

MICHIGAN FARMER

AND LIVE STOCK JOURNAL
PUBLISHED WEEKLY.
ESTABLISHED 1843.

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

VOL. CXLVIII, No. 22
Whole Number 3943

DETROIT, MICH., SATURDAY, JUNE 2, 1917

\$1.00 A YEAR
\$3.00 FOR 5 YEARS

IN modern agriculture we find a considerable desire for something new in crops, in the methods of handling, or in diseases. Farmers read with interest of new discoveries, new parasites, or new control measures. It is human nature to be curious of these things and to have them arouse our greater interest.

I wish to write of an old disease that every farmer knows and concerning whose control nearly every farmer is fully aware. For twenty-five years the farm papers have written of potato scab, its nature, and its control. No beneficial crop practice is so well known as potato scab treatment, and none so widely neglected. It is the purpose of this paper to tell the story of potato scab, its importance, its cause, and its control. Much that is new has been discovered about this disease and there is great necessity for our concentrating all efforts on its control.

Potato scab first made its appearance in the agricultural press, attended by a host of suppositions as to its cause. This farmer and the other, this scientist and the other, made suggestions pro and con as to the cause and nature of scab. Some claimed it was caused by plowing under green crops, some said it was caused by manuring, some said it was due to rough material in the soil which scratched the young tubers; some blamed quack grass, and indeed, produced evidence that quack grass could not only make scab in potatoes, but could bore through them as well.

Scientific Discoveries.

Out of this mass of suggestions light came from the experiments performed about 1890 by a young student at Purdue University. This student isolated a bacteria organism from scab spots and claimed he could produce typical scabs by inoculation with pure cultures. Later work failed to substantiate all this student claimed, but this at least came out of his work—potato scab ceased to be a football for a writing public to pass around, and became an understandable disease caused by a living organism. The scientist who worked on this disease gave definite control measures—which, indeed, are the very same as we recommend today. He reasoned that potato scab was a disease caused by a parasite carried to the field on the tuber, hence to control the disease we must disinfect the seed tubers. Accordingly he tried with good success soaking the potatoes in corrosive sublimate, one part to 1000.

A few years later another scientist noticed that if scabby tubers were examined when freshly dug they usually showed a white filmy or limy appearance on the scab spots. He was able to prove that this organism and not the bacterial parasite formerly suggested was the common cause of scabby tubers. The organism responsible was temporarily classified as a fungus, and was put in the group Oospora because this was as poorly defined a set of fungi as could be found. Into this group the scab organism which con-

sisted of threads which broke up irregularly into small joint-like spores, seemed best to fit, accordingly for years the scientific magazines and agricultural papers spoke of Oospora scabies as the fungus which causes potato scab.

The next advance in our knowledge of potato scab came in the matter of treatment. The corrosive sublimate treatment had come into great vogue and was advocated everywhere and used with marked success. It had this disadvantage—the material was some-

pint of formaldehyde in thirty gallons of water.

Scab Bacteria Has Many Hosts.

Recent work on potato scab has thrown new light on the whole problem. It was first suggested that the potato scab organism was not a fungus but one of the higher bacteria. This suggestion was readily accepted and seemed to be a necessary change in our way of thinking. From this work came the important discovery that the scab organism besides being one of the higher bacteria, was an organism that



Potato Scab Causes Loss of 15 Per Cent of Our Possible Marketable Crop.

what expensive and was very poisonous, so that there was always the problem of disposal of the liquid after seed treatment.

Formaldehyde had become popular as a disinfectant for medical and hygienic uses, and was tried for potatoes. It worked as well as corrosive sublimate for scab, and quickly the agricultural world began to treat its potatoes with formaldehyde. The treatment was quick, safe, and easy. It consisted merely in soaking the uncut seed for one and a half to two hour in a solution of formaldehyde made with one

existed everywhere in nature and that soils rich in grass roots, humus, etc., were especially rich in the germ. The Vermont investigators who worked over the subject, found the organism in virgin soil, and were able to produce typical scabs on tubers. They also found that the organism was not present to any great amount in soils that were acid or even slightly so, but that they were prevalent in soils heavily limed. Alkalinity favored this organism just as it favored many other bacteria. Much of the old writing was seen to have an accurate foundation in

observation and these discoveries explained them.

We are therefore dealing with an organism that is not alone on scabby tubers, but is in all soils containing humus and which is not acid.

Only Virulent Strains Attack Potatoes.

At first glance it might seem that there are no control measures possible and that seed treatments—which work so successfully—are in theory, at least, useless. But this is not the case. There was found to be great difference in virulence in the various strains of the germ as it is found in the soil. The particular scab germs which have been attacking potatoes and which have succeeded in scabbing them, are therefore of the strong virulent strains and thus differ from the ordinary soil forms. To plant scabby tubers is to set out in favorable position a "nest" of the most virulent germs. Scab treatment is therefore still advisable.

Rhizoctonia.

Light was shed on potato seed treatment from another angle. Recently we have come to realize that Rhizoctonia—Black Scurf—is doing great damage in damping off the sprouts of tubers in wet seasons and in cankering the stems, leading to the giant plants which yield twenty or thirty small, misshapen tubers. Black scurf gets its name from the masses the fungus forms on the tubers, and by which it lives over winter and is carried to next year's crop.

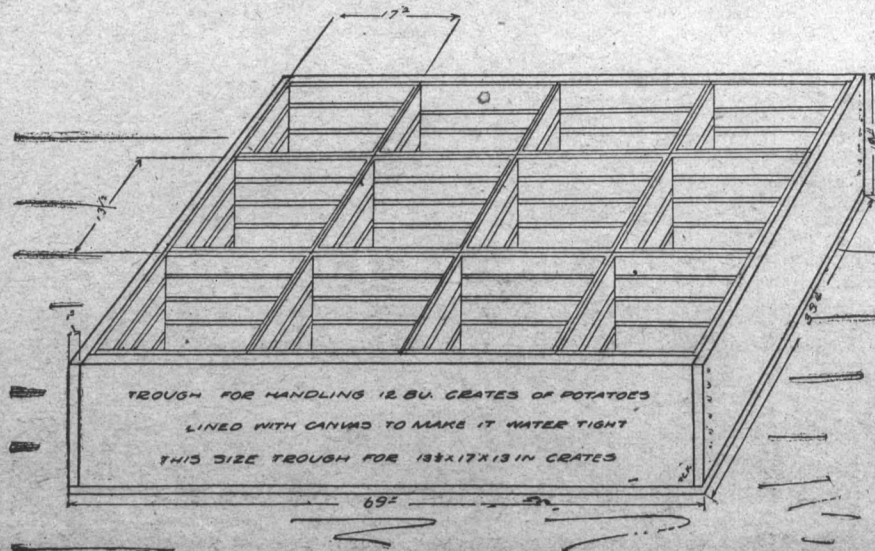
These scurfy lumps are so large and hard to penetrate that the ordinary formaldehyde dip was not found to be efficient in killing them. On the other hand, the old-fashioned corrosive sublimate treatment did the work because of its lasting antiseptic quality. Formaldehyde when applied killed the outer surface and evaporated. The fungus could start from within. Corrosive sublimate, on the other hand, condensed on the lamps and stayed there, always functioning to restrain growth from the scurfy mass.

One Treatment for Both Diseases.

The last word, then, in seed treatment teaches us to go back to the old-fashioned corrosive sublimate dip, not that formaldehyde will not control the scab, but because we must control Rhizoctonia, or Black Scurf, as well.

This treatment is simple and almost as easy as the formaldehyde dip. Four ounces of corrosive sublimate is dissolved in a little hot water in a glass vessel. Corrosive sublimate, as its name implies, is a chemical that will eat into metal and must accordingly be handled in glass or wooden vessels. A little vinegar, one tablespoonful, will speed up the dissolving process. This solution is then added to thirty gallons of water. The potatoes are soaked in this for one and a half to two hours before cutting. Reinfection from untreated tubers must, of course, be avoided. The solution becomes weaker in use and after four batches are treated, it should be made up fresh again.

For small quantities a barrel does very well. For large acreages, it will (Continued on page 656).



The Michigan Farmer

Established 1893.

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The Lawrence Publishing Co.

Editors and Proprietors

39 to 45 Congress St. West, Detroit, Michigan

TELEPHONE MAIN 4525.

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 subscriptions 50c a year extra for postage.

RATES OF ADVERTISING:

40 cents per line agate type measurement, or \$5.00 per inch (14 agate lines per inch) per insertion. No adv't inserted for less than \$1.20 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, JUNE 2, 1917



CURRENT COMMENT.

The Liberty Loan. In financing the war in which it has been drawn, the United States has two sources of revenue, viz., taxation and the sale of government bonds. The government is already committed to the policy of raising as large a proportion of the necessary money by taxation as is possible without encroaching seriously upon industrial activity. Big business and large incomes will pay a very high rate of taxation toward the support of the war. This source alone will not, however, provide the funds absolutely necessary for the gigantic preparations necessary to assure the early and successful termination of the struggle. For this reason, it will be necessary to secure a comparatively large sum from the sale of government bonds.

As a means of giving every person in the country an opportunity to exhibit their patriotism in supporting the government through the medium of a popular loan, the \$5,000,000,000 worth of bonds authorized by congress will be issued and sold largely in small denominations, and every person in every walk of life will be impressed with the idea that it is his patriotic duty to buy a Liberty bond. To facilitate the convenience of popular subscription, banks in all sections of the country will sell the bonds without commission, and applications may be made for same through any local post office.

These bonds will be of two kinds, known as coupon bonds and registered bonds. Coupon bonds are issued to the bearer in denominations of \$50, \$100, \$500 and \$1,000. The attached coupons are detached by the holder when the interest installments they represent are due, and can be cashed at any bank. Registered bonds are issued to the purchaser and registered in his name, and checks for the interest are mailed semi-annually to the holder. These bonds are issued in denominations from \$100 to \$100,000.

The first issue of these bonds will bear the date of June 15, 1917, and will run for thirty years, the government having the right to redeem them in fifteen years from date. The bonds will bear three and a half per cent

interest per annum, payable semi-annually. The purchaser of these bonds has the right to convert them into other bonds bearing a higher rate of interest if during the war the government shall issue other bonds at a higher rate. They are non-taxable except as to inheritance tax, which applies to all property of whatsoever nature.

These bonds are an excellent investment, the best of collateral for loans, and may be readily converted into available cash whenever same is needed. Right now the government needs the money, and it is the people's patriotic duty to furnish it. Through arrangements with many banks these bonds can be purchased on an easy payment installment plan, making them an excellent medium for the investment of small savings. Country people as well as city people should show their patriotism by buying Liberty loan bonds in such volumes as their means will permit.

Pursuant to the enactment of the selective draft law by Congress, the first

step toward the creation of an efficient military force under that law will be the registration of all persons within the age limits of liability for military service. June 5 has been fixed as registration day for this purpose by proclamation of the President and the governors of the various states. The following is the text of the proclamation issued by Governor Sleeper:

Whereas, The Congress of the United States has enacted a law requiring all male citizens twenty-one years of age and under thirty-one years of age to present themselves for registration for military service, and empowering the President to fix a date for such registration and to employ the officers of the state, and of the various municipalities, to execute the provisions of the law, and has authorized the raising of an army from the persons so registered, and

Whereas, The President of the United States has issued a proclamation calling upon such persons between the ages aforesaid to present themselves for registration before the local officials on the fifth (5th) day of June, 1917, and to do and perform certain other acts connected with such registration under severe penalty for failure or neglect to perform the same:

Now Therefore, By virtue of the authority vested in me as Governor of the State of Michigan, I do hereby announce and proclaim to the People of the State of Michigan

(a) That all the officers of the state and of the several municipalities thereof who are so required by law or by the President's proclamation, and who have been appointed thereto to perform any duties in connection with or pertaining to the registration or the selection of the male inhabitants of this state for military service, do strictly and unhesitatingly proceed to carry out and execute the duties required of them;

(b) That all male inhabitants of this state, twenty-one years of age and under thirty-one years of age, liable to registration under the terms of the President's Proclamation and the act of Congress, do obey the same and present themselves upon the date named, at the place and before the official to be designated in each polling precinct for registering and answering such questions as may be put to them touching their liability for military service to the United States;

(c) That all citizens, of what station soever, do lend their aid and assistance to the President, the Governor and to their appointed agents and representatives in these matters, as becomes the dignity and welfare of this state and of the nation at large.

And I do further request that Tuesday, the fifth day of June, 1917, the date appointed by the President for such registration, be observed as a holiday throughout this state, and urge upon all persons to lay aside their customary labors upon that date, and to celebrate the day with such suitable exercises as may be provided in each locality, in order that the work of the general government may be properly carried out without interference or hindrance in this state.

And I do hereby appoint the Mayor of each city, the President of each village and the Supervisor of each township as chairmen of their respective communities to head committees and to prepare such form of celebration as

may be deemed suitable for the observance of the day of registration.

Registration is compulsory and a severe penalty is provided for default, hence every man between the ages of twenty-one and thirty-one should register without fail on the appointed day. In cases where presence at the registration booth on registration day will prove a hardship, see the local officer mentioned in the above proclamation previous to the date.

How Soldiers will be Drafted.

The war in which our country is now engaged will come close to many homes in our state and nation on Tuesday next, when all young men of military age under the recently enacted selective draft law will be called upon to register for such service. In this connection the manner in which the selective plan of the draft law will be applied should be of interest to every Michigan Farmer reader.

As previously noted, there are no exemptions from registration for men who have reached their twenty-first birthday, and have not passed their thirty-first birthday, except those already in federal military or naval service. While it is impossible at present to give full details regarding the grounds for exemption, as rules for exemption are only outlined in the selective draft bill, and must in many cases be dictated by the President, the following general statement regarding same was authorized by the War Department and published in the Official Bulletin of May 24:

From the lists of persons so registered many names will subsequently be drawn by lot by the fairest system that can be devised. Persons whose names are drawn and other persons interested will be given an opportunity to present claims for exemption, exclusion, or discharge from the draft and to support such claims by evidence.

The determination of whether a particular claim for exemption, exclusion, or discharge shall be granted will be made by boards to be appointed by the President. These boards will function under the law and under regulations prescribed by the President. The only regulations that have as yet been prescribed are those governing the registration alone. The determination of exemptions, exclusions, and discharges is a second step quite separate from the registration.

Regulations governing the determination of exemptions, exclusions, and discharges will, when promulgated, be made available to all concerned at the offices of the local boards. Until such regulations have been promulgated further information can not be given as it might later prove misleading; and even after the regulations have been made public decisions concerning exemptions, exclusions, or discharges in individual cases can not be made by this office, since the law provides that all such cases shall be heard and determined by the boards to be established for that purpose.

Sentiment among Michigan Farmers seems to favor quite strongly the fixing of minimum prices by the government as a means of stimulating production in the present emergency. While a great many believe that with the present world shortage of food stuffs there is no reason for any farmer to be fearful to increase production to the maximum along any line and that prices are certain to be big for all products, yet these concede that the establishment of minimum prices for staples would tend to stimulate production all along the line.

The proposal for the fixing of maximum prices is less generally understood, and has brought about a misapprehension in some quarters. But it is understandingly opposed only by the professional speculators in food stuffs, as will become apparent to the reader from the following statement by the Secretary of Agriculture. This statement was issued on May 16 in response to a letter regarding the fixing of prices on food products:

"Your letter of May 1, with enclosure has been brought to my attention.

Your correspondent expresses apprehension from the talk in the newspapers about the government setting a price on food stuffs. He seems to think that it is contemplated to fix a price to producers which would be so low that they could not secure a reasonable return. Of course, there has been much confused writing in the papers. Only two suggestions have been made: One is that the government be given power to fix a minimum price with a view to stimulate production. This price would be sufficiently high to insure producers against loss. It could not have the effect feared by your correspondent, because the very object would be to stimulate production by assuring sufficiently high prices to producers. The other suggestion is that the government be given power to fix a maximum price, in extreme emergencies, to break corners or to control extortion. It is not contemplated that the government, if it had the power to fix a maximum price, would announce the existence of such a price in reference to any one or more commodities in advance of the appearance of an acute situation; nor is it contemplated that such a price, if fixed would be of continuing operation. The single thought in this connection is that the power might be used as a club to be applied only in individual cases where it is clear that an individual or corporation had established a corner or was practicing extortion. The power, it is suggested, would be used against such individuals or corporations, and when that particular situation was controlled or the abuse eliminated, the incident would be closed. Any further exercise of the power would depend upon the appearance of a similar condition."

HAPPENINGS OF THE WEEK.

Foreign.

The European War.—Late last week an air raid was made on England by German air ships, in which seventy-six persons—twenty-seven of whom were women and twenty-three children—were killed, while 174 were injured. The Italian army is attracting attention to the southern theatre of war by its drive on Triest in which the troops moved forward two miles on May 27. In this advance they cut through the Austrian lines between Jamiano and the gulf and established themselves on the outskirts of Medeazzo. They also captured the heights at the head of the Palliova Valley and consolidated their lines at other points. On the western front German attacks on the Aisne and Champagne battle fronts were broken down under the terrific French fire. British troops gained further ground in the neighborhood of Fontaine les Croisilles. A German attack east of Looze was repulsed. On the Russian frontier the usual reciprocal firing has taken place, but no infantry attacks by either side are reported in recent official statements. The submarine toll has decreased during the past two weeks. However, a considerable tonnage has recently been destroyed. On Sunday a Spanish steamer and 133 persons were lost, and six fishing boats were submarined on the same day.

The Brazilian congress is considering the cancellation of neutral relations with Germany, as stated in the decree of April 5, 1917. The sinking of Brazilian merchantmen by German submarines is given as the cause of the action.

Henry Morgenthau, former ambassador to Turkey, has declared that fully one million Armenians have lost their lives since the beginning of the war, as a result of the inhuman barbarities practiced by the Turks.

News by way of Amsterdam states that many German newspapers and journals will be obliged to discontinue publication because of the scarcity of paper. Other concerns will publish one or two editions weekly, while a few will be allowed to continue daily, but with a reduction in the size and number of papers.

National.

Destructive tornadoes swept over the country late last week and early this, killing over 160 persons, injuring a thousand more and doing property damage estimated at \$5,000,000. The tornado-swept zone extends from Illinois to the Gulf of Mexico. At Mattoon in central Illinois fifty-four persons are known to have been killed and 500 injured; at Charleston, ten miles east of Mattoon, thirty-eight were killed and 150 injured, while at Andale, Kansas, twenty-six were killed and scores injured on Friday of last week. In other Illinois towns eighteen were killed, in Indiana the casualties were seven, in Tennessee six, and in Kentucky three.

The secret service agencies of both America and England are using every possible means of discovering those

(Continued on page 666).

The Modern Plank Frame Barn

By PROF. H. H. MUSSELMAN

THE self-supporting roof is coming into more general use. Its simplicity of construction, economy of material, and ample strength when properly built make it a desirable type of construction. Using plank for framing and building not over thirty-six feet wide this type of construction can be recommended strongly except in basement barns where sixteen to twenty-foot posts are wanted above the basement. Thirty-six feet is considered sufficiently wide for practically any farm barn. This width is

sound, straight grained, and free from knots.

Size.	Lengths.				
	8 ft.	10 ft.	12 ft.	14 ft.	16 ft.
2x 6	1000	650	450	325	250
2x 8	1775	1425	1050	775	600
2x 10	2225	2225	1850	1500	1150
2x 12	2650	2650	2650	2275	2000

The best hemlock would have a little over half the strength of the above pieces.

Taking as an example a two by ten-inch joist fourteen feet long has a carrying capacity as shown in the table

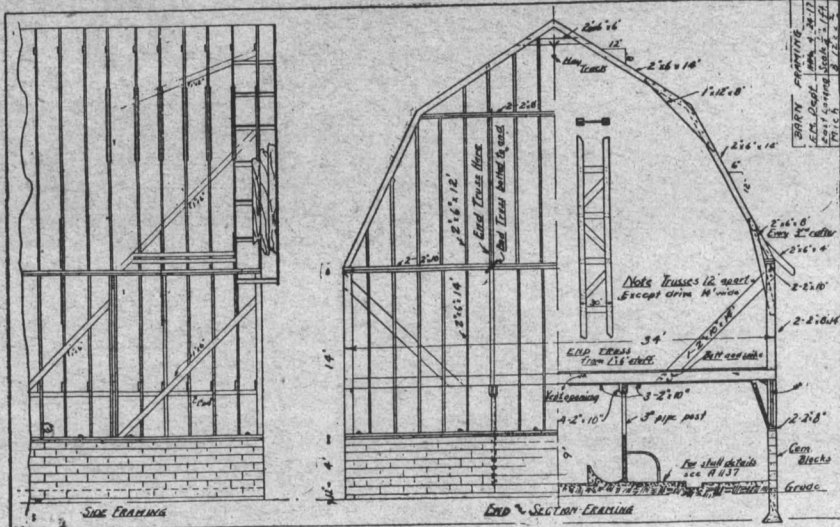


Fig. 1.—Details of Framing for Plank Frame Barn Thirty-four Feet Wide.

convenient to house two rows of cows headed either in or out and makes the handling of hay convenient. Also, this type and width of construction does not require unusual lengths and widths of lumber and uses the standard lengths of lumber economically.

An excellent rule for roof slopes is to set the lower rafter on full pitch and making the lower rafter two feet longer than the upper. For a thirty-six-foot width of barn this will require a sixteen-foot rafter for the lower slope and a fourteen-foot rafter for the upper slope, with very little cutting or waste. Or giving the slopes in another way, the lower rafter should have a six-inch run for a twelve-inch rise and the upper rafter should have a twelve-inch run for an eight-inch rise.

Figure No. 1 shows the framing for a self-supporting roof thirty-four feet wide. This is set on a cement block wall which is made four feet high or high enough to reach to the window line. No lumber is needed in this frame over fourteen feet long and none more than ten inches wide.

Figure No. 2 shows the framing for a barn forty feet wide with self-supporting roof. The bracing at the knee of the rafters and at the plate is made more substantial than in Figure No. 1 and the timbers are heavier. It is necessary in both of these framing plans to bolt and spike the brace which runs from brace to center of barn.

Figure No. 3 shows a good plan of a general farm barn which is adapted to use with framing plan shown in Figure No. 1. Half-basement construction with a drive to the second floor would be a desirable way to build this barn.

Following are given the figures for the strength or carrying capacities for various size oak or yellow pine joists.

Elm, beach or maple would not have equal strength but would serve very well for construction except that receiving severe strain.

Safe strength or safe carrying capacity of oak and yellow pine joists. The figures given in pounds are for thicknesses of full two-inch and the carrying capacities are for the pieces loaded evenly from one end to the other. The pieces also carry the load on edge and are supported at both ends. It is understood, of course, that the pieces are

of 1500 pounds. If these were spaced two feet apart under a hay mow the load which the joist would carry would be equivalent to a depth of heavy hay of more than thirteen feet. For figuring this way hay is taken at 500 cubic feet per ton. In the same way a two-by-twelve-by-fourteen joist spaced two feet apart of yellow pine would carry a depth of twenty feet of heavy hay.

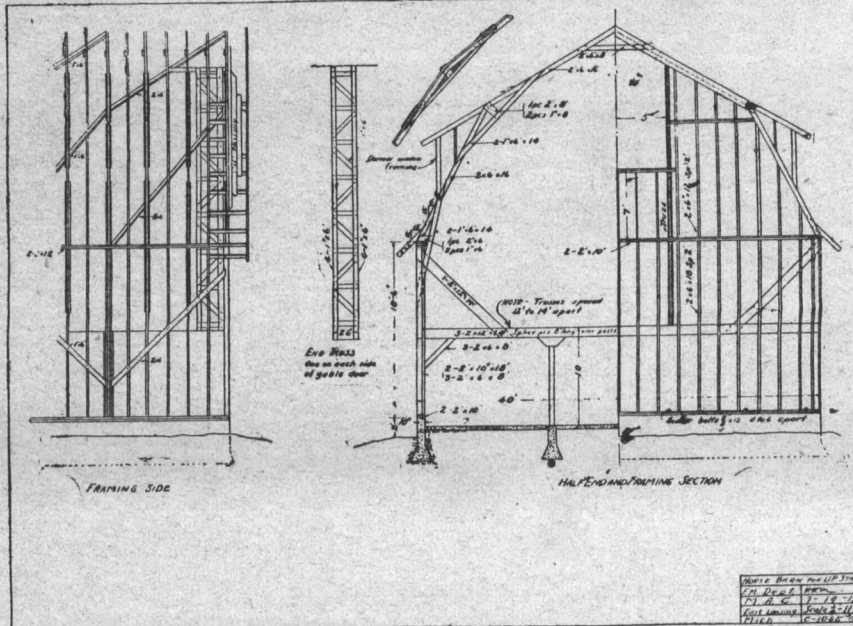


Fig. 2.—Framing for Self-supporting Roof Forty Feet Wide.

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POTATO SCAB.

(Continued from first page.)

pay to make a large trough which will hold nine to twelve bushel crates, and thus quickly treat a large quantity at one time. This trough should be made of heavy stuff and may be easily made water-tight by lining it with canvas or tarpaulin.

In all work, the poisonous nature of the chemical must be remembered and the crystals, solutions, etc., be kept away from live stock and children. Treated potatoes cannot be used as feed for stock.

