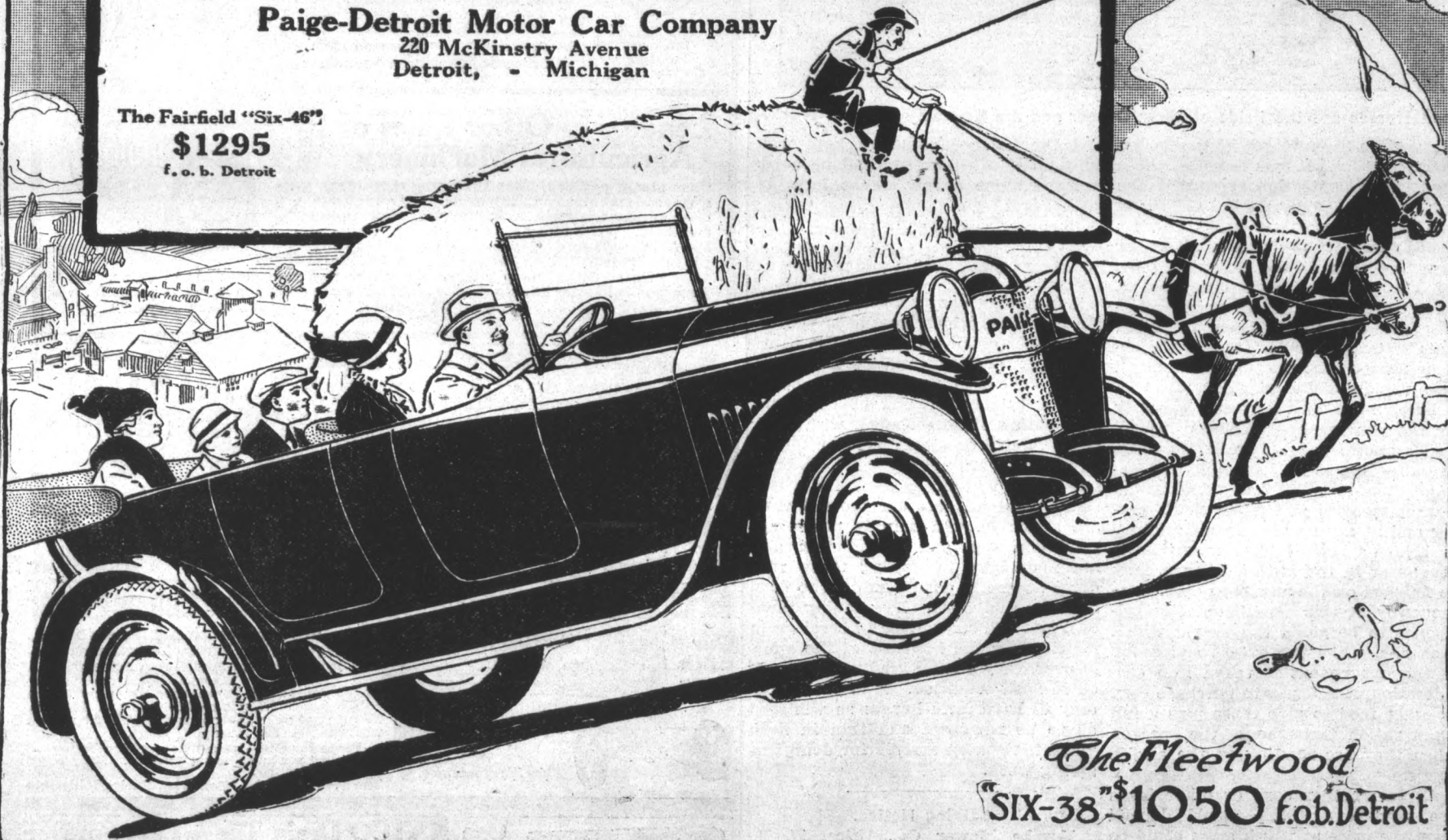
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POETRY
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AND *LIVE STOCK*
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JOURNAL.
ESTABLISHED 1843.

The FARM BOY
and GIRL
SCIENTIFIC and
MECHANICAL

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

WHAT is home without a mother?" So runs a saying dear to the heart of mankind. Let us paraphrase that saying and inquire, "What is home without a tree?"

The contrast between pleasantly shaded farm grounds and bare treeless ones is so marked that few can deny the advantages of the former. There are always people to chop down and cart away the old tree friends, but I believe that these people are in the minority. With most of us trees are an agreeable addition to the comforts of the farm yard; but how many give

The Plea of the Tree

By F. J. YATES.

care and encouragement to the trees already standing; and how few, how very few, indeed, are willing to set out in suitable locations, and protect through their first and second years of life in the new condition a few nice young trees to take the places of old and broken ones, or to fill the empty spaces?

Farmers, look about your farm

grounds this spring. Isn't there a single place which would be the better for a tree? Perhaps a hedge of arbor vitae would add fifty per cent to the appearance of your front yard. Perhaps a windbreak along a field where the wind sweeps unchecked during every windstorm would make it a more lucrative piece of property. Why not resolve to take pattern from Uncle

Sam who has awakened to the knowledge that if trees are not put back to take the place of those so ruthlessly butchered the whole climate of the United States is going to be different. You may not live to enjoy the shade of the slower growing trees, but someone will enjoy them; and after all we should build largely for the coming generations.

If you don't want to plant on a large scale, plant at least one or two trees this spring. How about that unshaded window in the kitchen? A Carolina poplar would in a short space of time

WORLD EVENTS IN PICTURES



Auto Truck Train No. 2 Carrying Supplies to United States Troops.



General View of Supply Base at the Camp in Columbus, New Mexico.



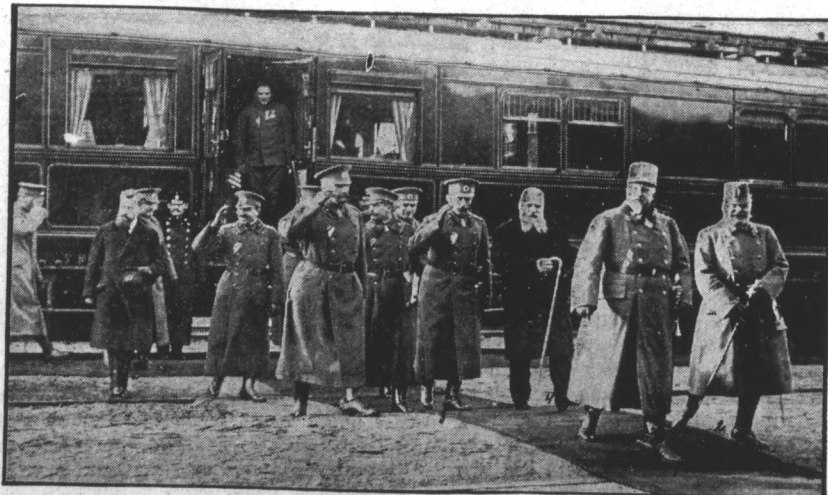
General Villa is Reported Wounded.



Member of Austrian Royal Family Visiting Soldier in Military Hospital.



German Crown Prince and his Only Daughter.

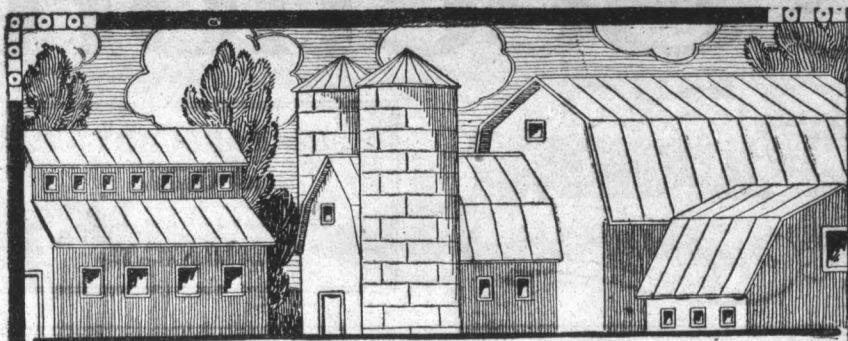


King of Bulgaria, (Second from Right) Visits Austrian Army Headquarters.



Sixth U. S. Infantry in Camp on Line of Communication in Mexico.

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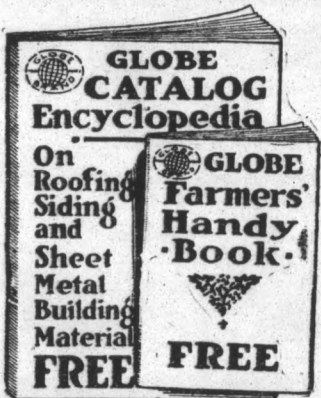
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Write us at once if you wish to secure one of the new Double Leverage Model Kirstin One-Man Stump Pullers at 20 per cent off. We have a certain number of our latest improved models to sell for advertising purposes. To the first buyer in each township we will make a special reduction of 20 per cent from our low net prices. The Kirstin is the most practical and clearest ever designed. Lowest first cost—lowest cost of operation. It saves you money all around. Don't lose time. Write at once. Find out all about the improved Double Leverage Model Kirstin. Let us show you why and how the Kirstin clears land faster, cheaper, better than any other way. If you want to make the big saving of 20 per cent—write at once. Remember this proposition is open to first buyers.

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Quick and
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FIRE! FIRE! FIRE!

We shudder at even the thoughts of fire. Sometimes we think what would we do if our house caught fire, or our barn, or any of our other buildings, or our automobile; try to put them out, of course, but how?

We had an opportunity of buying, at much less cost than any of our readers could, a lot of fire extinguishers, and of the best sort—the "Fire Chief" Dry Chemical Powder kind—supposed to be the best for quick work. As a rule, the time to put a fire out is as near the start as possible. Farmers have little fire protection; we figured on that when we bought a lot of the "Fire Chief" Extinguishers at a low wholesale price. We bought these with our subscribers in mind and will give them to our readers at cost. Full directions go with each one. They are instantaneous, sure. The \$2 size we will offer to our subscribers at \$1, or six for \$5, while they last.

The Michigan Farmer,
Detroit, Michigan

Columbias Put GO into Engines

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Manual Training in Rural Schools

By D. L. RUNNELLS.

ALBERT J. COFFEE, the teacher of a Genesee County rural school appeared before the school board last June with a course of study mapped out in which manual training was to be tried out. That meeting was probably one of the most important meetings in the history of that district.

The school was not prepared to teach the subject. It was without a building that would be suitable for a work shop. There were no tools, and there was not a precedent to follow—not one example of another common rural school in Michigan which had undertaken such a project could be found. The teacher was preaching something that had never been tried to his knowledge in a rural school. The success or failure of the undertaking would probably have some bearing upon his future career as a teacher.

In view of the some thirty classes held daily in the school, the introduction of manual training appeared to be out of the question. The school was already like a grist mill with grain heaped about the mill in sufficient quantity for two days' work but which must be ground in a single day. Why increase the demands upon the machinery? But Mr. Coffee had been a school teacher for two years before suggesting the new study and he believed that his system would work.

Members of the school board were the judges in this case against old methods and like most boards they had their own fixed ideas of school training. So Mr. Coffee had a great task to convince the board of the merits of his theories. The school officers had to be convinced that the present course of study was not satisfactory. It was also necessary to prove that any expense incurred in the establishment of manual arts would return generous profits. With the odds against him, he didn't lose hope nor quake before the cross-examination that followed his explanatory remarks, and his efforts were crowned with success. Manual training was introduced. Mr. Coffee shares the credit of its success with the school board who made it possible for him to put his theories into practice by giving their consent for a trial.

The teacher found a harbor of strength in the current dissatisfaction heard at farmers' meetings where farm questions were being discussed. The fact that many boys naturally gifted to follow the pursuits of agriculture were educated away by our present methods gave the movement general moral support. The teacher didn't claim a panacea for all defects of the rural education propaganda but he did believe that by combining the teaching of manual training and agriculture, it would in time have a great deal to do with silencing the cry "back to the farm."

Not all of the facts which the teacher brought to bear upon the subject to back up his theories, were found in his imagination. The world-wide opinion that all education should be objective was cited to the school board. The history of Germany shows that it has been the educational policy of the Germans to teach their children to work skillfully with their hands. As a result of this educational feature in her public schools Germany has a workshop within her boundaries today that is turning out untold quantities of

war munitions while the Allied countries have been obliged to draw upon the supply furnished by neutral countries.

War was not the goal held up by the teacher, but the idea was to teach manual training along with the subject of agriculture as a factor in making better and more useful farmers out of the boys. He hoped to teach them skill in the use of the tools which are used almost daily upon the farm. Farmers may differ as to the advisability of keeping the boys on the farm but it is not possible that a new interest in the farm will be formed in the minds of the boys unless prospective improvements can be suggested to the minds of the boys. To get the boy interested in the farm was the real goal which the teacher hoped to create through the study of manual training.

One of the greatest objections to the introduction of manual training in a rural school other than the lack of time to devote to the subject, is the expense incurred in providing a suitable building. If there was any such an objection to be found in the Potter school district Mr. Coffee was "armed." His proposal to the board was for the district to provide the material for the building and he and the pupils would do the rest. Again winning their favor, the teacher and pupils built a roomy addition to the fuel house that meets all requirements in the teaching of the subject. The building of the addition to the fuel house by the pupils under the instructions of the teacher, superseded the regular class work in manual training and had an introductory value to the course that cannot be readily measured. The building was completed shortly after the school opened in September. The appropriation made for tools, which was not to exceed \$25, was turned over to the teacher.

Ray Potter, a former M. A. C. student and a member of the school board, proved of great assistance to the teacher in arranging the course in manual training. His knowledge of the work gained while a student at the agricultural college was invaluable to the teacher in deciding matters of policy regarding the work. Text books were introduced. The students have little difficulty in deciphering the exercises. Each boy spends from one and a half to three hours weekly in the work shop.

The benefits derived from the manual training course in this school are two-fold—educational and disciplinary. The first was expected by the teacher but the latter came as a surprise. Before the boy could have access to the workshops, he must first prepare his lessons, then in order to keep him out of mischief he is allowed to go to the shops. He is not accompanied by the teacher but is placed on his honor. If it found that he has violated his privileges, the use of the shops is taken away from him until such a time as his conduct will warrant being allowed to return. The teacher spends but very little time during school hours in the shop but makes it a point to inspect the day's work during the noon hour or at the close of school. When any difficulty is encountered in the work, Mr. Coffee gives the pupils individual instruction after school hours. By fol-

(Continued on page 531).

The Country Road

By Anna Sterns

Far away and straight, and white,
Under the glare of the noonday light,
Stretches the country road from the
rails of steel;
And catching a glimpse as I travel on,
Drawn by the iron horse, hither and
yon,
A vague sense of longing I often feel,
For the country road I am sure must
go
Past meadows sweet where daisies
blow,
And beside rippling singing brooks;
It must lead past fields all clad with
grain,
Through quiet valleys and wind-swept
plain,
And by shady sequestered nooks.

And I long so to travel that peaceful
way,
That oft' to myself I rashly say,
"Some day, some happy day I'll go;
I'll leisurely travel past wooded hill
Of the meadow's perfume breathe my
fill,
And rest in the shade where wild flow-
ers blow."

Life's quiet paths run far away
From the marts of business and pleas-
ure gay,
O'er the hills of vision with view so
fair;
And as we hurriedly journey along,

Pressed by the jostling, restless
throng,
We long for those heights with their
purer air.

For these quiet paths do ever lead
O'er wind-swept paths and scented
mead,
Where the cooling breeze is fresh and
sweet;
And we know by the wayside bloom-
ing there,
Are the flowers of love and peace and
prayer,
And rest for our weary hearts and
feet.

Oh, we long so to go in this quiet way,
That oft' to our clamoring hearts we
say,

"Some glad bright day we will go;
And leaving behind the hurrying crowd,
The busy marts and their clamor loud,
Find peace where the pure still waters
flow."

But I wonder oft' will this dream come
true,
Some day do you think shall I, shall
you,

Leave needless worry and care be-
hind?
And leisurely traveling day by day,
O'er the country road, the secluded
way,
Life's real true meaning find?

Light of Western Stars

By ZANE GREY

"But it's a terrible risk, and it ought
not to be run!" he exclaimed passion-
ately. "I know best here. Stillwell
upholds me. Let me out, Miss Ham-
mond. I'm going to take the boys and
go after these guerillas!"

"No!"

"Good Heavens!" exclaimed Stew-
art. "Why not let me go? It's the
thing to do. I'm sorry to distress you
and your guests. Why not put an end
to Don Carlos's badgering? Is it be-
cause you're afraid a rumpus will spoil
your friends' visit?"

"It isn't—not this time."

"You're sick to think of a little
greaser blood staining the halls of
your home?"

"No!"

"Well, then, why keep me from do-
ing what I know is best?"

"Stewart, —I—" she faltered in
growing agitation. "I'm frightened—
confused. All this is too—too much
for me. I'm not a coward. If you have
to fight, you'll see I'm not a coward.
But your way seems so reckless—that
hall is so dark—the guerillas would
shoot from behind doors. You're so
wild, so daring. You'd rush right into
peril. Is that necessary? I think—I
mean—I don't know just why I feel so
—so about your doing it. But I believe
it's because I'm afraid you—you might
be hurt."

"You're afraid I—I might be hurt?"
he echoed, wonderingly, the hard
whiteness of his face warming, flush-
ing, glowing.

"Yes!"

The single, unequivocal word, with
all it might mean, with all it might not
mean, softened him as if by magic,
made him gentle, amazed, shy as a
boy, stifling under a torrent of emo-
tions.

Madeline thought she had persuad-
ed him—worked her will with him.
Then another of his startlingly sudden
moves told her that she had reckoned
too quickly. This move was to put
her firmly aside so that he could pass;
and Madeline, seeing that he would
not hesitate to lift her out of the way,
surrendered the door.

He turned on the threshold. His
face was still working, but the flame-
pointed gleam of his eyes indicated
the return of that cowboy ruthlessness.

"I'm going to drive Don Carlos and
his gang out of the house!" declared
Stewart. "I think I may promise you
to do it without a fight; but if it takes
a fight, off he goes!"

As Stewart departed from one door

Florence knocked upon another. Mad-
eline, far shaken out of her usual
serenity, admitted the western girl
with more than gladness. Just to have
her near helped Madeline to get back
her balance.

She was conscious of Florence's
sharp scrutiny, and then of a sweet,
deliberate change of manner. Flor-
ence might have been burning with
curiosity to know more about the ban-
dits hidden in the house, the plans of
the cowboys, the reason for Madeline's
suppressed emotion; but instead of
asking questions she introduced the
important subject of what to take on
the camping-trip.

For an hour they discussed the need
of this and that article, selected the
things most needful, and then packed
them in Madeline's duffel-bags. That
done, they decided to lie down, fully
dressed as they were in riding-cos-
tume, and sleep, or at least rest, dur-
ing time left before the call to saddle.

Madeline turned out the light. Peep-
ing through her window, she saw dark
forms standing sentinel like in the
gloom. When she lay down she heard
soft steps on the path. This fidelity
to her swelled her heart, while the
need of it presaged that fearful some-
thing which, since Stewart's passion-
ate appeal to her, haunted her as in-
evitable.

Madeline did not expect to sleep, yet
she did, and only a moment seemed to
have passed until Florence called her.
She followed Florence outside. It was
the dark hour before dawn. She could
discern saddled horses being held by
cowboys. There was an air of hurry
and mystery about the departure.

Helen, who came tiptoeing out with
Madeline's other guests, whispered
that it was like an escape. She was
delighted. The others were amused.
To Madeline it was indeed an escape.

In the darkness Madeline could not
descrie how many escorts her party
was to have. She heard low voices,
the champing of bits, and the thump-
ing of hoofs; and she recognized Stew-
art when he led up Majesty for her to
mount. Then came a pattering of soft
feet and the whining of dogs. Cold
noses touched her hands, and she saw
the long, gray, shaggy shapes of her
pack of Russian wolfhounds. The fact
that Stewart meant to let them go with
her was another instance of the care
with which he studied her pleasure.
She loved to be out with the hounds
and her horse.

Stewart led Majesty out into the

darkness past a line of mounted horses.

"Guess we're ready," he said. "I'll
make the count."

He went rapidly along the waiting
line, and when he returned Madeline
heard him say several times:

"Now, everybody ride close to the
horse in front, and keep quiet till day-
light!"

Then the snorting and pounding of
the big black horse in front of her told
Madeline that Stewart had mounted.

"All right—we're off!" he called.

Madeline lifted Majesty's bridle and
let the roan go. There came a crack
and crunch of gravel, fire struck from
stone, and then the steady short clip-
clop of iron hoofs on hard ground.
Madeline could just discern Stewart
and his black outlined in shadowy gray
before her; yet they were almost with-
in touching distance. Once or twice
one of the wolfhounds leaped up at
her and whined joyously. A thick belt
of darkness lay low and seemed to
thin out above to a gray fog through
which a few wan stars showed.

It was altogether an unusual depar-
ture from the ranch; and Madeline
found herself thrillingly sensitive to
the soft beat of hoofs, the feel of cool,
moist air, the dim sight of Stewart's
dark figure. The caution, the early
start before dawn, the enforced silence
—these lent the occasion all that was
needful to make it stirring.

Majesty plunged into a gully, where
sand and rough going made Madeline
stop romancing to attend to riding. In
the darkness it was not so easy to
keep close to Stewart, even on smooth
trails, and now she had to be watch-
fully attentive to do it. There follow-
ed a long march through dragging
sand. During this the blackness gradu-
ally changed to gray. At length Ma-
jesty climbed out of the wash, and
once more his iron shoes rang on
stone.

The figure of Stewart and his horse
loomed more distinctly in Madeline's
sight. Bending over, she tried to see
the trail, but could not. She wondered
how Stewart could follow a trail in the
dark. His eyes must be as piercing as
they sometimes looked.

As Majesty climbed steadily, Made-
line saw the gray darkness change and
lighten, lose its substance, and reveal
the grotesque shapes of yucca and oc-
cillo. Dawn was about to break. All
at once, to her surprise, Stewart and
his powerful horse stood clear in her
sight. She saw the characteristic rock
and cactus and brush that covered the
foot-hills. The trail was old and sel-
dom used, and it zigzagged and turned
and twisted.

Looking back, she saw the short,
squat figure of Monty Price humped
over his saddle. Behind Monty rode
Dorothy Coombs, and next loomed up
the lofty form of Nick Steele.

Bright daylight came, and Madeline
saw that the trail was leading up
through foot-hills. It led through shal-
low gullies full of stones and brush
washed down by floods. At every turn
Madeline expected to come upon water
and the waiting pack-train; but time
passed, and miles of climbing, and no
water or horses were met. Expecta-
tion in Madeline gave place to desire;
she was hungry.

Presently Stewart's horse went
splashing into a shallow pool. Beyond
that, damp places in the sand showed
here and there, and again more water
in rocky pockets. Stewart kept on. It
was eight o'clock by Madeline's watch
when, upon turning into a wide hollow,
she saw horses grazing on spare grass,
a great pile of canvas-covered bundles,
and a fire round which cowboys and
two Mexican women were busy.

Madeline sat her horse and reviewed
her followers as they rode up in single
file. Her guests were in merry mood,
and they all talked at once.

"Breakfast—and rustle!" called out
Stewart without ceremony.

"No need to tell me to rustle," said
Helen. "This air makes me simply
ravenous."

