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The Christmas Spirit

A SPIRIT is abroad in the land. Because He is spirit, he is invisible; yet His influence is very potent. His foot steps pass over the hearts of men and women and children, and the prints they leave are those of love and peace, and good will to men. Few fail to recognize and greet Him in some degree—their gentle, royal, self-respecting Guest.

The little children love Him, and welcome His advent with joy. They are so close to the great Heart of God, the little ones! They take the gifts of the Spirit with outstretched hand and happy grateful hearts. It is their time to take, and no one receives more naturally and gracefully than a little child. The words, "It is more blessed to give than to receive," pass over their heads now; but the time will come when they, acting as the stewards of the Spirit of Christmas, will return to His store all they have been given.

The Spirit's visitation lasts not for the day alone. His benign shadow precedes His coming by days, and even by weeks in some cases; and for a long time afterward His influence continues to haunt the hearts of men. He is everywhere. He is the arch-enemy of selfishness, the encourager of "selflessness." Only gifts inspired by free and fond affection are good in His sight.

It may seem that He is most often found in the large cities, where the streets teem with the pre-Christmas rush of shoppers. Certainly His effulgence is reflected back from many shining faces on the thoroughfare of trade—reflected with more intensity perhaps than from a single unit—but this is only as a thousand candles grouped give more light than a lonely one. The Spirit hovers with

especial tenderness over some farmhouse or some remote cottage in which His soul is seen and greeted with a true and unhurried welcome. The limp and much-darned stockings of some poor child awaiting the transforming touch of the parents, His stewards, is very lovely to the Spirit; much more lovely than the ostentatious Christmas gifts of some more favored little one, already spoiled and irritable because of too many toys. The incense of self-denial, born of love, is very sweet in the nostrils of the Spirit of Christmas. The harmonious and happy gathering around some simple board is pleasanter to Him than the banquet table where love and mutual appreciation are not.

The true meaning of the Christmas-tide is not comprehended by anyone who spoils the day by gluttony and selfishness, without acknowledging the Christ-Child's Day by thought of others. The Spirit turns sadly away from such as these—they know Him not. He wants a growing consciousness of brotherhood, of the privileges connected with giving, of the blessing of friends and relatives, of the deep meaning that thrills all departments of life. All these things are made known with a new significance to the responsive soul, in the barren December days when the heart turns toward the altar of the home fireside; when the mind is thoughtful, and the soul teachable. In those darkest and shortest days of the year men draw nearer to the Maker of things and men—far closer than in the sensuous days of summer, when all nature seems to conspire to make us forget the true meaning of life and death and sorrow and separation. At Christmas men and women turn with renewed affection to their

(Continued on page 791).

L.W. SNEZ

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DETROIT, DECEMBER 20, 1919

CURRENT COMMENT

Dangers of Class Radicalism

FOR the most part, the difficulties which the country has

faced as a result of recent labor troubles

have been due to the ascendancy of the radical element

in the labor organizations through which

strikes have occurred. Radicalism is

but another name for class selfishness.

It does not take into account the rights

of others who are outside the class

with which the radical thinker is affil-

iated. It was the radical element

among the membership of the miners'

organization which precipitated the

strike of coal miners at the beginning

of the winter season when the coun-

try's fuel needs were urgent, which pre-

vented an earlier settlement of the

controversy and which opposed the set-

tlement which was reached through

the influence of the more conservative

element in the organization.

There is no doubt that the attitude

of this radical element in labor orga-

nizations, which has little or no regard

for the rights of the public so long as

its own point is gained, has cost or-

ganized labor a large measure of the

favorable public opinion which it for-

merly enjoyed, just as selfish class ac-

tion is bound to react in every case.

The public is still fair and will still

stand for and insist upon justice for

the working man, but it will also de-

mand protection from radicalism

which will not make it easily possible

for the radical element of coal miners

to again threaten a tie-up of the coun-

try's industries which would entail a

general condition of unemployment and

suffering among all the people.

What is needed is more sound, un-

selfish thinking by people of all class-

es. Selfish thinking and selfish actions

are certain to bring damaging reac-

tions to the persons or classes indulg-

ing in them. Constructive thought and

action which will benefit the country

and all its people is what is needed,

and will go farther toward advancing

the interests of any and every class

than will class radicalism.

Credit for Export Trade

EXPORT trade is as vital to the

farmer as to the manufacturer. Credit

is the vital asset of export

business. Today it is practically the

whole business. If our export trade

is to be developed and maintained,

some system of credit must be pro-

vided so that the people of other

countries will find it possible to

do business with our farmers and

manufacturers. The United States

emerged from the great war the great-

est single financial and industrial pow-

er in all the world, with the greatest stock of gold ever possessed by any nation since time began, and with agricultural and manufacturing resources unmatched. It only remains for us to avoid destroying by our own acts the prosperity that otherwise surely waits upon us for generations to come.

The inflated values resulting from the war are not here to stay. This is a fact which every business man should recognize in the shaping of his business plans. It is to be hoped that the return of values to normal levels may come orderly and soon so that we may resume foreign business and provide for credit arrangements with other governments. The Edge bill, now before congress, is designed to stimulate export business with European countries. Its passage seems likely within a few weeks. Whether it fully succeeds or not it appears to be a step in the right direction.

The condition of the foreign exchange market is preventing American firms from doing a profitable export business, and it will continue to operate against our export business unless we can provide better credit arrangements with other governments. Our exports of wheat and meat have not been as liberal as would have been the case under more normal credit and exchange conditions. Small grains have dropped in price here on account of severe rates of exchange. Rye would have followed the price of wheat on European markets had the export trade remained unhampered.

Practically all of our farmers and manufacturers could increase their production should the demand require it. Foreign trade is that demand. It provides a profitable market for any surplus of food and manufactured products. Farmer, manufacturer and laborer—none can long survive the loss of export trade and prosper. If we will all keep our heads and not be led off by the idea that legislation and organization can be safely substituted for the operation of natural laws, the gradual leveling of prices will come about without unnecessary industrial and commercial revolution. That goes for the laborer and capitalist as well as the farmer.

Commercial Apple Orchard

NEVER were conditions more favorable for commercial orchard planting than they are today. Good apples are sure to find a ready market at good prices for many years to come. The fruit grower of this state, however, must produce a better quality than in the past, and will probably have to specialize upon a few good varieties to regain his home markets and capture new ones. Success in commercial apple growing depends upon selecting a few varieties of known value and obtaining a large output of quality fruit per acre. Good apples that meet the demands of the best markets will sell readily, but unknown varieties, even though the quality is excellent, will be difficult to move, and will not bring such good prices, while varieties of average merit will prove a drug on the market, and should not be considered for the commercial orchard.

The adaptability of our soil and climate to different varieties as well as the demands of our nearby large city markets should be carefully studied before deciding which varieties should be planted. Some varieties appear to possess excellence, yet they fail to bear profitable crops of fruit, or to find a ready sale years when they do produce good crops. As a general proposition it is well to have four or five varieties which will aid in distributing the work of picking, packing and marketing over a longer season, and also insure a crop during off seasons when some of the other varieties fail to bear a full crop.

Accurate data concerning the yields of different varieties of apples on the different types of soil in the different apple growing regions of the state would prove a valuable guide for the farmer who contemplates the planting of a commercial orchard. A further study of prices and market demands through a series of years would also prove a safe guide to follow in deciding which varieties to plant in the different counties of the state. Another matter which should be given more careful study by our horticultural experts is that of the susceptibility of different varieties to common diseases and injury from extremely cold weather. It costs a small fortune to bring a commercial orchard up to the profitable bearing stage, and one cannot afford to start such an undertaking before making a careful study of the business, both from the producing and marketing ends.

The Nut Industry

WITH the annual meeting of the Northern Nut Growers' Association, in session at Battle Creek this week, with the federal government represented there by a Michigan man, and with a Saginaw grower chosen as the new president, it is appropriate that the business of these enthusiastic members be given consideration by the good folks of our farms. While it can hardly be expected that the planting of nut trees will ever become as general as the growing of some of our major fruits, there are a number of reasons for believing that the production of nuts in Michigan will increase and that the aggregate value of the annual crops in years to come will be considerable. The tremendous increase in the consumption of nuts has advanced prices to very attractive levels; nuts supply a type of vegetative food that is needed in our diet; more desirable varieties are being developed; the soils and climate of our state are peculiarly adapted to a number of prominent varieties; and where the trees fail to produce satisfactory crops the timber developed is of no mean economic value. On waste lands that cannot be profitably devoted to other purposes, along the roadside, in parks and about country homes, the possibilities of this somewhat new line of production are worthy of thoughtful consideration. This is peculiarly true when we take into account with the natural advantages obtaining, the fact that of all the states of the union Michigan is the only one that has on its statute books a law encouraging the planting of nut trees along the roadside.

Save the Stable Manure

IN these days of high-priced plant foods there are reasons enough for making the most from the farm manures. The prospect of good prices for farm crops next year should prompt farmers generally to save and apply manure more carefully than ever before. A few farms are properly equipped for handling the farm manures without waste. Their example has shown how crop yields may be increased without depending too largely upon purchased chemicals. The rank and file of farmers who feed live stock must follow suit if they maintain crop production at a profit. In no department of our farming is there more room for improvement than in the handling and applying of farm manures. Too much emphasis has been put upon feeding live stock rather than making proper use of the manures resulting from our feeding operations. Utilizing farm manures to maintain and increase soil fertility is the real purpose of live stock farming. Its immediate application to the land, at all times when weather conditions permit, saves more of it from loss than

any other method of management. A ton of manure applied to a crop of growing wheat during the winter will furnish the wheat crop with readily available plant food, and contribute as much to the permanent fertility of the soil, as a ton of manure allowed to remain in the barnyard and hauled out and spread after the wheat crop is harvested. This is an additional reason for hauling out manure during the winter months. Another advantage is the fact that there is no delay in the spring's work after conditions permit getting onto the ground to begin the plowing.

If less than a load of manure is made each day it will pay to have a shelter to prevent it from freezing. Many farmers find it an advantage to allow their cattle to run loose under shelter instead of tying them in stanchions. On farms where this is done the manure is cleaned out and spread on the land when the weather is favorable and not a load is left about the barns to haul out after the field work begins in the spring. Such farms have no heaps of manure for the stock to wade through during the spring, or to rot and waste all summer before time can be found to move them to the land. Manure never was so valuable as it is today and never contains so much plant food as it does the day it is made.

Federal Farm Loans

EXPERIENCE with the operation of the federal farm loan law seems to indicate that, like most laws establishing new institutions or functions, it needs to be changed to meet the conditions encountered in its execution. One of the changes in the law which the officers of the federal land banks deem essential is the abolition of the provision for joint stock land banks. The profits derived from the operation of these banks are so large that it is feared that brokerage concerns that have exploited farmers for years will reorganize as joint stock land banks to continue their profitable operation. Another change which some of these men think desirable is an increase in the limit of individual loans to \$25,000 in order to properly finance the most profitable sized units in the corn belt states.

At a recent conference with President J. R. Howard, of the American Federation of Farm Bureaus, it was proposed to take an early referendum of the membership of this organization on these points in order to bring to bear the force of this organization for the passage of the Smoot bill, now pending in congress to provide for these changes in the federal farm loan law.

This is an example of the beneficial activities which are open to this great farmers' organization for effective work in behalf of American agriculture. We predict a large field of usefulness for this great organization along similar lines.

The War's Cost

THE first comprehensive report on the total cost of the war, which includes both the direct and the indirect costs, has just been made by the Carnegie Endowment for International Peace. Taking each of the belligerent countries separately and summarizing the totals this report gives the direct cost as \$186,000,000,000 and then states that the indirect costs have amounted to nearly as much more. The loss in human lives is placed at \$33,551,276,280, property losses at \$36,760,000,000, and loss of production at \$45,000,000,000. Whatever may be said in favor of wars one thing is certain, that under modern conditions they are conducted at great cost of both property and lives.



Crop Rotation--Its Practice

The second article of a service on Soil Management--By W. W. Weir

It is quite evident that crop rotation is possible only when two or more crops are grown. A common idea prevails that if a farmer wishes to practice rotation of crops he must divide his farm into as many fields as there are years in the rotation: For example, if a four-year rotation is planned, he must divide his whole farm into four fields, and into three fields if a three-year rotation is desired. In practice, however, things work out quite differently. In some cases it is easy to establish a fixed rotation for the whole farm. Take an eighty-five-

acre farm, for example; if it is comparatively level and has uniform soil, it could very easily be laid out into four twenty-acre fields and cropped as follows:

Field One.—First year corn; second year oats; third year clover; fourth year pasture.

Field Two.—First year oats; second year clover; third year pasture; fourth year corn.

Field Three.—First year clover; second year pasture; third year corn; fourth year oats.

Field Four.—First year pasture; second year corn; third year oats; fourth year clover.

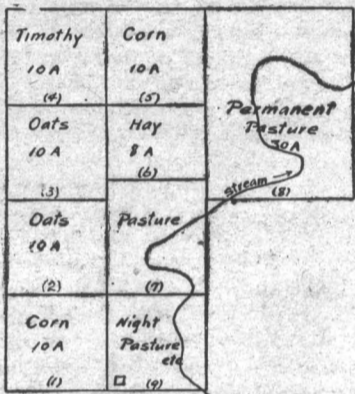


Fig. 1.—Conditions on a 110-acre Farm Before Rotation was Considered.

acre farm, for example; if it is comparatively level and has uniform soil, it could very easily be laid out into four twenty-acre fields and cropped as follows:

Field One.—First year corn; second year oats; third year clover; fourth year pasture.

Field Two.—First year oats; second year clover; third year pasture; fourth year corn.

Field Three.—First year clover; second year pasture; third year corn; fourth year oats.

Field Four.—First year pasture; second year corn; third year oats; fourth year clover.

On a seventy-acre farm a fixed three-year rotation can be established by dividing it into three twenty-two-acre fields.

This is the application of crop rotation in its simplest form. There are comparatively few farms, however, on which such simple arrangements of fields can be made. In most cases two or more different rotations are necessary on each farm, because of certain soil and cropping conditions. It is possible to practice a three-year, a four-year, a five-year and a six-year rotation all on a one hundred and sixty acre farm in order to best meet the soil and crop problems. The farm need not be divided into eighteen fields either, but rather into only eight fields of about twenty acres each.

Factors Which Determine Rotation.

In determining the proper rotations on any particular farm the following factors should be taken into consideration:

- The amount of feed required—hay, corn and grain.
- The kind and acreage of cash crops to be grown.
- The topography of the farm, whether level or hilly.
- Soil conditions.

In dairying and stock farming, the feeds required determine the kinds and amounts of crops to be grown. If an equal acreage of corn, grain and hay are required in addition to permanent

pasture the rotation problem may be easily solved. If pasture in rotation must be provided, or more acres of corn than grain, the rotation plans become more difficult to work out. In addition to growing crops for feed, cash crops are commonly grown, such as beans, barley, sugar beets, etc. Such crops usually complicate the rotation systems. Alfalfa, too, causes irregularities in cropping plans.

It is much easier to arrange fields and make definite cropping plans on farms that are level or nearly so, than on hilly farms. Many farms have hills which should be cropped differently than the more level fields in order to check soil washing.

Soil conditions are deciding factors in many rotations. Peat soil, for example, should be cropped quite differently than sand. A depleted field should not be included in the rotation plans intended for highly productive fields. Furthermore, some special crops should not be grown on certain fields because of adverse soil conditions.

Planning the Rotations.

On many farms cropping systems can be planned and carried out with little or no difficulty. On old or neg-

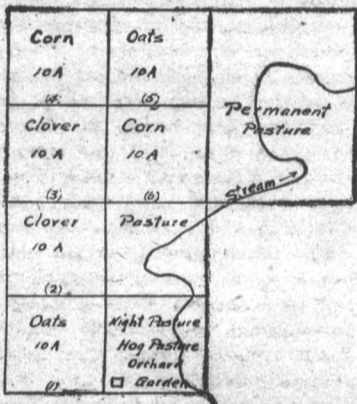
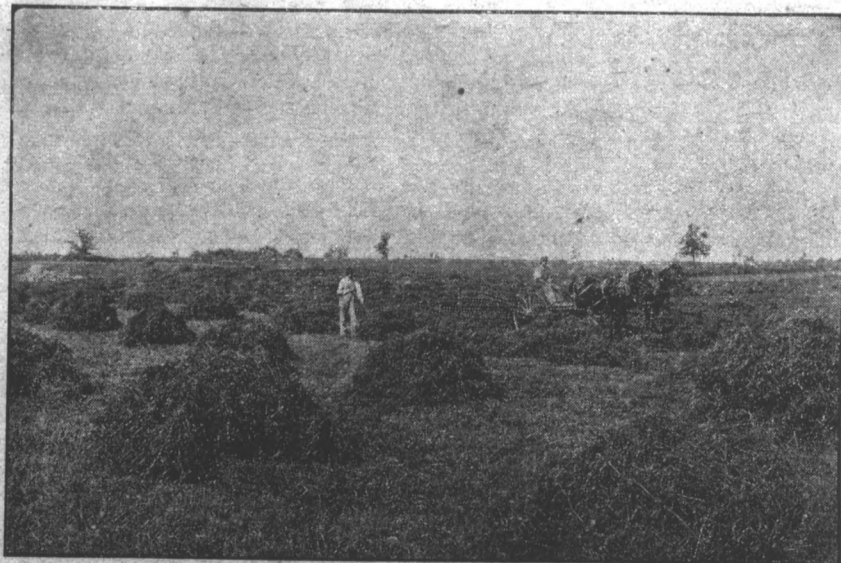


Fig. 2.—Rotation Plans Set into Motion. A Three-year Rotation is the Goal, and Less Number of Fields.

lected farms it usually becomes necessary to reorganize the whole farm. In doing so care should be taken not to disturb the farm business, unless it becomes necessary to make radical changes. In reorganizing a farm, two or more years are usually required before the proposed cropping plans can be fully established, because the existing conditions on the farm as regards drainage, hay fields, pasture, etc., should be given careful consideration.



Larger Yields Followed a Judiciously Planned Rotation.