Potato scab control measures recognize that the organism is present in all soils, but argues that the organism from scabby tubers is most virulent. It seeks to control the disease by cleansing the seed stock.

All of the old experiments agreed in pointing out the danger from scabby seed, either treated or untreated. With severe scabbing disinfecting is very inefficient. Accordingly only smooth stock free from scab should be used.

Plant Potatoes on Your Acid Soils.

Our best knowledge of the relation to acid and alkali indicates our best control will come in using potatoes on the slightly acid soils. The potato is one crop which tolerates very well acid soil conditions. We must take advantage of this relation to keep our acid soils in use. The soil experts tell us that Michigan soils are very short in lime, hence, farmers will not have to hunt far for suitable fields.

Potato scab is a disease which this year, above all others, must be met. Few realize the enormous loss that scab is causing. It is not too much to say that five per cent of Michigan's potato crop is too scabby and worthless to be picked up at all. A glance over any field at digging time shows the great number of culls in the field. But even with this sorting, there is yet more to be taken. At the car, or at least sometime before the potato gets through the market, the potatoes are vigorously sorted and scabby stock is put into the culls. Men at the great potato market, Chicago, tell me that it is not unusual to have five per cent of culls in a car due to scab. In an ordinary year these culls are worth from five to ten cents a bushel. Instead of potato scab being an insignificant factor, it probably turns ten per cent of our potatoes into culls, stock not only worthless of itself, but detrimental to the market value of sound potatoes.

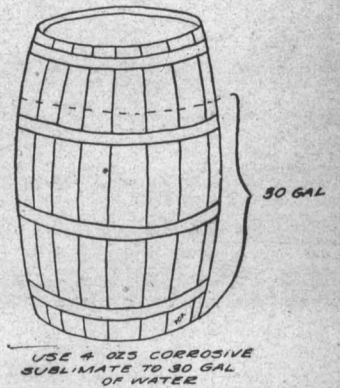
But there is yet another source of loss. We are just coming to realize that scab affects the potato plant aside from disfiguring the tubers. The scab

tato scab is costing us another five per cent of the crop.

Unless my observations of six years in Michigan potato fields are wrong, we are losing each year fifteen per cent of our possible potato crop by this well known and neglected parasite.

At any time as a part of common-sense farm economy, we ought to stop this great leak. It is a loss which in ordinary years is the difference between success or failure in the potato crop.

In this year above all others, when our acreage is small, our seed is poor, and our duty is so evident, we ought



to hit the form of loss that comes from potato scab, and hit it hard. The great gains in yield are not to come so much in increased yields per acre, so much as they are to come from a greater conserving of the yield we now get.

FERTILIZING BEANS.

We want to use commercial fertilizer on our bean land this year, and we don't know just how much is best to put per acre to get best results out of beans. Also, which would be best, to sow fertilizer broadcast or in the hill with beans? Our land is practically clay land.

Leelanau Co.

M. K.

There is no particular limit to the amount of fertilizer to use on beans when beans bring such prices as they do at the present time. If beans were down to \$1.00 or \$1.25 a bushel, then one might figure that an extra amount of fertilizer would raise the cost of production so as to wipe out the profit, but with beans above \$5.00 a bushel the more fertilizer you use the better.

There is only one thing to be careful about in fertilizing beans, and that is not to put too much fertilizer right in the drill with the seed. If the weather is hot and dry as it is apt to be, too much fertilizer will injure the germinating power of the beans.

You suggest the very best way of applying fertilizer to beans and that is to distribute it broadcast before the beans are planted and work it into the soil. When you do it this way there is absolutely no danger of injuring the crop.

If the present price, or anywhere near it, should hold on beans, I really believe it would pay to use as high as 500 pounds of acid phosphate per acre on ordinary land.

COLON C. LILLIE.

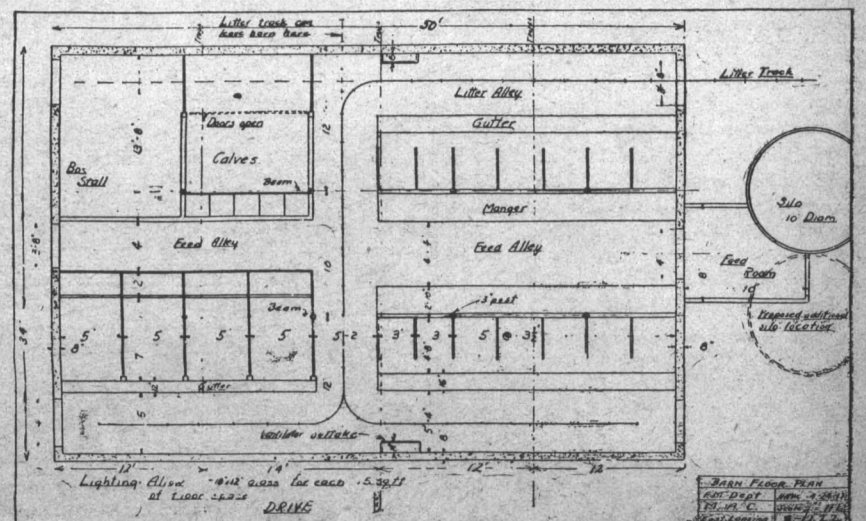


Fig. 3.—A Good Plan for a General Farm Barn Framed as in Fig. 1.



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BUCKEYE

The CRIB With The STEEL RIB

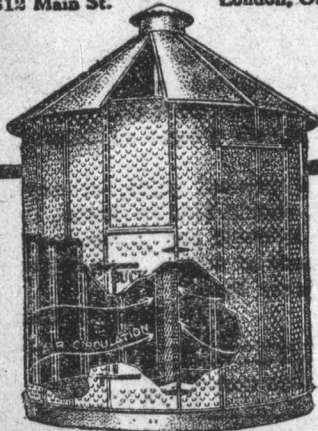
Buckeye Steel Grain Crib is built like a battleship! Heavy 20 gauge galvanized steel sheets fit heavy angle steel ribs and the completed crib stands like Gibraltar—a sure protection for precious corn and grain against rats, mice, storm, fire and light-fingered night prowlers.

Buckeye Crib cure corn or house grain, perfectly! A 10-inch upright perforated ventilator pipe in center keeps a constantly flowing current of air passing through corn from the outside perforations. Thus corn dries naturally and quickly.

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Farm Notes

Potato Planting Methods.

Please inform me which would be the best way to plant potatoes. I have clover sod, cut only once, and the clover is all dead. The ground is clay and sand in spots. I plowed it quite deep with jointer, then top-dressed it with stable manure. Would it have been better to have plowed it under? To my estimation it would go too deep. Now would it be best to plow shallow furrows, drop potatoes and plow them in, or is it better to plant with hand-planter? I thought by plowing them in the manure would mix with the ground. Any information would be greatly appreciated. Owing to the present situation I would like to raise a good crop of potatoes.

St. Clair Co.

G. R.

The manner of planting potatoes is not essential, so long as the seed is gotten in at a uniform depth in a seed bed which is well prepared. This may be accomplished by furrowing out and dropping the potatoes in the furrow and covering again, as successfully as with the hand-planter if that method is preferred. Then the ground may be harrowed once or twice with a spike-tooth harrow after heavy showers and before the potatoes come up.

While stable manure is usually plowed down rather than used as a top-dressing for potatoes, it is best applied in the fall where this is done. As this was applied on the surface and worked in, it is presumed that a heavy application was not made, in which case this method should prove satisfactory.

Wireworms.

I have a five-acre field which was a heavy sod about four years old, which was turned down and planted to beans last year. On account of wireworms I did not plant to oats or corn this spring. I have it plowed again and intend planting to beans, but some of my neighbors said they would take the beans. Will they? If so, is there anything I can do to prevent it? I do not find many now. Would the dry weather affect them any? The soil is a clay loam with a heavy clay bottom.

Tuscola Co.

A. C.

While beans are not entirely immune to attacks of wireworms, they are, together with peas and buckwheat, less severely attacked than is corn or spring sown grain. While the life cycle of the wireworm covers about three years, yet after the second plowing, they will not be so numerous, because some of the larvae will doubtless have matured the adult beetles before that time.

About the only thing which can be done to lessen the trouble is the practice of comparatively deep cultivation of the soil. If this land is to be put into beans it should be plowed and cultivated deeply before planting and the beans cultivated as deeply as practical the first and perhaps the second cultivation. Wireworms are of different kinds, some species living only in land that is poorly drained, and on such soil tile draining is beneficial. The application of lime is also said to have a beneficial effect where the soil is infested with wireworms.

USE LIME.

Authorized statement by Carl Vrooman, Assistant Secretary of Agriculture.

Is it too late materially to increase our national food supply this spring?

Not if our farmers in the eastern half of the country will promptly resort to the use of the cheapest and quickest known agency for speeding up national production of food stuffs—namely, lime.

Prices of most commercial fertilizers at present are high. Potash is almost unobtainable. Only by most scrupulous conservation of stable manure, and an increased use of legumes as green manure, and of ground rock phosphate, can the commercial fertilizer shortage be met, even temporarily. There remains one thing, however, that may be done to increase yields, which costs no more now than it did before. It may safely be said, I

believe, that if all sources of artificial chemical fertilizers failed, our total farm output in many sections could not only be maintained, but even increased for a considerable time simply by the application of lime to acreages that now are low in yield or lying fallow because they are too sour to grow profitable crops. Lime can and should be put on all sour land. By a plentiful use of lime we can, figuratively speaking, make our "war bread" of stones.

There is perhaps no considerable section of the United States without some local supply of limestone, marl or oyster shells. Ground limestone for direct application to the soil costs, delivered on the nearest siding, from \$1 per ton up, depending on the length of the haul. If crushed limestone is not available, burned lime, either ground or hydrated for agricultural use or the ordinary lump lime carried by all dealers in building materials, may be used in emergency, though lime in this form is frequently more expensive. On the other hand, if burned or hydrated lime is used the applications should be less than one-half those of ground limestone.

Thus there is available for almost every farmer, at normal cost, in spite of war conditions, a material which, for the time being, may avail to increase our agricultural output enormously. The initial returns from the application of lime to sour land are sometimes remarkable. An investment in limestone often pays a dividend of a hundred per cent or more the first year, if care is taken at the same time to maintain the organic content of the soil.

It is the duty of American farmers, in this national crisis, to make the most of this, our cheapest and most easily available agency for speeding up production. War or no war, a carload of crushed limestone where needed is always money in the farmer's pocket at the end of the crop year. And a carload of limestone, judiciously used by each farmer whose land is too acid, will augment our supply of bread-stuffs by a surprising number of millions of bushels.

LILLIE FARMSTEAD NOTES.

The excessive wet weather in our vicinity came to an end suddenly and cold, dry north winds dried the land off so quickly that heavy crusts were formed and our clay soil was plowed when too wet and became so hard in places that it was almost impossible to put it in condition for seed bed. The oat ground was exceedingly difficult to prepare and even after the oats were sown I had the men go over it twice with a pulverizer and twice with a roller and then the heavy clay portions were none too good. All the while it kept getting drier and drier but finally on Saturday, the nineteenth, we had rain which moistened up the surface and allowed the oats to germinate. Today, the twenty-second, we are having a heavy rain but we can use a good rain at this time without detriment. The only fear is that it will continue to rain and delay planting the corn and the beans as it did last summer. We were getting the ground in good condition and we intended to plant corn and lima beans today; now, however, it will depend on weather conditions when we plant.

One who never farmed clay soil can have no conception of the extra work it makes in having the season first too wet and then too dry. On light soil or sandy soil, it doesn't make very much difference but on heavy loam and clay it makes an immense amount of work. You get the clay land fairly well prepared and then there comes a heavy rain, usually the ground dries off quickly and a heavy crust is formed and it takes an immense amount of work to prepare it again. It does seem as if

the rain storms are more severe than they used to be. We use to get nice easy rains, it rained just fast enough so that the soil could absorb it without waste. Such rains didn't cause the land to bake so hard, but, late years, when we get a rain it simply pours, hammers the ground down, lots of it runs away, requiring this extra labor in preparing. Perhaps conditions will change back again.

The Wheat Crop.

During all this time wheat in our vicinity has been doing fairly well. It is making a good growth and if it wasn't for the places that were killed out by ice in the winter time, we would have a splendid crop. On my farm I believe we will have a fair crop any way. On well drained land the wheat has a good color, it looks healthy, and I see nothing to prevent its developing into a good crop. Of course, the winter-killed places are going to cut down the yield on some fields immensely but where wheat didn't winter-kill it seems to me it is unusually thrifty.

I have just made a short business trip in Ohio, and my observation is that they have better wheat down in that country than we have in Michigan, very little of it seems to be winter-killed, and that, too, has a splendid color and will make a good crop, I believe. The oat crop down there is backward as well as in Michigan, most of the fields are just nicely up and here it is past the middle of May. Unless we have a very unusual season I look for a poor yield of oats.

Alfalfa is Winter-killed.

I stated in a former issue that the alfalfa was coming up slowly and I attributed this to the fact that we had top-dressed the alfalfa heavily during the winter time. This manure held the snow quite a bit later this spring and prevented the sun from warming up the ground. On the clay side hills which received the more direct rays of the sun the alfalfa made a better start. Now, I didn't closely examine but I took it for granted that the alfalfa would come later, but large areas of this alfalfa are absolutely dead. No wonder it didn't start early. I am convinced that the same conditions which make our wheat spotted killed the alfalfa. The ground remained unfrozen all winter, covered by a deep bed of snow; when this snow went off early this spring, then the ground froze, and while the ground was in this frozen condition we had storms of rain and snow; this melted and every little depression held this water which could not drain through into the tile drains and when the weather turned cold it froze into a layer of ice, and in every instance where this ice formed, the alfalfa is dead. My best field of alfalfa is going to be a sorry looking sight. I believe it would pay to plow this up and put it into corn if we had the time to do it. Of course, it is not too late to plant corn but it means a lot of work for the teams, it means a lot more cultivating all summer, it means work that we didn't plan on doing, and in my opinion, we had better take what alfalfa we can get and not change our plans for this season. We have got all the work that we can do.

Clover Hardier than Alfalfa.

We have sixty acres of new seeded common red clover and this has stood the winter well. None of it has been destroyed by this icy condition that killed the wheat and the alfalfa. This proves that red clover is much hardier than alfalfa, even after alfalfa is well established. The clover is all new seeding and hasn't the root development that it will get. The alfalfa was two or three years old and well established. After this winter-killing of alfalfa I think I can notice that the Grimm alfalfa has stood the severe test the best; it is a little bit too early to tell, but I believe it is hardier than ordinary varieties. COLON C. LILLIE.

The Vegetable Garden

BEES near the garden will insure the cucumber crop being fertilized. When cucumbers are grown for pickles on a large scale be sure that the soil contains a fair amount of nitrogen and potash. To insure a healthy crop the young plants must be sprayed for blight, using Bordeaux mixture (three pounds of copper sulphate, six pounds of lime, fifty gallons of water). The spraying must begin as soon as blight appears in order to save the crop.

The insect enemies of importance are the striped bug, cutworms and green lice. The "striped bug" or cucumber beetle, is difficult to control, but Paris green or pyrethrum dusted on the plants will assist in destroying the pest. Small frames placed over the plants until they are fairly well developed are probably the best and the cheapest method of control. These little square boxes covered with cheesecloth or glass can be used for many years and their cost divided up against several crops does not make a large item. Plowing the ground early and keeping down the weeds will usually prevent the ravages of cutworms. A solution of one part nicotine to 500 parts water will destroy the green lice. Like all other pests, the insect enemies of the cucumber can be largely controlled by clean cultivation. Burning the vines every fall after harvest will destroy many pests and assist in protecting the next year's crop.

In growing cucumbers for pickles, the quantity of ground planted to the crop is less important than the quality of care which the crop receives. There is much work in producing cucumbers for pickle factories but in some sections it has paid an excellent profit. Not every farmer can take up such a crop as the time required for its cultivation and harvesting may seriously interfere with other work which may be more profitable.

In harvesting cucumbers for pickles, the vines may be picked up from the ground and then carefully replaced. This enables the grower to pick a large part of the crop without constantly bending over or working on the knees, and it will not injure the vines.

Any good garden soil capable of raising corn or potatoes will produce cucumbers if given the right amount of cultivation. The young plants need plenty of moisture and weeds will soon strangle them. R. G. KIRBY.

Planting Out the Celery.

Many of the early maturing garden crops, like beans, peas, sweet corn and early potatoes, are off the ground in time to make use of the same ground for fall crops of celery. Of course, the plants have been in preparation, but they are better for being grown in the beds or pots during this early period, for they can be given better culture, shade and water. Then the preparation of the soil for the celery crop can begin in the spring with the preparation for the early crop, and be continued until the celery planting season.

Celery soil must be exceptionally rich. One authority says that the ground should receive a six-inch coat of manure every season, but this is more than many fields will get in two or three years. Still it gives you an idea of how rich the soil should be, and relieve you of any fear of overdoing it on your plot. Avoid fresh manure, and you need not fear giving too much. Celery plants are gross feeders, and do not grow satisfactory stalks without rich soil and a fairly good supply of moisture.

When the ground is enriched well for the first crop the best fertilizer to use just before planting out the celery is bone meal, unless you have a supply of thoroughly rotted cow manure, when

a mixture of the two would be ideal, using about a half pound of bone meal to the rod of row. Use double this if used alone, about five pounds to the square rod of ground prepared. This should cost you not over ten cents, and you can count on getting many times ten cents more celery from your square rod because of it, if other conditions are right.

Your celery plants should be stocky and well rooted. It is best to transplant all celery plants at least once before setting in the garden, for this breaks the tap root and causes the formation of many fiber roots, making the plants take hold of the soil quicker in their new positions. Potted plants are less apt to die than those dug from beds and set out. The new paper dirt bands now on the market, square in shape, without bottoms, are ideal to pot the plants into, and it is so easy to remove the bands and set the plants with absolutely no disturbance of the roots.

Set the plants firmly six inches apart, sorting them so the plants do not vary much in size, for if a little plant is set between two big ones you might as well bid it good-bye, and your large plants will not blanch as well as if a large plant had been used instead,



Blossoming Time is a Critical Period. Most Fruits, when in Full Blossom, will Stand a Temperature of 30 Degrees without Injury.

one that could not have been crowded by its neighbors. Do not use any water before planting unless ground is extra dry, when the water should be applied and allowed to settle until the soil will not pack before the plant setting begins. After the plants are set the row can be well watered and a little dry soil drawn over the wet surface to keep the moisture from evaporating and to prevent crusting. From the first to the fifteenth of July is the best time for setting for the main crop.

Some prefer to grow their celery on the level, and others deep in trenches. I preferred a shallow trench, just such as I could form with the plow of a wheelhoe, plowing as deep as I could, the space between each row being a "land," with the back furrow in the middle, and the dead furrows for the row of celery. If one plowing did not seem deep enough I let it settle a little and then threw another back-furrow on top of the first, and that made my dead furrows still deeper. L. H. COBB.

The Horse Weeder in Garden Crops. Though unadapted to use in the small family garden, the horse weeder may often be used to good advantage in the growing of garden crops of all kinds. To be sure, it may not be used at all stages of crop development, nor yet under every condition of soil. Still, at certain stages of growth under certain soil conditions it will fill the bill to the dot. This holds good, even with such crops as onions, beets, carrots and the like.

The weeder is not a cultivating tool

in the general sense of the term. It will not loosen a compact soil, neither will it dig out nor cover up large weeds. It will not break up and mellow a crusted surface, but it may often be used to prevent one forming. As a weed destroyer its service is one of prevention. The weeder is a supplementary cultivating tool. The manner in which it does its work must be understood. It must be used at the right time to secure compensating results.

Though ordinarily unadapted to killing weeds of size, there are certain times when it may be used for this purpose to good advantage. When light precipitation closely follows cultivation with regular tools, the weeder may be used to re-create the earth mulch when, by going crosswise of previous cultivation, many weeds that may be in the rows or among the plants will be smothered by the loose earth pulled over them.

I find the weeder of great service in maintaining clean culture close to the plants and the earth mulch over the entire surface of the field. Of course, it is used supplementary to other tools. It is of little use after heavy rains, nor will it maintain the necessary depth of mulch alone. Its teeth do not work deep enough for this. But after light showers, when there is need of getting over the ground quickly its wide sweep admirably fits it for the purpose, while

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Army Horse Requirements

By WAYNE DINSMORE

THE passage of the selective draft measure by congress makes certain the immediate preparation and equipment of an army of at least a million men in 1917. All preparations are being made for a war that will last three years, for regardless of what civilians may think, army officials do not expect an early ending to the war into which the United States has been drawn.

The requirements of cavalry, infantry and artillery regiments in horses and mules are set forth in a letter just received by the writer from the War Department, Washington, D. C., to be as follows:

Cavalry Regiment, 1541 horses; 152 draft mules; 29 pack mules; six riding mules.

Infantry Regiment, 69 riding horses; 112 draft mules; 25 pack mules; six riding mules.

Artillery Regiment, 1097 horses; 88 draft mules; four riding mules.

These are minimum requirements, and do not take into account transportation trains required to forward supplies from terminal points to the field bases. In other words, the number of animals specified above refer only to those actually needed with the troops.

The war strength of a regiment of infantry is approximately 1500 men; of a regiment of cavalry approximately 1300 men; of a regiment of artillery consisting of six batteries of four guns each, approximately 1146 men. While definite information as to the proportion of infantry, cavalry and artillery to be included in the new army is not yet forthcoming, it is generally understood among army officials that an artillery battery of four guns will be allowed for each 1000 infantry. It seems probable therefore that the first one million men placed under army by the United States will be composed of 500 regiments of infantry totaling 750,000 men, 125 regiments of artillery totaling 143,250 men, and 100 regiments of cavalry totaling 130,000 men, making a grand total of a little over 1,000,000 men. The proportion of artillery certainly will not be less, and may be more, as actual warfare on European battlefields has demonstrated that overwhelming superiority in the artillery branch of the service is essential to efficient operation by the infantry.

It may be argued that there is no probability that the United States will prepare 100 regiments of cavalry, but in view of the danger from the Mexican situation, it appears to be the belief of well-informed army officers that at least that many cavalry regiments will be provided for in this year's mobilization.

To equip 500 regiments of infantry will require 34,500 riding horses, 56,000 draft mules, 12,500 pack mules, and 3,000 riding mules. One hundred and twenty-five regiments of artillery will require 137,025 horses, 10,000 draft mules, and 500 riding mules. The equipment of 100 regiments of cavalry will necessitate 154,100 horses, 15,200 draft mules, 2,900 pack mules, and 600 riding mules. The total number therefore required for the equipment of 500 regiments of infantry, 125 of artillery, and 100 of cavalry, will amount to 325,625 horses and 100,700 mules.

The army has at present only 70,000 head of horses and mules. This means that approximately 350,000 head of horses and mules must be bought within the next six months. No information has yet been received from the army authorities in regard to how the purchase of these horses and mules will be made. In the judgment of experienced horsemen however, the purchase of so large a number of horses and mules within the limited time available can best be accomplished by setting a definite price to be paid by the army for the different animals that

will pass inspection for their respective classes, and by establishing ten or fifteen inspection points where horses and mules may be tendered for inspection. This will permit dealers, large or small, or even farmers, to consign their horses directly to inspection points with definite information in regard to what they will obtain for them if they pass inspection. There seems to be no good reason why the producers of horses should not be permitted to sell them directly to the government, if they pass inspection, instead of being obliged to sell them through some intervening contractor. It is earnestly to be hoped that the army officials will decide on some general plan.

It must not be forgotten that the allied nations are still in the market, and will continue to be. Their need for horses and mules is as great as for guns and ammunition; indeed, even more so, because they can manufacture the guns and ammunition in their own countries, but their resources in horses and mules have already been exhausted, and the United States is the only source from which they can obtain additional supplies. Eight hun-

dred fifty-three thousand, one hundred sixteen head of horses and 289,062 head of mules have been exported, practically all of them for war purposes, during the thirty months ending March 1, 1917. In spite of the shortage of ships, 40,000 head of horses and mules were shipped in January, 1917, and more than 27,000 head in February, 1917.

Recent accounts from the battle front relating the losses of hundreds of pieces of artillery by the Germans in recent operations state that the loss of these pieces was due recently to the lack of artillery horses.

It is fortunate that the United States is well supplied with both horses and mules at the present time, but it is incumbent upon us, if we are to maintain our resources so as to effectually back up our armies and maintain maximum production on our farms, to see that every good mare is bred to a first-class stallion this season, and that every effort is made to save the foals that will be coming within the next few weeks. The war may yet be decided by the number of horses available to the respective belligerents, for on the far-flung battle lines and in the reserve made up of our farm forces, the horse is the most important single factor aside from man.

The Brood Sow Situation

By N. A. CLAPP

THE brood sow situation in the country at the present time, is a serious one. In the weekly letter from the Department of Agriculture, Washington, D. C., two articles are devoted to the subject. From a condition when last fall it seemed that we had a surplus of hogs, the numbers on the farms have so diminished that a note of alarm is sounded to call the attention of the farmers to the real situation. Probably on account of the extremely high prices for grains the number of hogs has been greatly reduced. The matter of disposing of the hogs has been carried so far that in very many cases not even a brood sow has been retained from which to raise pigs to feed for pork the coming fall.

