

MICHIGAN FARMER

AND
LIVE STOCK
PUBLISHED WEEKLY.

JOURNAL.
ESTABLISHED 1843.

The Only Weekly Agricultural, Horticultural, and Live Stock Journal in the State.

VOL. CL. No. 12
Whole Number 3985

DETROIT, MICH., SATURDAY, MARCH 23, 1918

\$1.00 A YEAR
\$3.00 FOR 5 YEARS

Closing Session of Potato Growers' Meeting

By ALMOND GRIFFIN

ON the closing day of the potato meeting at Lansing there was less excitement than on the previous day, but the program was full of profit and interest. C. W. Waid, extension specialist at the college, and retiring secretary of the State Potato Association, made an interesting report. Mr. Waid has been secretary of the society since it was organized five years ago, and his work has not cost the society anything, even the stenographic work, the stationery and other items have been free.

The organization has not had over one hundred and twenty-five members at any time. Mr. Waid urged the great need of a stronger and more representative membership in the state, pointing out that this lack of a strong organization among farmers is the reason why they were not represented on the United States Food Administration. "I am not defending double grading," said Mr. Waid, "and am not responsible for this system. I favored one grade, but when the Bureau of Markets adopted the present system I did say that I believed that it would eventually work out to the growers' benefit. I am satisfied that the majority of growers favor some grading system, but some readjustment of the present rules is imperative. Every retailer should be obliged to sell according to grades. The relative prices of first and second grades and the size of screens are important matters and there are differences of opinion among well posted men." Mr. Waid referred in closing to potato flour and to the dehydrating process that is being tried out.

Dr. Bessey, treasurer, reported a balance on hand of \$39. Many of the growers paid their \$1 fees during the sessions. The by-laws were amended so that the executive committee shall include the officers, also a representative from each potato growing county, the latter to be chosen by the local association of growers. A committee on revision of the constitution was also named by the president, one of the main purposes in view, according to sentiment expressed, being to limit membership to growers. When a grower is a dealer also, as is sometimes the case, he is to be classified as a dealer and ineligible to membership.

J. G. Milward, of Madison, Wis., secretary of the Wisconsin State Potato Growers' Association, gave an informal

talk on the work in that state. Organized work is being carried on in twenty-six counties and the field man in extension work at the state university is also secretary of the growers' association. "The work is broad and embraces every line of state development of the potato industry, including machinery, insecticides, the dealers and growers. The legislature appropriates \$3,000 annually, every cent of which must go towards development and no salaries are paid out of it. No other organization receives a direct appropriation from the Wisconsin legislature. Community potato development is an important feature. The state has various distinct potato belts and the Green Mountain types are confined as much as possible to cool, deep, fertile soils, the Rurals to clay loam, and so on. Much attention is paid to seed improvement and certification, which is a voluntary agreement between grower and field agent and during last year one hundred and eighty-one growers made application for government inspection and 96,000 bushels of seed potatoes were certified. In order to bring consumers and growers closer together annual expositions are held the week before Thanksgiving in Milwaukee, with standard varieties displayed representing table and seed stock, also machin-

ery and supplies. There are practical demonstrations in sorting, cooking classes for women, etc. We are also studying disease control. There has been great development in potato machinery and we are throwing out the inefficient sprayers and other costly tools."

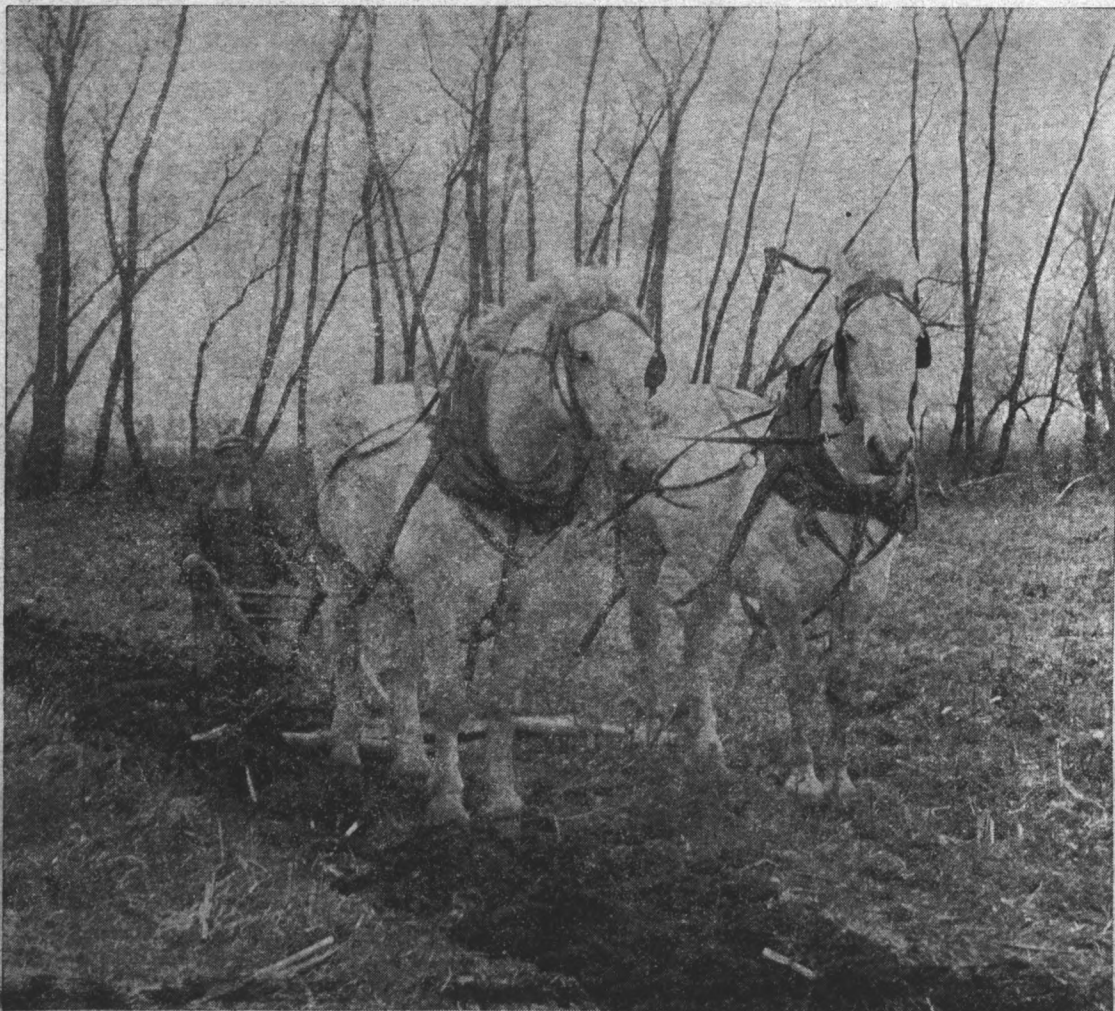
As regards potato grading, Mr. Wilward states that there is much complaint as to the two United States grades and the legislature has appointed a committee of five who are getting the testimony of growers. A careful investigation is also being made of the No. 2 stock as delivered by growers at warehouses. Where the crop was good the proportion of No. 2's in warehouses was reported at ten to twelve per cent. "While our state association passed a resolution favoring the United States grades, it is not a closed story by any means. Personally, I have always favored one grade. We should work out a grade adapted for the average American family. There will be a public hearing and I don't know what will be done."

Dr. Wm. Stuart, of the United States Department of Agriculture, Washington, and secretary of the Potato Association of America, was the next speaker and he told of what the department is doing for potato growers along var-

ious lines. Dr. Stuart was present when the Michigan association was organized in Grand Rapids. He stated that 108,000,000 bushels of seed potatoes were registered in eight states last year. The United States Bureau of Chemistry will install a potato starch making plant at Jackson prison in this state, which will utilize about a carload of potatoes daily. Potato ensilage is being tried out in Wisconsin and with good success. A tight cement tank is made use of and potatoes are sliced and mixed with two per cent corn meal, which causes a lactic acid ferment. In reply to questions, Prof. Stuart was of the opinion that the heat in the silo would not be sufficient to kill scab or other potato diseases. Experiments conducted at Norfolk, Va., and Presque Isle, Me., have shown that the three-ounce seed piece, either the three-ounce whole or the six-ounce potato cut in half, give best results as to yield.

John B. Harrison, secretary of the Wexford-Missaukee Potato Growers' Association, spoke of the work of this organization which was formed three years ago for general uplift work in the way of pure seed, fewer varieties and better cultural and marketing methods. "We started seed treatment the first year," he said, "the rule being that each member should treat one acre. Black scurf is our worst disease. We have some early blight but no late blight. A year ago last spring we sold lots of seed. While the situation is discouraging now, I believe that the farmer will hit it if he plants potatoes this year. I believe in the small local association first and then the county organization, or large unit. Our association and the Kingsley association are the first in Michigan to get an order from the state war board for stock for the dehydrators. Let the local association adopt a good letter head, as other business men do, then give customers full weight and honest treatment, grading and putting up fancy stock, and Michigan will have no trouble competing with any other state or country on earth."

"We must have standardization and grading," said John I. Gibson, secretary of the West Michigan Development Bureau, in the course of a forceful address. We must work some of this big crop of potatoes into flour and chips and starch. The big starch plant at (Continued on p. 390).



Breaking the First "Land" in the 1918 Drive for Maximum Production.

The Michigan Farmer

Established 1843.

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The Lawrence Publishing Co.

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39 to 45 Congress St. West, - Detroit, Michigan

TELEPHONE MAIN 4625.

NEW YORK OFFICE—381 Fourth Ave.
CHICAGO OFFICE—111 W. Washington Street.
CLEVELAND OFFICE—1011-1015 Oregon Ave., N.E.
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TERMS OF SUBSCRIPTION:

One Year, 52 issues.....\$1.00
Two Years, 104 issues.....\$1.50
Three Years, 156 issues.....\$2.00
Five Years, 260 issues.....\$3.00
All sent postpaid.
Canadian subscription 50c a year extra for postage.

RATES OF ADVERTISING

45 cents per line agate type measurement, or \$6.30 per inch (14 agate lines per inch) per insertion. No advt. inserted for less than \$1.35 each insertion. No objectionable advertisements inserted at any price.

Member Standard Farm Papers Association and Audit Bureau of Circulation.

Entered as second class matter at the Detroit, Michigan, post office.

DETROIT, MARCH 23, 1918



CURRENT COMMENT.

Rural Credit. That our financial and banking system has failed to provide adequate credit facilities for the development of our agriculture is a patent fact to every person who has given the subject any thought. The establishment of the Federal Land Banks through which long term credit can be secured by farmers who organize themselves into federal farm loan associations is government recognition of this fact. Long term loans are being secured by the farmers of many sections of Michigan and other states through this channel.

While this is helpful and will become a larger factor in rural development as the business of land banks is expanded in this direction, the growth of the system is necessarily slow, and will not for a long time supply all the capital needed for farm development in this or any other state. There remains in most communities no other source save the local bank or such private capital as may be seeking a short time investment, which is not a very considerable factor under present conditions.

Inquiry among the farmers of almost any community in northern Michigan will show that short-time credit facilities which are extended by the local banks are wholly inadequate to meet the needs of the farmers of those communities, and when such accommodations can be secured at all, they are available only at an interest charge which is practically prohibitive. In very many sections of the state bankers charge a bonus on all short-time loans in addition to the legal interest rate, which often brings the total cost of such loans to twelve or fifteen per cent or even more. In many cases the charges for short-time loans are so excessive as to leave little room for doubt that the farmers of a community are being exploited in a most unfair manner.

The whole difficulty is not, however, chargeable to the avarice of the bankers, but is in part at least due to the inadequacy of the present banking system in the matter of furnishing adequate rural credit. Very many banks—particularly in the newly developed and developing sections of the state—

are small institutions with limited capital and patronage, in which the overhead expenses of operation are necessarily exceedingly high as compared with larger banks in older and more thickly populated sections. This overhead charge, in which is represented the salary of the banker or bank manager and the incidental expenses of operating the bank is, of course, very much higher where both the capital and volume of business done is small.

An enterprising banker who would from some central point establish banking relations with farmers over a territory embracing a county or more could do business at a much smaller overhead cost and could provide short-time credit to farmers of such a territory at a reasonable interest charge. Adequate credit facilities at reasonable cost are an essential factor in the rapid upbuilding of successful agricultural communities. This is a factor of especial importance at the present time when the demand for and need of food stuffs is vital to the nation and even to the world.

Our State Bankers' Association has of late taken a good deal of interest in agricultural matters, mostly along the line of promoting better agricultural methods on Michigan farms. Little has, however, been done toward the end of providing adequate short-time credit facilities for the farmers of the state at large and particularly on farms in the northern portion of the state where agriculture is in the process of development.

While the problem is perhaps not easy of solution, it is worthy of the attention of bankers who are interested not only in the promotion of agriculture, but as well in the welfare of business in general. It is acknowledged today as never before that there is an intimate relation between agricultural prosperity and general business prosperity. No manufacturing or other commercial enterprise could succeed under the handicap of difficult credit conditions such as confront the farmers of Michigan today. No other business man could successfully develop his business under the handicap of necessary financial assistance in time of need or the excessive interest rates which farmers of many sections are obliged to pay on short-time loans when they can be secured at all. The farmers of newly developed sections particularly cannot do their best in the needed campaign of food production unless these conditions are speedily remedied.

Tractors for Food Production.

The farm tractor manufacturers of the United States are organizing for the purpose of increasing their output and facilitating its distribution as a means of increasing food production on the farms of the country. At a meeting recently held in Chicago a committee was appointed with a view to the securing of needed government co-operation to this end. This committee has already conferred with officials of the Department of Agriculture and other government bureaus at Washington, and will shortly present to the newly formed War Credits Department a comprehensive plan under which the aid of this department will be sought to increase the output of tractor manufacturers through financial assistance where necessary, and also to aid in financing the purchase of tractors by farmers where such financial aid is needed.

These steps are being taken by the tractor men on the theory that the present output of farm tractors is not adequate to the needs of the country under the difficult labor conditions which now obtain, and which are certain to become more pronounced as more men are withdrawn from producing industries into the army and the industrial if not the military draft on available farm labor thus increased.

Government attention may well be

directed, not alone to the manufacture and distribution of tractors, but other labor-saving farm equipment as well. The addition of such equipment is the only available means of overcoming the labor handicap to any considerable degree, and the greatly increased cost of such equipment under present manufacturing conditions makes the financing of increased food production by this means a difficult problem for very many farmers, who could use more and better farm equipment to their own and the country's advantage.

State Aid for Farmers.

The State War Preparedness Board is making good use of the funds placed at its disposal by the legislature and the powers delegated to it for emergency work relating to the war. Through this medium and cooperation with the Michigan Agricultural College and the United States Department of Agriculture, thousands of bushels of seed corn has been purchased and is now being shipped into the state for distribution to farmers at reasonable prices. A score or more of carloads of this corn is of varieties adapted to Michigan, including hardy corns from Dakota and Flint corn from New York. Other thousands of bushels of corn of good germination and adapted to planting for ensilage purposes have been purchased for similar distribution in the dairy and live stock section of the state. This is a work of special value to the farmers of Michigan under present conditions.

Another activity of the War Preparedness Board is the purchase of sheep in quantity from sections in the west where they are available for sale to farmers of the state in small flocks as they may be desired. A representative of the Board is now in the west making these purchases. Both seed corn and sheep will be sold to farmers for cash, thus reimbursing the state for its original investment.

The service rendered is, however, of peculiar value in a year like the present, when good seed corn and sheep are very scarce and difficult to secure, so much so, in fact, that the small purchaser would find it practically impossible to supply his needs in either of these lines in the ordinary channels of trade.

Another activity of great importance is the purchase of a large number of tractors by the war board for resale to Michigan farmers under condition that they be kept employed to the limit of their capacity. In this connection arrangements will be made for the community use of these tractors in the communities where they are placed under some plan which will provide for their use in plowing on as many farms as possible for spring crops.

These activities of the State War Preparedness Board in extending needed aid to farmers along lines in which their needs can best be supplied by wholesale purchase, is a matter for sincere congratulations to the state, and will prove of particular value in speeding up production for 1918.

The following paragraph "Kultur." will give our readers a picture of the horrors of war: "Every village they have passed through has been the victim of what is only organized pillage. Every city has been practically sacked, ransacked on system; its citizens plundered. Its civil officials terrorized, imprisoned, outraged, or killed. The civil populations have been, contrary to the usage of modern warfare, forced to serve the invading armies, brutally put to death, reduced to wholesale starvation, and desolation. Vast tracts of the richest and most industrious districts of Europe have been deliberately stripped and plunged into famine, solely in order that the invaders might make war cheaply. Irregular troops, contrary to all the practice of war, have been systematically murdered,

and civil populations indiscriminately massacred, solely to spread terror. A regular system of ingenious terrorism has been directed against civilians, as horrible as anything in the history of civic or religious wars. Large and populous cities have been, not once, but twenty, thirty, forty times, bombarded and burnt, and the women and children in them wantonly slaughtered, with the sole object of inflicting suffering. All this has been done not in license or passion, but by the calculating ferocity of scientific soldiers."

But the above sentences were not written last week nor last year. They were not put down after the world had been horrified by the suffering and bleeding of innocent Belgium. But these sentences appeared in the English Fortnightly Review of February, 1871, shortly before the surrender of Paris. Then, too, in the Commentaries of Julius Caesar he narrates events which show that even before the dawn of the Christian era German military leaders were in possession of the rudiments of their modern "Kultur." It is no new thing and our boys will have died in vain in this great war if this thing is not absolutely and utterly exterminated.

HAPPENINGS OF THE WEEK.

The European War.—Many raids were made last week on both sides for the purpose apparently of securing prisoners to gain military information. In conjunction, heavy artillery fire was also participated in along the entire battle line, not excepting the sectors occupied by the American troops. Last week the Americans and French took over first line German trenches on a front extending well over a mile. This has been held despite the use of heaviest artillery by the Germans. Berlin reports that a French attack before Verdun failed to record any advance.—No important news has been received from northern Italy.—In Macedonia heavy guns have been pounding away more or less for the past week.—Despite the acceptance of peace terms by the Russian Soviet congress, the Germans are continuing to advance against the Russians, especially in the south. Early last week they occupied Odessa, the big grain port on the Black Sea, and on Sunday, Nikolayev, Russia's big naval base in the south was taken over. In normal times large stores of grain were held here, but reports indicate that these stores are very meagre at the present time. The Red Gaurds are fighting the Germans in Finland, and it appears that additional troops are urgently needed to command the situation. An official Austrian report states that the Ukrainians have "invited" German officers to organize an army in that province.—During February the Allies made twenty-three air attacks on Rhine cities. Reports coming through Switzerland declare that residents are moving from these cities to central Germany, and that in some instances panics were started by the attacks.—In a fight between an American tank steamer and a U-boat the latter was sunk.—Labor troubles are in progress in Austria and Hungary, according to German newspapers. Vienna and neighboring industrial centers are seriously affected by strikes on railways and in railway shops. Under threat of military intervention, many of the men have returned but are not working.

In the Nationalist quarter of Belfast severe rioting occurred on Sunday between Sinn Feiners and the Belfast police. Troops were called out to take charge of the district.

The third Liberty Loan campaign begins April 6. Secretary McAdoo will aid in the drive in Michigan.

The campaign to enlist boys in the Boys' Working Reserve for employment on the farms of the country this season starts this week. It is expected that fully 25,000 boys will be enrolled to assist the farmers of Michigan.

An order has been issued by the federal food administrator permitting millers in Michigan to grind up to ninety per cent of their average for the three years preceding the war. Recently the millers were limited to seventy per cent of their pre-war output.

The United States Fuel Administration has compelled forty-two persons in the coal trade to refund \$34,000 which was improperly collected in the conduct of their business.

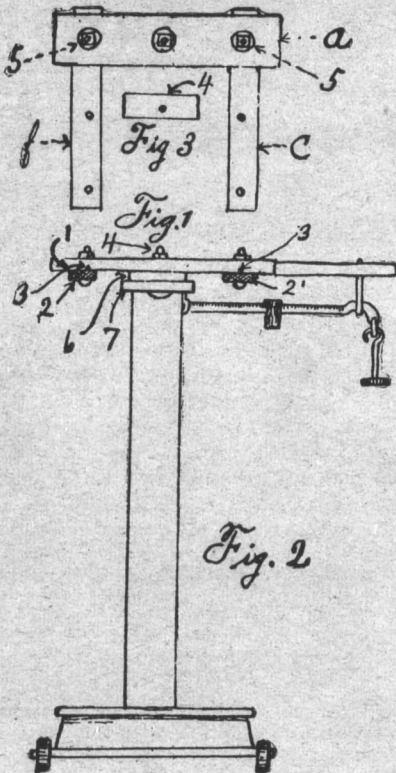
Fifty American colleges have offered to furnish scholarships, board, and in some cases, other expenses to girls sent by French colleges and schools to be educated in the United States.

More Help for Busy Farmers

SMALL leaks sink great ships," and we are of the opinion that if Franklin were a twentieth century farmer he would study well the many little labor and time saving ideas of his fellow farmer, to the end that he might adopt them to his personal needs. We are merely imitating this prudence in gathering for our readers practical suggestions. To make such a service most helpful requires the thoughtful cooperation of all who may have useful ideas to offer. May we hear from you?

HOME-MADE BAG HOLDER.

Please find enclosed pencil sketch of a bag-holder which has proved to be a labor-saving device for me, and is so simple and cheap that any farmer can make one for himself. I attach my bag holder to the weight holders on my scales, as shown in sketch, which



makes it convenient to know just how much grain I am putting up for seed or for market.

The bag holder consists of four pieces of wood, three bolts and four small nails. One piece of board 1x4x18, (a, Fig. 1); two pieces (f), (c) 1x2x16 inches; one piece (Fig. 3), 1x2x6 in.

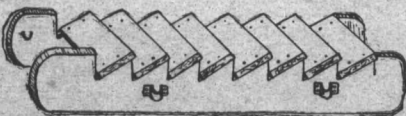
Pieces (f) and (c) should be bolted to piece (a) about twelve inches apart, the four nails should be about six inches apart, as illustrated. To operate catch the hem of the bag over the heads of the nails and spread sticks so as to hold the top of the bag tight. A pail or hand-scoop is the most convenient implement to use for filling the bag.

Ionia Co.

J. M. SAILER.

A COMBINATION CLOD CRUSHER AND SLED.

I am enclosing drawing showing a contrivance which I find is quite a help, as it does not cost much to make, and I use it for several jobs. This one is a clod crusher. Take two planks eight feet long, two or three inches thick, and eight, ten or twelve inches wide. These are for the runners and



should be of hardwood—oak is best—each rounded off at one end and notched on the upper edge, as shown in the illustration.

The cross-pieces are of similar material, seven or eight feet long, eight or

nine inches wide, and spiked in notches on each runner, with ends of cross-pieces even with the outside of the runners. A staple with a ring in it is driven from the inside of each runner near the front, and the chain by which it is drawn is run through the rings with the runners up. This makes a No. 1 clod crusher, land leveler and pulverizer. Reverse it and make a box ten or twelve feet long and put on top and you have a sled you can use for several odd jobs. When you put on top box put two staples on each runner to receive box stakes so box will stay on. Genesee Co. L. D. YERKES.

SAVING TIME AND STEPS.

When a farmer begins using hay from the mow, if he will cut down about one-third or one-fourth of the mow and use it clear to the floor, it will give him a very convenient place to use for one of many things, especially if he feeds considerable shock corn or corn fodder, or husking in the barn, as most of us are doing this winter, it will be very handy to unload several loads, or if the barn floor and the mow are on the same level and no breast girt between, it can be used for tools, etc. The time cutting it down as used is estimated at about two hours extra work, and the space should be available in November or December.

In feeding the brood sows where only two or three are kept, and the amount of corn fed is small, if we have located near a box or barrel that can be securely covered, and place therein a full basket or crate of corn at a time, it will save many trips to the corn crib when feeding. The same method worked out to good advantage in regard to feeding small calves a handful of shelled corn or oats when giving them their milk. Shell the corn with a sheller and fill an old pail and hang it in a convenient place in the stable near the calves.

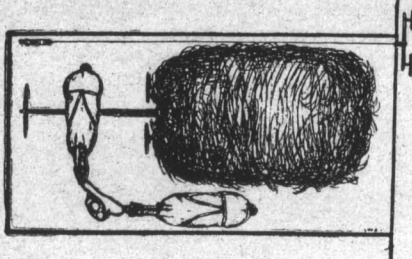
If we have a hammer and a few nails in each of the barns or buildings it will save many trips to the shop or the place where they are kept. Many times if we could pick up a hammer without taking the extra time and

heads, pays for themselves by being used in the place of rivets in farm machinery where it is almost impossible to get the affected parts solid enough to put in a rivet, as for instance, repairing an apron to a manure spreader. The hardware dealer can usually be induced to fix up a box for about twenty-five cents.

St. Joseph Co. THOS. HIMEBAUGH.

HELPFUL HINT.

While a load of hay is in the barn, instead of separating the horses to get

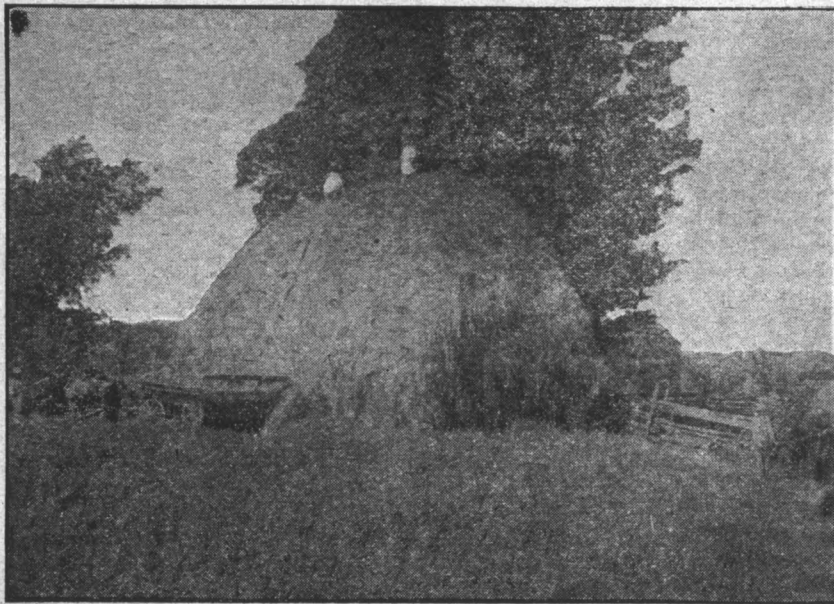


them out, a person may back one horse out and at the same time lead the other so that their heads are together, and they need not be separated.

Ionia Co. LESTER WRIGHT.

A HANDY WAY TO STACK HAY.

A large maple tree stood by the fence in our hay field. We fastened a pulley to a projecting branch about forty feet from the ground, bracing it by fastening a chain to the trunk from the branch. Then we fastened a pulley at the bottom of the tree. The hay rope was run through the pulleys and the double harpoon fork was attached to the end which went through the top pulley. The horse was hitched at the other end of the rope. It needs a boy to drive the horse, and a man on the load to set and trip the hay fork. They will keep two men busy on the stack. When the stack gets high enough for the fork to gouge out the stack we set rails and boards about four feet higher than the stack alongside the wagon and raised them as the stack grew taller. The photo was taken as the stack was finished, and shows kind of



Our Plan Enabled us to Build a Good Stack with Far Less Labor than is Usually Required.

steps to get it and return it, we would tack on many loose boards or drive many protruding nails in the stables that would otherwise be left to injure stock. It is unnecessary to have a new hammer for every place, as an old one answers the purpose very well. (I have an old piece of a monkey wrench in the hog house and use it many times). They can be bought at sales for five or ten cents many times, or we used to get a fair hammer on the ten cent counter.

Many times a box of assorted stove bolts, both counter-sunk and oval

stack it made. The hay keeps good stacked in this way. Lapeer Co. L. S. LAKE.

FOR YOUR CONSIDERATION.

Make your home service reach the firing line.

From now until the next harvest watch your grocery list or there will be no groceries to list.

The man who grows more food adds to the wealth of the world; the man who grows dollars may be adding only to his own wealth.

A single front, a single army, a single people.

More Vegetables

YOU can have a better garden—without less work—by using a Pull-Easy. It's the handiest little garden tool made. The

PULL-EASY

ADJUSTABLE

Garden Cultivator

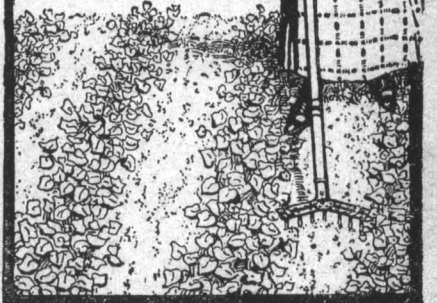
thoroughly stirs the soil and can be used either as a cultivator or rake. Instantly adjustable from 7 to 18 inches. Middle tooth quickly removed for cultivating two rows at once.

Strong, well balanced, practically indestructible—the only tool necessary from seeding to harvesting.

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Unless you are familiar with the smooth-cutting action of the well-tempered Disston blade, we urge you to go to any progressive hardware dealer in your vicinity, and saw through a board with a Disston.

Notice how the Disston saw "hangs." How perfectly its seasoned handle fits your hand. How its correctly set and filed teeth cut through the wood. Until you have sawed with a Disston hand-saw, you will never understand what real satisfaction there can be in driving a saw.

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A 110-day corn, carefully bred and selected for twelve years. Took first prize in Co. Corn Shows last two years. First prize at State College Corn Show last fall. Composite samples tested by State College, in each instance, prove 100 percent germination, while hundreds of samples being tested there are averaging about 65 percent germination. \$5 per bushel in lots not less than 5 bushels. Sacks 45 cents extra.

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Until the present supply is sold.
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Sacks are free with the scratch feed seed sacks for the other grain that you want. Will send samples of any of the grain.
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For Sale CHOICE SEED CORN. 500 bushel 100 day Yellow Dent, 400 bushel White Cap Yellow. Order early.
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Beardless BARLEY—Pure, cleaned for seed \$2.50 per bushel, new grain bags included.
H. L. COLE, Palmyra, Mich.

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How Good Maple Syrup Is Made

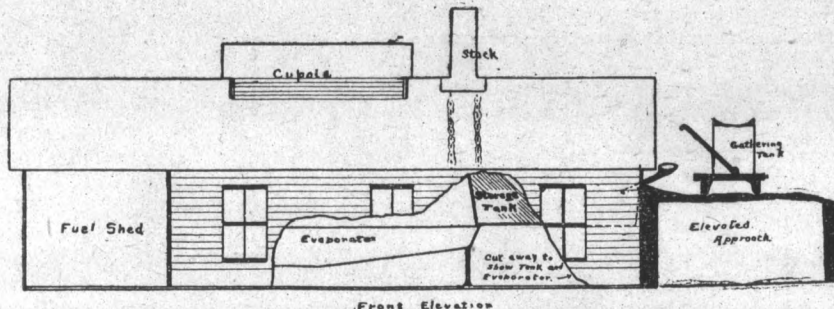
By F. H. SANFORD

IN order to answer numerous inquiries covering best methods to be used in the manufacture of maple sap syrup, we will endeavor to touch upon some of the essentials as the need has presented itself from questions asked. The first being:

Necessary Equipment.

We will assume that the average sugar bush in southern Michigan is two hundred trees and the equipment and accessories necessary for operation are based on this assumption. It is possible provide one of the modern evaporators which should be about ten feet long for this sized bush, and three hundred buckets and the same number of spiles. The best satisfaction will be

other containers for the syrup. During the present year this has been a very serious matter. Many local dealers have been unable to supply cans at all and others only at very high prices. A few producers are using glass jars. The Michigan Maple Syrup Makers' Association is seriously considering the adoption of two or three kinds of containers, notably the oblong tin can, the glass jar and paraffin paper container. The popular sized container seems to be the one-half gallon with a steadily growing demand for the quart size. This, we believe to be a true step toward conservation since it is well known that syrup placed in large containers is more quickly and



given and the highest grade of syrup made when heavy tin is used in the manufacture of buckets, spiles and evaporators. There are usually several accessories which accompany the evaporator, such as syrup skimmers, hydrometer, thermometer and one or two felt strainers or filters.