The hurry order, however, did not



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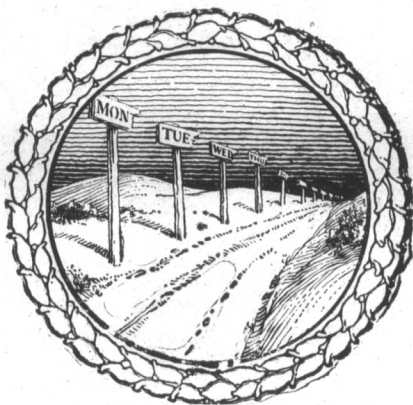
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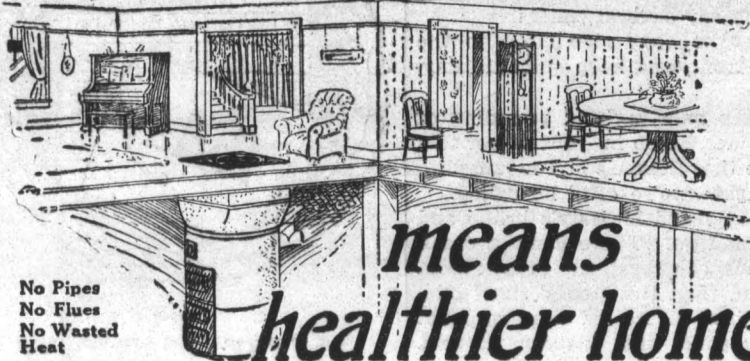
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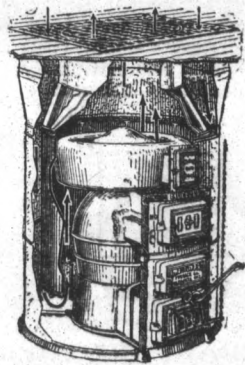
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interfere with the meal being somewhat of a picnic. While they ate and talked and laughed, the cowboys were packing horses and burros. As soon as the train was in readiness, Stewart started it off in the lead to break trail.

A heavy growth of shrub interspersed with rock and cactus covered the slopes; and now all the trail appeared to be up-hill. It was not a question of comfort for Madeline and her party, for comfort was impossible; it was a matter of making the travel possible for them. Florence wore corduroy breeches and high top-boots, and the advantage of this masculine garb was at once in evidence. The riding-habits of the other ladies suffered considerably from the sharp spikes. It took all Madeline's watchfulness to save her horse's legs, to pick the best bits of open ground, to make cutoffs from the trail, and to protect herself from out-reaching thorny branches; so that the time sped by without her knowing it.

The pack-train forged ahead, and the trailing couples grew farther apart. At noon they got out of the foot-hills, to face the real ascent of the mountains. The sun beat down hotly. There was little breeze; the dust rose thick and hung in a pall. The view was restricted, and what scenery lay open to the eye was dreary and drab, a barren monotony of slow-mounting slopes, ridged by rocky canons.

Once Stewart waited for Madeline. As she came up, he said:

"We're going to have a storm."

"That will be a relief. It's so hot and dusty," replied Madeline.

"Shall I call a halt and make camp?"

"What do you think best?"

"Well, if we have a good, healthy thunder-storm," said Stewart, "it will be something new for your friends. I think we'd be wise to keep on the go. There's no place to make a good camp here. The wind would blow us off this slope, if the rain didn't wash us off. It'll take all-day travel to reach a good camp-site, and I don't promise that. We're making slow time. If it rains, let it rain. The pack outfit is well covered. We shall have to get wet."

"Surely," replied Madeline, and she smiled at his inference. She knew what a storm was in that country, and her guests had yet to experience one, "If it rains, let it rain."

Stewart rode on and Madeline followed. Up the slope toiled and nodded the pack-animals, the little burros going easily where the horses labored. Their packs, like the humps of camels, bobbed from side to side. Stones rattled down; the heat-waves wavered black; the dust puffed up and sailed. The sky was a pale blue, like heated steel, except where dark clouds peeped over the mountain crests. A heavy, sultry atmosphere made breathing difficult.

Down the slope the trailing party stretched out in twos and threes; and it was easy to distinguish the weary riders.

Half a mile farther up Madeline could see over the foot-hills to the north and west; and she forgot the heat and weariness and discomfort for her guests in wide, unlimited prospects of sun-scorched earth. She marked the gray valley, the black mountains, the red gateway of the desert, and the dim shadowy peaks, blue as the sky they pierced.

Then there came a respite from the steep climb, and the way led through a matted, storm-wrenched forest of stunted cedar-trees. Even up to this elevation the desert reached with its gaunt hand. The clouds overspreading the sky, hiding the sun, made a welcome change. The pack-train rested, and Stewart and Madeline waited for the party to come up. Here he briefly explained to her that Don Carlos and his bandits had left the ranch some time in the night. Thunder rumbled in the distance and a faint wind rustled the scant foliage of the cedars.

An hour later the party had climbed above the cedar flat and was rounding the side of a great bare ridge that

long had hidden the crags. The last burro of the pack-train plodded over the ridge out of Madeline's sight. She looked backward down the slope, amused to see her guests change wearily from side to side in their saddles. Far to the west the sky was still clear, with shafts of sunlight shooting down from behind the encroaching clouds.

Stewart reached the summit of the ridge, and, though only a few rods ahead, he waved to her, sweeping his hand round to what he saw beyond. It was an impressive gesture, and Madeline, never having climbed as high as this, anticipated much.

Majesty surmounted the last few steps and halted beside Stewart's black. To Madeline the scene was as if the world had changed. The ridge was a mountain top. It dropped before her into a black, stone-ridged, shrub-patched, many-canoned gulf. Eastward, beyond the gulf, bare mountain-heads loomed up. Upward, on the right, led giant steps of cliff and bench and weathered slope to the fir-bordered and pine-fringed crags, standing dark and bare against the stormy sky.

Inky clouds were piling across the peaks, obscuring the highest ones. A fork of white lightning flashed, and, like the looming of an avalanche, thunder followed.

That bold world of broken rock under the slow mustering of storm-clouds was a grim, awe-inspiring spectacle. The fierce desert had reached up to meet the majestic heights where heat and wind and frost and lightning and flood contended in everlasting strife. And before their onslaught this mighty upflung world of rugged stone was crumbling, splitting, wearing to ruin.

Madeline glanced at Stewart. He had forgotten her presence. Immovable as stone he sat his horse. Dark-faced, dark-eyed, and like an Indian unconscious of thought, he watched and waited. To see him thus was to divine the affinity between the soul of this primitive man and the savage environment that had developed him.

A cracking of iron-shod hoofs broke the spell. Monty had reached the summit.

"Gene, what it won't all be doin' in a minute Moses hisself couldn't tell!" observed Monty.

Then Dorothy climbed to his side and looked.

"Isn't it just perfectly lovely?" she exclaimed. "But I wish it wouldn't storm. We'll all get wet!"

Once more Stewart faced the ascent, keeping to the slow heave of the ridge as it rose southward toward the looming spires of rock. Soon he was off smooth ground, and Madeline, some rods behind him, looked back with concern at her friends. Here the real toil, the real climb began; and a mountain storm was about to burst in all its fury.

Stewart waited for Madeline under the lee of a shelving cliff, where the cowboys had halted the pack-train. Majesty was sensitive to the flashes of lightning. Madeline patted his neck and softly called to him. The weary burros nodded; the Mexican women covered their heads with their mantles.

Stewart untied the slicker at the back of Madeline's saddle and helped her on with it. Then he put on his own. The other cowboys followed suit.

A blue-white, jagged rope of lightning burned down out of the clouds, and instantly a thunder-clap crashed, seeming to shake the foundations of the earth. Then it rolled from cloud to cloud, boomed along the peaks, and reverberated from deep to low, at last to rumble away into silence.

Madeline felt the electricity in Majesty's mane, and it seemed to tingle through her nerves. This moment of the breaking of the storm, with the strange, growing roar of wind, like a moaning monster, was pregnant with a heart-disturbing emotion. Glorious it was to be free, healthy out in the open, under the shadow of the mountain and cloud, in the teeth of the wind and rain!

Another dazzling blue blaze showed the bold mountainside and the storm-driven clouds. In the flare of light Madeline saw Stewart's face.

"Are you afraid?" she asked.

"Yes," he replied.

Then the thunderbolt rocked the heavens.

As the thunder boomed and died away, Madeline reflected with surprise upon Stewart's admission that he was afraid. Something in his face had made her ask him what she considered a foolish question. His reply amazed her. She loved a storm. Why should he fear it—he, with whom she could not associate fear?

"How strange? Have you not been out in many storms?"

A smile that was only a gleam flitted over his dark face.

"In hundreds of them—by day with the cattle stampeding; at night alone on the mountain, with the pines crashing and the rocks rolling; in flood on the desert."

"It's not only the lightning, then?" she asked.

"No. All the storm."

Madeline felt that if this iron-nerved man feared a storm, there must be something about a storm to fear. And suddenly, as the ground quaked under her horse's feet, and all the sky grew black, criss-crossed with flaming streaks, and between thunderous reports there was a strange, hollow roar sweeping down upon her, she realized how small was her knowledge of the mighty forces of nature. Then, with that perversity of character of which she herself was conscious, she was humble, submissive, reverent, and even fearful while she gloried in the grandeur of the cloud-shadowed crags and canons, the stupendous strife of sound, the wonderful, driving lances of white fire.

With blacker gloom and deafening roar came the rain. It was a cloudburst. It was like water tumbling down.

For long Madeline sat her horse, her head bent to the pelting rain. When its force lessened, and she heard Stewart call for all to follow, she looked up to see that he was starting once more. She shot a glimpse at Dorothy, and as quickly glanced away. Dorothy, who would not wear a hat suitable for inclement weather, nor one of the sticky yellow slickers, was a drenched and disheveled spectacle.

Madeline did not trust herself to look at the other girls. It was enough to hear their lament; so she turned her horse into Stewart's trail.

Glad indeed was Madeline to be left. (Continued on page 531).

AN OAK TREE.

BY HILTON DEXTER.

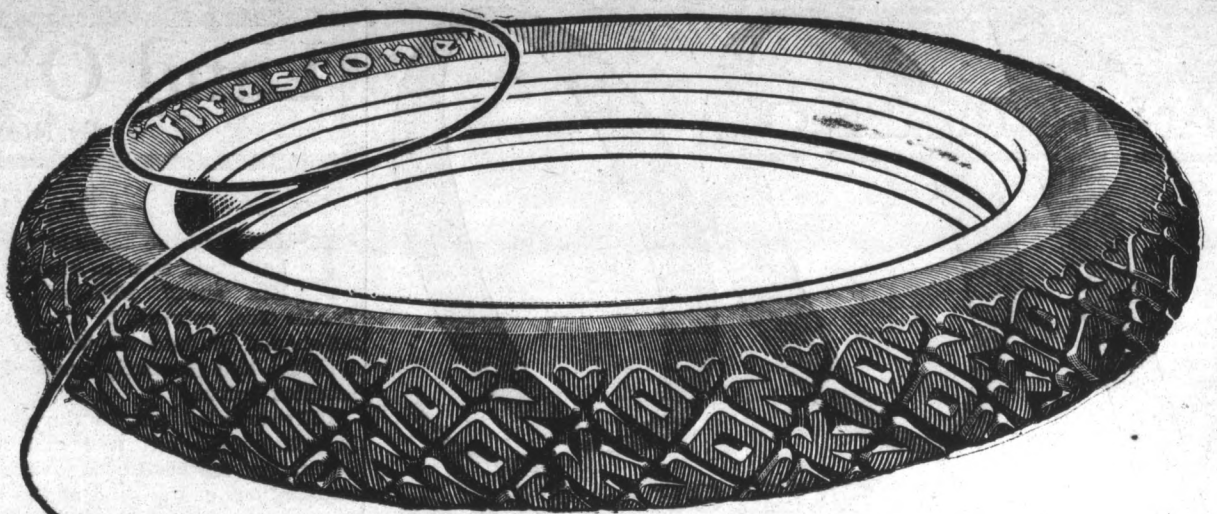
Oh, Oak! Thou guardian of each fleeting day!
Men pass and notice not thy murmuring voice;
But in thy accents tender I rejoice,
To me it is a joy along the way.

And as I pause beneath thy shading arms
That sweet, that dreamy music lulls to sleep;
Then my roving mind does soar and reap
Blessings, numberless, out of thy charms.

When that I then awake from my trance,
I wonder, nay I marvel at thy might;
I've romped and played in thy soft mellowed light
And thou hast watched with thy contented glance.

For nineteen years I have communed with thee,
Yet ever have I from thy leaflet voice
Heard sounds so soft, so pleasing to my choice,
Of thee, I could but ask, "So let it be."

Oh, Oak! Thou still dost watch o'er all my hours
Yet soon, too soon, thy boughs will fall to earth.
Oh, grant that then I may respeak thy worth,
That men may know I loved thy twilight bowers.



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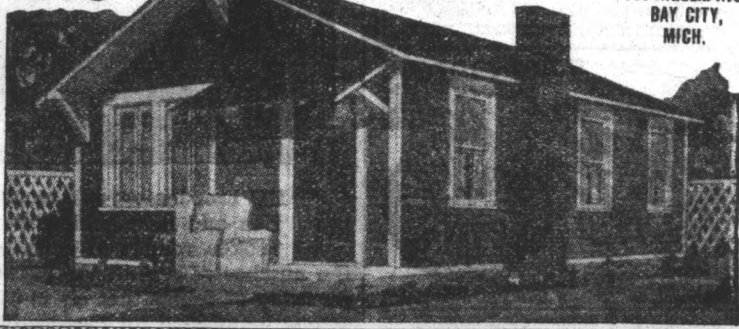
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Land O' Nod Stories.

By HOWARD T. KNAPP

The Vicious Ant Lion

THERE is the terrible ogre who built this trap to ensnare luckless ants," whispered Tinker Teedle Tee, pointing to the deep, funnel-shaped pit into which Billy Be By Bo Bum had so nearly tumbled a few minutes before.

Billy crawled out to the end of a branch of the oat tree and looking down, saw the head of a savage insect sticking out of the sand at the bottom of the pit. Never in all his life had Billy seen such a fierce looking animal. Its body was buried in the sand, but its head was armed with an enormous pair of powerful jaws, terrible saw-toothed pinchers that could cut off the head of an ant at one snip. It was an Ant Lion, and as Billy gazed down at the terrible ogre lying in wait to devour any poor ant unlucky enough to stumble into his clever trap, he trembled with fear to think how close he came to falling into the pit.

"Here comes a victim now," whispered Tinker a moment later as one of the Queen's soldiers emerged from the oat forest, and started to cross the road, headed straight for the trap. It was one of the soldiers who had taken part in the recent battle, but had lingered behind after the army had left the battlefield, and was now hurrying to catch up with its companions.

The ant was in such a hurry that it did not notice its danger until it was within a few inches of the pit. Even then it did not realize the true nature of the peril, but, thinking its path blocked by a cow track or some other natural hole, started to go around it, walking dangerously near the rim of the pit. Before the ant had taken three steps Billy saw the Ant Lion raise its head which it jerked back and forth, snapping its jaws open and

shut with each jerk. This made the sand fly up in a perfect shower, and the pellets, striking against the sloping sides of the pit, caused the loose sand to cave in. This was just what the Ant Lion wanted, for the soldier was walking so near the edge of the pit that when the sides caved in he was caught in the sliding sand and tumbled down into the trap where he was seized and eaten by the fierce ogre at the bottom.

The whole thing was done so quickly that it was over almost before Billy knew what was going on.

"Come on Tinker, let's go back to the city," said he after a brief silence. "I don't want to see any more ants killed. I've seen too much of that already today."

So Billy and the elf slid down the trunk of the oat tree and set off through the forest to rejoin the army. In a few minutes they reached the city and found the plain crowded with workers and slaves waiting to welcome the victorious army. The Queen was standing near the gate surrounded by her body guard as usual, and as Billy and Tinker pushed their way through the crowd to her side, she greeted them heartily.

"I certainly am glad to see you return in safety," said the Queen. "You were gone so long, I was rather afraid something might have happened to you, especially as it was such a bloody battle, costing the lives of many of my best soldiers."

"Oh, I took good care of him, your majesty," replied Tinker. "We watched the battle from the top of an oat tree. Your soldiers are sure brave fellows. In fact, I never saw such great fighters in all my life."

"If you think they can fight, you

And Another Reason Is Health



THE broadening of American life through popular and practical education and industrial achievement has made us discontented with unbroken rounds of daily toil. We have learned, too, that in adding to the number of our interests, regular daily work is more tolerable. In the diversity of things that claim attention of the average American, he finds strength and skill for performing his particular tasks with a less expenditure of time and of energy and with increased devotion.

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Frequently among those who have joined the concourse of motorists that throng our highways today, do we find persons who have experienced complete physical recovery from ailments that did not respond to prescriptions or to the knife. Their getting out for a few minutes each day drove the evil spirits away—the vampire, foul air, the fiend that halts digestion and assimilation and the hobgoblin that poisons every tissue, were all driven out, and nature full welcome, stepped in and restored order in these bodily domains.

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should see our cousins, the Driver or Legionary ants," spoke up the captain of the guard.

"I never saw them," said Billy.

"No, I guess you never did, as they live in Africa," replied the captain. "These driver ants live entirely by warfare. They never do any work from year end to year end. They have no city of their own or any fixed home, but move from place to place, killing and eating everything that crosses their path. They are more feared than any animal in all Africa, and even the fierce lions and elephants get out of the way when the Driver ants go on the war path.

"They move through the jungle in a straight line, never turning aside for anything. When they come across anything alive they sting it to death and eat it. When they come to a house they march in and take possession. The people move outdoors until the army has passed, but they welcome the ants as friends, for the plucky fighters kill every rat and snake and insect in the building."

And next week I'll tell you more about Billy's adventures.

LIGHT OF WESTERN STARS.

(Continued from page 529).

ed off her horse beside a roaring fire, and to see steaming pots upon red-hot coals. Except about her shoulders, which had been protected by the slicker she was wringing wet. The Mexican women came quickly to help her change in a tent near by, but Madeline preferred for the moment to warm her numb feet and hands, and to watch the spectacle of her arriving friends.

Dorothy plumped off her saddle into the arms of several waiting cowboys. She could scarcely walk. Far removed in appearance was she from her usual stylish self. Her face was hidden by a limp and lopsided hat. From under the disheveled brim came a plaintive moan:

"O-h-h! what an awful ride!"

Mrs. Beck was in worse condition; she had to be taken off her horse.

"I'm paralyzed—I'm a wreck. Bobby, get a roller-chair!"

Bobby was solicitous and willing, but there were no roller-chairs.

Florence dismounted easily, and but for her mass of hair, wet and tumbling, would have been taken for a handsome cowboy.

Edith Wayne had stood the physical strain of the ride better than Dorothy; however, as her mount had been rather small, she had been more at the mercy of cactus and brush. Her habit hung in tatters.

Helen had preserved a remnant of style as well as of pride, and perhaps a little strength; but her face was white, her eyes were big, and she limped.

"Majesty!" she exclaimed. "What did you want to do to us—kill us outright or make us homesick?"

Of all of them, however, Ambrose's wife, Christine, the little French maid, had suffered the most in that long ride. She was unaccustomed to horses. Ambrose had to carry her into the big tent.

Florence persuaded Madeline to leave the fire. When they went in with the others, Dorothy was wailing because her wet boots would not come off, Mrs. Beck was weeping and trying to direct a Mexican woman to unfasten her bedraggled dress, and there was general pandemonium.

"Warm clothes—hot drinks and grub—warm blankets!" rang out Stewart's sharp order.

Then, with Florence helping the Mexican women, it was not long before Madeline and the feminine side of the party were comfortable, except for the weariness and aches that only rest and sleep could alleviate.

Neither fatigue nor pains, however, nor the strangeness of being packed sardinelike under canvas, nor the howls of coyotes, kept Madeline's guests from stretching out with long,

grateful sighs, and one by one dropping into deep slumber. Madeline whispered a little to Florence, and laughed with her once or twice; and then the light flickering on the canvas faded and her eyelids closed. Darkness and roar of camp-fire, low voices of men, thump of horses' hoofs, coyote serenade, the sense of warmth and sweet rest—all drifted away.

When she awakened, shadows of swaying branches moved on the sunlit canvas above her. She heard the ringing strokes of an ax, but no other sound from outside. Slow, regular breathing attested to the deep slumbers of her tent-comrades.

Presently she observed that Florence was missing from the number. Madeline rose and peeped out between the flaps.

An exquisitely beautiful scene surprised and enthralled her gaze. She saw a level space, green with long grass, bright with flowers, dotted with groves of graceful pines and spruces, reaching to superb crags, rosy and golden in the sunlight. Eager to get out where she could enjoy an unrestricted view, she searched for her pack, found it in a corner, and then hurriedly and quietly dressed.

Her favorite wolfhounds, Russ and Tartar, were asleep before the door, where they had been chained. She awakened them and loosened them, thinking that while that it must have been Stewart who had chained them near by. Close at hand, also, was a cowboy's bed, rolled up in a tarpaulin.

The cool air, fragrant with pine and spruce and some subtle nameless tang, sweet and tonic, made Madeline stand erect and breathe slowly and deeply. It was like drinking a magic draft. She felt in her blood something that quickened its flow.

(Continued next week).

MANUAL TRAINING IN RURAL SCHOOLS.

(Continued from page 526).

lowing this procedure, the old educational system is in no way encumbered and no extra classes are added. The work is done during the pupil's spare time. Each pupil is in a class by himself, giving him an opportunity to progress as rapidly in the course as he is willing to work. One pupil can not hold another back through this system.

The scope of work outlined to be covered the first year includes from the cutting of boards with accuracy, and making simple articles, to the manufacture of model tables and other kinds of furniture. A recent display of the school's work at a farmer's meeting caused many of the veteran farmers of the county to marvel at the class of work done. The work is still in its infancy or experimental stage but the words of encouragement from the county and state educational officials would cause one to believe that its success at the close of the present year will have a remarkable influence upon its introduction into many of the rural schools in the state.

The urban school system now employs physical culture or athletics to build up the body; book knowledge to develop the mind and intellect; discipline to concentrate the mental forces and build up a noble and pure character; thoroughness to train the pupil toward accuracy in life's work, and special training to prepare for some city vocation. But it takes more than these to make a farmer. A vocational training that will concentrate the forces that tends to develop a farmer out of a farm boy is needed. To this end the study of agriculture has been introduced into the schools and in order to strengthen its influence, why not introduce another factor, the study of manual training—to train the hands to use the common tools of the farm with some degree of skill?

In proportion as men know more and think more, they look less at individuals and more at classes.—Macaulay.



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Woman and Her Needs

At Home and Elsewhere



Doing One's Best by the Children

EVERY conscientious parent is anxious to do the best for his children, but all too often in their loving anxiety parents confound doing the "most" with doing the "best."

"I couldn't have this when I was a child, but my boy shall," says the father, and strains every nerve to give the child things he had much better work for himself.

"I could not go out and have good times when I was a girl, I had too much work to do," says the mother, "but my girl shall have her chance." So she overdoes, that daughter may take her ease, thereby making a lazy, selfish parasite out of a child who might otherwise have developed into a capable, self-reliant woman.

Parents, on the whole, entirely overlook the fact that it was the very struggles they were obliged to make as children which turned them into the steady, industrious, desirable citizens that they are today. In their desire to make life happy for their children they overstep the mark and deprive the boys and girls of the real happiness which comes from effort.