The outlook for high prices for pork meats is very good. The needs of the armies in Europe must be met with something, and no other meat can be so conveniently handled as pork meats, notably bacon, side pork and hams. The demand for lard is also very great. To use an expression from the weekly letter, "The farmers have sold the goose, which if it had been kept, would have laid golden eggs."

There seems to be much interest manifested in increasing the acreage sown to spring grains and planted to corn. Such may be a wise plan, but with a large amount of grain on hand next fall it will be a wise plan to have some pigs to convert some of it into pork. The number of brood sows is too small to supply the entire needs. Prices will be so high for the spring pigs to feed in the fall that a large percentage of the same will be sold while light in weight and the numbers diminished to that extent that there will be a need of more pigs to make more pork to sell at the high prices which will prevail.

It is a good plan to raise two litters of pigs each year from the brood sows, one in the spring and one in the fall. The sow that farrowed her litter in April can be bred in the latter part of May and during the month of June for fall litters. In my own experience I have found the conditions during the months of September, October and the early part of November, very favorable for saving and raising pigs. There is usually an abundance of grass for the sows to eat at that time and there is an opportunity for the pigs to run about and get the exercise which they need to help them to develop while

they are learning to eat the tender grasses which help to expand their stomachs while small and enable them to grow more rapidly later on than would be possible if they were not allowed to eat the grass.

The fall pigs, which are liberally fed while young, can be made to grow up to market weights very quickly and cheaply, too. If crowded along while young one will not have little pigs to winter from which to make pork, but they will have young hogs of good weight and large proportions to eat the feeds and soon reach popular market weights. Good pig raisers can, if they will try, make the fall pigs weigh fifty pounds at two months of age, and from ninety to one hundred pounds at the end of three months.

Believing that the number of what is considered the brood sows is not sufficient to produce a sufficient number of pigs to meet the needs of the farmers in consuming the odds and ends of the grains, fruits and vegetables that will be raised on the farms the present season, it is suggested that selections from the young sows that were wintered over from last fall's litters be made and the same be bred to farrow pigs during the coming fall. Such selections can be made to serve an excellent purpose and aid, very materially, in supplying the needed number of hogs on the farms.

That the situation is a serious one those who have given the matter a little consideration will admit. More pigs will be needed to consume the feeds on the farms and make up a part of the income from the products of the farm. And farther, more pork meats will be needed to not only supply the great armies that are in the field in the European war, but the great armies of laborers in our various industries. If means are not devised at the present time to meet the future needs of this country, we will be compelled to face a meat famine, and we are pretty close to it now. Germany is not considered a pork producing country, but during the last year the number of hogs in that country were increased from thirteen millions to seventeen millions, an increase of four millions, and the work on the farms is being performed, largely, by women, old men and children. Shall we, an intelligent people, which we think we are, be less prudent in preparing to meet our future needs?

HOW TO FEED CALVES.

Raising calves is one of the most interesting phases of farm life and work to me, and I am going to tell you the method I follow in feeding, which is very successful.

I have read many articles on this subject and have taken some ideas from a number and have worked out a system of feeding that is very economical and effective.

When the calf is one day old, or at most, not more than two days, I take it away from the mother and commence feeding it from a bucket. I find that it is much better and easier for both the mother and the calf to be separated when the calf is very young, and it can be taught to drink much more easily at this time than if allowed to run with the cow for a longer period.

I milk the cow night and morning in the regular way. While the milk is still warm, I put about three quarts in the bucket and teach the calf to drink it. I feed in this way until the calf is three or four days old. Then I get a supply of calf meal and gradually substitute skim-milk for the whole milk.

This is the way I prepare the meal. Place a tablespoonful in the feeding bucket and pour over it slowly about a quart of hot water and stir until the mixture is smooth. I then add about two quarts of warm milk and a very small amount of salt (about a teaspoonful). The feed should be the same temperature when fed, as it is when it comes from the cow. If the feed is too hot it will constipate the calf and if too cold will cause a looseness of the bowels.

I gradually increase the amount of meal, also the amount of milk, (substituting skim-milk entirely for the whole milk by the time the calf is a week old), until I am using about four tablespoonfuls of meal and five or six quarts of milk by the time the calf is a month old. I then decrease gradually the amount of meal and after the calf has eaten the milk I place a small amount of bran in the bottom of the bucket and allow the calf to lick it. I increase the bran as I decrease the meal and keep increasing the milk as the calf gets older.

If placed where it can "nibble" grass or clover hay, it will soon learn to eat roughage. As soon as it eats roughage readily I give it an occasional nubbins and by the time it is six months old I wean it from milk and feed it clean water, roughage, and either an ear of corn or about a pound of bran to a feed.

My calves are always round and their coats are sleek and glossy and I never have any trouble with their bowels.

In summer, unless you have a separator, it is sometimes a difficult matter to keep the milk sweet until time to skim. I find, however, that sour milk is not injurious to calves, even thought quite young. But if sour milk is fed, it should be fed constantly and not alternated with sweet.

I would lay great stress on keeping the feeding pail clean and the stall or place where the calf is tied should also be kept clean and wholesome.

I have raised calves on as little as fifty cents worth of the meal, which you will admit is very much cheaper than allowing the calf to nurse the cow for a month or two, as some advocate. A few pounds of butter will buy enough meal for a calf, and a reasonable production being eight pounds per week you can readily see the advantages of this manner of feeding.

I have had opportunity to compare my way of feeding with that of farmers who allow the calf to run with the cow and in most instances the results obtained have been in favor of my method. I also believe that a cow will do better if milked in the regular way and at regular hours, than if the calf is allowed to nurse.

Newaygo Co.

Mrs. F. G. W.

Where the Leak In the Dairy Was Found

By JAMES N. McBRIDE

THE post mortems held over defunct dairy enterprises and dispersed milking herds leads one unavoidably to the conclusion that the low price paid for non-butter-fat milk solids is the most important cause of their loss. The glorifications of efficiency in herd feed and care, with the high yielding cow and her sons and daughters, have been unable to maintain the dairy herd's output proportionate to consumption. The dairyman has either a positive grievance or else is a causelessly irritable and undesirable citizen. By the logic of exclusion the dairyman who was and who has ceased to be, becomes normal when engaged in other forms of farm production.

The Price of Protein.

As a matter of history and chronology, the rise of the factory using milk for manufacture had its beginning at a period when protein foods were notoriously cheap. The early days were favored with cheap game and fish. Thirty years ago the great western plain states turned in an overwhelming supply of beef animals. At that time Chicago hotels would serve great steaks on individual platters; today a similar repast would cost at least \$2.50. It was during this period when all protein feeds, including the by-products of bran, middlings, oil meal, etc., were cheap and not in great demand. Skim-milk was the diluted protein food not possible to store or transport. It was like a low grade ore, too low to profitably operate. It was under these circumstances that condensaries came into operation. The non-butter-fat solids in milk were essential and too high a butter-fat content was undesirable.

Dairying and Soil Fertility.

The Holstein cow has been the embodiment of these desirable conditions, her milk was well balanced for both, to the consumer of whole milk and for condensing, the mineral content so desirable for children's growth was exceptionally high. The Holstein breed working under these conditions came rapidly to the foreground because the breed was pre-eminent in capacity to convert great quantities of roughage into milk. The silo with its power to contain roughage, followed in the wake of these economic facts. There was an adjustment of breed, feed and market that was both natural and profitable. This tendency was thwarted by the arbitrary determination to follow closely the prices paid for butter-fat and the undervaluation of the non-butter-fat solids and at a time when all protein food products were advancing rapidly in price, and also the depletion of soil fertility. The maintenance of soil fertility by dairying is a fact under normal conditions. The arguments for soil fertility by the dairy cow was artfully put to the dairyman as an annual asset, but the extracted food from his soil by all the rights of book-keeping was first a debit charge and at the best could only maintain the balance when feed was purchased, and this feed has advanced in price.

The Sources of Protein.

The advised man, for of such is the kingdom of agriculture, was told to grow his protein food and with that came legume crops, new and old, for dairy herds. The efficient grower of cow foods is an essential accompaniment to the efficient cow. But nature had declared that protein was the costly element to produce in grains, and as a rule the high protein grains were the sparse yielders. The legumes in forage, like clover and alfalfa, were for animal foods and these in turn were the ones which were able to take nitrogen from the air. The protein producers from the soil, and not from the

air like oats and beans, advanced in price because used directly as human food. Other protein animal foods, like oil meal and cottonseed meal, got their nitrogen from the soil (not from the air) and when the oils were extracted, advanced in price. Because of their oil products and lint, one might have assumed that these would have remained low in price but in trade language, they were held in strong hands and the prices were well maintained. The nitrogen in alfalfa and clovers was almost exclusively food for cattle and these feeds, deriving their protein from the atmospheric nitrogen, cost the farmer nothing, consequently the source of protein in the milk was nature's gift and small provision was made for the dairyman as a trapper of food from the air.

Price of Milk Not on Fair Basis.

In a general way food stuffs are priced on their calories or total food power and this price is made up of the two items, largely protein and carbohydrates, with the proteins the most costly and difficult of production. With milk, however, these normal facts are reversed arbitrarily. One pound of average whole milk would contain 314 calories. If the butter-fat were taken out the skim-milk would be 167 calories, or fifty-one per cent non-butter-fat solids. For the fifty-one per cent approximately 25 per cent of the total cost of the milk is paid the producer. These non-butter-fat solids are essential to the consumers of whole milk, condensed milk, milk powder, etc., and are paid for by them, but the manufacturer does not properly compensate the dairyman for them. These same elements of food in steak, eggs and other foods are fully 100 per cent higher in price than in milk. This failure to pay for valuable food elements in milk is far reaching. The value of all high protein cereals is higher than the carbohydrate or starch cereals because as a rule the acreage yield is less.

Milk and the Price of Hay.

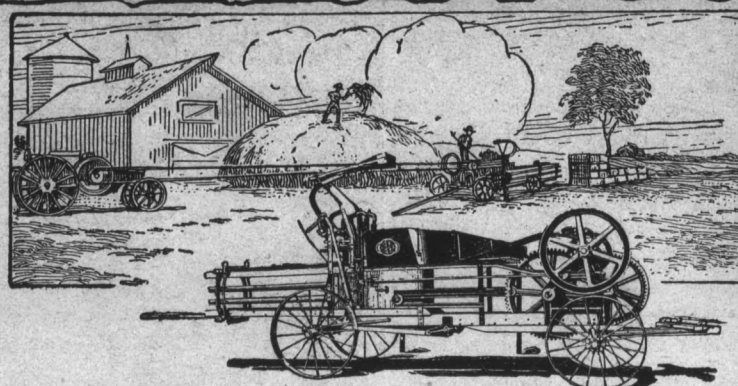
Legume forage when fed to fattening animals like sheep or cattle, is returning more in meat than in milk. The small price for milk derived from legume forage, together with the increase of motor vehicles, has and will continue to decrease hay prices. With the uncompensated protein in milk derived from legume forage and the more fully compensated protein foods derived from cereals, and these from the soil and not from the air, means a further soil depletion and unconverted aerial nitrogen into food. The problem is quite simple. Crops taking nitrogen from the soil, or fertilizers, compel the payment for protein at an increased price, when used for human food. Aerial nitrogen converted into human food in the form of meats is more fully paid for.

Nitrogen in Milk Should be Paid For.

The refusal of the great milk buying concerns to pay for a food in which the nitrogen can be drawn largely from the air, an inexhaustible resource, is one of the causes of food shortage directly in milk and indirectly in the fixation of nitrogen, in the roots of clover and alfalfa and the maintenance of humus in the soil.

For the maintenance of the food supply it is suggested that a body of chemists or food experts determine the value of these non-butter-fat elements from time to time, as to their relative food values in other forms and milk prices be butter-fat plus national food board prices for the other elements.

The dispiriting dairy wrecking fact has not been the farmer's inefficiency or the robber cow to any appreciable extent, but the almost unpaid-for element which was an important asset to the manufacturer or buyer and almost unpaid for to the producer.



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DAIRY PROBLEMS.

Peas and Oats.

How much peas and oats would you drill to the acre? I intend to cut them green until ripe and then mow the balance. A number of persons have told me that two bushels of oats was too many as they smothered out the peas. What is the best variety of corn to plant for fodder, that is, to cut as early as possible after peas and oats are gone?

Genesee Co.

V. C. S.

You should mix peas and oats, equal parts by measure where you intend to sow them for siloing purposes or to be cut for hay, and then use two and a half bushels of this mixture per acre. It is a fact that many people in growing this crop use too many oats for greatest success.

If you want fodder corn early, you want to plant the earliest variety you can get. "Flint" corn planted real early and quite thick, makes splendid fodder and will come as early as any, but an early variety of dent corn will do, or even early sweet corn.

Feeding Cows Straw.

Does it have any bad effect on milch cows to allow them to eat bright clean wheat or oat straw? My hired man says it hurts their flow of milk, that they will not give so much if they eat straw. Also, what bad effect does it have on a cow that eats the after-birth?

R. W. B.

Good clean wheat or oat straw will not tend to dry up cows if a sufficient amount of other feed is fed in connection with it to give a cow a full ration. The trouble comes because we try to make straw take the place of hay. We can't do this because it isn't as good a feed as hay. We don't have to feed quite as much hay when we feed straw but there is not very much nutriment in straw and consequently the cow cannot do well when straw is the only roughage. You can get along fairly well with straw as a roughage if you will feed extra grain, but that is expensive.

People of the dairy countries in Europe always feed some straw in the ration and they get good results. One feed of straw a day and one good feed of hay a day makes a good ration of roughage. But the idea is, if you would feed two rations of hay a day you wouldn't have to feed quite as much grain as you will if you feed one ration of hay a day. A cow must have a certain amount of food nutriment if you keep up the flow of milk.

It doesn't injure cows in the least to eat the placenta. They always do it when they are left by themselves. It is nature's way of regulating the digestion of the animal. Many people don't allow their cows to eat the placenta and they get along all right, but one has to take a little more pains in feeding bran mash or ground oats than he would if the cow was left to her natural instinct in this respect.

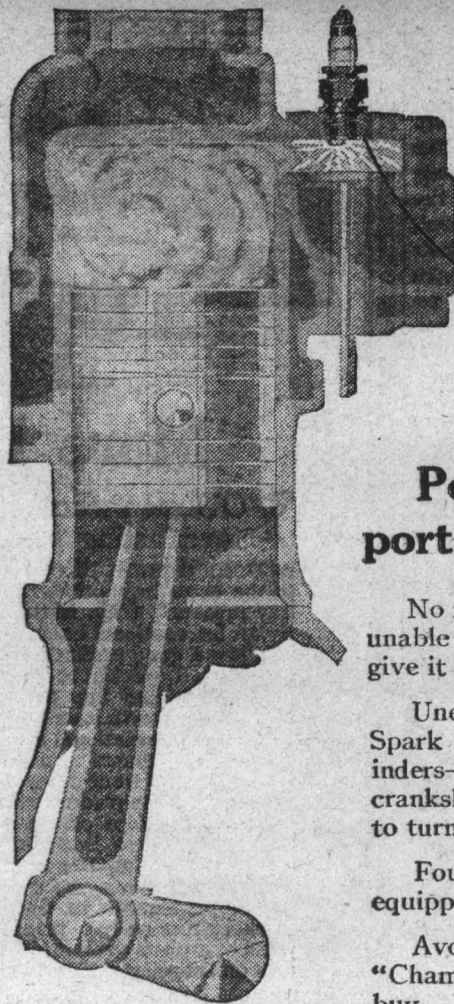
A Grain Ration on Pasture.

Please compound me a ration for milch cows running in pasture, composed of corn meal, cottonseed meal, buckwheat middlings. Would it be advisable to add either wheat bran or wheat middlings

E. O. P.

If wheat bran is cheaper than buckwheat middlings, I think you would have sufficient protein in the ration to make a substitute. By mixing corn meal, equal parts with wheat bran, then feeding two or three pounds of cottonseed meal per cow extra, it would make a splendid ration to supplement pasture. If you want to get the very best results, it might pay to occasionally change from wheat bran to buckwheat middlings or to wheat middlings. Cows like a variety and will do better if you cater somewhat to this variety, but it is a hard matter to get a better grain ration for cows on pasture than good old corn meal and wheat bran. A light ration will be sufficient when the pasture is at its best and this can be increased gradually as the summer advances and the pasture becomes shorter.

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

THERE will be more home gardens planted in Michigan this year than ever before in the history of the state, and a large part of these gardens will be planted by members of boys' and girls' garden clubs. The increased cost of all food stuffs, the probable increase in price of canned vegetables, the spirit of patriotism are all playing their part in bringing this to pass.

The idea of boys and girls having gardens is relatively old but there have been many recent improvements in regard to the old plan for this kind of work. It is quite generally agreed at present that successful gardening

Boys' and Girls' Home Garden Clubs

By C. A. SPAULDING

needs accurate supervision and that better results are obtained when the gardens are located on or near the home premises rather than grouped together at the school. The interest of the entire family is gained through the home garden and incidentally the homes of the neighborhood feel the weight of the responsibility that is attached to producing successfully these home gardens. The general plan of the garden clubs being promoted under the direction of the Junior Extension

service of the state co-operating with the public school system take into account this need of supervision and the desirability of the garden being located at home by organizing home garden clubs that receive the supervision throughout the garden season of trained garden leaders.

The clubs are organized through the school and the school district is usually made the unit of organization, in which subdivisions are made according to age.

Since the purpose of these clubs is scientific and efficient gardening, a course of instructions covering the different phases of gardening is presented to the clubs, partly through bulletins and printed directions and partly through demonstrations conducted by the teachers or garden supervisors. Model plans are furnished to the members and serve as a suggestive guide in the mapping out of their own garden plan.

In the planning of their gardens the clubs are instructed to plan with an eye to the future. The factors that will determine the choice of vegetables being of course the demand of the lo-

WORLD EVENTS IN PICTURES



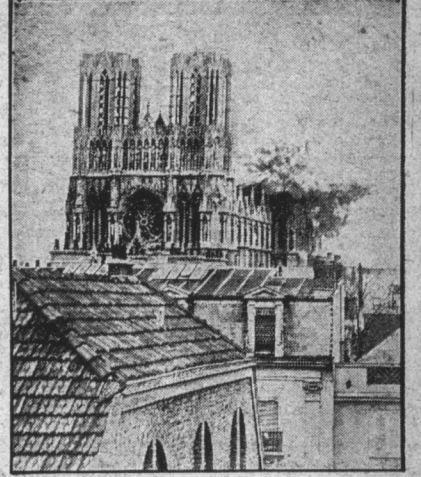
Roosevelt and Kaiser Wilhelm in Times of Peace.



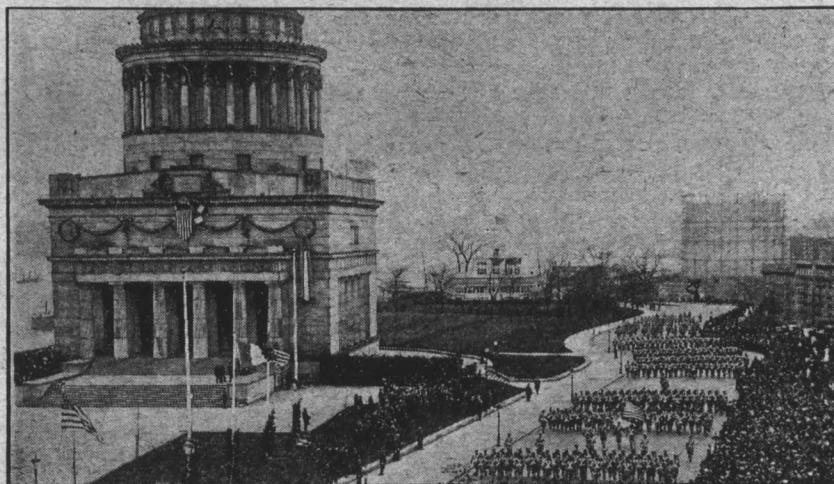
Fac Simile of Battleship Being Built in Union Square, New York.



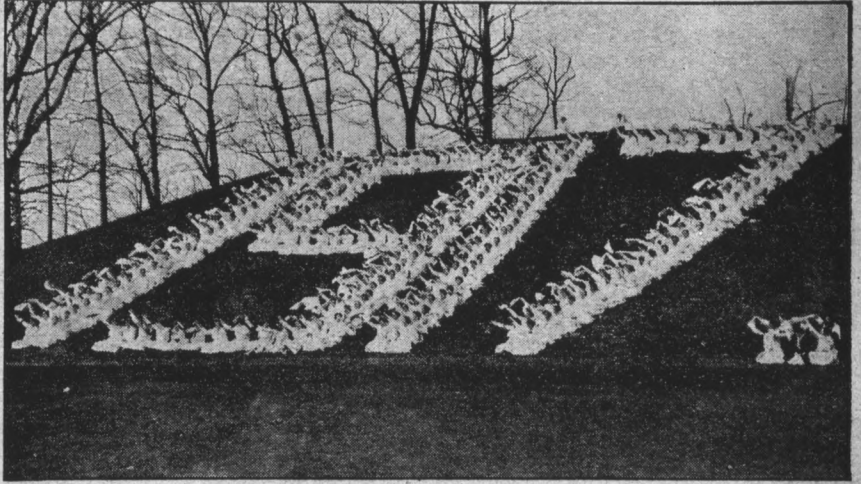
Son of Gen. Sherman is Recruiting for U. S. Army.



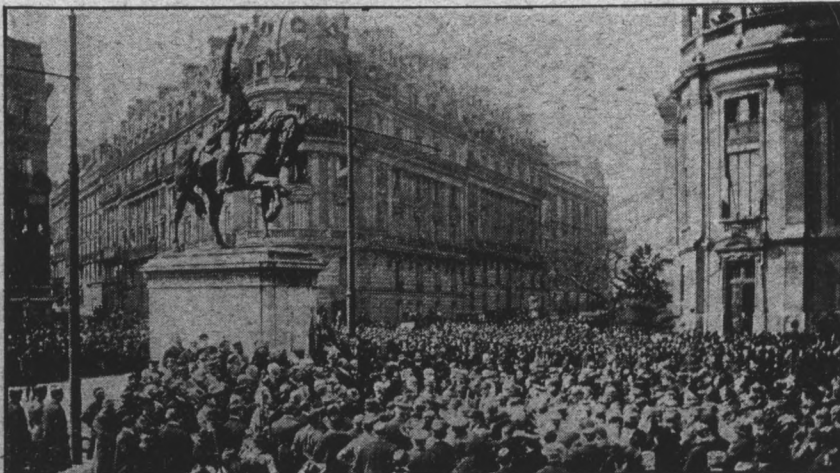
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cal market, the individual tastes of the home family and the amount of each vegetable that is expected to be canned.

The size of the garden moreover, will make considerable difference in the planning or mapping of the proposed garden. Where a relatively large space is to be used a good share of it can be devoted to the production of two or three staples, such as string beans, sweet corn, tomatoes or peas. The rest can be planted to a larger variety of vegetables, such as radishes, lettuce, spinach, brussels sprouts, beets, carrots, parsnips, onions, etc. If the plot be small, on the other hand, it is necessary that a careful rotation or succession be planned in order to utilize the space to the best advantage. This practice makes necessary the addition of extra fertility in the form of manure or commercial fertilizers generally.

A model garden is usually conducted for each club and here the methods are demonstrated to the club members just in advance of the time they are to perform them for themselves. These demonstrations include the fertilization of the plot, spading and working down the seed bed, planting the seeds, weeding, thinning and harvesting. These demonstration give the super-

(Continued on page 672).



Walter Crocker, 1916 Garden Champ'n.

"Contraband" RANDALL PARRISH

"Aye, we'll take yer, sir," he called down, a touch of deference in his hoarse voice. "Ye'll understand the trouble once yer come aboard. We'll lower a ladder near the mizzen chains; there'll be no danger laying the dinghy alongside here to leeward. Yer all able to climb, I reckon?"

"We have a woman with us."

"It'll be quite a job to rig up a swing, sir."

I turned and looked at her; then up the straight, steel sides looming before us, but before I could speak, she had made decision.

"I can go up the ladder, Mr. Hollis," she said firmly. "I am not afraid."

"All right," I called. "Lower away."

The little dinghy swept in easily, and, under my directions, McCann awkwardly fended it off from scraping against the steel sides. Protected by the great bulk of the almost motionless steamer, the water had merely a perceptible swell. As the rope ladder straightened, I caught the lower coil, and held it firmly. Down the ratlines, hand over hand, until he dropped sprawling into the boat, came one of the crew—a coal black negro. The fellow above, now standing on the rail and clinging to a backstay, roared down at him.

"Haul her in, Simms, haul her in. That's more like it. Now hold all taut. Send the lady up first, captain; there'll

be a hand to help her in the chains."

She did not hesitate, grasping the rope firmly in her hands as the negro and I lifted her high enough to get a foothold. The fellow seemed to enjoy his job, his black face glowing; but for an ugly scar he was a picture of good humor.

"You are all right, Miss Vera?"

"Yes," she called down.

"Then go up, but hold tight."

McCann followed, too glad to thus escape me to refuse, yet plainly enough half dead with fear. As soon as I saw his legs dangling, while the seamen above dragged him inboard, I drew myself up to the lower ratline, leaving the negro alone to hold the line.

