

MICHIGAN FARMER

AND LIVE STOCK JOURNAL.
PUBLISHED WEEKLY. ESTABLISHED 1843.

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

VOL. CXLV. No. 13
Whole Number 3881

DETROIT, MICH., SATURDAY, MARCH 25, 1916

{ 50 CENTS A YEAR.
\$2 FOR 5 YEARS.

Vetch Experience In Southwestern Michigan

By JASON WOODMAN
County Farm Agent, Kalamazoo County

ON the South Haven branch of the Michigan Central Railroad, a few miles west of Kalamazoo, lies the village of Kendall. Near this village is a farm called, by its owner, "Hard-Scrabble." The surface is rolling—some of it very much so; the soil is a light sand and gravel.

In years gone by, the farm was rented until it became so poor that it was alike unprofitable to renter and owner. Three years ago the present manager of the farm, Mr. Ralph Emery, of Kalamazoo, determined to try out some soil renovating processes on this land, and since then has been experimenting with alfalfa, sweet clover and vetch. In 1912, a field on the farm was sown to wheat. In June, 1913, this crop of wheat, abandoned by the renter because it was not worth harvesting, was plowed under and the field was summer fallowed. In August, vetch and rye were sown. The rye made a moderate growth; the vetch was spotted. While fairly good in places, over most of the field it was either missing entirely or was thin and scattering. There was, generally speaking, a moderate development of nodules on the roots of most of the vetch plants that lived through the winter and spring.

The Results.

In June, 1914, this growth of vetch and rye was plowed under; the field was again summer fallowed and given a second seeding of vetch and rye. The second crop of vetch made a luxuriant growth all over the field. In May, 1915, this crop was turned under and the land fitted for late potatoes. The potatoes were given the proper care and cultivation and, in addition, were sprayed. A yield of over two hundred bushels of marketable tubers was secured.

Let us consider just what happened to this field that in 1912 was so unproductive that it would not grow a crop. To begin with, the soil evidently was fairly well supplied with phosphorous and potash, and there was lime enough to satisfy the vetch plants. This particular piece of soil was poor because it was destitute of organic matter. Vetch loves a compact, moist, well-fitted seed bed. This was furnished by eight weeks of summer fallowing. The first crop was turned under, providing vegetable matter to aid in starting the second crop. The inoculation that developed the first year in the scattered spots of vetch, was thoroughly distributed over the field by the second summer fallowing; and the second crop, well inoculated, developed a vigorous growth of both roots and top. This, in its turn, plowed under and the soil properly fitted, furnished the requisite decaying organic matter the potato crop needed for its development. Mr. W. H. Ransler, a farmer living near by, did the work, and it was done at the right time, in the right way.

The Cost.

How much did this process of renovation cost? Mr. Emery paid Mr. Ransler for all man and team work, and purchased all the seed used. The total cost up to the time the land was plowed for potatoes, was \$19.78 per

acre. The price of potatoes this last his farming, and printed under flaring fall was high enough so that the crop of 1915 paid for itself, for the process of soil revonation, and a profit besides. Moreover, the land is started on the road to "Wellville."

Facts vs. "Fakir" Stories.

The above is a statement of fact.

Written up with the proper exaggeration and embellishment, with certain other facts ignored, given the usual knowing air and high coloring, with a jab or two at the average farmer for

this is not an agricultural "fakir" story, and there are other facts yet to be stated before we draw conclusions. Mr. Emery tried an experiment that cost nearly twenty dollars per acre. The experiment, in this case, produced desired results and was profitable from a financial point of view. It does not follow, however, that a man in debt for his land, can safely imitate this plan, especially if he lives some distance away.

The Other Side.

East and south of this farm is a big

third crop in succession was sown, and still a good stand was not secured. On a third farm, not far from the one last mentioned, but of better land than either of the others, and in condition to raise profitable crops of corn and rye, the second seeding, in succession, of vetch, on the same field, failed to make a crop, even though eight tons of good dairy manure per acre, were applied before the second seeding. The vetch came up nicely on all of these farms. On Mr. Emery's, the second crop made a vigorous growth all over the field. On the other farms, after a few weeks or months, a good share of the plants died.

Conclusions and a Warning.