All along the line it is the same with children of today. Too much is being done for them everywhere. Beginning with the first year in school, teachers are imbued with the idea that work must be made as easy as possible, and the child is over-directed. Everything is supervised, even the play, until the child, deprived of all initiative, becomes a weakling. Play can not be left to the spontaneous activity of the child, it must be directed into channels of development. Time was when the busy mother could turn her little ones out in the yard with a twine ball and a spoon to dig dirt and leave them to find a stick for a ball club. Now she is expected to watch over them while at play, provide them with a germless ball and bat and see that their games are constructive instead of destructive. She can no longer tie up a bundle of rags and mark a face on it with a bit of charcoal, for a doll. Scientific toys which instruct must be bought, even if the old folks are the only ones in the house who care a pin about them.

Higher along in the school the same devastating principle of making things easy for the children is carried out. Learning has been made so easy that when the average child gets through school he doesn't really know anything. Instead of having to get down and bone, dig things out for himself, he has relied upon his teacher until now, if another instructor should come along and tell him he was all wrong he wouldn't know for himself which teacher was right.

Children are supervised to death. "What shall we do, now?" is their cry, whereas they should be so brimful of ideas that they would not know which one to work out first. And the children that we consider the most fortunate, those of the well-to-do, are really in the worst plight. There is some hope for the children of the very poor. Their parents are too busy getting the daily bread to have time to bother with theories, and the children thrown back upon themselves, develop resources of entertainment. So soon as they are able they have to turn to and help out with the family income, which, while it may look like a hard-

ship, is really the best thing that could happen to them. They learn first hand the pleasure that comes from honest work well done, and know the worth of a dollar because they have had to earn it. Instead of growing up spineless creatures with no idea of meeting emergencies, except behind someone else, they are ready for anything, resourceful, quick, keen and business-like.

It is a fine, good thing for parents to want to do their best for their children. But it is a mistaken notion to think that doing our best for them means to place them above the necessity of sacrifice and hard work. Doing our best means to so train them that they are best able to take care of themselves. The father who aims to give his children each a farm or a thousand dollars is unselfish but mistaken. It would be far better for him, and the children, to put the young folks in a position to earn their own farm while father and mother sit back and enjoy the fruits of their own hard labor.

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NEW FURNITURE FROM OLD.

BY MRS. EARL TAYLOR.

Just because a piece of furniture is old and marred and weather-beaten, do not discard it. If it is strong and well made it can be transformed at little cost into a very pretty and useful piece of furniture with the aid of a brush and some paint.

By carefully following directions you can do the work yourself, even though you are not experienced in this line of work. First wash the article until it is perfectly clean, then let it get good and dry so it will take the paint well. If there are any rough places rub them smooth with sandpaper, then it is ready to paint and varnish. You may take your choice of several varnish stains which represent different kinds of wood.

Many times it is necessary to use a ground color under the varnish stain. Thus, if the furniture is dark and you are going to finish it in light oak, go over it first with a coat of ground color, a sort of yellow. Let this dry thoroughly and then apply the light oak varnish stain. Sometimes it is even necessary to use two coats of ground color. Let the first coat dry thoroughly and then if the old color shows through it is wise to apply another coat before applying the varnish stain. If grain- ing is desired on a varnish stain this may be done with the aid of a grainer.

MAKING FANCY WORK PAY.

BY JANET THOMAS VAN OSDEL.

Two girls who started out to make money by the sale of their fancy work, at which they were both expert, were discussing the matter a couple of years later.

"I've given it up," declared Gertrude. "About all I have to show for my efforts of two years is a beautiful collection of towels, pillow slips, two crocheted bed spreads and a lot of other stuff that I should never have thought of putting money into just for myself. Most of them are too expensive to use as Christmas gifts. I've simply been 'stung' by my money-making venture."

"How strange!" exclaimed Clara.

"For I am all enthusiasm over my venture. I cleared \$185 the first year and \$280 the second, and I know I shall do better this year. By 'cleared' I mean the money I made above the expense for materials. I do not count my time for I use the odd minutes, and often hours, after doing my housework."

But there was really nothing strange about the fact that one of these girls succeeded where the other failed. The simple secret of Clara's success was that she applied business methods to her work, the best result-bringing business methods. For instance, when the Irish crochet bags were so popular several years ago Gertrude did not begin making them until she had seen several of her friends carrying them. By the time Clara's friends were using them she had already cleared a neat sum on them and had stopped making them except when she received a special order. She was already at work on the next fad in fancy work. She reasoned that when a thing was new, women were bound to buy it. As soon as it became common, every amateur was making it and there was no market for it.

All of Clara's patrons and acquaintances remarked on the fact that she was brimful of ideas for all sorts of fancy novelties that had never been seen or heard of in her town. Consequently, even the women who did fancy work themselves patronized her, if for no other reason than that they wished to use her work as samples for their own. The secret for Clara's being always able to take the lead in these matters lay in the fact that several times a year she spent a day or two in the fancy work departments of the big stores in a neighboring city. She also observed the novelties to be found in the favor, the lace, the ribbon and the lingerie departments. She always found shown there a number of articles that would not have been heard of in her neighborhood for a year or more had she not introduced them. Also, she studied carefully and profitably the fancy work departments of the various papers and magazines and made use of the best ideas.

One reason for the quick sale of Clara's articles was that though she sold every piece at a fair profit the purchase price did not leave too big a gap in the pocketbook of the customer. She wanted her patrons to feel after they had reached home and examined their purchase that they had done well indeed, and she wanted their friends to think so, too. This prohibited her from making the very expensive, time-consuming pieces except when she had a special order for them. She knew that she could sell 100 articles at 25 or 50 cents to one \$10 piece and with greater profit. She never made a bed spread until a daughter of wealth ordered one for her bridal outfit. The price agreed upon for that before Clara took one stitch of the work was \$100.

Clara was well aware that the most extensive purchasers of her wares would hardly be found in her own neighborhood where most of the women had leisure to do some fancy work. She suspected that her most profitable field lay among the well-paid business girls of the city who desired pretty handiwork but had not time to do it. And she had an eye on the very wealthy families of the city. She finally hit upon a scheme for getting in touch with the business women by securing permission to display a counter of her

work at the door of a good restaurant patronized by high-class business girls. Not only did she sell out her stock but she took orders from a number of women. And the greatest value of these orders lay in the fact that she thus got the address of these women and thereafter kept in touch with them. Also after that successful trial she had her counter at the restaurant door a few days before each Christmas, Valentine and Easter holiday. All through the year she used the extra moments when she was not filling orders in making novelties for these holiday sales. As her articles sold for from five cents up, she could meet the dimensions of every purse.

Clara did not succeed, however, in getting a well established trade among wealthy society women. This was due to the fact that most of these families have their regular needlewomen to do all of their fine work and that they buy abroad and at exclusive shops. Clara's work could hardly compare with the expensive French work which they demand. This Clara soon had the good sense to see, but she also saw that her work did appeal to the business girls and enough orders to make it a fairly profitable business for her. And why cry for the moon when something quite as satisfactory was easily within her reach? She had demonstrated with good financial results that there is a demand for crochet, tatting, embroidery and all sorts of fancy work provided the woman who takes up this line makes up-to-date, or a little ahead of up-to-date, articles and then places them on the right market.

CHILDREN'S DISEASES.

Typhoid Fever.

While it can not be classed with children's diseases, the fact that many children under ten years of age have attacks of typhoid makes its symptoms and general treatment of interest to mothers. A few cases of typhoid, even in infants, have been reported, but they are extremely rare under two years of age. As in adults, the disease is caused by drinking infected milk and water, a fact which explains why few young children are victims as their milk and water is usually boiled.

The disease is much milder in children than in adults. Ulcerations of the intestines, hemorrhages and perforations being not at all frequent. More often the fever is characterized by nervous symptoms than by bowel disturbances. The child is weak and loses flesh, the weakness corresponding to the height of temperature. There is headache, and sometimes mild delirium at night, and in young children often stupor. These nervous symptoms subside as the temperature goes down.

In many severe cases the child also suffers from bronchitis, and pneumonia is also sometimes present. Tuberculosis of the lungs or bones is often a sequel of typhoid.

The patient should be kept in bed so long as there is any temperature, and indeed for a few days after the temperature goes down to normal. All solid food must be eliminated and milk or broth given every three hours. Clothing and bed linen stained by a discharge should be soaked for a day in an antiseptic solution and boiled thoroughly. Indeed all bed linen should

be boiled two hours by itself, under no circumstances should clothing be used about the patient be put in with the family wash.

DEBORAH.

CARING FOR ELDERLY PEOPLE.

(BY HILDA RICHMOND.)

One of the most gratifying changes in the thought and life of recent years is the way in which elderly people are cared for as compared with thirty or forty years ago. In days gone by very little effort was ever made to doctor an elderly person in cases of illness, as it was thought that there was no use to try. "Make them as comfortable as possible," was the common opinion, "for nothing else can be done." And the elderly people themselves shared that idea and gave up without much of a struggle.

But nowadays the aged people get a square deal as well as the younger ones. In our community a man past seventy years recently recovered from a very severe illness, and bids fair to last for many years. Two trained nurses and a good doctor worked as hard to pull him through as they ever did with a younger patient, and he got well. In other days he would have been made comfortable and no effort made to save his life.

And it isn't only when they are sick that they are cared for in a better way, but when they are healthy and strong. It used to be that "Grandma" or "Grandpa" was not allowed to work at all. A life of inactivity was all that was open to them. Of course, it was all done out of kindness but it was mistaken kindness. The idea was that the aged people had worked very hard for their children and were now entitled to perpetual rest. But perpetual rest is only good for the dead. A little work and a little play are good for the aged as well as for the children and the great scarcity of farm help has literally driven thousands of grandfathers and grandmothers to health and happiness because they have had to work.

Of course, the new treatment includes visiting, entertaining and an active interest in everything pertaining to life about them. Many country churches would have to close their doors but for the active elderly people who keep up services and every other activity. No longer are grandfather and grandmother considered too old to go out, even in cold weather, and the result of all this change is very gratifying.

The new departure robs old age of many of its terrors for it is inactivity that makes people cranky and discontented. The elderly man no longer divides up his property among his children when he gets to be sixty years old and has no interest in life after that, but retains the control of the money he worked hard for all his life. And the elderly lady retains her own home and interests, even though a widow, instead of "visiting round" to the end of her days. To be sure, sickness and misfortune come but they come to young as well as to old.

And besides being a benefit to the old folks, it helps everybody. There is constant friction in a home where elderly people are forced to endure the cheerful noise and confusion of children, it can't be otherwise. The young parents can not repress the children always, and the elderly people can not be comfortable where it is noisy. It is pleasant to know that one may grow old without being superannuated at sixty, or being a burden to anyone; and that is one of the privileges our great grandparents knew nothing about.

POLICEWOMEN PROVE PRACTICAL.

London policewomen have justified their "unfeminine" undertaking by the very convincing means of real service. According to a London dispatch, England, after a six months' trial, is really

beginning to like them, though at first there was violent opposition to the enterprise. Incidentally, these new public servants are winning favor not so much by force as by tact and persuasive powers. They have been especially successful in quieting panic-stricken crowds during Zeppelin raids, in dealing with drunken and fighting soldiers and in calming excited women and children in the streets.

PROPER FOOD FOR YOUNG CHILDREN.

Simple bills of fare, helpful recipes, and practical directions for the preparation of foods for children between three and six years of age, are contained in Farmers' Bulletin 717, "Food for Young Children," just issued by the U. S. Department of Agriculture. The bulletin, which was written by Caroline L. Hunt, under the direction of Dr. C. L. Langworthy, Chief of the Office of Home Economics, is easy to understand and should be helpful to mothers who are trying so to care for their children that they will grow up into stalwart and efficient men and women. It is issued at this time as a co-operative contribution to the "Baby Week" campaign conducted by the Children's Bureau of the U. S. Department of Labor, and may be secured by writing the Department of Agriculture, Washington, D. C.

WOMEN AND DRESS.

Thoughtful American women are more and more endorsing the opinion of Mrs. Thomas A. Edison that lack of originality in their apparel and a passive acceptance of all the vagaries of fashion are unworthy of the modern wife and mother. In order to take action on the dress question, two million club women throughout the United States will begin a nation-wide fight against many of the prevailing styles in women's apparel when the General Federation of Women's Clubs of America convenes in New York in May.

When grease or milk is accidentally spilled on the stove sprinkle some salt on at once. This prevents most of the "smudge," which you will otherwise have.—E. S. T.

WHAT KIND OF HOUSE ARE YOU GOING TO BUILD?

(BY IDA CHITTENDEN.)

This question is a very important one if you are looking forward to a newly built home, or even to remodeling the old one. Of course, you are thinking of that splendid living-room, and the kitchen with its modern conveniences, which have now come within the reach of nearly everyone. But are you also thinking seriously of the sanitary welfare of your family according to advanced ideas of housing?

Our larger cities nearly all have housing ordinances, and the smaller cities are falling in line. Not, however, until we secure a state law will the very present danger be eliminated.

You will, of course, build your home on high enough ground so that there will be surface drainage from the house, otherwise the water would be liable to freeze and eventually weaken the foundation. But will you not do this same thing also to avoid dampness in the house that would endanger the health of the inmates, and be sure that the cellar has perfect ventilation as well?

We are just now starting a very aggressive campaign against tuberculosis. The state has appropriated \$100,000 for this work. Have you ever considered what housing conditions may do to increase the ravages of this disease?

Every living-room should contain at least 150 square feet of floor space, every sleeping-room not less than 90 square feet, with ceilings eight and a half feet high. This is the minimum for safety according to the best au-



—“woman's work is never done”

Especially on the farm. Busy from morn till night—cooking, churning, feeding the chickens, getting the youngsters off to school, washing dishes and a thousand and one odd jobs.

When the day is done and the lights are lit, out comes the darning basket. It isn't fair to mother. Let the whole family wear

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and darning will be a thing of the past. Durable as their name, this famous hosiery wears best where the wear comes hardest. Made of sturdy, stretchy yarn, shaped to fit, with extra strength at heels, toes and soles. Different weights for different purposes—a hose for every use, for every member of the family and at a price you'll be glad to pay. 10c, 15c and 25c a pair.

Ask your dealer for Durable Durham Hosiery. He ought to have it in stock, as we are the leading makers of low-priced hosiery in the world. Have him show you the 25c mercerized hose. Don't forget the name—Durable Durham.



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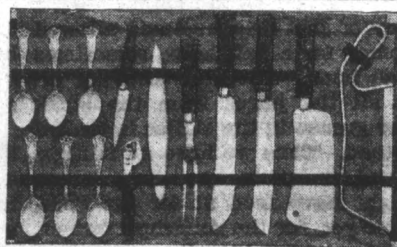
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"Use 20 Mule Team Borax in washing feeding bottles and other nursery utensils."

These are not guesses: they are the directions of well-known doctors and nurses as found in their published works.

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thority of the nation. Yet will you, because an attractive looking plan is placed before you by carpenter, contractor, or housebuilding catalogue house, forget this most important feature and be induced to build rooms that will not afford sufficient breathing space for the health of the inmates?

It is quite untrue that the country is freer from tuberculosis than are the cities. One big reason for this is the cramped sleeping-rooms and the poor ventilation that you find scattered throu the rural communities.

In building a house remember that the building may last a long time, that many people may live within its walls; and so build that the health of the inmates may never be endangered by lack of thought and care in the beginning by him who built the house.

THE COOK'S TIME TABLE.

BY M. A. L.

Many housekeepers, especially old ones, sneer at the idea of doing things "by the clock." They seem to think that instinct, or experience, will tell them when a thing is "done just to a turn," and that the kitchen clock is only to remind them of meal time. Perhaps with experienced cooks a clock isn't so necessary. A mysterious sixth sense may tell them when the food will be just right, but even the most experienced fail at times just because a dish was cooked too short a time or too long. A minute too long is as bad as a minute too little, in most cases.

Take dumplings, for instance. Everybody likes good, light dumplings with gravy, but all too few can make them. Yet nine-tenths of the secret lies in cooking them just the right time, no more no less. Ten minutes exactly by the clock, boiled with the cover never lifted a tiny crack, will give the right result. Nine or eleven minutes are more than apt to spoil everything. Yet the average cook will not bother to time them, and will laugh at you if you suggest it.

Then there is coffee. Boiling exactly five minutes after boiling begins, gives you a good cup of coffee, provided you have used the right proportion of coffee and boiling water. Boiling less gives you a decoction which is lacking in strength, and boiling longer, a black mass that is unfit to drink. Made in a percolator, with cold water, exactly twenty minutes over the blaze is the right time.

Beef steak, too, when properly cooked, is a delight to even the most fastidious. All too often the choicest steak is ruined in the cooking. Cooked properly it should be broiled over the blaze, not more than ten minutes if an inch thick, nor more than fifteen if an inch and a half thick. While cooking it should be turned constantly, indeed every ten seconds. If you can not broil it, but must resort to frying, the spider should be piping hot, with just enough melted fat in it to keep the steak from adhering. The fire must be as hot as possible, and the cook should turn the steak as frequently as in broiling. Eight minutes is long enough to cook a steak in this way.

All too often, however, the steak is put untrimmed into the skillet with a quantity of suet drippings and allowed to simmer for a half hour, sometimes even an hour. The slow cooking extracts all the juices from the steak and the grease in the skillet is soaked up instead. Thus we have an indigestible and unsatisfactory dish, where we might have food fit for the gods, or better yet, for the American farmer.

Baking powder biscuits are ruined more often by slow cooking than in the mixing. The oven should be piping hot when the biscuits go in, hot enough to cook average sized biscuits in 20 minutes. Small ones should bake in 10 minutes.

In cooking vegetables the sin lies on the side of cooking too long. The small vegetables, beans, peas, asparagus,

etc., are cooked until they fall to pieces, and then the water in which they are cooked is thrown away and milk or cream added. In this way the valuable part of the vegetable is thrown away and the indigestible hulls left to serve. Asparagus which will not cook sufficiently tender in 25 minutes is not fit to serve, and a half-hour is enough for green peas and new beans. Use just sufficient water to keep from burning, and do not throw away a drop. Keep this with the vegetable juices and if you must have milk add it to the juice. A generous bit of butter, with pepper and salt, is better than a white sauce, however, with these vegetables.

Corn should cook in at least 20 minutes, but if you plan to cook celery allow two hours.

Watching the clock while you cook does not require much effort, and in several cases I know it has changed a poor cook into a good one. The right time, no more no less, is as essential as good ingredients and correct mixing.

CENTERPIECE WITH VENETIAN CROCHET LACE EDGE.

Cut a circular piece of linen 12 inches in diameter and baste a roll hem around the entire edge. Then work a row of s c through the linen over the hem completely around the piece and sl st in the first s c to complete the circle.

First Row.—Make a row of d c around the entire edge.

Second Row.—Ch 11, skip 8 st of previous row. S c in 9th st. Repeat to end of row and sl st in the 1st st of ch 11 to fasten.

Third Row.—Ch 3, make 8 d c in the first 8 st of ch 11, ch 3, sl st in 9th st of ch 11. Skip the next two st of this chain and make 8 d c in the first 8 st of next ch 11, ch 3, sl st in 9th st. Repeat to the end of the row and make last group 9 d c, fastening last d c through the 9th st of chain and into top of the first d c of the first group.

Fourth Row.—Ch 12, s c in top of 8th d c of first group in previous row. Continue to end of row.

Fifth Row.—Sl st to 4th st of ch 12. Ch 3, 4 tr holding last st of each tr on needle and slipping all off together. Ch 11. Repeat to end of row and fasten in third st of ch 3.

Sixth Row.—Sl st to 5th st of ch 11. Ch 16, s c under ch 11. Repeat to end of row and fasten in first stitch of ch 16.

Seventh Row.—Ch 4. Make 12 tr in first 12 st of ch 16. Ch 4, sl st in 13th st of ch 16. Skip next three stitches and make 12 tr in first 12 st of next ch 16. Repeat and make 1 tr in top of first tr of first group to complete row.

Eighth Row.—Ch 17, s c in top of last tr in group of 12 of previous row. Repeat to end of row, making the last ch 13 stitches. Then make 1 tr in first st of ch 17.

Ninth Row.—Thirteen tr in first 13 st of ch 17. Ch 4, sl st in 14th st of ch 17. Skip the next three st of this chain and make 13 tr in the first 13 st of next ch 17. Repeat and make 1 tr through the 14th st of ch 17 and into the top of first tr of first group of 13 tr.

Tenth Row.—Ch 5, 1 d tr between 3rd and 4th tr of last row. Ch 12, 1 tr between 9th and 10th tr. Ch 2, 1 tr in top of last tr of group. Repeat to end of row. Fasten in 3rd st of ch 5.

Eleventh Row.—Two s c in the next 2 st of ch 5, 1 s c in the next tr c, 2 s c in the next 2 ch, 1 s c in the next tr c, 2 s c in the next 2 ch, 1 s c in the next tr c (2 s c in the next 2 ch. (9 ch, skip 1 ch and work into the next 8 ch 1 s c, 1 d c, 3 tr c, 1 d c, 1 s c, 1 sl st, make another chain of nine. Skip the first ch and work into the next eight chain, 1 s c, 1 d c, 3 tr c, 1 d c, 1 s c, 1 sl st. Skip the next tr c of the previous row and make 2 s c in the next 2 ch, 1 s c in the next tr c m, 2 s c in the next ch of 2, 1 s c in the next tr c, 2 s c in the next ch

2. Repeat to the end of row. Fasten thread and break.

Twelfth Row.—Make 1 s c in the top of the petals formed by the ch 9. Ch 5. Make one long stitch in the space between the two petals with the thread next tr c, 2 s c in the next ch 2, 1 s c thrown around the needle four times. Ch 5, 1 s c in the top of next petal. Repeat to end of row and fasten in first s c.

Thirteenth Row.—Ch 3, 15 d c over the next 5 ch. Ch 4, 1 s c, in the first st of ch 4 to form a petal. Skip the long st, 5 d c over the next 5 ch 1 p. Repeat to the end of row and fasten with a sl st in 3rd st of ch 3. Turn and work a sl st through last p. Ch 6. Turn again.

Fourteenth Row.—One d c into the same last p. Five ch 1 d c in the next p, ch 3, 1 d c in the same p. Repeat to the end of row. One sl st into the 3rd st of ch 6 to fasten.

Fifteenth Row.—One s c into the first space formed of the three ch. Then make in this same space 1 d c ch 3, 2 d c. Then ch 2, 1 s c in the 3rd st of ch 5 of the previous row, ch 2. Then work in the next space, 2 d c ch 3, 2 d c, ch 2, 1 s c in the 3rd st of ch 5. Ch 2. Repeat to end of row and fasten with a sl st in third ch.

Sixteenth Row.—One sl st into the next d c, then work into the next space formed by the three ch 1 s c, 4 ch, 1 s c, 4 ch, 1 s c, 4 ch, thus forming three little loops. Then 2 ch, 1 s c into the next s c, ch 2. Repeat to the end of row and fasten with a sl st into the first sl st. Break thread.

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Owner has another farm and is offering this one at a rare bargain; only 1 1/2 miles from three towns; orchard of 75 apple trees, plum and cherries, in fine condition. For picture of this attractive 12-room house, fine barn with silo and convenient out-buildings, see page 34, "Strout's Money Making Farms," copy free. \$630 takes this high-class property, easy terms arranged. Good farm of 150 acres for \$3900 with comfortable buildings shown same trip. E. A. Strout Farm Agency, Dept. 101, 150 Nassau St., New York.

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Successors to A. J. Stevens & Co., Established 1883. Farm, Fruit and Stock Lands. We own 18,000 acres of choice unimproved land in Gladwin and Clare counties. Sold on easy payments. Interest 6 per cent. Write for information.

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In Gladwin and Midland Counties, Michigan. Well located. Low prices and easy terms. Stafield Bros. (owners), 15 Merrill Bldg., Saginaw, (west side), Mich.