To avoid any mistakes in planning rotations, for many mistakes have been made, a few suggestions are here offered. To simplify matters, let us consider first a stock farm already stocked. We know how much stock that particular farm can carry, and knowing this, we proceed as follows:

1. First determine the amount of

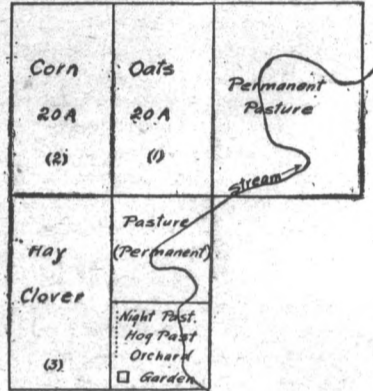


Fig. 3.—The Rotation Plans Finally Established. Farm Management is Simplified.

hay, grain and corn necessary to feed the stock. (Bear in mind liberal feeding.)

2. Ascertain the average yields on the farm.
3. Determine the acreage necessary to produce the feed required.
4. Make a map of the farm just as it is with fields showing acres in each. (A rough sketch will do. Draw to some convenient scale).
5. Number the fields in some convenient way.
6. Consider the rotations best suited to soil conditions in each field or in different portions of the farm.
7. Plan to grow each year the required amounts of the different crops.
8. Rearrange the fields if necessary to simplify the cropping plans and to aid in field management.

The Application.

A dairyman wishes to establish a three-year rotation on his farm of one hundred and ten acres—all silt loam soil. Corn, oats and clover are the crops to be grown. To meet the feeding requirements, about 125 tons of silage, 500 bushels of corn, thirty tons of clover, and 800 to 1000 bushels of oats are required.

The average yields are as follows: Corn, eleven to twelve tons of silage or fifty to sixty bushels of corn; oats, about forty bushels; and clover about

one and three-quarter tons per acre. At least twenty acres of each crop must be grown. Fifty-eight acres are under cultivation—as is shown in Fig. 1. Note the arrangement of the fields before rotation plans are considered.

Fig. 2 shows the arrangement of the fields and crops the second year. Field No. 6 is made two acres larger. Note that old timothy sods are plowed up. The cropping plans for the third year and thereafter are shown in Fig. 3—a three-year rotation being fully established, and the farm is divided into three cropping fields in addition to the hog and night pastures.

The soil problems to meet on this farm are: (a) a low supply of available phosphorus and (b) a comparatively low supply of nitrogen and soil organic matter.

The rotation for each field and the soil treatments are indicated in the following rotation chart:

The acid phosphate should be used at the start to supply available phosphorus. The rock phosphate is to be mixed with the manure by spreading it over the loads when they are hauled to the field. The rock phosphate is to be used once in about six or seven years. If results show that acid phosphate is best to use, this fertilizer may be applied with the manure at the rate of about forty or fifty pounds to the ton, spread over the loads of manure.

Alfalfa on This Farm.

An eighty-acre farm was purchased for a dairy farm. Seventy-four acres were available for raising the main crops—hay, small grain and corn. The

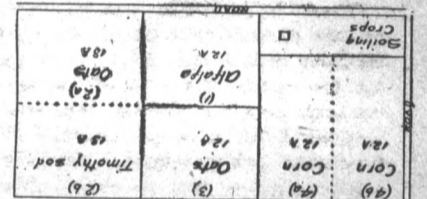


Fig. 4.—Cropping System for an Eighty-acre Farm is Divided into Four Fields, or Six Units of Twelve and Thirteen Acres Each.

average yields were considered sufficient to support, at the start, at least fifteen cows, a few young stock, four horses and some pigs.

Silage and soiling crops were planned for summer feeding, in addition to grain and whatever pasturage would become available.

Twelve acres of alfalfa, twelve to thirteen acres of clover, twenty-four to twenty-five acres of corn and twenty-four to twenty-five acres of grain were the crops to be grown.

Figure 4 shows the conditions before rotation systems were planned, as regards permanent fences, seeding, etc.

The farm consists of slightly rolling, silt loam soil. Fields Nos. 1 and 3 are best for alfalfa.

Field 2 (b) is in a low state of fertility.

The alfalfa necessarily causes irregularities in the rotation because only two fields have soil conditions favorable to this crop. It becomes necessary, therefore, to divide the farm into six cropping units of twelve and thirteen acres each.

The following rotation chart shows the cropping plans and fertilizer treatments for this farm:

Field 4 (a), being a good field, is (Continued on page 798).



Quincy--Banner Stock Shipping Point

How the Cooperative Spirit Has Spread in Branch County is Told by J. A. Kaiser

WHEN the cooperative shipping movement swept over southern Michigan in a resistless wave, some years ago, people were not wanting who belittled the plan and predicted its speedy failure. First and foremost among these opponents of the movement, were the stock buyers who for years, had made a living and even amassed comfortable fortunes in their chosen field. Second to these go-betweens who took from the farmer, a share of his just profits, were the business men of the towns, who thought they saw in the cooperative shipping association the first nail in the coffin of their particular line of trade. Still another element of opposition came from the farmers themselves—from those farmers who look with suspicion on every new advance and who are forever afraid they are going to be cheated.

But in spite of these opposing forces the cooperative idea grew and spread like wild-fire. There was no power strong enough to stop its progress, and the history of the growth of the movement is one of the most striking in the annals of rural advancement in this country. Several years have elapsed since most of these organizations were formed, and it is now possible to ascertain to what extent the idea has really triumphed. Of course, there have been failures. What movement does not, in its initial stages, record occasional failures? But generally, the associations have justified their existence. For the most part, they are still doing business, and the farmers of the locality would not change to the old system for anything.

Perhaps the most striking illustration of a successful shipping association to be found in southern Michigan is that now operating at Quincy, in Branch county.

The Quincy Cooperative Shipping Association was organized in 1916, along practically the same lines employed in the formation of all such associations. The method and make-up of these organizations are too familiar to readers of this journal and to Michigan agriculturists everywhere, to need repeating here. One point, however, in connection with the early stages of the Quincy association, is worthy of

mention as having something to do with the rapid growth in popularity. A live stock quarantine made prices for many weeks, unstable and altogether uncertain. Live stock buyers either could not or would not pay up, and the discrepancy between what the buyers were paying and what the association received, was so great that local farmers flocked by the hundreds to the support of the association. This gave the organization the boom it needed in its initial stages.

Since the first carload was shipped there has been a continuous growth in the amount of business done by the association. Today, Quincy is the banner shipping point for home-grown live stock, in the United States. This certainly is a record worth noting. This certainly is a victory for the cooperative idea, well worth publishing widely. Last year the Quincy association did a business in live stock alone amounting to a half million dollars. On shipping days there is a line of wagons and trucks in town that would have made the stock buyer of the old days gasp for breath. After these years the Quincy business man beholds on shipping day a crowd of farmers in his store such as he never dreamed of, in the old days. Instead of taking trade away from the town, the cooperative association has enlivened business and increased it. From a half dozen townships surrounding the village the farm-

ers come with their home-raised stock.

In setting forth the wonderful success of the Quincy organization, the names of two men should be mentioned. Since its formation, the association has been fortunate in the men elected to conduct its affairs. S. W. Boynton has been throughout, the efficient and wide-awake manager; and F. L. Holmes has performed with fidelity and ability the work of secretary-treasurer. Of course, these men are backed up by the five hundred members of the association, but as is well known, it is half the battle in launching a new enterprise, if the right men are selected to conduct the business.

And now, after thus very briefly stating the success of the Quincy cooperative enterprise, we arrive at its effect on other lines of endeavor. Mainly, the association has concerned itself with the shipping of live stock. So satisfactory to the farmers has this proved, that a new association is now being formed. This new organization will ship grains, hay, straw, and in fact, all farm products. The association will build an elevator and a warehouse. In addition to shipping from the farms, all kinds of farm produce, the association will ship in numerous things needed by the farmers, such as feed of various kinds, fertilizer, seeds, coal, and many other items. A manager will be hired to attend to the business.

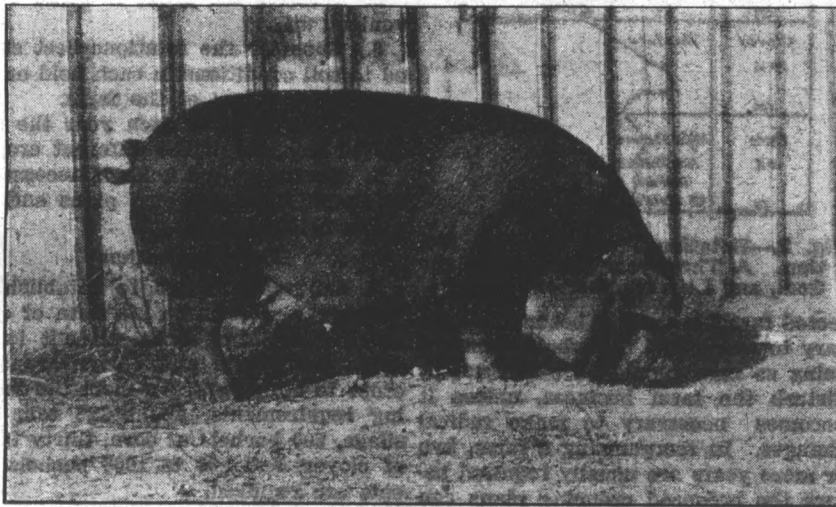
In the forming of this new enter-

prise, the leaders are meeting with no opposition whatever. The success of the live stock business has been too marked to permit of doubt or argument. Many farmers not members of the old association enjoy the benefits afforded by its shipping facilities, and the sentiment in favor of cooperation is well nigh universal throughout the territory under consideration. The knockers of 1916 have turned boosters in 1919, and the new association will be formed without a hitch.

The Quincy Cooperative Shipping Association furnishes a shining example of the full fruition of the cooperative idea along this particular line. Farmers as a class have been slow to learn the value of cooperation. But they have learned it at last, through the tangible results of these shipping organizations. Never again can the country revert to the old conditions. Slowly and laboriously have the farmers found the way upward in lines of advancement. Comparatively speaking only a small minority of our farmers are members of the Grange or of similar organizations. Comparatively few of our farmers have taken an active part in the movement conducted by agricultural institutions and experiment stations, for better seeds and more scientific methods of growing them. Only a small number of farmers take an active part in influencing legislation for the benefit of the rural community.

But with the cooperative movement the case is different. The cooperative shipping associations have been operative at the very door of the farmer, and he has reaped its benefits. No movement in the history of farming in this country has done more to bring to the grower his just share of the profits.

In the fight for better conditions one aim is to cut out the middlemen—to bring producer and consumer closer together. The cooperative movement is doing this. The buyer of live stock has been for the most part, eliminated. In the struggle to cut out the non-producer, cooperation is an essential factor. The cooperative associations are a big step in advance in the fight to give both producer and consumer a square deal.



Cooperative Shipping Associations Encourage Production of Better Stock.

“How You Gonna Keep 'Em Down on the Farm?”

By C. A. Spaulding

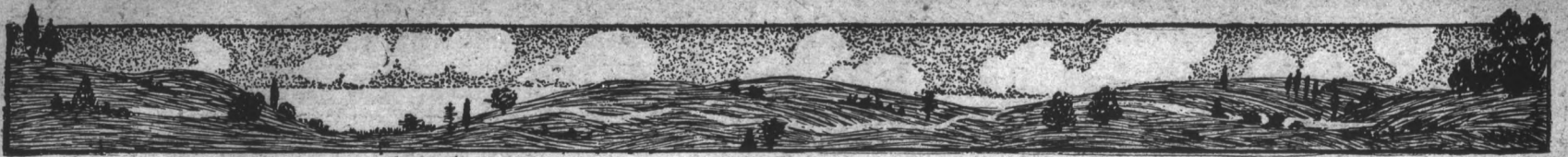
THE question of keeping boys and girls on the farm is not only being asked by the popular song writer on the various graphophone records, but is also a pertinent one to many farmers and rural sociologists of the day. It has been answered in many ways by as many authorities on rural life. The fact remains that it is still a question. Some farmers are prone to assert that the answer lies in keeping the boys away from the city schools that would attract them from their rural environment to the manifold opportunities of the city. This, to my mind, is not one of the answers. As a farm boy born and bred, educated in a small town high school, and the State Agricultural College, and after a considerable experience with farm boys, I should like to try to answer the question.

First of all, let us realize that we may not keep all the farm boys on the farm, nor do we want to do so. If we should, the cities would die a death of stagnation in four generations, if we can believe the result of scientific investigation. A great many farm boys are so constituted that they will best serve themselves, and humanity, by fitting themselves for professional careers or business life. Our goal, it seems to me, is to seek the boys who will eventually add the most to agriculture and rural life, and when I say boy, the term is inclusive and refers to the girl as well. The question arises as to how we are going to make this critical selection and pick out the boys and the girls who are naturally adapted to the rural atmosphere. In actual practice, we can never hope to do this. At the best, we can only offer all the boys and girls the best in country life, and let them contrast it with the best in city life, and make their own selection. In so doing, we must keep in mind the fact that the ones who stay because they want to stay will always make a greater contribution than those who are forced to do so. This amounts then, to practically a selling game. We must “sell” the boy and the girl their career or life work. We must accept at the outset the handicap which comes by way of contrasting the city opportunities which one sees on a visit to the city, or reads about, with the homely everyday routine of farm

life, which is a familiar fact to every farm boy or girl. We may, however, present the best side of our case so that a fair choice may eventually be made. We may even improve our stock as years go by, if we appreciate the fact that we are really dealing in a problem of salesmanship applied to the life work of boys and girls.

First of all, we must realize ways and means are changing rapidly in the country. From being a “job” in which failures in most other lines might make a living, farming has jumped to a position of prominence in the front rank as a scientific business.

The possibilities of farming as such a business must be brought to the attention of our youth through school work, school libraries, and other means. It may be that the home farm (Continued on following page).



contrasts rather strongly with the examples pictured. So does eighty per cent of the life in our cities contrast with the other twenty per cent. That is the appeal of America. Ambition, work, perseverance may overcome early disadvantages and odds, and place their possessor at the top. Farm boys and girls must see in rural life an opportunity for just as full a living socially, educationally, and spiritually, as the city affords, or it will not appeal to the best of them.

Financially, farming has started to come into its own. The science of agriculture is now being taught in our high schools and agricultural colleges. The federal department expends annually hundreds of thousands of dollars in order that farmers may learn more profitably to perform their work. This side needs to be emphasized, but it is not the crux of the situation. Much depends, however, on the remuneration which comes from farming.

Perhaps the best way to begin selling farm life as a career to a boy or girl is to make it as attractive as possible. The boy or girl on a farm develops rapidly and comes to share at an early age in the partnership of the farm labor. Wise is the father or mother who shares also, if only in a small way, the profits and the plans of the enterprise. The boy who early learns the value of a dollar by raising a colt or a pig, some poultry, or some sheep, gains much besides the actual profit. He has an interest in the place and looks forward to a greater interest each year. That mother is wise who at an early date, teaches her daughter the science of cooking, sewing, canning and other household arts, instead of detailing only the drudgery of dishwashing, ironing, etc. Perhaps the key-

word at this age should be "Partnership." The plan of the Department of Agriculture is sound in promoting agricultural and home-making clubs for boys and girls between the ages of ten and eighteen years.

The farm home should profit as largely by the results of scientific invention and added profit as the farm itself. In the past fifty years, self-binders, manure spreaders, riding plows, tractors, hay loaders, side delivery rakes, hay slings, double harpoon forks, letter carriers, milking machines, potato planters and diggers, corn planters, riding cultivators, etc., have done much to increase the efficiency of man labor and lighten it to a certain extent. The electric, or acetylene light, the power churn and washing machine, running water, electric irons and other electrical conveniences are now available in the farm house. The home that affords such conveniences to mother does not suffer so much by contrast with the home of the city cousin. These things are not, of course, possible financially in a large number of homes. They are possible, however, in a much larger percentage of farm homes than they are to be found at the present time.

What of the question of social advantage and recreation? The city has awakened to the need of a systematic program of recreation sooner than has the country. The city's need is not greater but its ways of meeting this need are more limited. To the boy in the open country, no recreation is more inviting perhaps than the long looked for day's fishing after the corn is in, or the occasional day of hunting or camping with father and some other boys. If father could but forget the years that separate them and see

things through the eyes of their boy, they could help to avoid many of the tragedies of youth.

Youth is gregarious. Boys and girls like to mingle with their kind. Here again the boys' and girls' clubs can fill a much needed place in rural life. If father and mother can keep interested in the interest of their boys and girls, can encourage them and be one of them in their social meetings, in their recreations, they have bound their boy and girl by just one more tie. Perhaps we should say that the watchword here should be "sympathy" in the broadest sense of the word. Sympathy with the boy's ambitions, his reading, his recreation, and his work. The community that is interested in the social life, the recreational life, as well as the economic and moral life of its young people, need not be alarmed that it will lose its boys and girls.

The boy that gets the right attitude toward the farm from the beginning by having an interest there, by having his recreational and social life there, will come back from school with ideas and ideals for that community. He will not hesitate to ask the finest girl he knows to share his lot on the farm if he can see where he and she can enjoy advantages that equal in every way the city. He will not, however, be likely to take his bride to the country if he has seen his mother become old prematurely from the burdens of carrying food up and down stairs to the cellar, carrying water from the pump, and doing many things that might have been lightened for her by modern conveniences.

The financial part of the problem may be partly individual, but the balance is largely a community problem.

If the community is not the right sort, the boy will not care to stay there.

This is evidenced by the fact that in the most prosperous farm regions today, the land is worked by tenants. The boys and girls have left the farm not to return, not because financially it did not offer advantages, but because the life there did not appeal to them.

I make my brief, then, that the problem is one of the community as well as one of the family. The family, the school, the library, the social life, and recreational life of the community must sell the farm boy and girl the life work of farming and rural life. I base my opinion on the fact that where communities are so organized that they offer their young people these advantages, farm boys and girls are not weaned by the city schools or by the college, but come back to the community because they feel a part of it, and by coming back, they can make their greatest contribution. The sooner communities realize this fact, the sooner will the problem of keeping our boys and girls on the farm become a thing of the past. Theodore Roosevelt has said, "This country will not be a good place for any of us to live in, unless we make it a good place for all of us to live in." This applies very aptly to the community. When our communities wake up to that fact that they have been sitting idly by, and let the city "sell" their boys and girls, their life work, and have really helped in the selling by the contrast they afforded, we may expect to hear the song changed. The words "How You Gonna' Keep 'Em Down on the Farm," will then be "How You Gonna' Keep 'Em Away From the Farm."

Developing Crops for Upper Michigan

THE soy bean is one of the best nitrogen-gathering plants that can be grown in the rotation, ranking at least as high as the clovers and alfalfa. Its extraordinary soiling and feeding properties have led many agricultural experiment stations to carry on extensive experiments with it. This plant is used extensively in the south as a soil builder and has gained favor in some parts of Michigan. Experiments carried on at the Menominee County Agricultural School for the past two years leads to the belief that this wonderful plant is adapted for growth in some sections of the upper peninsula of Michigan. It is being successfully grown on many farms in northern Wisconsin.