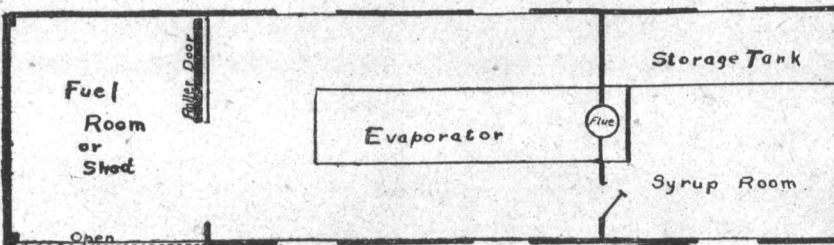
The operator should provide some convenient device for gathering sap. The gathering tank is very convenient and is provided with an adjustment for cheesecloth strainer and siphon or galvanized outlet pipe which does away with the necessity of emptying the sap by hand. However, in the small operation perfectly sterile sweet wooden barrels mounted on stone-boats are commonly used. These barrels may be mounted either vertically or horizontally and the intake hole cut out of the side or head, depending upon the position of the mount. When the barrels are used, a provision should be made for straining through the sap cheesecloth to prevent the leaves and dirt from getting into the barrels.

The further item of equipment is the storage tank. This should be sufficiently large to enable the accumulation of from thirty to fifty barrels of sap. This tank is usually placed just

lavishly used in the average family, than when smaller cans are opened.

Operations of the Bush.

First. Tapping. This operation may be done at the first sign of sap flow and consists in the use of a three-eighth bit for the purpose. The bore is given an upward slant to provide more rapid drainage through the spile. A second boring or cleaning is made in midseason by the use of a 7-16 bit with a circular cutting edge or lip. This type of bit gives much better service and satisfaction than the common square lipped bit. If necessary to bore a third time, a half-inch bit is used. It is very essential to keep the tap-hole clean and free from soured sap, since one of the most common sources of souring occurs through the accumulation of dead, sour sap in the spile and hole back of the spile. The hole should never be bored over two inches in depth, since the only use in boring is to get into the zone of sap-wood and to furnish a hold for the spile. Deeper boring simply injures the tree. The buckets should be made of heavy tin and provided with a painted covering, either wood or iron. A scheme which has been in successful operation by many growers for years is the paint-



Ground Floor Plan.

outside the sugar house or in the storage room of the house and at a lower level than the sap haul approach. In larger operations, a second storage tank is used, which is also placed on the inside of the sugar house and at the same level as the first. These storage tanks are usually placed in a position so that the bottom of the tank is on a level with the top of the evaporator pan.

The item of fuel should really be considered as part of the equipment, since it should be prepared a year in advance and seasoned under cover. Quick-burning fuel is very essential to rapid boiling and enough should be stored under the fuel shed to carry the operator through the season's run.

Cans or Glass Containers.

Provision should be made far enough in advance of the opening of the season for a supply of necessary cans or

ing of one side of the cover in bright red and the other in white. This enables the collector to see at a glance where he has been on his rounds in collecting the sap, since one color is always turned up as fast as the buckets are emptied. The cover also prevents rapid drying out of the spile hole or tap, keeps the dirt out of the buckets and has a tendency to keep the sap much cooler than if exposed to the sun and wind. Growers who have never used the cover will find it a distinctive advantage as well as a labor-saver.

Syrup House.

The syrup house should have an approach for the horses and gathering tank. This should be elevated to a height of six to eight feet so that all of the emptying of sap may be done by gravity. It is often easy to locate the

(Continued on page 396).

Grow Sorghum this Year

By C. E. THORNE, Ohio Exp. Sta.

A FEW years before the outbreak of the Civil War two varieties of sweet sorghum had been introduced into this country, one coming from China about 1853 under the name of Chinese sugar cane, and the other in 1857 from Natal, South Africa, under the name of Imphee. The seeds of these sorghums were widely distributed in small quantities by members of Congress and in other ways, and when the war broke out, cutting off the supply of Louisiana sugar and syrup, the northern farmer found himself in possession of a good substitute for the syrup at least. The culture of sorghum extended rapidly over the country, until before the war closed nearly every farm, in Ohio and Indiana, especially, produced annually a small patch of this cane, which was worked into syrup in the small mills of the neighborhood.

While a good syrup was made from sorghum, the production of sorghum sugar was never made commercially successful, although the U. S. Department of Agriculture expended large sums of money in the attempt; the difficulty being that sugar can be produced far more cheaply from the southern cane and from the sugar beet, under conditions of climate, soil and labor supply suited to these plants, than from sorghum. The consequence has been that the cane sugar industry has drifted toward Cuba, Hawaii and the Philippines, while the production of beet sugar has been developed by Germany and Austria Hungary under conditions of suitable soil and climate, low wages for labor and an export bounty on sugar, until those countries were producing half or more than half of the world's supply of sugar. The cutting off of this source of supply by the European war leaves America in much the same situation that the northern states found themselves in during the Civil War, and the present scarcity of sugar suggests a return to sorghum as a source of part of our supply of sweets. Fortunately, another use has been developed for sorghum than the production of syrup, it having been found to be a valuable forage crop. Consequently there need be no serious difficulty in procuring seed, which is kept by all the principal seedsmen.

Variety.

The best variety for general culture in the north is the Early Amber, a variety originated in Minnesota and thoroughly tested over a wide extent of country.

Soil and Preparation.

While sorghum may be grown wherever corn will succeed, it is well to avoid for sorghum the thinner clay soils on the one hand and the black soils verging on muck on the other. Drainage is indispensable, and a warm, chocolate-colored, gravelly loam on which a clover sod has just been turned under is an ideal site. The further preparation is the same as for corn; the land should be harrowed and rolled until the surface is thoroughly pulverized.

Planting.

Plant May 20 to June 1. Sorghum, like the soy bean, needs a little more heat than corn requires. Plant about three and a half feet each way, and not more than an inch deep. The

sorghum plant is weak at first, and too deep covering may completely discourage it. Drop six to eight seeds to the hill to make sure of a stand; five or six stalks to the hill are none too many for the permanent stand of Early Amber, or one or two less for the larger Orange.

Cultivation.

Sorghum grows very slowly at first, as compared with corn. Hence it is important that the land be as clean of weeds as possible. The general cultivation is the same as for corn.

Harvesting.

Frost is ruinous to sorghum, and hence it should be harvested as soon as frost threatens. The tops should be

removed by cutting a foot or more below the head, as the upper twelve to eighteen inches of stalk has little juice in it. The blades are then quite easily struck off by strippers made of wood and the size and shape of a straight sword. One is used in each hand. They should be made as light as possible consistently with strength. After stripping, the cane is cut as

close to the ground as possible, piled horizontally and covered with the blades and tops or with straw to protect it both from frost and from sunshine until ready to take to the mill. It should not be stood on end, as is done in shocking corn, not only because of the dirt that will adhere to the butts, but more especially because it will dry out too rapidly if thus stored. The sugar, of course, is not carried off in drying, but it is converted into an unavailable form.

A fair yield of sorghum is one hundred gallons of syrup per acre, although much larger yields are sometimes obtained.

Manufacturing.

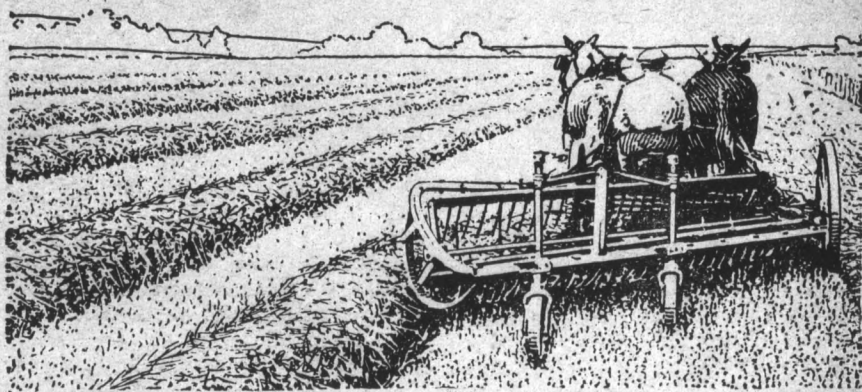
The juice is extracted from the cane by passing it between iron rollers, mills for which purpose may be purchased of any capacity, from that driven by one horse up to steampower mills of large size. A very fair farm mill, for two horses or light steam or gasoline power, may be bought for \$50 to \$75. The juice is evaporated in shallow pans similar to those now used in making maple syrup. The whole operation of grinding and boiling to syrup is simple and the art of making a good article of syrup may be acquired easily.

The best equipment for manufacturing is one in which both the grinding and the evaporating are done by steam. With such an equipment a grade of sorghum syrup can be made which rivals honey in color and is of delightful taste.

POTATO PRICES AND HANDLING CHARGES.

For the week ending February 2, the average retail price of potatoes in the United States was \$3.20. The price varied from \$1.93 for one hundred pounds in Denver to \$4.80 in New York, largely a result of inability to move the crop freely. The difference between retailers' and jobbers' prices averaged seventy-eight cents per hundred pounds of potatoes which was three cents less than the previous week.

Get the Big Price for Your Hay



DON'T be satisfied with the low or in-between price for your hay. Get the big price. The quality of your hay determines the price. There is often a difference of from \$6.00 to \$10.00 per ton between choice hay and hay that grades No. 3. Make better hay—increase your hay land profits by adopting the

JOHN DEERE DAIN SYSTEM of Air Curing Hay

Hay made by the Dain system cures better and holds its color. The leaves do not become brittle. There is little loss in handling. Hay made the Dain way keeps better in the mow, stack or bale, and is more palatable, more digestible and has greater feeding value. Whether you sell your hay or feed it, your profits are increased when you adopt the Dain system of making hay.

Rake Your Hay With a Dain System Rake

By following the mower closely with the Dain System Rake you turn the hay while the leaves are still active, delivering it in medium size windrows on clean, dried-out stubble. Raking against the heads places the bulk of the leaves on the inside (where they cannot sun-scorch) and the stems on

the outside, insuring thorough evaporation of moisture. By adjusting the angle of the teeth, the density of the windrow is controlled, allowing for free circulation of air. Hay cured by the Dain system is air-cured, not sun-cured. The highest quality of hay is made in this manner.

It's An Easy Rake To Operate

You put the machine in and out of gear, change the angle of the teeth, raise and lower the raking head with levers that are accessible from the seat of the machine.

The Dain System Rake has unusual capacity. This is made possible by the high steel arch, to-

gether with the inclined frame, which grows in height as the windrow grows (an exclusive feature).

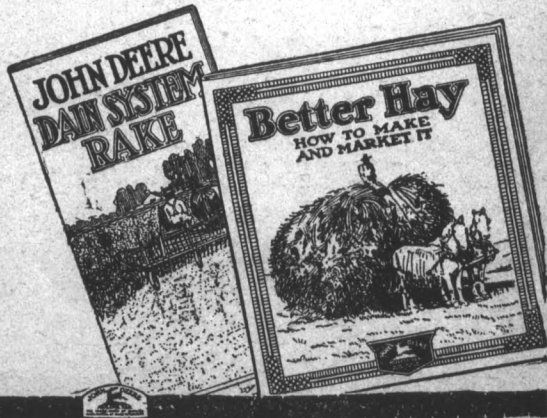
The Dain System Rake is making bigger hay profits for thousands of hay growers. It will do the same for you. Learn more about this valuable tool.

Write for Free Package DS-221.

and you will get "Better Hay—How to Make and Market It," which tells all about the varieties of hay, their value, how to grow them. Tells how to cure hay, also illustrates and describes a full line of labor-saving, money-making haying tools. Beautifully illustrated.

Also the "Dain System Rake" booklet, which tells in detail how the Dain System Rake makes better hay. Illustrates the action of this rake, also tells about its construction and how easy it is to operate it. Illustrated in four colors. Write today.

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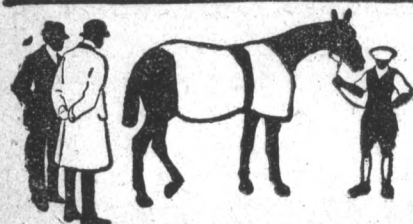
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One application usually enough; sometimes two required. Intended only for the established cases of Bone Spavin, Ringbone and Sidebone, causing chronic lameness.
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For the recent cases of Bone Spavin, Ringbone and Sidebone, Curb, Soft Enlargements, etc. Your money back if these remedies fail. Write for Fleming's Vast-Pocket Veterinary Adviser. 122 pages, 67 illustrations.
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CLOSING SESSION OF POTATO GROWERS' MEETING.

(Continued from first page.)

Traverse City is ready to run and will take care of many carloads."

Dr. E. B. Mumford, state leader of county agents, was the last speaker and his earnest, impassioned plea for cooperation and standardization made a deep impression. He asserted that because of favorable climate, soil and markets Michigan is in the potato business to stay.

Other Features of Farmers' Week.

Dr. Shaler Mathews, of the University of Chicago, gave the opening lecture Monday night on "Why we Went to War." Among other notable speakers at the M. A. C. during the week were Mrs. Calvin, of the Bureau of Education, Washington, Ex-Governor Fort, of New Jersey, on "Wheat in the World Crisis," D. D. Aitken, of Flint, president of the American Holstein-Friesian Association, on "The Dairyman's Opportunity During the War," Dr. Alonzo Taylor, of the United States Food Administration, E. H. Frothingham, of the United States Forest Service, Prof. Taylor, of the University of Wisconsin, and Dr. Jordan, of the Geneva, N. Y., Experiment Station.

Mr. Frothingham spoke to the maple syrup producers on the need this season of making all the syrup and sugar that the trees will yield. Dr. Fort asserted that if we cannot supply our Allies with at least 75,000,000 bushels of wheat this year we are beaten. He said that more food in the form of wheat can be packed into a given space than is possible with any other food product, hence the ban on meat has been partially lifted so that the people will eat more meat and less wheat. Mrs. Calvin, of Washington, made an urgent plea to use less wheat cereals and wheat bread. She said that every family should use more, milk, of which Michigan has a surplus.

Dr. Coons, plant pathologist of the college, said that the annual preventable loss from smut alone in oats now amounts to about \$5.00 an acre, or \$7,000,000 each year in Michigan. Prof. J. F. Cox, of the farm crops department of the college, who has been looking after the seed corn needs of Michigan farmers, stated that a million bushels had been purchased, which was to be sold at cost to farmers. Some of it has arrived and the rest is on the way.

Dr. Jordan, of New York, advised free use of dairy products in this food crisis and said to the housewives: "If your husband doesn't like corn meal or oat meal, tell him to enlist." He said that agriculture has been treated pretty well under the call to arms, the farmers in the army composing only .0148 of one per cent of the total number of men under arms.

In introducing Prof. Musselman of the college for his talk on "Care of Farm Machinery," Prof. Baldwin stated that one hundred and fifty men were enrolled for the week's school in care and use of farm tractors. Prof. Musselman estimated that \$12,000,000 is spent annually in the repair of farm tools, so that a reduction of even one per cent would mean saving \$12,000, or quite an item in war times. It was figured that a day's labor in June and July is worth ten times as much as in March or April, hence the value of preparedness, the inspection and repair of farm tools early. The high price of machinery has made this doubly necessary. Farmers in many cases are trying to get along with their old tools and more repairs are needed. Then the implement dealers are not carrying large stocks, because they cannot afford the investment, and so the farmer should look to his needs as to plow points, etc., early. He should go over the mower and see that the guards are in place. All machines should be looked over and lists made of parts miss-

ing as you go along. Instruction books coming with new machines should be taken care of and not left on the machine. In ordering parts, give the dealer accurate descriptions. A wire brush, gasoline, kerosene and soap and water were suggested for cleaning the machinery.

A representative of Henry Ford & Son, makers of farm tractors at Dearborn, Mich., gave the story of this machine from the early days, going back to the childhood of Henry Ford when he began to dream dreams. A long time ago he was an engineer at the Edison plant and began the study of tractors operated by steam. Then the gasoline motor car came out and he worked nights in getting models of engines of this kind. The tractor is a harder proposition than the motor car, since its engine carries a peak load continually, having a load besides its own weight, and there is no coasting.

The speaker stated that the tractor fills almost every place of the horse, except that you can't breed them. They will turn over six acres in an eight-hour day, will disc fifteen acres, drag thirty acres, thresh eight hundred bushels of wheat, haul five tons anywhere and saw wood faster than you can get wood to the buzz saw. They will cover nine miles per hour easily on the road.

"How to plow with the tractor," was next discussed in a paper prepared by H. Heylman of the Oliver Plow Company.

SEEDING FLAX WITH OATS.

What results might I expect from mixing flax with my oat seed when sowing it in the spring? Can I put the flax seed in the drill with the oats or will it have to be sowed broadcast after the oats has been drilled? Also, will it mature with the oats or not? Any advice concerning the benefit of sowing this seed will be gratefully received.

Kent Co.

W. J. McC.

My experience has been that this is a very uncertain crop. I have sown flaxseed with oats now three different times and once out of the three I have got enough flax seed to pay for the trouble; the other two times the flax seed crop amounted to nothing. If the season is just right some of the flax seed will ripen with the oat crop. Unless you can sow the oats real early you had better not sow at all. I do not believe there is any use in sowing the flax seed with late sown oats, for the flax seed is blasted by the hot weather and amounts to nothing. On good land where the oats can be gotten in early you may expect some flax seed. It is claimed that barley is a better crop to sow flax seed with in this way than oats, but I never tried it with barley.

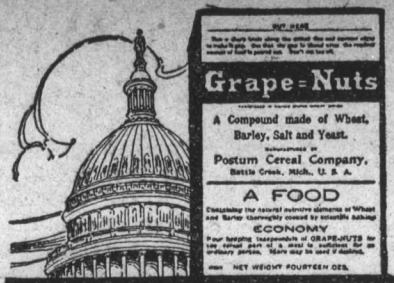
We sow the flax seed at the same time we do the oats, putting the seed in the grass seeder attachment of the drill and dropping the seed on top of the grain in front of the seeds. I don't want to discourage the growing of flax with oats. I would like to see it tried out thoroughly because if you can only raise a small amount it helps out because flax seed is valuable, especially for young growing calves and pigs.

COLON C. LILLIE.

NEW ASSOCIATION PROSPERS.

The Washtenaw Cooperative Shipping Association, organized here early this year with ninety-three members, is winning condence of the farmers and adding new members daily through the excellent financial returns on live stock shipped out. Eight cars of stock have already been forwarded. The following are the officers: President, Gary Lavender; vice-president, George C. McColla; secretary-treasurer, Chas. McColla; manager, Charles P. Knight. The officers named and Charles Seabold, Charles Foster and R. J. Bird, constitute the board of directors.

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Unlike the ordinary cereal Grape-Nuts requires no sugar, little milk or cream, and requires no cooking or other preparation in serving.

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Cranberry Bog Development

By RALPH W. PETERSON

Michigan Has Better Natural Conditions for Cranberry Growing Than Many of the Great Cranberry Producing States. This Profitable Industry Should be Give Serious Consideration by Michigan Farmers.

ON ideal cranberry bog location involves six essentials. (1) a dependable water supply; (2) a supply of clean, sharp sand close at hand; (3) good drainage ample enough to allow the water table to be kept at least two feet below the surface of the bog; (4) a peaty soil of such a nature that the water will percolate through it freely; (5) a warm climate with a growing season from May 1 to October 1; (6) a convenient shipping point. Once an ideal location is found, success is assured if the bog is properly developed and cared for.

Drainage Necessary.

The first step in the development of a wild bog is drainage. The system should be laid out for both drainage and distribution of the flood water. Rapidity of flowage is necessary in case of frost and the ditches should be laid out accordingly. This means thorough knowledge of ground levels and sound judgment in fixing the location and size of the main ditch and side laterals. A marginal ditch two feet deep is first dug to take care of the drainage from surrounding land. The main ditch, with the principal laterals are then dug, and an outlet ditch below secured for a quick run of the water. Before continuing with the balance of the drainage system, the clearing is done.

Clearing consists of removing the trees, stumps and brush. A bog may have a peat bottom, mud bottom or no bottom at all, but the peat bottom is the best and all wooded swamps have a peat bottom and any wooded swamp will make a good bog. Maple, cedar, huckleberry, laurel, brown bush pine, etc., are all indications of a good bog soil. The brown bush swamps can be cleared at an expense of \$5.00 to \$10 an acre, while a stump swamp may cost ten times this figure. The bush and stumps are pulled and after a few weeks' drying are burned.

The Arrangement of the Bog.

Before continuing with the grading, the balance of the drainage system must be dug. Extensive levels over the entire bog are taken and the topography of the land accurately determined. A flat bog can be divided into a few large fields, but a sloping bog must be divided into as many fields as necessary for economical grading, for each field must be made level to assure even flooding. The determination of the level of each area must be done accurately to balance up the cut and fill. This necessitates a detailed map of the bog, showing the various fields, made as a rule, not over five acres in area. Each field is drained by small laterals about one and one-half to two feet deep, running into the main distributing ditch or into the larger ditches dug before the bog was stumped. These small laterals are run parallel and about fifty feet apart and as far as possible at right angles to the main canal through the center of the bog. Such an arrangement assures quick flowage and drainage. These laterals are dug with a sharp, round pointed shovel. The sides of the ditches may be nearly vertical if the peat has decomposed very little. The cost of these lateral ditches is about fifty cents a rod.

Turfing the Bog.

The construction of the lateral system gives good drainage. The next step is turfing and grading. In turfing, the top six inches of sod is removed by plowing or by cutting it with a scalping plow, or with a turf axe. The usual practice is to use this turf, cut into blocks two feet square, for dike and dam building. If few weeds or grasses

are present, the turf is sometimes turned over where it lays, but one of the biggest problems in the maintenance of a bog the first three years is weeding and nothing should be done to encourage the growth of weeds and grass. Peat turf makes good material for dike construction. Along each side of the dike a layer or two of turf blocks are laid, lapping and closely fitting. The middle of the dike is built of sand usually. The size of the dike will, of course, depend upon the amount of water held back by it. The main dikes are used for roadways and should be built very strong. A top width of ten feet and over is not too much as it is better to make them over-strong than to underestimate the force of the water combined with the burrowing of gophers and muskrats. Seepage under the dike is cut off with a sand or clay core extending a foot or two beneath the bog surface. Provision is made for the flumes at the time of building the dike.

The Flumes.

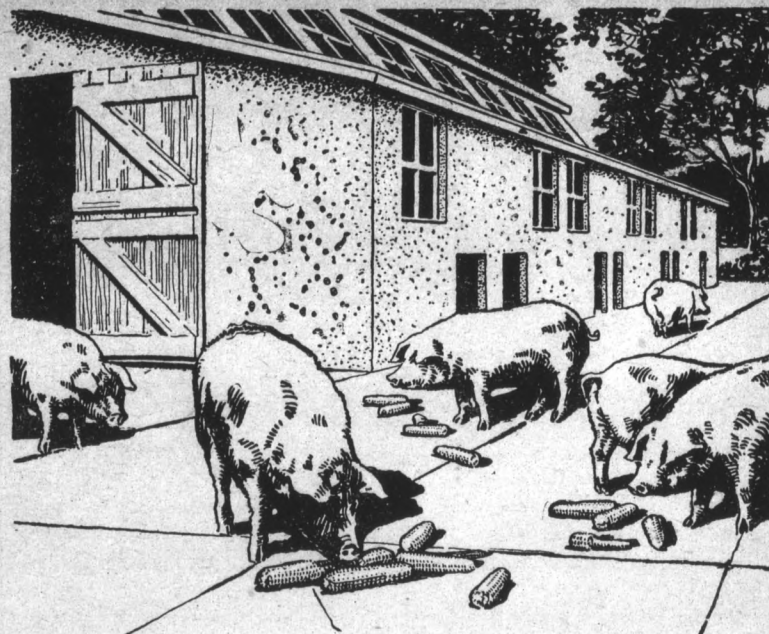
More real trouble is experienced with flumes than with any other part of the bog construction. The flumes are necessary to let the water from one field into another, or from the reservoir into the bog proper or from the bog through to the outlet ditch. The two latter flumes must be very much greater and more substantial because of the head of water they must hold back at certain times of the year. The small flumes necessary for the field dikes can be constructed of wood, but in the end concrete would be better. Flumes, above everything else, must not allow water seepage with its usual undermining effect. The flume, whether of concrete or wood, should have a floor and run-off to prevent washing and under-cutting and a resulting cave-in. Concrete flumes must have a firm foundation and be well built throughout. Side wings are required to cut off seepage between the wall and the dam.

Build Dikes Well.

Certain times of the year, particularly in the summer, the reservoir will contain a big head of water and some washing of the bank would occur unless stones, timbers or tree trunks are used as a protection and reinforcement. The burrowing of muskrats may cause an opening in the dam that would be disastrous were some reinforcement not in place on the inside face of the dam to help stiffen the dam, while sandbags are used to repair the leak. It is profitable in the long run to expend considerable money and effort in building up the best kind of dikes and dams and in using concrete for the flumes.

The Settling of the Bog.

At the same time, the dikes are being constructed, the grading operations are going on, leveling up each field to its respective grade. Some water can be let into the lateral ditches to use as a guide in setting the ground surface grades. The grading must be done by wheelbarrows largely. Low places in the bog can be filled by the turf blocks. No particular difficulty need attend the grading operation but in some cases we see fields that flood very poorly. Some parts of the field may be under a foot of water while other parts are exposed to frost injury. Deep holes in the field will continue to settle for a couple of years after being filled and provision should be made for this. The entire bog can be expected to settle some if previous to development it was very wet. The amount of grading needed will be based upon the topography of the ground and the efficiency shown in laying out the fields to avoid unnecessary handling of dirt.



This Concrete Feeding Floor

Prevents waste of high-priced corn—it delivers the bacon.

In these days you can't afford to feed grain to mud-holes. It's pork we need.

Concrete feeding floors mean permanent floors—no filth, no disease, no place for rats to nest.

You can build one by following the directions in our Bulletin 137.

Write for your free copy

PORTLAND CEMENT ASSOCIATION

Offices at			
Atlanta	Helena	Minneapolis	Salt Lake City
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CONCRETE for PERMANENCE

Free!

A 50-gallon barrel of Scalecide free to any one who will suggest a fairer guarantee than that given below.

"SCALECIDE"

As proof of our confidence and to strengthen yours, we will make the following proposition to any fruit grower of average honesty and veracity: Divide your orchard in half, no matter how large or small. Spray one-half with "SCALECIDE", and the other with Lime-Sulfur for three years, everything else being equal. If at the end of that time, three disinterested fruit growers say that the part sprayed with "SCALECIDE" is not in every way better than that sprayed with Lime-Sulfur, we will return you the money you paid us for the "SCALECIDE".

Send for new free booklet, "Profits in Fall Spraying".

B. G. Pratt Co., Mfg Chemists
50 Church St. Dept. 22 New York

IRON AGE

GARDEN TOOLS

Answer the farmer's big questions: How can I have a good garden with least expense? How can the wife have plenty of fresh vegetables for the home table with least labor?

IRON AGE Combined Hill and Drill Seeder

solves the garden labor problem. Takes the place of many tools—stores in small space. Sows, covers, cultivates, weeds, ridges, etc., better than old-time tools. A woman, boy or girl can push it and do a day's hand-work in 60 minutes. 30 combinations, \$4.50 to \$30.00. Write for booklet.

Bateman Mfg Co., Box 24C, Grenloch, N.J.

FARM WAGONS

High or low wheels—steel or wood—wide or narrow tires. Wagon parts of all kinds. Wheels to fit any running gear. Catalog illustrated in colors free.

Electric Wheel Co., 35 Elm St., Quincy, Ill.

Owens Transplanter

Only Self-Setting machine. Transplants sweet potatoes, tomatoes, tobacco, strawberries, cabbage, nursery cuttings, etc. Any desired depth. Better than hand. As plant is released, water valve opens, then closer rollers press dry soil around plant! Holds moisture but leaves no wet surface soil to bake.

J. L. Owens Co.
1143 Barnhart St., Minneapolis, Minn.

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Apple, Peach, Pear, Cherry and all kinds of Fruit trees and berry plants, of the very best varieties. All kinds of Shrubs, Roses, Climbing vines, and our famous everbearing Strawberry plants, bear till frost, a dozen plants free with your order. Money back if not as represented. Seeds, 2c package. Catalogue Free.

Ernst Nurseries, Box 2, Eaton, O.

Protect Early Cabbage

Don't let the cabbage maggot get your crop. For 8 years growers have been raising larger, firmer heads and insuring practically 100% crops by using

A. B. C. PLANT PROTECTORS

Special tar felt discs which any boy can slip on the stem directly after planting to prevent the maggot fly from laying its eggs. Big growers say they can't grow cabbage without them. Write for copies of their letters. Full information and wholesale price. Plant Protector Co., 43 South Water St., Rochester, N.Y.

FREE SPRAYING GUIDE

One of the most practical guides ever printed. Tells how to control every pest and disease. This book and Fruit-Fog, the perfectly atomized Super-Spray, positively guarantees you a maximum 1918 yield. Write for it at once. Send no money.

Hayes Pump & Planter Co., Dept. D, Galva, Ill.

TIMOTHY Wholesale Prices

Extraordinary big values. New tested re-cleaned seed. Quality guaranteed. Sold subject to your approval. Lowest prices on Sweet Clover, Alsike, Blue Grass, Clover, Alfalfa and mixed grass and all field seeds. Samples, prices and big valuable profit-sharing Seed Guide Free.

AMERICAN MUTUAL SEED CO., Dept. 331, CHICAGO, ILLINOIS

TIMOTHY SEED \$4.00 per bushel. High purity and germination. First class in every way. Timothy-Alsike Mixture \$4.50 per bushel, 45 lbs. Bags extra at 25c. each.

YOUNG-RANDOLPH SEED CO., Owosso, Mich.

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They are so scientifically made that they do 3 to 6 times the work of old-fashioned tools in the same time; and they make bigger, better crops because they cultivate more thoroughly. Invented by a practical farmer and manufacturer with over 45 years experience. They last a lifetime. Fully guaranteed.



No. 8 Horse Hoe does a greater variety of work, in corn, potatoes, tobacco, cotton, and other crops requiring similar cultivation, and does it more thoroughly than any other one-horse cultivator made. It is stronger, better made and finished. Lasts longer. Its depth regulator and extra-long frame make it steady-running. Cultivates deep or shallow and different width rows. 15 other styles of one-horse cultivators—various prices.

No. 17 Planet Jr is the highest type of single-wheel hoe made.

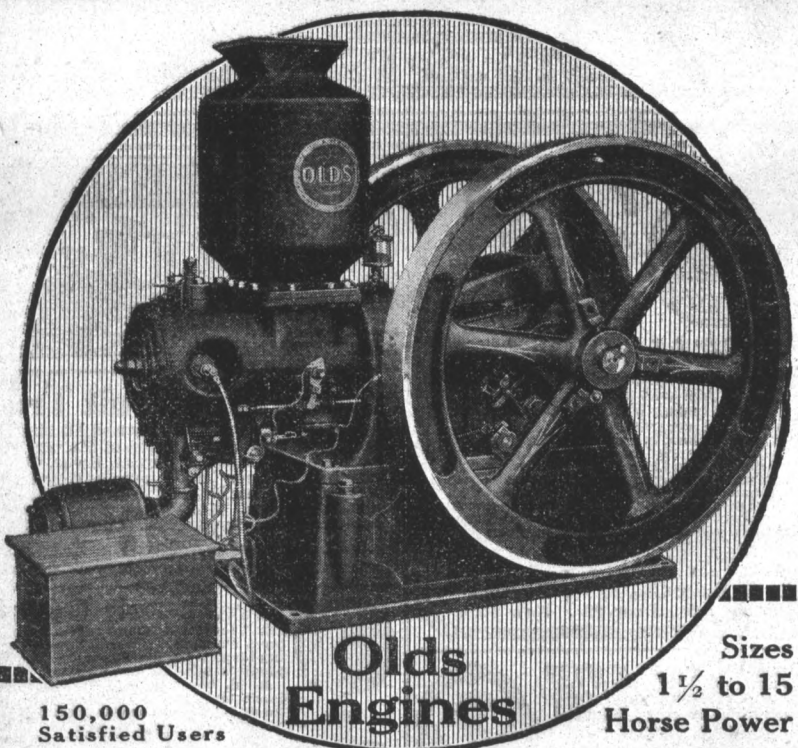
A hand-machine whose light durable construction enables a man, woman, or boy to do the cultivation in a garden in the easiest, quickest and best way. We make 24 styles—various prices.