40 ACRES, 20 cleared, level, clay loam, 4 1/2 miles from Ewart, Mich., on gravel road, eight room frame house, well and windmill, telephone, R. F. D., young orchard, well drained. With this farm goes 2 good horses, 4 good cows, 2 wagons, 1 disc, 3 cultivators, pair sleighs, stump machine, etc. Price for whole thing \$2500. \$1500 down, remainder reasonable. W. F. Umphrey, Ewart, Mich.

Wanted Farm 29 to 40 acres within 30 miles from Detroit, with stock and tools preferred. Send full particulars in first letter. Ross Land Co., 1000 Penobscot Building, Detroit, or 160 South Gratiot Avenue, Mt. Clemens, Mich.

257 ACRE STOCK FARM on main road, all improvements. \$30 per acre. 100 others. Send for list. Noylles Farm Agency, Phelps Bldg. Binghamton, New York

For Sale Farms 20 to 200 acres. Prices are right. A. B. EVERETT, South Lyon, Mich.

Good Farm Hand, No children. Modern Stock Farm near Detroit. Box G-415, care Michigan Farmer.

Farmers' Clubs

PATRIOTISM.

Paper read at a recent meeting of the Ingham County Farmers' Club, by Elva J. Haskell, and published by request of the Club.

This is the birthmonth of many brave and illustrious men. Not alone is it Washington's and Lincoln's, but Greeley, Dickens, Harrison, Jefferson, Victor Hugo and Longfellow each claim this as the month of their birth. Washington was born in 1732, and Lincoln in 1809.

When Columbus discovered America he little knew what a great nation it would eventually become.

And when the people from the old world first set foot upon its shores, they found but a wilderness inhabited by the red men and wild animals.

They came here to escape the cruelties of the old world: that they might be free to express their thoughts and to build up their homes. But Great Britain, in her lust for power, determined that these people should still be under her control; and as the burdens she laid upon them became too heavy for them to bear, they asserted their right to the new country, and refused to submit.

It was then that Washington, a man of noble mind and presence, became their leader. History tells us of their struggle for independence. It was then that American patriotism was founded. In 1777 the Congress of the United States appointed a committee to design a suitable flag for the nation. Washington and Robert Norris were the committee. The flag was changed several times, but in 1818 the flag was restored to its original form of thirteen stripes, alternating red and white; at the same time Congress provided that there should be as many stars as states, so on the Fourth of July following, a new star is added to the flag.

How well that handful of pioneers defended their chosen country, we well know. For Washington's army was but a handful compared with our nation's armies today. Patriotism has been instilled in our hearts from our birth. And yet, we are not many that descended from that pilgrim band compared to the vast numbers who are shielded by our nation's flag. I am glad and proud that I can truly say, I am a daughter of the Revolution, for my great grandfather fought in Washington's army. Washington was great as a general, and as a statesman; he was greater still as a man in his sense of rectitude, in his reverence to God, and love for his fellow men. During the Revolutionary war, Spain, France, and the United States were allies, and the treaty of peace signed in 1783 was between England on the one side and the allies on the other. Hardly was the ink on the treaty dry before Spain made extravagant claims concerning the boundaries of Florida and even denied our right to territory between the Alleghany mountains and the Mississippi river. It will help us to form an intelligent estimate of the possibilities before us, and the probable future of our nation if we will briefly consider its early difficulties and the progress it has made. For generations the United States has held steadfastly to the policy outlined by Washington in his farewell address. If we remain one people, under an efficient government, the period is not far off when we may defy material injury from external annoyance. Why forego the advantages of so peculiar a situation? Why quit our own to stand on foreign ground? Why, by interweaving our destiny with that of any part of Europe, entangle our peace and prosperity in the toils of European ambition, rival ships, interest, humor or caprice? It is our true policy to steer clear of permanent alliances with any portion of the foreign world, so far, I mean, as we are now at liberty to do it; for let me not be misunderstood as capable of patronizing infidelity to existing engagements.

We can better understand what called forth these wise utterances, if we know something of the condition of the country at that time. The United States was practically but a small fringe of settlements on the Atlantic seaboard; to be driven from the coast was to endure all the privations of the forest, and that coast was at the mercy of any of the naval powers of the day. Their northwestern and southern boundaries were vague and indefinite, of them they knew little and cared less. Their western boundary was the Mississippi river, and this was supposed to rise somewhere in British America. It is more than a century since Washington uttered his words of warning.

(Continued next week).

Grange.

Our Motto:—"The farmer is of more consequence than the farm, and should be first improved."

STATE GRANGE OFFICERS.

Master—John C. Ketcham, Hastings.
Overseer—C. H. Bramble, Tecumseh.
Lecturer—Dora H. Stockman, Lansing.
Secretary—Jennie Buell, Ann Arbor.
Treasurer—Frank Coward, Bronson.
Executive Committee—C. S. Bartlett, Pontiac; Geo. B. Horton, Fruit Ridge; J. W. Hutchins, Hanover; W. F. Taylor, Shelby; Wm. H. Welsh, Sault Ste. Marie; N. P. Hull, Dimondale; Burr Lincoln, Harbor Beach.

AMONG THE LIVE GRANGES.

Eaton Pomona.—It could hardly be said that the meeting of Eaton County Pomona Grange at Eaton Rapids was one of the largest ever held in Eaton county, nor yet that the business transacted was of great importance, but it is doubtful if there has ever been a more finished musical program rendered at a Pomona meeting in that county. Master Huber called the Grange to order and the business did not occupy more than 15 minutes, and was of little importance. Adjournment was taken to the dining-room, where a lot of business was transacted with more than passing interest. W. L. Huber, at the head of the table as pacemaker, is rather a strenuous leader and the members find it up to them to go some to maintain the pace. The dinner was fine—in fact, a regular Grange dinner—which is the most that anyone can say in the way of commendation. After dinner the members adjourned to the Baptist church, where the literary and musical program was staged. The musical program opened with a piano solo by Miss Miller, of Eaton Rapids, a student at Albion College, who delighted her audience by her rendition of a beautiful number. Violin solo by Mrs. Mabel Blackett, of Eaton Rapids, (a) Gypsy Dance, Bohr; (b) Excerpts from Verdi's Trovatore. The gypsy dance was an eccentric composition typical of the Hungarian, Balkan or Oriental dance melodies, or in a way, similar to the rhythm of Spanish Zingarella. The Verdi theme was the same as rendered by Mrs. Blackett at the January Pomona at Charlotte. Mrs. Blackett was accompanied by Miss Miller, another piano accompanist, who "was born, not made." The solos of Mrs. Moore were the veriest perfection of delicacy and refinement. Mrs. Moore inherits a beautiful soprano voice of absolute purity and extreme high range. Vocal solo by Mrs. R. H. Spencer, of Eaton Rapids, who sang in splendid voice, "My Little Grey Home in the West," and "Kathleen Mavourneen." Mrs. Keefer accompanied Mrs. Spencer in a very able manner. Piano duet, Miss Miller and Miss Strong, Eaton Rapids, themes from Miserre of Trovatore. The subject of "Co-operation" was discussed by Master Harry W. L. Huber and R. D. Bates, of Hastings. Mr. Huber spoke in particular of the success which has attended the venture of the Co-operative Shipping Association of Charlotte, and pointed out the many advantages to be derived from such co-operative enterprises.

COMING EVENTS.

Oliver Wilson, Master of the National Grange, will visit Michigan this summer and will speak at four points, M. A. C. being one, and Adrian another already decided upon. The date for the M. A. C. meeting is July 28. State Master Ketcham wants to have these four meetings in Michigan the biggest and best the National Master ever attended. We can do it if every Granger will come and bring his neighbor. Let us put Michigan on the National Grange map in big letters.

GRANGES ORGANIZED AND RE-ORGANIZED.

The number of Granges organized and re-organized from January 1, 1916, to March 31, 1916, both inclusive, is as follows:

Organized.

California 1; Colorado 13; Delaware 1; Idaho 4; Indiana 7; Iowa 2; Kansas 22; Maine 1; Maryland 3; Michigan 7; Missouri 6; Montana 2 Nebraska 7; New Jersey 1; North Dakota 4; New York 7; Ohio 29; Oklahoma 4; Oregon 3; Pennsylvania 10; South Dakota 4; Vermont 1; Washington 10; Wisconsin 3; total, 152.

Re-organized.

Kentucky 1; Ohio 1; Pennsylvania 1; Vermont 2; Washington 4; total 9.

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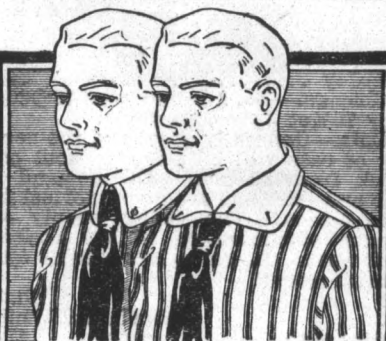
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Dept. A. Kalamazoo, Mich.

Markets.

GRAINS AND SEEDS.

April 11, 1916.

Wheat.—While the foreign news has generally favored a steady to weak trade, the condition of the growing crop in the United States and other producing countries, as well as the prospects for the spring wheat crop, has given markets strong support. As the season advances, the area that will be plowed up for other crops is reported larger and larger as the damage is better understood by the farmers. Hessian fly trouble is now being added to the list of bullish items urging higher values. There undoubtedly will be wheat carried over from this season into the next, but the large percentage of damaged and unmerchantable grain gives reason for believing that this quantity will not overcome the disadvantages of the coming short crop. The visible supply shows a decrease of 796,000 bushels. One year ago No. 2 red wheat was quoted at \$1.56 per bushel. Last week's Detroit quotations were:

	No. 2	No. 1	May
	Red.	White.	
Wednesday	1.20½	1.15½	1.22
Thursday	1.21	1.16	1.22
Friday	1.21	1.16	1.22
Saturday	1.20	1.15	1.21
Monday	1.22	1.17	1.23
Tuesday			

Chicago.—No. 2 red wheat \$1.21@1.23½; May \$1.17½; July \$1.15½.

Corn.—Corn values show advances over last week. The lateness of the spring will require farmers to keep a larger quantity of stored feeds for their own use. Improvement in live stock prices is also encouraging longer feeding periods. The visible supply last week decreased 781,000 bushels. A year ago No. 3 corn was quoted at 74c; Detroit's last week's prices were:

	No. 3	No. 3
	Mixed.	Yellow.
Wednesday	74½	77
Thursday	74½	77
Friday	75½	78
Saturday	75	77½
Monday	75	77½
Tuesday		

Chicago.—No. 2 yellow corn 79@80c; May 75½c; July corn 76½c.

Oats.—Generally speaking, the seedling of oats will be delayed about one week from normal. The demand is fair and offerings are about normal for this season. The visible supply decrease amounted to 941,000 bushels last week. Detroit's last week's quotations were:

	Standard.	No. 3
		White.
Wednesday	48½	47
Thursday	48½	47½
Friday	48½	47½
Saturday	48½	47½
Monday	48½	47½
Tuesday		

Chicago.—No. 2 white oats 43½@44½c; July 43½c per bushel.

Rye.—Cash No. 2 has advanced a fraction and is now 93½c per bushel.

Barley.—Milwaukee prices for malting grades have advanced to 70@77c, and Chicago values remain at 64@74c.

Beans.—Supplies are very low, the demand moderate and market firm. Cash beans steady at \$3.65; April \$3.70; May \$3.75. At Chicago market is quiet but firm, with Michigan pea beans, hand-picked at \$3.90@4; samples \$3@3.75; red kidneys \$4.75@5.

Peas.—Field varieties are quoted at \$2.10, sacks included, at Chicago.

Clover Seed.—Lower. Prime red is \$10.10 per bushel; prime alsike \$5.35.

Timothy Seed.—Prime 10c higher at \$3.60 per bushel.

FLOUR AND FEEDS.

Flour.—Jobbing lots in one-eighth paper sacks are selling on the Detroit market per 196 lbs., as follows: Best patent \$6.50; seconds \$6.20; straight \$5.90; spring patent \$6.80; rye flour \$6.

Feed.—In 100-lb. sacks, jobbing lots are: Bran \$24; standard middlings \$25; fine middlings \$30; cracked corn \$31.50; corn and oat chop \$28 per ton.

Hay.—No. 1 timothy \$18.50@19; standard timothy \$18.50@19; light mixed \$18.50@19; No. 2 timothy \$16@17; No. 1 mixed \$15@15.50; No. 1 clover \$12@13.

Chicago.—Firm. Choice timothy \$19@20; No. 1 do \$17.50@18.50; No. 2 \$15@16.

Straw.—Wheat and oat straw \$6.50@7; rye \$7.50@8 per ton.

DAIRY AND POULTRY PRODUCTS.

Butter.—Market continues firm at unchanged prices except for firsts, which are ½c lower. Extra creamery 36c; firsts 34c; dairy 25c; packing stock 22c.

Elgin.—While receipts have not increased any, on account of the advancing season, the market is not quite as firm as last week. The price remains unchanged. Price for the week, based on the sales, is 36c.

Chicago.—The market is steady and quiet. On account of high prices the buying is limited. Prices of fancy goods are 1c lower but packing stock is higher. Extra creamery 35c per lb; extra firsts 34½c; firsts 33½@34c; extra dairies 34c; packing stock 24½@25c.

Eggs.—The demand is brisk and although receipts are large prices are 1c higher than last week. Current receipts are quoted at 21c; candled firsts 21½c per dozen.

Chicago.—The feeling continues firm and prices are slightly higher. Receipts and consumption are large. Firsts 20½@21c; ordinary firsts 19½@20c; miscellaneous lots, cases included 19@20½c.

Poultry.—The demand has been very active and market is firm. Prices are higher for all kinds. Spring turkeys 24@25c; fowls 16½@20½c, according to quality; spring chickens 18½@20c; ducks 20@21c; geese 17c.

Chicago.—The market is firm, and springs and heavy hens are higher. Jewish holiday demand is strengthening the market. Turkeys 17@19c; fowls 12½@19c; springs 20c; ducks 18c; geese 10@13c.

FRUITS AND VEGETABLES.

Apples.—Apples are easy and active. Prices are unchanged. Greenings \$2.50@3.50; Spy \$3.50@4; Baldwins \$3@3.50; Steel Red \$4@4.50. At Chicago the market is active and all firm stock is readily taken. Spys are slightly higher. No. 1 Greenings are quoted at \$2.50@3.50 per bbl; Jonathans No. 1 \$3.50@4; Baldwins \$3@3.25; Spys \$3.50@4.50.

Potatoes.—Potatoes are easy and in sufficient supply to meet all demands. Carlots on track, white \$1@1.03; red 95c@1 per bushel. At Chicago the feeling is weaker and prices are slightly lower. No Michigan stock quoted; other kinds sell from 80@97c. At Greenville potatoes at selling at 75c, with very few coming to market.

WOOL AND HIDES.

Wool.—Market continues to grow stronger, despite the approach of the shearing season and dealers are as optimistic that prices will continue upward as they have been any time since the war began. Producers are holding their offerings at high quotations, and in many sections contracts are now being made at sellers' prices. Farmers are getting as high as 33c for quarter and three-eighths blood, which grades are now very scarce in Boston and other wool centers. Boston quotations are: Michigan delaines 31@32c; do combing 32@37c; do clothing 26@31c.

Hides.—No. 1 cured 17c; do. green 15c; No. 1 cured bulls 13c; do. green 10c; No. 1 cured calf 25c; do. green 24c; No. 1 horsehides \$4.50; No. 2 \$3.50; No. 2 hides 1c lower than the No. 1; sheepskins 50c@52, according to amount of wool.

GRAND RAPIDS.

Not much change is noted in the egg market, with buying prices still at 18@19c. Dairy butter is quoted at 25@26c. Greenville, Edmore and some other outside markets report that potatoes are bringing 75c and prices as a rule, are somewhat lower than last week. Bean quotations remain unchanged. Fowls, live weight, are in good demand at 15@16c.

DETROIT EASTERN MARKET.

Apples continue to sell slowly at 60c @ \$1.60 per bushel; potatoes \$1@1.20; parsnips 40@60c; cabbage 70@85c; carrots \$1@1.15; beets 70@90c; chickens 75@81 each; green onions eight bunches for 25c; rhubarb 25@40c per bunch; loose hay moves slowly at \$18 @20c per ton.

LIVE STOCK MARKETS.

Buffalo.

April 10, 1916.

(Special Report of Dunning & Stevens, New York Central Stock Yards, Buffalo, N. Y.)

Receipts here today: Cattle 160 cars; hogs 95 d. d.; sheep and lambs 20 d. d.; calves 2000 head.

With 160 cars of cattle here today, including 25 to 30 cars of shipping cattle, the demand was very strong. The good choice shipping cattle sold 15@25c higher, and the medium shipping cattle 10@15c higher. The good choice heavy cows and heifers sold 15@25c higher, and the medium low priced stuff about steady. They had 22,000 cattle in Chicago today and the market was quoted 15@25c lower at the

close, and if they get a good run there again next Wednesday, it is liable to make a lower trade here next Monday if we should get a fair run.

Liberal receipts of hogs at all markets forced prices considerably below best time of Saturday. While our receipts here were not very heavy, we were obliged to fall in line with other markets and the break ranged anywhere from 10@20c per hundred on the best grades, while pigs showed a loss of from 15@25c. A few selected loads landed at \$10, with the bulk at \$9.90@9.95; pigs generally \$9; roughs \$9; stags \$6.50@7.50. Our late market was rather dull and outlook not very encouraging for balance of the week.

Market was active on choice sheep and lambs, but slow on the heavy and coarse, with prices 30c higher than the close of last week. About all sold and we look for steady to possibly a shade lower prices last of the week.

We quote: Lambs \$11.75@12; cull to fair \$8@11.65; yearlings \$8.50@10.75; bucks \$4.50@7.75; handy ewes \$8.50@9; heavy do \$8.50@8.75; wethers \$9@9.50; cull sheep \$4.50@7; veals good to choice \$10.75@11; common to fair \$8@10; heavy \$6@9.

Chicago.

April 10, 1916.

Cattle. Hogs. Sheep.
Receipts today.. 20,000 60,000 13,000
Same day 1915.. 12,247 28,624 14,780
Last week..... 27,913 113,329 74,876
Same wk 1915.. 30,239 105,314 56,352

Hogs sold down 10@20c today because of the big supply, sales ranging at \$9.10@9.62½, aside from the prime light "singeing" lots. Hogs received last week averaged 219 lbs. Cattle trade started very late, with buyers bidding 10@15c lower prices. Sheep and lambs were scarce and active at advances of 10@25c.

Cattle supplies have varied greatly in recent weeks, depending on how prices were going, the reduced supplies of the past week being a natural outcome of unsatisfactory prices. They turned the course of prices upward naturally, there being a good all-around local and shipping demand, and calves had a good rise, too. The best steers sold up to \$10, with the bulk of the steers of all kinds selling at \$8.50@9.50, and choice beefs at a range of \$9.50@10. The commoner to fair steers of light weight found buyers at \$7.50@8.70, while the medium grade steers brought \$8.75@8.95, with sales of good steers at \$9@9.45. Butcher cattle had a good sale on the basis of \$5.45@8.50 for cows and \$5.50@9.30 for heifers, while cutters went at \$4.60@5.40, canners at \$3.50@4.55 and bulls at \$5.40@7.75. Calves were active sellers on the higher basis of \$5@7.50 for the heavy weights and \$8@9.65 for ordinary to prime light vealers. There was a strong demand for stockers and feeders, the insufficient offerings causing further good advances in prices, with sales at a range of \$6@8.70. Stock and feeding heifers also sold freely at advancing values for the better kinds. Judging from late developments, the course of the cattle market in the immediate future will depend on whether country shippers hold supplies down to moderate proportions, for these times the market cannot absorb what in normal years would be regarded as only reasonably large offerings of cattle. Yearlings are beginning to be wanted more than heretofore, with not many good lots offered. Usually, the demand is especially good for fat cows and heifers, and these sell quicker than steers, being the first to advance and the last to weaken in prices. For a week past cutters have been extremely high sellers, with not enough of the choicer cows offered to go around, and even canning cows sold unusually high. Late cattle sales were 25@40c higher than a week earlier.

Hogs were held back by owners last week to such a marked extent because of the recent bad breaks in prices that sellers were able to put the market once more on a very much higher basis. There was a lively general demand, in which eastern shippers participated, competing with local packers for the best lots of barrows of light and medium weight. Hogs coming to this market are averaging extremely well in quality, and the bulk of the offerings sell daily near top figures and within a range of 15c per 100 pounds. Recent Chicago receipts have averaged in weight 215 lbs., comparing with 221 lbs. a week earlier, 190 lbs. at the beginning of the year and 234 lbs. one and two years ago. Hogs are bringing far higher prices than in normal times, and their advance has caused sharp advances in fresh pork, as well as in provisions, recent sales of pork being made fully \$6 per barrel higher than a year ago. Closing hog sales for the week were at \$9.25@9.85, comparing with \$9@9.55 a week earlier. Top was paid for prime light singeing hogs to ship east, and heavy shipping hogs brought \$9.67½@9.80, while pigs brought \$7.50@9.15.

Lambs and sheep are in the same position as heretofore, with meager supplies and higher prices than were ever paid before in the month of April, notwithstanding some recent declines. It should be understood that the price of lamb and mutton in the retail meat markets of the country has reached such high levels as to seriously disturb consumption, and there must be limits to the upward course of live muttons. Shorn flocks are increasing in number, as is always the case as the season advances. At the week's end woolled flocks sold as follows: Lambs \$9@11.50; yearlings \$8.75@10.60; wethers \$8@9.25; ewes \$5.50@8.85; bucks \$6.50@7.75. Feeding lambs closed at \$10.25@11, and clipped flocks sold as follows: Lambs \$7@9.60; yearlings \$6@8.40; wethers \$6@7.75; ewes \$5@7.50.

Horses were plentiful and active last week at firmer prices, with army horses comprising a large share of the offerings and selling briskly. Light southern chunks were taken at \$55@100, farm workers at \$75@125, farm mares at \$140@190, wagoners at \$170@225 and drafters at \$230@315.

MICHIGAN CROP REPORT.

Wheat.—The condition of wheat on April 1 in the state was 78, in southern counties 73, in the central counties 82, in the northern counties 89 and in the upper peninsula 98. The condition one year ago was in the state and southern counties 86, in the central and northern counties 85 and in the upper peninsula 94.

The average depth of snow on March 15 in the state was 5.32 inches, in the southern counties 1.41, in the central counties 4.53, in the northern counties 13.34 and in the upper peninsula 23.35 inches.

On March 29 the average depth of snow in the state was 1.42, in the central counties 0.05, in the northern counties 2.85 and in the upper peninsula 17.75 inches.

The number of days protection to wheat by snow, in the state was 16, in the southern counties 10, in the central counties 21, in the northern counties 26 and in the upper peninsula 30.

In answer to the question, "Has wheat during March suffered injury from any cause?" 194 correspondents in the southern counties answer "Yes," and 51 "No," in the central counties 29 answer "Yes" and 65 "No," in the northern counties four answer "Yes" and 78 "No," and in the upper peninsula 20 answer "No."

The total number of bushels of wheat marketed by farmers in March at 60 flouring mills is 40,710 and at 82 elevators and grain dealers 61,694 or a total of 102,404 bushels. Of this amount 75,214 bushels were marketed in the southern four tiers of counties, 22,284 in the central counties and 4,906 in the northern counties and upper peninsula.

The estimated total number of bushels of wheat marketed in the eight months, August-March, is 7,000,000. Fifty-five mills, elevators and grain dealers report no wheat marketed in March.