The fact is, that vetch will not do equally well on all light soils. There are thousands of acres of medium sandy loam in southwestern Michigan, on which, years ago, good crops of corn, wheat and clover were grown, where, for some reason, it is very difficult to grow vetch. The plan so successfully used by Mr. Emery, will not work on all lands, as many a southwest Michigan farmer has learned by costly experience. These failures emphasize the fact that an agricultural practice desirable and profitable in one section may prove a failure in another section not many miles away. This is true in regard to vetch. It is also true of very many other farm practices. Vetch is recommended in bulletins, agricultural papers, and by lecturers on agricultural topics, for use on sandy lands. It is valuable for hay, pasture, seed production, and as a soil renovator—where it will grow; but the writer knows from wide observation, the many failures men have made with vetch—and made where the rules were followed faithfully. He has written this article detailing really conspicuous success on the one hand, and partial failure on the other, largely for the purpose of warning new beginners with this much advertised crop, to go slowly until the combined experience of the farmers in their neighborhoods has shown the way and laid down the rules for successful vetch growing in these neighborhoods.

We must not lose sight of the fact, however, that Mr. Emery's success did not accompany slack, shiftless methods. Both crops of vetch were sown in August, on land that had been thoroughly prepared. Both crops were plowed under, giving the land the maximum improvement that vetch will furnish.

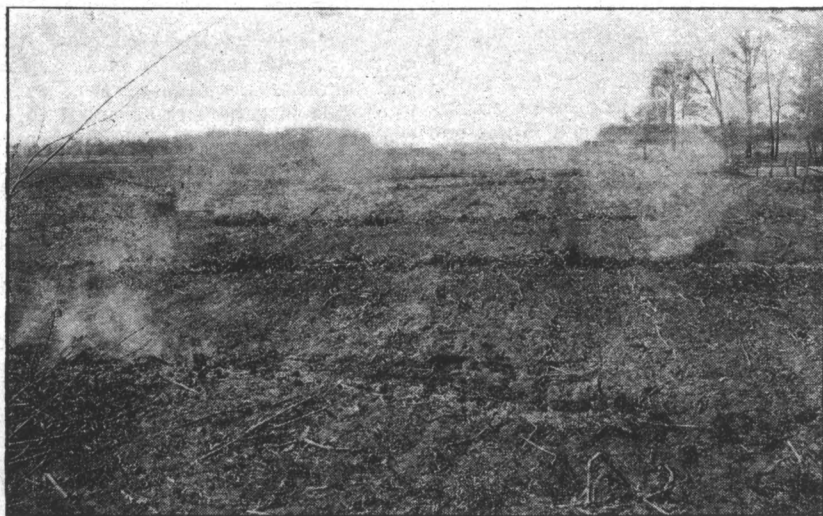
"Hard-Scrabble" is located in a section where potatoes are one of the leading money crops. The soil in this locality produces tubers of high quality and there is an established market. A good grade of seed was used on this field, and late blight was held in check by Bordeaux mixture. If this had not been done, even with the good price potatoes are bringing, the field would still be in debt to Mr. Emery. The good crop of fine quality, and the balance on the right side of the ledger were due finally to the fact that all steps necessary to successful and profitable potato growing were taken.



Scene Taken in Mr. Emery's Potato Field on October 3, 1915.

failing to apply business methods to headlines, this plain statement of fact can be so re-shaped as to make a most fetching agricultural "fakir" story of the sort so eagerly sought after by a certain class of periodicals. However,

valley. On the other side of the valley, about six miles distant, is a farm of apparently similar soil, on which a trial of practically the same plan of growing vetch failed to produce the same results. On this latter farm, the



Burning Vegetable Matter is a Poor Method of Conserving Soil Fertility.

Burning the cornstalks raked from a field where the corn was pastured down is an easy way to get rid of the stalks, but like burning the old straw stack, is poor economy. This coarse vegetable matter is the best material with which to fill little gullies which may have started on the hills, to prevent further erosion. It is also worth the cost of hauling from the field to use as an absorbent in the barnyard or to apply to the soil of some other field as a mulch or manure, in case it is desired to fit the stubble field for corn without plowing. Old World farmers have learned from experience that it is profitable to save all refuse vegetable matter and compost it as a means of adding to the available supply of farm manure.

The Michigan Farmer

Established 1843.

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The Lawrence Publishing Co.

Editors and Proprietors.

39 to 45 Congress St. West, Detroit, Michigan

TELEPHONE MAIN 4526.

NEW YORK OFFICE—381 Fourth Ave.

CHICAGO OFFICE—604 Advertising Building.

CLEVELAND OFFICE—1011-1015 Oregon Ave., N. E.