New 72-page Catalog, free!

Illustrates Planet Jrs in action and describes over 55 tools, including Seeders, Wheel-Hoes, Horse-Hoes, Harrows, Orchard-, Beet- and Pivot-Wheel Riding Cultivators. Write for it today!

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150,000 Satisfied Users

Olds Engines

Sizes 1 1/2 to 15 Horse Power

Dependable Power for Farmers

WITH farm help scarce; with wages soaring, the best labor saving machinery is demanded on the farm. Olds Engines are putting the farming business on a war-time basis because they are durable and economical.

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Thoroughly reliable, simple, perfectly balanced and compact, Olds Engines are giving never-faltering service in all sections of the country.

A Better Engine at a Lower Price

The Olds today—the product of 40 years experience—is better than ever. And our guarantee—three times as strong as heretofore—whereby you are the judge as to whether a part is defective or not, is your sure protection. Write for full particulars about this hopper cooled, frost proof engine which is equipped with the Webster Tri-Polar Oscillating Magneto, when so desired.

RELIANCE ENGINEERING COMPANY, LANSING, MICHIGAN

When Writing to advertisers please state that you saw their ad. in The Michigan Farmer.

Even at best, the grading will cost around \$50 an acre and may go three times this figure if the land is full of stump holes and very uneven.

Sanding the Bog.

Accurate grading will be a great help in sanding. This is one of the expensive operations in bog construction. The cost will be of from \$100 to \$200 an acre, according to the length of haul of the sand. Where teams can be secured in the winter cheaply, it is better to get the bog in shape and graded up the preceding fall, set long stakes to mark out the ditches and then spread the sand on the ice during the winter. The only alternative is to wheel the sand on the bog from the banks at the edge of the bog. This method demands the services of too many men to be very economical. In either case, only a coarse, sharp grade of sand is used. A difference of opinion exists as to the best amount of sand to apply the first year. Some growers apply four to six inches, others only two to four inches. Those sanding lightly the first year find that the vines make a better start and come into bearing quicker. Any means of encouraging a rapid vine growth to cover the surface of the bog and choke out any foreign growth of grass, weeds and especially of wood moss and horsetail, should be welcomed for the first two years of vine growth go a long ways in deciding the success of a bog. The smaller amount of sand applied the first year can be supplemented by resanding one-half inch the following three or four years. A deep root system is formed by this method of sanding and the root system extends some distance into the peat, while with a heavy sanding the first year too many of the roots are found in the sand.

Sanding is Valuable.

No one should minimize the necessity of sanding. Very distinct benefits accrue from sanding than can be obtained in no other way. The vines are found to do best by using sand as a cutting bed. The bog surface is kept warm, but dry, and discourages foreign seed germination. The heat generated by the sand is often sufficient to eliminate the use of water during frosty nights when the temperature gets down to freezing on unsanded bogs. Sand permits the necessary surface drainage, but also at the same time the necessary capillary action in the opposite direction for the need of the vines.

Cuttings Used for Planting.

The bog is established by planting cuttings about six inches to eight inches long. Seed is only used for securing new varieties. Only high-grade varieties should be planted. Herein enters another big item in the expense of bog development as a ton of vines is planted per acre and the cost will be around \$200 a ton in Michigan. This amount of vines permits a rather close planting of about ten inches by ten inches and the bog vines over rapidly and before the weed problem becomes very serious. A few Wisconsin bogs have been planted sixteen inches by eighteen inches, but the fight to hold the weeds in check was found very discouraging. The vines are secured from old bogs pruned in the spring before growth commences and are shipped in bales. The bog should be prepared and ready to plant early in May. If the planting is delayed until along in June, hot weather may be encountered and some damage may result to the vines in shipment. A marker is run over the surface of the bog and the vines planted at the intersections. If the bog is ready to plant upon receipt of the vines, the bales of vines are kept immersed in the water in the ditches where they are convenient to the planters. These vine cuttings are six to twelve inches long and are planted three to five in a place by means of an iron dibble. Only a few inches of the vine projects above the surface of the sand. Water is raised in the ditches for a few days until the vines begin

to take root. The surface of the bog the balance of the summer is kept as dry as possible. The vines will establish a good root system the first year and produce a few berries the second and third years, and a full crop the fourth year, and will continue bearing for a dozen or more years without replanting. Each field should be planted to but one variety, to facilitate cultural treatment, control of diseases, etc. The best varieties for Michigan conditions would be hard to say.

The Best Varieties.

The one or two semi-scientifically planted bogs in this state have indicated that varieties adapted to Wisconsin conditions would be all right in Michigan. The Jumbo varieties have given good success around Cranmoor and Grand Rapids, the cranberry section of Wisconsin. The McFarland, Bell and Bugle are other good varieties. The Early Black, Late Howe, Bugle and McFarland are the principal varieties grown in the east, in New Jersey and the Cape Cod section of Massachusetts. The Early Black ripens early in September, is a good yielder and requires little attention but has only fair quality. The Late Howe is the favorite late variety as it is a good yielder and keeps well, but is of poor quality. Cranberry varieties show a great variation in shape, size, quality and color. The latter character is subject to the most variation. The Early Black, as its name signifies, is deep red when ripe, while some of the late varieties are a very light shade of pink at harvest time but take on color in storage. (To be continued).

TROUBLE DEPARTMENT.

Girdled Trees.

Is there anything that can be done to save the trees that the rabbits have girdled? We have a nice young orchard which has been planted three years, and the rabbits have ruined the trees, about fifty in number, and if nothing can be done it is a total loss. Gladwin Co. SUBSCRIBER.

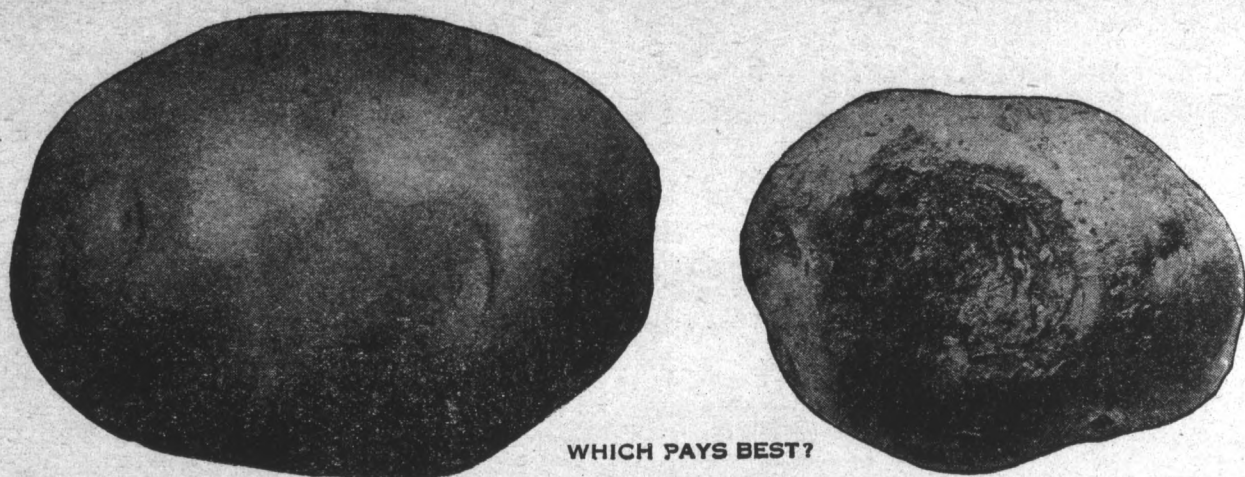
If the outer bark has just been chewed off, thorough painting over of the trees generally will suffice, but if the chewing has been through to the solid wood so that the cambium layer is injured, bridge grafting will then have to be resorted to. This is done by taking last season's shoots and cutting them long enough so that they can bridge over the wound and by each of the points and inserting them in holes on each side of the wound, which have been previously made, and then thoroughly covering the holes and wound with grafting wax. In this way you can get very good results.

The shoots should be a little longer than the distance between the two holes in which the two ends are to be inserted, so that they will be sprung a little in order to get them in place.

The chief object in caring for girdle wounds is to protect them from drying effects of the sun, and the use of grafting wax or paint made of pure white lead and raw oil is also necessary. Then cover the wounds with earth by banking up around them; this will greatly facilitate the healing over of wounds where grafting is not necessary.

PROVIDE SEED FOR REPLANTING.

Seed stocks of all kinds are reported scarce. The farmer who has a good supply of seed for coming crops is, indeed, fortunate. Farmers who have no seed are obtaining supplies earlier this year. The University of Missouri College of Agriculture suggests that, in view of the necessity for replanting in some seasons, farmers obtain or reserve sufficient seed for replanting. In many states last year, corn and wheat on low lands were destroyed by overflows. The water went down early enough that the land could be planted to early maturing corn, but few farmers had such seed on hand.



WHICH PAYS BEST?

More Potatoes And Better Ones

It was discovered long ago that potatoes produce more heavily when sprayed with a suitable fungicide.

The New York Experiment Station says—"It does not pay to spray for bugs alone." Their ten years' experiments with fungicides show an average yearly gain of 97½ bushels of potatoes per acre. A nineteen-year test at the Vermont Station shows an average yearly gain of 109 bushels per acre.

Spray to prevent blight—it pays.

Bugs are bad, but blight is worse although the spores that cause it can be seen only under a powerful microscope.

When you spray only with poison you are not getting the return you should for your work. You need a fungicide also.

PYROX is both a poison and a fungicide. It kills the bugs and flea beetles, prevents blight, invigorates the vines, imparts a rich green color to the leaves, and gives the little potatoes a chance to become big ones.

Spray with

REG. U. S. PAT. OFF.
Pyrox
TRADE MARK REGISTERED

It Pays

Pyrox is a smooth, creamy paste, *all ready to use by mixing with cold water*. Just measure it out, it mixes easily and saves time and labor at the busiest time of the year. In a letter to a friend, the Editor of "The Fruit Belt" says: "I have made up many thousands of barrels of spray mixtures on the farm, and I can say to you I have mixed my last barrel. I now use *Pyrox*."

Pyrox is as good for apples, tomatoes and other fruits and vegetables as it is for potatoes.

Most good agricultural supply dealers sell *Pyrox*. Last year the demand for *Pyrox* exhausted the dealers' supplies. Why not see your dealer at once about your supply? If he does not handle *Pyrox* be sure to fill in his name when mailing the coupon below.

BOWKER INSECTICIDE COMPANY
BOSTON AND BALTIMORE

"IRON AGE" MANUFACTURER USES PYROX

Mr. Fred H. Bateman, who is at the head of the company manufacturing the well-known "Iron Age" tools, is a real farmer. October 25, 1916, he wrote: "I investigated the merits of your *Pyrox* and this season have used four tons or more. I used it on potatoes, cucumbers, strawberries, cantaloupe, grapes and watermelons, with very satisfactory success."

BIG YIELD DUE TO PYROX

J. C. Carver & Co., Marumsco, Md., write: "We used *Pyrox* on our potato crop and got a big crop—110 barrels to the acre. They kept green all the time, although we had a long drouth. We attribute our large yield to *Pyrox*."

Avoid Blight and Bugs! USE THE COUPON!

Please send me the *Pyrox* Crop Book.

29-E-16

My Name.....

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I prefer to order through my dealer. His name is

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How to Make Money With Fertilizers

SAVE LABOR

It has been proven that labor on fertilized land returns 50 to 125% more than on unfertilized land, because of the greater crop secured from a given amount of labor. The hired man is costing you more than he did. Make his labor produce more by using **A. A. C. Fertilizers**.

KEEP MORE STOCK

The old fashioned way was to keep stock to make manure for the land. It was a good way too; but fertilizers, by increasing the grass and grain and forage, make it possible to carry more stock. Grow your grain with **A. A. C. Fertilizers**.

If we have no agent in your town, we want one. Write us for our nearest agent's address or ask for an agency yourself.

The Company maintains an Agricultural Service Bureau conducted by Dr. H. J. Wheeler, for many years Director of the Rhode Island State Experiment Station, whose Crop Bulletins, services and advice are free to all farmers.

The American Agricultural Chemical Co.

P.O. Drawer 814, Detroit, Mich.

We serve our trade from 60 points.

Plan Now For Greater Conservation Of Grains

Saving your grain to sell is doubly important this season—for the nation and for yourself. The more grain you can raise and sell the better fortified will the nation be. By using more ensilage and proportionately less grain feeds, you will make more money with which to buy Liberty Bonds or improve your farm for still greater production next season.

To cut your own ensilage economically and make money filling your neighbors' silos get one of the famous

Kalamazoo ENSILAGE CUTTERS

"The World's Standard"

—the only real center-shear cut machines on the market—the machines that have made good from the start and are now recognized as the strongest, safest, fastest cutting machines in the world.

Excess strength in every part—that's why they stand up so well. Malleable, unbreakable knife wheel insures durability and safety. The remarkable construction of the cutter head, which is the blower, makes fast cutting practical.



Write Today for complete new catalog showing all sizes of Kalamazoo Feed, Ensilage and Alfalfa Cutters. If you need a silo ask for Kalamazoo Silo Catalog. KALAMAZOO TANK & SILO CO. Dept. 123 Kalamazoo, Mich.

Concrete Feeding Floor

UNLESS one has plenty of feeding space in a permanent hog house it is practically impossible to get along and produce satisfactory results in feeding hogs out of doors without a cement feeding floor. Although we selected about the driest, sandiest place in our permanent hog pasture for our feeding and fixed permanent troughs on one side, so that the hogs could not only be fed corn, but slop there also, we found that during periods of heavy rains this muddled up so that it was impossible to feed the hogs where we intended. In fact, it got so muddy that the hogs could scarcely get to the troughs to eat their slop, and so it was necessary to build a cement feeding floor. In our case, we built a feeding floor seventy-five feet long and sixteen feet wide, with a cement trough running along one side and we have swing doors so that the pigs can be shut out of the troughs while the slop is fed from the outside. The size and shape, however, of the cement floor will depend entirely upon where it is to be located and the number of hogs to be fed. Each person will regulate the size according to his necessity.

How to Build.

It is better to make a good, permanent job while one is at it, and a trench should be dug which will mark the outside of the feeding floor and this trench should be about two feet deep. This should be filled with stones laid in cement, or else with pure concrete. If I hadn't had experience I would be inclined to think that this wouldn't be necessary but our hogs rooted under our feeding floor so that it was necessary to build this wall afterwards, consequently the best way is to build it at first.

The feeding floor should be entirely above the ground so that when it is finished the surface of the feeding floor ought to be three or four inches above the surrounding ground. This prevents water running on to the feeding floor in times of heavy rains. The floor should be planned also so that it will gently slope to one corner so that the water will drain off after heavy rains or the floor will be very sloppy. Again, there should be a ridge or edge of cement around the outside of the feeding floor two to four inches high, otherwise in feeding corn, much of the corn will be rooted off from the platform on to the ground. This raised cement edge prevents this.

When the trench is built it should just come above the edge of the ground so that the cement floor can be laid entirely over the wall. Most land would contain so much moisture at certain times of the year that a tile drain ought to be placed around and perhaps through the middle of the feeding floor if it is a large one, otherwise, in freezing in the winter time the floor may be forced out of shape. The tile should be placed under the stone wall or in the bottom of the trench clear around, and one perhaps through the center. This will drain this land so that there will be no trouble caused from freezing in the winter time.

The best way to build a foundation for the feeding floor is to pave ground with cobble stones. I would put the cobble stones right on top of ground and fill in between them with cement mortar or concrete mixed quite wet so that it will be evenly distributed all around these stones. This should come up flush with the top of the stones then the platform proper can be laid on top of the stones which should be just level with the face of your trench wall. Now put on a layer of cement two inches thick. This can be made out of gravel, pit run, no matter if it does contain some pretty good-sized pebbles. It ought to be fairly rich, say one part of cement to four of gravel, and this should be mixed rather wet

also and poured on and leveled off with a straight-edge and it should be troweled down with a wooden trowel so that it will have a rough surface rather than a smooth one so that the hogs will not slip. An opening can be made at the lowest corner so that there will be good drainage for the surface of the platform.

It is usually advisable to feed some kind of slop with the corn to feeding hogs, and therefore it is very handy when building this platform to have a cement trough on one edge of it. This trough should be four inches high and a foot wide, then it can be easily cleaned out with a common barn shovel. Even if it fills full of rain water when heavy rains come, it takes but a moment to scoop it out with a common shovel if the trough is large enough so that the shovel can be used.

If one will place this feeding floor just outside of a yard and have swing doors that will swing back over the feeding trough, the slop can be fed and the pigs cannot interfere. I have seen farmers with large bunches of hogs have a trough in an open field yard and the slop had to be carried with the hogs all clamoring for it. Many times the slop is spilled and it is poured over the hogs and much of it is wasted. This can all be prevented by the permanent trough with the swing door, as I have suggested.

COLON C. LILLIE.

FEEDERS' PROBLEMS.

Dried Beet Pulp for Horses.

I noticed an article in your paper that dried beet pulp took the place of corn for cows. Would it be good for the horses to feed in place of corn, on account of the high price of corn?

Kent Co.

J. H. V. L.

Dried beet pulp is nowhere near as good a food for horses as it is for the cattle. A horse wants a concentrated grain ration, like oats or corn or barley, to feed in connection with hay. Beet pulp is not a concentrated food; it is in a class more like corn silage, a succulent, bulky food. Of course, when dried down to eight or nine per cent moisture, as it is in the dried product, it doesn't seem so bulky but just as soon as it absorbs moisture it swells and becomes bulky. It is a nice thing to feed a little moistened beet pulp to horses, especially once in a while, as a corrective. It is like feeding roots. It tends to keep them in good condition, but as a basic food, beet pulp will not take the place of corn for horses—it is too bulky. Dried beet pulp should never be fed to horses in its dry state. It must be moistened or horses are liable to choke.

Fattening Pigs on Bran and Middlings.

Can I raise and fatten pigs on bran and middlings with no other feeds? If not, what would I need to feed with it and how should I mix it?

St. Clair Co.

R. W. B.

Bran is not a good hog food. It is not at all desirable for feeding young pigs. It is too coarse and chaffy and they don't like it. However, middlings is a most excellent food for growing pigs and you can grow them and fatten them on middlings. I did this once myself and I don't think I ever had a bunch of pigs do any better than when they got all the middlings they would eat up clean three times a day. We had a very small amount of skim-milk but it was mostly middlings made into a thick, heavy mush by mixing with water. A small amount of salt was added and the pigs did well and fattened readily.

Farmers in most parts of the United States where the dogs do not rule supreme are extremely desirous of engaging in the sheep breeding industry, and buying orders for good to fancy ewe breeding lambs are being placed with sellers at a far more rapid rate than can be filled, in spite of the high prices paid.

Don't Miss This Offer

Get a Kirstin One Man Puller and clear your land 30 days free! Send no money until you are absolutely satisfied; if not, return Puller and keep your money. This Puller pulls any stump! One man handles and operates. No horses required! Guaranteed 3 years, blow or no blow! Cash or easy payments. Prices \$50 and up. Get VALUABLE BOOK! Describes Kirstin One Man Pullers and HORSE POWER Pullers; also get a VERY SPECIAL OFFER. Don't miss this. Write today!

A. J. Kirstin Company
317 Lexington St. Escanaba, Mich.

Wonderful Kirstin

ONE MAN
Stump Puller
Sent FREE
on 30 Days Trial

At Farrowing Time

THE Department of Agriculture and the public press in general have been urging farmers to retain all of the females among their hogs, breed them for spring litters, in order to increase the number of swine available in the country for the production of pork which they claim will be needed to supply meat for home consumption and feed the armies of the Allies which are fighting for liberty in the European war. The efforts to increase the numbers of hogs will not bring about the desired results unless proper means are taken to safeguard both the sows and the pigs against disaster at the critical time of the arrival of the pigs.

Preparing Beforehand.

Every farmer and breeder should keep a record of the date on which each sow was bred to boar and make a correct calculation that sixteen weeks from the day a litter of pigs may be expected. At least a week or ten days before the day when the pigs are expected the sow should be supplied with a pen by herself that is not very large, but is warm and free from cold draughts of air. The reason we say beforehand is because it will take at least a week for the sow to become wonted to her new quarters and feel at home, a matter of considerable importance, as the home-like feeling will prevent restlessness, which is a dangerous difficulty at this critical time.

Be sure and attend to giving the sow the proper feed to put her system in the right condition. Do not feed her heavily, but give just what may be termed a moderate amount of feed made up of a variety of food materials. The feed should not be entirely of heavy feed, like corn, but should contain some light feed like wheat bran and middlings, which will put the bowels in a laxative condition. A small amount of vegetables like mangel beets or small potatoes, say two or three pounds each day, will be of great benefit in several ways. It will cool the system and encourage the secretion of milk at the right time.

The bedding should not be too plentiful or coarse, as little pigs soon after they arrive are liable to get entangled with coarse litter and get discouraged about getting to the udder. If the bedding is abundant the pigs often work under it and get laid on.

At Farrowing Time.

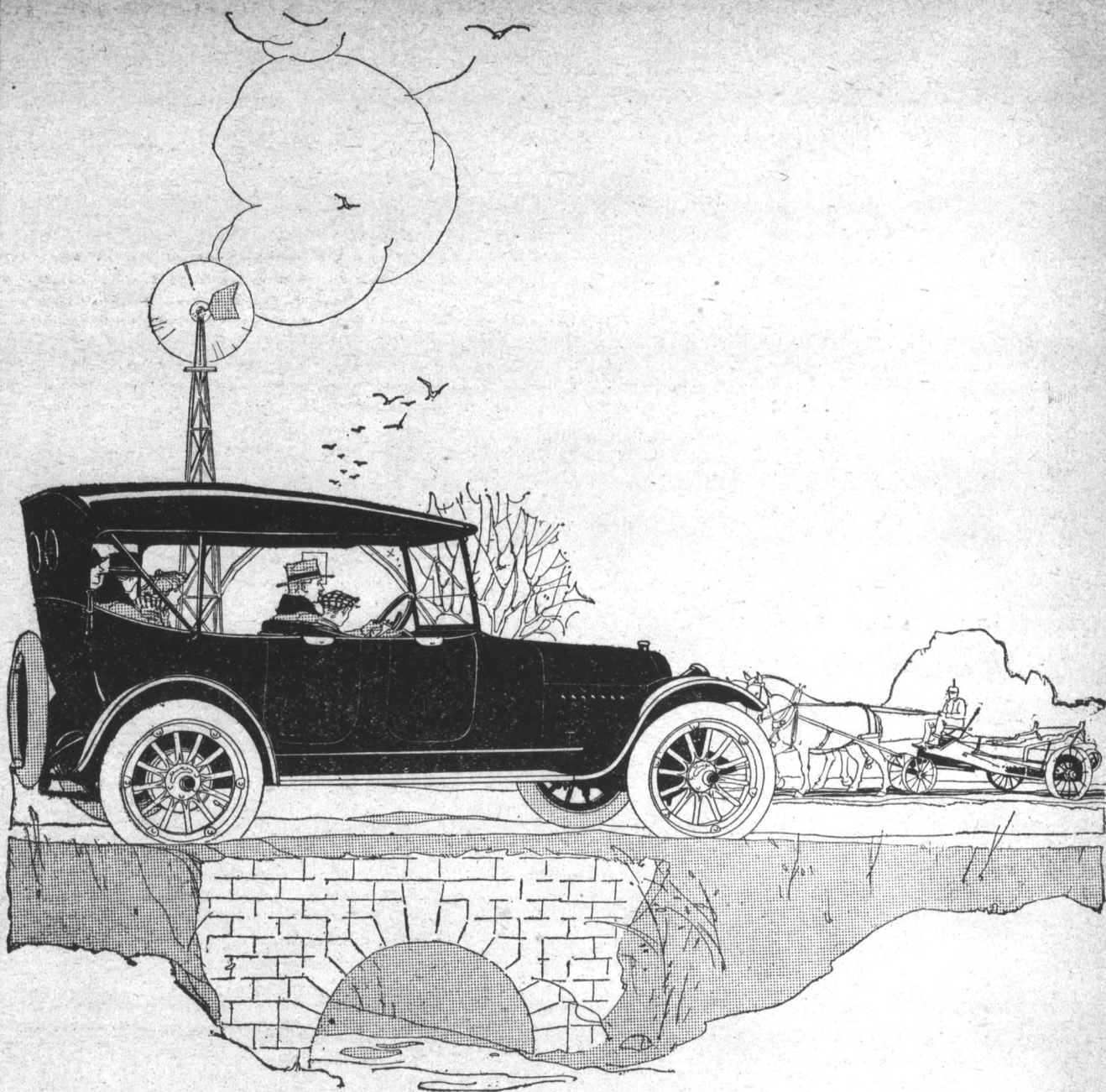
It is best to make all preparations beforehand and at the time the pigs are to arrive keep away and leave the sow to herself as a little disturbance at this time will often prove detrimental. If the weather happens to be very cold enclose the sow in a small compass by false partitions and false covers to keep the cold air from coming in at the sides and down from above. Letting in cold air is sure to prove disastrous.

Feeding the Sow.

While the sow should have a moderate amount of feed before farrowing, all feeds should be kept away from her at this time. Remember that she is sick and her system is not in condition to digest food. Do not feed her any heavy feeds at this time and do not feed lightly for at least twelve hours after farrowing. After her sickness has disappeared a little sloppy drink can be given. When she gets up and manifests a desire for food begin by giving a small quantity of light feed, largely sloppy feed, and increase gradually as she seems to desire. Do not attempt to get her on to full feed under a week's time. Bad results are sure to follow if heavy feeds are given soon after the arrival of the pigs. If the sow is not seemingly injured by heavy feeds at this time the pigs will be. I have known cases where sows were fed a full meal of heavy feeds, of their dying inside of twelve hours. It is sure to produce a fevered condition if it does not kill them, and the pigs partake of the same and do not thrive for some time. It is not safe to take any chances in this respect.

Wayne Co.

N. A. CLAPP.



Proved Worthy Beyond Question

THREE distinct tendencies in modern motor car construction were visible in the new models displayed at the recent metropolitan automobile shows.

Briefly, these three tendencies were concerned with more efficient power, lighter car weight, and greater economy of operation.

Every one of these qualities has been a pronounced characteristic of Oakland Sensible Six models during the past three years.

The high-speed overhead-valve engine of the Oakland Sensible Six delivers 44 horsepower at 2600 r.p.m., or one full horsepower to every 48 pounds of car weight.

The high carburetion efficiency of the engine gives from eighteen to twenty-five miles to the gallon of gasoline. The 32 x 4 tires, extra large for the light weight of this car, are giving 8,000 to 12,000 miles per tire.

The finely made chassis is a model of simplicity and strength, and the slightly body is swung on long springs over a generous wheelbase, insuring full comfort.

No pains have been spared to make the car handsome in proportion and finish; it is unusually roomy and accessible, and upholstered throughout in genuine leather.

OAKLAND MOTOR CAR CO.
PONTIAC, MICHIGAN

OAKLAND SENSIBLE SIX

THE sound and practical construction of the Oakland Sensible Six chassis matches low cost of operation with low cost of maintenance.

Touring Car . . .	\$1050
Roadster	1050
Roadster Coupe .	1210
Sedan	1250
Sedan (Unit Body)	1550
Coupe (Unit Body)	1550

F. O. B. Pontiac, Mich.

ESSENTIALS OF SYRUP MAKING.

(Continued from page 388).

sugar house on the slope of a hill so that most of the work is to be done in necessary approach. The sap storage is placed at a lower level than the level of the road approach. The diagram and ground plan of a sugar house shown in Figure 1 will illustrate this point.

The Evaporator Room.

This part of the outfit is deserving of considerable thought since it is here that most of the work is to be done in the making of the product. The evaporator should be placed in the center of the room so that an alley of at least four feet between either side of the house and the evaporator will provide the necessary working room for the operator. Most evaporators provide for the taking off of the syrup from either side of the pan and the alley should be of sufficient width to allow for the stock cans, skimmers and small testing table with hydrometer, etc., within handy reach.

Boiling the Sap.

Before starting the fires under the pan, the operator should be sure that his automatic regulators are working properly since it is very important that only a certain depth of sap will be maintained throughout the boiling. It is a well-known fact that the shallower the sap in the pan the more rapid will be the boiling off. If the corrugated patent pan is used, it is considered that a depth of one-half inch of sap above corrugations is best for rapid boiling.

The fires should be kept burning briskly so that the operation will provide the rapid boiling down of the syrup since this gives very light colored product which is so highly desired. If the syrup is allowed to stay in the pans over night and is brought to a second boiling, it is invariably made darker in color. The use of soured sap will produce dark colored syrup and great care should be taken to avoid this souring, which is indicated by the change in color of the sap. If the sap shows buddy, foamy or milky either in the buckets or in pans, these should be emptied and thoroughly scalded and brightened up if the highest grade of syrup is to be turned out.

The Testers.

The common Baume hydrometer is used in connection with a cylindrical cup. This is known under the common name of syrup tester. A Baume hydrometer reading at 35.6 degrees or on the red line, will produce a standard Michigan syrup which weighs eleven pounds to the gallon, provided the temperature of the syrup at time of test is sixty degrees Fahrenheit. If the syrup is very hot it should be allowed to cool before testing with the hydrometer. In connection with the hydrometer there is usually provided in every outfit, a Fahrenheit thermometer which is used as a check on the barometer and quite necessary to the inexperienced maker. Syrup which shows a temperature of 219 degrees by the Fahrenheit thermometer will weigh eleven pounds to the gallon. To the beginner it is recommended that both of these "testers" be kept close at hand. It is further recommended that the practice of producing syrup weighing more than eleven pounds net to the gallon is unfair, both to the producer and to the consumer. It is unfair to the producer since he is giving more than the law requires and it is unfair to the consumer since syrup weighing over eleven pounds to the gallon will almost always "candy," which simply means that a considerable quantity will crystallize in the bottom of the can in such form that it is almost impossible to be used and therefore becomes wasted. It is a common practice in Michigan for many syrup makers to produce what they call good measure and many consumers think they must have the

"candy" in the bottom of the can. However, the sooner this fault is remedied the quicker will be the stoppage of waste and a more equitable system of making and marketing will be established.

Storage.

Syrup which is made to conform to the rule of eleven pounds net to the gallon should not "candy" and it should not mold during the year. "Moldy" syrup is due to excess of water which is rather more or less a light syrup and weighs less than eleven pounds to the gallon.

Sugaring Off.

Owing to the strong demand for maple syrup the makers of maple sugar over the state are comparatively few. Sugaring off used to be a popular phase of maple syrup work, but has almost gone out of use in many sections because it does not pay.

Cleansing Maple Syrup.

If the maker has employed clean methods from start to finish in the syrup operation there is very little need for "cleansing." If he has kept the dirt and bark and rain water and sour sap out of the tanks and has strained the sap when it went into the gathering tank and again when it went into the storage tank, there will be no dirt and foreign matter in the pans. When the sap is boiled down until it registers a temperature of 216 degrees to 219 degrees the "lime" or "sugar sand" or "malate," as it is called, is precipitated or rendered insoluble. The presence of this "malate," or "sugar sand," in the syrup gives it a disagreeable or strong taste.

In order to remove this, the syrup must be filtered through heavy cotton (Continued on page 411).

Big Car Comfort!



Small Car Upkeep!

The new Elcar is the *roomiest car* with the *longest wheel base* of any selling at as low a price. Long, flexible springs and deep upholstery add to the comfort. Ride all day and you won't be cramped.