A year ago a small patch of Wisconsin Black Wax soy beans was planted on the school farm. The seed was inoculated with soy bean culture before planting and a fine, mature crop of the beans was harvested. All results seemed to indicate a successful introduction of this plant into the rotation of some of the farms of Cloverland, but before recommending it, more experiments were thought advisable, so the school obtained several varieties of the bean in the hope of getting a variety even better adapted to the conditions here. The five varieties tested were the Wilson Five, Black Eyebrow, Ito San, Manchuria, and Wisconsin Black Wax.

These five varieties were all planted on May 28 in a well prepared seed bed following a grain crop in the rotation. They were drilled in rows twenty-four

inches apart at the rate of about four pecks to the acre. Half of each plot was inoculated. In the case of the Wisconsin Black Wax, a small plot was planted, the same as in the case of the other four varieties, but in addition to this a patch of about one-half acre was planted on a piece of land where the quack grass had been particularly subdued. All of these plots were on light sandy soil. In addition to this, some of the Wisconsin Black Wax was seeded with the corn for silage purposes on clay loam soil. This was also done with some of the Black Eyebrow and Ito San.

The beans were cultivated the first time as soon as they appeared through the ground in the sandy plots, but blind cultivation was necessary in the case of the clay loam soils, as there was a difference of at least four or five days in date of appearance. The greater part of the cultivation was done while the beans were young. As the beans were in the same field as the corn, they were cultivated about as often.

The beans were all harvested on September 15. Some were pulled, others were cut with the corn knife, but all were tied in small bundles and set

up in shocks. They were turned twice before being hauled. Curing the beans similar to hay was tried last year, resulting in the loss of large amount of leaves.

The above experiments with the beans leads to the following conclusions: The Manchuria is out of the question, as it had not set pods at the time of harvest. The Wisconsin Black Wax matured the earliest, followed a week later by the Ito San and Wilson Five. A slight variation is due to the fact that the Ito San and Wilson Five were not acclimated. The Black Eyebrow was about two-thirds mature at harvest time and is considered the best of the five for silage and hay on account of its large size, abundance of large leaves, date of maturity and the fact that it bears its pods well up on the stalk. This high-bearing habit makes it possible to cut the corn with the corn binder without the loss of as many pods as would be the case with the earlier-maturing varieties. It also holds its leaves well in curing, a fact which should make it one of the best to be cut for hay.

The inoculated beans seemed to do the best for the first two or three weeks, but after that there was not much difference as to size, color and general appearance. The nodules on the roots were much more developed on the inoculated plants, however.

Counties further north than Menominee would likely find the Wisconsin Black Wax better fitted for hay or silage because of its early maturity. In planting for silage, however, many of



These Beans Were Two and a half Feet High when Two-thirds Grown.

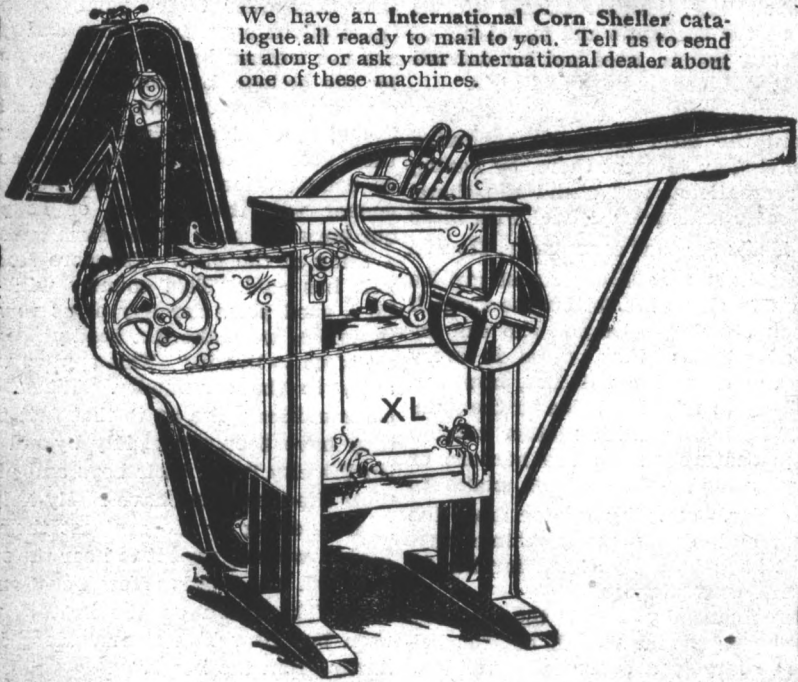
You Wouldn't Water Your Live Stock

with a dipper, but shelling corn without a sheller is almost as bad. Each is a slow, laborious way that takes up lots of valuable time and energy that should be devoted to other work.

International Corn Shellers are time savers and farm-efficiency machines that every corn farmer needs. They range in size and capacities from the 1-hole hand sheller that is designed to meet the needs of the farmer whose shelled corn requirements are limited, to the large power sheller, operated by an 8 h. p. engine, which has a capacity of from 1,750 to 2,500 bushels of corn in a day, according to the condition of the corn.

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Clipping is strongly urged by dairy farmers, certified milk producers and federal bureaus. Here is a strong endorsement:

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Plainsboro, N. J., Nov. 12, 1918.

We clip our cows at least once each month. By clipping the flanks, udders and rear portion of the cow, it is possible to groom and wash the dirt from the cow, which would be very difficult to do if the hair is allowed to grow.

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By H. W. Jeffers.

The Stewart No. 1 Clipping Machine will clip a cow in 5 minutes. Hand operated—runs easily—well built—lasts a lifetime. Buy from your dealer at \$12.75 or send us \$2.00, paying the balance on arrival. Electric clipping machine, direct current, \$60; alternating current, \$80.

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the pods will be lost, on account of its low-bearing habit.

The plant grows as well on clay loam soils as it does on the sand, and it grows a little taller and more leafy in the corn, using the corn as a support and making a very upright growth. Its dense shade was a help in subduing the quack after having weakened it considerably by late fall and early spring plowing and cultivation. The yield of soy bean hay was three tons per acre, and the yield of soy bean seed was twelve bushels per acre. Soy bean straw makes excellent cattle feed.

In feeding experiments, the soy bean cut in the hay stage was chopped and ground as in making alfalfa meal. This meal was substituted for the alfalfa in the ration for our dairy cows and was eaten with a great deal of relish by the cows, and resulted in a slight increase in the milk flow. Better results were obtained, however, when the alfalfa and soy bean hay were fed in equal proportions. This soy bean hay is a little higher in protein and fat than alfalfa and about the same in carbohydrates. Soy bean meal was also fed the hogs and they seemed to enjoy it almost as much as they did the corn. They looked well after a few weeks' feeding, but nothing definite as to the gain per pound has been ascertained.

In order to get the soy bean on more of the Cloverland farms, the Menominee County Agricultural School will ship small samples of soy beans to farmers and county agents wishing to try them out, provided they will give us a record of their results.

In an endeavor to procure the earliest maturing corn for this section, the Menominee County Agricultural School procured samples of Wisconsin numbers seven, eight, twelve and twenty-five from various parts of the state of Wisconsin, and planted them on the school farm. A sample of Wisconsin

number twelve that had been grown on the school farm for the past two years was also planted. They were all planted the same date on the same kind of soil and under similar conditions.

Observations as to size, number of leaves and date of maturity leads us to conclude that Wisconsin numbers twelve and twenty-five were about the same, with possibly a few more leaves on the Wisconsin number twenty-five, but the Wisconsin number twelve sent to us grew to be about two feet taller and matured about a week later than the Wisconsin number twelve that had been grown here for the last two years and had been acclimated to this section. The Wisconsin number eight matured slightly later than the number twenty-five and number twelve and was slightly larger and more leafy. Wisconsin number seven was so late in maturing that it was hardly in the milk stage at the time that the other corn was put in the silo. In traveling over the country, one sees much of this large, late-maturing corn being grown for silage purposes. This corn will not mature to the hard-glaze stage by the time frost kills it, and while the farmer may get a larger bulk of corn, the quality is not there and it will not produce the milk flow that a smaller amount of more mature corn would. Growing the more mature corn for silage will also help to lessen the amount of grain fed during the winter.

A few years ago the Squaw Corn grown by the Indians of Chippewa county was crossed with Wisconsin number twelve at the school, resulting in a short-stalked, early-maturing dent corn. This corn will mature in about ninety days and should be almost an annual cropper for this section of the country. The school hopes to be able to distribute a few samples for trial among farmers of Menominee and adjacent counties next year.

Buying Your Nursery Stock

FOR a farmer who wants three trees of the Grimes Golden apple and knows just what he wants, to find after buying and caring for the trees, that they are Ben Davis, is the thing that we want to avoid if possible. It may not be possible to avoid entirely such results, but since nearly all of the mistakes are due to carelessness the desired end may be quite closely approached.

One should know his nurseryman. That is the secret of true-to-name stuff, I believe. At home we bought a good bit of stock every spring for our own use and considerable for our neighbors. We have bought of three different nurserymen. The first one seemed right until a visit to the nursery showed a very careless system of handling the stock when shipping. I think that two neighbors found that they got trees that were not true to name. We quit that firm at once. The other one was too far away, though the stock was good and was grown as far north of our own latitude. This is worth while considering, too. Now for a good many years we have dealt with a nursery in our own state and when possible we drive to the nursery and get the stock the same day that we are ready for it. The drying out of the roots on a small tree is something that tends to cause losses of the trees after planting. Every care should be used to keep the roots damp all the time that the tree is out of the ground. This nursery uses every precaution to see that the trees are true to name.

One can't always get just the variety he wants but that is another reason to think that what we do get is right. I know of a firm where you can always get just the variety of any fruit you want. If they don't have it the label is changed to suit your wants. If you have a kick after the trees bear you probably (?) got the stock mixed after getting it home! Very plausible but it don't give one the tree that you have waited for so long. If there is a fruit man in your neighborhood get him to order for you. The trees will cost you as much if you buy direct because nurserymen get a better price than a regular buyer, since they buy more goods. More than that, the fruit man knows varieties and if a certain kind is not in stock he can replace with something that has the same characteristics as the one wanted, and so generally satisfy you.

The regular agent who sells trees is not usually acquainted with the business only from a selling point. He can mix varieties though probably unknowingly and get your order mixed as easily as any other green buyer. More than that, the profits that he takes are out of reason and we can't afford to give money away for fun to anybody. Order direct from the nursery that sells direct from a catalog, or from a neighbor who makes it his business to know the line he handles. Either way beats the agency proposition. It also saves a good bit of money.

Ohio.

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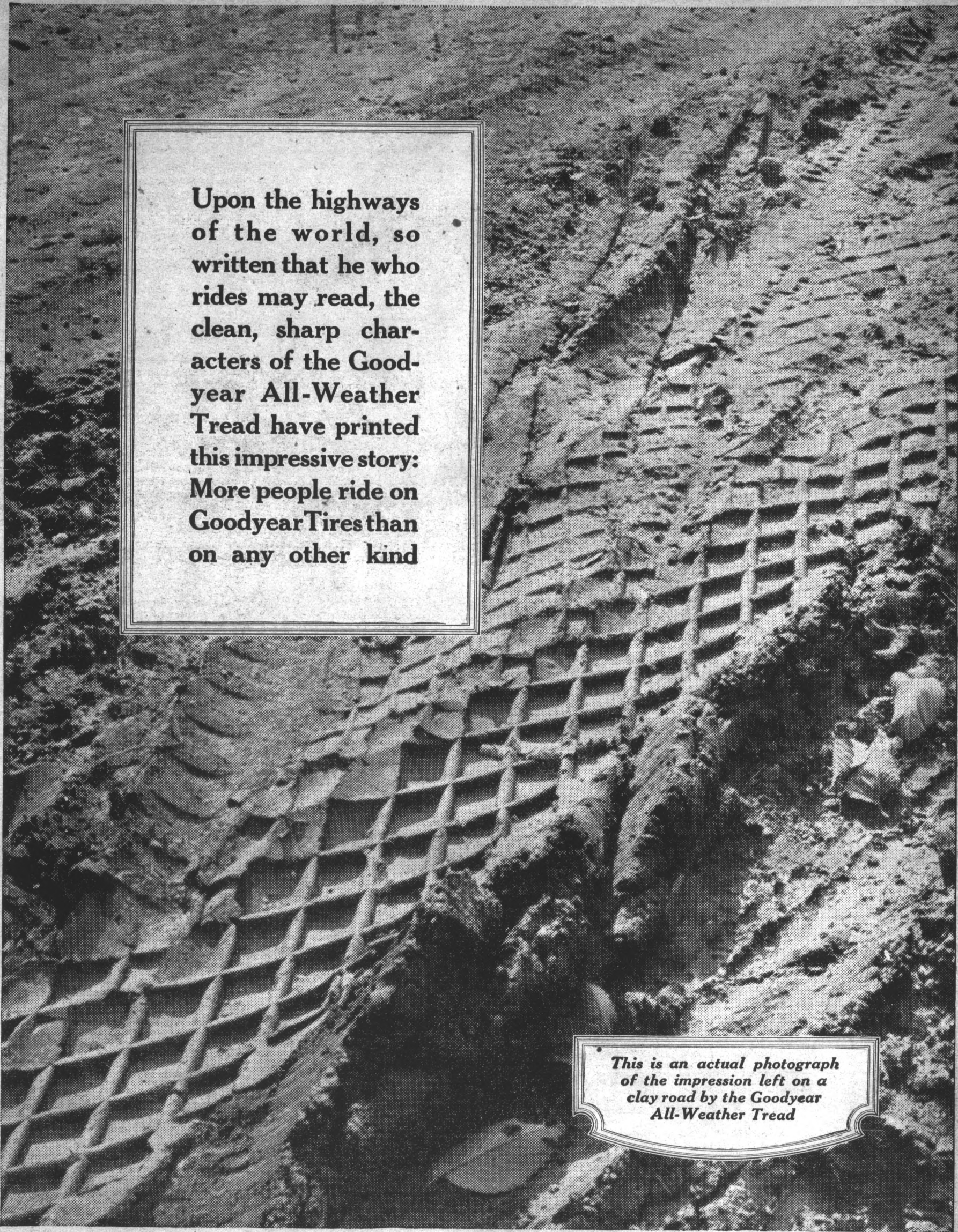
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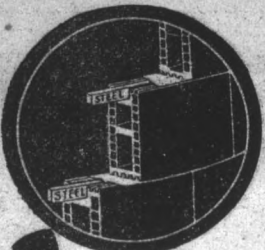
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GOODYEAR



Section of Natco Silo Wall. Note the steel reinforcing.

Natco Dairy Barns Strictly Sanitary

WHAT pride the housewife takes in her glistening glassware! And likewise the careful dairyman rejoices in the smooth-as-glass walls of Natco Hollow Tile. He cleans them as readily as the housewife cleans her glassware, and he appreciates the fact that there are no crevices in which disease germs can lurk.

Natco Hollow Tile

walls do not gather moisture as other forms of masonry do. The still-air spaces in the walls resist temperature changes—afford protection against cold in winter and heat in summer. Cows kept in Natco Barns are healthy and comfortable—contented. Consequently they give more and better milk.

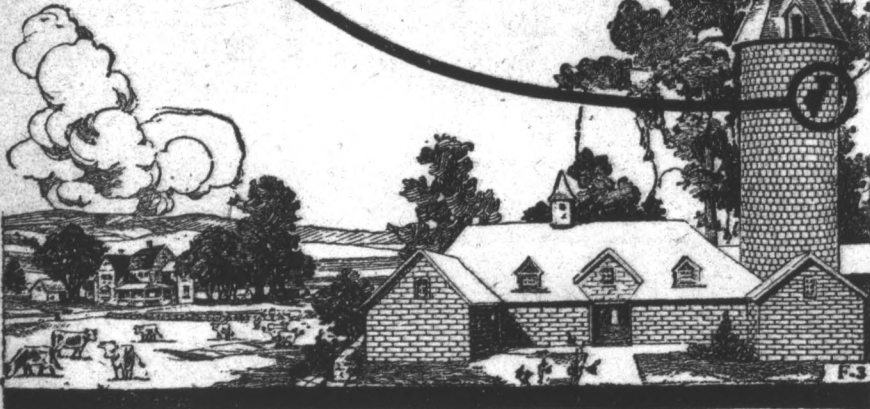
More and more, farmers are using Natco Hollow Tile for dairy barns, stables, horse stables, hog houses, sheep pens, garages, dwellings, etc. These uses are fully described and pictured in our free book, "Natco on the Farm." Send for it today.

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Farmers' Clubs at Lansing

THE twenty-seventh annual meeting of Michigan State Association of Farmers' Clubs, held in the Senate Chamber, Capitol Building, Lansing, December 2-3, 1919, had delegates present from nearly every county in the state.

The secretary's report showed a gain of 1,121 members in the clubs reporting. Four new clubs were added to the membership of the association and two clubs that had lost membership were reinstated.

A committee composed of Mrs. M. C. Spencer, Mrs. I. R. Johnson and Alfred Allen, were appointed to further the work of the state library among the Farmers' Clubs.

The association unanimously voted to make the minimum membership fee to the state association five dollars, every club paying at the rate of fifty cents per family. This motion was enacted to furnish funds that more efficient work might be done.

The legislative committee was authorized to make investigation as to the character of persons nominated for offices and report same to Farmers' Clubs.

The officers elected for the coming year were: President, Alfred Allen, Mason; vice-president, Lee Noble, Oxford; secretary-treasurer, Mrs. I. R. Johnson, Rushton; directors E. D. Ohrstead, Nashville; W. A. Cutler, Grass Lake; J. P. Hackett, Newaygo.

Resolutions Adopted. National Affairs.

We believe that congress should take immediate action on the League of Nations Covenant, that this vastly important matter affecting the governmental affairs of our country be dispensed with promptly, reassuring congress that we desire the adoption of such a covenant as will eliminate future possibilities of war.

Resolved, that we not only recognize the rights of the American farmer to collective bargaining, but that we insist upon the passage of the Capper-Hersman bill now pending in congress as an amendment to the Clayton antitrust act, which clearly defines the rights of the American farmer on this important question.