"Hey, above there," I shouted. "What shall we do with the boat?"

"Let her go; there is no room to stow it on deck. Come aboard, Simms."

We went up together, the ladder swinging dizzily to our movements. Once I glanced over my shoulder, at the empty boat, already twenty feet from the ship's side, a deserted, pathetic spectacle. Somehow it was like parting with an old friend. Then hands gripped me, and I was hauled in over the rail, and found a footing on deck. The negro followed unaided, and the

voice of the man who seemed to be in command growled down from the poop deck:

"Haul in the ladder, and stow it; then go forward and get some o' that riffle overboard afore dark. This way, captain; I'd like a private word with you fore you go below."

I paused an instant, glancing curiously about. The deck amidship was clear, although not overly clean, but forward of the main hatch a pile of debris extended almost from rail to rail, where the shattered foremast had crashed the wheelhouse into splinters. Here all was a tangled mass of steel and wood, spars, ropes, and all sorts of odds and ends. The foremast had been chopped away, and thrown overboard, but much of the remaining woodwork appeared blackened by fire. There were perhaps a dozen men in view, a typical freighter's crew, I judged, mostly foreign faces, two of them negroes. They worked silently, and then shuffled forward, without exhibiting the slightest interest in my presence, or giving a glance aft. Evidently something unusual had occurred, but just what was the nature of the accident to the Indian Chief I was unable to decide. I climbed the few steps, and joined the red-faced man waiting me on the poop.

He held out a fat, pudgy hand, not altogether clean, which I accepted rather doubtfully. His face was honest enough, but his eyes were mere slits, contrasting strangely with his apparent heartiness of manner. The wheelsman stood cross-legged, a cud of tobacco distending his cheek, and looked me over coolly, as if taking my measure for a report to his mates.

"I am very glad to welcome you on board the Indian Chief, captain—captain."

"Hollis," I answered shortly. "And your name?"

"Masters—Gideon Masters."

"In command?"

"Well, yes, in a way. I reckoned you'd want the whole story, an' thet things had better be explained afore yer went below."

"Of course; but first a question or two, Mr. Masters. What has become of my companions?"

"The lady was sent into the cabin, sir, and given a stateroom where she could fix herself up a bit," he answered soberly. "The other feller had a lot to say, and seemed to have some sort of grudge against you. I hadn't any time to listen to his yarn just then, an' I didn't care about it anyway, so I naturally turned him over to the bosun, ter have that eye dressed. He must have got an awful swipe, sir."

"I had to hit him—yes; but we can talk of that later. Where is he now?"

"In the galley, sir, where they're heating some water. After they get him fixed up, is he to go aft, or forward?"

"Aft, if you have room to spare; he is no sailorman, but a millionaire from New York; he has money to burn."

The fellow looked at me with his mouth wide open, his glistening eyes almost laughable.

"Is that so? Well, he don't look the part to my notion. You was all part of a yacht party?"

"Yes, the Esmeralda, a steam yacht, owned by Gerald Carrington, of New York, the copper operator on Wall street—you may have heard of him?"

"I reckon not," with a laugh, "that not being exactly in my line."

"Well," I went on, "we were run down about a hundred miles east of Montauk by a big liner, which must have been out of her course. She cut us square in two, but, excepting us three, all living on board got away in the boats. By accident we were left, and escaped later in the dinghy."

"What became of the liner?"

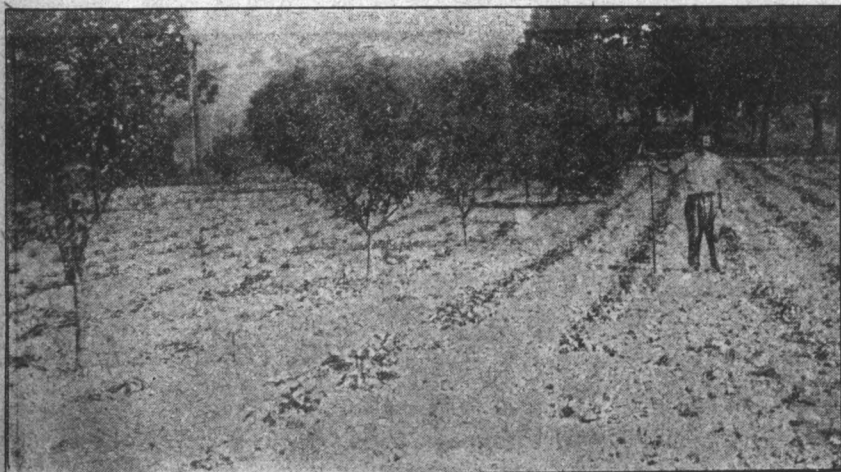
"She picked up the boats, and thinking they had all the survivors, went on. She was a mail boat, likely. The yacht went down five minutes after we left her; we've been afloat ever since. Now, Mr. Masters, that's our story in brief. What's the trouble here?"

He crossed to the lee rail, and expectorated overboard, coming back wiping his lips on the sleeve of his shirt.

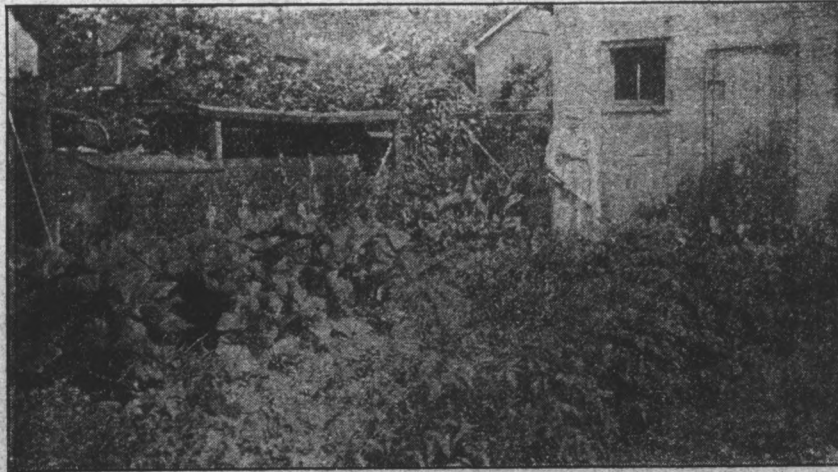
"I'll tell you enough to make it clear, sir," he said slowly, "although there is others on board who can explain more in detail. You're a seaman—or was once—so you'll see easily the sorter fix we're in. I'm the only officer left on the hooker, an' I couldn't navigate a ship if you'd give it to me. I'm only the chief engineer, an' my assistant is in the fo'castle with a broken leg. You see that riffle forward, sir? Well, it was lightning did that. Two bolts, so the crew says, for I was down below, an' never knew what happened till the electrics all went out. Then I shut off steam, and clumb out on deck. Lord, but it was a black night, raining cats and dogs, but no wind to speak of. It was the rain what saved us, for fire started yonder—you can see where it burned—but it died out of itself. We couldn't do nothin' but hang on till mornin'; only a few of us from the stokehole aft, and all the rest o' the crew huddled on the fo'castle. Them fellers would a taken to the boats, I reckon, only there's none strung forward o' the foremast, an' they couldn't get aft across that wreckage. Well, sir, when morning come we saw what we was up against; it looked a lot sight worse then than it does now. Them bolts of lightning had knocked the foremast into smithereens, killed the wheelsman, and put the steering gear plumb out o' commission. Then the topmast an' spars just naturally wrecked the bridge, and chart-house, an' the whole mass caught fire. The second officer was in the wheelhouse, sir, an' never knew what hit him, an' both the captain an' the first officer was a standin' tergether on the bridge. The topmast crushed the life out of 'em. There was six sailormen hurt the same way, an' four of 'em died. It was the worst mess I ever saw at sea, sir."

"Bad enough, surely; when did this happen?"

"Night afore last; we've cleaned up a bit since, but the crew won't work much under me, an' we're both short handed. First we dug out the dead bodies, sewed 'em up as best we could,



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an' put 'em overboard. Then I rigged up this wheel aft, so as to keep an engine goin, and hung on, waiting for something to turn up. There wasn't nothing else I could do."

"No, I presume not," and my eyes rested thoughtfully on the scene forward. "How is the hull—sound? You seem sunk deeply."

"That's cargo, sir; full to the hatches. The ship's dry as a bone; have had the well sounded every three hours."

"And what about the crew?"

"Just so; a crimp brought them aboard drunk, an' we were not at sea long enough for the mates to whip them into shape when this thing happened. I'm no deck officer, Mr. Hollis, and they don't take orders from me very well. I call 'em a hard lot."

I made no comment, endeavoring to turn all these facts over in my mind, and reach some decision. It was evident enough what was wanted, and how I could best serve; but would they be satisfied with the offer which I felt willing to make? It was far from my desire to assume command of the Indian Chief, and guide her destinies on a long outward voyage, to whatever port her cargo had been consigned. What that port was made slight difference, for my whole desire was to return as quickly as possible to New York. I would, however, assume temporary command, and consent to navigate the vessel to the nearest American port, where a competent skipper might be procured, and a new crew obtained. Indeed, under the laws of the sea, this duty was all that could be expected of me; all I had any right to do. In every essential this was a salvage job; I had found the freighter floating helplessly on the high seas, and my skill alone would bring her safely into harbor. To this end I possessed authority, and could compel the obedience of the crew, an obedience which, no doubt, they would grant willingly enough in their eagerness to get safely ashore. But if I attempted more than this, and assumed command for the long voyage, I should be captain in name only, possessing no real authority on board, until after we reached the port of consignment, and I had communicated with the owners, and received their endorsement. The Indian Chief possessed no wireless outfit, and whatever I did must be on my own judgment. These considerations flashed swiftly through my mind, and I attained decision before Masters again spoke. I would navigate the boat to the nearest port on the American coast, notify the owners, and then leave them to do as they pleased with vessel and crew. I cared nothing for the salvage; the presence of the disabled steamer in these waters had saved our lives, which was reward enough surely. All I cared for was to get myself and the young lady safely ashore. Why, even if further adventure appealed to me, I could never consent to drag that girl about with me to whatever foreign port awaited the Chief's cargo. My thought was interrupted by the sound of Master's voice.

"It sorter seemed to me, Mr. Hollis," he was saying, "that maybe it would be best for me to explain these things before you went into the cabin. You'll naturally want to know just the condition before you decide what to do."

"I have decided, Masters," I answered briefly. "There is only one thing I can do legally, and that is navigate the Indian Chief to the nearest American port, and surrender her to her owners. As a licensed captain of steam I have authority to assume command to this extent, but no more. It is a salvage job, and I would be within my legal rights, but if I continued the voyage, and later the owners should, for any reason, choose to disown my act, it would place me in a serious position."

"I reckoned you would look at it that way, sir. I'm no sea lawyer, but I

sorter figured it out about as you do. But that ain't the situation exactly."

"What isn't?"

"Why this owner business, sir. You see the owner of the Indian Chief, an' every pound o' cargo below hatches, is on board here."

"The owner is on board!"

"That's the gospel truth; that's why I took the trouble to keep you here, and tell you what I have, before you went down and met him, sir. It gives you a chance to think out your best course."

"But if the man is aboard, why did he not appear on deck to give us welcome? Surely our arrival must have been of interest?"

"Likely as not he hasn't even heard yet that you are aboard. You see, his cabin is on the starboard side astern, and he would see nothing from them ports. Besides, Mr. Hollis, he is lame, and it is a bit hard for him to get around on a ship without help. What do you say, sir? Shall we go down now, and talk it over below?"

"The sooner the better," I said, with a glance over the port rail. "The fog is thickening out yonder and we may have a rough night. The steamer would ride a heavy sea better with some more of that rattle overboard."

CHAPTER XI.

Contraband of War.

THE knowledge that the owner was actually on board changed the entire situation. I would have to argue it out with him undoubtedly, for quite naturally he would object to any return to an American port. Well, I might be in for a disagreeable interview, but I had made up my mind, and it was not to be changed by any bluster, or offer of high wages.

"Come on then, Masters," I said. "Let's get this over with."

The after cabin extended from rail to rail, the door opening directly from the main deck. It was of fairly good size, plainly furnished, a great contrast to the handsome sea-parlor of the Esmeralda, but familiar enough to me. A bare table extended lengthwise, its wooden surface stained and disfigured. A lantern, its globe discolored with smoke, dangled from a blackened beam overhead, and a small coal stove, red with rust, occupied a prominent position in front of the mizzen mast, its ill-jointed pipe leading somewhere astern. The carpet was of rag, rather gay in coloring, and showing unmistakable signs of long use, and the paintwork, originally cream, had long ago faded into a dirty yellow. Stateroom doors opened along either side, so close together as to prove them mere closets, containing no other conveniences than a sleeping berth or two. The cabin, however, was well lighted, much of its front being open to the deck, and having also a dead-light above. Masters led the way around the butt of the mast, and I followed, having taken all this in at a glance. There were two cabins astern, occupying apparently the full width of the vessel, and the engineer rapped with his knuckles on the panel of the nearest door. There was no response, but a second attempt resulted in a voice bidding us enter.

It was a pleasant enough interior, lighted by two ports, but showing no attempt at decoration. There was a rug underfoot, two chairs upholstered in leather, a big sea chest, and a desk littered with papers. Shelves held a fair collection of books, while two bunks occupied the far corner. A man arose from one of the chairs, and faced us, the light from the stern port shining full upon him. He was tall, delicate looking, his features bearing marks of pain, yet certainly not over thirty years of age. He was not at all like what I had expected to see, and I faced him in surprise. He had taken a step toward us, limping slightly, but at sight of a stranger paused.

(Continued next week.)

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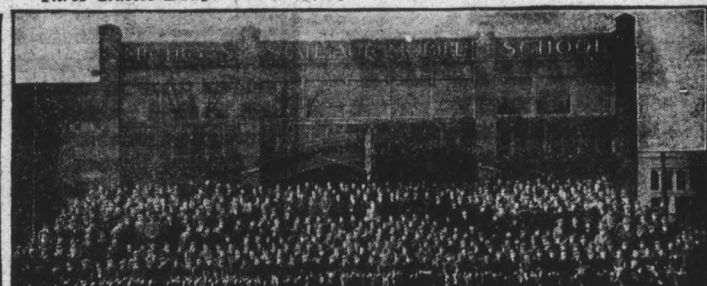
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Woman and Her Needs At Home and Elsewhere

Nursing as a Profession

By NELLIE DENTON McKENNEY

WHAT steps should I take to become a trained nurse? Would you advise a girl to take up this work? What are its possibilities as to income? These are a few of the questions I am frequently asked. It is evident that no cut and dried answer can be fired promiscuously at the ever increasing number of girls who aspire to become nurses. It is individuality that counts for success or failure in the nursing world as in any other sphere of endeavor.

The girl who has this important matter under consideration should ask herself: "Am I physically fit to stand ten hours of exacting work each day, seven days in the week for a period of three years? Is my mental equipment such that I can maintain a calm equilibrium under trying conditions, make quick decisions in present emergencies and anticipate future ones? Am I morally sound, strong on patience, tact, obedience and honesty?" All these are absolutely essential to the successful nurse. If she finds herself able to give satisfactory answers to the foregoing interrogations, the nursing profession stands wide open for her.

Assuming that her future vocation shall be that of a nurse her first inquiry will be, "Where shall I train?" I have had this question put to me scores of times, and, comparatively unimportant as it may seem at first thought, I am convinced that this is one of the things that should receive special emphasis. Invariably, I advise every girl who seeks entrance to the training school of a hospital to send her application only to the best. Many are attracted by the advertisements of certain institutions making wonderful promises to the aspirant, who, if she is gullible enough to accept them carte blanche, will assuredly become wiser though sadder as a result of her experience. As a matter of fact, hospitals that maintain desirable training schools for nurses do not advertise. They do not have to. If a girl applies for entrance into a school, she will find a long waiting list, with herself at the bottom. This should not, however, discourage her. When her turn comes she will be given fair and courteous treatment. When, in due time, the long hoped for graduation comes she will have a standing in the profession that will prove a desirable asset in securing future employment. So any girl settling the matter of what school it shall be would do well to consult a reliable physician as to the wisdom of her choice. He will appreciate the situation, and in most cases will be able to give her valuable advice.

When a probationer makes her initial boy to the duties of a hospital, it will not be long before she is impressed with the idea that every person, from the physician-in-chief to the most humble person in authority, is in a league to instill in her the importance of sanitation. Cleanliness is a nurse's first law. While she may be perfectly willing to admit this from the beginning, she will have positive proof of it before her first year is at an end. No matter how particular has been the home training, the spotlessness of mother's floors, the brightness of her silver, the dustless condition of her furniture will avail the daughter nothing here. It is taken for granted that

mother was the sanitation expert, that the former has yet to win her spurs.

The probation period usually lasts about three months. The beginner, who has had a taste of the prescribed duties will know whether she has judged aright her adaptability to the nursing profession, or the hospital superintendent will. It is right here that quite a considerable number bid their adieus, and the hospital world knows them no more. Perhaps it is better thus, as this sifting out process is a pretty accurate gauge of those characteristics that are considered essential.

With her acceptance into full fellowship, as it were, she receives instruction and is expected to do practical work in the taking of temperatures and care of patients. To this is likely to be added a term of night duty. Then it is, that she begins to feel that



Up-turned Hem Forms Pockets.

some progress is being made and that she is on the way to become a nurse.

The second year brings with it new studies and as she becomes proficient in these, other responsibilities are placed on her shoulders. Hence the theories that she learned from textbooks and by means of lectures, are applied in every-day practice. The adjective, "trained" as it is used to distinguish the graduate-nurse, is intended to be taken literally, for in no professional school is the practical more emphasized or the lack of it in less repute. Nor can it be said that the course is monotonous. It is as varied as the diseases to which mankind is heir, or the injuries that require a surgeon's attention. In the different departments, dietary, surgical, obstetrical, etc., an allotted time is spent, that she may become familiar with the best methods. As the various scientific methods gradually unfold, there are few girls who are not fascinated with the work. The manual side ceases to become drudgery, for with the broadening of experience, and a more intelligent conception of the day's work, they come to view the commonplace with a truer discernment.

Finally, on reaching her third year of training, the student nurse becomes a person of some importance, and is known about the wards and among her associates as a "senior." If her ability and trustworthiness have proven satisfactory, she may be given charge of a "floor" or a certain department of the institution, and as a mark of distinction wears a black band on her cap. In this capacity as a head nurse,

she has an opportunity to show executive ability that not infrequently is the forerunner of a lucrative engagement in connection with her alma mater, or a similar institution.

But after graduation, what? The girl who has invested three of the best years of her life in vocational training has taken many a long look ahead to the day, when by means of the experience gained she may hope to derive, therefrom a reasonable income. Perhaps ninety per cent of the graduate nurses turn their attention to private work. The demand is increasing rapidly of late years, not only in cities, but in villages and country places. People of all classes are fast recognizing the difference between trained workers and the neighbor or relative, who comes in to help out, oftentimes someone who knows absolutely nothing about caring for the sick and who simply adds confusion to an already much confused household. There is perhaps no department of nursing where the nurse can use broadmindedness to such good advantage as in private work, for she has to deal with all kinds and classes of people, from the tiny tot to childish old age, the ignorant and the cultured, the rich and the poor. To keep things running smoothly she needs to be a diplomat, capable of bringing into action all her God-given virtues.

In order to insure employment as a private nurse, it is customary to establish a connection in the profession by means of a nurses' registry. As there are different grades of these, the graduate-nurse will do well to discriminate in favor of one that is backed by the hospital serving the district in which she wishes to carry on her occupation. This may be done in return for a small fee, and is very essential if one desires to be kept busy. Physicians in the regular course of their practice, look to these institutions to supply them with nurses for their critical cases. It not infrequently happens that capable work will cause doctors to insist on having the same nurse whenever possible. A reputation earned in this way will often insure constant and profitable employment. The beginner must, as a rule, pin her faith to the registry, taking her turn with a score of or more of others. When she returns from a case, she again registers at the bottom and again takes her turn, which as a matter of fact, usually comes quite as soon as she is sufficiently rested to go at it again. The income derived from private nursing, while not large when compared with the responsibility assumed, is better than can be earned in many other positions open to women. It varies in different parts of the country, but usually averages from \$20 to \$25 a week.

It sometimes happens, however, that a girl is better adapted both constitutionally and temperamentally, for institutional work. Such positions are generally the result of exceptional ability that has brought the nurse into direct contact with some leading physician who recognizes her special talent to be just what he is looking for. In most cases of this kind, executive rather than technical skill is the qualification sought. Ordinarily, the salary will be in the neighborhood of \$50 a month, including board and other perquisites, which makes it practically equally to that received by the private nurse who is kept tolerably busy. While considerable responsibility is involved, the

physical requirements are not so exacting as is usual in private work.

Then there is the district or community nurse. The girl with philanthropic tendencies, can accomplish a great deal of good in this field. The ignorance or neglect of health laws is an old song, running from broken notes of suffering in the tenement house to the full top discord of too much food and too little exercise in the millionaire stratum. In most countries this work is organized under national auspices. For instance, there is the Red Cross Society in the United States, the Victoria Nurses in Canada, the Jubilee Nurses in England, and the Bush nurses in Australia. These are doing a good work in their respective spheres, and will furnish an unlimited opportunity for one who is interested in the sanitary uplift of mankind. The momentary reward is not, perhaps, quite so encouraging as in some other fields for the beginner, but one can never tell what it will ultimately lead to. Many district nurses are holding executive positions and drawing large salaries in the government service. They are being added to from time to time as the work develops. The outlook is certainly most promising.

But aside from being a fair financial proposition, there is another desirable feature of the nursing profession. While it takes one into homes of all kinds and conditions of people, one is continually making friendships, some of which prove of the most lasting character. Personally I feel this is one of the chief rewards nursing has to offer. The nurse who habitually tries to maintain a sunny disposition along with an honest effort to perform her duties well, may rest assured that her investment in the great market of life will return rich dividends.

LETTER BOX.

Household Editor.—Would like to say I heartily agree with Deborah in her article, "Doing Our Bit." We hear this warning to economize on every side, until the poor housewife is almost distracted to know where to next begin to save. Where is there a woman who cares anything for thrift or economy who is not doing her utmost in these days of high prices to make "both ends meet?"

It certainly is not the ones who belong to Red Cross societies, or who are making bandages or socks or mittens, that are doing the real economizing. Or are they the ones that will have to endure the hardships if our beloved country should be thrown into a prolonged war? Although I admit it is a noble cause.

Our country might better urge the men to economize on tobacco. Think of the money, wasted on tobacco alone. I would venture to say there is more money spent for tobacco alone than for bread, and never a word of warning or reproach from our nation for it.

You may walk down the street and it will be appalling to see how few men there are who are not using the filthy weed in some form, and this is not a necessity. Our country would be better, cleaner, and healthier if men had to be deprived of it.

Food we have to have to sustain life. Not so with tobacco or alcoholic stimulants. Our lives would be better without either, and our homes better for the lack of them. And yet there are thousands of dollars expended for the growing of both.

I feel sure that if the men would be willing to sacrifice in that respect our women would be doubly willing to sacrifice needless finery or even necessary clothing if need be. In an emergency like this it would be well to put John Barleycorn and Lady Nicotine on the unnecessary list.—E. B. P.

Household Editor.—There are some articles in your paper which I admire

and the market news is a help but one particular article, entitled, "Doing Our Bit," in the department of "Woman and Her Needs," issue of March 12, has so aroused my indignation and the feeling of receiving an insult among many whom I know who have read it, that I wish to call your attention to certain sentences.

First, this appears: "In the cities, women are bustling about establishing Red Cross units, and taking first aid lessons, which they will never use, but which gives them a fine chance to get their names in the papers." Now, it must be ignorance on the writer's part or wilfully causing to be printed wrong statements, for those who are joining the Red Cross are not doing it to get their names in the papers, but are fully aware that if they have enlisted for actual service that it probably means death for many of them.

Second sentence: "Women who never darn their own stockings are beginning to knit socks which no soldier could wear if they ever got finished." Perhaps the author doesn't know that all socks have to be made under strict rule with certain yarn, needles and so many stitches, and if not knitted right, do not pass inspection and are not accepted by the Red Cross. Most of the knitting is done by women of experience or under their supervision.

Third sentence: "Young girls, who couldn't pick a sliver out of small brother's finger, without fainting away, are rushing down to enlist and posing for their photos." Be it understood that girls, while they may rush to enlist, are not accepted without careful training and unless they can prove they can stand certain tests.

Fourth sentence: "There is no sense in going to the Red Cross to roll bandages. The pretty girls have already rolled more than would be needed if the war were to last three years more and besides the papers like their pictures best." Does the author know that one unit of hospital service in France has thirty thousand beds? That many units have one thousand beds and many more have less? Are bandages all that is needed? How many bandages, sheets, pillow slips, towels, night shirts, etc., are required daily to supply them? So many that anyone, "pretty" or not, who can spare the minutes at the rooms of Red Cross units is given something to do and even then there is not enough work done to meet requirements. President Wilson, himself, calls for more workers in this department. I do not doubt that if the nurses who are caring for the wounded or if any others who are working, had the time to pose, the papers would far prefer their pictures to the likeness of someone who stays at home and grumbles at even talks on economy and, as she states in the article, "is filled with a mad desire for \$12 white top shoes," and "to show her feelings in the matter by treating the family to a three-inch porterhouse steak flanked with mashed potatoes, and garnished with stuffed, hothouse tomatoes."—Mrs. I. K.