You secure this comfort for moderate upkeep cost. 18 to 24 miles are averaged to the gallon of gasoline. 1000 miles to a gallon of oil is the rule rather than the exception. Tires give exceptionally long service due to light weight and correct balance. Repair expense runs low—the Elcar is quality built. Every part is 150% strong.

Brief Mention of Elcar Points

Four-cylinder models have powerful long-stroke Elcar-Lycoming motor, developing 37 1/2 horsepower at 2100 r. p. m. Six-cylinder models have famous Continental 8 1/2 x 4 1/2 inch engine, developing 40 horsepower at 2100 r. p. m. Outside of the power plants, the Elcar sixes and fours are practically the same. Two unit electrical system. Long wheel base, 116 inches; road clearance 10 1/2 inches. Full floating rear axle with spiral bevel driving gears. Timken roller bearings front and rear. Double universal drive; tubular propeller shaft; copper cellular radiator. A wonderfully easy riding semi-elliptic spring suspension. Roomy and comfortable bodies of beautiful design and durable finish; new "Cathedral Pipe" upholstery. Equipment complete, even to motometer on the radiator.

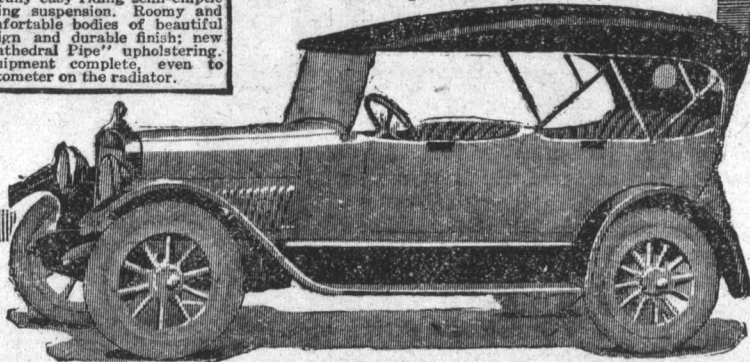
You will be proud to own an Elcar. The lines are long and graceful; the body work high grade; the finish beautiful and durable. The motor is speedy, with abundant power for the hard pulls. It is a car that will serve you economically, dependably and long.

Investigate the Elcar at our nearest dealer's. We'll gladly write you his name, if you don't know him.

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Write for catalog illustrating and describing the 1918 Elcar Models. We gladly mail it to anyone interested.

Elkhart Carriage & Motor Car Co.
6-714 Beardsley Avenue, Elkhart, Ind.



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Wood stave silos are the best—easiest to build, handiest to use, best to preserve silage. That is now generally acknowledged. The only objection to ordinary wooden silos is that they decay and don't last as long as they should. This objection is entirely overcome in

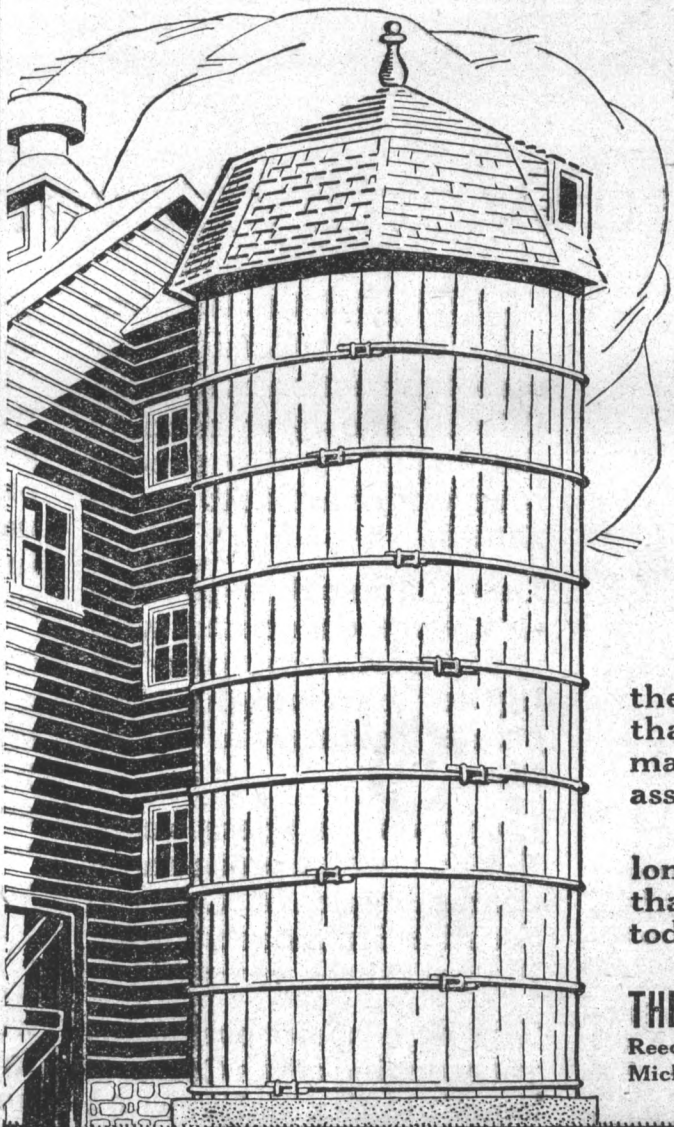
THE CENTURY Creosoted Stave Silo

Century Silos can't decay and will last a lifetime. They are thoroughly impregnated with creosote, the most powerful wood preservative known.

The construction of a Century Silo is the strongest, most serviceable and lasting that can be used. Everything about it is made to last indefinitely. Permanence is assured in every possible way.

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The FARM BOY
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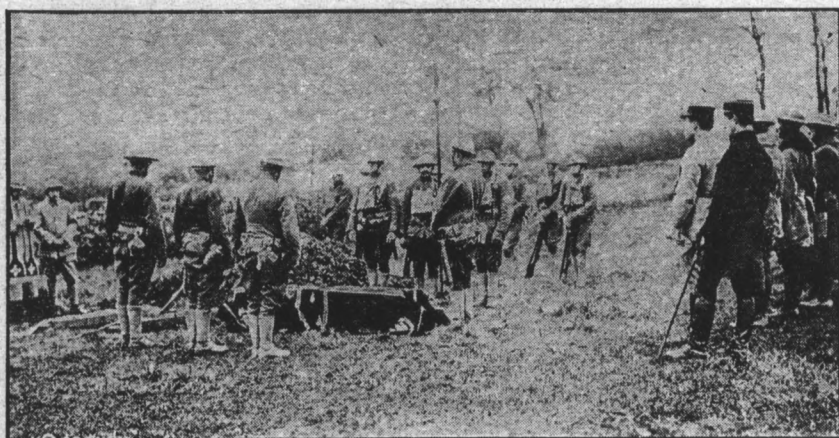
WORLD EVENTS IN PICTURES



Small Balloon Utilized to Distribute Copies of President Wilson's Speech Among the German People.



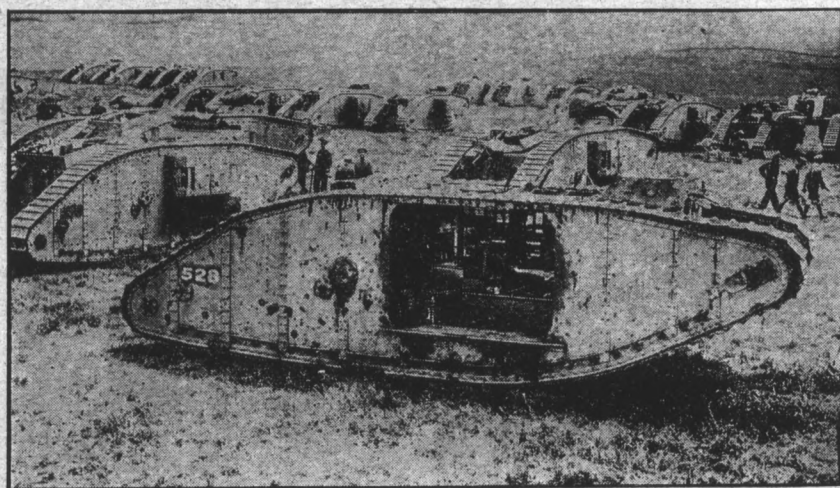
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Inside the Lines

By EARL DERR BIGGERS & ROBERT WELLES RITCHIE

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As Woodhouse slowly lifted his eyes to the line of portraits, he noticed that Jane had moved to place the broad tent shade of a floor lamp on its tall standard of mahogany between herself and the other two men so that her face was momentarily screened from them. She looked quickly at the portrait over the mantel and away again. Woodhouse, knowing himself the object of two pairs of hostile eyes, made his survey deliberately, with purpose increasing the tension of the moment. His eyes ranged the line of portraits on the rear wall, then turned to that one over the fireplace.

"Ah, yes, a rather good likeness, eh, Major?" He drawled his identification with a disinterested air.

Crandall's manner underwent instant change. His former slightly strained punctiliousness gave way to naturalness and easy spirits. One would have said he was advocate for a man on trial, for whom the jury had just pronounced, "Not proven." Scotch verdict, yes, but one acceptable enough to the governor of Gibraltar. The desk telephone sounded just then, and General Crandall answered. After listening briefly, he gave the orders, "Dress flags!" and hung up the receiver.

"Fleet's just entering the harbor," signal tower reports," he explained to the others. "Miss Gerson, if you care to step here to the window you'll see something quite worth while."

Jane, light-hearted almost to the point of mild hysteria at the noticeable relaxation of strain denoting danger passed, bounded to a double French window giving on a balcony and commanding a view of all the bay to the Spanish shore. She exclaimed in awe:

"Ships—ships! Hundreds of them! Why, General, what—"

"The Mediterranean fleet, young woman, bound home to protect the Channel against the German high-seas fleet." Deep pride was in the governor's voice. His eyes kindled as they fell on the distant pillars of smoke—scores of them mounting straight up to support the blue on their blended arches. Captain Woodhouse could scarcely conceal the start General Crandall's announcement gave him. He followed the others to the window more slowly.

"Wirelessed they'd be in ten hours ago," the governor explained to his wife. "Rear-admiral won't make his official call until morning, however. In these times he sticks by his flagship after five o'clock."

"Wonderful—wonderful!" Bishop turned in unfeigned enthusiasm to Woodhouse, behind him. "There is the power—and the pride—of England. Sort of thrills a chap, eh?"

"Rather!" Woodhouse replied.

"Well, must get down to the quay to receive any despatches that may come ashore," the major exclaimed. "Gad, but it gives me a little homesick tug at the heart to see those grim old dogs of war. They represent that tight little island that rules the waves."

"Ah, London—London—the big, old town where they pull the strings that make us dance!" General Crandall, leaning against the window frame, his eyes on the incoming fleet, voiced the chronic nostalgia of the man in the service.

"The town for me!" Woodhouse exclaimed with fervor. "I'm sick for the sight of her—the smells of her: the orange peel and the asphalt and the gas coming in over Vauxhall Bridge."

Bishop turned on him admiringly.

"By George, that does hit it off, old man—no mistake!"

Jane was out on the balcony now

with field glasses she had picked up from the governor's desk. She called back through the curtains, summoning Woodhouse to come out and pick out for her the flagship. When he had joined her, Bishop stepped quickly to his superior's side.

"What do you think, General? By George, it seems to me it would need an Englishman to give one that sniff of London this chap just got off."

"Exactly," the general caught him up crisply. "And an Englishman's done it—Rudyard Kipling. Any German who can read English can read Kipling."

"But what do you think, General? Chap strikes me as genuine—that portrait of Lady Evelyn clinched things, I take it."

"Confound it! We haven't absolutely proved anything, pro or con," General Crandall grumbled, in perplexity. "Thing'll have to be decided by the Indian—what he finds, or doesn't find—in Woodhouse's room. Let you know soon as I hear."

Bishop hurried to make his adieux to Lady Crandall and her guest, and



Jaimihr Khan Held the Tip to His Master's Cigarette.

was starting for the doors when Woodhouse, stepping in from the balcony, offered to join him. The governor stopped him.

"By the way, Captain, if you'll wait for me a minute I should like your company down the Rock."

Bishop had gone, and the general, taking Woodhouse's agreement for granted, also left the room.

Woodhouse, suddenly thrown back on his guard, could find nothing to do but assent. But when Lady Crandall excused herself on the score of having to dress for dinner, he welcomed compensation in being alone with the girl who had gone with him steadfastly, unflinchingly, through moments of trial. She stood before the curtains screening the balcony, hesitant, apparently meditating flight. To her Woodhouse went, in his eyes an appeal for a moment alone which would not be denied.

"You were—very kind to me," he began, his voice very low and broken. "If it had not been—for your help, I would have—"

"I could not see you—see you grope blindly—and fail." She turned her head to look back through the opened glass doors to the swiftly moving dots in the distance that represented the incoming battle fleet.

"But was there no other reason except just humanity to prompt you?" He had possessed himself of one of her hands now, and his eyes compelled her to turn her own to meet their gaze. "Once when they—were trying to trip me, I caught a look from your eyes, and—and it was more than—pity."

"You are presuming too much," the girl parried faintly; but Woodhouse would not be rebuffed.

"You must hear me," he rushed on

impetuously. "This is a strange time for me to say this, but you say you are going—going away soon. I may not have another opportunity—hear me! I am terribly in earnest when I tell you I love you—love you beyond all believing. No, no! Not for what you have done for me, but for what you are to me—beloved."

She quickly pulled her hand free from his grasp and tried to move to the door. He blocked her way.

"I can not have you go without a word from you," he pleaded. "Just a word to tell me I may—"

"How can you expect—that—I—I knowing what I do—?" She was stumbling blindly, but persisted: "You, who have deceived others, are deceiving them now—how can I know you are not deceiving me, too?"

"I can not explain." He dropped his head hopelessly, and his voice, seemed lifeless. "It is a time of war. You must accept my word that I am honest—with you."

She slowly shook her head and started again for the double doors. "Perhaps—when you prove that to me—" He took an eager step toward her. "But, no you can not. I will be sailing so soon, and—and you must forget."

"You ask the impossible!" Woodhouse quickly seized her hand and raised it to his lips. As he did so, the double doors opened noiselessly and Jaimihr Khan stood between them, sphinx-like.

Jane, startled, withdrew her hand, and without a farewell glance, ran across the library and through the door to Lady Crandall's room. Jaimihr Khan, with a cold glance at Woodhouse, moved silently to the door of General Crandall's room and knocked.

"It is I—Jaimihr Khan," he answered to the muffled hail from within. "Yes, General Sahib, I will wait."

He turned and looked toward Woodhouse. The latter had taken a cigarette from the case Almer had sent him through Jane, and was turning it over in his hand curiously. The Indian, treading like a hunting cat, began lighting candles. His tour of the room brought him to the captain's side, and there he stood, motionless, until Woodhouse, with a start, observed him.

"Captain Woodhouse has been most in-discreet," he said, in his curious mechanical way of speech.

Woodhouse turned on him angrily. "What do you mean?" he snapped.

"Is it that they have ceased to teach discretion—at the Wilhelmstrasse?" The Indian's face was like a mask.

"I know nothing about the Wilhelmstrasse," the white man answered, in a voice suddenly strained.

"Then it is verree, verree foolish for the captain to leave in his room these plans." Jaimihr Khan took from his girdle a thin roll of blue prints—the plans of the signal tower and Room D which Almer had given Woodhouse the night before. He held them gingerly between slender thumb and forefinger.

Woodhouse recoiled.

"The general sahib has sent me to search the cap-tain's room," the even voice of Jaimihr Khan ran on. "Behold the results of my journey!"

Woodhouse sent a lightning glance at the door leading to the governor's room, then stepped lightly away from the Indian and regarded him with hard calculating eyes.

"What do you propose to do—with those plans?"

"What should I do?" The white shoulders of the Indian went up in a shrug. "They will stand you before a wall, Cap-tain Woodhouse. And fire. It is the price of in-discretion at a time like this."

Woodhouse's right hand whipped back to his holster, which hung from his sword belt, and came forward again with a thick, short-barreled weapon in it.

"Give me those plans, you yellow hound!"

(Continued on page 400).

A NEW WOOD, THE LIGHTEST KNOWN.

BY M. MEREDITH.

A new wood, apparently little known, and called balsa wood, is exceedingly light and promises to have an extended field of usefulness in connection with cold storage structures when heat insulation is important. It is a tropical wood growing principally in the states of South and Central America.

The wood is remarkable, first, as to its lightness second, as to its microscopical structure third, for its absence of woody fiber, fourth, for its elasticity and fifth, for its heat-insulating qualities. So far as investigation has disclosed, it is the lightest commercial wood known. It has also considerable structural strength which makes it suitable for many cases. In general appearance balsa wood resembles basswood. Until recently, Missouri cork wood, weighing eighteen pounds per cubic foot, was believed to be the lightest, but recent investigations indicate that balsa wood is much lighter, having a net weight of 7.3 pounds per cubic foot. The ordinary commercial balsa wood is seldom perfectly dry, and, because of the moisture content, its weight has been found to be between eight and thirteen pounds per cubic foot.

The extreme lightness of this wood suggests its application as a buoyancy material in life-preservers and lifeboats. When, however, it was attempted to apply the wood practically, it was found to be of little value, because it absorbed water in great quantities and also because it soon rotted and also warped and checked when worked. After testing nearly every method that had been suggested Colonel Marr's method of treating woods which had been recently patented was finally successful. In this method the wood is treated in a bath, of which the principal ingredient is paraffin, by a process which coats the interior cells without clogging up the porous system. The paraffin remains as a coating or varnish over the interior cell walls, preventing the absorption of moisture and the ill-effects as to change of volume and decay which would otherwise take place; it also prevents the bad effects of dry rot which follow the application of any surface treatment for preserving wood of the same type. The Marr process tends to drive out all water and make the wood waterproof.

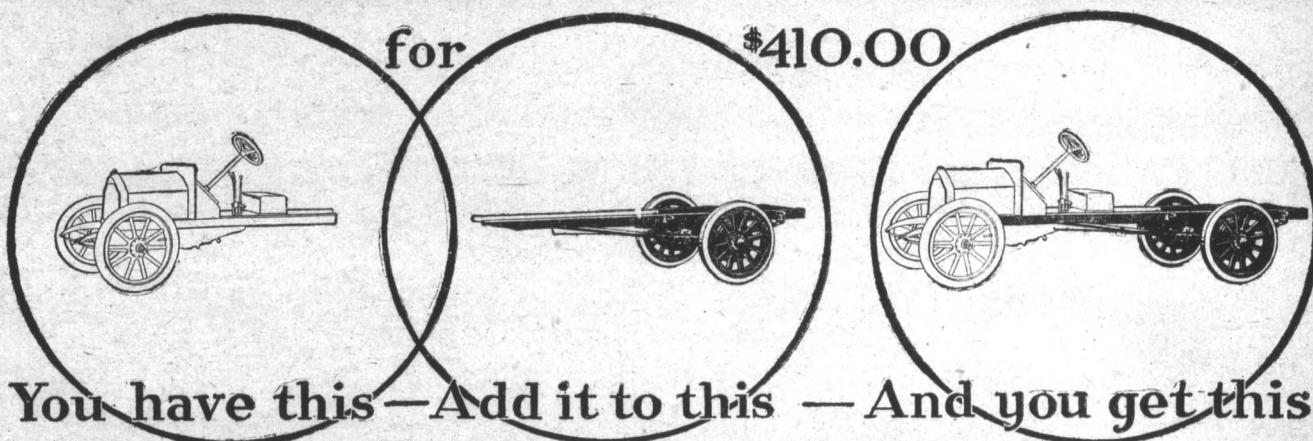
PUNCTUALITY.

Punctuality is important, because it subserves the peace and good temper of a family; the want of it not only infringes on necessary duty, but sometimes excludes this duty. Punctuality is important as it gains time; a good packer will get in half as much more as a bad one. The calmness of mind which it produces is another advantage of punctuality; a disorderly man is always in a hurry, he has no time to speak with you, because he is going elsewhere; and when he gets there, he is too late for his business, or he must hurry away to another before he can finish it. It was a wise maxim of the Duke of Newcastle: "I do one thing at a time." Punctuality gives weight to character. "Such a man has made an appointment; then I know he will keep it." And this generates punctuality in you; for, like other virtues, it propagates itself. Servants and children must be punctual where their leader is so. Appointments, indeed, become debts; I owe you punctuality, if I have made an appointment with you, and have no right to throw away your time if I do my own.—M. M.

Any food consumed over and above the needs of the human body is wasted. We have to put every ounce of effort behind the men behind the guns. In 1913, Europe produced forty-three per cent of the world's sugar; since then she has had other engagements.

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It gives you a real truck—sturdy, dependable, shaft-driven, with internal gear axle drive, the drive used on the highest-priced trucks.

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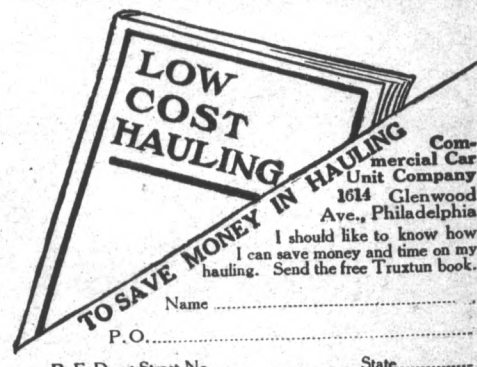
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The Michigan Farmer

Detroit, Michigan

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Low-priced tea is
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B 368



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INSIDE THE LINES

(Continued from page 398).

"Shoot!" Jaimihr Khan smiled. "Add one in discretion to another. Shoot, my youthful fool!"

The door to General Crandall's room opened, and the general, in uniform evening dress, stepped into the library. Woodhouse swiftly slipped his revolver behind his back, though keeping it ready for instant use.

"All ready, Captain. Smoke." The general extended his cigarette case toward Woodhouse.

The latter smilingly declined, his eyes all the while on the Indian, who stood by the corner of the general's desk. Between the sleek brown hands a tiny blue roll of paper was twisting into a narrower wisp under the careless manipulation of thin fingers.

"Well, Jaimihr," Crandall briskly addressed the servant, "have you completed the errand I sent you on?"

"Yes, General Sahib." The brown fingers still caressed the plans of the signal tower.

"Have you anything to report?" The general had his cigarette in his mouth and was pawing his desk for a match. Jaimihr Khan slowly lifted the tip of the paper wisp in his fingers to the flame of a candle on the end of the desk, then held the burning tip to his master's cigarette.

"Nothing, General Sahib."

"Very good. Come, Woodhouse; sorry to have kept you waiting." The general started for the double doors. Woodhouse followed. He passed very close to the Indian, but the latter made no sign. His eyes were on the burning wisp of paper between his fingers.

CHAPTER XVI.

The Pendulum of Fate.

THE next day, Thursday, was one of hectic excitement for Gibraltar. Focus of the concentrated attention of town and Rock was the battle fleet, clogging all the inner harbor with its great gray hulks. Superdreadnaughts, like the standing walls of a submerged Atlantis, lay close to the quays, barges lashed alongside the folded booms of their torpedo nets. Behind them, battle cruisers and scouts formed a protecting cordon. Far out across the entrance to the harbor, the darting black shapes of destroyers on constant guard were shuttles trailing their threads of smoke through the blue web of sea and sky. Between fleet and shore snorting cockleshells of launches established lanes of communication; khaki of the Rock's defenders and blue of the fleet's officers met, passed, and repassed. In wardroom and lounge glasses were touched in pledges to the united service. The high commander of the Mediterranean fleet paid his official visit to the governor of Gibraltar, and the governor, in turn, was received with honors upon the quarterdeck of the flagship. But under the superficial courtesies of fanfare and present arms the stern business of coaling fleet progressed at high tension. It was necessary that all of the fighting machines have their bunkers filled by noon of the following day. Every minute that the Channel up under the murky North Sea fogs lay without full strength of her fleet protection was added danger for England.

That morning, Captain Woodhouse went on duty in the signal tower. Major Bishop, his superior, had summoned him to his office immediately after breakfast and assigned him to his tasks there. Sufficient proof, Woodhouse assured himself, with elation, that he had come through the fire in General Crandall's library, tested and found genuine. Through this pretext and that, he had been kept off duty the day before, denied access to the slender stone tower high up on the Rock's crest which was the motor center of Gibraltar's ganglia of defense.

The small office in which Woodhouse was installed was situated at the very top of the tower—a room glassed on four sides like the lantern room of a lighthouse, and provided with telescope, a telephone switchboard, range finders, and all the complicated machinery of gunfire control. On one side were trestle boards supporting charts of the ranges—figured areas representing every square yard of water from the nearest harbor below out to the farthest reaching distance of the monster disappearing guns. A second graphic sheet showed the harbor and anchorages and the entrance to the straits; this map was thickly spotted with little, red, numbered dots—the mines. Sown like a turnip field with these deadly capsules of destruction were all the waters thereabouts; their delicate tendrils led under water and through conduits in the Rock up to this slender spire called the signal tower. As he climbed the winding stairway to his newly assigned post, Woodhouse had seen painted on a small wooden door just below the room he was to occupy the single white letter "D."

Room D—where the switches were, where a single sweep of the hand could loose all the hidden death out there in the crowded harbor—it lay directly below his feet.

Captain Woodhouse's duties were not arduous. He had as single companion a sergeant of the signal service, whose post was at the window overlooking the harbor. The sergeant read the semaphore message from the slender signal arm on the flagship's bridge—directions for the coal barges' movements, businesslike orders to be transmitted to the quartermaster in charge of the naval stores ashore, and such humdrum of routine. These Woodhouse recorded and forwarded to their various destinations over the telephone.

He had much time for thought—and much to think about.

Yesterday's scene in the library of Government House—his grilling by the suspicious men, when a false answer on his part would have been the first step toward a firing squad. Yes, and what had followed between himself and the little American—the girl who had protected and aided him—ah, the pain of that trial was hardly less poignant than had been the terror of the one preceding it. She had asked him to prove to her that he was not what she thought him. Before another day was past she would be out of his life and would depart, believing—yes, convinced—that the task he had set himself to do was a dishonorable one. She could not know that the soldiers of the Hidden Army have claim to heroism no less than they who join battle under the sun. But he was to see Jane Gerson once more; Woodhouse caught at this circumstance as something precious. Tonight at Government House Lady Crandall's dinner to the refugee Americans on the eve of their departure would offer a last opportunity. How could he turn it to the desire of his heart?

One more moment of a crowded yesterday gave Woodhouse a crust for rumination—the unmasking of Jaimihr Khan, the Indian, had elected for him-

self at that critical minute when it lay in his power to betray the stranger in the garrison. The captain reviewed the incident with great satisfaction—how of a sudden the wily Indian had changed from an enemy holding a man's life in his hand to that "friend in Government House," of whose existence the cautious Almer had hinted but whose identity he had kept concealed. Almer had said that this "friend" could lay his hand on the combination to Room D in the signal tower when the proper moment arrived. Now that he knew Jaimihr Khan in his true stripe, Woodhouse made no doubt of his ability to fulfill Almer's prophecy.

And the proper moment would be this night! Tonight, on the eve of the great fleet's sailing, what Woodhouse had come to Gibraltar to do must be accomplished or not at all.

The man's nerves were taut, and he rose to step to the bayward window, there to look down on the embattled splendor of England's defense. Steel forts ranged all in rows, awaiting but the opportunity to loose their lightnings of obliteration against the ships of an enemy. Cardboard ships! Shadows of dreams! In Room D, just below his feet, a hand on the switches—a downward push, and then—

Lady Crandall's dinner in Government House was in full tide of hilarity. Under the heavy groined ceiling the spread table with its napery and silver was the one spot of light in the long shadowed dining-room. Round it sat the refugees—folks who had eaten black bread and sausage and called that a meal; who had dodged and twisted under the careless scourge of a war beyond their understanding and sympathies, ridden in springless carts, been bullied and hectorated by military martinets and beggared by panicky banks. Now, with the first glimpse of freedom already in sight and under the warming influence of an American hostess' real American meal, they were swept off their feet by high spirits almost childlike. Henry J. Sherman, Kewanee's vagrant son returning from painful pilgrimage, sat at the right of Lady Crandall; his pink face was glowing with humor. To Consul Reynolds, who swore he would have to pay for thus neglecting his consulate for so much as two hours, had fallen the honor of escorting Mrs. Sherman to table. Willy Kimball, polished as to shirt bosom and sleek hair, had eyes and ears for none but the blithe Kitty. Next to General Crandall sat Jane Gerson, radiant in a dinner gown of tricky gauze overlaid on silk. At her right was Captain Woodhouse, in proper uniform dinner coat faced with red and gold. Of the whole company, Woodhouse alone appeared constrained. The girl by his side had been cool in her greeting that evening; to his conversational sallies she had answered with indifference, and now at table she divided her favors between General Crandall and the perky little consul across the table. It seemed to Woodhouse that she purposely added a lash of cruelty to her joy at the approaching departure on the morrow.

"Oh, you must all listen to this!" Kitty Sherman commanded the attention of the table, with a clapping of hands. "Go ahead, Will; he had the



funniest accident—tell them about it.”

“Young Kimball looked conscious and began to stammer.

“You’re getting us all excited, Willy,” Henry J. boomed from the opposite side of the table. “What happened?”

“Why—ah—really quite ridiculous, you know. Hardly a matter to—ah—talk about.” Willy fumbled the rose in the lapel of his jacket and searched for words. “You see, this morning I was thinking very hard about what I would do when I got back to Kewanee—oh, quite enthusiastic I am about the little town, now—and I—well, I mean to say, I got into my bath with my wrist watch on.”

Shouts of laughter added to the youth’s confusion. Sherman leaned far across the table and advised him in a hoarse whisper:

“Buy a dollar Ingersoll, Willy. It floats!”

“Well, you might give him one of yours, father,” Kitty put in, in quick defense. “Anybody who’d carry two watches around—”

“Two watches?” Lady Crandall was interested.

Henry J. beamed expansively, pulled away his napkin, and proudly lifted from each waistcoat pocket a ponderous watch, linked by the thick chain passing through a buttonhole.

“This one”—he raised the right-hand time-piece—“tells the time of the place I happen to be in—changed it so often I guess the works’ll never be the same again. But this one is my pet. Here’s Kewanee time—not touched since we pulled out of the C., B. & Q. station on the twentieth of last May.” He turned the face around for the others to read. “Just three in the afternoon now. Old Ed Porter’s got the Daily Enterprise out on the street, and he’s tilted back in his office chair, readin’ the Chicago Tribune that’s just got in on the two-five train. The boys at the bank are goin’ out to the country club for golf—young Pete Andrews wearin’ the knickerbockers his wife cut down from his old overcoat; sort of a horse blanket pattern, you might say. The town’s just dozin’ in the afternoon sun and—and not givin’ a hang whether Henry J. Sherman and family gets back or not.”

“You’re an old dear!” Lady Crandall bubbled. “Some day Kewanee will erect a statue to you.”

The talk turned to art, and the man from Kewanee even had the stolid general wiping the tears from his eyes by his description and criticism of some of the masters his wife had trotted him around to admire.

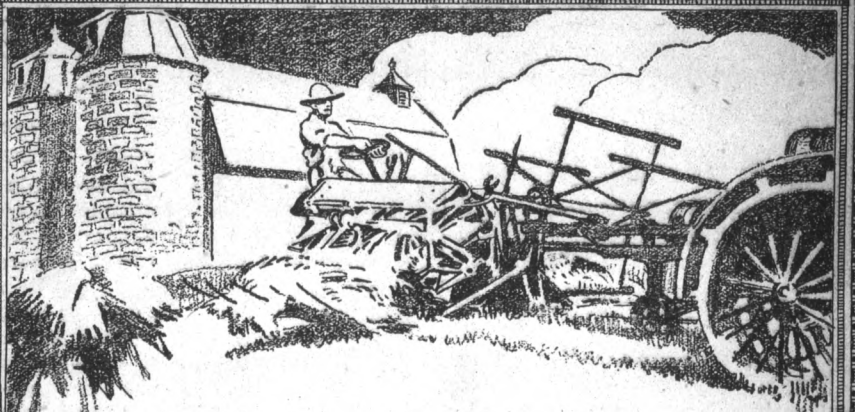
“Willy, you’ll be interested to know we got a painter in Kewanee now,” Henry J. cried. “Member young Frank Coales—old Henry Coales’ son? Well, he turned out to be an artist. Too bad, too; his folks was fine people. But Frank was awfully headstrong about art. Painted a war picture about as big as that wall there. Couldn’t find a buyer right away, so he turned it over to Tim Burns, who keeps the saloon on Main Street. Been busy ever since, sorta taking it out in trade, you might say.”