The rights of citizenship in a world's democracy must rest upon education and training for mutual service, and righteousness among nations. To this end we ask that the federal government establish at our various colleges schools for such service in vocational education and discipline as will inspire and train our young men to establish and maintain universal peace.

Resolved, that we favor the retention of the railroads, telegraph lines, express companies, etc., until such times as permanent unification and reforms are instituted and a fair determination of government control in peace times be made in comparison with corporation control.

State Affairs.

We regard the plans of terminal warehouses and a market commission for preserving the rights of producers and consumers as correct in principle and a proper step at the present time. The early adoption of such plans is asked.

The necessities for forests is now reflected in the advanced price of lumber. We urge that suitable acreage in this state, especially in the older settled sections be reforested under state direction. Since the returns are remote we urge that areas of not less than one acre be planted and that a special plan for loans be made by the Federal Farm Bank that will carry the burden; and that these areas for forest and wild life be termed "Roosevelt Woods."

Industry and civilization today depends on a constructive program for the continued and increased products for the farms of America. Because of this the farmer who coordinates in his

products both labor and capital must be recognized as the stabilizing force in time of unrest and group friction. The farmer today desires to maintain production adequate to the world's needs, but must have an economic place which permits a price for his products that will enable him to pay for labor a wage equal to that paid by other industries. Otherwise he cannot produce up to the full efficiency of his farm and equipment, with the result of increasing costs and prices. He must have the current return for investment and pay for management.

The method of adjusting these equities of industry at the present time do not exist, nor can they be determined by price fixing in advance, but must be based on production costs and demands with an allowance of a reasonable profit. We, therefore, recommend a national commission with a personnel of actual farmers, together with those representing the public, to determine stabilizing prices and agricultural allocation. We commend this to the Michigan Farm Bureau and other agricultural organizations.

The necessities of increased production were never more imperative, and the only real effective method of decreasing prices is more products. Output is now limited by labor shortage and existent machinery of production is capable of indefinite increase by application of more hours of work. Such an increase of output would involve but little more than the labor cost as existent and food, tools, housing, etc., would need little increase. This would prove the most effective and only method of reducing prices as well as increasing the purchasing power of the participating consumer. Agriculture promises and agrees to long hours of labor next year to produce food and clothing, and asks a conference or convention to meet at an early date with a view to an understanding for an increase of production along all lines for the year 1920. The president of this body is authorized to appoint a committee of three to confer and cooperate in calling such a convention.

We commend the efforts of Hon. C. B. Scully to secure the passage by the last legislature of a law providing for a state income tax, and again urge the passage of such a law, either by initiative or by the legislature.

We believe that the country is suffering from too much paternalism, that there is too much useless legislation, too much investigation by the federal government, and we believe that the prices of farm products at the present time is due largely to the activity of the national and state governments and other municipalities in investigating the high cost of living.

Whereas, Agriculture is the foundation upon which rests the prosperity of the state; and

Whereas, a large percentage of the citizens of which are farmers;

Therefore, be it

Resolved, that justice, propriety dictate that the next governor of Michigan shall be either a practical farmer or one who has a sympathetic understanding of the needs and problems of the farmers of the state.

FERTILIZING MUCK.

As an answer to the question on fertilizing muck, published in the Michigan Farmer of November 29, I wish to state that I have seen excellent crops of wheat, rye, barley, oats and potatoes raised on peat muck land, but only after a layer of sand three-quarters of an inch thick has been spread on top of the muck and plowed down and worked well into it. I think this is the best way for preparing this kind of land for grain crops. If a thin spread of marl is applied, it will improve the crops, but I would not repeat the marl application too often. If that is done, no manure will be necessary for the first year, as there undoubtedly will be too heavy a crop if manured.—M. C. L.



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02

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- POULTRY MASH

AND
LADISH
QUALITY
WHEAT FLOUR





The Farm Flock in December

LITTER in a poultry house must easily cover the scratch grain so the hens will have to exercise on the cold days. Litter that is damp and tightly packed together causes the grain to remain on the surface where it is quickly gathered by the birds. Then they proceed to hump up in corners of the house and lose the benefit of their winter exercise. Litter must be loose and dry to be of much value. Tough damp litter is only good for fertilizer but worth enough for that purpose to pay for removing it and furnishing the house with clean straw.

Colds are sometimes due to dusty floors caused by using garden loam on the floor instead of sand. When a bird has watery eyes it pays to isolate her from the flock and rub the head with camphorated vaseline. Permanganate of potassium helps to prevent the spread of colds in the flock but we do not believe the birds like the mixture as well as clear water and never use it except on rare occasions. Vigorous breeding stock on good rations in open-front houses seem to have the vitality to resist colds. But the air must be free from dust or even the strongest birds may sometimes show watery eyes.

If the poultry nests have been nailed tightly to the walls of the house it will pay to remove them and build nests in small portable sections. These can be taken out in the sunshine for cleaning and spraying. And they will not furnish a place where mites and lice can become securely entrenched.

It pays to have a large hopper for oyster shells so it will not need to be filled more than once in three or four weeks. The small hoppers soon become empty and if they are not filled promptly some of the hens will not receive enough lime to place hard shells on the eggs they lay. It is not only the soft-shelled eggs that cause losses but also the eggs that look good but have weak shells. They often break in transit and injure the appearance of other eggs in the crate. Oyster shells are one of the cheapest items in the hen's ration and we regard them as one of the most important.

The use of commercial laying mash often takes a lot of worry out of the poultry business. These mixtures contain much of the materials needed for egg production. We have been using a commercial mash recommended by a practical poultryman in our section and it has been helping very much to keep the pullets laying on cold days. We might mix a mash just about as good at a slightly lower cost, but this commercial mixture is doing well and on cold stormy days it is a great satisfaction to have bags of mash ready for the feed hoppers whenever it is needed. The mash contains green feed and when the birds are on the range they do not need that portion of the ration served in a hopper. We think we can mix our own mash to the best advantage in the spring and summer but during the winter some time is saved by having the miller mix the mash.

Farmers who place eggs in water-glass for home use find that they are very desirable in winter when their fresh stock is bringing good prices. But such eggs must always be labeled when sold commercially. We believe

nothing is gained by preserving eggs at home for winter sales. It is better to try and produce fresh eggs in the winter. Buyers appreciate them and this winter in spite of the high egg prices it seems as if consumers were never more anxious to obtain quality eggs.

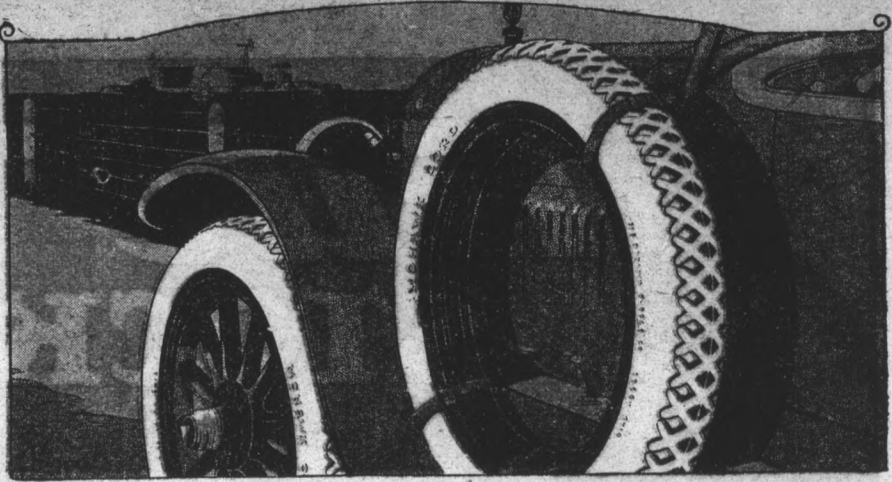
It seldom pays to allow the layers outdoors in winter unless the snow melts and the day is warm and still. In that case we believe that it pays to give the hens a vacation outside. Their actions prove that they enjoy the freedom and a few days outside seems to give them new life and vigor to stand the confinement when the storms return. On many farms the layers are never outside all winter. They are managed like machines. However, we believe that a hen is something besides a machine. She has her likes and dislikes. She enjoys sunshine on the range and the poultryman is lucky if the hens can have many such days every winter.

The chances for success with egg production seem to be growing better. The business is so exacting that competition seems to be growing less in our section and the farmer with fresh eggs for sale can induce his friends with automobiles to visit him at frequent intervals. When such a trade is worked up it pays to place the eggs in neat boxes marked with a brand and charge for the service of grading the eggs and packing them right. Then it pays to keep track of feed costs and operating expenses in such a manner that you can produce the proof of your innocence as a profiteer. The egg producer earns his money but it is surprising how little some city people know concerning the production of eggs and poultry meat. Usually they are very reasonable when they understand the situation. Disgruntled customers can always be told that there is nothing for sale and the producer is soon rid of them. The statement will be true because there are always plenty of desirable fresh egg customers for all a farmer can produce.

We have been using a commercial coal tar disinfectant in place of kerosene oil for spraying the roosts to keep down mites and lice. One gallon of the dip makes one hundred gallons of spray dope by mixing with water and it can be distributed with a small potato sprayer or more easily with a barber sprayer when there is a large area to cover. The cost is much less than for kerosene and the spray imparts a rather clean and pleasant odor to the poultry houses. There are lice paints on the market which protect roosts and nest boxes for several months and they are being found desirable investments by practical poultrymen.

The writer hopes to attend at least one good poultry institute this winter and several poultry shows. They bring large returns for the investment and they help make a poultryman more interested in his business. The bred-to-lay stock are fine but the poultry business of the country would not amount to near as much if it were not for the fanciers who like fine feathers and organize and support the exhibitions. Farmers who can attend a good poultry show will obtain much information if they visit with breeders who have had years of practical experience.

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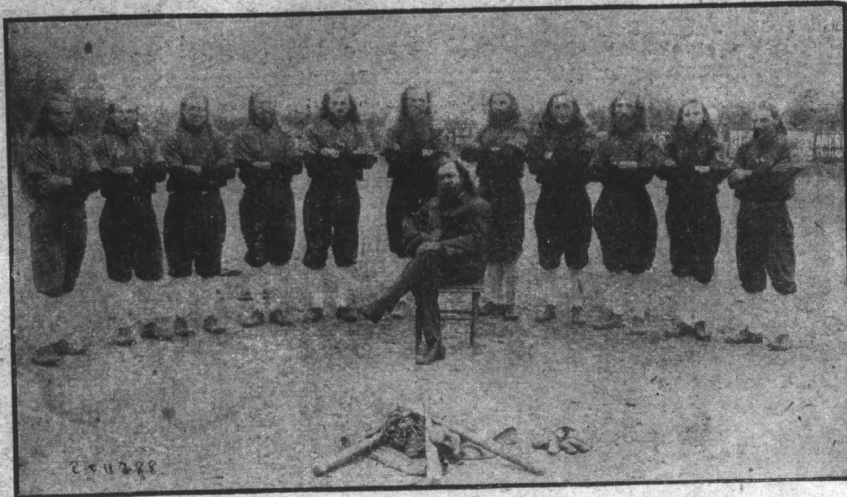
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Poultry Ads. Continued on Page 791

WORLD EVENTS IN PICTURES



The Chicago cubs are after Paul Leslie Mooney, pitcher for the base ball team of the House of David, Benton Harbor, Michigan.



Mildred Harris Chaplin, screen queen, and her palatial home, and the Fullerton triplets, one of which Mildred wishes to adopt.



Santa Claus establishes headquarters at a bar and is planning a chain of stores that will spread over the bars of the country.



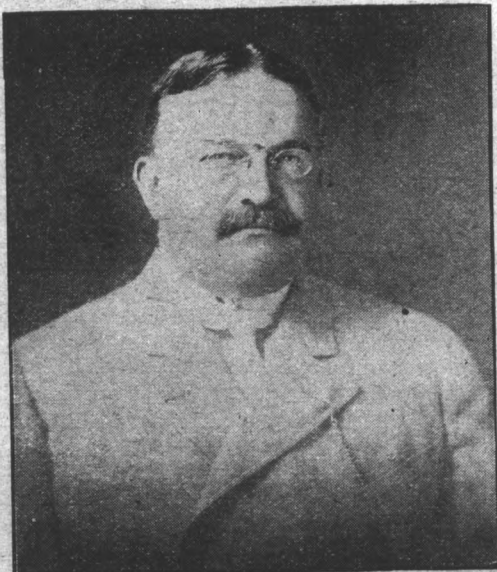
Eighty-two years old and one-legged, Larry Hogo operates over eighty mining claims.



Dr. Bell, inventor of the telephone and a picture of his new speed flying boat, which is capable of making seventy-one miles per hour.



Latest picture of Thomas Edison, taken while waiting for Henry Ford to get a shave.



United States Senator Truman H. Newberry, who has been indicted by the federal grand jury on charges of corruption, fraud and conspiracy in connection with his election.



Secretary Baker and General March leave for Panama, where they will formally open the canal. They are accompanied by General Chamberlin, Inspector General of the United States Army.



Representative Joshua W. Alexander, of Missouri, has just been appointed Secretary of Commerce by President Wilson, to succeed William C. Redfield.

Crooked Trails and Straight

By Wm. MacLeod Raine

(Continued from last week.)

He folded the paper and returned to his room to make preparation to return to his ranch. The buzz of the telephone called him to the receiver. The voice of Cullison reached him.

"That you, Mac. I'll be right up. No, don't come down. I'd rather see you alone."

The owner of the Circle C came right to business. "I've made a raise, Mac, and while I've got it I'm going to skin off what's coming to you."

He had taken a big roll of bills from his pocket, and was counting off what he had lost to his friend. The latter noticed that it all seemed to be in twenties.

"Twelve hundred. That squares us, Mac."

The Scotchman was vaguely uneasy without a definite reason for his anxiety. Only last night Cullison had told him not a single bank in town would advance him a dollar. Now he had money in plenty. Where had he got it? "No hurry at all, Luck. Pay when you're good and ready."

"That's now." "Because I'll only put it in the Cattlemen's National. It's yours if you need it."

"I'll let you know if I do," his friend nodded.

Mackenzie's eyes fell on a copy of the Sentinel protruding from the other's pocket. "Read about the hold-up of the W. & S. Express? That fellow had his nerve with him."

"Sho! This hold-up game's the easiest yet. He got the drop on them, and there was nothing to it. The key was still in the lock of the door. Well, when he gets through he steps out, turns the key, and rides away."

"How did he know there was money coming in last night?"

"There's always a leak about things of that sort. Somebody talks. I knew it myself for that matter."

"You knew? Who told you?"

"That's a secret, Mac. Come to think of it, I wish you wouldn't tell anybody that I knew. I don't want to get the man who told me in trouble."

"Sure I won't." He passed to another phase of the subject. "The Sentinel says Bolt expects to catch the robber. Think he will?"

"Not if the fellow knows his business. Bolt has nothing to go on. He has the whole southwest to pick from. For all he knows, it was you."

"Yes, but—"

"Or more likely me." The gray eyes of the former sheriff held a frosty smile.

In spite of that smile, or perhaps because of it, Mackenzie felt again that flash of doubt. "What's the use of talking foolishness, Luck? Course you didn't do it. Anybody would know that. Man, I whiles wonder at you," he protested, relapsing into his native tongue as he sometimes did when excited.

"I didn't say I did it. I said I might have done it."

"Oh, well! You didn't. I know you too well."

But the trouble was Mackenzie did not know him well enough. Cullison was hard up, close to the wall. How far would he go to save himself? Thirty years before when they had been wild young lads these two had hunted their fun together. Luck had always been the leader, had always been ready for any daredeviltry that came to his mind. He had been the kind to go the limit in whatever he undertook, to play it to a finish in spite of opposition. And what a man is he must be to the end. In his slow, troubled fashion, Mac won-

dered if his old side partner's streak of lawlessness would take him as far as a hold-up. Of course it would not, he assured himself; but he could not get the ridiculous notion out of his head. It drew his thoughts, and at last his steps toward the express office where the hold-up had taken place.

He opened a futile conversation with Hawley, while Len Rogers, the guard who had not made good, looked at him with a persistent, hostile eye.

"Hard luck," the cattleman consoled. "That's what you think, is it? You and your friends, too, I reckon."

Mackenzie looked at the guard, who was plainly sore in every humiliated crevice of his brain. "I ain't speaking for my friends, Len, but for myself," he said amiably.

Rogers laughed harshly. "Didn't know but what you might be speaking for one of your friends."

"They can all speak for themselves when they have got anything to say."

Hawley sent a swift, warning look toward his subordinate. The latter came to time sulkily. "I didn't say they couldn't."

Mackenzie drifted from this rather unfriendly atmosphere to the courthouse. He found Sheriff Bolt in his office. It was that official's busy day, but he found time not only to see the owner of the Fiddleback, but to press upon him cordially an invitation to sit down and smoke. The Scotchman wanted to discuss the robbery, but was shy about attacking the subject. While he boggled at it, Bolt was off on another tack.

Inside of a quarter of an hour the sheriff had found out all he wanted to know about the poker game, Cullison's financial difficulties, and the news that Luck had liquidated his poker debt since breakfast time. He had turned the simple cattleman's thoughts inside out, was aware of the doubt Billie had scarcely admitted to himself, and knew all he did except the one point Luck had asked him not to mention. Moreover, he had talked so casually that his visitor had no suspicion of what he was driving at.

Mackenzie attempted a little sleuthing of his own. "This hold-up fellow kind of slipped one over on you last night, Bolt."

"Maybe so, and maybe not."

"Got a clew, have you?"

"Oh, yes—yes." The sheriff looked straight at him. "I've a notion his initials are L. C."

Billie felt himself flushing. "What makes you think that, Nick?"

Bolt walked to a cupboard and unlocked it. His back was toward the cattleman, but the latter could see him take something from a shelf. Turning quickly, the sheriff tossed a hat upon the table.

"Ever see this before?"

Mac picked it up. His fingers were not quite steady, for a great dread drenched his heart like a rush of icy water. Upon that gray felt hat with the pinched crown was stamped the individuality—and the initials—of his friend, Luck Cullison.

"Don't know as I recognize it," he lied, not very readily. "Not to know it. Why?"

"Thought perhaps you might know it. The hold-up dropped it while getting away."

Mackenzie's eyes flinched. "Dropped it. How was that?"

"A man happened to come along San Miguel street just as the robber swung to his horse. He heard the cries of the men inside, guessed what was doing, and exchanged shots with the miscreant. He shot this hat off the fellow's head."

"The Sentinel didn't tell any such a story."

"I didn't give that detail to the editor."

"Who was the man that shot the robber?"