Dear Deborah.—If all you can do to help in the war is to write, pray don't discourage or belittle the efforts of those who would attempt to do something else. First aid lessons will not hurt anyone, neither will knitting socks, even if the soldiers cannot wear them. The rolling of bandages is but a small part of Red Cross work. Let the society girls roll them if they will, there is much else we can do.

If farm women knew all there is to know about thrift the United States would not be called the most wasteful nation in the world.

Economy was drilled into me in my youth by a New England mother and grandmother, and I have practiced it in Methodist parsonages and on a Michigan farm, but I haven't learned all there is to know about it yet, and

I welcome all suggestions from whatever source.

Feel insulted when Uncle Sam's representatives "preach thrift" to us? Not if I know American womanhood. "Keep on the even tenor of our way!" in this greatest crisis of our nation's history? No. God helping us, we'll climb to new heights of economy and efficiency, and do you, Deborah, cheer us on!—L. C. W.

THE NEW CORSET IS DECIDEDLY LOW.

Poets sing of "the human form divine," but corset manufacturers have more to do with the making of the feminine form these days than Mother Nature. Every time Fashion decrees to change the outline of the female figure, the outline changes, Venus (was she the Grecian "perfect 36," or was it Pandora?), notwithstanding.

This year the corset manufacturers have decreed that the corset is simply to be used to support the abdomen. The new corset ends practically at the waist line, as the inch or so above the waist which Fashion allows is not worth mentioning. Of course, this demands a brassiere to support the bust and these are shown in net with no front boning.

The low bust corset and the girdle, these are the vogue just now. And the corset itself is a far remove from the old instrument of torture known to our mothers, with its stiff high sides and many bones. The new ones have little boning and are cut in lines to fit snugly without lacing.

For the stout woman there are numerous devices to reduce the abdomen and support her tired back. One make of corset depends for this support on insets of elastic in the back and graduated boning in front. That is, the front bones which contain the fasteners are narrow at the top, considerably less than a half-inch, and grow wider till they are at least an inch wide at the bottom.

A second make has not only the elastic reinforcement and graduated front stays, but has a triangular piece of heavy cloth set on each side of the front, to give added support to the abdomen. These pieces are stitched to the corset at the back, and fastened with adjustable hooks in front so that the size of the corset may be changed.

Still another corset has a light, adjustable belt inside the corset which may be laced to fit any size. This gives the necessary support and aims to relieve the back.

In buying any corset it is better to buy one good one at a fair price than to buy three cheap ones. A well-made corset not only is easier to wear, a support and help instead of a straight jacket, but it outwears a half dozen cheap "sale price" affairs. Besides, expert fitters will fit the corset to you when you buy if you choose a fair priced model, while the cheap ones you take at your own risk. They may happen to fit you. Usually they do not.

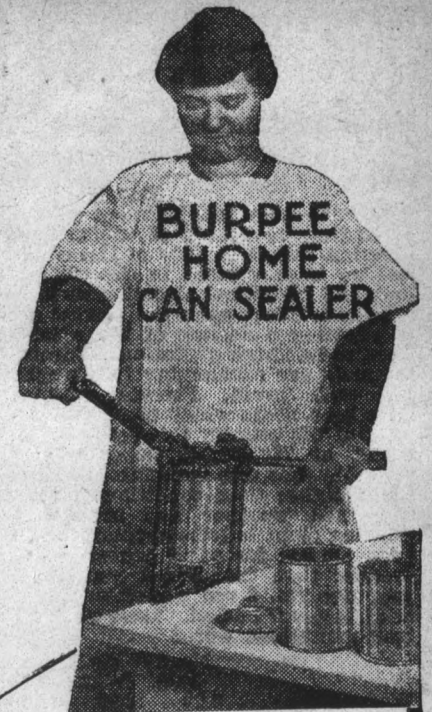
HOME QUERIES.

Household Editor.—Can someone give me a recipe for making graham bread in which the flour is first scalded? I cannot seem to make it the same way as white bread, and someone told me the flour should be scalded, but I am unable to find such a recipe. Here is a brown bread recipe which we think good, and which is generally relished by children. One and a half cups of white flour, half cup corn meal, two cups graham flour, one teaspoon of soda, one teaspoon of salt, half cup of sugar, half cup of molasses, two cups sour milk.—Mrs. Wm. J. M.

Who has such a recipe?

BOOK NOTICE.

"The Expectant Mother," by Samuel Wyllis Bandler, M. D., Professor of Gynecology in the New York Post-Graduate Medical School and Hospital; 12mo volume of 213 pages with 14 illustrations. Cloth, \$1.25 net. W. B. Saunders Co., Philadelphia.



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Markets.

GRAINS AND SEEDS.

May 28, 1917.

Wheat.—The readjustment of rules of trading by boards of trades in the different wheat centers of the country and an improvement in the crop outlook and statistical situation have had a bearish effect upon the market prices showing a decline of 20c a bushel from recent high quotations. European interests are exchanging future wheat for cash grain. Private estimates have been made which places the total yield of the country this season for all wheat at 750,000,000 bushels. It is probable that this estimate is substantially higher than conditions warrant. The cool weather has favored the growing plant but the acreage that has been plowed for other grains is much greater than in normal years. One year ago No. 2 red wheat was quoted at \$1.14½ per bushel. Last week's Detroit quotations were:

	No. 2	No. 1	
	Red.	White.	July
Wednesday	3.02	2.99	2.32
Thursday	3.00	2.95	2.27
Friday	2.95	2.90	2.24
Saturday	2.85	2.80	2.20
Monday	2.75	2.70	2.12

Chicago.—July \$2.05; Sept. \$1.83.

Corn.—The demand for corn is unusually large and notwithstanding the prospects for heavy delivery, the market maintains a solid front and prices are holding well up to the recently established records, notwithstanding the declines in the wheat trade. Bears point to the arrival of corn from Argentina and to the increased acreage to be planted here this season, but these influences did not greatly affect the cash situation. A year ago No. 3 corn was quoted at 73c per bushel. Last week's Detroit quotations were:

	No. 3	No. 3
	Mixed.	Yellow.
Wednesday	1.73	1.75
Thursday	1.72	1.74
Friday	1.72	1.74
Saturday	1.69	1.71
Monday	1.66½	1.68½

Chicago.—July \$1.41½; Sept. \$1.28½.

Oats.—Prices here are below those of last week. The new crop is starting nicely with the acreage large. Fair supplies of oats are in the hands of farmers and dealers, which encourages price reactions upon the slightest suggestion of bearish conditions. Standard oats were quoted at 42½c per bushel one year ago. Last week's Detroit quotations were:

	No. 3	
	Standard.	White.
Wednesday	75	74½
Thursday	74	73½
Friday	71	70½
Saturday	69½	69
Monday	68	67½

Chicago.—July 59½c; Sept. 52½c.

Rye.—During the past week this cereal advanced 5c, which advance was lost on Saturday, and on Monday there was a further decline of 5c, making the price for cash No. 2, \$2.20.

Beans.—There is practically nothing doing in the bean trade here owing to lack of supplies, and the quotations given are merely nominal. Cash and June beans were quoted at \$9.15 per bushel. At up-state points the prices range from \$8@9.50 per bushel. The Chicago market shows a firm trade with supplies limited. At that market Michigan pea beans hand-picked, are quoted at \$10.50@11.25; red kidneys \$8.75.

Field Peas.—Offerings are light and values firm. At Chicago they are quoted at \$3.75@4.50 per bushel, sacks included.

Seeds.—Prime clover seed \$11.10; October \$11.85; prime alsike \$11.50; prime timothy seed \$3.85 per bushel.

FLOUR AND FEEDS.

Flour.—Jobbing lots in one-eighth paper sacks are selling on the Detroit market per 196 lbs., as follows: Best patent \$16; seconds \$15.60; straight \$15.20; spring patent \$16.40; rye flour \$13.60 per bbl.

Feed.—In 100-lb. sacks, jobbing lots are: Bran \$40; standard middlings \$41; fine middlings \$45; cracked corn \$68.50; coarse corn meal \$67.50; corn and oat chop \$58 per ton.

Hay.—In carlots at Detroit: No. 1 timothy \$18.50@19; standard timothy \$17.50@18; No. 2 timothy \$16.50@17; light mixed \$17.50@18; No. 1 mixed \$14.50@15; No. 1 clover \$13.50@14.

Pittsburg.—No. 1 timothy \$19@19.25; No. 2 timothy \$17@17.75; No. 1 light mixed \$17@17.75; No. 1 clover mixed \$16.50@17; No. 1 clover \$16.50@17.

Straw.—In carlots, on track Detroit,

rye straw \$10.50@11; wheat and oat straw \$9.50@10.

DAIRY AND POULTRY PRODUCTS.

Butter.—The market continues firm with demand brisk. Creamery extras, none offered; creamery firsts offered at 40c, bid at 39c.

Elgin.—Market is steady at an advance of 5c over last week. Price, based on sales, is 43c.

Chicago.—Trading is active and offerings are readily taken up. Prices are 3@3½c higher than last week. Extra creameries 41@41½c; extra firsts 40½c; packing stock 32c.

Eggs.—The demand is active and the market is firm. Fresh firsts were sold at 36c; others offered at 36½c and bid 35½c.

Chicago.—The feeling is weak and prices have declined about 1c. The demand is moderate, consumption being checked by high prices. Fresh firsts 33¼@34½c; ordinary firsts 31¼@32c; miscellaneous lots, cases included 32@34c.

Poultry.—The supply is abundant and prices are lower. The recent high prices of grain have undoubtedly caused selling of farm stocks. No. 1 hens 23@24c; small and medium do 22@23c; broilers 40@43c; ducks 22@23c; geese 14c; turkeys 24@25c.

Chicago.—Market remains steady and without change. Receipts light and demand moderate. Fowls 19c per lb; roosters 15½c; broilers 1½@2 lbs. 34@36c per lb; ducks 16@18c; geese 12@14c turkeys 12@20c.

Dressed Calves.—Market at Detroit is steady. Fancy 19@20c; No. 2 17@18c per lb.

Chicago.—The trade is light, receipts being small; 50@60 lbs. weight 17@17½c; 60@80-lb. weight 17½@18½c; 90@100 lbs. 18½@19½c.

Dressed Hogs.—Best quality quoted at Detroit at 19@19½c per lb.

Chicago.—Market rules firm with prices higher. Heavy hogs in demand. Quotations: 20@40 lbs., \$10; 40@60 lbs. \$17@19; 60@100 lbs., \$17@18; 100@250 lbs., \$18@19.

FRUITS AND VEGETABLES.

Apples.—The market is active and prices remain unchanged. Baldwin \$5 @6; Steele Red \$9 per bbl. At Chicago demand is good for well graded stock, otherwise the demand is only fair. No. 1 stock sells at \$3.50@6.50 per bbl; No. 2 at \$2.25@2.75; orchard run \$3.25@3.50.

Potatoes.—Market is firm for old potatoes because supply of old and new is light. Quotations are: In carlots at Detroit in sacks, Michigan \$3@3.10 per bushel. At Chicago no Michigan stock was reported. Market is quiet but steady. Prices range from \$2.75@3.35 per bushel.

WOOL.

If any change has taken place in the wool trade, it is for a stronger and firmer market. Manufacturers will be obliged to set aside for the present at least, private orders to take care of government contracts, which will force current orders to pile up for filling after government demands are satisfied. This situation promises to maintain a bullish wool market for a considerable time to come. In Boston last week 300,000 pounds of fleeces were sold at prices ranging from 49@62c per pound. Farmers are generally of the opinion that prices will be higher which makes it difficult for local buyers to secure any larger quantities from the producers at the present time.

LIVE STOCK MARKETS.

May 28, 1917.

Buffalo.

Cattle.—Receipts 3,200; shipping 25 @40c lower; butchers active, steady and strong; shipping steers \$10@13.25 per cwt; butchers \$9@12.25; heifers \$7.50@11.50; cows \$6@11; bulls \$7@11; stockers and feeders \$7.50@9.25; fresh cows and springers active and steady \$50@125.

Veals.—Receipts 2,200; slow, 50c higher, \$5@14.75.

Hogs.—Receipts 1,400; slow; pigs steady; others 10@20c lower; heavy \$16.40@16.50; mixed, \$16.25@16.40; yorkers \$16.15@16.25; light yorkers \$15@16; pigs \$14.25@14.75; roughs \$14.25@14.50; stags \$12@13.25.

Sheep and Lambs.—Receipts 7,000; slow; yearlings steady; others 50c lower; lambs \$10@16.25; yearlings \$9.50@15; wethers \$13@14; ewes \$5@12; mixed sheep \$12.50@13.

Chicago.

May 28, 1917.

Monday's market on cattle weak, with 20,000 head received. Sheep receipts were 10,000, market steady. Hogs were lower with receipts of 9,000, bulk selling at \$15@15.90; heavy at

\$15.85@16; light \$14.90@15.55; pigs at \$13.50@14.75.

Cattle were marketed liberally during the last week, and the rank and file of the offerings underwent considerable reductions in prices, these consisting largely of the accustomed shorted and merely warmed-up consignments. On Thursday even heavy cattle were affected and sold off sharply, while cows and heifers were materially lower, with canners and cutters going off materially, but bulls ruled firm under the influence of a good eastern shipping demand. Taking the week as a whole, the bulk of the beef steers found an outlet at \$11@13, with quite a fair representation of choice heavy weights at \$13.10@13.70 on Wednesday. Steers selling at \$13 and upward came under the head of choice to extra, with a class of steers grading as good going at \$12.50 and upward, while a medium grade brought \$11.50@12.45. Fair killers of light weight sold at \$10.50@11.45, and limited numbers of inferior little steers sold down to \$8.50 @9. Yearlings of desirable quality sold at \$11.50@13, with some fancy yearlings averaging from 1060 to 1125 lbs. selling for \$13.35, but few prime lots were offered on the market. For the butcher stuff there was a good outlet at the best time during the week, with cows going at \$7.90@11.25 and heifers at \$7.50@12, while cutters sold at \$7.35 @7.85, canners at \$6.50@7.30 and bulls at \$7.50@11. The calf market experienced a veritable boom that landed the best lots at the highest prices on record. Light vealers sold at \$14.50@15.50 per 100 lbs., and heavy calves at \$7@9, with medium weights going at \$9.25@14.25 for desirable lots. There was not much doing in stockers and feeders, the offerings being comparatively small and ruling prices very high. Stockers sold mostly at \$8@10, with yearlings the high sellers, while feeders went usually at \$9.25@10.50. On Wednesday a string of half-starved North Dakota rough cattle arrived and attracted very little attention from buyers. Closing week's prices for cattle, the choicer lots excepted, were about 15c lower on an average than a week earlier.

Hogs sold on the best day last week at \$16.55, or within a dime of the highest price of the year, but later on prices broke sharply, because of materially increased receipts, supplies being far in excess of those for a week earlier and much larger than a year ago. On Thursday hogs sold as much as 30 @40c below the high time of Wednesday, and on Saturday the range of sales was from \$15.35@15.90 for heavy packing lots to \$15.90@16.20 for heavy shippers, with light shippers selling at \$15.75@15.90, light bacon lots at \$14.75 @15.70 and pigs at \$10.50@14.50, according to quality and weight, the highest-priced pigs weighing up to 135 lbs. A week earlier hogs sold at \$15.10 @16.50.

Lambs continued in much too small supply last week to supply the requirements of purchasers, and the regular weekly new high price records took place. Lambs made up nearly all of the offerings, there being an insignificant supply of yearlings, wethers and ewes, and the offerings came to market shorn very largely. Shorn lambs were advanced for the week 25@50c and woolled lots 15@25c, prime Colorado unshorn lambs selling to \$20.60. Spring lambs closed at \$14@21, and clipped offerings closed as follows: Lambs \$11@17.25; yearlings \$10@16.10; wethers \$8@14.75; ewes \$6@14.25; bucks \$12@13.

Horses were in only moderate supply last week, and a good general demand made firm prices. Army horses were in good demand for shipment to France, and it was stated that the United States government would shortly want to buy 250,000 horses for army purposes and that purchases would be made as far as possible from first hands. Since the beginning of the war over a million horses and mules have been exported for army purposes. Farm chunks sell at \$60@140 for ordinary to pretty fair grades, while drivers sell usually at \$100@200 and drafters at \$185@300.

HAPPENINGS OF THE WEEK.

(Continued from page 654).

responsible for informing Germany of the sailing of the United States flotilla and of the European port of destination. In some manner this knowledge had been forwarded to Germany in time to allow submarines to mine the port. However, this was learned in time to prevent damage to the American boats.

One of the first attacks to be undertaken by the United States food administrator is a campaign to pledge every woman presiding over a household to provide against every possible food waste. The object is not to reduce food consumption to a point where it affects human efficiency but

merly to eliminate losses from careless methods.

The United States government is to let contracts during June for \$170,000,000 worth of automobiles and trucks. The government will need 3,100 touring cars and roadsters, 35,000 one and one-half ton trucks, an equal number of three-ton trucks and 5,000 motor cycles.

At a meeting of representatives of the countries of North and South America at Washington, an organization is being effected which promises to aid materially in the solution of the food problem of the United States and her European allies. It is proposed to collect and forward to England and France food exports totaling approximately one billion dollars. In carrying out the plans the United States government is being urged to furnish other American nations with capital, machinery and agricultural experts for the big campaign.

PUBLIC HEARING ON DAIRY PRODUCTS.

The Joint Committee on Definitions and Standards announces a public hearing on tentative standards for milk and milk products to be held in Chicago, Ill., on June 12-13, 1917. The joint committee representatives of the United States Department of Agriculture, the Association of Official Agricultural Chemists, and the Association of American Dairy, Food and Drug Officials. All persons interested are invited to attend. Those who desire may present their views in writing to the secretary of the committee, Bureau of Chemistry, Washington, D. C., on or before the dates set for the hearing. Copies of the tentative standards suggested by the committee may be obtained upon application to the secretary of the committee at the above address.

The committee desires to obtain from the trade and others their views as to the fairness of the suggested definitions and standards and also information as to what should be the basis of a standard for butter. Shall it be butter-fat; or moisture; or butter-fat and moisture; or butter-fat, moisture, and casein; or butter-fat, moisture, casein and salt? The discussion will cover the following subjects: Milk, standardized milk, adjusted milk, skim-milk, cream, sweet cream, heavy cream, pasteurized milk or cream, buttermilk, homogenized milk or cream, cheeses and butter. The hearings will be held at 10:00 a. m., on June 12-13, 1917, in the Hotel Sherman, Randolph and Clark streets, Chicago, Ill.

LIVE STOCK NEWS.

Within a short time hogs have been selling on the Chicago market at around the highest prices of the year, all prices of past years having been far exceeded, with decreasing receipts in recent weeks and as lively a demand as ever. After corn planting is over it is expected that there will be good receipts of packing sows, which will probably sell at lower prices, although apparently no one is looking for otherwise than fancy values so long as the war goes on. The domestic and foreign consumption of American hog products is as large as ever, and no large accumulations of provisions are reported anywhere. Meanwhile, prime heavy barrows comprise as small a proportion of the daily receipts as ever, and these sell at a liberal premium. Recent Chicago receipts of hogs have averaged in weight only 215 pounds, comparing with 222 pounds one year ago, 234 pounds two years ago, 237 pounds three years ago and 242 pounds four years ago. High-priced corn explains the deficiency in hog weight. Huge orders for meats for the armies and navies of the allied powers, including the United States, greatly aid in maintaining prices for hogs and hog products.

The Chicago and other markets of the country are getting very few choice heavy cattle, and these are selling at a liberal premium, as are the few choice little yearlings marketed. Recent Chicago supplies of cattle have been furnished largely by South Dakota, Missouri, Nebraska and Illinois, with dairy states furnishing a good many canning cattle.

There have been times recently when the Chicago packers complained that steers for which they had to pay from \$13@13.50 per 100 pounds cost them relatively more than the cheaper kinds, as they failed to show the finish to prove their worth on the sheets.

A short time ago an Iowa farm renter marketed in Chicago a carload of 846-lb. Shorthorn yearling steers at \$12.50 per 100 pounds, and he said it was the only kind of beef production that pays at present. He has no silo, and relies wholly on grass, hay and corn.

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.

May 31, 1917.

Cattle.

Receipts 1050. Canners 25@35c lower than last week; other grades strong. Best heavy steers \$11.50@12; best handy weight butcher steers \$10.50@11.25; mixed steers and heifers \$9.50@10.50; handy light butchers \$8.75@9.75; light butchers \$8@9.50; best cows \$9.50@10; butcher cows \$8@8.75; common cows \$7@7.25; canners \$6.25@6.75; best heavy bulls \$9.50@10; bologna bulls \$8.50@9.25; stock bulls \$7.50@8; feeders \$8.50@9.50; stockers \$7.50@8.50; milkers and springers \$50@100.

Bishop, B. & H. sold Newton B. Co. 1 cow wgh 960 at \$7, 1 do wgh 770 at \$6.50, 2 do av 1075 at \$8.50, 5 do av 926 at \$9.25, 3 canners av 770 at \$6.75, 25 steers av 900 at \$10.65; to Parker, W. & Co. 3 canners av 1033 at \$6.75, 1 do wgh 1300 at \$7, 1 do wgh 820 at \$6.75, 3 do av 833 at \$7, 20 steers av 1125 at \$11.25, 19 do av 1176 at \$11.25, 1 do wgh 1020 at \$10.50, 1 bull wgh 1180 at \$10; to Brighton D. M. Co. 2 cows av 1105 at \$9, 1 bull wgh 1450 at \$10.85, 1 cow wgh 800 at \$7.50, 1 do wgh 870 at \$8.50; to Breitenbeck 11 steers av 953 at \$10.60; to Prentiss 19 cows av 1048 at \$8.25, 2 do av 1265 at \$10, 5 do av 990 at \$8.60; to Sullivan P. Co. 6 do av 991 at \$8.50; to Heinrich 5 steers av 672 at \$9; to Thompson 6 do av 880 at \$10.50; to Shipiro 1 bull wgh 740 at \$8, 1 do wgh 1150 at \$10; to Brighton D. M. Co. 1 steer wgh 1260 at \$11, 2 do av 1160 at \$12; to Gerber 8 butchers av 565 at \$8.75; to Parker, W. & Co. 3 cows av 800 at \$7, 2 do av 840 at \$7, 2 canners av 810 at \$6.25; to Thompson 3 bulls av 940 at \$9.65, 7 butchers av 821 at \$9.65, 16 steers av 1170 at \$11.25; to Newton P. Co. 3 do av 773 at \$11, 3 do av 950 at \$11, 1 bull wgh 1850 at \$9.50, 8 butchers av 677 at \$9.

Sandel, S., B. & G. sold Walk 1 bull wgh 1010 at \$9.60; to Thompson 1 do wgh 1740 at \$10.50, 14 steers av 1174 at \$11.50, 1 cow wgh 1020 at \$8.25; to Newton P. Co. 25 steers av 930 at \$10.90; to Parker, W. & Co. 12 do av 1133 at \$11, 2 cows av 850 at \$6.50, 1 do wgh 900 at \$7, 11 do av 863 at \$7.25; to Applebaum 2 do av 900 at \$7.50, 2 bulls av 580 at \$7.75, 1 do wgh 690 at \$8.50; to Hammond, S. & Co. 18 steers av 1133 at \$11.25, 1 bull wgh 1450 at \$9.50, 2 cows av 835 at \$6.50; to Mason B. Co. 3 do av 900 at \$10, 1 steer wgh 1040 at \$10.25, 4 do av 1172 at \$11.25; to Thompson 2 bulls av 1385 at \$9.75, 1 do wgh 1470 at \$9.50; to Sullivan P. Co. 1 cow wgh 1200 at \$8, 1 do wgh 1150 at \$9, 15 steers av 815 at \$10.25; to Walk 9 stockers av 515 at \$7.75; to Kamman B. Co. 5 steers av 1014 at \$11.50, 1 cow wgh 930 at \$10, 13 steers av 790 at \$10.25; to Goodgold 6 butchers av 745 at \$8.25; to Rattkowsky 3 do av 653 at \$8.50, 5 do av 856 at \$10.10.

McMullen K. & J. sold Goodgold 14 butchers av 413 at \$7.50, 2 do av 760 at \$7.75; to Parker, W. & Co. 15 do av 760 at \$9.25; to Hammond, S. & Co. 4 cows av 912 at \$7; to Parker, W. & Co. 17 butchers av 623 at \$8.40; to Heinrich 14 do av 634 at \$8.45.

Veal Calves.

Receipts 1027. Market steady. Best \$14.50@14.75; others \$7@12.50.

Erwin, S. & J. sold Thompson 5 av 115 at \$12, 23 av 160 at \$14.75; to Mich. B. Co. 9 av 150 at \$14.75, 10 av 161 at \$14; to Hammond, S. & Co. 5 av 111 at \$11, 26 av 155 at \$14.75; to Thompson 2 av 155 at \$14.75, 10 av 152 at \$14.75, 5 av 125 at \$11.50, 19 av 140 at \$4.75.