Table talk was running at a gay rate when Mrs. Sherman, who had sent frequent searching glances at Captain Woodhouse over the nodding buds of the flower piece in the center of the board, suddenly broke out:

“Ah, Captain Woodhouse, now I remember where I’ve seen you before! I thought your face was familiar the minute I set my eyes on you this evening.”

Jaimihr Khan, who stood behind the general’s chair, arms folded and motionless, swiftly lifted one hand to his lips, but immediately mastered himself again. General Crandall looked up with a sharp crinkle of interest between his eyes. Captain Woodhouse, unperturbed, turned to the Kewanee dowager.

(Continued next week.)



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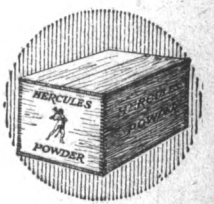
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The Grizzly King

By JAMES OLIVER CURWOOD

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Muskwa bolted down the mountain as fast as his short legs could carry him. In another second Bruce was after him, and Langdon joined in ten feet behind.

Suddenly Muskwa made a sharp turn and the momentum with which Bruce was coming carried him thirty or forty feet below him, where the lanky mountaineer stopped himself only by doubling up like a jack-knife and digging toes, hands, elbows, and even his shoulders in the soft shale.

Langdon had switched, and was hot after Muskwa. He flung himself face downward, shirt outspread, just as the cub made another turn, and when he rose to his feet his face was scratched and he spat out a handful of dirt and shale out of his mouth.

Unfortunately for Muskwa his second turn brought him straight down to Bruce, and before he could turn again he was enveloped in sudden darkness and suffocation, and over him there rang out a fiendish and triumphant yell.

"I got 'im," shouted Bruce.

Inside the shirt Muskwa scratched and bit and snarled, and Bruce was having his hands full when Langdon ran down with the second shirt. Very shortly Muskwa was trussed up like a papoose. His legs and his body were swathed so tightly that he could not move them. His head was not covered. It was the only part of him that he could move, and it looked so round and frightened and funny that for a minute or two Langdon and Bruce forgot their disappointments and losses of the day and laughed.

Then Langdon sat down on one side of Muskwa, and Bruce on the other, and they filled and lighted their pipes. Muskwa could not even kick an objection.

"A couple of husky hunters we are," said Langdon then. "Come out for a grizzly and end up with that!"

He looked at the cub. Muskwa was eying him so earnestly that Langdon sat in mute wonder for a moment, and then slowly took his pipe from his mouth and stretched out a hand.

"Cubby, cubby, nice cubby," he cajoled softly.

Muskwa's tiny ears were perked forward. His bright eyes were like glass. Bruce, unobserved by Langdon, was grinning expectantly.

"Cubby won't bite—no—no—nice little cubby—we won't hurt cubby—"

The next instant a wild yell startled the mountain-tops as Muskwa's needle like teeth sank into one of Langdon's fingers. Bruce's howls of joy would have frightened game a mile away.

"You little devil!" gasped Langdon, and then, as he sucked his wounded finger, he laughed with Bruce. "He's a sport—a dead game sport," he added. "We'll call him Spitfire, Bruce. By George, I've wanted a cub like that ever since I first came into the mountains. I'm going to take him home with me! Ain't he a funny looking little cuss?"

Muskwa shifted his head, the only part of him that was not as stiffly immovable as a mummy, and scrutinized Bruce. Langdon rose to his feet and looked back to the sky-line. His face was set and hard.

"Four dogs!" he said, as if speaking to himself. "Three down below—and one up there!" He was silent for a moment, and then said: "I can't understand it, Bruce. They've cornered fifty bears for us, and until today we've never lost a dog."

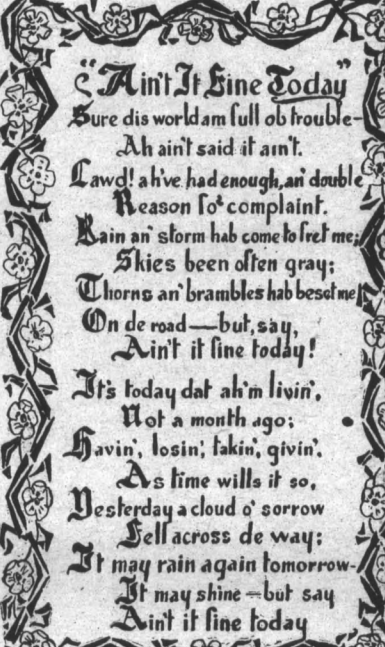
Bruce was looping a buckskin thong about Muskwa's middle, making of it a sort of handle by which he could carry

the cub as he would have conveyed a pail of water or a slab of bacon. He stood up, and Muskwa dangled at the end of his string.

"We've run up against a killer," he said. "An' a meat-killin' grizzly is the worst animal on the face of the earth when it comes to a fight or a hunt. The dogs'll never hold 'im, Jimmy, an' if it don't get dark pretty soon there won't be none of the bunch come back. They'll quite at dark—if there's any left. The old fellow's got our wind, an' you can bet he knows what knocked him down up there on the snow. He's hikin'—an' hikin' fast. When we see 'im ag'in it'll be twenty miles from here."

Langdon went up for the guns. When he returned Bruce led the way down the mountain, carrying Muskwa by the buckskin thong. For a few moments they paused on the blood-stained ledge of rock where Thor had wreaked his vengeance upon his tormentors. Langdon bent over the dog the grizzly had decapitated.

"This is Biscuits," he said. "And we always thought she was the one cow-



"Ain't It Fine Today"
Sure dis world am full ob trouble—
Ah ain't said it ain't.
Lawd! a live had enough, an' double
Reason fo' complaint.
Rain an' storm hab come to fret me;
Skies been often gray;
Thorns an' brambles hab beset me
On de road—but, say,
Ain't it fine today!
It's today dat ah'm livin',
Not a month ago;
Havin', losin', takin', givin'.
As time wills it so,
Yesterday a cloud o' sorrow
Sell across de way;
It may rain again tomorrow—
It may shine—but say,
Ain't it fine today

ard of the bunch. The other two are Jane and Tober; old Fritz is up on the summit. Three of the best dogs we had, Bruce!"

Bruce was looking over the ledge. He pointed downward.

"There's another—pitched clean off the face o' the mount'in!" he gasped. "Jimmy, that's five!"

Langdon's fists were clenched tightly as he stared over the edge of the precipice. A choking sound came from his throat. Bruce understood its meaning. From where they stood they could see a black patch on the upturned breast of the dog a hundred feet under them. Only one of the pack was marked like that. It was Langdon's favorite. He had made her a camp pet.

"It's Dixie," he said. For the first time he felt a surge of anger sweep through him, and his face was white as he turned back to the trail. "I've got more than one reason for getting that grizzly now, Bruce," he added. "Wild horses can't tear me away from these mountains until I kill him. I'll stick until winter if I have to. I swear I'm going to kill him—if he doesn't run away."

"He won't do that," said Bruce tersely, as he once more swung down the trail with Muskwa.

Until now Muskwa had been stunned into submissiveness by what must have appeared to him to be an utterly hopeless situation. He had strained

every muscle in his body to move a leg or a paw, but he was swathed as tightly as Rameses had ever been. But now, however, it slowly dawned upon him that as he dangled back and forth his face frequently brushed his enemy's leg, and he still had the use of his teeth. He watched his opportunity, and this came when Bruce took a long step down from a rock, thus allowing Muskwa's body to rest for the fraction of a second on the surface of the stone from which he was descending.

Quicker than a wink Muskwa took a bite. It was a good deep bite, and if Langdon's howl had stirred the silences a mile away the yell which now came from Bruce beat him by at least a half. It was the wildest, most blood-curdling sound Muskwa had ever heard, even more terrible than the barking of the dogs, and it frightened him so that he released his hold at once.

Then, again, he was amazed. These queer bipeds made no effort to retaliate. The one he had bitten hopped up and down on one foot in a most unaccountable manner for a minute or so, while the other sat down on a boulder and rocked back and forth, with his hands on his stomach, and made a queer, uproarious noise with his mouth wide open. Then the other stopped his hopping and also made that queer noise.

It was anything but laughter to Muskwa. But it impinged upon him the truth of one of two things; either these grotesque looking monsters did not dare to fight him, or they were very peaceful and had no intention of harming him. But they were more cautious thereafter, and as soon as they reached the valley they carried him between them, strung on a rifle-barrel.

It was almost dark when they approached a clump of balsams red with the glow of a fire. It was Muskwa's first fire. Also he saw his first horses, terrific looking monsters even larger than Thor.

A third man—Metoosin, the Indian—came out to meet the hunters, and into this creature's hands Muskwa found himself transferred. He was laid on his side with the glare of the fire in his eyes, and while one of his captors held him by both ears, and so tightly that it hurt, another fastened a hobble-strap around his neck for a collar. A heavy halter rope was then tied to the ring on this stray, and the end of the rope was fastened to a tree.

During these operations Muskwa snarled and snapped as much as he could. In another half-minute he was free of the shirts, and as he staggered on four wobbly legs, from which all power of flight had temporarily gone, he bared his tiny fangs and snarled as fiercely as he could.

To his further amazement this had no effect upon his strange company at all, except that the three of them—even the Indian—opened their mouths and joined in that loud and incomprehensible din, to which one of them had given voice when he sank his teeth into his captor's leg on the mountain-side. It was all tremendously puzzling to Muskwa.

CHAPTER XV.

GRATELY to Muskwa's relief the three men soon turned away from him and began to busy themselves about the fire. This gave him a chance to escape, and he pulled and tugged at the end of the rope until he nearly choked himself to death. Finally he gave up in despair, and crumpling himself up against the foot of the balsam he began to watch the camp.

He was not more than thirty feet from the fire. Bruce was washing his hands in a canvas basin, Langdon was mopping his face with a towel. Close to the fire Metoosin was kneeling, and from the big black skittle he was holding over the coals came the hissing and sputtering of fat caribou steaks,

and about the pleasantest smell that had ever come Muskwa's way. The air all about him was heavy with the aroma of good things.

When Langdon had finished drying his face he opened a can of something. It was sweetened condensed milk. He poured the white fluid into a basin, and came with it toward Muskwa. The cub had unsuccessfully attempted flight on the ground until his neck was sore; now he climbed the tree. He went up so quickly that Langdon was astonished, and he snarled and spat at the man as the basin of milk was placed where he would almost fall into it when he came down.

Muskwa remained at the end of his rope up the tree, and for a long time the hunters paid no more attention to him. He could see them eating and he could hear them talking as they planned a new campaign against Thor.

"We've got to trick him after what happened today," declared Bruce. "No more tracking 'im after this, Jimmy. We can track until doomsday an' he'll always know where we are." He paused for a moment and listened. "Funny the dogs don't come," he said. "I wonder—"

He looked at Langdon.

"Impossible!" exclaimed the latter, as he read the significance of his companion's look. "Bruce, you don't mean to say that bear might kill them all!"

"I've hunted a good many grizzlies," replied the mountaineer quietly, "but I ain't never hunted a trickier one than this. Jimmy, he trapped them dogs on the ledge, and he tricked the dog he killed up on the peak. He's liable to get 'em all into a corner, an' if that happens—"

He shrugged his shoulders suggestively.

Again Langdon listened.

"If there were any alive at dark they should be here pretty soon," he said. "I'm sorry, now—sorry we didn't leave the dogs at home."

Bruce laughed a little grimly.

"Fortunes o' war, Jimmy," he said. "You don't go hunting grizzlies with a pack of lapdogs, an' you've got to expect to lose some of them sooner or later. We've tackled the wrong bear, that's all. He's beat us."

"Beat us?"

"I mean he's beat us in a square game, an' we dealt a raw hand at that in using dogs at all. Do you want that bear bad enough to go after him my way?"

Langdon nodded.

"What's your scheme?"

"You've got to drop pretty ideas when you go grizzly hunting," began Bruce. "And especially when you run up against a 'killer.' There won't be any hour between now an' denning-up time that this grizzly doesn't get the wind from all directions. How? He'll make detours. I'll bet if there was snow on the ground you'd find him back-tracking two miles out of every six, so he can get the wind of anything that's following him. An' he'll travel mostly nights, layin' high up in the rocks an' shale during the day. If you want any more shootin', there's just two things to do, an' the best of them two things is to move on and find other bears."

"Which I won't do, Bruce. What's your scheme for getting this one?"

Bruce was silent for several moments before he replied.

"We've got his range mapped out to a mile," he said then. "It begins up at the first break we crossed, an' it ends down here where we came into this valley. It's about twenty-five miles up an' down. He don't touch the mountain's west of this valley nor the mountain's east of the other valley, an' he's dead certain to keep on makin' circles so long as we're after him. He's hikin' southward now on the other side of the range."

(Continued next week.)



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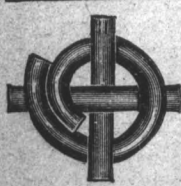
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Boys' and Girls' Club Notes

Conducted by E. C. Lindemann

For the first time in the history of Boys' and Girls' Club Work in Michigan the regulation Four H Achievement Buttons are to be awarded to all members of regularly organized clubs who have completed all requirements—that is, to all who have finished all the work and filed their report and story with the State Leader of Club Work.

These pins are made of gold with a background of white enamel on which is inserted a green four-leaf clover. The clover is emblematic of good luck in agriculture and the four H's, one in each leaf, stand for the four types of education furnished the boy and girl through club work:

The Head—to think, plan and reason.

The Hands—to be useful, helpful and skillful.

The Heart—to be kind, true and sympathetic.

The Health—to resist disease, to enjoy life and to insure usefulness.

In the center of the clover leaf is a golden lamp representing the lamp of learning and at the stem of the clover is the Open Book of Knowledge. Around the outside border of the pin the words State, Home, School Achievement show that the achievement the pin rewards is on that typifies the united effort of the Home, the School and the State.

These pins will be awarded at the regular Achievement Day in the well-organized counties of the state, while in the counties where the clubs are scattered the pins will be mailed out to the club members directly from the college.

The cost of producing 456 pigs raised by boys in pig clubs of the Ohio State University last season varied from six and a half to more than twenty-nine cents a pound. The rate of gain varied from one-third pound a day to two and a quarter pounds. The average daily gain was 1.47 pounds and the average cost per pound of gain was 11.4 cents.

A careful study of the results in view of the varied conditions under which the pigs were raised has led the summarizers of the records to conclude:

1. The use of some feed high in protein, as a supplement for corn as the basis for the ration, is essential to economical gains.

2. Pigs of good quality and breeding generally made cheaper gains and made a better finished product than inferior pigs.

3. Some good pasture, either alfalfa, clover, or bluegrass, proved efficient in producing gains.

4. It paid to take extra care of the pigs as regards housing, feeding, and handling.

RAISING A GARDEN.

Our boys and girls who are planning a garden this year will like to read some gardening experiences of G. Arthur Lincoln, of Harbor Beach, Mich.

Last year—was the busiest year of my life. Our house burned in April and so we put in a big crop. We planted six acres of buckwheat, one acre of potatoes, which did not grow, ten acres of beans, which did not come up good, and nine acres of oats. We put in lots of garden.

A quarter of an acre of Hubbard

squash, was caught by early frost, but we had ten barrels of good ones and two or three small ones for the pigs. We had one-quarter of an acre of early potatoes which kept us supplied through the summer and winter. We had all the sweet corn, beans, peas, turnips, radishes and cabbage we could eat, and almost enough of cucumbers, onions and tomatoes.

My garden was made up of cucumbers, early cabbage, sweet corn (which did not grow well), carrots, beans and tomatoes. I traded cabbages for pumpkins with our neighbor, who did not have any. I sold some beans and cabbages but we ate most of them up as there are eight persons in our family. I learned to build a load of hay, drive the horses on the hay fork and hay rake, and do some other things. I intend to learn how to cultivate and harrow this year.

I almost forgot to say that we had four acres of turnips which I helped put in, thin, pull and top. We had about one thousand bushels.

Just now I am studying the seed catalogs and planning to put in as big a war garden as a ten-year-old boy can manage.

Books are the best things, well used; abused, among the worst.—Emerson.

How the World's Business Is Transacted - By COMFORT A. TYLER

IN our last article we mentioned the desirability of always numbering checks drawn on a commercial or checking account. I wish to emphasize this just a little more for it really is fundamental in keeping an exact record of your banking business.

The writer, in his business career has received checks large and small from every state in the Union, all the way from Maine to California, and from Lake Superior to the Gulf coast. Many of these are not numbered. It has always been a query to me just how it was possible for the people who write their checks in this manner, to know just what they are doing and how they are able to "reconcile" their bank accounts when their pass book is returned to them and the monthly statements come.

I have an account with one bank, that has been continuous for more than thirty years. When living on my farm

as I did for many years I was eight miles from a bank. This meant that my banking must be done by mail. Just at first this may seem to you to be an inconvenient way, and yet it is not so difficult when one gets used to it.

When I first left the farm I was still further from this bank. When I came to Detroit I was half way across the state from it, and yet I have never closed the account. Why? Well, this was my first bank and the only one with which I established banking relations for many years. I am consequently better known to that institution than any other on earth. I could probably secure more accommodation from them than from any other in the world.

It is always best to stay by the bank that knows you. You will usually receive just as good treatment at any bank as you are entitled to, and sometimes better. By holding to one bank you are better able to establish a business confidence that is the most valuable asset you will ever acquire.

Bankers are no more infallible than other people. They are less likely to make mistakes in banking than are you, for they are entirely familiar with the work they are doing, while you are not so familiar perhaps with money changing; but remember that bank employees are only just folks, made out of the same kind of mud as the rest of us are. They have all the annoyances and fatigue and heartaches that anyone else has and they do make mistakes.

Now, if you make a record of every piece of paper or amount and kind of money that you send to your bank, with the day and date it was sent, then number your checks and issue them in numerical order, keeping the stub of your check religiously, and will have



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your account reconciled once each month, you will always be able to adjust any error, be it on your part or the bank's, without much trouble. If you do not do this, it will only be a matter of a short time until you will be almost sure the bank has made an error—when most likely they have not.

Of course, if you always take your deposits to the bank, together with your pass book, and attend to it that the entry is properly made, this will obviate the need of keeping tab to a certain degree. But even then I think it always wise to make a duplicate deposit ticket, listing exactly what your deposits were and of what they consisted, and filing this for your own records. There may come a time when you will be very glad you did so. Be this as it may, always number your checks and keep the stub.

In my last article I mentioned that your check issued in payment of debt might go through many channels before being returned to you, among the rest that of coming to the city correspondent and going through the clearing house. A friend had called my attention to the fact that this is not always done which, of course, is a fact, but there are so many ways that checks are handled after leaving your hands, that to enumerate all of them would require "pages" to tell and would not be of great interest to you. The most interesting and valuable part of the whole banking business to the average farm boy or girl, is the fact that they have established a credit "depot" when they have built a confidence account with the local or any other banker.

Again, if the man who does business on correct business principles is doing business with you and received a neatly written check with your name and business or address printed in one corner and the number in the other, (and your banker will furnish you with such a check book if your account is sufficiently valuable to warrant it, he will at once have confidence in your business ability. I think it very advisable to have your name and business card because it has a decidedly business-like on your check, or your address, first, appearance, and second, a more potent reason, many of us have not yet learned to sign our name so that the average person can read it. This is one very important reason for the writer using such a check.

In eighteen years as secretary of the American Hampshire Sheep Association, the writer has always received and given face credit for every check that has been mailed him from every quarter of the globe, and if memory serves me correctly, only two have been returned to us with that disheartening little check mark against the notation, "insufficient funds," and right here and now, boys and girls, let me say, don't ever let this happen with your account.

Never overdraw. Never write a check for a larger amount than you have in the bank. Your banker, if he knows you well and favorably may, probably will, pay it. But he breaks the banking law when he does so, and every time you do that you check a demerit against your credit. Don't do it. Don't say, "Oh, my banker knows me and will pay it." Probably he does and will, but don't ask him to become a law breaker, as you do when you do this. It is not fair to either he or you. He is entitled to a fair balance from you for doing your business for you. You are entitled to contribute to good business in keeping a creditable bank balance.

AS WE SEE IT.

Save food or go on short rations. It doesn't matter who started this war, Uncle Sam will finish it. We must meet sacrifices at the front with sacrifices at home. "The Allies are all in the same boat, a long way from shore on limited rations"—and Uncle Sam is running the relief ship.

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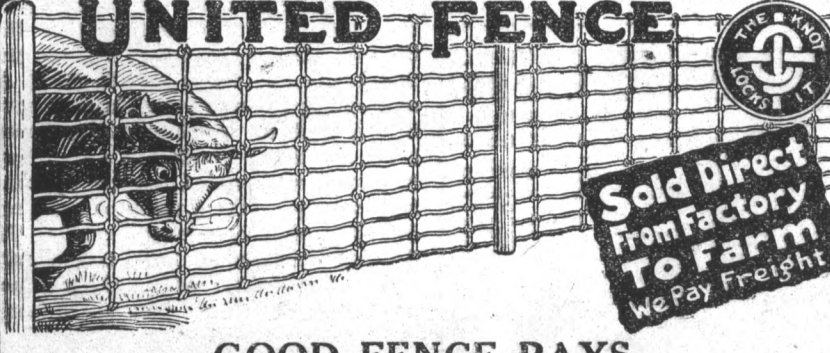
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9-42-30	9	42	30	3, 3 1/2, 3 1/2, 4 1/2, 5 1/2, 6, 8, 8	900 52 1/2c
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Woman and Her Needs

Life Is More Than Possessions

NOW that it has become fashionable once more to refer to the Bible, I want to emphasize the fact, recorded there for the first time, I believe, that "a man's life consisteth not in the abundance of things which he possesseth." Conversations with two women recently have once more impressed it upon me.

One is the most discontented woman I know, with, apparently, everything she wants in life. A husband, three superbly healthy children, cook, governess, seamstress, chauffeur, two cars, beautiful furniture, opportunity to travel, leisure to do whatever she desires. But she never seems to have time to do anything but complain.

"Life is just one thing after another," she sputtered. "You just get one thing done and something else bobs up—I did think I'd learn to knit this winter, but with planning Betty's clothes, and getting son off to preparatory school, and seeing that the nurse doesn't forget Babe's nails and teeth, and giving orders to the cook, my time is completely filled. I've had six cooks, too, since we've tried to Hooverize. Servants simply won't endure it to live cheaply. If things keep on we'll have to close the house and go to a hotel. I never could do my own cooking. I don't see why we had to go and mix up in Europe anyway. Now everything is upset and if you don't 'do your bit' someone talks about you—"

There was a lot more in the same strain, all complaints at her own hardships, but never a thought for the mother who has given her boy and is now taking in washing to earn her living.

The other woman with whom I talked, took the bad taste away. If anyone has a legitimate cause to complain she has, for she is that most pitiable creature, the old maid aunt whom no one wants unless they are in trouble and need a cook or nurse.

Just now she is with a cousin whose five children came down with measles at Christmas and followed it up with chicken-pox and whooping cough. The only ray of sunshine is the old maid cousin, who knows by experience that her cousin will begin to hint for her to move on as soon as the children are well.

"Life is so interesting," she puts it. "Just now I'm here, and who knows where I'll be in a month? It gives me something to look forward to, and such a fine chance to adapt myself to conditions. After all, life is just a series of altering yourself to suit situations, isn't it? And that's what makes character."

And so I say, life does not consist of an abundance of possessions, but of a variety of experiences. And only those who accept the experiences as a means of growth have learned the secret of living.

DEBORAH.

Hooverizing Keeps This Family Well

Dear Deborah.—Your article "Fighting the Enemy at Home" was a good one and really ought to encourage some who cannot spend the time and strength to work at the Red Cross work. I want to tell of my experience. I wanted to help in some way. My father was in the War of the Rebellion and my brother was in the Spanish-American war, but we have no boys to send now. I have a family of four to do for, and also work six hours a day six days a week in an office. So you can readily see that I have not very much time to give. I tried the knitting, I always loved to knit, but the heavy yarn and needles that they use now tired my hands so I could not run a type-writer fast at all, so I had to give that up. I at last decided that the only way that I could help besides giving to the Red Cross and Y. M. C. A. and buying Liberty Bonds, was to save in the kitchen. We have always been great hands for bread, and even if we had meat we wanted a crust of some kind with it. I tried rye bread and my family liked it very much, so since the first of December I have baked only two messes of wheat bread, and not one has complained. We use Johnny cake and rye biscuit for warm bread and gems. I have also found that I can make a pretty good substitute for Graham by grinding oat flake through the meat grinder and adding an equal amount of white flour to it. So we have our Graham bread just the same. In the sweet stuffs we have made oat meal cookies and molasses cookies, making the latter out of the sweet molasses and not using any sugar. We have also found that we like corn syrup on our cereals, oat meal, rice, etc. By the way, rice is a good substitute to use with cheese instead of macaroni.

We have always got our butter from our daughter who lives on our farm. But this winter we have used oleo and given up the butter. For lard we have used a substitute. So we can find lots

of ways to use the substitutes and help in our little bit. When we think what the people are living on over there we ought to be thankful that we can have the substitutes to use.

We have never been as well a winter in our lives as we have been this winter. We generally all of us have colds and bilious spells, etc., but nothing of the kind this year. My husband said the other day that he thought it was marvelous the way we had got through the winter so far and not been sick at all. And we have had the usual coal trouble, too, part of the time running a furnace and heating three rooms and part of the time running a stove and living in one room. But one can stand lots of inconveniences, etc., if they only meet them with the right spirit. And I believe that is one good thing which will come out of this war, the good feeling, the interest for each other, and the forgetting of ourselves.—Mrs. G. E. Y.

DO NOT SAVE ON MILK.

A quart of whole milk gives as much nourishment as one pound of lean meat. Being a liquid, milk is sometimes classed with water, tea and coffee, simply as a beverage. This is a great mistake. If all the water were to be driven off from a quart of tea or coffee, almost nothing would be left, and the little that remained would have little or no value as food. If, on the other hand, the water were driven off from a quart of whole milk, there would be left about half a cupful of the very best substances, including butterfat, a kind of sugar not so sweet as granulated sugar, and known as milk sugar, and also materials which are needed to make muscles, bone, teeth and other parts of the body. All these valuable substances are ordinarily either dissolved or floating in the water of the milk. Do not begin to save on milk.—M. A. C. Extension Division.

EASTER EGGS.

BY JULIA R. DAVIS.

There are few games more exciting or enjoyable to the little folks than hunting for the prettily colored eggs, hidden in various nooks and corners out of doors at Easter-tide for the children to find. However scarce or high-priced eggs may be, most mothers lay aside some for this time-honored custom.

Harmless vegetable dyes for Easter eggs may be bought, but in these days when we are urged to conserve in the smallest outlay it is well to use the many colors that may be produced at home without expense. For example, eggs may be dyed a rich brown by boiling them in water with onion skins. If before they are put in onion water they are sewed in small bags with ivy or parsley leaves, their shells will be variously tinted. A few violets in the bags will color the eggs brown and lilac. If the eggs are wrapped in colored silks, or even in bright colored paper or calico print, variegated patterns will appear upon the shells. The eggs should be placed in lukewarm water, which is gradually brought to the boiling point. After boiling some time the water should be allowed to cool before the eggs are removed. They may be colored a bright green by being boiled in water with spinach or fresh grass. Logwood colors them a violet; a little vinegar added to the water changes the color to delicate lilac; cochineal colors any shade of red from pink to scarlet, according to the amount added to the water, and indigo dyes them deep blue.

Colored eggs may be ornamented by drawing patterns on the shells with tallow before boiling. As the dye will not affect the parts covered with grease the designs will appear in white upon a colored background.

Egg shells may be engraved by drawing the design with melted wax, or varnish, and then dipping the shells in strong vinegar. The vinegar eats away the shell, and leaves the pattern in relief. If the rest of the shell is to be colored, the wax, or varnish, should be left on during the dyeing and removed later by scraping or with the aid of alcohol.

Appropriate Easter mottoes or couplets written on the egg shells add to the surprise and delight of the egg-hunter. These may be written with a quill pen dipped in a weak solution of muriatic acid.

CONTRIBUTED RECIPES.

Household Editor.—I have some economical recipes which are tried, delicious and also cheap, so I am sending them to you to publish, to help housewives in food conservation and to lessen the high cost of living. These recipes I made myself and have tried them. They should be used with scant shortening, especially the bran.

Bran Muffins.—Three tablespoons of sugar, one cup of buttermilk, one-quarter teaspoon of soda, one-quarter teaspoon of salt, one teaspoon of baking powder one heaping teaspoon of compound bran to make stiff batter, one-quarter cup of flour.

Bran Porridge.—Take the amount of bran you need for breakfast, pinch of salt, and boiling water to cover. Cook for fifteen minutes. You will have a delicious breakfast porridge, served with sugar and milk.

Bran Cookies.—One and one-half cups of sugar, half cup of cream, or two tablespoons of compound, one cup of buttermilk or sour milk, one and a half teaspoons of soda, one quart of bran, one cup of flour, one teaspoon of baking powder, one pinch of salt.

Graham Brown Bread.—One-fourth cup of sugar, half cup of molasses, half tablespoon of compound, one and one-half cups of buttermilk, one-fourth teaspoon of soda, one teaspoon of baking

powder, mixed in enough graham flour to make a stiff batter. Drop from a spoon.—Reader.

I have noticed several recipes for molasses fried cakes, but all take both sugar and eggs, so am sending one I have used for many years and find it very nice. Also cake and cookies which call for very little sugar, all of which may be omitted if found more convenient to do so.

Molasses Fried Cakes.—One cup of cooking molasses, one cup of sour milk, one tablespoon of melted shortening, half teaspoon each of salt and cinnamon, two teaspoons of soda. Mix about as for cookies and fry as any fried cakes. Roll in sugar if you like.

Molasses Cookies.—Two cups of molasses, half cup of sugar, one cup of shortening, one egg, two teaspoons of soda, seasoning.

Fort Atkinson Ginger Bread.—One cup of cooking molasses, one cup of boiling water, two cups of flour, half cup of shortening, one egg, one teaspoon of soda, one teaspoon of ginger, two tablespoons of sugar. Put together as follows: Stir sugar and shortening together, add flour and stir. Add molasses and yolk of egg and beat together. Add boiling water and soda and then the white of the egg, well beaten. Have omitted sugar. You may think batter pretty thin, but never mind. Do not bake too fast, and it is sure to be all right.—Mrs. J. C.

HOARDING FOOD.

Anyone buying and holding a larger supply of food now than in peace time, except foods canned, dried or preserved in the home, is helping to defeat the Food Administration in its attempt to secure a just distribution of food and the establishment of fair prices.

The food hoarder is working against the common good and even against the very safety of the country.

Hoarding food in households is both selfish and unnecessary. The government is protecting the food supply of its people.—U. S. Food Administration Home Card.

HOME QUERIES.

Some time ago I found a recipe for canning or putting up elderberries for pie. I tried it and we had the finest elderberry pie we ever ate. I have lost the recipe and forgotten how I prepared the fruit. Could some housewife inform me?—Mrs. G. G. C.

Household Editor.—I dislike very much the taste, also the odor of soda in tomato soup. Perhaps Mrs. O. R. E. does, too. If she will have both the tomatoes and the milk boiling, when the two are combined, the milk will not curdle.—Mrs. R. T.

Scotch Orange Marmalade.—To two pints of ground oranges, (pulp, rind and juice), add two pounds of honey, and cook to a thick marmalade.