Rye.—The average condition of rye in the state is 84, in the southern counties 80, in the central counties 88, in the northern counties 91 and in the upper peninsula 99. One year ago the condition in the state and southern counties was 90, in the central and northern counties 89 and in the upper peninsula 98.

Meadows.—The average condition of meadows in the state is 89, in the southern counties 87, in the central counties 90, in the northern counties 94 and in the upper peninsula 101. The condition in the state one year ago was 88, in the southern counties 86, in the central counties 87, in the northern counties 91 and in the upper peninsula 98.

Live Stock.—The average condition of horses and cattle in the state is 95, sheep and swine 94.

Fruit.—The fruit correspondents throughout the state report that the winter has been very favorable for fruit and that present prospects are above the average. The following table shows the prospect for an average crop of the various kinds of fruit in the state and the different sections:

	State.	Sou.	Cent.	Nor.	Up.
		Co.'s	Co.'s	Co.'s	Pen.
Apples	84	81	86	91	95
Pears	81	81	78	85	85
Peaches	76	75	71	84	90
Plums	81	79	77	88	97
Cherries	85	83	86	92	94
Small fr.	87	85	90	88	97

In regard to the question, "What per cent of orchards are being sprayed?" correspondents report 44 in the state, 48 in the southern counties, 33 in the central counties, 45 in the northern counties and 12 in the upper peninsula.

All kinds of fat live muttons are selling extraordinarily high, and a few spring lambs from Iowa have reached the Chicago market.

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30% to 40%
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Their negligible defects in finish—which only expert factory inspectors are able to detect—in no way affect their high standard of workmanship or their proved durability. This makes it possible for us to absolutely guarantee each tire sold for 3,000 miles wear.

	Plain	Non-Skid	Guaranteed
23 by 2	\$5.80	\$6.20	\$2.00
24 by 2	6.25	6.65	2.25
25 by 2	6.75	7.15	2.50
26 by 2	7.25	7.65	2.75
27 by 2	7.75	8.15	3.00
28 by 2	8.25	8.65	3.25
29 by 2	8.75	9.15	3.50
30 by 2	9.25	9.65	3.75
31 by 2	9.75	10.15	4.00
32 by 2	10.25	10.65	4.25
33 by 2	10.75	11.15	4.50
34 by 2	11.25	11.65	4.75
35 by 2	11.75	12.15	5.00
36 by 2	12.25	12.65	5.25
37 by 2	12.75	13.15	5.50
38 by 2	13.25	13.65	5.75
39 by 2	13.75	14.15	6.00
40 by 2	14.25	14.65	6.25
41 by 2	14.75	15.15	6.50
42 by 2	15.25	15.65	6.75
43 by 2	15.75	16.15	7.00
44 by 2	16.25	16.65	7.25
45 by 2	16.75	17.15	7.50
46 by 2	17.25	17.65	7.75
47 by 2	17.75	18.15	8.00
48 by 2	18.25	18.65	8.25
49 by 2	18.75	19.15	8.50
50 by 2	19.25	19.65	8.75
51 by 2	19.75	20.15	9.00
52 by 2	20.25	20.65	9.25
53 by 2	20.75	21.15	9.50
54 by 2	21.25	21.65	9.75
55 by 2	21.75	22.15	10.00
56 by 2	22.25	22.65	10.25
57 by 2	22.75	23.15	10.50
58 by 2	23.25	23.65	10.75
59 by 2	23.75	24.15	11.00
60 by 2	24.25	24.65	11.25
61 by 2	24.75	25.15	11.50
62 by 2	25.25	25.65	11.75
63 by 2	25.75	26.15	12.00
64 by 2	26.25	26.65	12.25
65 by 2	26.75	27.15	12.50
66 by 2	27.25	27.65	12.75
67 by 2	27.75	28.15	13.00
68 by 2	28.25	28.65	13.25
69 by 2	28.75	29.15	13.50
70 by 2	29.25	29.65	13.75
71 by 2	29.75	30.15	14.00
72 by 2	30.25	30.65	14.25
73 by 2	30.75	31.15	14.50
74 by 2	31.25	31.65	14.75
75 by 2	31.75	32.15	15.00
76 by 2	32.25	32.65	15.25
77 by 2	32.75	33.15	15.50
78 by 2	33.25	33.65	15.75
79 by 2	33.75	34.15	16.00
80 by 2	34.25	34.65	16.25
81 by 2	34.75	35.15	16.50
82 by 2	35.25	35.65	16.75
83 by 2	35.75	36.15	17.00
84 by 2	36.25	36.65	17.25
85 by 2	36.75	37.15	17.50
86 by 2	37.25	37.65	17.75
87 by 2	37.75	38.15	18.00
88 by 2	38.25	38.65	18.25
89 by 2	38.75	39.15	18.50
90 by 2	39.25	39.65	18.75
91 by 2	39.75	40.15	19.00
92 by 2	40.25	40.65	19.25
93 by 2	40.75	41.15	19.50
94 by 2	41.25	41.65	19.75
95 by 2	41.75	42.15	20.00
96 by 2	42.25	42.65	20.25
97 by 2	42.75	43.15	20.50
98 by 2	43.25	43.65	20.75
99 by 2	43.75	44.15	21.00
100 by 2	44.25	44.65	21.25

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DETROIT LIVE STOCK MARKET.

Thursday's Market.
April 13, 1916.
Cattle.

Receipts 1831. The run in all departments was much smaller at the local yards than at the same period a week ago and the general market was much more active. Especially so in the cattle division where the demand was never better and the prices on all grades averaged about 15¢ to 25¢ higher than at the same period a week ago. The quality was good. Good milch cows were very scarce and the common grades are still dull and not wanted. Few were buying stockers for returning to the country on account of the price being so high for butchering purposes. The close was strong as follows: Best heavy steers \$8.50@8.75; best handy weight butcher steers \$7.75@8.50; mixed steers and heifers \$7.25@8; handy light butchers \$6.50@7.50; light butchers \$6@7; best cows \$6.50@7; butcher cows \$5@6.25; common cows \$4.25@5; canners \$3.50@4.25; best heavy bulls \$6.25@7; bologna bulls \$5.50@6; stock bulls \$5@5.50; feeders \$6.75@7.75; stockers \$5.50@7.25; milkers and springers \$4@7.50.

Reason & S. sold Bray 5 cows av 1072 at \$6, 1 do wgh 1220 at \$7, 1 do wgh 1100 at \$7, 1 steer wgh 1045 at \$7.50; to Thompson Bros. 11 butchers av 993 at \$7.25, 1 steer wgh 918 at \$8.25; to Breitenbeck 1 do wgh 750 at \$7.50, 3 cows av 1015 at \$5.75; to Sullivan P. Co. 12 steers av 1153 at \$8; to Fineman 2 bulls av 950 at \$6; to Bliss 2 do av 925 at \$5.65, 1 do wgh 800 at \$5.40, 2 do av 900 at \$5.35; to Thompson Bros. 16 steers av 852 at \$7.40, 1 do wgh 770 at \$6.

Bishop, B. & H. sold Thompson Bros. 6 steers av 895 at \$7.60; to Hely 7 cows av 774 at \$5.25; to Mich. B. Co. 12 do av 1008 at \$5.75, 5 bulls av 1392 at \$6.35, 1 do wgh 1370 at \$6.25, 3 heifers av 773 at \$6.75, 3 cows and bulls av 1060 at \$6.35, 1 steer wgh 610 at \$6.50, 5 do av 1060 at \$8, 13 cows av 1004 at \$5.60; to Hammond, S. & Co. 4 do av 942 at \$4.10; to Bresnahan 7 heifers av 516 at \$5.50; to Newton B. Co. 22 steers av 1083 at \$8.50, 1 cow wgh 1020 at \$4.50; to Thompson Bros. 7 steers av 750 at \$7, 2 do av 720 at \$6, 4 butchers av 1150 at \$6.50; to Graves 4 bulls av 1400 at \$6.50; to Bresnahan 1 steer wgh 960 at \$6.25, 1 do wgh 870 at \$7.75, 8 cows av 1070 at \$6.25; to Thompson Bros. 18 steers av 1040 at \$8.75, 6 do av 1090 at \$7.75, 6 do av 1070 at \$6, 3 do av 850 at \$7.65; to Graves 1 bull wgh 1350 at \$7; to Bresnahan 1 cow wgh 1080 at \$4.25, 1 steer wgh 1070 at \$7.50, 3 cows av 1050 at \$5.75, 4 do av 1000 at \$6.25; to Hammond, S. & Co. 3 do av 950 at \$4; to Sullivan P. Co. 2 steers av 1150 at \$8, 6 cows av 1000 at \$5.90; to Graves 1 bull wgh 1350 at \$7, 4 do av 1250 at \$6.40; to Thompson Bros. 7 steers av 775 at \$7, 2 do av 870 at \$6; to Sullivan P. Co. 10 do av 902 at \$7.40, 6 cows av 950 at \$5.50, 5 steers av 1175 at \$8.50; to Hammond, S. & Co. 8 cows av 975 at \$5.35.

Veal Calves.
Receipts 1263. There was but little change in the veal calf department; a few choice brought \$10.50 but the bulk was at \$10 for good and \$5@9 for medium and common weights.

Roe Com. Co. sold Nagle P. Co. 2 av 125 at \$6, 3 av 165 at \$10.25, 2 av 130 at \$10, 3 av 110 at \$6, 16 av 120 at \$9; to Rattkowsky 4 av 140 at \$10.50, 1 wgh 140 at \$7.

Reason & S. sold Sullivan P. Co. 3 av 150 at \$10, 20 av 140 at \$10, 3 av 150 at \$8, 21 av 140 at \$10.

Sheep and Lambs.
Receipts 1509. The sheep and lamb supply was very small and prices averaged 25¢ to 50¢ higher than they were a week ago, selling as follows: Best lambs \$11.50@11.65; fair lambs \$11.25@11.40; light to common lambs \$9.50@10; clip lambs \$9.25@9.50; fair to good sheep \$8@8.50; culls and common \$6.50@7.

Bishop, B. & H. sold Thompson Bros. 16 lambs av 95 at \$11.50; to Nagle P. Co. 3 spring lambs av 45 at \$16; to Mich. B. Co. 175 wool lambs av 90 at \$11.65, 13 do av 80 at \$11.65, 3 do av 80 at \$10, 74 do av 83 at \$11.65, 36 do av 65 at \$10.50, 21 clip lambs av 80 at \$10, 6 sheep av 75 at \$6; to Sullivan P. Co. 65 wool lambs av 95 at \$11.65, 5 do av 75 at \$10.50, 4 clip lambs av 90 at \$10, 7 sheep av 125 at \$7; to Nagle P. Co. 73 clip lambs av 55 at \$9, 33 do av 60 at \$9, 49 do av 60 at \$8, 202 wool lambs av 65 at \$11.25.

Hogs.
Receipts 11,178. In the hog department the trade was about 5¢ higher than on Wednesday. Pigs \$8.25@8.65; yorkers and mixed \$9.50@9.65.



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The Middleman, a Modern Necessity

By DON FRANCISCO

A HUNDRED years ago the perishable farm products used in the city all came from nearby farms—there were no means of bringing them over greater distances. In 1812, when the Washington market was built in New York City, it was a place where the farmer brought his goods and sold them to the people. Today conditions are more complex and the means of establishing a direct route between producer and consumer less obvious.

The development of railroad and steamship transportation has brought the farmer of South Carolina and Kansas as near New York City as were those of Long Island one hundred years ago. It has removed any limitations on the growth of the city which might have been imposed by the difficulty of getting an adequate food supply, and, as a consequence, the city has grown until it is dependent upon the production of a very wide area for its continued existence.

Sources of Supplies.

The commercial articles of food are often brought great distances: potatoes, for instance, are brought to the New York market from Maine, from the western states, from Bermuda, Scotland, Ireland, and Belgium; onions from the south—Virginia, South Carolina and Texas, from the western states, and from Italy and Spain; green vegetables of all kinds are brought from nearby farms and in very large quantities from the south and west—in the flush of the season one railroad bringing over 300 carloads a day, and one steamship line running two steamers daily in the busy season between New York and Virginia; oranges and grapefruit come from California and Florida, the West Indies and Mediterranean ports; apples from New England and New York, Michigan, Oregon and Washington; cauliflower comes in the early season from Cape May and later from Long Island; melons from California, Colorado and the south, bananas from the West Indies and South America, and so on. It is estimated that the value of foodstuffs brought to New York City annually is \$900,000,000.

With these conditions in mind, let us raise the question, "Is the middleman an essential factor in the distribution of foodstuffs—particularly perishables?"

How they are Known.

The men who handle the farm products between the farm and the New York City consumer may be classified roughly as: (1), shippers; (2), commission merchants and wholesalers; (3), jobbers; (4), retailers.

The largest receivers in the city are the commission merchants or wholesalers who receive goods on consignment or sale and sell to jobbers and sometimes retailers. There are something over 500 men engaged in the commission business of this city. In general they have a commission of five per cent on sales.

It is impossible for the large wholesalers and commission men in the city to conduct their business on such a scale that they can divide up their goods into small enough lots to sell to the ordinary small retailers. For this reason an intermediate group of middlemen has arisen, known in the New York market as jobbers, who perform the next step in the dividing and distributing process. Goods sometimes pass through the hands of three or four such dealers before reaching the retailer. They sell to hotels and to fruit vegetable dealers in the outlying districts who cannot take the time required to buy in the primary markets—to go from place to place to select just the right grade of goods for their trade, and many of them cannot take goods in large enough lots to buy as the commission dealer must sell. It is cheaper for them to buy this service

than to perform it themselves. Were all the retailers in New York to send in their wagons to the primary market for a day's supplies it is estimated that it would be a week before the last of this procession of conveyances had secured its load. In a large city, direct buying by the retailers at a primary market is not only physically impossible but financially extravagant.

On Price Changes.

It is interesting to consider another phase of the distributing business—the fluctuations of the jobbers', retailers' and consumers' prices. The impression is widespread that the consumers' price does not fluctuate with the retail purchase price, and that the jobbers' price to the retailer does not fluctuate with the price paid the producer.

In New York City the Mayor's Market Commission reported that "the greatest fault of the present system is the inflexibility of prices. They fail to reflect the fluctuations of wholesale prices so greatly that the wholesale market may be glutted and goods be spoiling in the freight yards, and the

a side line to meet the ordinary demand of the customers of the store. In the country districts competition in the sale of perishables is less active. The above conditions mean unnatural competition and indicate an unhealthy market condition. Probably they are more common to other lines than to oranges. This citrus fruit furnishes a year-round business on the product of an industry which has been stabilized and efficiently organized.

Are Jobbers Honest?

The jobber has been accused of dishonesty. In considering this accusation it is interesting to note that during the past eleven years the California Fruit Growers' Exchange has done a business with the jobbing trade which returned to California practically \$160,000,000, and during that time lost through uncollected bills, failures in business and all other causes, less than \$8,000—a striking tribute to the integrity of the jobbing trade as a whole in this country.

They Render a Necessary Service.

The position of the "middleman" in the merchandising system is widely

such schemes are not applicable to the marketing of large supplies and do nothing to either lower the consumer's price or increase the return to the producer.

Producers of the country's staples cannot sit back on the farm and await the consumer's orders for express or parcel post shipments. If they did, those products would not be sold. The supply of most lines really exceeds the demand and they are disposed of through the continual bombardment of salesmanship in the direction of the consumer. Two thousand five hundred jobbers with 7,500 salesmen means five times more men attempting to sell products to the retailer than were there only 500 jobbers with 1,500 salesmen, and five times as many chances that the retailer will buy.

Probably there are too many jobbers in this country to carry on the distribution of perishables in the most economical manner. Probably if the federal government were to take charge of food distribution the first thing it would do would be to eliminate four out of five jobbers in the belief that one could cover the territory formerly supplied by the five as effectively and much more economically. Big business is economical business. That is why a large co-operative organization can give a better service—a more expensive service—than a smaller one or an individual shipper and still cost less.

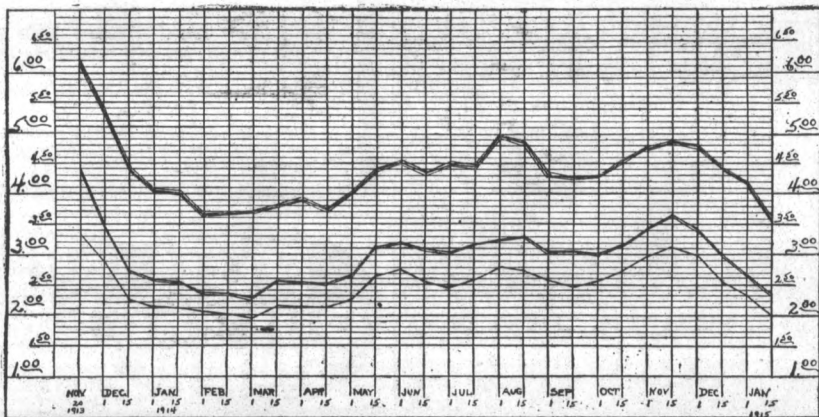
But from the producer's standpoint the elimination of four-fifths of the middlemen and therefore of four-fifths of the competition, four-fifths of his buyers and four-fifths of the forces which are pushing his goods toward the retailer—would have a very doubtful influence on the cost of distribution, the price realized by the producer and the price paid by the consumer.

If the jobber and retailer are performing a vital service in bridging the gap and are doing it efficiently and economically then each has an economic justification and each will continue as part of the distributing system as long as he continues to perform the service in this way. Whether a better link can be forged then a part of the present chain will drop out whether it relates to a service performed by the producer, the jobber or by the retailer.

GOVERNMENT AND CO-OPERATIVE AGRICULTURE.

The American commission members cross-examined the Austrian officials rather liberally to ascertain the extent of government aid to co-operative agriculture. The following questions from the evidence is the Austrian attitude:

"Without doubt Austria has been the land of government aid through co-operation, especially in agriculture. The savings and loan societies of the Raiffeisen type, however, were organized without any aid from the government and without governmental or official recognition. They were established by the initiative and judgment of the people themselves, but they are the foundation, the beginning and the end of co-operative agriculture in Austria. They have organized the agricultural industry and provided the means for their foundation and management. As a matter of fact, the government at the beginning was hardly friendly to them, but later saw the importance of them to the welfare of the nation, and for many years has encouraged co-operative development because, in carrying out its responsibilities the government feels it to be its duty to promote them on natural ground, in the development of social and political economy. It interests itself along the line of education, lecture courses in all schools of the king-



Graphical Representation of Fluctuations in Jobber's and Retailer's Prices. Lower Line is Jobber's Cost, Middle Lines Jobber's Selling Price, and the Upper Lines Retailer's Selling Price.

retail prices through the city be scarcely depressed."

In direct contradiction to this we have the data assembled by the California Fruit Growers' Exchange. The accompanying diagram shows carlot, jobbers' and retailers' prices on oranges in twelve representative cities and their fluctuations during 12 months.

From this chart it will be seen that the three prices taken as a whole, do follow each other with almost exact regularity.

Custom and Competition.

This "sympathy" between the different prices must necessarily follow where the competition between the different wholesale and retail dealers exerts itself naturally. Probably the larger and more highly organized the business, the closer will the fluctuations follow one another.

Failure to follow may also be attributed to other causes. A season of high prices will accustom the public to regard those prices as normal, with the result that they either cease to buy the article or view with suspicion goods marked at a lower figure. The public knows very little about wholesale prices, as they are not reported in a way to reach average consumers; consequently the demand for goods is not formed intelligently. The system of marketing goods through a long series of dealers tends toward rigidity in demand and price. Both jobber and retailer are cautious about buying more than their accustomed trade will move off, and prefer to buy the usual quantity and hold it at a profitable price than take the risk of buying freely when the market is low and working up a demand for the goods. Sometimes jobbers or retailers combine to maintain a minimum price. At other times perishables are often carried as

misunderstood. To this factor the high cost of distribution is popularly ascribed and there is a widespread agitation that he be eliminated. In a previous article we have shown how only 8.2 per cent, or a mark-up of 14.2 per cent, represents his margin and that he is not the leading factor in the cost of distribution.

The 2,500 jobbers of this country perform a distinct function in assembling perishables in the distributing centers, in storing, financing and distributing the growers' products through their 7,500 traveling salesmen to the 300,000 retailers. These functions must be performed by someone and the jobber, who distributes his overhead charge over a group of products, can do it more economically than the producer, who would attempt to reach the consumers or retailers with a single perishable crop that is variable in supply and subject to climatic disaster. The jobbers are desirable to the distributing chain so long as they present the goods properly to the retailer, at a reasonable margin and under conditions that do not curtail consumption.

Bulk of Produce Must go by the Dealers.

To be true, there are a very few notable examples of success in selling perishables direct from producer to consumer. But the days are past when a majority of the people bought direct from the farmer, at such places as the above mentioned Washington Market in New York, and the tendency brought on by modern condition of living is more likely to be toward wider separation.

Direct selling is feasible for the handling of a specialty, a small output of perhaps some rare fruit or an insignificant quantity of a particularly fancy line of vegetables. But in general

dom, from the high school down to the intermediate winter schools, especially through the agencies which extend the knowledge concerning co-operative principles and their economic value. But the amount which the government grants towards the general expenses of these organizations is altogether insignificant. The government aid in the aggregate amounts to about two hundred thousand dollars.

THE MILK INSPECTION PROBLEM.

(Continued from page 522).

employment in this capacity that he keep free from political alliances.

The Dairyman is an American and Does Not Like to be Ordered Around.

One result of our political system has been therefore that in the inspection departments there have been placed in authority, with power to supervise the conditions under which milk is produced upon the dairy farm, men who have influence in politics but who have absolutely no appreciation of the work they are called upon to do. Some officials believe that they are not exhibiting a proper degree of official poise unless they impress upon the producer or the farmer, the fact that they have a certain amount of arbitrary authority. Consequently the milk inspector goes to the farm and after a brief inspection proceeds to inform the dairyman what he must do in order to make it possible for him to sell his milk in the city. He tells him also what certain things he must observe and if these are not done as the inspector orders, as a penalty therefor the dairyman is shut off from his market. In many of these dialogues the quality of the milk which this particular dairyman produced never enters into the discussion at all. It sometimes happens, in fact more frequently than one would suspect, that the means by which the thing is to be promoted is given more value than the end itself. The public is not interested in the manner in which the farmer works to produce clean, wholesome milk. In common language, the final test should revolve around the quality of the milk which the farmer produces and not around the manner in which he produces it.

We are quite willing to concede that the score card method is perhaps the shortest way for the farmer to produce high-grade milk, but the acceptability of that product in the city market should depend upon the product itself and not upon the manner in which the farmer produced it.

More of Diplomacy and Less of Police Function Needed.

The score card system of judging dairies is an admirable thing. Placed in the hands of inspectors and agents who appreciate what it was designed for, it will accomplish great good. We believe it would be perfectly proper for boards of health and state inspectors to encourage the adoption by individual dairymen of the score card as the ideal to which they should work, but it should be impressed upon them that ideal conditions do not make ideal milk, but merely make it easier to produce ideal milk and it must be impressed upon the city milk consumer, if it cannot be done in any other way than by law, then the statutes of the state should undertake to make it clear that it is the product sold and not the method in which the product is produced that should be the criterion of acceptability in the markets of the city.

Crop and Market Notes.

Michigan.

Gratiot Co., April 6.—Frost is out of the ground and fields are drying out. Wheat, rye and meadows all look poorly. Most farmers have all the stock, especially cows and yearlings, that they can carry. Feed is about all gone. Fruit trees are fairly well advanced for the season. Sugar making opened late and the yield promises to be small. Butter-fat 36c; butter 18@24c; pota-

toes \$1; beans \$3.40; hogs \$7@9. Buyers are anxious to contract for wool which gives promise of high prices this spring. Sheep are selling at fabulous quotations.