"Cass Fendrick."

"But he didn't claim to recognize the hold-up?" Mackenzie forced himself to ask this in spite of his fears.

"Not for certain."

"Then he—he had a guess."

"Yes, Mac. He guessed a man whose initials are the same as those in that hat."

"Who do you mean, Nick?"

"I don't need to tell you that. You know who."

"If you mean Luck Cullison, it's a lie," exploded the cattleman. He was furious with himself, for he felt now that he had been unsuspectingly helping to certify the suspicions of the sheriff. Like an idiot, he had let out much that told heavily against his friend.

"I hope so."

"Cass Fendrick is not on good terms with him. We all know that. Luck has got him in a hole. I wouldn't put it a bit above Cass to lie if he thought it would hurt Luck. Tell you it's a conspiracy. Man, can't you see that?"

"What about this hat, with the two holes shot through the rim?"

"Sho! We all wear hats just like that. Look at mine." Billie held it out eagerly.

"Has yours an L. C. stamped in the sweat band?" Bolt asked with a smile.

"I know you ain't his friend, Nick. But you want to be fair to him even if he did oppose your election." Mackenzie laid an appealing hand on the knee of the man seated opposite him. "I'm sheriff of Papago county. It doesn't make any difference who worked for or against me, Billie. I was elected, and I'm going to enforce the law."

"And you think Luck would do a fool thing like this?"

"I didn't say I thought so, but it's my business not to overlook any bets."

"But you do believe it. Now, don't you?"

"Since you've got to have an answer—yes, I do."

"By heaven, I'd as lief think I did it myself."

"You're a good friend," Bolt conceded. "By the way, I've got to pay for some supplies this morning. Can you cash a check for a hundred?"

"I reckon so." Mackenzie drew from his pocket the roll Cullison had given him two hours before. He peeled five twenties from it. The sheriff observed that the prevailing denomination was the same.

"Get these from Luck?" he asked carelessly.

The cattleman stared at him, and the suspicion grew on him that he had been trapped again.

"Why do you ask?"

"Because it happens the bills stolen from the W. & S. were all twenties."

"No, I didn't get them from Cullison. This is money I had," he answered sullenly.

"Then I dare say you can let me see



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the money you got from him."
 "He paid me by check."
 "Banked it yet?"
 "That's my business, Nick."
 "And mine, Billie. I can find out from the bank if you have. Besides, I happen to know that Luck's bank account is overdrawn."
 "Someone has been at you to prejudice you, Bolt."

"Nobody but Luck Cullison himself and his actions."

From the office of the sheriff, Mackenzie wandered to the club in search of Luck. He was thoroughly dispirited, both dreaded to meet Luck, and yet was anxious to do so. For he wanted to warn him, wanted to see him fall into one of his chill rages when he told him there were suspicions against him.

Cullison had left the club, but Alec Flandrau was still there. Billie drew him into a corner, and learned that Luck had just settled with him.

"Did anyone see him give it to you, Alec?"

"No. He took me upstairs to the library and paid me."

"In bills?"

"Yes—in twenties."

"For God's sake, don't tell anybody that." In a dozen jerky sentences the owner of the Fiddleback told Flandrau of the suspicions of the sheriff.

Together they went in search of Luck. But though they looked for him all day, he was not to be found. They might have concluded he had ridden out to the ranch, but his horse was still at the stable where he had left it.

The fact that had been seen of him Luck was walking along the plaza toward the hotel, not a hundred and fifty yards from the latter. A dozen men had spoken to him in the distance of a block. But he had not been seen to reach his hotel. He had not called for his room key. Somehow he had vanished, and none could tell how or where.

To Bolt his disappearance was as good as a confession of guilt. He searched Luck's room at the hotel. Among other things, he found an old envelope with interesting data penciled on it.

Before nightfall the word was whispered all over Saguache that Luck Cullison, pioneer cattleman and former sheriff, was suspected of the W. & S. Express robbery and had fled to save himself from arrest. At first men marveled that one so well known and popular, one who had been so prominent in affairs, could be suspected of such a crime, but as they listened to the evidence and saw it fall like blocks of a building into place, the conviction grew that he was the masked bandit wanted by the sheriff.

CHAPTER IV.

Kate Uses Her Quirt.

RED-HEADED Bob Cullison finished making the diamond hitch and proudly called his cousin Kate to inspect the packhorse.

"You never saw the hitch thrown better, sis," he bragged, boy-like. "Uncle Luck says I do it well as he can."

"It's fine, Bob," his cousin agreed, with the proper enthusiasm in her dark eyes. "You'll have to teach me how to do it one of these days."

She was in a khaki riding skirt, and she pulled herself to the saddle of her own horse. From this position she gave him final instructions before leaving. "Stay around the house, Bob. Dad will call the ranch up this morning probably, and I want you to be where you can hear the 'phone ring. Tell him about the white-faced heifer, and to be sure to match the goods I gave him. You'll find dinner set out for you on the dining-room table."

It had been on Wednesday morning that Luck Cullison disappeared from the face of the earth. Before twenty-four hours the gossip was being whispered in the most distant canons of Papago county. The riders of the Cir-

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cle C knew it, but none of them had yet told either Bob or Kate.

Now it was Friday morning and Kate was beginning to wonder why her father did not call her up. Could it be that Seapy Stone was pulling off his train robbery at Tin Cup and her father was so busy that he could not take time to ride to a telephone station? She did not like to leave the ranch just now, even for a few hours, but other business called her away. Sweeney was holding down the fort at the Del Oro against Fendrick's shepherders, and his weekly supply of provisions had to be taken to him. Since she wanted to see with her own eyes how things were getting along at the canon she was taking the supplies in person.

It was a beautiful morning, even for Arizona. The soft air was at its winiest best. The spring rains had carpeted the hills with an unusually fine grass, and the summer suns had not yet burnt this to the crisp brown of August. Her young heart expanded with the very joy of life. Oh, how good it was to be alive in a world of warm sunshine, of blue, unfecked sky, and of cool, light breezes. Swifts basked on the rocks or darted like arrows for safety, and lay palpitating with suspense. The clear call of the quails sounded to right and left of her. To her eager consciousness it was as if some bath of splendor had poured down overnight upon the old earth.

She rode from sunlight into shadow and from shadow to sunlight again, winding along the hill trail that took her toward the Del Oro. After hours of travel she came to the saddle from which one looked down to the gap in the canon walls that had been the common watering place of all men's cattle, but now was homesteaded by her father. Far below her it lay, a dwarfed picture with detail blurred to a vague impressionistic map. She could see the hut, the fence line running parallel to the stream on the other side, some grazing cattle, Sweeney's horse in the corral.

The bleating of a lamb floated up to her. Kate dismounted and made her way toward the sound. A pathetic little huddle of frightened life tried to struggle free at her approach. The slim leg of the lamb had become wedged at the intersection of several rocks in such a way that it could not be withdrawn.

Kate pulled the boulder away, and released the prisoner. It looked at her and bleated without attempting to move. She took the soft, woolly creature in her arms, and examined the wounded limb, all torn and raw from its efforts to escape. A wound, she recalled, ought to be washed with cold water and bound. Returning to her horse, she put the little animal in front of the saddle, and continued on the trail that led down to the river.

Sweeney came out from the cabin and hailed her. He was a squat, weather-beaten man, who had ridden for her father ever since she could remember.

"What in Mexico you got there?" he asked in surprise.

She explained the circumstances under which she had found the lamb.

"And what you aiming to do with it?"

"I'm going to tie up its leg and take it across the river. Some of the C. F. herders are sure to find it before night."

"Sho! What are you fooling with Cass Fendrick's sheep for?" he grumbled.

"It isn't a sheep, but a lamb. And I'm not going to see it suffer, no matter who owns it."

She was already walking toward the river. Protestingly he followed, and lent a hand at tying up the leg with the girl's handkerchief.

"I'll just ride across and leave it outside the fence," she said.

"Lemme go. I know the river better."

Sweeney did not wait for her assent, but swung to the saddle. She handed him the lamb, and he forded the stream. At no place did the water come above the fetlocks of the horse. "I'm so glad you know the dangerous places. Be careful you don't drown," she mocked.

The rider's laughter rang back to her. One of her jokes went a long way with Sweeney. The danger of the river had been the flimsiest of excuses. What he had been afraid of was that one of Fendrick's herders might be lurking in some arroyo beyond the fence. There was little chance that he would dare hurt her, but he might shout something unpleasant.

In point of fact, Sweeney saw some one disappear into a wash as he reached the fence. The rider held up the lamb, jabbered a sentence of broncho Spanish at the spot where the man had been, put down his bleating burden, and cantered back to his own side of the river without unnecessary delay. No bullets had yet been fired in the Cullison-Fendrick feud, but a "greaser" was liable to do anything, according to the old puncher's notion. Anyhow, he did not want to be a temptation to anyone with a gun in his hand.

An hour later, Kate, on the return trip, topped the rise where she had found the lamb. Pulling up her pony, to rest the horse from its climb, she gazed back across the river to the rolling ridges among which lay the C. F. ranch. Oddly enough, she had never seen Cass Fendrick. He had come to Papago county a few years before, and had bought the place from an earlier settler. In the disagreement that had fallen between the two men, she was wholly on the side of her father. Sometimes she had wondered what manner of man this Cass Fendrick might be; disagreeable, of course, but after precisely what fashion.

"Your property, I believe, Miss Cullison."

She turned at sound of the suave, amused drawl, and looked upon a dark, slim young man of picturesque appearance. He was bowing to her with an obvious intention of overdoing it. Voice and manner had the habit of the south rather than of the west. A kind of indolent irony sat easily upon the swarthy face crowned with a black sleek head of hair.

Her instinct told the girl who he was. She did not need to ask herself any longer what Cass Fendrick looked like.

He was holding out to her the blood-stained kerchief that had been tied to the lamb's leg.

"I didn't care to have it returned," she told him with cold civility.

"Now, if you'd only left a note to say so, it would have saved me a quite considerable climb," he suggested.

In spite of herself a flicker of amusement lit her eyes. She had a sense of humor. "I did not think of that, and since you have troubled to return it to me, I can only say thank you."

She held out her hand for the kerchief, but he did not move. "I don't know but what I'll keep it, after all, for a souvenir. Just to remind me that Luck Cullison's daughter went out of her way to help one of Cass Fendrick's sheep."

She ignored his sardonic mockery. "I don't let live creatures suffer when I can help it. Are you going to give me my handkerchief?"

"Haven't made up my mind yet. Perhaps I'll have it washed and bring it home to you."

She decided that he was trying to flirt with her, and turned the head of her horse to start.

"Now your father has pulled his freight, I expect it will be safe to call," he added.

The bridle rein tightened. "What

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nonsense are you saying about my father?"

"No news, Miss Cullison; just what everybody is saying, that he has gone to cover on account of the hold-up."

A chill fear drenched her heart. "Do you mean the hold-up of the Limited at Tin Cup?"

"No, I don't." He looked at her sharply. "Mean to say you haven't heard of the hold-up of the W. & S. Express Company at Saguache?"

"No. When was it?"

"Tuesday night. The man got away with twenty thousand dollars."

"And what has my father to do with that?" she demanded haughtily.

A satisfied spleen purred in his soft voice. "My dear young lady, that is what everyone is asking."

"What do you mean? Say it." There was fear as well as anger in her voice. Had her father somehow got into trouble trying to save Sam?

"Oh, I'm saying nothing. But what Sheriff Bolt means is that when he gets his handcuffs on Luck Cullison, he'll have the man that can tell him where that twenty thousand is."

"It's a lie."

He waved his hand airily, as one who declined responsibility in the matter, but dark, saturnine face sparkled with malice.

"Maybe so. Seems to be some evidence, but I reckon he can explain that away—when he comes back. The hold-up dropped a hat with the initials L. C. in the band, since identified as his. He had lost a lot of money at poker. Next day he paid it. He had no money in the bank, but maybe he found it growing on a cactus bush."

"You liar!" she panted, eyes blazing.

(Continued next week).

THE CHRISTMAS SPIRIT.

(Continued from first page).

friends, and make known their love and appreciation by gifts and loving phrases of the tongue which rise directly and easily from the heart.

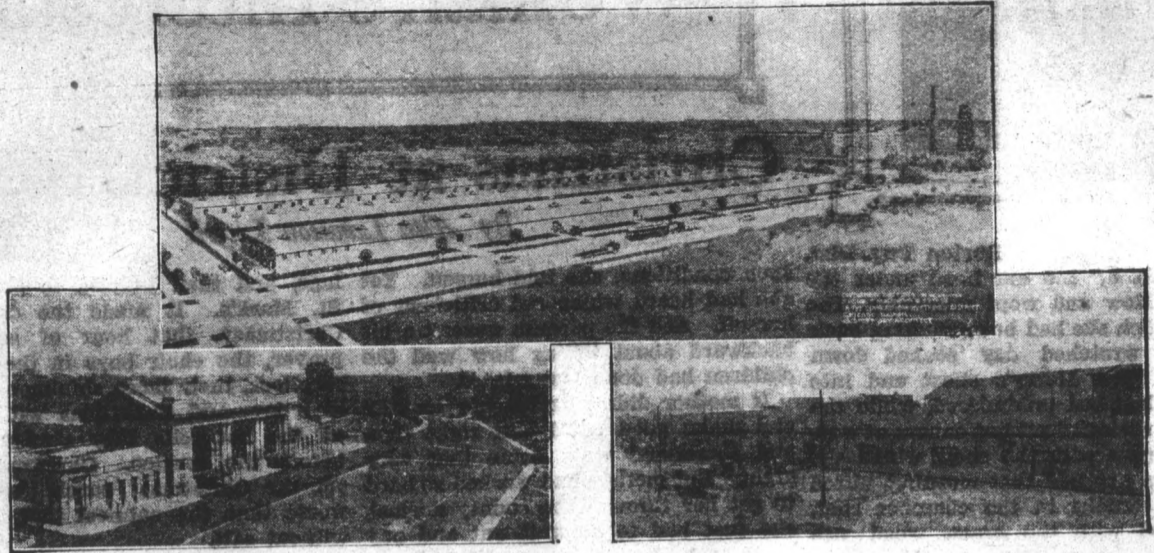
As "a rising tide lifts all the boats," so all people are directly or indirectly uplifted and softened by the influence of the time. And the Spirit can work only through and upon the hearts of men—He has no material gifts to offer.

In an evolving world such as ours the Spirit, wise beyond the wisdom of mortals, realizes there must be unhappiness; and yet He is always striving to lessen it. There is a swift undercurrent of tears in the joy and blessedness and fellowship of Christmas-tide, a drawing together of spirits. And though men and women who strive to outvie each other in making presents often grumble about the commercialism of the modern Christmas, we may see their eyes grow soft as they prepare a gift for some true friend—a gift into which they have put care and loving thought.

The church bells, the sleigh bells, the mystery of the season, the ingeniously sweet deceptions—these touch the soul with a tinge of tender sadness, some hint of better days to come. What does the Spirit ask of those who would keep the Christmas-tide properly? That there should be simple presents for the children; thoughtful remembrances for friends; kind greetings and appreciative words if the purse is light; cheer and consideration for the aged; thanks for the love of relatives; gratefulness for the lessons of the past year; sharing with more unfortunate brothers; a laying aside of envy of the more fortunate; a gathering with their loved ones in true harmony; and a prayer that they may draw from the great day of love, inspiration for the whole year to come.

The Christmas Spirit, ambassador of Christ Himself, bids the world make itself worthy of the thought that Christmas Day is the birthday of our Lord.

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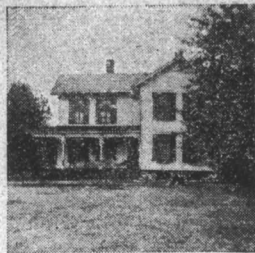
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Woman's Interests

Christmas at District No. 3

By Alta Lawson Littell



THE teacher in "Burton Twp. Dist. No. 3," hid her head under the pillow and wept miserably. The tears which she had been winking back all that wretched day soaked down through Mrs. Merry's sheet and into the feather bed unhindered, while the teacher reviewed all her causes of woe. They began with the snow which she found on her bed that morning, sifted through cracks in the chamber roof, continued with the green wood fire which wouldn't burn in the school-house stove, mounted higher with the wanton and wilful inattention of Master William Merry, son of her landlady and of the school director, and climaxed with the fact that it was Christmas eve, she was just eight miles from home and couldn't get there for Christmas and mother, because everyone was too busy with holiday festivities to take her for just one day, and "Burton Twp. Dist. 3" gave its holiday vacation at potato digging time.

The weeping grew into a regular small girl "Boo hoo" as the teacher reached the climax. The idea of a community being so mercenary, so unpossessed of the finer feelings that they wouldn't close their school a week for Christmas and New Years, and them just eight miles from Newton, that center of culture and learning. Over home the community Christmas tree was being lighted and soon the old church parlors would be crowded with everyone she knew. She could see the church now, the lights gleaming softly through the yellow windows, and the electric star they always lighted on the cross on Christmas eve sparkling on high. If she listened hard enough she might even hear the bells—but she pulled the other pillow over her head for fear she would.

She did hear, however, as she raised her head to secure the pillow, giggling in the hall outside her door and Willie's whisper, "Hush, she'll hear you." What mischief was that young imp up to now, she wondered. For the past week he had seemed possessed, and his spirit had spread to a half dozen of the other boys. Every time she looked up they were looking at her with broad grins on their faces. And that night as they went whooping out, Willie had yelled at the group, with a significant wink and nod in her direction, "Don't forget, tonight at 8:30 sharp." She shivered with premonition. If it was anything Willie Merry was concerned in she felt sure something would be to pay. It seemed queer that a boy could look so much like an angel and act so much like a—a, well, not a bit angelic.

There might just as well not have been any school all week, for all the work done. Holiday making had pervaded the air, the children were excited and the teacher homesick. Though she hadn't called it that. She was just plain discouraged over the school. No order, no school spirit, no ambition in the children, she told herself. And nothing at all to work with. To be sure they had the things the school law of Michigan compelled them to have, but the maps were made before 1914, the globe was minus half its surface, blackboards were cracked and plaster hung in tatters from the ceiling. No teacher could be expected to get good work out of children under

such conditions, she told herself. Yet she had heard whispered criticisms of herself. And the parents weren't a bit backward about telling how well the children had done last winter.