McMullen, K. & J. sold Nagle P. Co. 29 av 140 at \$14.25, 32 av 150 at \$14.50; to Parker, W. & Co. 23 av 160 at \$14.50.

Sheep and Lambs.

Receipts 815. Good Lambs 25c lower; grass lambs 75c@1 lower; sheep steady. Best lambs \$15@15.50; fair do \$14@14.50; light to common lambs \$12@12.50; heavy fat sheep \$10@10.25; fair to good sheep \$11@12; culls and common \$8@9.

Erwin, S. & J. sold Thompson 6 sheep av 125 at \$12, 4 do av 105 at \$8, 3 yearlings av 95 at \$13, 7 spring lambs av 60 at \$18; to Nagle P. Co. 4 lambs av 80 at \$15, 9 sheep av 115 at \$12; to Thompson 20 do av 80 at \$8.50, 24 spg lambs av 49 at \$17, 32 lambs av 65 at \$15.50, 39 sheep av 90 at \$11.

Hogs.

Receipts 4259. Market slow. Pigs \$13.50@13.75; bulk of mixed \$15.25@15.40; choice grades \$15.50.

Veterinary.

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

Shy Breeder.—We have a cow that comes in heat irregularly, have bred her several times and she fails to get with calf. N. H. G., Gaveys, Mich.—It is well to keep in mind that certain cows are barren and those that come in heat irregularly are generally shy breeders; there may perhaps exist a cystic condition of the ovaries which if crushed by hand through rectum and vagina, she might then get with calf. When she comes in heat, inject her with a tepid soda solution made by dissolving ¼ lb. bicarbonate of soda in half gallon of clean boiled water, then breed her a few hours later.

Eczema.—I have a calf six weeks old that appears to have a skin ailment affecting the hind legs. The hair seems to shed out and the legs are stiff; besides, the calf is dumpy and stands with back arched. W. F., Jeddo, Mich.—Give calf 10 grs. of sodium salicylate and 5 grs. of potassium iodide at a dose three times a day, and apply one part coal tar disinfectant and thirty parts water to bald part of skin once a day.

Sore Eye.—I have a horse that appears to be going blind in one eye. A thin film appears to be growing over eyeball and I have thought the eye was not as sore one day as it is the other. W. E. B., Middleville, Mich.—Dissolve 40 grs. of boric acid, 40 grs. of borate of soda in one-quarter pint of clean boiled water and apply to sore eyes twice a day. Mix together equal parts calomel and boric acid and blow a small quantity into eye three times a week.

Breeding Question.—I have a two-year-old bull which I suspect is not a good calf getter, but appears to be rather dull and sluggish, but seemingly perfectly healthy. J. B. M., Three Rivers, Mich.—Give him 40 drops of fluid extract nux vomica, 1 dr. ground capsicum, 2 drs. of ginger and 1 oz. of ground gentian at a dose in feed three times a day. Perhaps this bull is of a sluggish temperament and may never make a good stock bull.

Warbles.—I have two cows, both of them have several bunches on each side of back bone and I would like to know what ails them and what, if anything, can be done to relieve them? B. E. C., Ceresco, Mich.—Each of the bunches contain a grub which should be squeezed out and killed. It will be necessary to use in some cases a sharp pen knife to open skin. Then apply tincture iodine occasionally.

Knuckling.—I have a young horse that knuckles on fetlock joint and would like to know if this ailment can be cured. J. C. B., Colon, Mich.—A majority of horses that knuckle are of faulty conformation, having short upright pasterns which predispose them to knuckling. If it is the result of hard work, rest and applying light blisters or a liniment composed of equal parts turpentine, aqua ammonia and raw linseed oil three times a week it will have a good effect. In many cases treatment does not give very good results, it only makes the skin sore and tender.

Periodic Ophthalmia.—Loss of Vision.—We have a horse that has gone blind, his eyes became inflamed and sore several weeks ago, first discharging water, then later mucus formed. The first attack seemed to pass off, but some time later he suddenly lost his sight. We have another horse that is affected in the same way and would like to know if there is anything we can do for it. G. G., Sebawaing, Mich.—The writer believes that your horse is incurable and the one that lost vision will remain blind. Give your horse 30 grs. of potassium iodide and 1 dr. of Fowler's solution twice a day and blow one part calomel and four parts boric acid into eye three times a week.

Leucorrhoea.—I have a four-year-old mare that has leucorrhoea and I would like to know how she should be treated. J. M., Merrill, Mich.—Give her a teaspoonful of powdered sulphate iron and a tablespoonful of cooking soda at a dose in feed twice a day. Dissolve 1 dr. permanganate of potash in half a gallon of clean tepid water and wash out vagina, using a fountain syringe every two days.

Stifle Lameness.—Our eight-year-old mare is lame in stifle joint and most of the trouble is on the inside. I have applied various liniments, but to no success. At present the mare is not working. R. N. P., Cedar Run, Mich.—Clip hair off stifle and apply one part red iodine mercury and one part powdered cantharides and eight parts lard twice a month.

LIVE STOCK NEWS.

Quite recently corn prices have been subjected to a fresh bull movement, and sales were made at far higher figures than were ever paid before in the history of the market. The latest bull movement was inspired by the publication by the federal government of the bad showing of the winter wheat crop, which brought about a sudden upheaval of wheat prices on the Chicago Board of Trade, all of the grains participating in the upward movement. Looking ahead, it is fortunate that the weather conditions over the corn belt of the United States have been generally favorable for corn planting, and the latest advices promise a large acreage. It is a certainty that with our obligations to do all in our power to feed the allied countries as well as our own large population, and our live stock, all the grains, potatoes and other food stuffs and feed stuffs that can be grown will be urgently needed, and good prices are counted upon.

Exclusive steer ranching in the western plains country of Texas has been giving place to cattle raising of late, and the other day a prominent stockman of that territory purchased near Kansas City a carload of registered coming yearling Hereford bulls for breeding purposes. He made it his practice during many years to buy steer calves, maturing them, and holding them until they were from two to four years old. But now conditions are changed, and stockmen are obliged to resort to breeding their own cattle. The stockman just referred to recalls the time when he purchased in the course of a single season as many as 12,000 steer calves, but this is no longer possible. He says there will be a large calf crop this spring, and in his herd of cows the average will run close to 85 per cent, while in some herds it will beat that. His cows were fed cottonseed cake all last winter, and they also had good pasturage. He owns a well which will furnish as much as 1,200 gallons of water a minute, and he is going to put down more and irrigate part of his land and raise alfalfa. Whenever there is any over-supply of cows, there are ready buyers at profitable prices.

Of course, the unprecedented boom in corn prices accounts for the remarkable unanimity with which stockmen throughout the states comprising the corn belt have been letting their holdings of cattle and hogs go on the market long before reaching proper maturity. The rule does not apply especially to sheep and lambs, which have been marketed on the whole in very good condition, supplies of these being extremely meager. The advance in corn to hitherto unheard-of prices was accomplished at the same time wheat was soaring at a lively pace, May wheat having touched \$3.25 per bushel at the time when the directors of the Chicago Board of Trade decided to stop further trading in May wheat, corn and oats. Since then wheat has declined almost as sensationally as it had advanced before, while corn has undergone some substantial rallies, following its first sharp declines. Corn is now extraordinarily high in price everywhere, and this causes most farmers to let their live stock go to market much earlier than in normal times, notwithstanding the liberal premium paid for well matured holdings. Looking ahead as far as another crop of corn, it may be said that reports on corn acreage show an enormous increase, and it is estimated that the Kansas acreage is increased as much as 4,000,000 acres, while the Nebraska acreage is 3,000,000 acres larger than a year ago. The gains in corn acreage are due in great part to the great losses in winter wheat acreage. There are in many parts of the country extraordinary efforts put forth to increase the acreage of coarse grains, and a great deal of meadow land has been plowed up and turned over to corn, while it is stated that all the cotton states are showing heavy gains in their corn acreage. Within the last few weeks clover seed prices have been advanced sharply, because of the general expectation of a short crop. Many people see in the plowing up of so many clover and timothy meadows a promise of reduced supplies of clover seed one and two years hence.

Enormous profits are being made by owners of sheep and lambs, the meager offerings enabling them to obtain almost any price they choose to ask, and as far smaller shipments have been made of feeders to feeding districts than in other years, a continuance of fancy prices seems certain. A short time ago B. F. Harris, the widely-known banker and farmer of Champaign, Ill., marketed in Chicago 126 head of prime spring lambs which averaged 60 lbs. at \$21 per 100 lbs. He makes a specialty of raising high-grade early spring lambs for the market and makes it pay handsomely.



GOMBAULT'S CAUSTIC BALSAM

A safe, speedy and positive cure for

Curb, Splint, Sweeny, Capped Hock, Strained Tendons, Founder, Wind Puffs, and all lameness from Spavin, Ringbone and other bony tumors. Cures all skin diseases or Parasites, Thrush, Diphtheria. Removes all Bunches from Horses or Cattle.

As a HUMAN REMEDY for Rheumatism, Sprains, Sore Throat, etc., it is invaluable. Every bottle of Caustic Balsam sold is warranted to give satisfaction. Price \$1.50 per bottle. Sold by druggists, or sent by express, charges paid, with full directions for its use. Send for descriptive circulars, testimonials, etc. Address THE LAWRENCE-WILLIAMS COMPANY, Cleveland, Ohio.

DEATH TO HEAVES NEWTON'S

Some cases cured by 1st or 2nd \$1 can. Three cans are guaranteed to cure Heaves or money refunded.



Standard Veterinary Remedy for Heaves; free booklet explains fully. 35 years sale and veterinary use.

CURES HEAVES BY CORRECTING CAUSE—INDIGESTION. IT'S A GRAND CONDITIONER AND WORM EXPELLER

Safe. Most economical. Excellent for Cattle and Hogs. \$1.00 per can at dealers, at same price by parcel post. THE NEWTON REMEDY CO., Toledo, Ohio.



Booklet Free \$3 Package guaranteed to give satisfaction or money back. \$1 Package sufficient for ordinary cases. MINERAL HEAVE REMEDY CO., 463 Fourth Ave., Pittsburg, Pa.

Wanted Men to take charge of Cow Testing Associations in Michigan. Dairy farm experience necessary. Other training given free, in short time. Wages \$50 per month with board, lodging and transportation furnished. Good experience. Apply giving past experience to Dairy Extension Office, Mich. Agri. College, East Lansing, Mich.

We want Fresh White Leghorn Eggs. We pay a premium over the highest market quotation and remit immediately upon arrival. Fox River Butter Co., Detroit, Michigan.

HAY Ship To The Old Reliable House Daniel McCaffrey's Sons, 623-625 Wabash Bld., Pittsburgh Pa.

FRUIT We want your entire crop. Write for rubber stamp. The E. L. Richmond Co., Detroit, Michigan.

EGG'S We want new laid stock and can pay top prices for them. AMERICAN BUTTER & CHEESE CO., Detroit, Mich.

FOR SALE: Good sound smooth Russet Potatoes for seed or table use. Write E. A. BACKUS & SON, Carsonville, Mich.

Farms and Farm Lands For Sale

40-Acre Farm, \$1750, Four Miles To City

of 60,000 people, a noted manufacturing center, 30 acres dark loam; 10 acres wire-fenced pasture, some wood, variety fruit; 9-room house, maple shade, telephone if desired. 40 foot barn, hog, wagon and poultry houses. To settle estate going for \$1750, part down. For details see page 22, "Our Spring Catalogue," copy mailed free. E. A. STROUT FARM AGENCY, Dept. 101, 150 Nassau St., New York.

SHEEP.

Shropshire Ewes

Mostly yearlings with lambs by side, extra good ones, come at once if you want them.

Kope Kon Farm, Kinderhook, Mich.

OXFORD DOWN SHEEP We have a few rams for sale. M. F. Ganssley, Lendon, Mich.

When writing to advertisers please mention the Michigan Farmer.

A Successful Cooperative Live Stock Shipping Association

ACCORDING to F. L. Holmes, the secretary, and S. W. Boyton, the manager, the Quincy Co-operative Shippers & Buyers' Association is the largest live stock shipping association in Michigan, if not in the north central states. The association which is a co-operative organization of live stock producers was formed September 25, 1914, and has been steadily growing ever since until now it has a membership of over 400. The volume of business has increased season by season, and last year amounted to over \$311,000, which is a very respectable figure. The organization has brought about the retirement from the field of a number of drovers who followed one another about the country making bids on animals. The money which formerly went to pay for this wasteful driving now goes to the producers in the form of better net returns for live stock. So efficient and economical are the business methods of the Quincy Association that farmers haul stock a distance of twelve miles to ship through the organization. So completely is the association operated for the benefit of the producers that the advantages of the shipping facilities are extended without charge to the members of all the co-operative associations in the nearby territory. Producers, however, who are not members of a co-operative shipping association are charged extra. This is the mutual benefit idea elaborated to a creditable end.

The marketing of live stock naturally divides itself into three parts, namely, (1) the listing of the animals; (2) the receiving, weighing, marking and loading, and (3) the making of the settlements. Shipments are nearly always made on Wednesdays or Saturdays, because on these days the railroad company guarantees a thirty-six-hour schedule to Buffalo. If the stock is not maturing into marketing condition too fast, shipments are made only Saturdays as then the stock goes on the Monday market, which is believed to be the best of the week. The officers of the association keep in close touch with the members and note in pocket memorandum books all lots of stock that are nearly ready for market. When enough stock is listed to insure a good shipment word is sent out by telephone as to the kind of a shipment to be made, and the day. For instance if cattle are to be shipped it is desirable to have enough to make a carlot. There are slight differences in the transportation charges and the management aims as far as possible to take advantage of these differences to the financial gain of the producers.

Farmers are expected to deliver their animals by noon of the day of shipment. On a busy day there will be a long string of farmers in line with the wagon racks filled with animals waiting to unload. As each lot of animals is received it is graded, weighed, and when necessary the animals marked. Then they are yarded preparatory to being loaded. Over 900 animals have been received and shipped out by the Quincy Association in a single day. The largest single shipment yet made was ten decks.

The grading is done on the same principle and in the same manner as at the Buffalo yards to which practically all the stock is forwarded. In shipping cattle each animal is weighed and marked separately and sold upon its merits. The veal calves are graded as No. 1 and culls according to the condition of each animal when weighed. The hogs are graded as heavy, yorkers, pigs, rough, stags and boars, and the receipt which each producer gets at the time of delivering his stock shows how many animals and pounds of each grade he is marketing. The sheep are graded as lambs, ewes,

bucks, yearlings and veal lambs. The different lots of sheep are indicated with marks of varying design made with different colored paints on the backs of the animals. So well do the officers of the Quincy Association understand the Buffalo system of grading that only rarely do they find on the account sales indications of a different grading than what they made. They have become skilled in the matter of

mined and the local expenses deducted. The Quincy Association has been fortunate in so far in enjoying small shrinkages. This is partially due to the quick running time to Buffalo. However, extremes in shrinkage are evened up so that the shrinkage, one shipment with another, is fairly uniform.

The local expense in addition to the two cents for insurance, consist of the

to buy such supplies as its members may order co-operatively.

The association is operated without flourishes or trimmings. Although it is doing a business amounting to over a quarter of a million of dollars a year it does not maintain an office, does not possess a single mahogany desk, is without stenographers, messengers, office boys, porters and doorkeepers; is without typewriter, calculating machine, file case, or safe. But it does have a good accounting system, is offered by men who are quick at figures, are not afraid to work, who are accurate, and are honest beyond doubt. They are practical demonstrators as to what can be accomplished in the way of reducing "the high cost of marketing." They conduct for their fellow farmers a big business in a remarkably efficient manner and at a cost that has all the appearance of being very near to bed rock.

A NEW STANDARD BARREL LAW.

At the last session of the Michigan Legislature the following measure was enacted into law, which changes the requirements of selling farm produce in barrels. The full text of the measure is here given without comment.

The People of the State of Michigan enact:

Section 1. The standard barrel for fruits, vegetables, and other dry commodities other than cranberries shall be of the following dimensions when measured without distention of its parts: length of staves, twenty-eight and one-half inches; diameter of heads seventeen and one-eighth inches; distance between heads, twenty-six inches; circumference of bulge, sixty-four inches, outside measurement; and the thickness of staves not greater than four-tenths of an inch. Provided, that any barrel of a different form having a capacity of seven thousand fifty-six cubic inches shall be a standard barrel. The standard barrel for cranberries shall be of the following dimensions when measured without distention of its parts: Length of staves, twenty-eight and one-half inches; diameter of heads, sixteen and one-fourth inches; distance between heads, twenty-five and one-fourth inches; circumference of bulge, fifty-eight and one-half inches, outside measurement; and the thickness of staves not greater than four-tenths of an inch.

Section 2. It shall be unlawful to sell, offer, or expose for sale in this state, or to ship from this state, to any other state, territory, or the District of Columbia or to a foreign country, a barrel containing fruits or vegetables or any other dry commodity of less capacity than the standard barrels defined in the first section of this act, or subdivisions thereof known as the third, half, and three-quarter barrel, and any person guilty of a willful violation of any of the provisions of this act shall be deemed guilty of a misdemeanor and be liable to a fine not to exceed one hundred dollars, in any court of this state having jurisdiction: Provided, however, that no barrel shall be deemed below standard within the meaning of this act when shipped to any foreign country and constructed according to the specifications or directions of the foreign purchaser if not constructed in conflict with the laws of the foreign country to which the same is intended to be shipped.

Section 3. Reasonable variations shall be permitted and tolerance established by rules and regulations made by the director of the bureau of standards and approved by the Secretary of Commerce. Prosecutions for offenses under this act may be begun upon complaint of local sealers of weights and measures or other officer of the state appointed to enforce the laws of the said state, relating to weights and measures: Provided, however, that nothing in this act shall apply to barrels used in packing or shipping commodities sold exclusively by weight or numerical count.

Section 4. This act shall be in force and effect from and after the first day of September, nineteen hundred seventeen.

Section 5. An act entitled "An act to regulate the size of dry or packing barrels for fruits, roots and vegetables," being section six thousand two hundred fifty-four of the Compiled Laws of nineteen hundred fifteen, be and the same is hereby repealed.



A Satisfied Member Delivering Hogs on May 12, when 50 Calves, 180 Hogs and 97 Sheep were Shipped by the Association.

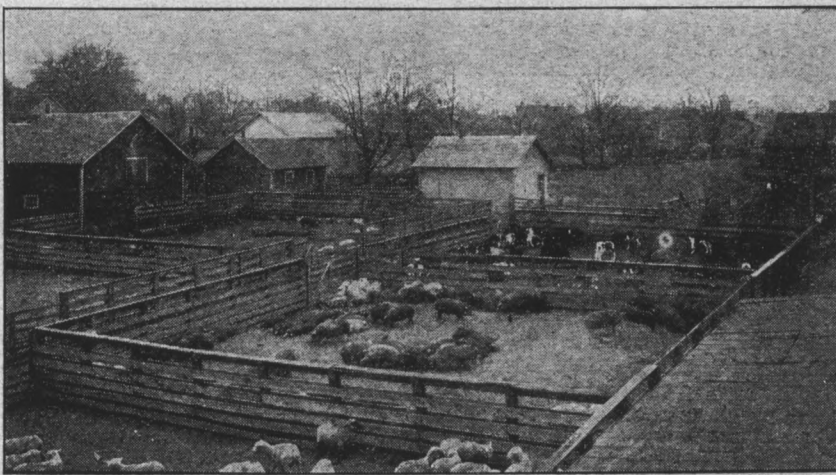
grading by numerous trips to Buffalo and by extensive experience.

As satisfactory returns to the producers depend upon keeping the expenses down, as well as making good sales, the management plans the loading of the cars so as to get the maximum number of animals into each car with the minimum chance of loss by death or because of crippled animals. Car loading is an art which the Quincy officers have mastered. Because of long experience they know exactly how to handle the different kinds of animals, which to put by themselves, and what animals to crate.

All animals received by the association in a healthy condition are insured against ordinary death or injury in transit. The railroad is responsible in case of unusual delay or accident to the carload. A charge of two cents per one hundred pounds of live weight is made upon the animals shipped, and

cost of incidental expense in connection with loading and a charge of eight cents per one hundred pounds for compensation to the secretary and manager. When stock is received from farmers who are not members of a co-operative association they are charged two cents per one hundred pounds extra and the money obtained from this source is sufficient to cover incidental expenses. The total deductions, including freight, selling commission, insurance, local expense, varies from forty-seven to forty-nine cents for each one hundred pounds of Buffalo weight. Only three times in the history of the Quincy Association has this expense reached the fifty-cent figure. The net amount due each farmer is given him through the medium of an association check.

It is the ambition of the officers of the Quincy Association to make returns to the farmers that are favor-



Yards at Quincy where the Association Transacts its Business.

from the fund so obtained all ordinary losses are paid. If, however, at the time of receiving an animal appears to be nearing the end of its earthly existence the association refuses to forward it except at the owner's risk. The two cents per hundred pounds charged for insurance has been found entirely adequate. This is largely due because of the great skill displayed in handling and loading the animals.

Settlements for stock shipped are made on receipt of the account sales and checks from the Buffalo market. The checks are for the selling price of the stock, less transportation charges and the commission for selling. Before the returns can be distributed among the producers the amount of shrinkage on each lot of animals must be deter-

able. If a shipment fails to reach Buffalo in time for the Monday market, but is sold on the Tuesday market at higher prices, the farmers are given the benefits of the advance, but, if on the other hand, Tuesday prices are less than the Monday, the settlements are made on the basis of the Monday prices and a claim is put into the railroad company for the amount of the loss because of failure to make delivery as per schedule. So far the association has been very successful in the collection of these claims, also in the collection of its other just claims.

The association has a current bank balance that is close to one thousand dollars. This is its working capital. Because of actual cash in hand it is able to meet all its bills promptly and

Farmers' Clubs

MOTHER'S LOVE.

Paper read by Mrs. Carrie Dinger at a recent meeting of the Penfield Farmers' Club, and published by request of the Club.

"Most of all the other beautiful things in this life come in twos, and three, dozens and hundreds; plenty of roses, stars, sunsets, rainbows, brothers and sisters, aunts and cousins, but only one mother in all the wide world."—Kate Douglas Wiggin.

There is an old Hebrew proverb which says: "God could not be everywhere, therefore He made Mothers. So Mothers were made for the world and the world for Mothers, and without Mothers there would be no world, to the little babe she is all the world. Fathers cannot be left out, as they came first, but God, to complete His work, gave us Mothers, and from their flesh and blood, the race of man is fashioned, from their hopes and prayers their faith is molded; from their love the tenderness of heart is throbbing. Their prayers send them forth with high ambition and noble thoughts. In all this world no font of deep strong deathless love save that within a Mother's heart."

God's love is compared to it where in Isaiah it says, "As one whom his Mother comforteth I will comfort you."

Yes, she comes to you when sorrow and adversity is upon you, hiding her own heartaches, and with cheering words and loving counsel strives to disperse the clouds that hang heavy over you, and her love endureth forever.

Fathers may forsake their children. Brothers and sisters become enemies, husbands and wives lose their love for each other, but a Mother's love still lives on.

Whate'er befalls her child, if into the depths of sin it goes, no deed is dark enough to quench the flame; the darker the depths the brighter that light grows. She would even leave Heaven to go to that erring one with hopes to bring her child out of the depths.

The sweet theme of Mother has rang through all the ages and the very word expresses to the human heart all that it can feel or know of love, tenderness self-sacrifice. No note of song more sweet than that one word—Mother.

There is magic in it. It has power over the wayward when tempted to stray in forbidden paths.

It comes to those who have parted in anger and softens their hearts. It comes to the old when dreaming of days long past and they live again in the halo of her love and the words, "My Mother" comes from their lips as a sacred utterance.

It comes to the wanderer in strange lands, and the heart will ache for a touch of the hand or a glance of love light from her eye; it will bring them back oftentimes to her loving embrace. It comes to the statesman holding the highest position in the land and fills his cups of joy to feel and know that his Mother has a share in his honor.

It may seem as though there were some so hardened in sin that the name of Mother could have no effect on them, but down deep in the vault of the heart is a jewel box containing one or more precious jewels of memories of the dear old Mother. It may almost seem as when traveling this hardened road the key to the vault and casket has been lost, and it will never be opened. But sometime, somewhere, a key will be found that will unlock that treasure and bring to the erring one's view the jewel that will soften and lead back to a better manhood or womanhood.

In every woman is a God-given instinct of motherhood, which shows in the love that reaches out to children that are not their own by birth, the

true, pure motherhood that will love and cherish to a fulfillment.

Oliver Wendell Holmes says: "The real religion of this world comes from woman much more than from man. From Mothers most of all, who carry the key of our souls in their bosoms. She is the interpreter between God and man; she brings to her little one the goodness of God by her teaching and loving care."

Mother is the name for God in the lips and hearts of little children, kneeling at her knee to lisp their little prayers. God and Mother are merged in one, and in after life they see him still through her it is written that the sins of the fathers are visited on their children; it is also as plainly written that the virtues of the Mother are visited upon them, and what a rich inheritance given to boy or girl, rich and poor alike!

"Honor thy Father and thy Mother." What does that mean? Love, honor and obey? It is more than that; it is to be all that your Mother would have you be, all that she thinks you are.