Mecosta Co., April 6.—The weather has been rather cold. Fall seeding is small, but does not appear to be winter-killed. Feed, especially roughage, is very scarce. Do not think fruit trees are hurt any. Very little maple syrup was made in this section. Farmers are behind in starting spring work. Hay \$12@15; butter-fat 38c; potatoes 75@80c; beans \$3.25; cattle \$2.50@5.50; hogs 9c; hens 14c.

Arenac Co., April 5.—Meadows are badly damaged. Wheat and rye are in fair condition. Live stock is looking good and farmers have some rough feed on hand. Those having orchards are now pruning the trees. The maple sugar harvest was small. Fields are very wet. Wheat 90c; beans \$3.25; oats 52c; hay \$10@12; roads are in very bad conditions.

Gladwin Co., April 1.—Two bridges across the river were swept out by the high water and ice. Roads are in bad shape. There will be a large acreage of sugar beets planted in this section. More would be planted but for the shortage of seed. Live stock is in good condition, and the lamb crop is good. Butter 30c; cream 37c; eggs 16c; potatoes 90c; onions \$1.25.

Hillsdale Co., April 6.—Farmers are just beginning to plow. Roads are in the worst condition in many years. Wheat and rye fields are not looking very encouraging. Clover is looking fine. Fruit trees seem to have come through the winter in good condition, with most of the blossom buds alive. Farmers have plenty of feed on hand. It has been found necessary in many cases, to sort corn in the cribs, as some of the poorest will not keep in warm weather. Not much was done this year in the line of making maple products. Beans \$3.50; potatoes 90c@ \$1; clover seed \$10@11; eggs 18c; good dairy butter 30c; hogs \$8@9.50; cattle \$4@5.50; veal 9c; raw hides 14c.

New York.

Columbia Co., April 3.—Winter grains are looking fine. Stock has wintered well, and there appears to be a sufficient amount of feed on hand. Fruit buds are uninjured. The snow is barely gone, and spring work has not begun. Milk \$2.25; butter 35c; potatoes \$4 per barrel; beans \$4 per bushel; eggs 30@32c.

Pennsylvania.

Perry Co., April 3.—Most wheat and rye fields are in good condition. Usual amount of live stock on hand but lateness of pasture will likely make the amount of feed on hand too small. Fruit buds damaged some. Spring work not opened up as yet. Roads are in unusually bad condition. Eggs 18c; butter 26c; corn 70c; potatoes \$1.20; hogs \$10. Excepting sheep, stock at sales is selling low. Money is commanding higher interest than for some years.

Lancaster Co., April 3.—Wheat, rye and meadows do not look good. Spring work has not opened up on account of unfavorable weather. Wheat \$1.18; corn 87c; oats 50c; butter 35c; eggs 20c; potatoes \$1; poultry 12@18c; hay \$20@22; hogs \$10; steers \$8; calves \$10.

Ohio.

Medina Co., April 4.—Wheat fields are looking rather brown, but meadows appear to be coming through in good condition. There is an average amount of live stock on hand, and farmers are supplied with plenty of feed. Fruit trees are still dormant. But very little maple syrup was made. No spring work has been done. Dairymen supplying Cleveland milk dealers are holding out for 15c for summer and 20c for winter milk. The producers have a strong association. Milk 16c; butter 33c; potatoes \$1.05; hogs \$9; prime cattle 7c.

Indiana.

Daviess Co., April 6.—Winter wheat badly damaged. Many fields have been plowed and sowed to oats. Grass and clover have also suffered. Live stock is scarce and feed plentiful. Fruit trees appear to be in good shape. Harvest of maple products was light. The spring work is well under way. Early sown oats are coming up nicely. A good acreage of corn ground already plowed. Cream 38c; potatoes \$1; cattle \$7.50; hogs \$8.50; hay \$12; corn 70c; wheat \$1.

TEXAS ONION CROP.

The Texas onion crop of 1916 is estimated to cover 10,057 acres, as compared with 8,943 acres in 1915, an increase of about 12 per cent. The condition of the crop on April 1 is estimated as 55 per cent of normal, which forecasts a yield of about 192.5 bushels per acre, or a total production of 1,935,972 bushels, the equivalent of 4,200 cars of 460 bushels each. In 1915 the shipments amounted to about 4,607 cars, or 2,119,220 bushels.



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So easy-riding that you will wonder why you ever considered any car without four full elliptic springs.

And the more you know of Jackson "34" the more convinced you'll be that the motor hasn't a cross grained streak in its system. There's

not a chance for disappointment. You'll notice the absolute truth of the Jackson slogan, "No hill too steep, no sand too deep."

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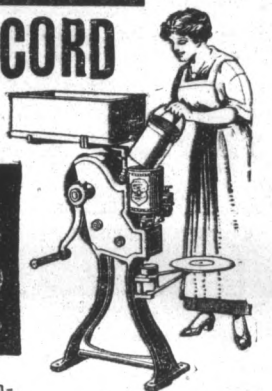
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Baby Chicks from our own Bred-to-Lay Ringlet Barred Rocks \$10 per 100 S. C. White Leghorns \$10 per 100 and S. C. Buff Orpingtons \$12 per 100. Hatching Eggs carefully packed \$4 per 100. For further information write for our Chick Folder. **RUSSELL POULTRY RANCH, PETERSBURG, MICH.**

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BARRED Rocks Parks 200 Egg Strain with records to 290 eggs a year—\$1.50 per 15 Delivered. By Parcel post. Fred Astling, Constantine, Mich.

BARRED Plymouth Rocks bred to lay and exhibit. Buy your eggs from trusted birds. Our birds lay 50 per cent. all winter. Eggs \$2.00 per 15 from our best pens. Boswell Bros. Lincoln Lake Poultry Farm. Box 74, Ludington, Mich.

BARRED ROCK EGGS and Baby Chicks. Four pullets laid 950 eggs in 12 months. Average 237 eggs each. W. C. Coffman, R. 3, Benton Harbor, Mich.

RINGLET BARRED ROCKS direct from Thompson's. A limited amount of eggs for hatching from vigorous stock. \$1.50 per 15. G. Gardner, Petersburg, Mich.

Chicks that Live \$15 per 100. Silver, White and Partridge Wyandottes. White Leghorn Chicks \$12 per 100. Pekin and Rouen Ducks—25 cents each. **ALDHAM POULTRY FARM, R. No. 37, Phoenixville, Pa.**

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JOHN'S Big, beautiful, hen-hatched Barred Rocks. Eggs, 30, \$2.50; 100, \$7.00. Select matings 15, \$4; 30, \$7.50, all postpaid. Photos. Circulars. John Norton, Clare, Mich.

Poultry House Construction**Dimensions of Wood's House.**

I am interested in the Wood's poultry house and would like a plan of the interior of the building with the dimensions of the various parts.

St. Clair Co.

C. E. K.

Various breeders build the Wood's type of house and the dimensions and inside plans are not always the same, as they are altered somewhat according to the individual ideas of the builder. The accompanying sketches of the inside and outside of a Wood's open-front house represent the type most frequently used.

The plans given are for a Wood's house 20x50 feet, which will give a floor area of 1,000 square feet, which will be large enough to house 250 birds. As will be noted from the sketch, the house is completely divided in the middle by a wooden partition which makes two breeding pens

garden loam until the inside of the poultry house is at least one foot higher than the outside soil. It is claimed that removing the soil is hard work but it seems no harder to me than keeping a cement floor in sanitary condition. The soil must be removed several times each year but good garden loam which has been scratched around in the poultry house and allowed to absorb the droppings is worth much more for fertilizer than the cost of removing it and filling the floor space with clean dry earth. Of course, the dirt floor must be covered with a good litter. The cement floor is more expensive than a dirt floor and its value seems somewhat a matter of personal opinion among farmers who carry on the poultry business as a sideline.

A poultry house should certainly not be lathed and plastered on the inside.

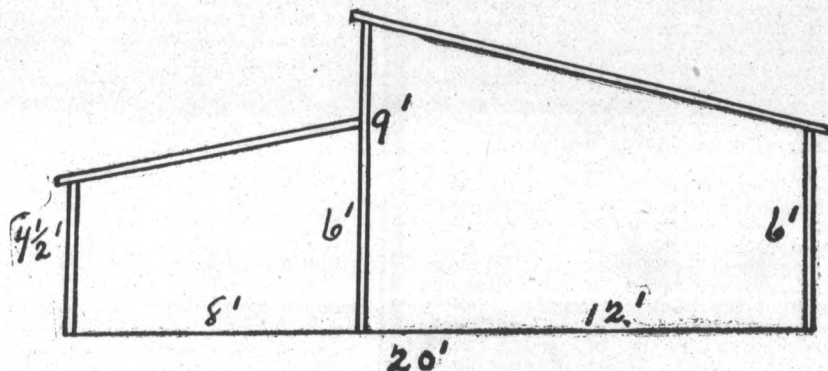


Diagram of Wood's House, Giving Dimensions.

each capable of housing 125 birds. By this method the fencing can be so arranged as to permit the fowls from different sides of the house to range in separate yards. It is then possible to keep 125 pullets in one side and 125 mature birds in the other. A system of this kind is desirable for many reasons. The pullets will probably require slightly different rations from the mature birds or during breeding season the eggs from the older stock will be preferable for hatching. The small partition between the roosts in each breeding pen or section of the laying house, should go to the roof. Its value consists in preventing draughts on the roosts.

The dimensions as marked on the sketches are taken from the ground up and represent the plan most frequently used in constructing the Wood's open-front house.

A House for 250 Hens.

Kindly advise me as to the best kind of poultry to build to keep about 250 hens. Would a cement floor or dirt floor be best and should it be lathed and plastered inside. Should it have a cement foundation? What kind of hens would it be best to keep for laying purposes?

Huron Co.

J. Mc.

In poultry houses constructed to give the flock the maximum of health and comfort each hen should be allowed at least four square feet of space. On this basis 250 hens would require 1,000 square feet of floor space and a Wood's open-front house 20x50 would furnish the right amount of space for each hen.

There is much difference of opinion concerning the right kind of floor for a poultry house. Many breeders prefer the cement floor but on the general farm I prefer a good dirt floor to cement. The cement floor is ideal if it is given the best of attention but it requires a good depth of clean litter at all times or it will be cold and damp. During the farmers' institute at the college I heard Professor Burgess of the poultry department, state that the cement floor was probably responsible for blood rings in some of the eggs. This was caused by the birds slipping on the hard floor. Another breeder stated that he prevented dampness in his cement floor houses by laying strips of heavy building paper under the surface to prevent ground moisture from rising into the house. Personally I prefer a good dirt floor underlaid with gravel and filled with good

promising but it is usually difficult to obtain first-class stock in a new and untried breed and the best is none too good for the farmer desiring to make money in the egg business.

Ingham Co.

R. G. KIRBY.

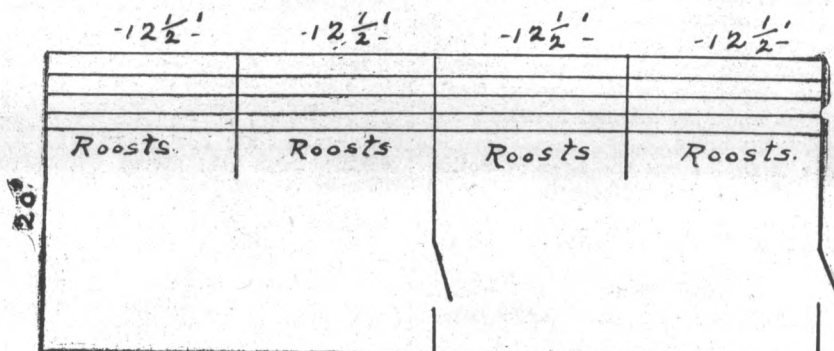
LESSENING THE DEATHS AMONG YOUNG CHICKS.

Every chick that dies increases the cost of raising the flock. If the little fellows are purchased as "day olds," this is more particularly true than when the hatching is done at home, yet in any case the mortality is costly. The critical period stretches over the first two or three weeks of the chick's life. After that some may die or occasionally an epidemic will break out in the flock and take off a considerable number. The danger is much less, however, after the first three weeks are passed safely.

Overfeeding and feeding when too young are the causes of many deaths, also, improper foods often prove fatal. Young chicks should have no food for 36 or even 48 hours after hatching. Corn bread, rolled oats and hard-boiled eggs are good feeds for the first few days. Cracked wheat and fine cracked corn may be fed when the chicks are a week old. Avoid moist mash. These cause all sorts of digestive troubles. Feed sparingly at first. Do not throw down a lot of food to become foul and unfit for use.

Cleanliness is essential in raising chickens. See that all the houses and coops are thoroughly disinfected before the chicks are placed in them. Keep the brooders clean. Spray or wash them with a coal tar preparation. This is the most effective way of destroying germs and vermin. White diarrhea, the deadliest enemy of young chicks is spread by foul quarters, and unclean drinking fountains and feeding troughs. Pure water is very necessary.

Vigorous breeding stock is the first essential for healthy chicks, but sometimes when a good start is made, neglect and improper care work havoc. In large flocks, one or two having the white diarrhea may cause a considerable percentage of mortality. This disease is often spread a good deal during the first day or two of the life of the young chicks. In incubators where



Open Front - Facing South

Showing Roost Arrangement in Wood's House.

the chicks drop down into the light as soon as hatched they pick up droppings and, one with the disease may contaminate a large part of the flock. Chicks hatched with hens are freer from the disease because the little birds remain under the mother hen until they are fed and hence do not have a chance to pick up neglected droppings. For this reason it is well to keep the incubator dark until the birds are removed to the brooders.

Warm dry quarters are necessary at first. Sunlight is also a great help in building up the strength of the little fellows. Give only a limited range at first, and especially if hen mothers are allowed with the chicks. Free range is never advisable for chicks until they are at least a month or six weeks old.

If chicks are kept in clean quarters there should be little danger of lice. Look over the little fellows, however, and put a bit of lard on the head and

under each wing of the whole bunch. This will effectively deal with the body lice, if the old hen is also treated. Should red mites appear in the coops nothing but a thorough cleansing and spraying will deal with them.

New Hamp. C. H. CHESLEY.

EARLY HATCHING BEST.

There is practically everything to be gained and nothing to be lost by setting hens as soon as possible now. The chicks will thrive much better during the cooler weather and the hen should be spared from setting during the warmer weather. The first young chickens marketed always bring the best prices and the early hatched pullets will mature early enough to lay next fall, which is not true of the later ones. Winter eggs depend partly on early hatching.

Select a healthy hen and try her for a day or two on the nest before risking valuable eggs under her. An odd number of eggs—usually eleven, thirteen or fifteen—should be used, particularly in cool weather as they lie in a more nearly perfect circle.

As soon as the hen becomes broody make a nest for her in a separate hatching room or a place where the other hens will not have a chance to disturb her. The nest should be sixteen or eighteen inches square and at least eight inches deep, depending somewhat upon the size of the hen, but it must be roomy. In nature it would be placed on the ground and if this is not possible in the poultry house, a large sod should be placed in the bottom of the nest and then covered with straw to help keep the eggs from drying out too rapidly.

Either allow the hen to leave the nest for food and water whenever she wishes, or remove her once a day for that purpose.

Lice should be controlled by dusting the hen with insect powder at the beginning and again ten days later. It is a good plan to rub a bit of blue ointment about the size of a pea into the skin beneath the vent and to rub a little more into the feathers on the under side of the wing at hatching time. This is partly rubbed off on the chicks and helps keep the lice away.

Remove the chicks as rapidly as hatched, and later return them all together to the hen for brooding, but be careful that they are not chilled while away from the mother.

Missouri. H. L. KEMPSTER.

NESTS OUTSIDE.

Nests outside, but attached to the poultry houses, have decided advantages. They are dark, occupy no inside room, and the eggs can be gathered without entering the houses. Such nests are made as follows: A box 18 inches wide, 18 inches high and as long as desired, is fastened to the side of the house. The top of the nest is made sloping, is covered with roofing-paper, and hinged to the wall of the poultry house. Small openings are cut through the wall of the house for the hens to enter.

Indiana. T. Z. RICHEY.

POULTRY NOTES.

The pullets that will fill the egg basket in early fall and winter are the early hatched pullets.

Chicks should be left in the incubator 36 to 48 hours after hatching.

Keep the chicks well covered in the cold weather while moving them to the brooder.

Keep the brooder in a sanitary condition. Impure air will ruin a fine flock of chicks in a very short time.

Make it a rule that every chick must come out from under the hover at feeding time.

Guard against sudden changes in the temperature. During cold weather locate the brooder indoors.

Michigan Farmer's Club List.

For the benefit and convenience of our subscribers we have arranged the following list of papers. Besides the money saved they save the trouble and expense of sending each order separately.

EXPLANATION.—The first column gives the paper's regular subscription price. The second column price is for the Michigan Farmer and the other paper, both for one year. Add 50 cents when the Michigan Farmer is wanted three years, or \$1.00 if the Michigan Farmer is wanted five years. All combination orders may be handed to our agents or sent to us, as is most convenient.

Write for prices on publications not listed.

Subscribers to the Michigan Farmer whose time is not up for one year or more, may have as many other papers as wanted by deducting 50 cents from the second column price. This takes care of those who subscribed for three or five years a year or two ago.

We send sample copies of the Michigan Farmer only.

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News, Grand Rapids.		2 00	2 00
Press, Grand Rapids.		2 00	2 25
Courier-Herald, Saginaw, Mich.		2 50	2 50
News, Saginaw.		2 50	2 50
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American Poultry Journal, Chicago, (m)		1 00	1 20
American Poultry Advocate, Syracuse, (m)		50	75
American Sheep Breeder, Chicago, (m)		1 00	1 35
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Breeders' Gazette, Chicago, (w)		1 00	1 45
Green's Fruit Grower, Rochester, (m)		50	70
Hoar's Dairyman, Fort Atkinson, Wis.		1 00	1 20
Jersey Bulletin, Indianapolis, Ind. (w)		1 00	1 35
Kimball's Dairy Farmer, Waterloo, Ia. (m)		25	70
Poultry Keeper, Quincy, Ill. (m)		50	70
Poultry Success, Springfield, O. (m)		50	75
Reliable Poultry Journal, Quincy, Ill. (m)		50	75
Swine Breeders' Journal, Indianapolis, Ind. (s-m)		50	80
Michigan Poultry Breeder (mo)		50	70
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Housewife, N. Y. City, (m)		50	80
Ladies World, New York City, (m)		1 00	1 25
McCall's Magazine and Free Pattern, N. Y. City, (m)		50	75
Mother's Mag., Elgin, Ill. (m)		1 50	1 55
Pictorial Review, N. Y. City, (m)		1 50	1 50
Today's Magazine and Free Pattern (m)		50	70
Woman's Home Companion, N. Y. City, m		1 50	1 40
Woman's World, Chicago, (m)		35	60
Religious and Juvenile.			
American Boy, Detroit, Mich. (m)		1 00	1 50
Boys Magazine, Smithport, Pa. (m)		1 00	75
Little Folks, Salem, Mass. (m)		1 00	90
Young People's Weekly, Elgin, Ill. (w.)		75	90
Youths Companion, Boston, Mass. (m)		2 00	2 25

Saving the Little Chicks

While poultry raisers all around her were losing their little chicks by the score, Mrs. C. F. Gardner of Oak Grove, Mich., never lost one last season from White Diarrhoea. Her experience, as given below, will be interesting to those who have not yet found a way to prevent White Diarrhoea:

"I have raised poultry for five years and have lost so many every year with White Diarrhoea, but I am glad at last I have not given up raising poultry, as I have found a sure treatment for White Diarrhoea and other diseases. Last year, I learned of the wonderful results others were obtaining from the use of Chictone, so obtained a box from The Wight Company. After using it I never lost another chick and raised considerably over 300. I would not be without Chictone."

Mrs. Chas. F. Gardner, Oak Grove, Mich.

Chictone gets results! Resolve TODAY that you will save YOUR chicks from White Diarrhoea. Chictone is guaranteed to save 90%. There are lots of substitutes, but there's only one Chictone. Chictone is not a poison. Sold in 5¢ boxes, in tablet form only. Delay is dangerous. Order today from

THE WIGHT CO., Dept. 254, LAMON, IOWA

POULTRY.

BARRED Plymouth Rock Eggs from full blood heavy laying stock. Fine hatching, none better. 15 eggs, \$1.00; 100, \$4.00. Egg-A-Day Poultry Farm, R. 2, Ceresco, Mich.

BARRED Rock Eggs from healthy, vigorous stock. \$1.50 per 15; \$3.25 per 50; \$5.00 per 100. Sam Stadel, Chelsea, Mich.

CHICKS. We ship thousands each season. Ten varieties. Ancona's \$1 a hundred, free booklet. Freeport Hatchery, Box 12, Freeport, Mich.

SPECIAL BARGAIN CLUBS

We have arranged here a list of special bargain combinations which will save you considerable on your reading matter. No substitution of other magazines which are the same price can be made. You must take the entire combination as it is. You can make up your own club from the club list if none of these suit you.

Orders may be sent direct to us or through any of our agents. Order by number. Address all orders to the Michigan Farmer or hand to our agents.

EXPLANATION.—Wk. means the paper comes each week, mo. means each month, S.-mo. semi monthly. Dailies on R. F. D. only.

Publishers of other papers will not allow us to quote their paper single at less than their regular prices, but Subscribers to the Michigan Farmer whose term does not expire for 1 year or more will be allowed reduced prices on other papers at any time if they will write us the ones wanted, this also applies when other papers are wanted not in the clubs they select.

NOTE.—The Michigan Farmer is figured in "Our Price" at the special season price of only \$1 for 3 years, 50 cents only may be deducted if the Michigan Farmer is wanted for but 1 year.

No. 1.	
Michigan Farmer, 3 yrs., wk.....	\$1.25
Boys' Magazine, mo.....	1.00
The Ladies' World, mo.....	1.00
Regular price	\$3.25
OUR PRICE ONLY \$1.65	

No. 2.	
Michigan Farmer, 3 yrs., wk.....	\$1.25
The American Boy, mo.....	1.00
Woman's World, mo.....	.35
American Poultry Advocate, mo..	.50
Regular price	\$3.10
OUR PRICE ONLY \$2.00	

No. 3.	
Michigan Farmer, 3 yrs., wk.....	\$1.25
American Poultry Advocate, mo..	.50
The Ladies' World, mo.....	1.00
Regular price	\$2.75
OUR PRICE ONLY \$1.60	

No. 4.	
Michigan Farmer, 3 yrs., wk.....	\$1.25
Pictorial Review, mo.....	1.50
Boys' Magazine, mo.....	1.00
Regular price	\$3.75
OUR PRICE ONLY \$1.80	

No. 5.	
Michigan Farmer, 3 yrs., wk.....	\$1.25
Youths' Companion, wk.....	2.00
McCall's Mag. and Pattern, mo..	.50
Poultry Success, mo.....	.50
Regular price	\$4.25
OUR PRICE ONLY \$2.95	

No. 6.	
Michigan Farmer, 3 yrs., wk.....	\$1.25
American Swineherd and book, mo	.50
McCall's Magazine & Pattern, mo	.50
Poultry Success, mo.....	.50
Regular price	\$2.75
OUR PRICE ONLY \$1.75	

No. 7.	
Michigan Farmer, 3 yrs., wk.....	\$1.25
Choice of any daily in Detroit or Grand Rapids except Detroit News	\$2.00 to \$2.50
People's Popular Monthly.....	.25
Everyday Life, mo.....	.25
Woman's World, mo.....	.35
Regular price	\$4.60
OUR PRICE ONLY \$3.00	

The Michigan Farmer in these Clubs is figured for 3 years. Take this into consideration when comparing with Club prices offered by others.