If mother didn't expect her to stay and make good she'd quit right then and there and walk home that very night. But mother had worked so hard to get her through the county normal, she just had to stick it out and pay back part of the money. Mother had been so glad when she got a school right at home. They had expected to spend all their holidays together, and now the very first real one she was stranded. Why, it wouldn't be Christmas without mother and the six o'clock service in the morning. Every since she could remember they had got up at five o'clock on Christmas morning, snatched a peek at the stuffed stock-

ings, and then hurried to service in St. Mark's. It made the day more Christmasy, that hour of song and prayer, the choir boys in their white surplices, their faces shining with holiday joy—and sometimes with butter off the hot rolls they always served before the service. Christmas without the Christmas carols would be worse than the oatmeal that morning without salt.

Through the gloom which enfolded her, sounds from the outside crept in. At first faint and uncertain, she told herself she was "hearing things." Then, as the notes grew stronger, she threw off the pillows and sat up. Somebody was singing Christmas carols. Who could it be? There was to be no celebration in the neighborhood, she knew. She had wanted a tree at the school house, but all the men were too busy

to get one, and the board had decided against burning wood to heat the building. Yet someone was singing Christmas carols. Could it be that some of the choir boys from Newton—she sprang out of bed, at a hurried rap on her door.

"Can I come in teacher," fourteen-year-old Martha Merry giggled excitedly. "It's Willie and the Barnes boys, and Joe and Jack Lawton. Willie's been practicing them on this for a month, and he was so scared you'd find out about it and wouldn't be a surprise. Don't they look killing?" Martha giggled on. Teacher and pupil were at the open window looking down at the boys. "They've borrowed black skirts and middy blouses, so they'd look just like the real choir boys. Of course, those black sleeves are their coat sleeves, but Willie said that would not show up at night."

"Hush," teacher was trying to drink it all in. Nothing St. Mark's choir had ever done sounded so Heavenly to her as those boyish voices below.

"It came upon a midnight clear," followed by, "While shepherds watched their flocks by night," and all the dear old Christmas songs even to her own favorite, "Noel."

"Jesu, gentle babe,
Saviour, sweet and holy.
Born on Christmas night,
In a manger lowly.
Shepherds came from far,
Guided by the guiding star.
Then in adoration
Bringing their oblation,
Myrrh and frankincense and gold,
Sages, gifts unfold.

The angels in chorus sweet have sung
Noel.

Let earth's gladsome voice repeat the
song they swell, Noel, Noel, Noel.
Sing we all, Noel."

The serenade finally ended, as Willie admitted in response to the prolonged handclapping of teacher and Martha, that "they didn't know no more."

"Come on, fellows, let's go in and sing 'em for your mothers," he suggested to his satellites, and the group trooped off, strains of "Silent Night," floating back as teacher closed the window.

"But, where did they ever learn them," she turned to Martha who had lighted the lamp.

"Will taught them to the boys," Martha, flushed with pride was smiling happily.

"Yes, but where did he learn them?" Teacher had never before succeeded in finding out that Willie could learn anything, though she knew he could sing. His voice always rose clear above all the others when time for singing rolled round.

"Well, you know, Will just loves music," Martha explained. "He hummed tunes before he could talk, mother says. And he only has to hear a tune once to whistle it. Once when father had a good year and was feeling happy he drove us over to the Newton Christmas tree. Willie learned the tunes there, and an organ peddler who got dinner here last summer gave him an old hymn book. He found the words in there. Didn't he sound fine?" Martha's tone held a wistful note.

"He was wonderful." Teacher's honesty was unmistakable. "It was better than the boy soloist at home."

"There's mother calling me," Martha turned to go. "I'm awful sorry you



Fruit Nut Balls.

Wash and stone one cup of dates, wash one cup of figs and remove stems, and put through food chopper, together with two cups of nut meats of any sort. Mix all thoroughly, shape in small balls, roll in powdered sugar. If the mixture sticks to the hands, use some of the powdered sugar, not enough, however, to make fruit dry and crumbly.

Chocolate Pop-Corn.

Cook one cupful of granulated sugar, one-half cup of milk, three tablespoons of grated chocolate and a lump of butter the size of a walnut together until a little dropped in water is quite brittle. Pour over one quart of popped corn, stirring so that all the kernels are coated.

Strawberry Divinity Fudge.

Place in a saucepan two cupfuls of granulated sugar, half a cupful of water and a fourth of a teaspoon of cream of tartar. Boil to the hard-ball stage. Add one cupful of strawberry jam and boil up again. Pour the mixture over the stiffly beaten whites of two eggs and beat until light and foamy. When the mixture begins to harden, pour into greased pans and when cold cut into squares.

Any thick preserved fruit can be used in the same way. Preserved strawberries and preserved pineapple, half-and-half, make a good combination. If preserved pears are used, a little chopped ginger will be an improvement.

Cocoanut-Marshmallow Cubes.

To make about one hundred marshmallows will require one package of gelatine, one and one-quarter cups of water, two cups of granulated sugar, one teaspoonful of vanilla. Soak the gelatine in half the amount of water for five minutes. Put remaining water and the sugar in a saucepan, and boil until it threads. Add soaked gelatine and let stand until partially cooled,

then add vanilla, and beat until the mixture becomes white and thick. Pour into buttered pans, having the mixture about one inch in thickness. Sprinkle generously with shredded cocoanut,

and let stand in a cool place until thoroughly chilled. Turn out on a board, cut in cubes and roll in powdered sugar. Fruit juice used instead of part of the water, makes a nice variation, in which case the vanilla should be omitted.

Plum Pudding Bars.

Chop very fine two ounces each of candied orange peel, seeded raisins, figs and dates. Beat the white of an egg slightly, add a tablespoon of water and mix with the fruit until smooth, adding enough confectioner's sugar to form a stiff paste. Mold into a loaf and brush the top with melted chocolate. Let the mixture stand in a cool place for two hours. Then turn onto a greased paper, and coat the other side with the melted chocolate. When thoroughly set, cut into bars.

Maple Sugar Fudge.

If you have some sugar left over since maple sugar time, try the following: Boil together two cupfuls of maple sugar broken into small pieces, one tablespoon of butter and one cupful of milk until it forms a ball when dropped into cold water. Let stand until partly cool, then add one cupful of broken nut meats and beat briskly until the mixture is nearly ready to set. Pour into a buttered tin and cut into squares.

Nut Crisps.

Cover the bottom of a well-buttered pan thickly with two cups of broken peanut kernels. Melt two cups of sugar in a saucepan, stirring constantly to keep from burning and from sticking to the sides of the pan. As soon as melted, remove from fire and pour over nuts. When cold break into pieces.

couldn't go home for Christmas, because I know you wanted to, but it's nice to have you here," she vanished before astonished teacher could reply.

"How could I ever think that boy was hopeless," teacher mused as she took down her hair. "A boy who can sing like that, and apply himself enough to learn the words to all those songs and teach them to that bunch could do anything." Teacher had been trying hard to teach the three R's to those boys and she knew.

"Why, all he needs is to be interested. She dropped her brush, astonished at her discovery. "Why, that's all they all need." She stared at the light as she went once more over the events of her one term. "I've complained all the time that they didn't behave and were not interested, and that the parents were indifferent. And I've never done a single, blessed thing to get anyone interested. Just moped and thought I was abused. Complained because I hadn't things to work with, and never made an effort to get anything. And here's this boy without even a tuning fork and only an old hymn book, has taught those youngsters a half dozen hymns in a month. And that 'Noel' is the hardest thing to sing unaccompanied. Mr. Brown says he always works two months with the choir boys on it."

She picked up her brush and began to stroke her hair. "I'll bet you if I put it up to Willie, we could get new maps and charts and an up-to-date dictionary this winter. He'd just revel in getting up a concert. Why couldn't we? And if they got interested in that I could use that as an incentive to get them to study." Ideas and plans began to formulate.

"You big baby," she looked severely at the girl in the mirror. "What were you crying for an hour ago? This is a perfectly lovely district and the children and everyone in it are grand."

The remark of the moderator when she complained to him once, came back to her as she climbed into bed.

"I've noticed young ones allus does about as you let 'em, and grown-up humans aren't so much different."

Well, she was going to see that they all did differently in "Burton Twp. Dist. No. 3," from now on. And the "all" included the teacher.

FOR THE CHRISTMAS DINNER.

I WONDER how many Bob Crachits and Tiny Tims will have their plum pudding this year? Probably not so many as in Dickens's time, but here's hoping a goodly number will still be able to get their holiday pudding.

This is the way Tiny Tim's mother made her pudding. At least this recipe has been in use in one English family for more than two hundred years, so if Mrs. Crachit didn't make hers this way she should have.

English Plum Pudding.

Six ounces of suet chopped fine; six ounces of Malaga raisins, stoned and chopped; eight ounces of currants washed and picked over carefully, three ounces each of bread crumbs and sifted flour; one-sixth of a grated nutmeg, three eggs, a small blade of mace, and the same of stick cinnamon powdered; one-half teaspoon of salt, one-half pint of milk, four ounces of sugar, one ounce of candied lemon, one-half ounce candied citron.

Beat eggs, sugar and spices well; add milk and rest of the ingredients. Dip a closely woven cloth in boiling water, wring it, flour the inside slightly. Tie up the pudding in it and put into a kettle containing six quarts of boiling water. Keep a supply of boiling water on hand as, if the water ceases to boil the pudding will be heavy. Boil six hours.



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Our Boys' and Girls' Page

The Blows You Strike

By E. L. Vincent

OUR youngest boy came home from school one day with flushed cheeks and flashing eyes. Mother saw that something was wrong, but she waited for it to come out, which it did very shortly.

"If I hadn't been a Vincent," he declared, "I would have given that boy a licking he never would forget."

The name saved him from disgracing himself in a fight. He knew we would be grieved and hurt if our boy got into a row of that kind, so he ran all the way home to tell about it. And that was the best blow our Laddie could possibly have struck for the good name of the family. If he had stood up to a fight to the finish and had beaten his school fellow to a frazzle, it would not have meant so much for us as did that hard-earned victory when the thought of father and mother back yonder at home kept him true and clean.

What kind of blows do you strike for those who know you best? Take father and mother, for instance. When out with the fellows, do you always stand up for the home folks loyally? It is pretty easy in these days to let the standard down a bit. Temptations come to do and say little things that are not quite as many as they should be. How do you meet these?

A little chap I know who was being pumped by an inquisitive neighbor's wife while on the way to school about some of the home affairs, bravely stood up and said: "My mother doesn't want me to tell." That shut the lips of the thoughtless woman pretty effectually. And the boy did right. We are to guard the little secrets of the home the best we can.

Then, too, how about the man you work for, if you are away from home now? It did me a world of good not long ago to hear a boy who was in the employ of a business firm bravely and loyally speak in behalf of the house. The fellows he was with were trying to get him to say something unfavorable about his employers. They had all told of weak places in the methods of their employers. Now it was the other boy's turn; but not a single word

did he speak that would in any way tarnish the good name of his house. He had plenty of good words for them. His eyes gleamed enthusiastically when he was speaking about them; but they could not get a single disloyal expression from his lips. And I know they honored him for it.

I do not suppose the firm that boy worked for ever knew or will know just how loyal their boy employe is to them. That does not matter so much. If he follows up that policy of speaking well always and everywhere of the men for whom he is working, he will strengthen the house more than he will ever know; for such blows do count for good. Their influence will go farther than any of us can imagine.

Have you ever stood and watched the down of a thistle as it drifted away through the air? To you, standing on the ground, the air seemed still; but up where that fluffy thing was there was current enough to bear it along slowly, until at last it went out of sight. And somewhere that down of the thistle came to the earth. It fell into some little hollow, perhaps, and there when the warm rains of spring came it took root, and soon there was a new plant.

This is quite like the influence of our words for good. They do not go out of sight and die. Somewhere, sometime, they get a lodging place in some mind and spring up to bear fruit that is worth while. You and I may not always know that this is so. But that does not matter. If we strike our blows for the right, manfully and with an honest purpose, we may be sure it will tell by and by.

Just now there is a tendency with a great many people, and some of them, I am sorry to say, are on the farm, to say things that are not very friendly to the government under which we live. It is a habit men get into very easily; but it is a bad habit, for all that. For such words are like thistle seed. They bear thistles, and we all know these are about the worst things the farmer has to deal with. They never do anybody any good, but they do hurt and sting and crowd out better plants.

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A Christmas Story

By Helen Kent



RANDMA BURTON sat in her easy rocker, silently looking over a pile of letters. Each letter was given careful attention and then put aside on the mantel. Soon she reached for her knitting and as the needles clicked in making hurried rounds of the little red mitten, Grandma smiled to herself as if some satisfactory plan was being worked out.

That night when the children came from school, each in turn looked in to ask Grandma what she thought of the Christmas note and the list of gifts each hoped to find in his stocking. Then Grandma would take the individual letter and talk over the particular toys selected and finally she said to small John, aged five, "John if you had never seen, which of these gifts would you be willing to give him for his very own?"

John looked puzzled and after careful thought said, "Well, he could have

the train of cars, for my old ones are not so bad only the paint is worn off. Yes, I would give him the engine and cars."

Grandma was pleased and patted John on the shoulder, saying, "Just fine, John, I know any small boy will be glad of such a gift."

When Ted had piled the wood-box high with wood for mother's kitchen stove, he looked in to see Grandma. It had been the custom for years to give all of Santa Claus' letters to Grandma, who had passed some seventy Christmas seasons and knew just how to help both children and Santa Claus at this busy season of the year. "Read my letter over, Grandma?"

"Yes, Ted, and it was a list to make any boy happy I'm sure, but Ted, if you had an imaginary brother whom you had never seen, which of the list would you be willing to divide with him?"

"Divide?"
"Yes, which gift would you give

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away to someone less fortunate?"
"Well, I never. Grandma, you must have had a secret treaty with old St. Nick to help him make things go farther. But I'll take the top one off my list and give away my sled."

"God boy Ted, you will be a big generous man some day." Grandma's new plan was progressing finely and she chuckled to herself over the serious way each had sacrificed some worthwhile gift.

Soon Margaret came in to show a G plus arithmetic paper. Problems had been hard for Margaret and Grandma had promised to keep close account of all the good marks. "That is a fine paper and a neat looking paper, too. Be sure to bring me all the good papers. I look for one every day and I see the problems are a little harder, too. I would like to talk over your Christmas note with you." The same question was put to Margaret as had been to her brothers, and she said, "If I had an imaginary sister with brown eyes and brown hair like mine, I would give the plaid hair ribbon I asked Santa for."

This pleased Grandma so much, she was still smiling when twelve-year-old Grace came in for an interview. She listened soberly and said, "I would give half my list if she were to be real instead of imaginary. I wish I had been one of twin girls, it must be so fine to have a sister old enough to be sort of a chum. But then, I will divide with an imaginary sister, she can have the box of stationary which I had hoped would have two sizes of letter paper in it."

This completed the letters on Grandma's mantel and after she had marked the gift to be given away on each list, she dozed off to sleep in her easy chair. The days flew by, just as busy days always do. Mothers were making good things for Christmas dinners. Little folks gazed very anxiously in at shop windows and played the game of choosing what they most wanted or what they would like best of all to give to grown-up friends. When Christmas Eve came, each one in the Burton family was on hand with a stocking to hang before the fireplace.

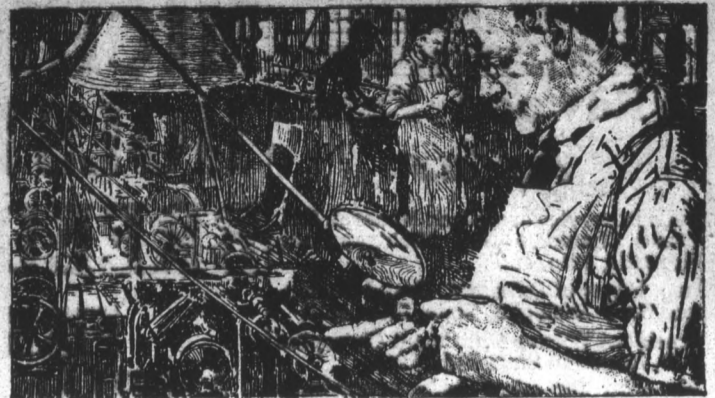
Then Mr. Burton surprised them by saying, "Put on your wraps, everyone, and I'll take you for a spin. It is just 8:30 and we can see the shop windows and the big municipal tree which will be lighted in the park. We shall all sleep better after our lungs are filled with fresh air."

No one had to be coaxed and it was barely ten minutes before all, even to Grandma, were ready. The big tree in the park was beautiful with many colored lights and at the very tip-top a cross was sending out its radiance. After a little Mr. Burton started to drive down the avenue and the windows all looked bright and cheerful as they sped along for blocks and blocks. Suddenly the car came to a standstill and Mr. Burton said, "Let's all go in here a jiffy." The big door swung open and they found themselves in a big room, plain but neat, where fifty or more children were seated about a pretty little tree. Each child was examining toys and chattering to others in childish delight. The matron, a pleasant-faced woman, came to meet them with a hearty handshake for each one, large and small, and to Mr. Burton she quietly said: "Thangs so much for this tree, it is the finest one we have ever had and the nuts and candy will give the children no end of pleasure."

Grandma Burton said, "I wonder if Santa found the imaginary brothers and sisters all right?" The Burton children began to suspect the plan their Grandmother had so cleverly worked and they moved about among the little folks. Very soon each had located his imaginary brother or sister by the toy that had been sacrificed.

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W. E. SCRIPPS, Prop., Sidney Smith, Supt.


WOODCOTE AUGUS

1919 Winnings to Date			
Mich. State Fair	12 1sts	2 cham.	1 gd. ch.
N. Y.	9 1st	2 "	1 "
West Mich.	11 1st	3 "	2 "
Saginaw	10 1st	4 "	2 "
International—2 firsts including the undefeated calf herd for 1919.			
Every Animal Bred At			
WOODCOTE STOCK FARM, Ionia, Mich.			

Cloverly Angus, 5 cows with calves, rebred; 2 bred cows; 1 two year old, 2 yearling heifers. Price \$2300. 8 yearling bulls, \$225 each. Geo. H. Hathaway & Son, Ovid, Mich.

For sale at reasonable prices, several Aberdeen Angus bull calves and yearling bulls sired by Lord Ida 2nd No. 248830. Lang Bros., Davison, Mich.

GUERNSEYS



Butter Fat at Lower Cost Per Lb. No other breed can produce rich golden butter fat as cheaply as the Guernsey. Official yearly records show—one cow has given 24,008 lbs milk and 1,098 lbs butter fat. Write for our free booklets. The American Guernsey Cattle Club, Box 140, Peterboro, N. H.