"Say, fellows, let me tell yer, I'd be happy as a clam, if I only was the feller, that my mother thinks I am. She thinks I am a wonder, and knows her little lad could never mix with nothing, that's ugly, mean or bad. And lots of times I sit and think how nice 'twould be, gee whiz! if a feller was the feller that his mother thinks he is."

Yes, strive to be all she thinks you are, noble and upright men and women, for through you the world judges your Mother. Then show to the world you have the best, and don't be afraid to sometime tell her so. Every word of loving praise will be dropped in that jewel box of memory as a precious treasure. How many, many that are living in the memories of their Mothers, if they could live over the past, would be more mindful of her. Christ would teach us by His example when in the agony of His last hour he was mindful of his Mother.

Yes, Mother is a sweet name and no higher sphere can woman reach in this world than to wear the crown of Motherhood.

Was there ever a name that lived like this?

Will there ever be such another? The angels have reared in heaven a shrine to the holy name of Mother.

CLUB DISCUSSIONS.

A New But Active Club.—The May meeting of the Lynn Farmers' Club was held at the home of Mr. and Mrs. William Gottschalk. President A. J. Smith called the meeting to order and Mrs. Ransom Teetsel acted as secretary. A number of patriotic songs were sung, and the county agent discussed agricultural matters pertaining to the production of maximum crops to meet the war crisis. The preserving of fruits and vegetables was also taken up at considerable length, and the women of the Club were much interested and are planning to co-operate with those of Elliott Grange in holding a cold-pack demonstration on the afternoon of June 11. Various other subjects were discussed by the members present, and all felt that some action should be taken looking to a more concerted effort on the part of all the Clubs in the county for the improvement of St. Clair county agriculture and rural life. The holding of a union picnic in August in which every Club in the county should participate was believed to be a most desirable step to unify the work of the various Clubs and enable them to pull together to better advantage for the accomplishment of common ends. The Lynn organization is one of the new Clubs started last winter during the farmers' institute season, and it is making very substantial progress indeed. The next meeting will be held at Mr. and Mrs. William Campbell's in Lynn township June 21.

A Profitable Meeting.—On May 2 the Grant and Burtchville Farmers' Clubs, of St. Clair county met at the pleasant home of Mr. and Mrs. George Conat. Although farmers are at present very busy, there were about 120 people present. During the forenoon people visited and discussed vital questions of the day. At noon a sumptuous dinner was served and an excellent program

Grange.

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

STATE GRANGE OFFICERS.

Master—John C. Ketcham, Hastings. Overseer—C. H. Bramble, Tecumseh. Lecturer—Dora H. Stockman, Lansing.

Secretary—Jennie Buell, Ann Arbor. Treasurer—Frank Coward, Bronson. Executive Committee.—Jas. Helme, Adrian; Geo. B. Horton, Fruit Ridge; J. W. Hutchins, Hanover; W. F. Taylor, Shelby; Wm. H. Welsh, Sault Ste Marie; N. P. Hull, Dimondale; Burr Lincoln, Harbor Beach.

GRANGE MEMBERSHIP IN KENT COUNTY.

Sparta Grange leads with 168 members with Courtland Grange second with 135. Other Granges have memberships as follows: Rockford 106; Carlisle 94; Kent City 74; Kinney 66; Oakfield 56; Evans and South Lowell, each 48. These are the nine leading Granges in the county, the other Granges have from 19 to 43 members each.

AMONG THE LIVE GRANGES.

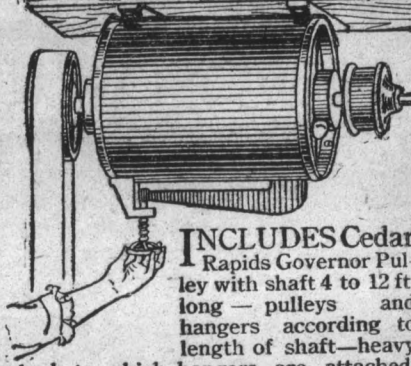
Berlin Center Grange held a very enjoyable meeting on May 4. The lecturer, Mrs. Cora Denton, furnished a short program and a contest was organized between the men and women. The leaders were Harrison Sherwood and Mrs. Bert Kimball. Roll call, new members, reinstatement, paying dues, music, original work, recitations, etc., for score points. Each side will give two programs, the men giving the first on May 17. This promises to be a very lively contest.

Summer Grange met Saturday evening, April 28, with an average attendance. Communications relative to binder twine were read by the secretary. A circular letter sent out by President Wilson was read, the same being in relation to the food shortage and importuning us farmers to raise more. It is the opinion of the writer that the farmers are not going to exert themselves beyond their previous record unless assured of a satisfactory price for their products when harvested. The present high prices are not wholly due to any neglect of the farmers, but are largely occasioned by the unusual season last year. If the wheat generally doesn't look any better elsewhere than any the writer has seen, the writer thinks we will yelp like a full-sized dog another winter, although the usual acreage has been sown. With the prevailing high prices of seed the farmer is not going to exceed the limit in planting this spring. And especially so, when they have no prospect what the crop will bring at harvest time.

Ashley Grange met May 4 and decided it would be impossible to attend the Pomona at North Star in a body on May 5. The ground was barely dry enough to work and rain was threatening. A good patron of husbandry will not tempt providence by neglecting to look after his crops when the weather is favorable, especially now that we are so far behind with spring work. The chief business of the session was the ordering of binder twine, etc. New members were received and applications for membership continue to come in. Members responded to roll call with a statement from each as to what he or she had learned at the farmers' institute, that he put into practice on his farm. The following program was rendered: Roll call, "What crop I like best to raise, and why;" recitation, W. M. E. Robbenolt; N. W. Wirebaugh. Subject to be announced at the meeting. "Feeding and care of stock," A. Bolles; reading, Mrs. George Coon; "Alfalfa," Orr Trask and Charles Follett.

was carried out. Cleon Matheison, in a very able manner, gave a talk on government ownership of electric railways, telegraph lines, etc. This was the speech he delivered at the recent debate between Port Huron High School and Albion, when the Port Huron team won. Rev. Francis gave a pleasing talk on "Development of Character." Mrs. George McKenzie read a paper on "Our Responsibilities." The meeting closed by a patriotic duet by Rev. and Mrs. Brown, the Club joining in the chorus. All went home feeling the day had been well spent. The Club will meet with Mr. and Mrs. A. McIntyre in June.

Speed Governing Line Shaft



plank to which hangers are attached. Governor pulley prices

—as low as \$12.00

Costs little more than the average friction clutch pulley. The governor with a thousand different speeds—controls any speed instantly. Regulates the speed of several pulleys on the same shaft—speed regulated by a simple turn of the hand-wheel on the governor and speed always uniformly maintained.

Install it yourself—with a screw driver. No service troubles—no figuring pulley sizes—attach it to the wall—the ceiling or the floor.

Ask Your Dealer About It

He'll gladly demonstrate it for you, show you how it will control your machinery and how easily it can be installed. Or write us for illustrated folder and prices of all sizes.

Cedar Rapids Foundry and Machine Co.
302 Second Street, West
Cedar Rapids, Iowa

Insure Your Automobile

In a Safe Company

With an organization which is producing enough business to pay for a stolen car each day, and a surplus of \$65,000 on hand and 21,700 policies issued, the Company is prepared to meet all claims.

Auto owners realize that great care should be used in driving and that the ordinances of most large cities make it illegal to leave automobiles on the street without a proper lock; yet accidents continually occur and cars are stolen.

The farmer and the business man who joins a mutual should select one that has a large membership and a surplus on hand to meet claims.

Should you have a large damage claim against you, the only mutual company in the state able to give you prompt and efficient service with money on hand to pay the judgment, is the Citizens' Mutual Automobile Insurance Company, of Howell, and the cost is only \$1.00 for policy and 25c per H. P.

A GOOD ENGINE FOR SALE

A Cook stationary gasoline engine with 9 K. W., Direct Current Generator. This is an efficient power plant, which we have used a few months but have no further use for on account of moving into a new building. To move it we will sell for \$250, f. o. b. Detroit. It will come in mighty handy on some farm this summer.

MICHIGAN STATE AUTO SCHOOL, Dept. A.
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Send us twenty-five cents and we will send you prepaid one Black Japan Metal Flag Bracket for your automobile radiator. Give us make of car and we will send one to fit.

Galesburg Sheet Metal Works
Galesburg, Ill.

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Bags Extra 25c.
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Do You Need Farm Labor?

We have experienced and inexperienced men and boys who wish to work on farms. They are bright, sober, clean and willing. Address: Jewish Agricultural Society, 712 W. 12th St., Chicago, Ill.

Foxes Wanted—100 young Reds. Will pay \$2 each and express charges. RASS BROWN, McFall, Ala.

When writing to advertisers please mention The Michigan Farmer.

POULTRY.

Baby Chicks

From Standard Bred S. C. White and Brown Leghorns, \$10.00 per 100; \$90.00 per 1,000. Bred to lay large white eggs. Safe arrival guaranteed. Catalogue free. **WOLVERINE HATCHERY, Box 2221, Zeeland, Mich.**

Baby Chicks and Hatching Eggs

From Bred-to-Lay Barred Rocks, S. C. White Leghorns and S. C. Buff Orpingtons. All high class stock at very reasonable prices. Send for our Chick Folder at once. **RUSSELL POULTRY RANCH, Petersburg, Mich.**

Baby Chicks, S. C. White Leghorns, 5,000 for May, at \$12.00 per 100. Safe delivery guaranteed. All breeders are farm raised and bred for high egg production. Order direct from this advertisement. **SUNNYBROOK FARM, Hillsdale, Mich.**

Baby Chicks Cheaper than hatching eggs. We specialize in Leghorns, Rocks and Reds. Send for catalogue. Twentieth Century Hatchery Company, Box 162, New Washington, Ohio.

CHICKS Rocks, Reds, Orpingtons, Wyandottes, Leghorns. Best laying strains. Ship everywhere. Prices right. **TIFFIN POULTRY FARMS & HATCHERY, Dept. 16, TIFFIN, OHIO.**

JOHN'S big beautiful hen-hatched Barred Rocks, good layers. Breeding pairs (5 birds) \$10 to \$20. Eggs 30, \$2.50; 100, \$7. Circulars. Photo. John Northon, Clare, Mich.

Barred Rocks: EGGS FROM STRAIN with records to 297 eggs a year, \$2 per 15. Delivered by parcel post, prepaid. Circular free. **Fred Astling, Constantine, Mich.**

Barred Plymouth Rock Eggs from full blood stock winning strain. \$1.50 per 13. Prize winning strain. **J. A. Barnum, Union City, Mich.**

Ferris White Leghorns A real heavy laying strain, trapped 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, 934 Union, Grand Rapids, Mich.**

CHICKS, livery, different varieties, free booklet. **Freeport Hatchery, Box 12, Freeport, Michigan**

"200-Egg" Pedigree White Leghorns

Baby Chicks, Eggs for Hatching "Bred-to-lay" strain, vigorous, healthy stock, all sired by Missouri Experiment Station males with pedigrees of 200 to 274 eggs in one year. Chicks, \$25 for 100, \$100 for 500. Eggs for hatching, \$10 for 100. Thousands of satisfied customers. Book your order at once for eggs for hatching and baby chicks of quality. We sell Magic Brooders, best brooders made, \$16.50 each, capacity 800 to 600 chicks. Catalogue. **Michigan Poultry Farm, Lansing, Mich. "Michigan's Largest Poultry Farm."**

LAYBILT S. C. W. LEGHORNS

Large, Great Layers, Pure White Proved egg type from like ancestry. Not the "Best in the World," but **None Better** for beauty and laying ability. Laybilt Leghorns mean either better quality at the same price or the same quality at a less price. **Selected hatching eggs, \$1.50 per 15. Parcel Post paid: \$5 per 100; 90% fertility guaranteed. Strong Day-Old Chicks, now \$10 per 100. Hatch every week. Guaranteed delivery alive and lively. Everfresh Egg Farm, Ionia, Mich.**

BUFF LEGHORNS Special June Sale. Hens, Pairs & Eggs. **Dr. William A. Smith, Petersburg, Mich.**

Fowler's Buff Rocks. I am now booking orders for eggs at \$1.50 for 15, \$3 for 30, \$4 for 50, \$7 for 100. Pen No. 1, \$4 for 15. Also one 2 yr. old White Holland Tom. **R. B. Fowler, Hartford, Mich.**

EGGS for setting from R. C. Brown Leghorns, leading strains in America. Also W. China Geese and M. Pekin ducks. **MRS. CLAUDIA BETTS, Hillsdale, Michigan**

Eggaday White Wyandottes, Eggs \$1.25 per 15; \$2.25 per 30; \$3.50 per 50. **EGGADAY RANCH, Marshall, Mich.**

Improve Your Poultry. My Young's Strain S. C. White makers. Strong, vigorous, bred-to-lay stock. Baby chicks \$8 to \$11 per 100. Satisfaction guaranteed. Large orders filled. Free catalogue. **W. Van Appledorn, Holland, Mich., R. 7, Box 141.**

MORSE'S White Leghorns. State Cup winners. Bred for eggs for years. Now selling eggs, chicks and stock. Free catalog. **Rufus Morse, Belding, Mich.**

PINE Crest S. C. White Orpingtons, cockerels, pullets, eggs \$5 and \$3 per 15; utility \$8 per 100. Eggs half price after May 15th. **MRS. WILLIS HOUGH, Pine Crest Farm, Royal Oak, Michigan.**

RHODE ISLAND REDS and PLYMOUTH ROCKS Males 5 to 12 lbs. according to age \$2 to \$5; P. R. hens weight 5 to 10 lbs., eggs 15 for \$1.00; 100, \$5; 120, \$6.00. Mammoth Bronze Tom Turkeys, 8 to 10 lbs. according to age \$6 to \$25, 10 eggs \$5. **A. E. Cramton, Vassar, Mich.**

R. I. Red Chicks and Eggs. Winter Layers. Bred by more Michigan farmers than any other strain Catalog. free. Interlakes Farm, Box 39, Lawrence, Mich.

RINGLETS' Barred Rocks. The famous show and laying strain Eggs \$2.00 for 15. Delivered by Parcel Post from selected matings. Plain View Stock Farm J. W. Saliard, Prop. Res. W. St. Claire St., Romeo, Mich.

Barred Rock Eggs Four pullets laid 950 eggs in one year. **W. C. COFFMAN, R. 3, Benton Harbor, Mich.**

Homestead Farms

On account of abundant orders, we cannot promise Day Old Chicks until into June. We can still supply

Eggs for Hatching Rocks, Reds, Wyandottes, Black Minorcas and Leghorns; Geese, Ducks and White Holland Turkeys. Cockerels and pullets of our several breeds can be supplied from July on thru the autumn months and we invite inquiry from any, who want any of these fowls. **HOMESTEAD FARMS, Bloomingdale, Mich.**

R. and S. C. Reds. Eggs and Chicks. Pure bred stock. Also good Scotch Collie Pups. **O. E. Hawley, Ludington, Mich.**

RHODE I. Whites win in the egg laying contest. Best eggs and market fowl. Eggs \$2 per 15, \$5 per 45. Baby chicks. **H. H. Jump, Jackson, Michigan.**

Bred-to-Lay S. C. W. Leghorns and Barred Rocks. Eggs, \$1 for 15, \$1.50 for 30, \$2.50 for 50. Alpine Poultry Farm, R. 2, Grand Rapids, Mich.

S. C. W. Leghorn eggs from a 240 egg strain, \$2 per 15. Utility eggs, \$5 per 100. **HILL-CREST POULTRY FARM, Ypsilanti, Michigan.**

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Silver Spangled Hamburg Eggs \$6 and \$7 per 100 Turkey eggs \$5 per setting. Circulars sent for stamp. **RIVERVIEW FARM, Vassar, Michigan.**

Single Comb Black Minorcas Great big cockerels sired by a 10 lb. cock bird. **R. W. Mills, Saline, Mich.**

S. C. White Leghorns 200 egg strain. Tom Barron hens. Baby chicks 15c each. Hatching eggs 5c each. **C. W. Gordon, Fowlerville, Michigan.**

S. C. White Leghorns. Size, shape, vigor, egg production. Hatching eggs \$5; Baby Chicks \$11 per 100. 15 years in the hen business. **A. O. Howard, Tecumseh, Mich.**

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SILVER, Golden and White Wyandottes. Eggs from some grand matings. \$1.50 per 15, \$2.50 per 30, large vigorous birds. **C. W. Browning, R. 2 Portland, Mich.**

WHITE Wyandottes. A. 1 layers. Eggs for hatching, \$1.25 for 15, \$2.25 for 30, Special matings \$5 per 15. **DAVID RAY, 709 Norris St., Ypsilanti, Michigan.**

White Wyandottes. winter & summer layers. Eggs \$5.50 per 100 Baby Chicks \$12 per 100. Satisfaction guaranteed. **Hemlock Poultry & Stock Farm, Prescott, Mich.**

Hatching Eggs From prize winning S. C. W. Leghorns \$1.50 per 15. **White Line Poultry Farm, Hillsdale, Mich.**

FOR SALE S. C. Buff Orpington eggs from good stock. F. O. K. layers, 15, \$1.50; 30, \$2.50; 100, \$7.00. Prices same till July 10. **Mrs. Calvin Fuller, R. 2, Bancroft, Mich.**

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

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.

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ABERDEEN-ANGUS

Bulls by **BLACK QUALITY ITO**, sire, First prize, Breeders and Calf Herds Mich. State Fair 1916. We also won first on Exhibitors Herd, Jr. Champion Bull, Jr. Champion Female and Grand Champion Cow. Also breeders of Percheron, Hackney and Saddle Horses. **WOODCOTE STOCK FARM, Ionia, Mich.**

FOR SALE Good Angus bulls, bred cows, and heifers. Prices reasonable. **Geo. Hathaway & Son, Ovid, Mich.**

Two Choice Registered Guernseys Two year old Heifers in the next 60 days, fine individuals, and well bred, \$300 each, don't wait a month if you want these, they will go to the first man sees them. **J. M. WILLIAMS, North Adams, Mich.**

GUERNSEYS: Choice Reg. Bulls from 4 mo. to 1 yr. old, ready for service, from good producers. Also 4 selected high-grade 2 yr. old heifers, fresh, with 8 heifer calves, \$132 pure bred, well marked and priced right. **Meadow-Gold Guernsey Farm, St. Johns, Michigan.**

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

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

GUERNSEYS Bull calves for sale, from A. R. dams and cowmen test. **GEO. N. CRAWFORD, Holton, Mich.**

Protecting Chicks from Rats and Weasels

THE flock of young chicks is constantly in peril from rats and weasels and when an attempt is made to produce a large flock of broilers the losses are often so extensive that there is no profit. My first experience with a weasel was discouraging. In a colony house, raised about four inches from the ground, we placed 250 chicks under a stove brooder. It was intended to raise the house at least two feet in the air and place it on blocks before the chicks hatched, but stormy weather and spring work caused the neglect. At night the chicks were safely sleeping under the warm brooder as we supposed. The next morning, a hole had been eaten through the brooder floor and 117 chicks had been killed and dragged

protection is to make the buildings rat and weasel proof and then clean up everything on the farm which can be used by the pests for a breeding place. **R. G. KIRBY.**

THE CARE OF DUCKS.

The requirements of ducks are so few that anyone can raise them. They are less bother than chickens, not requiring such varied feeding, and a fence two feet high will keep them where you wish them to stay. They will not dig up the garden, never fly up onto anything, and are never troubled with lice or bowel troubles as are chickens.

You can feed them the same kind of feed from the fifth day after they hatch until they are full grown, which they will be in ten or twelve weeks.

To get ducks for breeders or winter layers, you should hatch them in April or May, but for the market June is early enough, unless there is a good demand for green ducks in your vicinity. It is best to study your market before setting the eggs.

Do not feed the young ducklings until they are thirty-six hours old, taking particular pains to see that they are kept dry and warm. It is not desirable to try to raise them with hens, as they step on so many of them, and the ducks are even worse to raise them with. Brooders are much less bother and will raise a larger per cent of them.

For the first five days feed bread crumbled and moistened with milk, adding a heaping tablespoonful of sharp sifted sand. After the fifth day feed one and a half pounds of middlings, one and a half pounds of chop, three pounds of bran and one and a half pounds of sifted sharp sand, well mixed, and a small amount at a time wet up into a crumbly mash. Never feed only what they will clean up in ten minutes, three times a day, always giving fresh water when you feed them, and be very sure that none of the feed is dry or they will choke to death.

Make Colony House Rat Proof.

In protecting a flock from weasels the colony house should be raised at least a foot from the ground and supported on smooth cement blocks. In building such a house it pays to place one-fourth inch mesh wire under the matched flooring to prevent rats and weasels from eating into the house. The loss of one flock of chicks is much more expensive than the extra cost of building a colony house by the right method.

When chicks are brooded with hens the metal brood coops can be used to advantage and they are not very expensive when purchased by the dozen. The A-shaped coops placed on the ground result in many losses from the rat and weasel pest. Brood coops should be placed on thick boards and securely closed every night. Scrap lumber piles, stone piles and rubbish heaps are frequently breeding places for rats and weasels. They should be cleaned up if poultry production is to furnish part of the farm income.

Do Not Poison Rodents.

Poisoning rats does not pay, as the hens may eat the poisoned food or the rats will die in the fields and be eaten by the poultry. Trapping is the most satisfactory. Bury the traps when they are purchased, until all odors are destroyed and then bait them with material which has been handled with gloves, or the bait may be avoided by the rats. A good cat and a rat dog will assist in keeping down both rats and weasels. Both of these pests are great travelers. The farm that is free from them one night may receive a visit the next. When one farmer begins a campaign of trapping and poisoning rats an entire swarm may move in the night and take up their abode on the neighbor's farm. The only sure

DIFFICULTY IN HATCHING.

Could you tell me what is wrong with my hatching? I have given the incubator the best of care and I set 530 eggs and hatched 130 chickens. There were chickens in the shells and some were pipped, but did not hatch. Incubator was run from 101 to 104 degrees. I kept plenty of hot water in the tanks. What do you think is the trouble? **W. H.**

Usually when there is difficulty in chicks coming through the shell, it is caused by mismanagement with reference to regulating the ventilation and supply of moisture.

Very often one follows carefully the instructions which come with the incubator, but the incubator may be kept in a room in which the atmosphere is very dry, and therefore more moisture is needed than under normal conditions. Undoubtedly if you had kept the moisture pan in the nursery tray, you would have had better success at hatching time.

Occasionally, however, the eggs are not strongly fertilized, and the chicks are weak, and on that account they have difficulty in coming through the shell. If that is the case, it will be necessary to add more vigorous cockerels to the flock, or use a greater number of cockerels.



A Prize-winner of the Oldest Breed Known, the Black Dorking.

A Guaranteed Quality Sale of Registered Holstein Cattle

At the West Michigan State Fair Grounds in
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on Tuesday June 19th, 1917

Eighty-nine head of high class cattle that are
carefully Tuberculin tested and are guaranteed
to be breeders of off breeding age.

25 choice Heifer Calves out of high class sires.
A handsomely marked bull calf from a 30.27
lb. junior three year old dam, and out of a high
class sire.

A bull calf from a 26.65 lbs. Junior three year
old dam and sired by a son of King Segis Pontiac.
A bull calf sired by a 30 lb. son of Friend Hen-
gerveld De Kol Butter Boy and out of a high re-
cord dam.

Daughters of the 40 lb. bull Johanna McKinley
Segis and of the 34 lb. bull Traverse Dutch Weg.
Daughters of other 30 lb. sires that space does
not permit us to mention.

Young A. R. O. cows with 7 day butter records
from 20 to 28 pounds, Choice A. R. O. cows and
heifers bred to bulls out of dams with A. R. O.
records from 30 pounds to 38 pounds of Butter.

All cattle in sale have been carefully inspected
by the Sale Committee, and all undesirable ani-
mals have been rejected.

An unusual opportunity to buy high class
foundation stock from herds that are carefully
tuberculin tested. A majority of the herds from
which these cattle are consigned are under the
supervision of the Bureau of Animal Industry, and
tested regularly by Government Veterinarians.

If interested, write for a Sale Catalog.
COL. KELLY, W. R. HARPER,
Auctioneer, Sale Manager
MIDDLEVILLE, MICHIGAN

HOLSTEINS AND BERKSHIRES

All stock guaranteed as
represented

3 choice Bull Calves for fall use, with
large yearly record backing. Can-
not be beat as individuals. Berkshire
gilts bred to farrow in August, good
backs, large bone and from large lit-
ters. There is no better investment
in sight.

SWIGARTDALE FARM

PETERSBURG, MICH.

"TOP NOTCH" HOLSTEINS

Many years of careful management and systematic
handling of our three large herds find us the breeders
and owners of a cow that heads one of the only eight
combinations of three direct generations of thirty
pound cows in the United States. We have young bulls
for sale sired by a son of this great cow. The blood of
this cow in them, combined with that of other great
animals of the breed in our herds, would insure most
pleasing results in almost any herd. McPHERSON
FARM CO., Howell, Michigan.

Bigelow's Holstein Farms,

BREEDSVILLE, MICH.