No. 8.	
Michigan Farmer, 3 yrs., wk.....	\$1.25
Mother's Magazine, mo.....	1.50
McCall's Mag. and Pattern, mo..	.50
Ladies' World, mo.....	1.00
Regular price	\$4.25
OUR PRICE ONLY \$2.15	

No. 9.	
Michigan Farmer, 3 yrs., wk.....	\$1.25
Choice of either:	
Breeders' Gazette, American Sheep Breeder, Hoar's Dairyman	1.00
Poultry Success, mo.....	.50
Boys' Magazine, mo.....	1.00
Ladies' World, mo.....	1.00
Regular price	\$4.75
OUR PRICE ONLY \$2.70	

No. 10.	
Michigan Farmer, 3 yrs., wk.....	\$1.25
Today's Magazine, they also give choice of one May Manton pattern free with first issue.....	.50
Poultry Success, mo.....	.50
Boys' Magazine, mo.....	1.00
Regular price	\$3.25
OUR PRICE ONLY \$1.65	

No. 11.	
Michigan Farmer, 3 yrs., wk.....	\$1.25
Any Detroit Daily (except the News)	2.50
Poultry Success, mo.....	.50
Boys' Magazine, mo.....	1.00
People's Popular Monthly.....	.25
Regular price	\$5.50
OUR PRICE ONLY \$3.00	

No. 12.	
Michigan Farmer, 3 yrs., wk.....	\$1.25
Any Grand Rapids Daily, 1 yr..	2.00
Kimball's Dairy Farmer, S.-mo ..	.25
Reliable Poultry Journal, mo....	.50
People's Popular Monthly.....	.25
Regular price	\$4.25
OUR PRICE ONLY \$3.00	

ATTENTION.—On any one of these combinations you save the price of the Michigan Farmer three years and on some considerably more.

CHICKS 70 and up. Barred Rock, Wyandottes, Leghorns, Minorcas, etc. Safe delivery guaranteed. Circular free. Reliable Hatchery, McAlisterville, Box 6 Pa.

Bred to lay R. C. Reds, S. C. White Leghorns, testing 90 & 40. J. C. Greene, St. Johns, Mich.

EGGS for hatching from pure bred White Plymouth Rocks and S. C. Buff Leghorns on free range. Kietzen & Webster, Bath, Mich.

Eggs and Baby Chicks from pure bred R. and S. C. R. L. Reds. Two white guinea hens \$1.50 each. O. E. HAWLEY, Lidington, Mich.

Fowler's Buff Rocks a few choice Cockerels stock, 7 to 9 lbs. according to age \$2 to \$5. Eggs \$1.50 for 15. R. B. FOWLER, Hartford, Michigan.

Hatching Eggs Buff, Barred, Columbian, Partridge, Silver and White Rocks Pekin and Rouen Ducks, Sheridan Poultry Yards, Sheridan, Mich.

For Sale: Eggs from pure bred R. O. Brown Leghorns \$1.00 per setting of 15. PETER BIERENS, R. 1, Falmouth, Mich.

Eggs for hatching—From pure bred White Plymouth Rocks, Pekin and White runner ducks. White African guinea. H. V. Hostetler, R. 1, St. Johns, Mich.

IMPROVE your poultry. My Young's strain S. C. White Leghorns great money makers. Strong, vigorous, free-range stock. Baby chicks \$5 per 100 and up. Satisfaction guaranteed. Free catalogue. W. Van Appleton, Holland, Mich.

LEGHORNS—White, Brown, Buff, Black. Also Rocks, Reds, Anconas, Pekin Ducks, eggs, baby chicks. Prices reasonable. Circular free. Sunnybrook Poultry Farms, Hillsdale, Mich. Chas. G. Burroughs, Mgr. Formerly Foreman University of Wis. Poultry Dept.

LILLIE Farmstead Poultry. B. P. Rocks; R. I. Reds; L. W. Leghorns. 15 eggs \$1; 25 eggs \$1.50; 50 eggs \$2.50. P. P. delivery free. Colon C. Lillie, Coopersville, Mich.

ORPINGTONS—White, Single-Comb Kellestrasse. Eggs, Chix. Special prices. M. E. THOMPSON, Redford, Mich.

Pine Crest White Orpingtons A few pullets and hens, males all sold, eggs and baby chicks. MRS. WILLIS HOUGH, Pine Crest Farm, Royal Oak, Mich.

RHODE ISLAND REDS and PLYMOUTH ROCKS. Males 5 to 12 lbs. according to age \$2 to \$5; P. R. hens weight 5 to 10 lbs. eggs 15 for \$1.00, 100, \$5; 120, \$5. Mammoth Bronze Tom Turkeys, 8 to 30 lbs. according to age \$6 to \$25, 10 eggs \$3. A. E. Cramton, Yassar, Mich.

R. I. Reds, Both Combs, Most Popular strain in Michigan Eggs for hatching, Baby Chicks. Write for catalog. INTELAKES FARM, Box 39, Lawrence, Michigan.

Rose Comb Brown Leghorn & Mammoth Pekin Duck Eggs \$1 per setting, \$5 per 100. W. China Geese 25 cents each. CLAUDIA BETTS, Hillsdale, Mich.

ROSE AND SINGLE COMB Rhode Island Reds Eggs, per 15, \$1.50 by parcel post; from special pens, 20c each by express. Jennie Buell, Ann Arbor, Mich.

RHODE ISLAND WHITES win at the National Egg Laying contest. Cold weather don't stop them. Eggs \$1.50, 2 settings, \$2.50. H. H. Jump, Jackson, Mich.

ROSE Comb Rhode Island Red Eggs, dark colored R. matings \$1.50 per 15. Utility eggs, laying strain \$4 per 100. MRS. T. A. ETTER, Richland, Michigan

Strong Day Old Chicks \$10 Per 100. S. C. W. Leg. Selected hatching eggs, \$4.50 per 100 prepaid. Guaranteed delivery and fertility. Everfresh Egg Farm, Ionia, Mich.

BUFF LEGHORNS—Cockerels, hens, pens or eggs. Anything you wish in Buff Leghorns. Great laying strains. Dr. William Smith, Petersburg, Mich.

Ferris Leghorns—200 Egg Strain—Eggs, chicks, 8-week-old pullets from hens with records up to 264 eggs. Best winners at largest shows. Prompt shipment, prices low, quality guaranteed. White Leghorns are best for eggs. We raise thousands. Free catalog and price list gives particulars. Write for it now. FERRIS LEGHORN FARM, 934 Union, Grand Rapids, Mich.

Heavy Winter Layers:—Long, large bodies. S. O. W. Leghorns, Wyckoff strain. Eggs, \$1.50 per 15; \$4 per 50; \$7 per 100. H. A. Magoon, R. 5, Ann Arbor, Mich.

S. C. B. Minorcas Cockerels and Pullets. Eggs, Pope S. strain. P. C. Bred Bows and fall pigs. Big type with quality. R. W. Mills, Safford, Mich.

S. C. White Leghorns, vigorous bred to lay stock. Eggs, \$5.00 hundred—75c for 13, a few day old chicks, safe delivery and fertility guaranteed. M. MALONEY, R. No. 1, Kalamazoo, Michigan.

(Additional Poultry Ads on P. 539).

BREEDERS' DIRECTORY.

Change of Copy or Cancellations must reach us
Ten Days before date of publication.

DISPERSION

SALE

33 Head Registered Holstein Cattle

APRIL 21, 1916

At One O'Clock Sharp

Twenty-two Young Cows and Heifers, 10 Young Bulls and Bull Calves, carrying the blood of Hengerveld De Kol, Pontiac Korndyke, Jesse Hartog and Prince C. R. U.

One Grandson of Pontiac Korndyke, three years old.

The sale will be held 1 1/4 miles west of Beadle's Crossing on electric road between St. Johns and Lansing. Rigs will meet the cars at this crossing. Write for catalogs.

F. G. Johnston, Sales Manager

R. L. Bixby, Auctioneer

E. E. Sturgis, Prop.

CATTLE.

ABERDEEN ANGUS

If you are in need of an extra good bull or a few choice young cows or heifers, we have them for sale. Our herd is headed by the Grand Champion Black Monarch 3rd. We invite you to come to our Farm and see them. They are bred right and priced right. U. L. Clark, Hunters Creek, Mich. Sidney Smith, Mgr.

ABERDEEN-ANGUS

HERD ESTABLISHED IN 1900. TROJAN-ERICAS and BLACKBIRDS only. Also breeders of Percheron, Hackney and Saddle Horses. WOODCOTE STOCK FARM, Ionia, Mich.

Aberdeen Angus Four young bulls also young cows and heifers. Extra good. Priced reasonable. Inquire P. J. Wilber, Clio, Mich.

FOR SALE—14 Angus bulls 9 months and older, including our herd bull. Also a few cows and heifers. Geo. Hathaway & Son, Ovid, Mich.

AYRSHIRES—One of the foremost dairy breeds. The most economical milk producers. Calves for sale. White Leghorn cockerels. Duroc Jersey swine. Michigan School for the Deaf, Flint, Michigan.

VILLAGE FARMS, Incorporated
Grass Lake, Michigan,
GUERNSEY CATTLE
BERKSHIRE HOGS

MILO D. CAMPBELL CHAS. J. ANGEVINE

BEACH FARM GUERNSEYS

We have just completed our annual tuberculin test without a single reaction. This will please our many patrons as much as it does us. We wish to call the attention of those who expect to buy Registered Guernseys to the fact that The Beach Farm Herd is free from contagious diseases. We have for sale Registered Bull calves, on these we will be pleased to give descriptions and quote prices by letter, also a few choice females that we much rather you would come and see than try to buy by mail.

CAMPBELL & ANGEVINE
Coldwater, Michigan.

GUERNSEYS—REGISTERED BULL CALVES
Containing blood of world champions.
HICKS' GUERNSEY FARM, Saginaw, W. S., Mich.

Registered Guernsey Bull Calves for sale. May Rose breeding. Address Clint Bishop, Watervliet, Mich.

AVONDALE Guernsey bulls all sold. Sorry to disappoint those wishing our stock. Only registered bull calves left. Avondale Stock Farm, Wayne, Mich.

Guernsey Bulls of service age and calves from choice. Adv. reg. breeding. T. V. HICKS, Route 1, Battle Creek, Mich.

Guernsey Bull Calf Six months old A. R. breeding. Also a good Collie dog. E. G. A. WIGENT, Watervliet, Mich.

FOR SALE Reg. Guernsey bull calves, dams running in a. r. now. Cheap now, write JOHN EBELS, HOLLAND, MICH. R. No. 10.

AT Farmers' Prices. Registered Guernsey Bull calves from them. As they are young, will make a low price on them. BIGELOW'S HOLSTEIN FARMS, BREEDSVILLE, MICH.

BULL advertised last week sold. Bull calves 3 and 4 months old Gr. Sons Pauline Spotswood 740 lbs.—at prices you can afford to pay. We have one cow 8 yrs. old and one 10 years due to freshen in July and Sept. for \$350. J. M. WILLIAMS, North Adams, Mich.

One Extra Fine Registered Guernsey Bull. Four months old. Price \$50. E. W. RUCHS, Caledonia, Mich.

WANTED Someone to buy 2 Registered 3-year old Holstein heifers with records of 17.08 and 16.17 and their 1 year old daughters, all bred to 30.58 bull. RIVERVIEW FARM, Vassar, Michigan.

For Sale—Holstein Calves, Bulls and Heifers. Will accept a few cows in payment. H. E. REED & SONS, Howell, Michigan.

Howell Consignment Sale Co.

Sixth Annual Sale of

100 Registered Holstein Friesians 100

AT HOWELL, LIVINGSTON COUNTY, MICHIGAN, ON APRIL 26, 1916
IN OUR BIG SALE PAVILION

This will be a choice lot of cattle representing the best lines of breeding. Our herd sires are strongly bred in the 30-lb. class, most of them are from dams, and sire's dams averaging over 30 lbs. Our stock is mostly from, or bred to such sires as these. They are mostly young, many A. R. O. cows and heifers. Only two or three bulls will be offered. A fine heifer calf from King Segis Champion Mobil the 40-lb. bull will be sold in this sale, space will not permit to tell of the good things, come and see. Thanking our many customers for their liberal patronage we wish to welcome you back on above date with many new ones.

Catalogs April 10th

Col. Perry and Mack, Auctioneers.

MARK B. CURDY, Secretary.

WEST MICHIGAN HOLSTEIN BREEDERS'

Fifth Annual Consignment Sale

AT THE WEST MICHIGAN STATE FAIR GROUNDS IN GRAND RAPIDS, MICHIGAN, ON
Wednesday, May 3, 1916

A Breeders' Sale of 90 Head of High-Class Registered Holstein Cattle From Breeders' Own Herds.

Everything over six months of age carefully Tuberculin Tested by Government Veterinarians from the Bureau of Animal Industry, or by competent Graduate veterinarians, and Certificates of Health approved by the Michigan State Veterinarian.

A sale where you get healthy cattle of quality, and where buyers come back the second time. Granddaughters and grandsons of Pontiac Korndyke, Hengerveld de Kol, Colantha Johanna Lad, Traverse Princess Weg, and King Segis Pontiac. Daughters of Prince Segis Korndyke, and the 30-lb. bulls Colantha Sir Korndyke Clothilde, Traverse Dutch Weg, and King Pieterij Pet Canary. Choice young A. R. O. cows and heifers, bred to 30-lb. bulls.

A chance to buy foundation stock for establishing high-class Holstein herds.

Sale catalogs will be out about April 15, 1916. If you are interested write for sale catalog.

W. R. HARPER, Sale Manager,

Middleville, Michigan.

Duroc Jersey Herd Boars

Special Offering of High Class Fall Boar Pigs. Breeding and Individuality good enough for breeders who appreciate the best.

Also some good farmer's boars. This is the best lot of fall pigs we have ever had to offer. A cordial invitation is extended to visit the farm and inspect the stock. If you wish one of the best young Jersey bulls in Michigan we have him for sale. For further particulars, address,

Brookwater Farm, Swine Dept., Ann Arbor, Mich.



Purebred Registered
**HOLSTEIN
CATTLE**

Holsteins, the best dual purpose breed.

The annual distribution by the Holstein-Friesian Association of \$22,500 in prizes for milk and butterfat records and for exhibitions at fairs has been a stimulus to dairymen in exploiting the merits of purebred Registered Holstein cattle. Prosperity attends the farmer who wisely buys or breeds these most prolific and profitable of all dairy cattle. Quantity of production and persistency of milking during long periods are characteristic of the hardy Holstein cow. Investigate the big Black-and-Whites.

Send for FREE Illustrated Descriptive Booklets
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P. L. Houghton, Sec'y., Box 164, Brattleboro, Vt.

Do You Want A Bull?

Ready For Service.

From a grand daughter of The King of the Pontiacs. Sired by a bull that is more than a half brother to the Champion Holstein Cow of the World, and whose dam is a 30 lb. 6 1/4 % fat daughter of Pontiac Aggie Korndyke who has more 30 lb. daughters than any other living bull. If you do write for pedigree.

EDWIN S. LEWIS, Marshall, Mich.

Announcement Extraordinary

The "Espanore Herd" of Registered Holsteins will be offered the public at a great Dispersion Sale May 9th. Watch this paper for particulars.

ESPANORE FARM
LANSING, MICHIGAN.

HATCH HERD YPSILANTI, MICHIGAN

Registered Holstein-Friesian sires, grandson's of World's greatest dairy sire, out of choice A. R. O. dams and King Pontiac Jewel Korndyke; Brother of K. P. Pontiac Lass 44.15; average record of 50 dams in his pedigree 31.25 in 7 days; average per cent of fat three nearest dams 4.37; of his own dam 4.38. Sires in first three generations already have over 600 A. R. O. daughters. A few females bred to "King". Prices reasonable.

Holstein Bulls Ready For Service.

Grandsons of Friend Hengerveld DeKol Butter Boy and Pontiac Aggie Korndyke. From high record A. R. O. dams at farmers' prices.

LONG BEACH FARM,
Augusta, Michigan. (Kalamazoo, Co.)

FOR SALE

SOME VERY FINE YOUNG BULLS
Whose sires have as high as 31 lbs. of butter behind them. As they are young, will make a low price on them. BIGELOW'S HOLSTEIN FARMS, BREEDSVILLE, MICH.

HOLSTEIN Bull Calf: Born Oct. 5. A splendid individual, well grown, and of choice breeding. Dam has A. R. O. record, better 7 days 18.04 lbs. milk 419.8 as a 2yr.-old. Sire Albina Bonte Butter Boy No. 93124. W. B. Reader, Howell, Mich.

HOLSTEIN-FRIESIAN CATTLE
Herd headed by grandson of King Segis Pontiac, and tuberculin tested annually. A few choice young bulls from dams having official records.

PEACELAND STOCK FARM, Three Rivers, Mich.
Chas. Peters, Herdsman. C. L. Brody, Owner, Fort Huron, Mich.

Herefords—3 Bull Calves
ALLEN BROS. PAW PAW, MICH

FOR SALE

22 head of high grade Holstein heifers two years old. All bred to registered Holstein bull, and about half of them will freshen in 60 days. They are all from good milking strain that will test up good. Fourteen hundred dollars buys them all if taken at once.

WM. H. SAXON, R. F. D. 8, Mt. Pleasant, Mich.

For Sale: Big Holstein Bull 2 yr. old. Good breeding. Reg. bulls and heifers 10 mos. old. Ferd. J. Lange, Sebawaing, Mich.

Choice Holstein Bulls. All from A. R. O. Dams. Semi-fading grandsons of Hazel-let grandson of Maplecrest De Kol Parthena and Pontiac Maid 30.2 lb. Born March 26. Traces to De Kol 2d 17 times. Dam Pontiac Hesperia 24, a Pontiac Korndyke, Pontiac Cornucopia and Pontiac Burke combination. M. L. McLaulin, Redford, Mich. J.

\$75 gets Hazel-let grandson of Maplecrest De Kol Parthena and Pontiac Maid 30.2 lb. Born March 26. Traces to De Kol 2d 17 times. Dam Pontiac Hesperia 24, a Pontiac Korndyke, Pontiac Cornucopia and Pontiac Burke combination. M. L. McLaulin, Redford, Mich. J.

"TOPNOTCH" Holsteins

By careful retention, for many years, of largest producing females, and use of superior sires, a breeding herd of wonderful quality has been established. We are selling young bulls of this "TOP NOTCH" quality of serviceable age, at moderate prices. Information, pedigrees, etc., on application. McPHERSON FARMS CO., Howell, Michigan.

Buy Your Holstein Bulls

When They Are Calves.
Here are seven to select from, all from A. R. O. cows; 3 of the dams are granddaughters of Pontiac Korndyke. The sire of two of these dams carry the same breeding as the \$2500 bull Rag Apple Korndyke 8th. Write for description and prices. THE LIA STOCK FARM, Herbert L. Smith, Prop., Ionia Co., Shiloh, Michigan.

I Have Holstein Bulls, Bull Calves and Cows that I offer for sale. I can show breeding, records, individuality and attractive prices. L. E. CONNELL, Fayette, Ohio.

FOR SALE Registered Holstein Bulls ready for service, and bull calves, also females. FREEMAN J. FISHBEEK, Howell, Michigan.

REGISTERED Holstein Bull 6 months old. Two nearest dams average 28 lbs. of butter and 650 lbs. of milk in 7 days. Mostly white, good individual. \$100 delivered with all papers, safe arrival guaranteed. Write for pedigree and photo. ROBERT W. FAY, Mason, Michigan.

Reg. Holstein Females—Pontiac Breeding 1 to 5 years. John A. Rinke, Warren, Mich.

Reg. Holstein Bull 5 mos. old. Dam made 546 lbs. milk. 18.46 lbs. butter 7 days. Nicely marked and well grown. E. R. Cornell, Howell, Mich.

Only \$40 Delivered: Handsome registered Holstein bull calf. Sire 25 lb. butter bull, Dam A. R. O. 17.62 lbs. butter. All papers. Rougemont Farms, Detroit, Mich.

WANTED
Six good men to buy pure bred HOLSTEIN BULL CALVES. Good notes on a year's time accepted in payment. GEO. D. CLARKE, VASSAR, MICH.

For Sale My entire herd or high grade Holstein Cows and Heifers. Also one Reg. 3-yr. old Percheron stud colt or will trade for Reg. Holstein cows. Arthur N. Birkholz, New Buffalo, Mich.

Something Choice Six exceptionally fine Holstein grade heifers by 25 lb. A. R. O. butter bull, out of heavy milking dams. Calves are beauties—3/4 white. Splendid size and condition. ROUGEMONT FARMS, Detroit, Michigan

For Sale, Registered Holstein Bull calf, two-thirds white, born Mar. 15, 1916, dam and sire's dam has A. R. O. record. Price \$30. CHAS. L. COOK, Fowlerville, Mich. Box 438.

Little Farmstead Jersey Cattle. Bull calves from R. of M. Cows, also heifer calves and several bred heifers for sale. Colon C. Lillie, Coopersville, Mich.

Hope Farm Jerseys FOR SALE—3 yearling bulls, 2 bull calves. GEORGE C. BORCK, Grand Haven, Mich.

Jersey Bulls for Sale from high-producing dams, with testing Assoc. records, also on semi-official test. O. B. Wehner, R. 6, Allegan, Mich.

Grade Jersey Herd For Sale FORTY COWS

The result of twenty years careful breeding and selection, are now offered for sale. Individual milk records have always been kept and are open for inspection. If interested write for particulars and if possible visit and examine the herd and their record. Delivery will be made at any time desired during the spring or early summer. A few registered Jerseys also for sale. Address Geo. A. True, Armada, Mich.

THE WILDWOOD Jersey Herd. Registered Jersey Cattle of Quality. Forty head Tuberculin tested Majesty's Wonder 90717 heads the herd. His daughters are producing from 400 to 500 lbs. butter in one year as two year old heifers, and are bred to Majesty's Oxford Fox 134214 a class Grandson of Oxford Majors, which combines type and production. Alvin Balden, Cadmus, Mich.



Dairymen! —The Truth

You may be prejudiced against the Jersey because you don't know her. Look her up. She's the Money Cow.

Get This Book—a history of the breed and full of very interesting tests and facts. It proves conclusively that for pure dairy type, economy of production, richness of milk, long life and adaptability to feeds and climates—all these combined—she stands way above them all. This book "About Jersey Cattle" is free. Get your copy now. You'll find it mighty good reading.

The American Jersey Cattle Club
346 West 23rd Street, New York City

Hillside Farm Jerseys A 10 mos. old, solid color bull now offered for sale. Dam is a R. of M. cow with record of 546 lbs. of butter as a 3 yr. old. He is a fine individual. Price right. C. & O. Deake, Ypsilanti, Mich.

23 Registered Tuberculin tested Jersey Cows for sale. Also, young males HERMAN HARMS, Reese, Michigan.

FOR SALE JERSEY BULL CALF

dropped Dec. 1st 1915. Solid color golden fawn. Fine individual, grand dams of both sire and dam are R. M. cows. Will sell cheap.

NEWMAN'S STOCK FARM, Marlette, Mich., R. 1.

Registered JERSEY BULLS and Heifers, Duroc Jersey Boars and bred sows for sale. NOTTEN FARM, Grass Lake, Mich.