QUALITY ECONOMY QUANTITY

GUERNSEY BULLS FOR SALE

Atta Boy of Maple Crest born April 1919. Sire imp. Spotswood Sequel A. R. 19 A. R. daughters Dam imp. Albinia price \$175.00. Pride's May King of Avondale born June 1919 Sire Nora's May King of Bailey Falls dam Queens Pride of Harrison A. R. price \$150.00. May Boy of Halcyon born April 1917 Sire Byron S. dam Mixer Mildred price \$250.00.

Avondale Farms, Wayne, Mich.

Registered Guernseys

A two year old bull, and nearly four months old bull calf. F. E. ROBINSON, Room 307, M. C. R. B. Depot Bldg., Detroit, Mich.

GUERNSEYS

Two fine bull calves for sale, by our A. R. May Rose Herd Sire. Priced to sell. Send for pedigree and description. GILMORE BROTHERS, Camden, Mich.

REGISTERED GUERNSEYS

Those choice heifers we adv. have gone to good homes. We have a fine bull calf—worth the money. J. M. WILLIAMS, North Adams, Mich.

GUERNSEY bull calves whose sire, dam made 19,460.20 milks \$99.05 fat. Their mother's sire's dam made 15,109.10 milks, 778.80 fat. T. V. HICKS, Battle Creek, Mich.

GUERNSEYS Reg. bull calves, 6 mos. old, at \$75 each. Write your requirements. Walter Phipps Farms, 80 Alfred St., Detroit, Mich.

Reg. Guernsey bull calves for \$50.00 delivered, sired by the best bred bull in Michigan. Also heifer calves for sale. E. A. BLACK, R. 3, Howard City, Mich.

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

Registered Guernsey Bull for sale, 2 years old. KRESTEN THOMSEN, Rudgate Farm, Birmingham, Mich.

Holstein-Friesian Cattle

Herd Headed by Segis Pontiac De Nijlander

A 32-lb grandson of Michigan's great 35-lb. champion, His dam, Oak Valley Korndyke Beets Segis Fan, 32.06, is also a Michigan prize winner. Write for calf list. Wah-be-me-me Farms, White Pigeon, Mich.

\$125 Liberty Bonds or terms gets bull calf born May 29, 3/4 white, 9 nearest dams avg. 23.85 lb. bu., 533 lb. milk in 7 days. Dam gddam. of Pontiac Cornucopia M. L. McLAULIN, Redford, Mich.

A Fine Herd of Reg. Holstein

yearlings. Consisting of 10 richly bred heifers and the 8 months old bull, Sir Johanna Ormsby Pietertje. This is a great foundation for a herd, and a fortune. I also have 8 cows, two to five years old, fresh or soon due. I am going to sell these before Nov. 15th. It is your move if you want them. L. E. CONNELL, Fayette, Ohio.

MICHIGAN HOLSTEIN BREEDERS

FIRST ANNUAL SALE TUESDAY

Jan. 13, 1920

AT Michigan Agricultural College East Lansing, Mich.

AN AUCTION EXTRAORDINARY OF

Seventy-Five Holsteins

Chosen from the Best Herds.

Guaranteed by our best breeders.

Four cows with records above 30 lbs. butter 7 days. One with 1100 lbs. butter in a year.

Sixteen animals with dams above 30 lbs. and up to 33.5 lb. including five bulls.

Many soon to freshen. All bred to bulls from dams with 30 to 45 lb. records.

For Catalog Address

CHAS. A. DANIELS, Sec'y. OKEMOS, MICH.

Facts in BLACK & WHITE



Holsteins Talk in the Language of Money

For many years purebred Holstein-Friesian cattle have been proving their superiority as money-makers. If you want to hear a story of prosperity, listen to the man who breeds and owns Holsteins. Every angle of this Holstein superiority is fully covered in our free booklets which you may have for the asking.

Write today for these uncontroversial proofs.

THE HOLSTEIN-FRIESIAN ASSOCIATION 164 Hudson Street Brattleboro, Vermont

"Top-Notch" HOLSTEINS

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

Hatch Herd (State and Federal Tested) Ypsilanti, Mich. Offers young sires out of choice advanced registry dams and King Korndyke Artis Vale: Own dam 34.16 lbs. butter in 7 days; average 2 nearest dams 37.61, 6 nearest 33.93, 20 nearest 27.83.

The Traverse Herd

We have what you want in BULL CALVES, the large fine growthy type, guaranteed right in every way. They are from high producing A. R. O. ancestors, Dam's records up to 30 lbs. Write for pedigrees and quotations, stating about age desired.

TRAVERSE CITY STATE HOSPITAL Traverse City, Mich.

GET A BETTER BULL WINNWOOD HERD

BREEDERS OF

Registered Holstein-Friesian Cattle

We have bull calves ready for service and a new crop of baby bulls coming all of Maplecrest breeding. We have one of the largest pure bred herds in Michigan and this will be the last chance to buy sons of Flint Maplecrest Boy, cheap. For his daughters start to freshen this winter and they will all go on yearly tests. We own them all and will develop them. Don't wait, a bankable note is the same as cash to us and our record will be right. Tell us your wants.

JOHN H. WINN, (Inc.)

Lock Box 248, Roscommon, Mich.

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

CLUNYSTOCK FARM

A Semi-Official Bred-Bull to Head Your Herd
Maplecrest Application Pontiac No. 132652, heads your herd
His dam's record is 1344.3 lbs. butter, 23,421.2 lbs. milk in 365 days, and 35,103 lbs. butter and 615.6 lbs. milk in 7 days.
One of his sons from our good record dams will carry these great blood lines into Your Herd. For Pedigrees and Prices write to
R. BRUCE McPHERSON, Howell, Mich.

BULL

Born May 15, 1919, straight individual, well marked, good condition and growth, more white, sire a 29-lb. son of Colantha Sir Korndyke Colthilde, 21 A. R. O. daughters Dam a 20-lb. granddaughter of Dekol 2ds Paul Dekol No. 2, 38 A. R. O. daughters. Price \$200 delivered, pedigree and photo. Herd Tuberculin Tested. HOWARD EVANS, Eau Claire, Mich.

HOLSTEINS OF QUALITY

Cows all sold. Have 15 choice heifers some bred to a 33 lb. and 35 lb. bulls. Some open, will breed anytime to suit purchaser to a grandson of May Echo Sylvia. Record of two nearest dams of herd sire is 35 lb. butter and 812 lb. milk in 7 days.
C. HARDY, Rochester, Mich.

Reg. Holsteins Herd bull, a double grandson of De- Ko 2ds. Butter Boy 3d. A splendid individual, kind, sure server. Dams record at 6 yrs. butter 7 days 28.53 lbs. milk 619. 365 days at 2 1/2 yrs. butter 82 lbs. milk 1822 lb. W. B. Reader, Howell, Mich.

Beautiful Holstein bull calf nearly white born Oct. 23 19, Price \$75.00 reg. and del. Better wire for him. J. ROBERT HICKS, St. Johns, Mich.

REGISTERED Holstein bulls sired by King Zerna R. Alcarra Pontiac, son of the \$50,000 bull; some from good A. R. O. cows. C. H. Giddings, Gobleville, Mich.

MICHIGAN JERSEYS

Which is the best dairy breed? Michigan Jersey breeders feel that this question has been answered many times.

Jersey superiority was proven at the Chicago, St. Louis, and Ohio tests when large herds from different breeds were tested for a year, and the Jersey led them all.

Many beginners like to do their own experimenting, but that takes time and is usually very costly.

The question of superiority being settled leads us to the point of offering you the benefit of our years of experience. We know you can succeed with Jerseys and we are willing to help you get a good start.

Write to, or call upon, any Jersey breeder in Michigan for assistance. The way to get ahead is to go ahead. Start with Jerseys now!

MICHIGAN JERSEY CATTLE CLUB.

BUTTER BRED JERSEY BULLS FOR SALE CRYSTAL SPRING STOCK FARM, Silver Creek, Allegan County, Michigan.

The Wildwood Jersey Farm Bulls for sale by Majesty's Oxford Fox 134214 and Eminent Ladys Majesty 150934, and out of R. of M. Majesty dams. ALVIN BALDEN, Capac, Mich.

Maple Lane R. of M. Jersey Herd. For sale Blue Belle's Premier son of Sophie's Premier that sold for \$1750 this fall. Bulls and bull calves. R. C. Red cockerels. IRWIN FOX, R. 3, Allegan, Mich.

U.S. Accredited Jersey Herd. We offer for sale bulls ready for service also bull calves R. of M stock. Address GLENBURNIE FARMS, R. 2, Washington, Mich.

For Sale. Five Registered Jersey Cows. Freshler soon to freshen. Also young bulls ready for service. H. C. & A. H. Donaldson, Fenton, Mich.

LILLIE Farmstead Jerseys—A few heifers bred to freshen soon, heifers bred to freshen next fall, 3 cows, R. of M. bull calves. C. C. Lillie, Coopersville, Mich.

Bulls ready for service from our herd bull Marguerite's Premier, gds. of Pops 99th of Hood Farm, and cows now on test for R. of M. Smith & Parker, Howell, Mich.

HARWOOD HEREFORDS

Young stock both sexes for sale. "Keep On 508019" heads the herd. Write us your wants. Visitors welcome.

JAY HARWOOD, Ionia, Mich. Farm six miles south of Ionia.

HEREFORDS

3 Prince Donald, 3 Farmer and one Poll-ed bulls from 7 to 13 months old, for sale.

ALLEN BROS.

PAW PAW, MICHIGAN

HEREFORDS

of Quality. Renner Bullion, sired by the \$9500.00 Bullion the 4th, now heads our herd. Inspection invited. COLE & GARDNER, Hudson, Mich.

Herefords. Just purchased 3 new herds, now have either sex, horned or polled, any age. Priced reasonable. THE McCARTYS, Bad Axe, Mich.

HEREFORDS: young stock of either sex for sale. RALPH S. SMITH, Kewadin, Mich.

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

For Sale Shorthorns of Quality Scotch and Scotch Topped descendants of Archers Hope, Avondale, Maxwellton Sulton and White Hall Sulton, Model Type, by the Oscola Co. Shorthorn Breeders Ass. John Schmidt, Sec. Reed City, Mich.

BIDWELL SHORTHORNS

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

BIDWELL STOCK FARM Box B, Tecumseh, Mich.

Richland Stock Farms

Home of the Michigan Champions. Shorthorn Sires in Service:

IMP. Lorne, IMP. Newton Champion, Sterling Supreme. Why not buy a young bull to head your herd that carries the blood that is making Shorthorn History. Only a few real headers left. Write your wants.

C. H. PRESCOTT & SONS, Tawas City, Mich.

Ionia Co. Breeders Ass'n

Have for sale Reg. Shorthorns, Herefords, Angus, Holsteins, Jersey, Red Polls and Brown Swiss Cattle, Shropshire, Hampshire and Lambouillet sheep. Poland China and O. I. C. swine. Write for list. FRED W. BRICKLEY, Sec., R. 3, Ionia, Mich.

Scotch Shorthorns Imp. Royal Bruce heads a select herd of females consisting of the Rosewood, Lovely Orangeblossom and Roan Lady and several other good females. Two bulls ready for service for sale also a few females. CARR BROS. & CO., Bad Axe, Mich., Address Norman Car, Secretary.

Meadow Hills Shorthorns. Herd headed by Silver King, full brother of Lavender Sultan Purdue University's great sire. For sale females of all ages, a few young bulls. Geo. D. Doster, Doster, Mich.

MILKING SHORTHORNS. Clay bred bull calves. Davidson and Hall, Tecumseh, Mich.

For Sale Several choice young Shorthorn cows and heifers Airdrie Duchess and Rose of Sharon families. E. S. Batcheler, R. 6, Howell, Mich.

Shorthorns Good Scotch bred bulls, cows and heifers priced right. W. B. McQUILLAN, R. 4, Howell, Mich.

SCOTCH Shorthorns for sale. Special—A roan 17 mo. old, bull suitable for herd header. Lawrence P. Otto, Charlotte, Mich.

Milking Shorthorns of best Bates breeding one bull 10 mo. old for sale, Price \$150.00. E. H. KURTZ, Mason, Mich.

Bulls all ages, 6 yr. cow due in Jan. \$300; 2-2 yr. old B heifers \$250.00 each. Central Michigan Shorthorn Ass., Oscar Skinner, Sec., Gowen, Mich.

FOR SALE One ear load registered Shorthorn Cattle. H. W. HUBBARD & SON, Ovid, Mich.

Thoroughbred Brown Swiss bull calf. Sired by Edison 5471. Dam 10080, a high test heifer, sired by King Master 2460. ERNEST H. SHERWOOD, R. 4, Saranac, Mich.

HOGS

Attention Berkshire Breeders I have an extra good last spring boar, well marked, long bodied, good size. Two litter mates of his sire won at the Eastern Berkshire Congress and many swine shows. Sold only to use in good Berkshire herd. Price reasonable. W. H. EVERY, Manchester, Mich.

Registered Berkshire Boars: ready for service. A few gilts and sows bred for May and June farrow. Also spring pigs. CHASE STOCK FARM, Marlette, Mich.

Registered Berkshire pigs for sale and also sows with pigs; call or write KRESTEN THOMSEN, Rudgate Farm, Birmingham, Mich.

Berkshires Bred and open gilts serviceable boars: can furnish pairs or trios. RUSSELL BROS., R. 3, Merrill, Mich.

Registered Berkshire boars, one yearling, two spring boars priced reasonable and guaranteed to be O.K. B. B. REAVEY, Akron, Mich.

DUROC JERSEYS Boars sired by a son of King the Col. E. D. HEYDENBERK, Wayland, Mich.

Duroc spring boars. Sired by Orion Cherry King Col. 2nd, first aged boar at State Fair. These boars priced reasonable. W. C. Taylor, Milan, Mich.

DUROC JERSEYS

CAREY U. EDMUNDS, Hastings, Mich.

DUROC BOARS of size, quality and breeding. All are sired by State Fair Winner. Come see herd. NEWTON BARNHART, St. Johns, Mich.

INTERNATIONAL HAY AND GRAIN SHOW.

THE hay and grain show proved one of the most interesting features of this year's International. Realizing that good breeding depends upon liberal feeding of the proper kinds of feedstuffs to bring out the best in heredity, the Chicago Board of Trade hung up liberal cash premiums amounting to \$10,000 to stimulate the production of better feed crops on American farms. Many pedigreed seed growers of Michigan were prominent among the exhibitors of hay and grain. The following is a list of awards in the hay and grain division:

For the best half bushel of rye: First, J. J. Davis, Jackson, Mich.; 2d, John Lucas, Alta, Canada; 3rd, Swartz Bros., Waukesha, Wis.; 4th, L. A. Sedgwick, Parma, Mich.; 5th, Peter Postinen, Chatham, Mich.; 6th, J. W. Beckman, Kokato, Minn.; 7th, Gifford Patch, Clark's Lake, Mich.; 8th, Reinhold Kressin, Jackson, Wis.; 9th, Sauerman Bros., Crown Point, Ind.; 10th, Noyes Raessler Beloit, Wis.

For the best half bushel of Soft Red Winter Wheat: First, I. B. Keeley, Marysville, Ohio; 2nd, John Dunbar, Rudyard, Mich.; 3rd, R. B. Caldwell, Cumberland, Ohio; 4th, A. W. Jewett & Sons, Mason, Mich.; 5th, Jacob Mundell, Frankfort Ind.; 6th, Jay Lawrence, Coshocton, Ohio; 7th, Aaron Hagenbuck, Three Rivers, Mich.; 8th, Wm. Ottmeyer, Jackson, Mich.; 9th, A. H. Crosby, New Buffalo, Mich.; 10th, A. B. Reed, Richland, Mich.

For the best half bushel of Two-Rowed barley: First, Seagor Wheeler, Saskatchewan, Canada; 2nd, Joseph Meyers, Freeport, Ill.; 3rd, Samuel Larcombe, Manitoba, Canada; 4th, George Lewis, Manhattan, Mont.; 5th, John Howell, Montrose, Colo.; 6th, Jay Lawrence, Coshocton, Ohio; 7th, C. E. Troyer, La Fontaine, Ind.; 8th, A. W. Jewett & Sons, Mason, Mich.; 9th, John Hans, Jefferson, Wis.; 10th, H. P. West, Ripon, Wis.

For the best half bushel of Six-rowed barley: First, L. L. Young, Nampa, Idaho; 2nd, Anton Bohl, Beaver Dam, Wis.; 3rd, Otto Wolf, La Crosse, Wis.; 4th, Jno. Dunbar, Upper Peninsular, Mich.; 5th, Frank Gasper, Rockland, Wis.; 6th, W. F. Tullar, Warren, Minn.; 7th, J. L. Krause, Reesville, Wis.; 8th, Wm. Bell, Arlington, Wis.; 9th, W. F. Otcheck, Frinnell, Iowa; 10th, H. W. Whitehead, Rockland, Wis.

For the best half bushel of white or yellow oats: First, H. W. Whitehead, Rockland, Wis.; 2nd, Frank Gasper, Rockland, Wis.; 3rd, B. Brubaker, Washburn, Wis.; 4th, Morum Bros., Hollock, Minn.; 5th, Ernest Peterson, Harmond, Iowa; 6th, H. E. Rosenow, Oconomowoc, Wis.; 7th, Walter Nystrom, Worthington, Minn.; 8th, H. M. Krause, Riesville, Wis.; 9th, L. L. Lawrence, Van Buren, Mich.; 10th, Thos. Totten, Woodslee, Ont.

For the best half bushel of black oats: First, H. P. West, Ripon, Wis.; 2nd, Thos. Totten, Ontario, Canada; 3rd, A. W. Jewett & Sons, Mason, Mich. For the best twenty ears of White Dent corn: First, Edward Peters, La Crosse, Wis.; 2nd, J. Emmitt Bruner, Ridgeway, Wis.; 3rd, H. C. Latt, Tracy, Minn.; 4th, Otto Wolf, La Crosse, Wis.; 5th, Henry Meinhard, Sherburn, Wis.; 6th, John Rasmussen, Freeburn, Minn.; 7th, C. L. Blanchard, Sherburn, Minn.; 8th, Theron Thorpe, Beloit, Wis.; 9th, George Washington Farm, Mankato, Minn.; 10th, Ernest Carson, Chatfield, Minn.