Have Some Fine Registered Stock For Sale

Registered Holsteins. Very fine Young bull five
months of age A. R. O. breeding
Satisfaction guaranteed. W. B. Jones & J. F. Lutz, Okeoch, Mich.

Holstein Calves, 10 heifers, and 2 bulls 15-16ths pure,
15 weeks old, beautifully marked, \$20.00 each, crated
for shipment anywhere. Edgewood Farm, Whitewater, Wis.

REG. HOLSTEINS: Herd headed by Albina Bonte
L. Butler, Jr. No. 38124. Dam's record at 6 yrs. butter
28.53 lbs. milk 619.4. Yearly record at 2 1/2 yrs. butter
82.2 lbs. milk 1562.2 lbs. W. B. HEADER, Howell, Mich.

Cluny Stock Farm

100 REGISTERED HOLSTEINS 100
THE MILK AND BUTTER KIND

Those Bull Calves will be yearlings next fall and
winter—they will cost you more price and express
then. Those remaining are individually right and bred
right. Entire herd above six months old and tuberculin
tested. Not a reaction in the 65 head. Select your herd
sire from a herd you know is free from tuberculosis.

Prices and pedigrees sent on request.
R. BRUCE McPHERSON, HOWELL, MICH.

OAK LEAF FARM

Ypsilanti Sir Pletieffe De Kol

Service bulls all sold. Buy a calf and raise it. Fine
individuals 4 and 5 months old. E. H. Gearhart &
Son, Marcellus, Mich., R. No. 4.

REG. Holsteins. Place your order now for a bull calf.
I have cows due to freshen soon, bred to the best
bull in Mich. Elmer E. Smith, Redford, Michigan

REG. Holstein Bull, ready for service. Sired by a
Rhine-brother of World's Champion cow. Send card
for pedigree and price. E. R. Cornell, Howell, Mich.

842 Lbs. BUTTER

Is the average of the semi-official records of our herd
bull's dam (at 2 yrs.), his grand-dam (at 3 yrs.) and his
great grand-dam. Three choice young bulls from A. R.
O. dams. Herd tuberculin tested annually. Holsteins
of course. Peaceand Stock Farm, Three Rivers, Mich.
Chas. Peters, Herdsman, C. L. Brody, Owner, Fort Huron, Mich.

Buy Your Bulls From Parham's Pedigree Stock Farm
Choice Registered Holstein calves from A. R. O. cows.
RAY B. PARHAM, Bronson, Michigan.

Need Reg. Holsteins??

You can't find better bred bulls than we are offering.
ready for service. You don't need cash. We trust you.
Get our description booklet. LONG BEACH FARMS,
Augusta, (Kalamazoo Co.), Michigan

1200-lb. Bred Young Bull

Ready for service. The sire Mapcrest De Kol Heng-
erveld own brother to a world's champion junior
year old, 123 pounds of butter in a year. Brother, in
blood, to the ex-champion cow, record 132.93 lbs.
butter in a year. Write for pedigree and price.
HILLCREST FARM, F. B. Lay, Mgr.,
Kalamazoo, Mich.

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.

They are selling—get yours soon. Also Duroc Jersey Fall Boars ready for spring service. Full
particulars and price on application. Better yet, visit the farm.

H. W. MUMFORD, BROOKWATER FARM, O. F. FOSTER,
OWNER, MANAGER

Ann Arbor, Mich., R. 7.

WINNWOOD HERD

John H. Winn, Inc., Holton, Mich.

Reference: Old State Bank, Fremont, Mich.

Have for sale 6 Maplecrest Korndyke Hengerveld
Holstein bulls. One 12 months; one 6 months; one 2
months, all out of A. R. O. dams. One male 19 lbs.
butter in 7 days as a Jr. 2 year old. Another 21 lbs. in
7 days as a Jr. 3 year old. Also have five others, same
breed from 2 to 6 months. Must sell at once, need the
room. Our prices will surprise you. John H. Winn,
Holton, Michigan.

Ten Good Young Holstein Cows For Sale

I want to sell as soon as possible, TEN GOOD YOUNG
cows. Most of them are bred to "The Milk & Butter
Champion" a son of a world's record milk cow and his
sire is a son of a world's record butter cow. We will
have more cows than we can milk this Spring. So this
is your chance to get a few good ones. Also have bull
calves and a few bulls ready for service.
L. E. CONNELL, Fayette, Ohio

Holstein and Guernsey Heifer and Bull Calves
Choice selected promising dairy calves, practically pure
Holstein and pure Guernsey, but not registered, also
color, \$20.00 each, all express paid to any point.
MEADOW GLEN, Whitewater, Wis.

Butter Fat Counts

Holstein Bull Calves from a 30 lb. 6.53 *Sire. Dam
are grand daughters of the King of the Pontiacs.
Their dams grand daughters of Sadie Vale Concordia
the first 30 lb. cow. Edwin S. Lewis, Marshall, Mich.

For Sale A Yearling Heifer, pure bred Hol-
stein, Sire, Colantha Johanna Cream-
elle Lad, Dam, Elizabeth Segis Lyons. If you want
something good, write, Geo. D. Clarke, Vassar, Mich.

FOR SALE Reg. Holstein heifers, 8 months old.
Large, finely marked and thrifty. Price \$100,
crated at depot. **C. L. HULETT & SON, Okemos, Mich.**

High Grade Holstein Heifers

Fresh or soon to freshen. Also grade Holstein Bull
Prices reasonable. **THE JENNINGS FARMS,**
V.M. SHOESMITH, General Manager, Bailey, Mich.

2 Holstein Heifers by a 24 lb. bull in calf
to 30 lb. bull. Bull calf
22.92 lb. dam. 30.21 lb. sire. Terms if wanted.
M. L. McLAULIN, Redford, Michigan.

Registered Holstein Friesian Heifers, 3 to 6
mos. old. Some from 30 lb.
sires. Priced to sell. **Fred J. Lange, Sebewaing, Mich.**

Reg. Holstein Friesian Cows and Heifers, some
4 R. O. \$125. Heifers
nine months old, \$100. Bulls \$40 up, with papers.
FRANK STAFFEN, R. 3, Howard City, Mich.

BULL CALF for sale, Pontiac Korndyke Breeding.
Dam gives 60 lbs. milk per day at 2 years. Farmers
Prices. **JOHN A. RINKE, Warren, Mich.**

Registered Holstein Bulls, ready for service, closely
related to the 50 lb. cow.
Priced to sell. **B. B. REAVY, Akron, Mich.**

On Our Easy Payment Plan we will ship you
any registered
Holstein Bull calf in our stables. Price from \$30 up.
Ypsilanti Farms, Ypsilanti, Michigan.

HEREFORDS

10 Bull Calves from 4 to 12
months old.

ALLEN BROS., PAW PAW, MICH.

Wanted Herefords Five registered de-
fenders, open, dark color, give price and description in
first letter. **E. E. COLE, Hudson, 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.**

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—The Truth—

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

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

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

For Sale Jersey Bull Calf

Dropped Nov. 3rd 1916. The sire and dam are
both from R. M. cows. This calf is an extra good
individual, and will be sold cheap. Address:
Newman's Stock Farm, R. 1, Marlette, Mich.

Jersey Bulls for sale, ready for service. Out of
good producing dams. Prices right.
R. B. FOWLER, Hartford, Mich.

JERSEYS FOR SALE Young bulls
ready for service from R. M. ancestors. Meadowland Farm,
Waterman & Waterman, Packard Road, Ann Arbor, Mich.

FOR SALE Yearling Jersey bull from regis-
ter of merit stock. **HILLSDALE**
FARM JERSEYS. Great producers.
C. & O. DEAKE, Ypsilanti, Michigan

Maple Hill Farm Registered Jersey Cattle
Stock under 2 1/2 years all sold.
J. R. Worthington, R. No. 7, Lansing, Michigan

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

Notion Farm Jerseys—One bull ready for service;
heifer calves by Foxhall
Orton. **NOTION FARM, Grass Lake, Mich.**

The Wildwood Farm

Brooder of Line bred Majestystain of Jersey Cattle.
Herd on E. of M. test. Tuberculin tested. Bull calves for
sale. Type & Production is our motto. **Alvin Baiden, Capac, Mich.**

Maple Lane R. of M. Jersey herd offers for sale
tuberculin tested cows, bulls, bull
calves and heifer calves, carrying the best R. of M.
blood of the breed. **IRVIN FOX, Allegan, Mich.**

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

Bidwell Shorthorns

"For Beef and Milk"

This herd at 6 months has bone,
size and quality—our own breeding.
The blood of Scotch bulls, Imp.
Shenstone Albino and Imp. Villing-
er Registered stock always for sale.

BIDWELL STOCK FARM,
Box B, Tecumseh, Michigan.

RICHLAND SHORTHORNS

Sires in service, Village Archer and Albion Crest. Ist.
prize 2 year old and Junior Champion at the Mich.
Stat Fair in 1916. We offer a number of young bulls and
females for sale. Also some Aberdeen-Angus bulls of
serviceable age reasonable prices. Write your wants.
Tawas City, Mich. **C. H. Prescott & Sons, Prescott, Mich.**

Francisco Farm Shorthorns

Big Type Poland Chinas

"They're rugged—They pay the rent."

Nothing but quality at present.

P. P. POPE, R. 3, Mt. Pleasant, Mich.

FOR Sale—Reg. Short Horn Bulls by Maxwalton
Monarch 2nd, a son of Avondale, from 1 to 9 mos.
old. **John Schmidt, Reed City, R. No. 5, Michigan.**

Shorthorns For Sale Young bulls ready for
service, also cows and
heifers. **W. B. McQuillan, Howell, Michigan.**

Shorthorns For Sale. Young bulls \$100. Bred cows,
and heifers \$150 for quick sale.
Write **W. J. BELL, ROSE CITY, MICHIGAN.**

SHORTHORNS Maple Ridge Herd, Estab-
lished 1867. Young bulls
for sale. **J. E. Tanswell, Mason, Michigan.**

Shorthorns—Dairy or beef bred. Breeding stock all
ages for sale at farmers prices. **C. W. Crum,**
Secy. Cent. Mich. Shorthorn Breeders' Assn., McBride, Mich.

Shorthorns 3 Red Bull Calves, 6 months old.
1 Roan Bull, 2 years old, for sale.
W. O. OSIUS, Hillsdale, Mich.

Shorthorn Bull Duke of Oak Crest 16 mos.
old, heavy milkancester \$200.
DAVIDSON & HALL, Tecumseh, Michigan

Shorthorns For Sale A few registered Short-
horn heifers for sale.
Price very reasonable. **A. L. Wilson, Scottville, Mich.**

HOGS.

Durocs and Victorias

Heavy bone, lengthy Spring Boars and Gilts from prize
winners sired by one of the best Sires of the Great De-
fender & other noted strains. **M. T. STORY, Lowell, Mich.**

Berkshires, Boars, serviceable age, best blood
lines. Registered. **ELMHURST**
STOCK FARM, Almont, Mich.

Berkshire Pigs 7 weeks old, registered and
transferred, \$15 each. Best
blood lines. **RIVERVIEW FARM, Vassar, Mich.**

CHESTER WHITES—Gilts bred for July and Aug.
farrow. March pigs ready to ship. Large type.
F. W. ALEXANDER, Vassar, Michigan.

Duroc Jerseys bred gilts for sale
priced to sell.
Carey U. Edmonds, Hastings, Mich.

40 Duroc Sows and Gilts will be
bred to the two
best young Duroc Boars in Mich. A postal will
bring description, breeding and price. Last fall boar
pigs \$25 to \$40. **Newton Barnhart, St. Johns, Mich.**

Duroc Jerseys. Breeding Boars and Sept. Gilts
J. H. Banghart, East Lansing, Mich.

Durocs For Sale

Big heavy boned fellows. Spring Pigs ready to ship,
and a good lot of Fall Boar and Gilt. **A. BRAY**
ESTATE, Okemos, (Ingham Co.), Mich.

Duroc Sows and gilts bred to Eureka Cherry King
and Crimson Critic son of Critic Model 1916
champion Iowa Fair. **W. C. Taylor, Milan, Mich.**

DUROC Jersey fall Boars, ready for spring service
also Gilts bred for Aug. and Sept. farrow. Spring
pigs, pairs not akin. All stock shipped on approval.
R. J. DROTT, R. 1, Monroe, Michigan

PINEHURST DUROCS. Choice fall boars. One
great yearling boar. Choice Yellow Dent Seed Corn
for sale. **Orlo L. Dobson, Quincy, Michigan.**

DUROC Sows bred for Aug. and Sept. farrow
also spring pigs either sex. Write for
description and prices. **E. D. Heydenberk, Wayland, Mich.**

Duroc Spring Pigs sired by Fancy
Orion King,
the \$125 boar, for sale at \$50 at weaning age.
Reg. and Del. **J. R. HICKS, St. Johns, Michigan.**

Raise Chester Whites
Like This
the original big producers



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 rep-
resented 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

O. I. O's, have some last fall gilts bred for Sept. far-
row, and a fine lot of this spring pigs either sex,
not akin, Farm 1/2 mile west of Depot.
Otto B. Schulze, Nashville, Mich.

1/2 Ton O. I. C's & Chester Whites 1/2 Ton
10 Oct. and Nov. boars sired by our undefeated Grand
Champion School Master. The boar that has size and
quality combined. All sold any age. Write and get our
Catalogue free and describes our champions. We do
not say our hogs are the best but we win the cham-
pions to prove it. We have 100 sows bred to our cham-
pion boars for Mar. and Apr. farrow. **HARRY T**
GRANDELL & SON, Cass City, Mich.

CHOICE BRED GILTS Bred
to Big
O. I. C's Prince 50002, sired by Wildwood
Prince 1110 lb. 3 yr. Grand Champion
at Iowa, sold for \$500. Ship O. I. C.
—J. Carl Jewett, Mason, Mich.

O. I. O. Boars and Gilts all sold. I am booking orders
for March and April pigs either sex, single, or in
pairs not akin. **A. J. BARKER, Belmont, Mich. R. R.**

O. I. C. Thorough bred O. I. C. Swine all
sold out except fall pigs.
O. D. Somerville, Grass Lake, Mich. R. D. 4.

O. I. C'S. All sold. Booking orders for the
best of our winter and spring pigs.
O. J. THOMPSON, Rockford, Michigan

O. I. C's. Buy the best and breed them better.
Fall Gilts and Boars. **CLOVER**
LEAF STOCK FARM, R. 1, Monroe, Mich.

O. I. C. bred sows and gilts all sold. A few long
bodied heavy boned fall boars to offer.
G. P. ANDREWS, Dansville, Michigan

O. I. C. SWINE. Nothing to offer
at present.
H. W. MANN, Dansville, Michigan.

"War is"
So is starvation, every one should do their bit. You
can raise more pork on less feed if you breed Butler's
big type Poland Chinas. We have some dandy fall pigs
at \$30 each for quick sale. **J. C. BUTLER, Port-
land, Michigan, Bell Phone**

Large Type P. C. Gilts bred
for March
and April farrow all sold. A few good ones to be bred
for June farrow. Also some good fall pigs either sex.
W. E. LIVINGSTON, FARM, MICH.

S. P. C. yearly Gilts for August farrow. A few long
L. bodied heavy boned boars ready for service. 2 nice
fall boars by Smooth Jumbo H. O. Swartz, Schoolcraft, Mich.

LARGE type P. C. Some very choice summer gilts
bred to farrow in August. Will sell 1 of my yearling
herd boars. **W. J. Hagelshaw, Augusta, Mich.**

Large Stiled Poland China, fall and spring pigs.
at farmers prices. **B. P. Rock eggs**
\$1.50 per 15. Robert Neve, Pierson, Mich.

POLAND Chinas bred gilts all sold, still have some
choice fall pigs of large and medium type, at farm-
ers prices. **F. D. LONG, R. 8, Grand Rapids, Mich.**

Big Type Poland Chinas Sept. farrow, either sex, sired
by Jumbo Wood, 800 lb.
hog. **A. A. WOOD & SON, Saline, Michigan.**

Hampshire Swine. Nothing for sale but fall boars and
gilts. Write for prices.
FLOYD MYERS, R. No. 9, Decatur, Ind.

Big Type Poland China fall boars. Am booking orders
for spring pigs, satisfaction
guaranteed. **G. W. Holton, R. 11, Kalamazoo, Mich.**

Spotted Poland Chinas Big boned spring pigs not re-
lated. Bred sows and gilts for
Aug. farrow. **L. O. CLAPP, R. 1, Adrian, Mich.**

HAMPSHIRE SWINE My herd con-
sists of many of the most noted champions of the
breed. My herd boar, Clayton Lad, 1823 is a brother of
Look Out Lad, who was grand Champion at the National
Swine Show. I am booking orders for spring pigs, to
be shipped about May 1st. Write me for prices.
George E. Starr, Grass Lake, Mich.

HORSES

Percheron Stallions

25 Must Be Sold

Also 2 Imported
Clydesdale Stal-
lions. Spring Sale
Prices are now on

Palmer Bros.,

P. O. Belding, Ionia Co., Belding, Mich.

REGISTERED PERCHERON
Mares and Stallions priced to sell. Inspection invited.
L. C. HUNT, EATON RAPIDS, MICH.

SHETLAND PONIES
Herd established 1891. 20 Head
to select from. Write Dept. E
for catalog.

The Shadyside Farms, North Benton, O.

Percherons, Holsteins, Angus, Shropshires, Durocs
DORR D. BUELL, Elmira, Michigan.

Registered Percheron 1 stallion
coming 4 years
1 stallion coming 1 year. Mares and Fillies. Priced to
sell. **Wm. J. Blake, Dutton, Mich.**

FOR Sale Chestnut Hamiltonian Stallion, broke to
drive. S. C. White Leghorn eggs. 15 eggs \$1.00, 100 at
\$1.50. June \$4.00. Chase Stock Farm, R. 1, Marlette, Mich.

PERCHERON Stallions, one coming five, one com-
ing two, one coming one. Duroc sows.
E. J. Aldrich, R. 1, Tekonsha, Mich., Bell Phone

SHEEP

Joint Sheep Sale

BOYS' AND GIRLS' HOME GARDEN CLUBS.

(Continued from page 662).
 visor a chance to emphasize little technical points that might otherwise be overlooked. Here he can point out the advantage in canning the young beets and carrots that are thinned out of the row. Here he can actually show each step in the whole program of gardening.

While the canning is not a required part of the program of all garden clubs it has been used as a side line by the majority of clubs in the past and it can be safely said that this year canning as a sideline for garden club members will be more popular than ever before. Instructions for canning of vegetables by the cold-pack canning method, complete recipes, suggestions for utilizing the waste and surplus of the garden are given to clubs. Canning demonstrations are given and here again the families and neighborhoods are reached for mothers and friends that have heretofore been able to can vegetables only with the aid of "canning compounds" are taught the simple, safe and sane method of "cold-pack" canning. By utilizing this method of canning it is possible to prevent the vast waste that has been going on year after year in the majority of gardens.

A very definite and essential part of the work of the garden club members is the report that all garden club members are required to keep. This is a simple but complete record of all the operations that go into making the garden, the time used, the expense for labor, seeds and incidentals, as well as the income for fresh or canned vegetables. This report shows the boy the business possibilities of such a project and at the end of the season serves a partial basis for determining who did the best piece of work in the garden club.

Each club also holds a local fair at which time the members make an exhibit of fresh and canned vegetables, together with their reports. On the basis of the inspections made by the supervisor, the quantity and quality of the vegetables, fresh and canned, together with the profit, as shown by the report, the work of the members are graded and the winners are decided.

It is impossible to approximate the results that will come from this movement this year. Some estimate can be made, however, for the extent of this movement when it is learned that in the upper peninsula of the state, in the mining regions, many mining companies are taking their men from the mines and actually clearing up for the purpose of gardening and potato raising, tracts of land varying in size from five to forty acres. These will be "broken," fitted and turned over to the members of the school home garden and potato clubs.

If the results of one city in Michigan last year can be taken as a reliable guide, the garden and canning clubs of the state of Michigan will play no small part in the solving of the present vexatious food shortage problem.

Two hundred and sixty-six boys and girls actually did all the work required on their home gardens and made complete reports of their work. These reports showed the 266 children had produced a total of \$1,653.38 of food products; \$1,152.09 worth of these products went directly into the homes of these boys and girls and this material helped out on the family budget. These gardens were for the most part small back yard plots, but \$269.67 worth of vegetables were sold and \$231.62 canned for winter use. If during normal times and with an ordinary effort such results can be obtained, it is safe to predict that the garden and canning clubs will play a substantial part, both in the educational and economic program of the state for 1917.

When The Planting Is Done What Then

The Tractor that will pay best on your farm is the one that you can put to work *any day on any job* just as you would a team. Heavy PLOWING tractors are all right for big land owners, but for an average farm you need a tractor that will do *all* kinds of farm work at lowest cost. You don't want a Tractor so heavy that its clumsiness and cost of fuel make its use impractical on most jobs. You want a Tractor that will not only plow from 4 to 12 acres a day, one that will harrow, disc and sow from 16 to 20 acres a day, but also one that will CULTIVATE, mow, harvest, cut corn, haul, do belt work—in short, a Tractor that will do **ALL YOUR FARM WORK WITHOUT HORSES.**

MOLINE 2 WHEEL UNIVERSAL TRACTOR

is the ideal Tractor for the average size farm, for these three reasons:
 1st. It hitches to the implement, so you can ride the tool and watch the work closely just as you would if you were driving a team.

2nd. It handles easily, quickly, turns short and backs with tool attached.

3rd. It is light in weight, only 2800 lbs, making its operating cost inexpensive and preventing packing soil.

Being a strictly two-wheel tractor **ALL ITS WEIGHT IS TRACTION WEIGHT.** There is no dead weight to haul. Its pulling power is as much as Tractors weighing 1,500 to 2,000 lbs more. Both the wheels are drive wheels. The implement to which you hitch it forms the rear wheels. **YOU RIDE the TOOL—NOT the TRACTOR.**

Don't choose any Tractor until you see the MOLINE-UNIVERSAL work and see how well it is adapted for all round use on your farm. Write for Catalog Folder and read how it will solve your power and hired help problems.

MOLINE PLOW COMPANY

Dept. 42

Moline, Illinois

Moline Universal Tractor attached to a Moline Two-Row Cultivator



The Moline Line

includes

Corn Planters, Cotton Planters, Cultivators, Corn Binders, Grain Binders, Grain Drills, Harrows, Hay Loaders, Hay Rakes, Lime Spreaders, Mowers, Manure Spreaders, Plows (Chilled and Steel), Reapers, Scales, Seeders, Stalk Cutters, Farm Trucks, Vehicles, Wagons, also Stephens Six Automobiles.

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Full weight, highest quality; formed in standard patterns.

Fireproof, weatherproof, durable—and reasonable in cost.

APOLLO-KEYSTONE Copper Steel Galvanized Sheets

give unexcelled service and satisfaction. These sheets insure greatest resistance to rust and corrosion, and are absolutely unequalled for Roofing, Siding, Culverts, Tanks, Flumes, Cisterns, and all forms of exposed sheet metal work. Look for the Keystone added below regular Apollo trade-mark—it indicates that Copper Steel is used. Sold by weight by leading dealers. Accept no substitute. Every farmer and owner of buildings should have our "Better Buildings" booklet containing valuable roofing information. Sent free upon request. **AMERICAN SHEET AND TIN PLATE COMPANY, General Offices: Frick Building, Pittsburgh, Pa.**

FREE My Big Circular on Ford Gas Engine Power

Write for it today. You farmer Ford owners, let me show you how for less than 1-cent cost of 8 h. p. portable gas engine, you can get power reliable as your Ford engine, portable as your Ford car. Guaranteed. **Schluter AUTO SELF-STARTING** Now sold everywhere. Easily attached. No change whatever in engine. With improved crank socket and detachable crank handle, just hook it on and start to work. Only \$22.50. Order from this ad on 6-day money back guarantee, or write for big FREE circular. **E. F. ELMORE CO.** 231 Main St. PARKERSBURG, IOWA. "BIGGEST LITTLE THING ON THE FARM"

Bee Keepers Supplies

Bee Hives, Sections, Comb Foundation, Smokers, etc. Everything for the bees including Beginners Outfits. Send for catalog. 34c per pound cash for average bees-wax delivered here. General agents for Root's bee supplies in Michigan.

BERRY SUPPLIES

Send for prices on berry baskets and 16 qt. crates. Special 200 A grade berry baskets postpaid for \$1.35 or 200 B grade for \$1.25 within 160 miles of Lansing. No waxlined paper baskets this season. **M.H. Hunt & Son, Box 525, Lansing, Mich.**

SELF-OILING WINDMILL

With INCLOSED MOTOR Keeping OUT DUST and RAIN - Keeping IN OIL

SPLASH OILING SYSTEM

OIL SUPPLY REPLENISHED ONLY ONCE A YEAR

DOUBLE GEARS - Each Carrying Half the Load

Every feature desirable in a windmill in the

AUTO-OILED AERMOTOR

Gasoline Engines - Pumps - Tanks

Water Supply Goods - Steel Frame Saws

WRITE AERMOTOR CO. 2500 12TH ST., CHICAGO

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.

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Free catalog and Poultry Feed price list upon request. **S. J. Griggs & Co. Dept. No. 21, Toledo, Ohio**

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