Maple Lane R. of M. JERSEY HERD offers for sale, tuberculin tested cows, heifers, bulls, and bull calves backed by several generations of R. of M. breeding. IRVIN FOX, Allegan, Michigan.

BIDWELL SHORTHORNS

For "Beef and Milk" Registered bulls, Scotch-topped roans, reds and whites for sale. Farm at N.Y.C. Depot; also D. T. & I. R'y. Address G. R. Schroder Mgr. BIDWELL STOCK FARM Box B, Tecumseh, Mich.

Shorthorn Cattle of both Sex for Sale W. W. KNAPP, Howell, Michigan.

Two Shorthorn Bulls old enough for service. Golden Wyandotte Cockerels. Collie puppies. S. G. BELCHER, R. No. 5, Hudson, Michigan.

DAIRY Bred Shorthorns of best Bates strains. No more females for sale at any price. J. B. Hummel, Mason, Michigan.

FOR Sale—12 Reg. Short Horn Bulls by Maxwalton F. Monarch 2nd, a son of Avondale, from 5 to 9 mos. old John Schmidt, Reed City, R. No. 5, Michigan

Shorthorn Cattle. Five cows, Ten heifers, Five bull calves; also herd bull for sale. Write. Wm. J. Bell, Rose City, Mich.

Shorthorn Cows and Bulls For Sale R. R. Station, Elsie. H. B. PETERS, Carland, Mich.

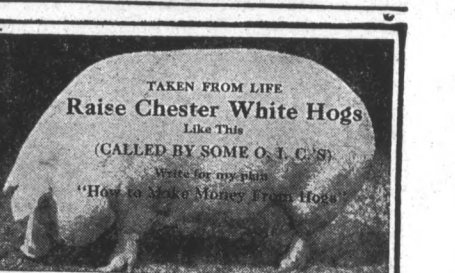
For Sale Shorthorn Herd Bull at beef price. Write for description. W. F. BARR, Aloha, Michigan.

Shorthorn AND POLLED DURHAMS FOR SALE. Have red-roan and white. Have over 100 head in herd. C. Carlson, Leroy, Mich.

Polled Durhams for Sale. 8 young cows and heifers bred, 18 mo. to 5 years. Prices right. Write for them. L. C. KELLY, Plymouth, Michigan

2 Loads feeders and two load yearling steers. Also 2 can show you any number 1, 2 and 3 years old from 600 to 1200 lbs. Isaac Shanstun, Fairfield, Iowa. R-8

HOGS.



I have started thousands of breeders on the road to success. I have a very large and fine herd. Every one an early developer, ready for market at six months old. I want to place one hog in each community to advertise my herd. C. S. BENJAMIN R. No. 10, Portland, Michigan

Royalton Bred Berkshires. Six weeks old pigs, both papers \$7.00 each. Order quick. D. F. VALENTINE, Supt., Temperance, Michigan.

Berkshires of best breeding, of various ages, either sex, all registered stock, no akin, special reduced price. Write your wants quick. Mitchell's Lakeside Farms, R.2, Bloomingdale, Mich.

BERKSHIRES. Bred gilts and sows due to farrow in April and May. Priced to move quick as crowded or room. Chase's Stock Farm, Marlette, Michigan R.1.

Berkshires I have one nice fall Gilt to go at once not bred, and 2 sows bred to farrow in April and May. A. A. Pattullo, Deckerville, Mich.

Berkshire Hogs. Sows bred to farrow in April. Best, C. S. BARTLETT, Prop. Maple Place Farms Pontiac, Michigan

Berkshires. Of various ages, either sex, open or bred, prolific strains, Registered, at moderate price. Elmhurst Stock Farm, Almont, Michigan.

Breeders' Directory—Continued on page 543.

Veterinary.

CONDUCTED BY W. C. FAIR, V. S.

Curb.—I have a three-year-old colt that slipped on the ice about two months ago causing a curb. Please tell me how I can remove it. C. K. Melvin, Mich.—Apply one part red iodide of mercury and six parts lard once a week.

Infected Joints.—I have a calf that is about a month old which is very badly crippled. When ten days old I noticed some of his joints were swollen and it bothered him to get up. Later his neck seemed to be affected and twisted to one side. What had I better do for him? Mrs. E. F., Port Austin, Mich.—Your calf became infected through navel and is now incurable. A little attention at birth, such as applying any good home healing remedy to navel and surrounding parts, at the same time tying cord and painting end with tincture of iodine would have saved your calf's sickness. Painting joints with tincture iodine twice a week and giving calf 4 grs. of quinine at a dose three times a day will do some good.

Thumps—Eczema.—What can I do to prevent my young pigs from having thumps and is there a remedy for it? My cows are losing their hair, which seems to come off in patches. C. C. V., Niles, Mich.—Thumps is a very common ailment in young pigs and this condition is doubtless due to some interference of the diaphragm and is usually in some way associated with overloading of the stomach and in many cases it seems to develop in pigs that do not have a chance to exercise. The treatment consists in feeding good nourishing food and obliging the pigs to take plenty of exercise. Your cows should be groomed or washed occasionally and wet body with one part coal tar disinfectant and 49 parts of water daily.

Lice.—I wish you would let me know how to take lice off horses. A. R., Farmington, Mich.—Clip your horses and apply one part coal-tar disinfectant and 29 parts water. If you have a warm stable you might select a warm day and wash them with this solution occasionally.

Tonic for Horses.—Will you please prescribe an inexpensive tonic for horses and cattle? A. W. R., Plymouth, O.—Mix together equal parts bicarbonate soda, sulphate of soda, ground ginger, ground fenugreek, ground gentian, powdered charcoal. Give a tablespoonful or two at a dose two or three times a day.

Veterinary Question.—I am writing to know how long you consider it necessary to keep up the treatment you prescribed for ulcerated vaginitis in cattle? R. S., Howell, Mich.—It is always good practice to continue treatment until the animal either recovers or dies; or until treatment in the case becomes hopeless. Therefore, I wish readers of this department would bear that in mind.

Growth of False Tissue on Leg.—I have a six-year-old mare in foal that has a thickened protruding bunch on hind leg extending from fetlock nearly to rock, caused by a barb wire cut. F. J. F., Butternut, Mich.—Dissolve 1 oz. of permanganate of potash in one-half pint of water and paint scar once a day. I have always been a great believer in the surgical removal of such bunches, then take care of the wound as it should have been taken care of in the first place. This is work for a Vet; however, if the mare is near foaling time it had better be postponed.

Diseased Tooth—Sidebone—Ringbone.—I have a ten-year-old mare that had an ulcerated tooth which our Vet. punched out through the side of her face and for a long time the wound refused to close; but since she has an offensive discharge from nose. She also has sidebones and ringbone on one hind leg which makes it very difficult for her to move. G. N. H., Kalamazoo, Mich.—I do not believe that your mare will get well of either ailment; therefore, you will be money in pocket to have her destroyed; however, you had better get the opinion of your Vet. before doing away with her.

Scratches.—I would like to know what to apply on the heels of my six-year-old mare that has had scratches for the past three months. C. F. E., New Lathrop, Mich.—Clip off hair, apply wet bandages dipped out of one part bichloride of mercury and one thousand parts water to soften scabs; then scrape off hard part, and apply the following lotion once a day: Dissolve 1 oz. of permanganate of potash in one quart of water, give 3 drs. of Donovan's solution of arsenic at a dose three times a day.



The style of the sulky has changed, but the anatomy of the horse remains the same. Newton's has cured horses for 34 years.

Where do Heaves Catch a Horse?

Usually, when a horse shows symptoms of heaves, the cause is attributed to lung affections. For that reason, owners will administer medicine that acts on the lungs, with the result that the animal is not cured, because heaves is not a lung disorder. It affects the lungs only indirectly. Heaves is caused by indigestion.

NEWTON'S Heave, Cough, Distemper and Indigestion Cure

goes right to the seat of the trouble—the stomach. It removes the cause of the disorder and tones up the digestive and respiratory organs. It is a wonderful stomach and intestinal worm expeller. *It's death to heaves.*

Newton's is a veterinary remedy that has been curing horses for more than 34 years. The first or second \$1.00 can of Newton's often cures heaves and three cans are *guaranteed* to cure. If they fail, we'll willingly refund your money.

You'll find Newton's a handy conditioner to have around all the time. Good for cattle and hogs. If your dealer can't supply you with either the 50c or \$1.00 cans, we will by Parcel Post. Write for booklet.



SCREW-TOP CANS

THE NEWTON REMEDY CO., 133 Ontario St., Toledo, Ohio

CATTLE

Livingston County Holstein Breeders' Sale Company

Will Sell 100 head of Registered Holsteins, at HOWELL, MICH.

Wednesday, May 17, 1916

(LARGER AD LATER)

Catalogs May 7. F. J. Fishbeck, Secy.

HOGS

SWIGARTDALE FARM

BREEDERS OF HOLSTEINS AND BERKSHIRES

Stock for sale at all times. Berkshires of unsurpassed quality and breeding, at reasonable prices. A choice bull calf, nicely marked, five months old, sire's dam with record of over 27 pounds. Dam of calf a grand daughter of Hengerveld De Koi. Price \$50.00.

Swigartdale Farm, Petersburg, Mich.

Chester Whites. Long type prolific kind. Orders booked for spring pigs. Write your wants. Meadow View Stock Farm, R. 5, Holland, Mich.

Chester Whites for sale. Pairs not akin. F. W. ALEXANDER, Vassar, Mich.

Duroc Jerseys. We have a few choice young boars blood lines. The Professor, Kant Again, Ohio Chief, Good E. Nuff, Orion, Perfection, Ira D. Jack, Pilot Wonder. Prices reasonable. Send for pedigree. THE JENNING'S FARMS, R. 1, Bailey, Mich.

Capitol Herd D. J. Swine. Young sows bred, young boars, pigs both sex. Express prepaid. J. H. Banghart, R. 1, East Lansing, Mich.

DUROC JERSEY BOARS a choice lot of spring boars. Fall pigs, pairs and trios not akin. W. C. TAYLOR, Milan, Michigan.

Duroc Jerseys—Fall and spring pigs either sex from choice strains. S. C. STALLMAN, CHERRY LAWN FARM, Shepherd, Michigan.

DUROC JERSEY Bred sows and gilts all sold. Booking orders for spring pigs. E. D. Heydenberk, Wayland, Mich.

DUROC JERSEYS—Fall boars of the large heavy boned type. Sired by Champion winners. Open gilts ready for breeding. Holstein bull calf, a fine individual. 3 months old, nicely marked. F. J. Drott, Monroe, R. 1, Mich.

DUROC Jerseys—Fancy fall pigs (either sex). Buff Rock eggs \$1.25 per 15; S. C. W. Leghorn eggs \$1 per 15. John McNeill, R. 4, Station A, Bay City, Mich.

Duroc Jersey gilts and some sows bred for Aug. and Sept. E. H. MORRIS, MONROE, MICH.

Duroc Jerseys Two good fall gilts, also two fall boars. Will book orders for spring pigs. Wm. W. Kennedy, R. 3, Grass Lake, Mich.

DUROC JERSEYS—A few bred gilts for sale. Carey U. Edmonds, Hastings, Michigan.

Heavy Boned Durocs—A fine bunch of Bred sows and fall pigs for sale. M. A. BRAY, OKEMOS, (Ingham Co.), Mich.

Duroc Jerseys Six June Gilts bred for June farrow. Price \$25.00. Weight 160 lbs. to 180 lbs. H. G. Keeler, R. No. 5, Cassopolis, Michigan.

Duroc Aug. Boars at the right price. Pigs at weaning time. E. J. Aldrich, Tekonsha, Mich., R. No. 1, Bell Phone.

DOBSON'S DUROCS Combine size, quality, breeding. Boars for sale. Pigs at weaning time. Registered Jersey bull. Orlo L. Dobson, Quincy, Mich.

BIG Bone Poland China Boar for sale, coming 2 years. Strong breeder, long body, heavy bone, \$50.00. Reg. Address B. G. HILLS, Fennville, Michigan.

O. I. C. BRED GILTS. Also young boars sold. Pigs at weaning time. J. CARL JEWETT, Mason, Mich.

Registered O. I. C. Swine Stock for Sale—All Ages. Correspondence Solicited, Visitors Always Welcome. Brightside Farm, Grand Lodge, Mich.

O. I. C. SPRING BOARS of good type and Red Polled bull calves. John Berner and Son, Grand Lodge, Mich.

O. I. C. Choice serviceable boars. Choice gilts all sold. Fall pigs, either sex, not akin. Write for low prices and description. A. G. HATT, Grass Lake, Mich.

O. I. C. October boars weighing 200 lbs. at \$25 each for April shipment. C. J. THOMPSON, Rockford, Michigan.

Way Brothers Stock Farm. The home of the big bone O. I. C. Hogs. Stock for sale. Registered free. J. R. Way, Three Rivers, Mich.

O. I. C. Boars for service. Gilts farrowed for May and June farrow. I prey express. G. P. ANDREWS, Dansville, Mich.

O. I. C. Serviceable boars, gilts bred for June farrow. Booking orders for spring pigs, no akin. H. W. MANN, Dansville, Michigan.

BIG TYPE O. I. C.'s and Chester Whites. Special prices on all boars and fall pigs either sex. These are sired by Abo 2nd, this boar sired our unbeaten breeders young herd at every state fair we showed this year, other sires are Wonder Boy, White Hall and Allen, this boar was junior champion at Wis. State Fair last year. Now Mr. Buyer our pigs are all sired from champions, our price is no higher than other breeders and the Express Co. charges just the same for a poor pig as it does for a good one. Get our catalog and see where the good ones are. We are booking for Spring pigs sired by Sch oolmaster, the highest priced boar of the breed and five times G. Champion. We Reg. Free and ship C. O. D. Rolling View Stock Farm, Cass City, Mich.

O. I. C. Swine. I am booking orders for Spring pigs. Elmer E. Smith, Redford, Mich.

O. I. C. bred gilts all sold, am offering Sept. boars and gilts, large growthy ones, and booking orders for spring pigs. A. J. Barker, R. 1, Belmont, Mich.

A few bred sows to farrow in April, May and June. I have 20 last fall boars to offer, also gilts. Have them not akin. All good stock. Otto B. Schulze, Nashville, Mich. 3/4 mile west of depot.

O. I. C. September pigs, both sex. Bred E. B. MILETT, Fowlerville, Michigan.

O. I. C. Choice Boars ready for service. I pay express and register. JULIAN P. CLAXTON, R. 3, Flint, Mich.

O. I. C. SWINE I am offering choice gilts strictly O. I. C. type bred to farrow the forepart of May—also fall pigs price right. Stock registered in purchaser's name free of charge. A. J. Gordon, R. 2, Dorr, Mich.

O. I. C.'s FALL PIGS, EITHER SEX. Satisfaction Guaranteed. A. R. GRAHAM, Flint, Michigan.

O. I. C. SWINE. Oct. boars and gilts. 3-Registered Holstein Bulls sired by 27 lb. bull. Cloverleaf Stock Farm, Monroe, Mich. No. 1.

Boars at Half Price We still have a few big boned, big type Poland China boars ready for service, weighing up to 250 lbs. not fat at \$20 & \$25 each. Registered in buyer's name. Also registered black Percheron Stallion 2 years old \$250.00. J. C. BUTLER, Portland, Mich., Bell Phone.

POLAND CHINAS

From our thousand pound Grand Champion Boar and Big Stretchy Sows. Also booking orders now for spring pigs.

Hillcrest Farm, Kalamazoo, Mich.

Big Type Poland China Pairs and trio not akin out of large litters. G. W. HOLTON, Route 11, Kalamazoo, Michigan.

POLAND CHINAS Gilts, of the big type, bred for April and May farrow. A. A. WOOD & SON, Saline, Michigan.

Large Strain P. C. 4 choice boars ready for service. Gilts left, some to farrow the last of April and first of May. At Farmers Prices. H. O. SWARTZ, Schoolcraft, Michigan.

Large Type P. C. Gilts and sows. Bred for Mar. and Des Moines, Big Knox Jr., and Giant Defender. Bred to Big Knox Jr. Smooth Wonder 3 and Big Jumbo, four greatest boars in state. Come or write. W. E. Livingston, Parma, Mich.

For Sale Poland Chinas either sex, all ages. Something good at a low price. P. D. Long, R. F. D. No. 8, Grand Rapids, Mich.

Heavy Boned Poland Chinas. Fall and Summer Pigs. Sows Bred. Eggs from big Barred Rocks \$1.00 for 15. ROBERT NEVE, Pierson, Michigan.

BIG TYPE POLAND CHINAS—bred sows and gilts all sold. Have several good spring boars and fall pigs. Both sex. Call or write. W. BREWBAKER & SONS, Elsie, Michigan

REGISTERED Poland China Spring Boars and Sows Rat \$15 each. Making this special price to make room for others. A. G. Mende, Stanton, Mich., Colbys Ranch.

Large Type P. C. Sows & Gilts all sold. Have 3 extra good spring boars. Sired by Big Defender. W. J. HAGELSHAW, Augusta, Michigan.

Large Yorkshire Swine all ages. Red Poll Bulls ready to use \$75 each. E. S. CARR, HOMER, MICHIGAN.

Large Yorkshires August and September pigs. 2 spring boars. Prices reasonable. W. C. COOK, Route No. 1, ADA, MICHIGAN.

Yorkshires Gilts For March & April farrowing For Sale. Waterman & Waterman, Ann Arbor, Mich.

GROWTHY THE DISEASE PROLIFIC "MULEFOOT" RESIST- PROFITABLE HOG ING

WE ARE NOW BOOKING ORDERS FOR SPRING PIGS

THE CAHILL FARMS

KALAMAZOO - - - MICHIGAN

Hampshire Swine. the great pasture hog. My herd contains the blood of some of the greatest champions of the breed. Headed by a son of the Great "Look Out." Bred sows and boars all sold. Booking orders for spring pigs. Can supply pairs and trios, not akin. Geo. E. Starr, Grass Lake, Mich.

Hampshire Hogs—Nothing for sale but Apr. Boars. Taking orders for spring pigs. Write your wants. John W. Snyder, St. Johns, R. No. 4, Mich.

Hampshire Swine. Boars. Write for prices. Price to sell. FLOYD MYERS, R. No. 9, Decatur, Ind.

SHEEP.

Kope Kon Farms

SHROPSHIRE and DUROCS. KINDERHOOK, MICH

Oxford Down Sheep. Good yearling field Rams and ewes of all ages for sale. M. F. GANSSLEY, Lennon, Michigan.

WOOL-MUTTON SHROPSHIRE EWES Bred to high class imported ram. Special prices now to close out. Also M. B. Turkeys. Mapewood Stock Farm, Allegan, Mich.

HORSES

DUNHAMS

Percherons

For Fifty Years The Best

Send for fine Photographic

Catalogue.

Dunhams,

Wayne, Dupage County, Illinois

Valuable Percheron

Stallions & Mares

Must be Sold to Close Estate

A. A. Palmer, Estate,

R. R. Orleans, Mich P. O. Belding, Mich

Registered Percherons

2 rising two year old Percheron Stallions weight 1550 and 1600 lbs. Priced to sell. Inspection invited.

E. C. HUNT, Eaton Rapids, Michigan.

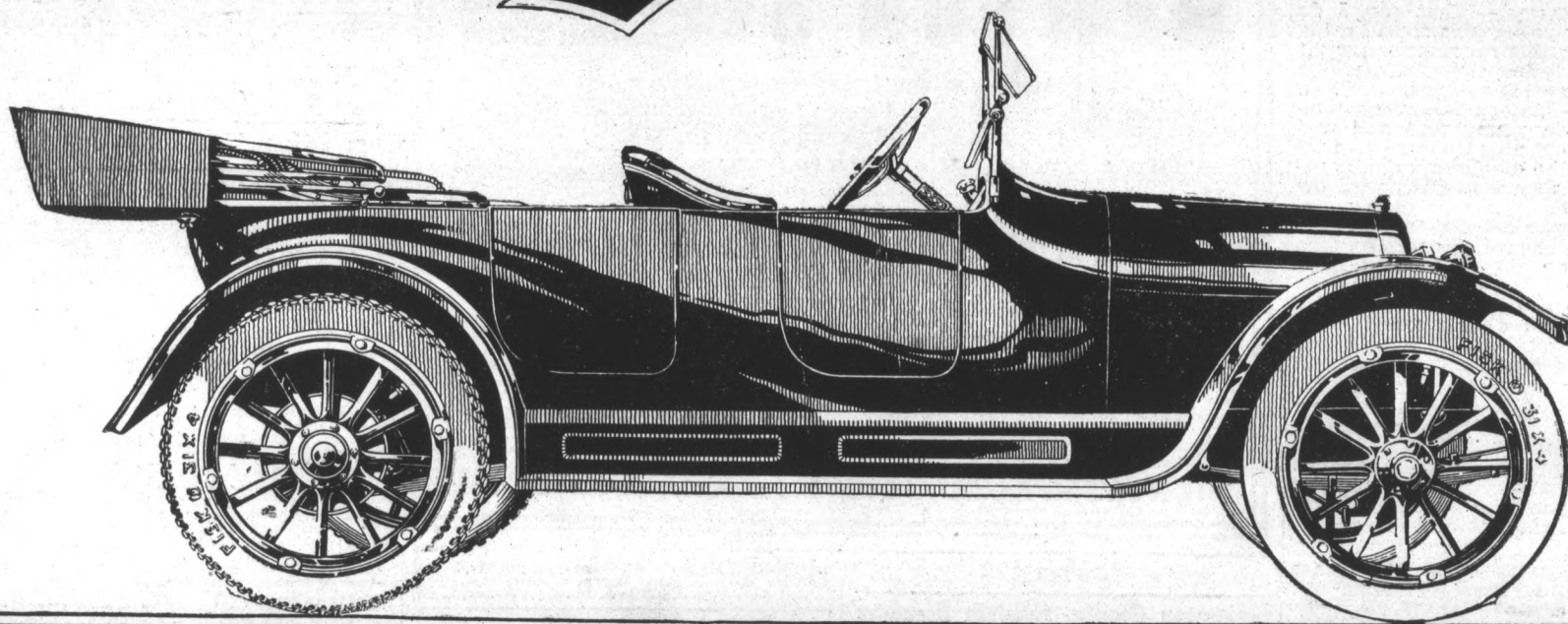
(Additional Horse Ads on Page 537).

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Roadster \$595
Model 75 - f. o. b. Toledo.

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—so now there's no need to sacrifice pride to economy

This Overland costs only \$615.

But it is every inch an Overland—a perfect beauty.

Though a small, light, economical car, it is roomy, sturdy and powerful.

And it is absolutely complete to the last detail.

Never before has a stylish, comfortable, completely equipped car been offered at anywhere near so low a price.

Now for the first time, exacting pride and strictest economy are fully satisfied in one and the same car.

And for easy riding this newest Overland is not to be compared with any other car of its size.

In fact, many a big, high-priced car is nowhere near so easy riding.

It has cantilever rear springs which absorb road shocks more perfectly than any other type.

Large four-inch tires add to its easy riding qualities.

And the seats are soft and deep and built up over long spiral springs.

The seats are also broad and wide—ample in their roominess for five full grown people.

Of course it is electrically lighted and started and the electrical control switches are located on the steering column—right at your hand.

You should have a car this spring—

And if you want top class at bottom price, it must be this Overland, for no other car meets both these requirements.

Nowonder it has swept the country—the biggest and quickest success of all our long line of record breaking models.

But one thousand cars a day is the present limit of our production.

That is more than double the capacity of any other producer of cars of this size and class.

But the demand is in proportion to the excess value in this car.

Order yours now to avoid delay.

See the Overland dealer today.

Catalog on request—Please address Dept. 566

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