For the best twenty ears of Yellow Dent corn: First, Joseph A. Bunker, Ridgeway, Wis.; 2nd, George Brueckner, Jefferson, Wis.; 3rd, John Berdel, Jr., Stoddard, Wis.; 4th, H. C. Brueckner, Jefferson, Wis.; 5th, G. E. Kittleson, Ceylon, Minn.; 6th, Chas. Laoughlin, Three Oaks, Mich.; 7th, Lewis Scott, Fairmont, Minn.; 8th, Peter Scott, Fairmont, Minn.; 9th, A. H. T. Shakheim, Gotham, Wis.; 10th, A. I. Wringle, Beresford, South Dakota.

For the best single ear of corn: First, Lewis Scott, Fairmont, Minn.; 2nd, H. C. Lau, Tracy, Minn.; 3rd, G. A. Radke, Tracy, Minn.; 4th, Mrs. Leo P. Kelly, Beloit, Wis.; 5th, Sam'l Carlson, Elk Point, South Dakota. For the best fifty-pound bale of timothy: First, George Sterling, Salesville, Wis.; 4th, John Monfoster, Bozeman,

DE LAVAL the world's standard CREAM SEPARATOR. There are more De Laval in actual use than of all other makes combined. A De Laval purchased now will have paid for itself by spring. THE DE LAVAL SEPARATOR CO. NEW YORK CHICAGO SAN FRANCISCO. Ask nearest agent for a demonstration - ask nearest office for his name.

Earn Big Money Cutting Wood. With a Howell Dress Saw Machine. Turn your timber into cash. Big coal shortage. The demand and prices for fire wood are greater than ever. Our drag saw cuts more wood in less time and at less expense than any machine built. Send for our FREE catalog and prices. R. R. Howell & Co., Mfrs., Minneapolis, Minn.

THE FAMOUS O.I.C. SWINE. We have the undefeated Herd of the World. Winning premier breeder and exhibitor at every fair shown in 1919-1918-1917, including the following state fairs--Ohio, Michigan, Indiana, Illinois, Missouri, Kentucky, Tennessee, Oklahoma, New York, Alabama, Tri-state fair Memphis, and the National O.I.C. twice. Stock of all ages for sale. Registered free in the O.I.C. association. Order now. We will ship any of our stock on approval allow you to keep three days before you have to pay for it. You will be your own judge on your own farm. CRANDELL'S PRIZE HOGS, Cass City, Mich.

O. I. C. BOARS FOR SALE. One of the Best Herds in Michigan. Big type, growthy boars of all ages. I ship C. O. D., pay express and register in buyer's name. If you want a real choice boar, guaranteed right in every way, write me. J. CARL JEWETT, R. 5, Mason, Michigan.

Duroc Opportunity. What would the earning capacity of a Brookwater Boar be in your herd? A mid-west breeder states that the Brookwater boar he used added from \$75 to \$100 to every gilt bred to him. It paid this man to use one of our boars it will pay you. We have several that we are offering at prices which appeal to the small breeder who must of necessity be a conservative buyer. We have a few that are good enough to be used in high class herds at prices in keeping with their individuality and breeding. Money invested in a good herd boar very speedily increases the value not only of what you sell but what you keep. Send for price list or better, visit the farm. BROOKWATER FARM, Ann Arbor, Mich. HERBERT W. MUMFORD, owner. J. BRUCE HENDERSON, Manager.

Registered Duroc Boars. We have a choice lot of spring boars, sired by Michigan Cherry Col. No. 118479. Ira Jackson selected this boar to head our herd. Our prices are within every farmer's reach. The Jennings Farms, Bailey, Mich., R. F. D. No. 1. Duroc Jerseys. Our herd won 15 firsts, 9 seconds, 3 thirds, 3 fourths, 2 fifths at leading Michigan fairs including State Fairs. We have some choice boars ready for service, reasonable prices. Some bred sows later on. RUSH BROS., OAKWOOD FARM, Romeo, Mich.

Chester Whites, spring and fall stock for sale won highest honors against strong competition. F. W. ALEXANDER, Vassar, Mich. Pure Bred Chester Whites. Aug. farrow, four pigs at \$20, each delivered if taken soon. Nice thrifty. R. V. HOYLE, R. 3, Mt. Pleasant, Mich.

O. I. C. and Chester White Swine. Strictly Big Type with quality. Spring pigs of March and April farrow. A choice lot of boars. Will only spare a few more gilts at present. Will ship C. O. D. and record them free. Newman's Stock Farm, Marietta, Mich. R. No. 1.

O. I. C. Pigs. 35 to 40 lbs. Pairs and trio, no akin from matured stock. I will ship to you on approval C. O. D. \$20, each Hog. HARLEY L. FRY, Scott, Ohio.

O. I. C.'s. I will ship C. O. D., pay the express and record free of charge every boar born in Oct. and Nov. F. C. Burgess, R. 3, Mason, Mich.

O. I. C.'s. Last spring boars all sold. Have an extra good lot of last spring gilts good fall pigs not akin. Good stock, registered free. 1/2 mile west of Depot. OTTO B. SCHULZE, Nashville, Mich.

O. I. C.'s. Am offering a few September pigs that combine size and quality. C. J. THOMPSON, Rockford, Mich.

O. I. C.'s. One June boar and fall pigs not akin. Also Shorthorn bull calf 7 mos. old. Stock registered free. JOHN O. WILK, Alma, Mich.

O. I. C.'s. Big type serviceable boars, summer farrowed. G. P. ANDREWS, Dansville, Mich.

O. I. C.'s. Have some choice spring boars and gilts; also this year's fall pigs. WEBBER BROS., R. 2, Phone 408, Royal Oak, Mich.

O. I. C.'s. Service boars, fall pigs no akin also Buff B. pigs. at \$3.00 each. CLOVER LEAF STOCK FARM, Monroe, Mich.

L. T. P. C. I spring boar, (by Long Jones) the best pig you ever saw; price \$100.00. send check with first letter or the other fellow will beat you. If you don't like description will return check. A few good spring boars left at farmer's prices. Gilt will be bred to a grandson of Giant Buster and a Grand Son of Dishers Giant, no better pair of young boars in the state, and Wiley's King Bob. H. G. SWARTZ, Schoolcraft, Mich.

Boars also sows and pigs. Real Big Type Poland B Chinas. Bred big for 25 years. Sired by Mich. Buster by Giant Buster, litter 14 out of 16 sows. Miss Queen 2nd, some breeding, also by Butler's Big Joe by Rust's Big Joe, out of a Wonder Queen, nuf said. Write us your wants, we will treat you right, our prices are low. J. C. BUTLER, Portland, Mich.

LARGE Type P. C. the largest in Mich. Spring boars now ready to ship. Boars for the breeder and boars for the farmer. Come and see the real large type with quality. Free delivery from Parma furnished system. Look up my exhibit at the Great Jackson Co. Fair, Sept. 8th, to 11th, expenses paid if not as advertised. W. E. LIVINGSTON, Parma, Mich.

Big Bob Mastodon Sire is Caldwell Big Bob Champion of the world, his dam's sire was the Grand Champion of Iowa State Fair. Boars ready to ship. C. E. Garnant Eaton Rapids, Mich.

B. T. P. C. Spring Boars all sold. One Oct. 21st yearling boar, wgt. 425 lbs., as near perfect as any pig in Michigan. Price \$125. Gilt ready Jan. 1. Bred to a good son of \$10,000 Harrison's Big Red. Every pig recorded free. JOHN D. WILEY, Schoolcraft, Mich.

L. S. P. C. Ten husky spring boars. Well bred and well fed ready to ship. F. T. Hart, St. Louis, Mich.

T. P. C.'s, for sale, our herd boar. Mow's Wonder B. der 19025 bred by Mow, extra good one. Price \$100. Spring boars and gilts from prize winning sire and dams. W. Brewbaker & Sons, R. 5, Elsie, Mich.

Big Type P. C. Boars, best breeding, doubly immunized. A. A. WOOD & SON, Salsine, Mich.

P. C. Boars Long bodied, heavy boned, with best of breeding. Satisfaction guaranteed. B. W. MILLS, Salsine, Mich.

Big type P. C. Choice spring boars from Iowa's greatest herd out of 100 lbs. sire and mammoth sows, big boned fellows. E. J. Mathewson, Burr Oak, Mich.

TWO HERD BOARS for sale. Ask for description of a real boar, live wires. Also have a few fall pigs, pair not akin. C. A. BOONE, Blanchard, Mich.

Big Type Poland Chinas. Spring boars by BIG BOB. Out of sows by Grand Master and Hillcrest Wonder. Also Fall Pigs. HILLCREST FARM, Kalamazoo, Mich.

Large Type Poland Chinas for sale; something good in spring boars; write or see them; free delivery from Manchester. A. A. Feldkamp, R. 2, Manchester, Mich.

Big Type Poland Chinas. Sired by Smooth Maiden litter mate to the Ill. Grand Champion. The big boned, deep, long bodied kind at farmer's prices. Wah-be-me-me Farms, White Pigeon, Michigan

Large type P. C. Spring boars and gilts now ready to ship. Also one fall yearling boar and fall pigs. CLYDE FISHER, R. 3, St. Louis, Mich.

Big Type Poland Chinas. We aim to keep our herd in size and in quality. We have sows sired by Big Bob, the Yankee, Gertrude Jones and Gertrude King. Our herd boar is one of the largest and smoothest and of choice breeding. He is proving to be a great sire. We like the good ones and believe you do also. We now have a litter of 10 "Glansmans" and the dam looked again for spring litter to the Glansman. Visitors welcome. Wesley Hill, R. 6, Ionia, Mich.

Big Type P. C. sows bred to La Big Bob & THIRTY La Giant, fall pigs, none better, call or write. E. H. LEONARD, St. Louis, Mich.

When in need of something right good in a L. E. P. C. boar just come and see or write W. J. HAGELSHAW, Augusta, Mich.

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Edgewood Hampshires, spring boars sired by our prize winning and Grand Champion boars. Make the right buy today and get a good one, either for Hampshire breeding or for a cross on your other sows. Depew Head, Edgewood Farm, Marion, O.

Hampshires Bred gilts now ready to ship, a few 100 lbs. boars left and fall pigs from new blood lines. JOHN W. SNYDER, R. 4, St. Johns, Mich.

Fairview Stock Farms Tamworths. Registered spring pigs for sale, either sex, from massive ancestors. W. H. Warner, Concord, Mich.

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Whittum Farm Shropshires 50 good ones including 30 imported ewe and ram lambs. None better to start a new flock or improve the old one. 10 imported, one and two year old rams. THE WHITTUM FARM, Eaton Rapids, Mich.

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Wait a minute, buy Hampshires. The American Hampshire Sheep Association wants to send you a dandy little booklet with list of breeders. Some near you. Write COMFORT A. TYLER, Secretary, 22 Woodland Ave., Detroit, Mich.

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In order to finish the ram trade quickly I will give you your choice of a dozen very good yearlings at \$35.00.
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Shropshire ram lambs of good quality and some ewes all registered.
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For the best fifty-pound bale of alfalfa:

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Eighteen of the states put up agricultural exhibits. Michigan had the largest.

CROP ROTATION—ITS PRACTICAL APPLICATION.

(Continued from page 779). used to take care of the irregularities in the cropping plans. The oat crop on this field is seeded to mammoth clover which is turned under. For green manuring this clover is excellent.

Note that a special phosphate treatment is planned for field Number 2 (b). Sufficient manure can be secured from a near town to enable this man to manure at least twenty-four acres a year.

On this farm are established a two-year rotation, a three-year rotation, and a seven or eight-year rotation, and yet the farm is divided into only four fields or into six twelve and thirteen-acre cropping units.

Other Problems Met by Rotation.

A great deal can be said in favor of crop rotation in meeting soil and crop problems, but space will permit only a mere mention of other points.

When a farm consists of different soils, rotations should be carefully planned to best meet the soil conditions. On sand, for example, the rotation should include rye, soy beans, corn and mammoth clover. On depleted loams and silt loams a three-year rotation including clover gives best results. In cropping hillsides, care should be given to lessen erosion. Such fields should be kept in grass as much as possible.

In growing alfalfa, it is often convenient to divide a portion of the farm into five or six units or strips, and rotate with corn and grain—four strips in alfalfa, one in corn and one in grain (seeded to alfalfa). Each year one strip of alfalfa is plowed up for corn. **When Clover Fails.**

The argument is commonly advanced that crop rotation cannot be made to succeed because clover often winter-kills or fails. This need not interfere greatly with the cropping plans. When clover fails, a suitable annual legume should be grown in place of it, such as soy beans. Very often oats alone or oats and peas are sown for hay when the clover fails. If pasture follows hay in rotation, oats and peas seeded to clover is a good substitute. The clover will provide the pasture. **Systematic Farming Begins with Rotation.**

How profitably can the winter evenings on the farm be spent in planning cropping systems for the farm. Make a plan of the farm now and begin. Crop rotation can be planned on any farm. It matters not where on the farm, there are suitable legumes for all conditions. Plan rotations for larger yields, for more economic crop productions, for soil improvement, and to aid in maintaining productivity. And furthermore, plan rotations to put system into your farming, for systematic farming begins with systematic crop rotation.



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Fruit Growers Meet

(Continued from last week.)

A REPORT of the results of the dusting and spraying work carried on by the Horticultural Department of the Michigan Agricultural College during the season of 1919 was given by W. C. Dutton. This work included tests of dusting and spraying the dry lime-sulphur compounds and some of the newer arsenicals. Apples, peaches, cherries, plums and currants were the fruits used for this work.

Dusting and Spraying Apples.

A Duchess apple orchard was divided into several parts and each part treated with a different material. One plot was dusted with a mixture composed of ninety per cent sulphur and ten per cent arsenate of lead. Another was sprayed with lime-sulphur diluted at the rate of one to forty, and one and a quarter pounds of dry arsenate of lead to each fifty gallons. The results from both materials were entirely satisfactory. Scab and codlin moth were both controlled.

Dry Lime-sulphur Compounds.

Other plots in the orchard were sprayed with different brands of dry lime-sulphur. These materials were used at the strength recommended by the manufacturers, also at a rate about double that in order to make them of a strength about equal to lime-sulphur one to forty. These materials did not cause any serious foliage injury but in every case they failed to give satisfactory control of scab.

On an orchard of Stark apples a comparison was made of lead arsenate, calcium arsenate and magnesium arsenate. They were used in combination with lime-sulphur. The lead arsenate gave very satisfactory control of codlin moth and caused no foliage injury. Calcium arsenate caused some foliage injury and did not control codlin moth so well as lead arsenate. Magnesium arsenate caused very severe foliage injury and defoliation. There was also a much higher percentage of wormy apples where this material was used.

Peaches.

Dusting peaches for the control of leaf-curl failed to give satisfactory results. The dusted trees were in nearly as bad condition as the untreated trees. Summer dusting of peaches for the control of brown rot and curculio was tried but no trouble developed on unsprayed trees so no conclusions could be drawn. A comparison of magnesium arsenate and lead arsenate was made on peaches. Lead arsenate used with lime or self-boiled lime-sulphur caused very serious injury and defoliation when used alone or in combination with other materials.

Cherries and Plums.

A comparison of dusting with lime-sulphur and Bordeaux was made in several orchards of plums and Montmorency cherries but no conclusions could be drawn as no disease developed on the unsprayed trees. One orchard of English Morello, cherries showed a late infection of shot-hole fungus. Spraying with lime-sulphur, one to forty, controlled this satisfactorily but dusting did not.

Currants.

Bordeaux gave better results in the control of anthracnose on currants than either dusting or spraying with lime-sulphur. The plants sprayed with Bordeaux were practically free from disease and the foliage remained green and in good condition throughout the season. When sprayed with lime-sulphur or dusted, there was usually considerable foliage injury and in some cases the disease was not controlled.

Strawberry Growing.

The shortage of fruit production brings new emphasis to the strawber-

ry crop and as a result there was great interest in the talk on the above subject by F. E. Beattie, of Three Rivers, Michigan. He emphasized the fact that the strawberry will grow upon all types of soil—the important matter being the proper feeding of the soil to develop a plant that will bring the best returns. He pictured an analogy between the feeding of strawberries and feeding of hogs. It little matters whether the trough in which the hogs are fed is made of wood, steel or cement so long as the feed placed therein conforms to the wants of the animals. So with the strawberry soil, it is not so much what the soil consists of as it is what you put into it.

Some of the materials fed the soil are corn, hay roots, stockyard manure, vetch and alfalfa. From his experience he thinks that the plowing down of a good crop of vetch or alfalfa gives about the same results as the turning under of an ordinary application of good manure. An important thing in adding vegetable matter is the thoroughly mixing of the fiber with the soil. He plows deep, using a tractor.

The plants are set in the spring. He favors the hill system as it gives more feeding surface for the plants, more sunlight and it results in the production of superior berries. Cultivation is done with a Planet Junior cultivator and hoe. His fields are frequently cultivated thirty times during the season. This work starts as soon as the plants are set and continues throughout the season.

Mr. Beattie practices top-dressing, using from five to ten tons of manure per acre. To this is added 500 pounds of acid phosphate and 100 pounds of tobacco dust, which furnishes the needed potash. Early in the winter after the ground has thoroughly frozen the plants are mulched with straw or strawy manure. Sometimes strawy manure is used over the rows and well-rotted manure applied between them. In the summertime the straw holds the berries off the ground and keeps them free of sand.

Some system of crop rotation was recommended by the speaker. His plan is to grow legumes and strawberries alternately. This keeps the soil in excellent physical condition and allows for the proper addition of plant food.

His suggestions on harvesting were never to pick when plants are wet from dew or rain. He advises sorting in the field. Large fancy berries are picked first and placed in the boxes selected for that variety. These when filled are taken to the packing shed where the top layer is neatly arranged to attract the buyer.

To be successful some method of acquainting the public with the fact that berries are on sale must be practiced. A label should be adopted, and appropriate display cards put in stores and at gasoline stations bring excellent results.

Regarding everbearers Mr. Beattie is thoroughly convinced that the superior varieties of this type of strawberry will constitute the great bulk of the plantings of the future. Those producing everbearers should keep in mind that continuous cropping requires a much larger amount of plant food than plants producing but a few days during the season. Many of these varieties have a constant supply of ripe berries from the first of August until the growing season is over.

NO MARKET SERVICE THIS WEEK.

On account of the coal famine we were obliged to close our forms early, which prevented giving readers our regular market service.



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—FOR THE COMING YEAR

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People's Home Journal, 1 yr... 1.00		
Total value		\$2.00

The Michigan Farmer, 1 yr...\$1.00	BOTH	\$2.50
American Boy, one year... 2.00		
Total value		\$3.00

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