Corn Meal Dumplings.—Greens, corn meal dumplings, and jowl, food experts will tell you is a perfect combination of food values. The dumplings are made as follows: Pour a cup of boiling water over two cups of corn meal and one teaspoon of salt, add a little more water if it swells too dry. Mold into dumplings, while hot, dipping the hands in cold water every minute to prevent burning. Drop dumplings in the liquor in which greens were cooked, and cook fifteen minutes closely covered. Lift from pot with skimmer and serve on dish with greens.

To Remove Rust.—One does not have to wait for a sunny day to take iron rust out of linen. Soak the garment in cold water and wring out lightly. Then squeeze lemon juice on the spot and sprinkle with salt. Next put in a double boiler and steam for twenty minutes. Take off the fire, rinse in cold water and rust is gone.—M. A. C.



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Also an eighty acre farm S. 1/4 of the N. E. 1/4 of Sec. 2, Broomfield Township, Isabella County, Michigan. About 40 acres cleared, good orchard, no buildings to speak of, some Rye on ground. Price \$2000.00.

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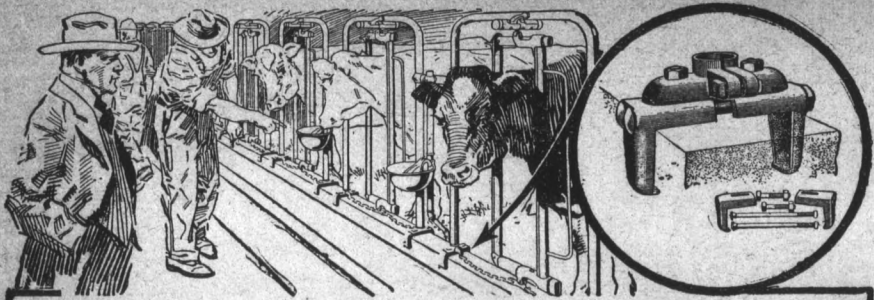
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Adaptability of the Breeds

By W. MILTON KELLY

THE question as to which breed will prove the most profitable from a breeding standpoint involves several important questions, besides that of the relative efficiency in the production of milk and its products. Apart from the importance of adaptation of type to local conditions there is a great advantage in community breeding. If the dairy farmers of an entire community are interested in producing pure-bred cattle and grades of a single breed that is well adapted to the conditions, the region becomes known as a place where such cattle can be purchased both for breeding and commercial purposes. Hence all of the surplus stock can be sold at higher prices and with less expense for advertising than if only a few of the dairy farmers were breeding the one breed. The demand for carload lots of grade cows for eastern milk dairies is sure to be an important factor in the years to come. Success in breeding registered dairy cattle is much easier when one is located in a community where a number of progressive dairy farmers are working with one breed.

Few Good Females Desirable.

In buying foundation females for a herd, individual records as well as approved blood lines should be given as much attention as age or price. As a rule, other factors being equal, it is better to buy females of breeding age, either with calves at foot, or safe in calf to sires that are bred right to nick well with them. When one gets a good young cow with a credible milk record he is getting something for his money. One eliminates risk, depreciation and uncertainty; and makes a fair start toward making the business pay. Many a breeder has made a good beginning from the purchase of a few old cows. It is the old cows that many experienced breeders prize so highly. A close study of the prominent dairy performers, looking up the age of their dams, would be enlightening as well as interesting to many breeders who think it good management to sell their best cows before they grow old in their herds. To secure a few head of desirable females means a lot of hard study and close investigation, but unless a man will go about the problem intelligently he had better keep his money in the bank and devote his energies to some other line of farming.

A Tried Sire is Preferable.

The greatest improvement in breeding must come largely through the bull. As a rule, the tried sire, one that has served his time in some established herd and is being sold to make room for one of lesser age, is a safer investment than a younger animal. By studying the form and character of some of his offspring, one can form an accurate idea of his value as a sire, and there is less risk to run than when a perfectly untried sire is purchased. When an old sire is selected, the beginner will be assured of a certain degree of success until he has got his bearings and become sufficiently familiar with the type and character of the animals of the breed with which he is working to select the sorts that find favor among the most liberal buyers. From any point of view, the use of a tried sire is preferable. He will prove an anchor in time of trouble.

An Old Breeder's Care.

One of the country's most famous breeders owes his success to the use of one exceptionally good aged bull. He has been searching for several years for another bull that will prove equally valuable as a sire. It is the well defined conviction of the owner that he must secure a sire whose calves will be as meritorious as those of the one used so long or else his herd cannot be kept up to its present high

standard. This breeder, who won fame and fortune through some of the heavy milking daughters of his famous sire, has more of a problem than merely replacing the bull that has done so well as a sire. He must find a bull whose characteristics and traits nick well with the females of the first great sire. This makes the situation more perplexing, but the owner is seeking diligently, studying good bulls and consulting milk records and experimenting with a number of young bulls in a moderate way to find out what kind of daughters they will produce. No doubt before the old sire shall have outlived his days of usefulness a worthy young sire will have been discovered. The real value of a tried sire in rounding the corners, so to speak, of a herd of cows from various breeders and placing the new breeder in possession of a herd of females that present much uniformity of type and quality can hardly be measured in dollars and cents. It is only thus that a beginner may succeed in developing his herd to a standard of high excellence unless he should have the singular good fortune to obtain a young bull that proves to be one of the really great sires of the breed.

The Test of Efficiency.

The breeder must make a constant study of the essential merits of breeding animals and familiarize himself with the general type and minor characteristics of his animals in order to render them suitable for the persons into whose ownership they ultimately come to perform their service. The cow that shows a profit at the end of the year gives more real satisfaction than a phenomenal producer who does her work at a loss. The dairyman's ideal of perfection is sure to be the cow that gives him the best returns, consequently she must not only be a large producer but an economical producer. In judging pure-bred dairy cattle for what they will produce, ancestry must be weighed to an extent of at least fifty per cent of the whole. To the man who keeps a sire or dam for producing young, a knowledge of pedigree is of as much importance as the make-up of the animal itself. Estimating the value of pedigree will always be a determining factor in breeding pure-bred cattle, and the greatest success will be achieved by those who master and utilize this knowledge and who do not lose sight of the pedigree's best proof, the make-up of the animal itself.

How to Study Pedigrees.

The new breeder frequently places too much importance to the pedigree, and it blinds him to the necessity of going behind it to study the merits of the individual. Pedigrees merely trace the line of ancestry. It is up to the buyer to trace out the real merit of the ancestry as best he can. With all pedigrees there ought to be a record of performance. We now have what is known as advanced registry that gives the production records of the registered animal. This advanced registry record is an important factor in selecting a herd. Like the pedigree, it can not guarantee that the animal will inherit the power to produce as well as its ancestry, yet it is a guarantee that the animal stands a better chance of being a profitable producer than the one about whose ancestry nothing is known. The man who buys advanced registry stock is on safer ground than one who takes chances of discovering an equally good one. He may secure a prize, but the chances are vastly greater that he will just buy an ordinary producer, no better than thousands of grade animals that could be had for less money.

There is no better evidence of the value of advanced registry records than that given by concrete examples.

The calf born from the Holstein-Friesian cow that made a world's record for one year's milk production, was sold at a nominal figure before the record was made. As soon as the cow's owner realized what she was doing he bought the calf back, and sold her afterwards for \$8,000. Was this official milk record of any value to the seller? The Jersey cow that held the world's record for three consecutive years was bought for less than \$200 before it was known what she could do. A few months after it is claimed that \$10,000 was refused for her. Was her record of any real value? The famous Guernsey cow that established a record for a cow of her age was at one time owned by an eastern breeder, and it is safe to say that her calves never brought what might be called high prices. Later, neither this cow nor her calf could have been bought at any reasonable price; an offer of \$10,000 was refused by her owner. These facts and figures show that advanced registry records have more or less value as a guide in selecting dairy cattle.

When one begins to touch upon show ring records he is sure to have a come-back from many breeders of dairy cattle. Fortunately for the breeding industry, there are many breeders who believe that it is possible to combine usefulness with beauty, and these men are finding a ready sale for every animal they can produce. There is no reason why breeders should sacrifice beauty and uniformity to produce heavy producing animals. Just as soon as a breeder ignores breed standards and pins his faith entirely on advanced registry records, just so soon will he invite failure, because of the two cows having an equal capacity for production, one being true to type and the other coarse and rough, the prospective buyer will take the one which pleases his eye. The ideal dairy cow combines beauty with utility.

Careful selection of the sires and dams influences the heredity tendency to produce larger milk and butter yields and good breeding stock. A liberal system of feeding and suitable environment develops these inherited tendencies. Heredity is a peculiar force. We can use it to do some things, we can head it off and prevent it doing other things we do not want it to do, and it frequently does things that no one can account for. Much that appeals to the eye or goes to make advanced registry record is caused by what goes into the mouth. Good breeders who have made a success have been generous feeders. Feed is not all, for there are many cows that can not return a profit under any system of feeding. It is the breeder's duty to weed out all of the unprofitable cows by the process of elimination. Good breeding must be reinforced by generous feeding to bring out the best that is in animals.

A BREEDER'S PROBLEM.

There are many who do not believe very strongly in a careful, scientific breeding. There are many scrub cows that are enormous producers, both in quality and quantity, of milk. Then there are many pure-bred cows that are poor producers. A case has come to our notice of a pure-bred cow which produced about twelve thousand pounds of milk in a year, mated with a sire whose dam produced eleven thousand pounds in a year, and the result was a daughter which was capable of producing less than six thousand pounds of milk in a year. It is because of occurrences like this that some dairy farmers look with some suspicion on scientific breeding of dairy cows.

The principle of atavism, which is breeding back to some primitive type, is well shown in such cases. This principle is frequently shown, not only in the breeding of cattle, but in the breeding of all other animals. In such

cases the sire and dam that bred back should never again mate. It may be that the fault was not exclusively in either, but in the combination of blood. The intelligent breeder will see to it that such offspring is sent to the shambles.

The experienced breeder can usually see before the calf is two weeks old whether it will be suited to dairy purposes. The dairy animal will have a thin neck. There is a peculiar softness in the skin of a good dairy animal that all experienced animal breeders will quickly notice.

It is a fact that a great deal depends on the way calves are brought up. The best heifer calf may easily be spoiled by being fed fattening food, or by semi-starvation before it is a year old. Both of such procedures are injurious to the calf's digestion. If this is ruined in calfhood, the cow will be a poor eater, and therefore a poor producer, no matter what the sire and dam may have been.

It would also seem to go without saying that a great deal also depends on the way the mature animal is fed. Fine blooded animals require the best of care and treatment if they are to do their best. If the owner is not able or prepared to give his cows the required treatment, or is too negligent to do so, his fine-blooded cows are certain to sink to a level with, if not below, that of the scrub cows. And so it often occurs that the best bred animals are often branded as cheats, only because their owner did not properly treat and sustain them.

A. B.

SILO FOR TEN HEAD OF CATTLE.

I have an eighty-acre farm. I keep ten head of cattle in the winter time, five or six are cows, about fifteen ewes. Would want to feed cows a part of the summer. Now, how big a silo do I want? Was thinking of a 12x30 or a 10x30.

R. A. S.

A silo eight feet in diameter is better than one ten feet for a small herd of cattle. I wouldn't think of building a silo twelve feet in diameter for five or six cows. Eight feet in diameter would be all right, then by building it thirty feet high or more, you will have sufficient silage probably so that you will have some left for feed in the summer time when the pasture is short. The best thing to do, however, would be to build a 10x30 foot silo and then buy a sufficient number of cows to eat the silage fast enough to prevent any waste.

FRANCE AGAIN TIGHTENS HER BELT.

New French food regulations effective February 25, contain these restrictions necessary to conserve the limited supply of food. Public eating places are forbidden to serve sugar, but customers may bring their own supply. The making of pastries, biscuits and confectionery is prohibited. All grain which may be used for making bread is reserved for human food. Bread served at meals in public eating places is limited to about three and a half ounces per meal. There are severe restrictions on the consumption of dairy products of all kinds, especially butter, cheese and cream.

"VISIBLE SUPPLY" EXPLAINED.

As commonly used the term "visible supply" applied to an agricultural food commodity means the stocks at primary interior points, plus the amount on the lakes, rivers and canals, plus the stocks at principal export points. It is an approximate measure of supplies actually in sight and moving through trade channels, and does not include the amount which has not yet left the farms or the areas in which produced.

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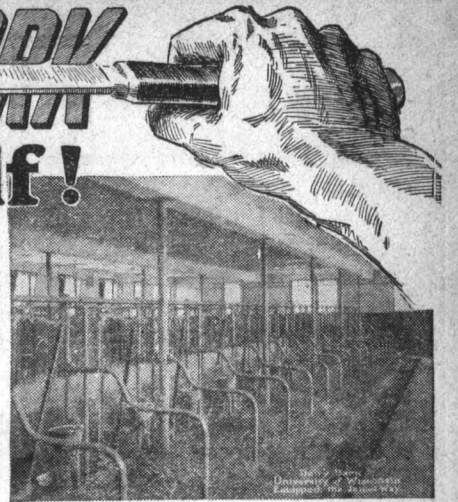
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Tells why chicks die

E. J. Reefer, the poultry expert, 239 Reefer Bldg., Kansas City, Mo., is giving away free a valuable book entitled, "White Diarrhoea and How to Cure it." This book contains scientific facts on white diarrhoea and tells how to prepare a simple home solution that cures this terrible disease over night and actually raises 98 per cent. of every batch. All poultry raisers should certainly write Mr. Reefer for one of these valuable FREE books.

Egg-u-hatch applied to eggs during incubation strengthens the chick and weakens the shell. It supplies free oxygen, absorbs the carbon dioxide and rots the shell. Makes better hatches of stronger chicks. Booklet free. Package treats 100 eggs, 50 cents, postpaid. Ask your dealer. GEO. H. LEE CO., 265 Lee Bldg., Omaha, Neb.

Poultry as a Source of Food Supply

By I. J. MATHEWS

I AM not here to urge the keeping of more poultry." This sentence astonished the hearers of Professor Rice, of Cornell University, who is admittedly the foremost poultryman in America. Professor Rice went on, however, to enunciate a law of economy that will hold in the production of any class of live stock in these critical times.

Law of Economy.

In all this discussion, we shall assume that if the individual loses, the nation loses. If the poultry kept and fed do not make good use of their food, some of it is wasted, the owner is impoverished and it would be much better to feed it to the hogs.

Poultry can be made to pay if handled properly, but only the best should be fed. Hens are now scarce and high in price, and they bid fair to continue high for a long time to come. Three reasons can be stated for this statement.

In the first place, the conditions which have prevailed for the last year or two where the fowls bring a good

factors influence egg production, namely, breeding, feeding and housing. Of these breeding is, by all odds, the most important. Some hens do not lay because they are not bred to lay. Others may have the best of rations and all the other supplies that enter into the formation of the egg, and still they do not lay. Then again, there are hens that lay on the feed that but little more than maintains other fowls. Laying is an inherent quality just as is work in a family. You have noticed families all of whose members were workers. In the same way, some families become known for the ways in which they evade work. Hen families are the same as men families in this respect. "We have two hens at Cornell University that are the same age and have had the same chance. One hen has laid nearly a thousand eggs, while the other has laid thirty-eight." With this statement, the professor closed his remarks on the breeding phase of the subject.

In taking up a discussion of proper feeding for eggs, he called attention to

scales. The ear lobes of a layer of the white breeds become white, not yellow. The body of the layer is an oval, her feathers seem to be white and with all the attributes named, together with the great width between the pelvic bones will enable anyone to distinguish the layers.

By examining the abdomen of the hen, another sign of laying can be detected. For three weeks before laying, the oviduct increases from five and six inches to one and a half feet in length. The body is full and changing in shape.

The Non-Layer.

The typical non-layer has yellow shanks, yellow feathers, yellow beak, a shriveled comb, molts early, has a narrow pelvis and a body that is upright.

In the yellow legged breeds, such as Wyandotte, Rock and Red, whether or not the hen has been laying can be told by the pigment of the red ring around the eye. If the hen has been laying, the red color fades out and if the ring is a rosy red, the hen is probably a non-layer, especially if this attribute is coupled with that of a shriveled comb.

The thing to do is to cull out boarders, and then feed the layers one hundred per cent of feed so that they may be able to produce eggs. The hen that lays the least eggs adds insult to injury by laying them when eggs are the cheapest and resting at periods when eggs are high in price.

Distribution of Egg Costs.

"Yearling hens produce eggs at less cost than do older hens." To back up this statement, Professor Rice illustrated by the following table:

Average Cost of Feed Per Dozen Eggs.

Rochester feed quotations (mixed), carload lots f. o. b.

Age of Hen.	1914-16.	1916-17.	Increase.
1 year	0.115	0.154	0.039
2 year	0.125	0.17	0.045
3 year	0.13	0.178	0.048

This table shows conclusively that the hens lay less eggs as they get older. This also brings out the fact that the cost of production of these eggs did not increase as fast as did the retail selling price.

The Future of Farm Poultry.

"I regard the future of farm poultry as very bright and promising," said Professor Rice. They are very beneficial in that they destroy many injurious insects and they eat forage that would otherwise go to waste. Added to this, they are a source of meat that is always on foot, at hand, and can be easily made ready when the minister comes. Added to this, they are the most valuable source of food, with one exception—that of milk. Egg is a most nourishing and easily digestible food that contains vitamins—a life-giving substance that is found in but few other foods with the exception of butterfat, in which this substance abounds.

Good Layers Have Been Sold.

Eggs and poultry products are a human necessity and not a luxury.

The one shame that rests on poultrymen now is that they have let the wrong hens get away from them. When the buyer has shown up for the purpose of buying the culls, the owners have gone into the flocks and picked out the frazzled and frayed birds, in other words, the late molters or layers. These have gone to the packing houses while the non-layers have been in a great many cases, retained because of the fact that they had completed their moults early.

In summing up, Professor Rice emphasized the fact that poultry must pay for the feed they consume, else it had best be disposed of in the raw state. The most valuable points in his whole talk were those which enable one to go into a flock and cast out the drones. This he made so clear that even the novice can cull out a flock with certainty and send the hens that refuse to lay, to a packing establishment where they will have to lie in wait for some hungry poultry lover.



For Poultry Products the World Must Depend on the Farm Flock.

price and where the chicken feed is high, the birds are sure to be sacrificed. High-priced feed and high-priced chickens will always decrease the supply of birds because people do not know whether the feed will pay or not and so they unload both the hens and the feed.

Then again, the price of eggs for hatching purposes last spring was so high that a minimum of eggs were incubated. The eggs that were never incubated can not go to supply the demands for market fowls. Last spring a great many incubators were not started and there was a great falling off in the normal supply of chicks, hence the hens that were on hand commanded a still higher price, thus widening the chasm between the present and the usual supply.

Also, while the birds were commanding a top notch price, dumping was practiced with the result that markets were glutted, which in turn caused the sacrifice of good birds. All these factors have operated to cause a decrease in our poultry supply equal to thirty-five per cent of the normal number.

Luring Times Ahead.

Unquestionably, the next few years will be money-makers for the poultryman. In the first place, eggs will continue to be high because the price of cereals will fluctuate with the abundance of the crops, while this will in no wise influence the number of fowls. They will remain few in number of necessity, thus limiting the number of eggs that will be available.

Poultry meat will be in demand and the scarcity of fowls will cause a wide divergence between the price of meat and the price of feed. These things, taken together with the fact that poultry supplies are daily being decreased makes the outlook for the wise poultry keeper a bright one.

According to Professor Rice, three

the fact that of the total amount of feed for a laying hen, eighty-five per cent of it is used for maintenance, while the fifteen per cent above this is what causes the hen to lay. He called attention to the idea that some men feed poultry the eighty-five per cent of the food, but they do not lay; another poultryman feeds ninety per cent and the best hens lay, and then again, the poultryman who feeds the full one hundred per cent of feed gets the maximum egg production, provided the birds have been selected on an egg-laying basis.

How to Tell the Layers.

To quote Professor Rice, "Efficiency is the watchword of the hour." The efficient poultryman must quit feeding good feed to unprofitable fowls. He must select the layers and discard those that are liars. It is a shame for poultrymen to keep unprofitable birds around—there is no use of it, for now we have learned how to tell with unerring accuracy the hen that is laying, the hen that will soon lay and the hen that refuses to lay. It is easy now to tell the layer from the liar.

To tell a good layer, watch the molting. Late molters are always the layers. They are in such good physical condition that they do not have to molt early and they keep right on laying. In the white birds that have yellow shanks and beaks, the layer will have pale shanks and beak. The reason for this is because the pigment from the body is taken to make up the coloring matter of the egg and as this is taken out, the color fades from the legs and beaks.

Indications of a Good Layer.

The comb is another indication of a layer. The hen that is laying has a comb of soft, velvety texture which is pliable and warm. The hen not laying has a shriveled comb which when examined more closely shows white

Care of Hatching Eggs

By I. G. SHELLABARGER

TO insure eggs being produced next winter the pullets must be hatched early this spring. One difficulty often times experienced in hatching early chicks is to get eggs that are fertile. However, if vigorous males are with healthy females and not too many females with one male, little trouble from this source may be encountered.

The eggs to be placed in incubation must have careful handling. The eggs ought to be gathered daily and then not subjected to extreme or sudden changes of temperature. After the eggs are gathered they should be placed in a location not subject to variations of temperature and for this reason a dry cellar is possibly the best place to store the eggs until they are ready to be placed in incubation. It is important to hunt the eggs several times per day if they are to be placed in incubation because if they are not the different hens using the same nest will sit on these eggs and in the course of a day the eggs are brought up to incubating heat several times a day and this is detrimental to the germ of the egg.

Use Care in Handling Eggs.

This year while we are trying to conserve on every hand and trying to produce the largest amount of foods ever produced it is important that we use every means possible to gain this end and consequently we can not exercise too much care in handling the eggs.

The hands should be clean in handling the hatching eggs. It is well to wash the hands before gathering the eggs. Any oily substances on the hands may be rotten on the egg and thus close up the minute pores in the shell through which the unborn chick breathes. Some also assert that diseases of various kinds may be transmitted to the egg through dirty hands.

There has also been more or less trouble encountered with deformed and crippled incubator chicks. In fact, we don't believe we have ever taken off a hatch from the incubator but what there were several deformed chicks, while on the other hand, we don't think we ever removed a clutch of chicks from a hen and found a single deformed chick among the lot and this is the case after thirty years' experience with chickens. Much experimenting has been carried on with the hope of finding the cause of this trouble, but nothing has been found that will absolutely overcome the difficulty.

The subject of white diarrhoea of young chicks has been given scientific study but as yet no absolute cure or preventative has been discovered and about the only thing to do is to use precautionary measures as the proper handling of the hatching eggs.

Keeping the Eggs.

Eggs that are intended for hatching should be gathered several times per day and taken to some location where the temperature will not vary to any great extent. For this reason the dry cellar is probably the best place. Although should the cellar be quite damp the eggs held therein may not hatch well because the film of moisture that will collect on them will affect their hatchability materially.

The small end of the egg should be placed down, to protect the air space in the large end of the egg, and then eggs should be gently turned daily. Eggs intended for hatching should not be held over two weeks or ten days, although we have held them for three weeks and had excellent hatches, but to hold eggs for such long periods is not to be encouraged.

Rough handling of eggs may break or loosen the egg germ from its location. The egg germ is the little white disk-like spot noticed on the yolk when the egg is broken open. In receiving

hatching eggs from a distance the shipper usually advises the receiver to allow the eggs to sit for twenty-four hours before placing them in incubation, this is done to allow the germ in the egg to right itself. Also to allow the egg to settle and the air space to become normal.

It sometimes happens that the eggs in the nest that are wanted for incubation become badly soiled and if they are not cleaned the hatch may be interfered with. Soiled eggs should be washed in lukewarm water to clean them of the dirt. Although experiments have been shown that a hatch of 52.5 per cent has been secured of unwashed eggs and forty per cent of washed eggs. However, the statement is not clear whether the eggs were washed with a solution of alcohol or creolin to overcome white diarrhoea or merely in clear water to clean them of dirt and filth. The trouble from dirty eggs may be overcome if the fowls are not permitted to forage in dirty and filthy quarters and if clean litter and plenty of nesting material is supplied.

In the above some suggestions have been made upon the care of the hatching eggs seem small within themselves but will do much toward insuring success and are applicable whether the eggs are to be placed under hens or in incubators.

ESSENTIALS OF SYRUP MAKING.

(Continued from page 396).

or wool filters. These filters are made of heavy cotton felt or wool felt. The most popular ones in operation are made of wool. When the syrup is taken from the evaporator pan it is run into one of these filters which is held in place in the mouth of a large storage can, usually a common milk can. After two to three gallons of syrup have passed through one of these filters it is necessary that the felt be washed out or cleaned, since all foreign matter and "malate" is taken out of the syrup in this process. This accumulation is easily removed from the felt by washing in a tub of water, the filters being run through an ordinary wringer and then placed back in the first compartment of the evaporator where the hot boiling sap runs in. These filters may be used over and over again if kept perfectly washed and produce the finest grade of clarified syrup.

Use of Labels.

Every maker is required by law to label his product if he expects to put it on the market. This label must contain: The name of producer, the net weight and the measure, and it should give the name of the distributor. Every maker should take steps to secure these labels early in the season. Much difficulty has been experienced in providing a paste which will make the labels stick to the tin cans. The following paste is recommended. Boil flour paste for several minutes during which time the paste should be constantly stirred until somewhat cool. A teaspoon of good vinegar may be added to each quart to remove the grease or finish on the can, otherwise the paste will "snap" from the can when dry. A paste recommended by a very prominent sugar maker in Ohio consists of nothing more or less than the wall paper paste which he claims to have used for fifty years with absolute success.

In tests of brooders kept at different temperatures, a high temperature for several days and also wide variations of temperature caused a heavy mortality. The most desirable temperature is stated to be for the first week 100 degrees F.; second week, ninety-six degrees; third week, ninety-two degrees, and fourth week eighty-eight degrees.

Win the War By Preparing the Land Sowing the Seed and Producing Bigger Crops

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The Food Controllers of United States and Canada are asking for greater food production. Scarcely 100,000,000 bushels of wheat can be sent to the allies overseas before the crop harvest. Upon the efforts of the United States and Canada rest the burden of supply.

Every Available Tillable Acre must Contribute; Every Available Farmer and Farm Hand must Assist.

Western Canada has an enormous acreage to be seeded but man power is short and an appeal to the United States allies is for more men for seeding operations.

Canada's Wheat Production last Year was 225,000,000 Bushels; the demand from Canada alone, for 1918, is 400,000,000 Bushels.

To secure this she must have assistance. She has the land but needs the men. The Government of the United States wants every man who can effectively help to do farm work this year. It wants the land in the United States developed first of course; but it also wants to help Canada. Whenever we find a man we can spare to Canada's fields after ours are supplied, we want to direct him there. Apply to our Employment Service, and we will tell where you can best serve the combined interests.

Western Canada's help will be required not later than April 5 th. Wages to competent help, \$50 a month and up, board and lodging.

Those who respond to this appeal will get a warm welcome, good wages, good board, and find comfortable homes. They will get a rate of one cent a mile from Canadian boundary points to destination and return.

For particulars as to routes and places where employment may be had, apply to

U. S. Employment Service,

Dept. of Labor.

Detroit, Grand Rapids, Sault Ste. Marie and Port Huron, Mich.

How To Save Baby Chicks

Firman L. Carswell, a big poultry raiser, 612 Gateway Station, Kansas City, Mo., is giving free a valuable book which tells how to save, feed and care for Baby Chicks. Every poultry raiser should write now for a copy of Mr. Carswell's free book which contains important facts about White Diarrhoea and how to treat it. Advertisement.

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For settings or in quantities for incubators, from any of the foregoing breeds.

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One Pens 17 S. C. Rhode Island Reds with cockerel, or pullets can be divided; R. C. Reds, 5 only.

HOMESTEAD FARMS, Bloomingdale, Mich.

Baby Chicks from Standard Bred S. C. White and Brown Leghorns. Good laying stock. \$13 per 100. Safe arrival guaranteed. Catalogue free. Book your order now for spring delivery. Wolverine Hatchery, Box 22, Zeeland, Mich.

Barred Rocks—EGGS FROM STRAIN with records to 290 eggs a year: \$2 per 15. Delivered by parcel post, prepaid. Circular free. FRED ASTLING, Constantine, Mich.

Barron English 240 egg strain White Leghorns, heavy winter layers, large size birds. Hatching eggs \$6 per 100. Chicks \$13 per 100. Guarantee satisfaction. Devries Leghorn Farms and Hatchery, Box A, Zeeland, Mich.

Barred Plymouth Rock eggs for hatching from full blood stock prize-winning strain \$1.50 per 13. J. A. BARNUM, Union City, Mich.

BARRON Strain S. C. White Leghorns Bred to Lay long bodied vigorous stock. Hatching eggs \$6 per 100. Bruce W. Brown, R. 3, Mayville, Mich.

FOR SALE—Barred Rock Cockerels \$3 each. Eggs from choice Barred Rock mating \$2.50 per 15. Mrs. RAY G. BUNNELL, Lawrence, Mich.

Baby Chicks Young's Strain S. C. White Leghorns free range stock, safe arrival guarantee, catalogue free. Knolls Hatchery, R. 3, Holland, Mich.

BABY Chicks. Bred-to-lay S. C. White Leghorns at last year's price, \$12 per 100. No catalogue or circular. Order direct from this ad. Cash in full with order. Hatch every Tuesday, beginning April 2. Sunny-brook Poultry Farms, C. G. Barrington, Prop., Hillsdale, Mich.

Buff Leghorn Cockerels, and a few pens. Dr. WILLIAM A. SMITH, Petersburg, Mich.

Buff Orpingtons—Seventeen years' Best exhibition egg producing strain. Eggs for Baby Chicks. Circular free. WILL SCHADT, Goshen, Indiana.

Chicks, We ship thousands, booking orders now for spring delivery, free booklet. FREEPORT HATCHERY, Box 12, Freeport, Mich.

Cockerels—From Chicago Coliseum winning stock. \$3 & up "Ringle" & Buff Rocks, both combs Reds, Spanish Orpingtons, Wyandottes. Tyrone Poultry Farm, Fenton, Mich.

Choice Chicks April and May heavy breeds per setting \$1.50; per 100 \$7.50. Eggs Crescent Egg Company, Allegan, Mich.

Chicks and eggs, standard bred stock, Leghorns, Minorcas, Spanish, Rocks, Reds, Orpingtons, Wyandottes, Campines, Houdans, Polish, Scotch Greys, Tyrone Poultry Farm, Fenton, Mich.

DAY-OLD CHICKS

of quality guaranteed to 1,500 miles. Eggs for Hatching at low prices. Bar. Rocks, S. C. W. Leghorns, S. C. and R. C. Reds, W. Wyandottes, Buff and W. Orpingtons. Chicklet catalogue free. GOSHEN POULTRY FARMS, R-19 Goshen, Indiana

DAY-OLD-CHICKS

Young's Heavy Laying Strain S. C. White Leghorns \$8.00 per 50, \$15.00 a hundred. Safe delivery guaranteed. Immediate shipments. Order now or write, ROY L. DRUKER, 711 Delaware St., Grand Rapids.

DAY OLD CHICKS

250,000 for 1918. \$10 per 100 and up. Purebred. Hatched right. Strong guarantee. 10 leading varieties. Hatching eggs. Big brooder offer. Western Branch, Augusta, Kansas. Free catalogue. Stamp appreciated. Rubens Reliance Hatchery, 333 W. Fremont St., Fostoria, O.

Laybitt S. C. W. Leghorns Large, great layers. Pure white. Bargains in choice breeding hens now. Everfresh Egg Farm, Ionia, Mich.

Ferris White Leghorns A real heavy laying strain, trapnested 17 years, records from 200 to 264 eggs. Get our special summer prices on yearling hens, breeding males, eggs for hatching, 8-week-old pullets and day old chicks. We ship C. O. D. and guarantee results. Catalog gives prices; describes stock; tells all about our farm and methods; results you can get by breeding this strain. Send for your copy now—it is free. GEORGE B. FERRIS 924 Union, Grand Rapids, Mich.

Chicks that Live \$15 per 100 S. C. W. Leghorns. Send for catalog. SNOWFLAKE POULTRY FARM, R. 1, Grand Rapids, Mich.

Fowlers Buff Rocks Booking orders now at a \$2 for 15; \$4 for 30; \$5.50 for 60; \$8.00 for 100. R. B. FOWLER, Hartford, Mich.

John's Big beautiful hen hatched Barred Rocks good layers males & females \$3 to \$6 each. Breeding pens \$12. Send on approval circulars photos. John Northon, Clare, Mich.

IMPROVE YOUR POULTRY

My Young's strain bred-to-lay S. C. White Leghorns are great money makers. 100,000 baby chicks for 1918 delivery at \$13 and up per 100. Satisfaction guaranteed. Write for free catalogue. W. VAN APPELDORN, R. 7, Holland, Mich.

Pine Crest White Orpingtons, hens and pullets \$3.00 each, eggs special price \$5 per 15. Delivery \$12 per 100. MRS. WILLIS HOUGH, PINE CREST FARM, Royal Oak, Mich.

RHODE ISLAND REDS and Plymouth Rocks Males \$5 to 12 lbs. according to age \$3 to \$8; P. R. hens weight 5 to 10 lbs., eggs 15 for \$1.50; 100, \$10; Mammoth Bronze Tom Turkeys 8 to 38 lbs. according to age \$6 to \$25, 10 eggs \$4. J. Morris & J. Barsan, Vassar, Mich.

R. I. REDS, both combs. Chicks & eggs. Most popular strain in Michigan. Write for catalog. INTERLAKES FARM, Box 39, Lawrence, Mich.

R. I. Reds and R. I. Whites. Both combs. Eggs for sale, also a few good cockerels. Good prices reasonable. O. E. Hawley, R. 3, Ludington, Mich.

S. C. Brown Leghorns, Heavy layers. Eggs \$15-\$18. 30-\$25. 45-\$35. 100-\$7. Prepaid by mail. FLOYD ROBERTSON, R. 1, Lexington, Indiana

SILVER Golden and White Wyandottes. A few good Golden and White cockerels, to spare at \$3. Eggs \$1.50, \$2.50, \$5.00. C. W. Browning, R. 2, Portland, Mich.

Single Comb Black Minorca cockerels, sired by a 10 lb. cockbird. A few more P. C. fall pigs. R. W. MILLS, Saline, Mich.

WHITE Wyandottes. I have a fine lot of April and May hatching cockerels for \$3.00 and \$5.00 each. DAVID RAY, 709 Norris St., Ypsilanti, Michigan.

White Wyandotte cockerels, good size, color. \$3.50; 3 for \$10. Reg. Swedish Select Ones free from snout \$1.50 per bu. in 10 bu. lots recleaned and bags free. VAN O. FARM, R. 1, Box 124, Hartford, Mich.

White Wyandottes Chicks and eggs from a winter laying strain. Write for circular. INTERLAKES FARM, Lawrence, Mich.

White China Goose eggs 25 cents each. R. C. Duck \$1.50 for 11. Best of stock. Mrs. CLAUDIA BETTS, Hillsdale, Mich.

WHITE Holland Turkeys a limited number for sale. Silver Spangled Hamburg cockerels Hamburgs are the greatest layers on earth, get acquainted with this wonderful breed. Riverview Farm, Vassar, Mich.

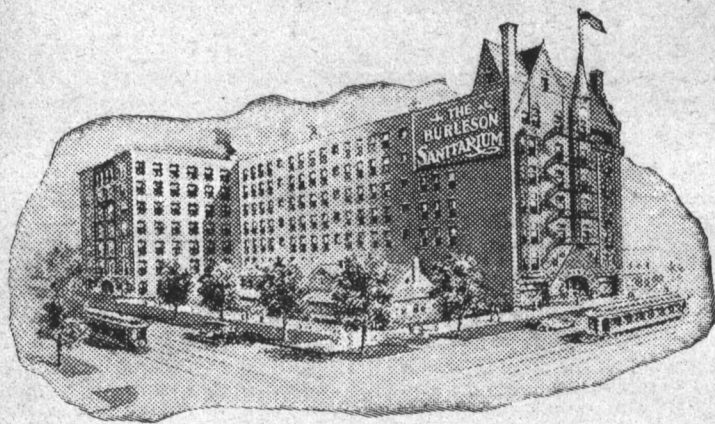
M. B. Turkeys, Toulouse Geese and S. C. W. Leghorn cockerels. Also Berkshire, both sex. Stamps appreciated. Chase Stock Farm, R. 1, Marietta, Mich.

MAMMOTTE White Holland Turkeys, Toms \$8. Hens \$6. Pairs \$12. Prices \$17. Stamped envelope for reply ALDEN WHITECOMB, Byron Center, Mich.

FOR SALE Pure bred Bourbon Red Turkeys, Toms \$8; Hens \$4. LOTTIE CAIN, R. 5, Hastings, Mich.

Gray African Geese, Eggs \$1 each. Three fine tries to sell. Also good farm cheap. Mrs. TRUMAN FRENCH, R. 3, Ludington, Mich.

Piles Cured Without the Knife



The Largest Institution In the World for the Treatment of Piles, Fistula and all Other Diseases of the Rectum (Except Cancer)

WE CURE PILES, FISTULA and all other DISEASES of the RECTUM (except cancer) by an original PAINLESS DISSOLVENT METHOD of our own WITHOUT CHLOROFORM OR KNIFE and with NO DANGER WHATSOEVER TO THE PATIENT. Our treatment has been so successful that we have built up the LARGEST PRACTICE IN THE WORLD in this line. Our treatment is NO EXPERIMENT but is the MOST SUCCESSFUL METHOD EVER DISCOVERED FOR THE TREATMENT OF DISEASES OF THE RECTUM. We have cured many cases where the knife failed and many desperate cases that had been given up to die. WE GUARANTEE A CURE IN EVERY CASE WE ACCEPT OR MAKE NO CHARGE FOR OUR SERVICES. We have cured thousands and thousands from all parts of the United States and Canada. We are receiving letters every day from the grateful people whom we have cured telling us how thankful they are for the wonderful relief. We have printed a book explaining our treatment and containing several hundred of these letters to show what those who have been cured by us think of our treatment. We would like to have you write us for this book as we know it will interest you and may be the means of RELIEVING YOUR AFFLICTION also. You may find the names of many of your friends in this book.

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We Offer a Few Special Bargains
In S. C. White Leghorn cockerels, Rambouillet rams, Hampshire pigs (either sex) and Holstein bulls. A good chance for a small investment to reap the benefit of a large expenditure of capital and years of expert breeding.

Flanders Farm, Orchard Lake, Mich.

CATTLE.

WOODCOTE ANGUS

Trojan-Ericas and Blackbirds only Breeders of the dam and former owners of the sire (our herd bull) of the Grand Champion Bull at the International Chicago for 1917.

WOODCOTE STOCK FARM, Ionia, Mich.

Cloverly Angus Good quality bulls of serviceable age and younger. Inspection invited.
Geo. Hathaway and Son, Ovid, Mich.

Guernsey Grades Won In Wisconsin Test

At the Wisconsin Dairy Cow Competition held at the Experiment Station, 23 grade Guernseys averaged 10,073 lbs. milk and 475 lbs. butter fat for the year. The 4 leading cows were Guernsey grades. One produced 15,744 lbs. of milk and 729 lbs. of butter fat, and calved again during the year. She yielded a profit of \$130.35 above the cost of feed.

(9) Write for our valuable book—

"The Grade Guernsey"

American Guernsey Cattle Club
Box 1
Peterboro, N. H.

Registered Guernseys

A few choice bull calves at prices you can afford to pay.
J. M. WILLIAMS, North Adams Mich.

Guernseys For Sale, four young registered cows. Tuberculin tested. Geo. N. Crawford, Holton, Mich.

Guernseys 45 Registered head, all tb. tested. Nora's May King, son of Imp. May Rose King, heads our herd, 19 of his half sisters sold averaging \$1950 each. His bull calves are booked ahead at reasonable prices. Avondale Stock Farm, Wayne, Mich.

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

For Sale Registered Guernsey bull calves May Rose breeding.
JOHN EBELS, R. 2, Holland, Mich.

For Sale Guernsey bull calves from advanced registered dams ranging in age from 3 to 8 months.
L. J. BYERS, Coldwater, Mich.

CLUNY STOCK FARM

100--REGISTERED HOLSTEINS--100
When you need a herd sire remember that we have one of the best herds in Michigan, kept under strict sanitary conditions. Every individual over 6 mos. old regularly tuberculin tested. We have size, quality, and production records backed by the best strains of breeding.

Write us your wants.
R. BRUCE McPHERSON, Howell, Mich.

A Good Note accepted in payment of finely bred registered Holstein bull calves. Quality of the best, and at prices within reach of all. Write, GEO. D. CLARKE, Vassar, Mich.

Parham's Pedigree Stock Farm offers Reg. Holstein cattle, Chester White Swine, extra bargains in calves and fall pigs. Bulls half price.
R. B. PARHAM, Bronson, Mich.

A Few Fine Bulls For Sale

Bigelows Holstein Farms, Breedsville, Mich.

I Always Have Holsteins To Sell

If wanting Registered cattle write me your wants before placing your order elsewhere.

L. E. CONNELL, Fayette, Ohio

Holstein-Friesian Cattle

A. R. O. herd, tuberculin tested annually. A few choice bull calves for sale.
C. L. BROADY, Owner, Port Huron, Mich.
Chas. Peters, Herdsman, Three Rivers, Mich.

3--HOLSTEIN BULLS--3

Ready for service at Long Beach Farm, Augusta, Mich.

"Top-Notch" HOLSTEINS

The young bulls we have for sale are backed up by many generations of large producers. Buy one of these bulls, and give your herd a "push". Full descriptions, prices, etc. on request.

McPherson Farms Co., Howell, Mich.

OAK Leaf Farm. Herd sire Lenawee Pontiac Calamity King offer Registered Holstein bull calves from A. R. O. cows and the above sire whose dam holds the milk and butter record in the state of Ind. 7 days milk 786.3, butter 82.51—315 days milk 23782.3, butter 826.775.
E. H. GEARHART & SON, R. 4, Marcellus, Mich.

Grange.

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

THE LECTURER'S HOUR.

(Concluded from last week.)

Take, for example, the question of the relation of the farmer to military service. All summer, in spite of our great need of farm labor, we have kept still. This fall, when thousands upon thousands of acres of beans and potatoes were ready to harvest there was not the labor to accomplish it between showers. Many of our boys were gone, are in cantonments training for service in the new army when they ought to be in the fields helping to increase the supply of food. America will win this war, or will help to win it, there is no doubt about that, if the nations with which she is allied can be fed. But when we think how the common people in France live now, and look far away to the dawn of peace, we begin to realize how valiantly fights the man out in the field, where are harvested those products which do not destroy but which mean life to our people and our allies in this war, "To make the world safe for Democracy."

Then there are other matters pertaining to food production which we may very profitably discuss—questions of the feeding of our dairies, and the live stock on the average farm in our community. Are we going to keep our small pigs and get them ready for the spring market? Shall we veal our calves that we do not wish to keep, or shall we grow them for beef and take chances on loss? How may we best feed and dispose of our young cattle and hogs in a way to increase the supply of meat and at the same time make a profit?

What is our Grange doing about the Y. M. C. A. work, and the Red Cross? These agencies appeal to every man and woman. The Y. M. C. A. is going to look after our boys thousands of miles from the sound of mother's voice. We cannot do too much for this agency. What is our Grange doing? Have a program devoted to Y. M. C. A. work and your Grange will get busy.

I know one township that is most active in Red Cross work. Reader, have you a boy at the front? If not, your neighbor has. We have only to shut our eyes to see that boy wounded and left to die alone, but for the Red Cross.

I am sorry anybody must fight, but we are in this war, not for pastime, not to sell the commodities that have risen so much in price, but to fight because we can see no other way. A lot of us are too old to fight, but we can help. In work for those forces that tend to lessen the awful consequences of war, we may find our task. What is our Grange doing? Is it measuring up to its responsibility?

In a large way, the average subordinate Grange lecturer may answer by her work in the lecturer's hour.

Now, in closing, may we not ask that each lecturer shall take new courage, shall build a higher and broader ideal of Grange lecture work, and thus building, shall leave no means unused that will increase the interest of the community in the programs of the Grange in which she serves?

May we not ask her to go out after better material, to use the best songs, the best recitations, to plan for live discussions of up-to-date questions, and thus planning her programs, then to "tell it out?"

Never before has the Grange had such an opportunity to serve. May it not "be found wanting" is the earnest wish of the writer.

W. F. TAYLOR.

Farmers' Clubs

CLUB DISCUSSIONS.

The Farmer's Outlook.—The March meeting of the Salem Farmers' Club was held at the home of Mr. and Mrs. Charles Mason. There was a good attendance, there being about fifty present to enjoy the social hour, the dinner and the program. At two o'clock the president called the meeting to order and the Club sang America. Then followed the secretary's report and the roll call, which was responded to by patriotic thoughts and quotations. Dale Farley then gave a little recitation on what Herbert Hoover tells us to do to conserve. A paper, "Is the Farmer's Outlook as Rosy as it is Painted?" was read by Bruce Rorabacher. Mrs. Rorabacher thought the outlook for the farmer depended entirely on who was painting the picture. To the city man who knew nothing of farming it might look very rosy indeed, but to the experienced farmer, with the uncertainty of help, an over-production of any crop need not be worried about. A lively discussion followed. A recitation by Rev. Dean, and a reading by DeForest Thompson were then given, and Mr. Thompson gave a short talk on the organization of the different farmers' organizations of Washtenaw county for more efficient work during the war. Program closed by singing "The Star Spangled Banner."—Mrs. I. R. Johnson, Cor. Sec.

The Twenty-first Anniversary.—On Thursday, March 7, at the home of Mr. and Mrs. Tracy Crandall occurred the twenty-first annual meeting of the Howell Farmers' Club. There were about 125 present. After a social hour in which a pot-luck dinner was served, President Wells called the meeting to order and by request read a short selection upon the different European war fronts, after which he introduced Mr. S. M. Yerkes as toastmaster. Mrs. C. H. White was the first speaker of the afternoon to respond to a toast, "Our Boys." This was a well written description of the cantonments which are the temporary homes of our soldier boys while in training for overseas duty. Mr. Herbert Beebe responded to the toast, "Our Girls." He was of the opinion that they should be well trained in the art of housekeeping and held the mothers largely accountable for much of the inefficiency of their daughters in this line. Deplored the fact that so many girls preferred employment in towns and remarked that if they persisted in this choice we must expect our boys to be discontented with rural life and also seek occupations amidst urban surroundings. Mrs. Bruce Bucknell responded to the toast, "The Man Behind the Plow." She contended that much depends upon the man behind the plow, not only in an agricultural sense but that all business in order to be successful must not only have an intelligent and thorough man at the helm but a moral one as well. Roy Lannen appeared next, responding to the toast, "The Woman Behind the Man." Mr. Lannen possesses the rare ability of swaying his audience from mirthful to serious moods at will. He said that when everything went well "Dad" was a fine pal, but when trials and sickness assailed us we inevitably turn to mother. Mrs. Roy Latson recited "Just Say Hello," and responded to an encore by rendering a selection entitled, "A Touching Incident." Mrs. Edward Houghtaling impersonated a child on its first visit to a barber shop accompanied by its father, was encored and responded by giving a similar one in regard to the many questions a child can ask that parents are unable to answer. During the afternoon Miss Kieff rendered several selections on the violin, Mrs. Glenn Satterla playing the accompaniment. Miss Mabel Risch sang a solo with Mrs. George Heeg presiding at the piano. W. H. Peavey gave the concluding speech in response to the toast, "Twenty-one Years." The following officers were elected for the ensuing year: President, Mrs. J. S. Brown; first vice-president, S. M. Yerkes; second vice-president, C. D. Austin; recording secretary, Mrs. Roy Latson; corresponding secretary, Mrs. R. R. Smith treasurer, Britten Gilkes; directors, Howard Reed, Jay Todley; organist, Mrs. Fred Bucknell. A committee was appointed to draft resolutions of sympathy for Mrs. C. P. Johnson, of Lapeer county, a former associational secretary, whose son was one of the victims of the ill-fated Tuscania. Recording secretary's annual report showed eleven meetings held during the year and also that we had lost by death three of our members, Mrs. C. D. Austin, Linus Reed, W. C. House.—Mrs. R. R. Smith, Cor. Sec.

Veterinary.

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

Mange—Breeding Question—Cough.
—The hair comes off around the eyes, face, neck, but skin is left smooth. No evidence of lice. Am feeding clover hay. How can I tell whether or not my sow is with pig? She was served two months ago, or we suspect she was. This sow ran with her own sons and they have not served her. Sheep have had a cough for a long time, mucus discharge from both nostrils. They are fed bean pods, clover and cull beans. A. B. F., Ramona, Mich.—You fail to mention whether the stock are calves or grown cattle. However, you had better apply iodine ointment twice a week. Your sow will soon change shape and show she is pregnant. If not, she will not change shape and will come in heat. Your sheep need a change of feed, also shelter them during storms.

Mangy Dog.—I would like to know what can be done for my dog. He has some kind of skin ailment, large flakes of dandruff appear on skin and on side of hind leg the skin is rough. When he scratches the skin becomes sore. He is a fine Collie; he has a very poor appetite. E. J. H., Kenadore, Mich.—Apply one part coal tar disinfectant and 49 parts water three times a week. Give him 20 drops of tincture gentian and 10 drops of Fowler's solution at a dose three times a day.

Loss of Vision.—I have a horse that is ten years old who seems to be blind in one eye, the eye is perfectly clear, both alike, but he is blind in one. I have owned him for three months, but only recently discovered his blindness. His former owner had never discovered any eye trouble. What had I better do for him? C. Y., Harrisville, Mich.—Perhaps he suffered from a slight brain hemorrhage and if blood clot or effusion absorbs soon, vision will possibly be restored.

Hock Lameness—Scours.—Last fall my seven-year-old mare suddenly went lame in hind leg; I located the trouble in hock, thinking it bone spavin. I rested her for a few weeks and she recovered. She has occasionally limped and I forgot to say her hock is slightly enlarged on inside. I also have a ten-month old calf that has periodical attacks of scours. Part of the time she has fairly good appetite. G. J. B., Durand, Mich.—If your mare suffered from bone spavin she would start lame, then perhaps gradually warm out of it, until she was again rested. Clip hair off hock and apply one part powdered cantharides and six parts fresh lard twice a month. The heifer's feed should be changed; also give her 30 grs. of powdered sulphate of iron and a teaspoonful of ginger in each feed until she is well.

Indigestion.—Heifer calf five months old is not thriving; is fed skim-milk and calf meal mixed in ground corn and oats, but she spends too much time licking side of pen. C. F., Owosso, Mich.—Give her 20 grs. of air-slaked lime in milk or drinking water three times a day, also give her a dessert-spoonful of ground gentian at a dose in feed two or three times a day.

Constipation.—Indigestion. — Every twenty or thirty days my young Jersey cow becomes constipated; during these spells her appetite is gone and it requires several days for her to pick up and get back to normal. She is fed with care, had no trouble calving, and always cleaned nicely. R. M., Otsego, Mich.—The feeder should closely watch her dung; when it becomes waxy, dry and hard, then give her either epsom salts or raw linseed oil. A change of feed at the proper time and walking exercise will help; wash out rectum with soap suds. It is bad practice to give a cow of this kind drugs daily.

Heifer Fails to Come in Heat.—I have a nice healthy heifer two years old that has not yet been in heat. What had I better give her? J. H. E., McBain, Mich.—Give her ½ dr. of ground nux vomica, 2 drs. ginger, 1 dr. ground capsicum at a dose in ground feed two or three times a day. She is perhaps barren, or if she is a twin calf and has a male brother she will never breed.

Infected Udder—Dropsy.—Have cow that has had three calves, after each calving her udder has caked; besides, she is swollen under belly. Will it be safe to breed her again? A. C., Pontiac, Mich.—Yes, breed her again, but milk her carefully by hand when she freshens. If such an udder was gently hand-rubbed and if her stall was thoroughly cleaned, disinfected and kept clean at time of calving she would have less bag trouble.

AUCTION SALE

OF

DUROC JERSEYS

AT HASTINGS, MICH.

MARCH 26, 1918

32 Head, mostly bred gilts of the best blood lines.

Carey U. Edmonds, Prop.

Jerseys and Duroc Jerseys

The most important thing in buying a Jersey bull is to get one backed up by generations of high producers. Brookwater offers to sell a few choice bull calves of this kind. Our herd of Durocs has won more prizes at the State Fairs this year than any other.

Boar Pigs and Yearlings For Sale.

H. W. MUMFORD, OWNER

BROOKWATER FARM

O. F. FOSTER, MANAGER

Ann Arbor, Mich., R. 7.

CATTLE

AUCTION SALE

Of Horses, Mules, Farm Tools and Pure Bred Holstein Cattle

To be Held at My Farm, 1½ Miles East of Belleville Station on

TUESDAY, MARCH 26th, 1918

Sale to Commence at 10 A.M. Lunch at Noon

Pure Bred Cattle

Rockwood Johanna Belle	No. 244905
Natag Pontiac Palmyra	No. 145130
Imperial Beets Pictoria	No. 269084
Aggie Vale Palmyra	No. 272344
Ormsby Rose	No. 112015
Salina Mercedes Butter Boy	No. 210670
Miss Yette Trytue	No. 247478
Lida Winona Woodcrest Vale DeKol	No. 257741
Clora Beauty	No. 242888
Johanna Perfection DeKol 2nd	No. 172407
Livingston Sigrid Hengerveld	No. 11582
Salina Mercedes Texal	No. 120464
Miss Winona Mercedes Butter Boy	No. 204477
Heifer { Dam Queen Mercedes Tritomia Piebe	332959
{ Sire Ashmoor King Pontiac Pride No.	170823
Heifer { Dam Livingston Sigrid Hengerveld No.	176582
{ Sire King Segis Fayne Hengerveld No.	115355

The cows are bred to such bulls as Heron Hill Paul Pontiac 140857 and King Pontiac Jewel Korndyke 94864.

F. W. SAVAGE, Prop.
C. F. Thompson, Auct.

Aberdeen Angus for sale, small herd consisting of 5 fine registered 2 yr. old heifers.
ROBERT SMITH, Caledonia, Mich., R. F. D.

MAKE MORE MONEY

in dairying. You can when you find out, as thousands of others have, that

Purebred HOLSTEINS

are the MOST PROFITABLE

Cows ON EARTH

They yield the largest quantities of milk and butterfat at the lowest cost

WRITE FOR FREE INFORMATION
No obligation—we have nothing we want to sell you.
THE HOLSTEIN-FRIESIAN ASSOCIATION OF AMERICA
Box 164, Brattleboro, Vt.

HOLSTEINS At Auction

Two miles N.W. of Angola Ind. at noon Tues. Mar. 26, will sell a high class of grade cows, 12 Holsteins and 4 Jerseys. Closing out a home-grown herd of choice cows 2 to 6 yrs. old, daughters of our best cows, picked to produce market milk for Angola distributors, freshening all through the year, five of them in March and April.

A Registered Holstein Bull Sir Pontiac Segis Boone 3rd, 16 months old whose dam has official record of 20,56 lbs. butter in 7 days and his sire's dam 31 lbs.
Team black Percherons (mare and horse) coming 4 yrs. old, weight 2300.
W. A. SNIFF, Angola, Ind.

The Traverse Herd Great Values In Bulls

from A. R. O. Cows with records up to 30 lbs. Let us know your wants. We will send extended pedigrees and prices.

TRAVERSE CITY STATE HOSPITAL, Traverse City, Michigan.

Holstein bull, nearly ready for service, large straight deep-bodied, handsomely marked ¾ white. His six nearest dams have A. R. O. records that average butter 7 days 24.13 milk 534 lbs. W. B. Reader, Howell, Mich.

Auction Sale

44-head of thoroughbred Holstein Cattle, 8 work horses and farm tools.

March 29-1918 at 9 o'clock sharp.

Catalogues of Cattle on request.

Boyle & Robinson, Auctioneers

GEO. W. BURT, Prop. Redford, Mich.

The Pontiac Herd

"Where the Champions come from"

Offer Bull Calves sired by sons of Pontiac Korndyke, Hengerveld DeKol, Pontiac Dutchland, or Admiral Walker Pietertje.

Do you want a Pontiac in your herd?

Pontiac State Hospital, Pontiac, Mich.

HOLSTEINS of quality. Bull calves from dams with records high as 31 lbs. in 7 days. Also cullie puppies.

E. A. HARDY, Rochester, Mich.

\$225 takes your choice of heifers of a 30 lb bull due in May to a 23 lb. son of

Johanna Korn, D. K. Terms if wanted.

M. L. McLAULIN, Redford, Michigan.

HOLSTEIN bull calves, eligible to registration, without papers, \$25 at 10 days of age, registered, \$50 to \$75.

Dewey C. Pierson, Hadley, Mich.

Registered Holstein bull calf, born Sept. 1917, dam daughter of 24 lb. cow, writes for pedigree and price, P. O. B. your station.

E. E. STURGIS, R. 3, St. Johns, Mich.

Holstein calves, 25 heifers, & 2 bulls 15-16ths pure, 5 weeks old, beautifully marked, \$25 each, crated for shipment anywhere. Buy only the best.

EDGEWOOD FARMS, Whitewater, Wis.

Parkside Holstein bulls, 8 and 16 mo. Both sired by noted bull, 37 relatives are 30 lb. cows. Priced to sell.

J. E. TIRRELL & SON, Charlotte, Mich.

Herefords Bob Fairfax 494027 at head of herd. Stock for sale.

Both sexes either polled or horned. EARL O. McCARTY, Sec'y Mich. H. B. Ass'n, Bad Axe, Mich.

HEREFORDS

10 bull calves for sale, Perfection

Fairfax and Prince Donald breeding.

ALLEN BROS.,

PAW PAW, MICH.

HEREFORDS Two yearling bulls, registered, well developed, ready for service, prize winning ancestry.

E. J. Taylor, Fremont, Mich.

Jersey Bulls for Sale from high-producing dams, with testing Asso. records, also on semi-official test.

C. B. Wehner, R. 6, Allegan, Mich.

ONE 11 mo. old solid colored gr. son of Royal Majesty whose dam as a 3 yr. produced 406.24 lbs. of butter 1 yr. First check \$50.00 gets him, registered, transferred and delivered any point in Mich.

FRED BRENNAN Sec., Capac, Mich.

Choice Bulls ready for service. Also heifers for sale. Strong in the Blood of Royal Majesty. Come and see them or write for particulars.

THE WILLOW HERD

Alvin Balden, Capac, Mich., Phone 143-5

MAPLE Lane R. of M. Jersey Herd has for sale R. of M. cows, daughters of R. of M. cows, bull calves, heifer calves and bulls. All from 500 & 600 lb. dams.

IRVIN FOX, Allegan, Mich.

JERSEY bull and bull calves for sale from R. of M. cows, also heifers and cows of all ages.

C. B. WEHNER, R. 6, Allegan, Mich.

FOR SALE Registered Jersey bull calves.

SMITH and PARKER, R. 4, Howell, Mich.

Lillie Farmstead Jersey Cattle. Several heifers bred to freshen next fall. Also a few heifer and bull calves of choice breeding. Colon O. Lillie, Coopersville, Mich.

For Sale A fine, dark, solid color Jersey bull 16 mos. old. Double grandson of Royal Majesty and out of R. of M. cow.

C. & O. DEAKE, Ypsilanti, Mich.

Shorthorn Cattle/ of both Sex for Sale

W. W. KNAPP, Howell, Michigan.

BIDWELL SHORTHORNS

For Beef and Milk.

Registered bulls, cows and heifers—Good Scotch and Scotch-Topped for sale. In prime condition. Modern sanitary equipment. Farm 10 minutes from N. Y. C. depot, 1 hour from Toledo, Ohio. Automobile meets all trains. Write

BIDWELL STOCK FARM,

Box B, Tecumseh, Mich.

Shorthorns—Dairy beef bred. Breeding stock all ages for sale at farmers prices. O. W. Crum, Secy. Cent. Mich. Shorthorn Breeders' Ass'n., McBride, Mich.

Richland Farm

Shorthorns.

IMP. Lorne in Service. Grand Champion Bull of Mich. Special offer on 14 head of Shorthorns. Cows with calves at foot, heifers two years old and heifers one year old. Also a number of bull calves. We invite correspondence and inspection.

O. H. PRESCOTT & SONS,

Farms at Prescott, Mich. Office at Tawas, City, Mich.

Francisco Farm Shorthorns

We maintain one of Michigan's good herds of Scotch and Scotch-Topped cattle. They are well bred, properly handled and price reasonable. Come and see; we like to show them.

P. P. POPE, Mt. Pleasant, Mich.

Fair Lawns Shorthorns

Yearling bulls by Canada's best sire: Missie Augusta 62778 and Imp. Newton Frier 628120.

LAURENCE P. OTTO, Charlotte, Mich.

Shorthorns for sale, 5 bulls Scotch top 10 to 14 mos., 13 roan, 1 white, 1 red, price \$150. to \$250. 1 son of Max-walton Sultan, 19 mos. \$350. O. Carlson, Leroy, Mich.

Bates Shorthorns theoretical milk strain young bulls 8 mos. old for sale. Price \$150 to \$200. J. B. HUMMEL, Mason, Mich.

Shorthorns—Two bulls, 15 and 16 mo. By a grandson of Cyrus Clay.

COLLAR BROS., R. 2, Conklin, Mich.

SHORTHORNS. Butterfly Sultan, half brother to International Sr. Champion, in service. For good bulls, cows, and heifers. W. B. McQuillan, Howell, Mich.

Shorthorns Maxwalton Monarch 2nd, 387322 half brother to 5 Grand Champion in service.

JOHN SCHMIDT, R. 5, Reed City, Mich.

Shorthorns—Four fine young bulls ready for service. Grandsons of Imp. Villager. Also bred heifer & cows heavy milking strain. Farmers prices. Free Catalogue. HORRIETON FARMS, Hart, Mich.

SON of Harthorh Welfare heads our herd of milk-Sing Shorthorns comprising Chiffley of Clay bred cows, young bulls ready for sale and service. Write us Liddel Bros., R. 2, Clinton, Mich., Macon Phone.

Grand Traverse Shorthorn Asso. Reg. stock for sale.

M. E. DUCKLES, Sec., Traverse City, Mich.

1867-1918 Maple Ridge Herd of Shorthorns Yearling heifers and bull calves for sale.

J. E. TANSWELL, Mason, Mich.

Three Bred registered, Shorthorns three yr. old heifers for sale. Also two bull calves.

W. E. MORRISSE, R. 5, Flint, Mich.

Shorthorns Four very desirable heifers 17 to 21 months old, and bull 8 mo. All roans. Price \$10.00.

S. E. BOOTH, Morrice, Mich.

Purebred Shorthorn bull calves one to six months, price \$50 to \$85.

W. F. BARR, Aloha, Mich.

For Sale Reg. Shorthorn bull 6 mos. old Red, Rich bred one, \$200.

J. M. HICKS & SONS, R. 2, Williamston, Mich.

SHORTHORN: 1 bull 6 months old, 1 heifer 14 mos. Sold Registered in buyer's name, \$100 if taken soon.

H. W. MANN, Dansville, Mich.

Scotch Shorthorns for sale, 5 bulls ready for service.

John Lessiter's Sons, Orion, Mich., R. F. D.

Polled Durham Cattle 9 yearling bulls for sale.

J. A. DeGARMO, Muir, Mich.

Cattle For Sale

2 Loads feeders and two loads yearling steers. Also 2 can show you any number 1, 2 and 3 yearling steers.

Isaac Shantum, Fairfield, Iowa, R-8

HOGS.

GREY TOWER FARM

Now offers for sale a few choice Holstein bull calves, from high testing dams, with good A. R. O. records, at farmers' prices, write us about them and our

Durocs & Berkshires

M. D. KITCHEN Mgr., Grass Lake, Mich.

DUROCS Orion Chief Perfection No. 68945, and Jennings Pilot Wonder No. 75373. Two outstanding boars of big type and excellent quality. All selected large type smooth sows. Thrifty, smooth, large boned spring gilts from these herd boars and choice sows at very reasonable prices. The Jennings Farms, Bailey, Mich.

Dobson's Durocs surplus stock all sold. Nothing doing till spring.

ORLO L. DOBSON, Quincy, Mich.

DUROCS

You want more size, feeding qualities. Fall boars ready for service. A few sows bred for June farrowing.

NEWTON BARNHART, St. Johns, Mich.

Duroc Jerseys—boars of the large heavy boned type. Prize winning stock, prices reasonable, type and breeding considered, also gilts bred to Junior Champion boar for spring farrow. F. J. Drott, R. 1, Monroe, Mich.

Large boned Duroc Jersey September pigs either sex ready to ship. Breeding and prices on request.

J. D. CRANE & SON, Plainwell, Mich.

DUROC JERSEYS

E. D. HEYDENBERG, Wayland, Mich.

Choice Duroc Jersey Gilts For Sale.

CAREY U. EDMONDS, Hastings, Mich.

Duroc fall boars sired by Crimson Critic T. Satisfaction and Brookwater Principal, right bred. Bred sows all sold.

M. O. TAYLOR, Milan, Mich.

Durocs Can spare two or three bred daughters of Joe Orion 2nd the \$5000 boar.

A. FLEMING, Lake, Mich.

Duroc Jerseys Why don't you order a pig and raise an extra good boar or gilts for yourself.

E. E. CALKINS, Ann Arbor, Mich.

DUROCS service boars, bred sows, fall pigs. Express paid.

J. H. BANGHART, E. Lansing, Mich.

Additional Stock Ads. on Page 415

Markets.

GRAINS AND SEEDS

March 19, 1918.

WHEAT.—Visible supply of wheat in America decreased last week 1,199,000 bushels. The grain is not moving to the markets in liberal quantities and millers continue to have trouble in securing supplies for their current needs. Flour is in urgent demand despite the liberal use of substitutes. One year ago the local market quoted No. 2 red wheat at \$2.01 per bushel. Present prices here are: Cash No. 2 red \$2.17; No. 2 mixed \$2.15; No. 2 white \$2.15.

CORN.—Despite the extremely heavy receipts of corn at primary markets, trading in this cereal has been conducted on a fairly steady basis, prices having suffered only a moderate decline during the week. As soon as the grain began accumulating, orders were uncovered that readily absorbed the offerings. Plenty of cars are now available, but despite the large movement, the visible supply shows an increase of only 1,489,000 bushels. With the continued favorable weather conditions over the corn belt, it is prophesied that the replenishing of supplies from country points will be materially interfered with shortly by farm operations. Good corn is firm and scarce. A year ago the local price for No. 3 corn was \$1.12½ per bushel. Present prices are: Cash No. 3 corn \$1.65; No. 3 yellow \$1.75; No. 4 yellow \$1.55 @1.60; No. 5 yellow \$1.25 @1.30; No. 6 yellow \$1.20. At Chicago the market closed Monday with March corn at \$1.27½; May corn at \$1.25.

OATS.—Oats exhibited strength at the opening this week, due in part to an unexpected demand from foreign brokers. Receipts have been moderately large, and the visible supply shows an increase of 1,904,000 bushels. A year ago standard oats were quoted locally at 65½¢ per bushel. Present prices for oats are: Standard 92¢; No. 2 white 92¢; No. 3 white 91½¢; No. 4 white 90½¢. Chicago's closing prices on Monday were: March 87½¢; May 84½¢; cash standard 87½¢ @90¢.

RYE.—Receipts are small, with the market slightly below last week, cash now being quoted at \$2.75 per bushel. At Chicago the same grade is quoted at \$2.80.

BEANS.—The demand for these legumes shows a renewed interest, and buying was free and brisk at the opening this week. Prices, however, were maintained on a steady basis, with immediate and prompt shipment quoted at \$12.50 per cwt. At Chicago the demand is moderate and offerings seem fairly plentiful, with Michigan pea beans, hand-picked, quoted at \$13 @13.25 per cwt; red kidney, fancy at \$14.50 @15; fair to choice do \$12 @13.

SEEDS.—Prime red clover at \$20; March \$19.60; alsike \$15.50; timothy at \$3.80.

FLOUR AND FEEDS

FLOUR.—Jobbing lots in one-eighth paper sacks are selling on the Detroit market per 196 pounds as follows: Straight winter \$11.30; spring patent \$11.50; rye flour \$14 @14.50 per bbl.

FEEDS.—The United States Food Administration has fixed the selling price per ton of wheat bran (in carload lots) by millers at 38 per cent of the price paid by them for a ton of wheat—the average price paid for wheat during the preceding month. In selling to dealers in less than carload lots they can add fifty cents per ton. In retailing to consumers they can add to this price a retail profit of ten per cent. If sold in bags they can add the actual cost of the bags. For middlings they can add \$9 per ton to the price of bran. For "feed" (which is the entire product of wheat after the flour is taken out) they can add \$4 per ton to the price of bran.

The following will serve as guides to prices: If the average price paid for wheat is \$2.05, the millers' price for bran in carload lots should be \$25.96. To dealers in less than carload lots the price should be \$26.46 per ton. When sold to the retail trade the price per hundred should be \$1.46. If the average price paid for wheat is \$2.10, the milling price for bran in carload lots should be \$26.60 per ton. To dealers in less than carload lots the price should be \$27.10 per ton. When sold to the retail trade the price per hundred should be \$1.50.

Other Feeds.—Cracked corn \$76.50; coarse corn meal \$74; corn and oat chop \$60.

HAY.—In carlots at Detroit: No. 1 timothy \$26.50 @27; standard timothy \$25.50 @26; light mixed \$25.50 @26; No.

2 timothy \$24.50 @25; No. 1 clover, \$24.50 @25 per ton.

Pittsburgh.—No. 1 timothy at \$32 @32.50; No. 2 timothy \$30 @31; No. 1 light mixed \$30.50 @31.50; No. 1 clover mixed \$31.50 @32.50; No. 1 clover at \$31.50 @32.50.

STRAW.—In carlots on track at Detroit: Wheat and oat straw \$11.50 @12; rye straw \$12.50 @13.

DAIRY PRODUCTS

BUTTER.—Stocks are heavy and buyers few. Fresh creamery firsts are quoted at 41 @41½¢; fresh creamery extras 43¢.

Chicago.—Market is rather quiet and prices lower. Creamery extras at 43¢; extra firsts 42½¢; packing stock 30 @31c per pound.

CHEESE.—Michigan flats 24 @24½¢; New York flats 25¢; brick 28¢; long horns 28½¢; Michigan daisies 26¢; Wisconsin daisies 26½¢; domestic Swiss 35 @43c for prime to fancy; limburger 30 @32c per lb.

DRESSED CALVES.—Fancy 20 @21c; choice 18c; common 17c.

DRESSED HOGS.—Best 21c per lb.

POULTRY PRODUCTS

POULTRY.—(Live).—Demand slow and not much poultry offered. Food Administration has ordered that poultry dealers shall not purchase, ship, sell or negotiate the sale of any live or freshly killed hens or pullets between February 11 and April 30 of this year. The object is to save all egg-laying chickens during the egg season for laying purposes. Old roosters 22 @24c per lb; ducks 30 @32c; fat geese 30 @32c; turkeys 30 @32c.

Chicago.—(Live).—There was a good sale for the light offerings on hand. Fowls 22 @31c; ducks 30 @31c; geese 24 @25c; turkeys, good 25c.

EGGS.—Receipts were quite heavy, but buyers took everything offered, at higher prices. Fresh firsts 37 @37½¢.

Chicago.—Demand good and prices higher. Fresh Michigan firsts 36¼ @36½¢; ordinary firsts 35 @35½¢; miscellaneous lots, cases included 33½ @34½¢ per dozen.

FRUITS—VEGETABLES

(Quotations furnished by U. S. Department of Agriculture, Bureau of Markets, Detroit Office).

POTATOES.—The potato market opened in Detroit this week with demand and movement good. There were nine cars on track Tuesday morning. The closing prices to jobbers for U. S. Grade No. 1 round whites, sacked, on Monday, were \$1.55 @1.60. The same grade of Michigan stock sold in Cleveland on the same day at \$1.60; in Cincinnati at \$1.60; No. 2 at \$1.20; in Columbus at \$1.65; in Indianapolis at \$1.50 @1.60, No. 2 \$1.10; in Pittsburgh at \$1.50 @1.60; in Washington, D. C., at \$1.85 @2.

At Michigan country loading points farmers are receiving from wagons for the above No. 1 grade 75 @85c; in Wisconsin 85c for No. 1 and 40c for No. 2; New York farmers are paid \$1.25 @1.35.

APPLES.—There were sixteen cars of apples on the Detroit tracks on Monday morning. Best Baldwins sold at \$5.50; Winesaps at \$6.25 @6.50 per bbl. The majority of the large markets of the country show a steady tone with a moderate movement and a fair demand.

GRAND RAPIDS

Egg receipts are increasing and buying for storage will begin in a few days. Eggs for storage were bought last year at around 33c and will probably be a little higher this season. Just now they are worth 35c. The potato market shows some improvement with prices around 90c per cwt. at the buying points. Cars are scarce and growers are reported holding for higher prices. Grain prices as reported at mills are as follows: Wheat \$2.09; rye \$2.50; barley \$1.50; corn \$1.80; oats 98c; beans \$12 per cwt. Hay is worth \$20 @24.

LIVE STOCK

BUFFALO.

March 18, 1918.

Cattle.—Receipts 80 cars; market is 25c higher; prime steers \$13 @14; fair to good \$12.50 @13; plain \$11.50 @12; coarse and common \$10.50 @10.75; choice heavy butcher steers \$12 @12.50; fair to good \$11.50 @11.75; best handy steers \$11.25 @11.75; fair to good \$10.25 @11; light and common \$9 @9.75; yearlings \$12 @13.50; for best heavy heifers \$11 @11.50; good butcher heifers \$10.50 @10.75; fair butcher heifers \$9.25 @10; common \$7 @8; best fat cows \$10.50 @11.50; butcher cows

\$8 @9; medium to fair \$7 @7.50; cutters \$6.50 @7; canners \$4.75 @5.75; best heavy bulls \$10.25 @11; good butcher bulls \$9 @9.75; sausage bulls \$7.50 @8.50; light bulls \$7 @7.50; best feeding steers \$9.50 @10; common to fair \$8.50 @9.25; best stockers \$8.50 @9; fair to good \$7 @8; common \$6 @6.50; milkers and springers \$65 @120.

Hogs.—Receipts 60 cars; market 25c lower; heavy \$18.25 @18.50; yorkers at \$18.60 @18.75; pigs \$18.50.

Sheep and Lambs.—Receipts 20 cars; market steady; top lambs \$19; yearlings \$14.50 @16.50; wethers \$14 @14.50; ewes \$13 @13.50.

Calves.—Receipts 15 cars; steady at \$7.50 @19.

CHICAGO.

March 18, 1918.

Cattle. Hogs. Sheep.
Receipts today...21,000 66,000 15,000
Same day 1917...2,596 6,729 8,578
Last week...64,935 243,801 73,240
Same wk 1917...46,020 172,995 80,653

Shipments from here last week amounted to 19,301 cattle, 70,600 hogs and 17,456 sheep. Hog shipments from here a week earlier were 61,447 head and a year ago 17,169 head. Hogs received last week averaged 240 lbs., showing big gains over previous weeks.

Early this morning today's Chicago hog receipts were estimated at 82,000 head, but later it was reported that there was a wreck on the Rock Island Railroad 150 miles from here and that from 400 to 450 cars of live stock destined for this market were delayed and were not expected to get in today. Accordingly, the hog receipts were cut down as likely to not exceed 66,000 head. Prices were largely about 25c lower, with sales on a basis of \$16.10 @17.85 for rough heavy packers to prime light hogs. Cattle sold at about steady prices, with some early sales up to \$14.25, but these were not fancy. Late on Saturday a new high record for the week was made by the sale of 18 head of fancy steers which averaged 1712 lbs. at \$14.75.

Cattle prices experienced such a decline during the preceding weeks of too liberal receipts that owners throughout the territory tributary to Chicago acted more conservatively last week, and much smaller receipts made buyers more eager to take hold. Prices firmed up for all kinds of beef cattle, the best lots excepted, and the steers averaged 50 @75c higher, with the greater part of the steers selling at \$11.50 @13.25, and a fair representation of the better class at \$13.30 @14.25. The poorer class of little steers went at \$9.50 @10.90, while sales were made of a better class of light weight steers at \$11 @12.45, with a medium grade selling at \$12.50 @12.95, while good steers brought \$13 @13.45 and choice heavy beefs \$13.50 and upward. Sales were made of good to choice yearlings at \$12.25 @13.50, and sales ranged all the way down to \$10 @11 for the commoner lots of yearling steers. Butcher stock shared in the upward course of prices, with cows selling at \$7.65 @12.65 and heifers at \$7.25 @12.25, while cutters sold at \$7.50 @7.60, canners at \$6.75 @7.15 and bulls at \$7.50 @11.25. Calves were in more animated demand at stiff advances in prices, with light vealers selling at \$16 @16.85 per 100 lbs. and heavy calves salable at \$8 @12.50. There was a good general demand for stockers and feeders, with prices much higher than a few weeks ago, buyers paying \$8.75 @12 for inferior calves to prime rather heavy feeders, and only plain kinds went below \$9.50 @10, while there was no extensive trading above the \$11.50 market. There is an increasing disposition among farmers to engage in feeding cattle on a larger scale than in the past, and it is generally realized that early purchases will cost less than those made later on.

Hogs were marketed with greatest liberality during the past week, and numerous declines took place in prices for the heavy lots, but most of the time buyers took the desirable offerings of light weights at firm values, the top price paid being the highest of the year. As few light hogs are headed marketward, they may be expected to continue the highest sellers until they become much plentier. Fewer hogs have reached western packing points so far this year than a year ago, but the greatly increased weights of the hogs marketed largely offset the falling off in numbers. At the week's close hogs brought \$16.45 @18, few going below \$17, and pigs selling at \$13 @17, with stock pigs taken at \$16.75 @17.25. Stags closed at \$17 @18, subject to dockage. Prime light hogs topped the market, and hogs were the highest since last November, with prime heavy hogs selling at \$17.50.

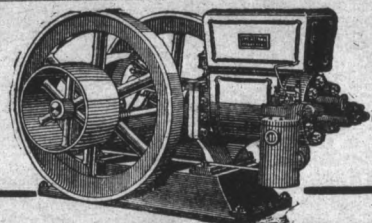
Lambs of the better class had a large demand last week and scored further good advances, with nowhere near enough to go around, but heavy lambs had to go at a big discount from prices paid for the best lighter weights. General conditions are now extremely

favorable for the sheep industry, and many farmers are anxious to engage in it once more. Late sales of lambs were at \$16.50 @18.50, with the heavy lambs taken at \$16.50 @17.25, feeding lambs at \$16.75 @17.50 and ewe breeding lambs at \$17.50 @18. Prime light yearlings sold up to \$16.75, while the wethers sold at \$13.25 @15, ewes at \$8.50 @14.50 and bucks at \$11 @12. Sheep and yearlings advanced during the week 50c @1, and at the high time prime lambs sold 50c higher.

Horses were in moderate supply and demand last week at mostly unchanged prices, with fair buying by eastern and southern shippers. Inferior to good farm chunks were salable at \$60 @140, drafters at \$185 @265, feeders at \$150 @240 and the better class of expressers at \$175 @210.

The quantity of poor corn on farms of the country has resulted in a greater increase in the production of live stock for meat purposes than would have been the case could a larger portion of the corn have been placed on market.

Make twelve ounces of bread do where sixteen served before.



OTTAWA ENGINES

Kerosene Oil, Gasoline and Gas

Let me send you an engine to earn its own cost while you use it—for my Kerosene engine gives more power from a gallon of 6-cent kerosene than you can get from a gallon of 20 or 25-cent gasoline in a gasoline engine. Easy to start; easy to operate; no cranking; no batteries. All sizes—2 H.P. to 22 H.P.—Stationary, Portable and Sawn Outfits. 10-Year Guarantee on Every Engine. Write for Latest Prices.

Direct From My Big Factory

Ever since I started my factory, years ago, I have been selling engines direct from the factory to the man in the shop or on the farm. Now, as before, any honest man can have my engine on

90 DAYS' TRIAL

Every engine I send out must make good all I guarantee. No need to pay double my price for any good engine, or take an out-of-date engine for any kind of a price. Let me show you how to figure what an engine is worth and

How To Know Better Engines
My newest book helps you choose a safe and value-received engine—How to make simple tests—and all about valve in head motor. Send me your address today. Just a postal card will bring this newest and latest book.

Geo. E. Long, OTTAWA MFG. CO.
1364 King Street, Ottawa, Kansas.

Good Tires Mighty Cheap

They come from a well-known factory—but just didn't measure up to factory requirements. A little blemish here and there that might take a keen eye to see. Chances are that they'll give you as big mileage as any tire you ever bought. But the factory calls them "seconds"—so we do, too, even though they are built for good, hard service.

At the prices we ask for them there's two dollars value to you in every one dollar you spend!

Size	Plain	Non-Skid	Size	Plain	Non-Skid
30x3	\$9.00	\$10.00	33x4	18.50	18.00
30x3 1-2	10.50	12.00	34x4	17.50	18.75
32x3 1-2	13.00	14.25	34x4 1-2	23.50	25.50
34x4	15.50	16.75	35x4 1-2	27.00	29.00
38x4	16.25	17.75	36x4 1-2	28.00	30.00

2 percent t off for cash with order.
10 percent deposit required with all C. O. D. orders.

R. K. Tire Company

837 No. Broad St., Philadelphia, Pa.



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INSYDE TYRES Inner Armor for Auto Tyres. Double mileage, prevent blowouts and punctures. Easily applied in any tire. Used over and over in several tires. Thousands sold. Details free. Agents wanted. American Accessories Co., Dept. 712 Cincinnati, O.

THIS IS THE LAST EDITION.

The first edition is sent to those who have not expressed a desire for the latest markets. The late market edition will be sent on request at any time.

DETROIT LIVE STOCK MARKET.

Thursday's Market.
March 21, 1918.
Cattle.

Receipts 1886. All grades of cattle brought last week's prices and trade was active.

Best heavy steers \$11.50@12.50; best handy weight butcher steers \$10.50@11; mixed steers and heifers \$9.50@10; handy light butchers \$8.50@9.25; light butchers \$8@8.50; best cows \$9@10; butcher cows \$7.50@8.25; cutters \$7@7.25; canners \$6.50@6.75; best heavy bulls \$8.50@9.50; bologna bulls \$8@8.25; stock bulls \$7@7.50; milkers and springers \$8.50@10.

Bishop, B. & H. sold Hammond, S. & Co. 6 canners av 895 at \$6.75, 5 steers av 964 at \$10.75, 14 do av 1148 at \$12.50, 27 do av 705 at \$11.35; to Garber 2 bulls av 1190 at \$9.50, 7 butchers av 800 at \$8.50; to Bray 7 cows av 1016 at \$8.50, 2 canners av 830 at \$6.75; to Kamman B. Co. 13 butchers av 683 at \$8; to Mason B. Co. 2 do av 1200 at \$10, 13 steers av 923 at \$10.25; to Bresnahan & K. 4 cows av 882 at \$7, 3 do av 1017 at \$8, 2 canners av 900 at \$6.50, 21 cutters av 960 at \$7.65; to Sullivan P. Co. 13 steers av 850 at \$10, 19 do av 922 at \$10.85, 10 cows av 960 at \$8; to Ratner 10 butchers av 923 at \$9.85; to Garber 5 do av 780 at \$9; to Sutton 15 stockers av 415 at \$7.75; to Nagle P. Co. 14 steers av 954 at \$10, 3 do av 750 at \$8.50; to Newton P. Co. 7 cutters av 811 at \$7, 7 do av 724 at \$7; to Grant 6 butchers av 795 at \$7.75; to Hammond, S. & Co. 8 steers av 1007 at \$10.50, 10 do av 936 at \$10.50; to Newton P. Co. 12 cows av 880 at \$7, 4 do av 962 at \$8.50; to Fineman 1 bull wgh 1400 at \$10; to Nagle P. Co. 2 steers av 1045 at \$11; 12 do av 1330 at \$12.25; to Sullivan P. Co. 12 cows av 988 at \$8.75, 1 steer wgh 1130 at \$10.50, 10 cows av 1027 at \$8.75; to Mich. B. Co. 7 steers av 1004 at \$11, 13 do av 740 at \$9, 4 do av 975 at \$9.50.

Erwin, S. & J. sold Nagle P. Co. 3 cutters av 1000 at \$7.50; to Sullivan P. Co. 2 cows av 935 at \$8, 2 do av 1060 at \$9, 1 do wgh 930 at \$7, 27 butchers av 743 at \$9; to Hammond, S. & Co. 15 cows av 931 at \$9.50; to Newton P. Co. 12 do av 1022 at \$9.50, 2 do av 970 at \$7, 1 do wgh 960 at \$8; to Sullivan P. Co. 7 steers av 730 at \$10.50, 1 bull wgh 1500 at \$9; to Bray 8 steers av 966 at \$11.90, 5 do av 710 at \$9.60, 3 cows av 1107 at \$8.25, 8 do av 920 at \$7.50; to Nagle P. Co. 14 steers av 1050 at \$11.65; to Kamman B. Co. 10 do av 960 at \$11.50, 5 do av 846 at \$10; to Newton P. Co. 1 bull wgh 1870 at \$9; to Cole 30 heifers av 764 at \$10; to Thompson 1 bull wgh 1950 at \$9, 1 do wgh 1590 at \$8.75; to Bernfeldt 9 butchers av 988 at \$9.25.

Veal Calves.

Receipts 964. Market 50@75c higher than last week. Best \$17; others \$8@15.

Erwin, S. & J. sold Hammond, S. & Co. 3 av 155 at \$17, 8 av 115 at \$16.50; to Thompson 11 av 150 at \$17; to Sullivan P. Co. 7 av 130 at \$15, 11 av 147 at \$17; to Thompson 5 av 165 at \$17, 1 wgh 110 at \$14; to Parker, W. & Co. 12 av 145 at \$16.75.

McMullen, K. & J. sold Hammond, S. & Co. 3 av 115 at \$13, 8 av 145 at \$17; to Bernfeldt 2 av 150 at \$17, 2 av 140 at \$17.50, 2 av 145 at \$17.50; to Parker, W. & Co. 8 av 160 at \$17; to Hammond, S. & Co. 7 av 150 at \$17.

Sheep and Lambs.

Receipts 1419. Good lambs 25c higher than last week. Best lambs \$18@18.25; fair lambs \$17@17.75; light to common lambs \$11@16.50; yearlings \$16; fair to good sheep \$10@12.50; culls and common \$5@7.

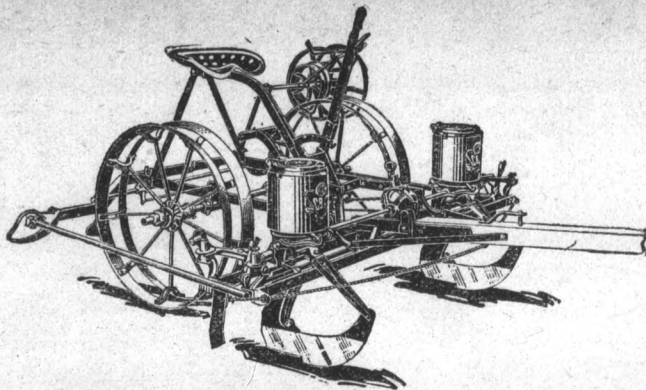
Bishop, B. & H. sold Nagle P. Co. 229 lambs av 95 at \$17.50, 36 do av 70 at \$17.50; to Parker, W. & Co. 54 do av 60 at \$17, 84 do av 63 at \$17; to Mich. B. Co. 27 do av 75 at \$17.85, 23 do av 70 at \$17.65, 12 do av 85 at \$17.75, 101 do av 76 at \$17.65, 128 do av 85 at \$18; to Sullivan P. Co. 101 do av 83 at \$18; to Parker, W. & Co. 103 do av 65 at \$17.25.

Erwin, S. & J. sold Parker, W. & son 15 do av 90 at \$17.50; to Parker, W. & Co. 15 lambs av 60 at \$17; to Thompson, W. & Co. 12 do av 75 at \$16.50, 6 do av 95 at \$17.50; to Wilson & Co. 223 do av 85 at \$18.25.

McMullen, K. & J. sold Thompson 26 lambs av 65 at \$17.50.

Hogs.

Receipts 4857. Market steady at last week's prices; heavy hogs dull; mixed \$17.60@17.85; pigs \$17.50.



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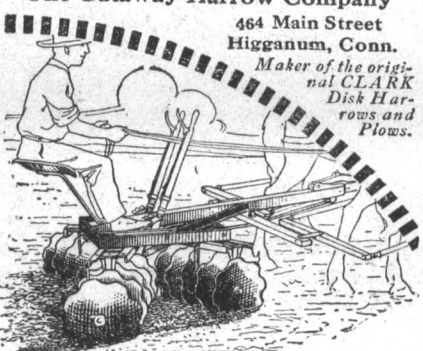
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I HAVE started thousands of breeders on the road to success. I can help you. I want to place one hog from my great herd in every community where I am not already represented by these fine early developers—ready for market at six months old. Write for my plan. More Money from Hogs!
G. S. BENJAMIN, R. F. D. 10, Portland, Michigan

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O. I. C. & Chester White Swine.

Strictly Big Type with quality. Bred sows & gilts are all sold, two boars fit for service good ones. Also have a few fall pigs left, either sex. I will ship C. O. D. NEWMAN'S STOCK FARM, R. 1, Marlette, Mich.

O. I. C.'s 2 choice May boars & Sept. & Oct. pigs sired by First Premium boar Mich. State Fair 1917. Clover Leaf Stock Farm, R. 1, Monroe, Mich.

O. I. C.'s big type, one yearling sow and gilts to farrow in Apr. and May. Aug. and Sept. boar G. P. ANDREWS, Dansville, Michigan.

O. I. C.'s all sold except some fall gilts. Order your spring pigs now.
C. J. THOMPSON, Rockford, Mich.

O. I. C.'s Last spring gilts bred for next spring farrow also last fall pigs either sex and not akin. Good growthy stock 1/2 mile west of Depot, Citizens phone 124. Otto B. Schulze, Nashville, Mich.

O. I. C. Gilts weighing about 180 lbs. bred for April farrow for sale. Satisfaction guaranteed. Maple Grove Farm, Lakeview, Mich., Roseman Bros., Props.

O. I. C. For sale fall gilts and a few gilts bred for June farrow.
F. C. BURGESS, Mason, Mich. R. F. D.

Large Type P. C. no public sale this year; 50 sows and 10 gilts all queens of the breed go at private treaty.
W. J. HAGELSHAW, Augusta, Mich.

Big Type P. C. Big boned fellows from Iowa's greatest herds. Special prices on spring boars.
E. J. MATHEWSON, Burr Oak, Mich.

Big Type P. C. bred for March & April farrow sired by Peter's Jumbo & Grand Superba and 2 or 3 yearling sows at bargain prices. C. E. Garant, Eaton Rapids, Mich.

Large Type P. C.

Bred gilts and boars all sold nothing to offer at present.
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LEONARD'S Bred sows all sold, fall pigs, orders booked for spring pigs at weaning time. Shipped C. O. D.
E. R. LEONARD, St. Louis, Mich.

P. C. Sows For Sale. Bred for April farrow. Prices reasonable.
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Big Type Poland Chinas: Sows bred for April and May farrow and fall pigs.
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BIG TYPE POLAND CHINAS. Booking orders for spring pigs.
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Large Strain, P. C. A few gilts left bred for June farrow and 2 nice boars ready for service at farmers prices.
H. O. SWARTZ, Shoolcraft, Mich.

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Yorkshire Gilts Bred for spring farrowing. Bacon is high in price. Yorkshires make bacon; buy Yorkshires. Waterman & Waterman, Packard Road, Ann Arbor, Mich.

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Percheron Stallions and mares of reasonable prices; inspection invited.
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PERFECT Percherons. Two Registered Percheron Stallions, 3 & 4 years old, for sale or trade. Photos sent on request.
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FOR SALE Belgian Stallion as good as the best. NEREUS QUIGLEY, 311 South Dought St., Jackson, Mich.

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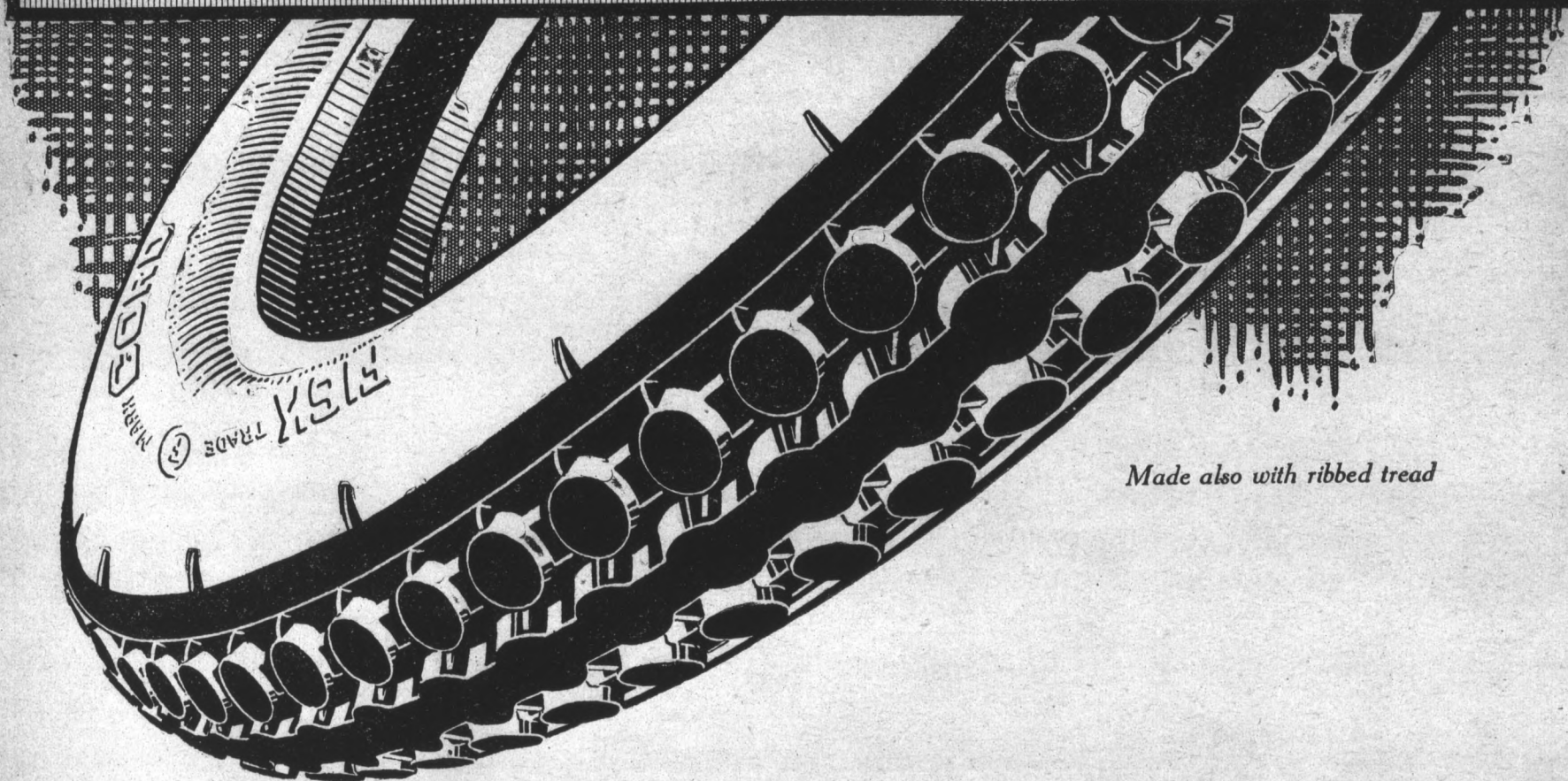
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