PHILADELPHIA OFFICE—261-263 South Third St.

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TERMS OF SUBSCRIPTION:

One year, 52 issues.....50 cents
Two years, 104 issues.....1.00
Three years, 156 issues.....\$1.25
Five years, 260 issues.....2.00

All sent postpaid.

Canadian subscriptions 50c a year extra for postage.

RATES OF ADVERTISING:

40 cents per line agate type measurement, or \$5.60 per inch (14 agate lines per inch) per insertion. No adv't in serial for less than \$1.20 each insertion. No objection able advertisements inserted at any price.

Mem Standard Farm Papers Association and Audit Bureau of Circulation.

Entered as second class matter at the Detroit, Michigan, postoffice.

DETROIT, MARCH 25, 1916

CURRENT COMMENT.

The Need for Rural Credit.

Since the publication of the report of the conference held at M. A. C. during Farmers' Week, at which the statement was made by a number of farmers present that exorbitant interest rates were charged on loans made farmers at many banks in northern Michigan, several communications have come to hand from northern Michigan farmers substantiating this claim.

Specific mention of one or two cases will serve to illustrate the general tone of these letters. A North Central Michigan farmer reports a case where a farmer needed \$350, offering a mortgage on his farm as security. The bank which loaned him the money compelled him to give a bonus of \$50 which was incorporated in the mortgage in addition to an interest rate of seven per cent on the whole loan, including the bonus. This specific instance was given to illustrate a practice which this farmer declares to be general in that section of the state.

Another farmer, of a Northeastern Michigan county, states that with five banks in that county a uniform rate of two per cent per month is demanded for short time loans, the additional interest being in the form of a discount on the face of the note. This farmer also states that auction notes bearing seven per cent interest are subject to five per cent discount by the bank, and if the maker of the note cannot pay same at maturity, the usual rate of two per cent per month is applied to any renewal of same which is granted by the banks. This farmer states that he is fortunately sufficiently forehanded so that he does not have to patronize the banks, but declares that he knows of many instances in which these exorbitant rates have been exacted, and states that the great need of many northern communities with which he is acquainted is for capital which can be loaned on good security at six or seven per cent, as in the southern portion of the state.

On the other hand, farmers who happen to be situated near the larger towns where banking facilities are better report better credit facilities at reasonable rates of interest, in accordance with the statements made by representative bankers at the conference above mentioned. We believe that the progressive bankers in this section of the state would be glad to aid the farmers of any section in making well secured loans on more favorable terms if the matter were brought to their attention in a forcible manner. It would be at least worth a trial if the farmers of these communities which are suffering from lack of needed capital should through their local Grange or other farmers' organizations appeal to the

bankers in the larger towns for relief from this condition, and if this does not prove effective, take the matter up with the officers of the State Bankers' Association to the end that the situation may be generally understood among the bankers of the state. Publicity of a condition of this kind will undoubtedly be an active force toward remedying it.

Singly the farmers of any community who need additional funds for use in their business are not in a position to remedy the difficulty for the reason that any effort to do so will destroy even such credit as they now enjoy with local institutions. But if collective action is taken there will be a better prospect of getting a square deal from the local institution without such injury, or of getting relief through the action of the conservative bankers of the state, whom we are certain would not look with favor upon exploiting methods of the kind which seem to have been practiced upon the farmers of many sections of northern Michigan.

Of course, the man who is in need of funds and who cannot give adequate security has less cause for complaint at being required to pay a high rate of interest than has the responsible farmer, since the hazard in making such loans is bound to be a factor in the interest rate demanded, but there seems to be plenty of evidence to show that in many localities exorbitant rates of interest are secured on perfectly safe loans by local banks, most of which are, so far as we have learned, private institutions.

Perhaps in many of these localities there is not sufficient business to support a bank at a reasonable interest charge for loans. In such cases it would be profitable for the farmers of these communities needing long-time loans to act in a collective way to secure capital from outside sources if possible. This would be necessary in any event under any form of rural credit which is likely to be inaugurated in this country, and such action promises much in the way of definite results if approached in an intelligent and business-like manner by the farmers of any community in which exorbitant interest charges are now the rule rather than the exception.

The Good Roads Question.

The news items from different localities in Michigan where the good roads question is exciting an interest which prompts definite action toward road improvement show something of the general interest which is being taken in this proposition throughout the state. At the coming April election the farmers of many counties and many townships will have the opportunity to vote directly upon this question of special highway improvement.

In numerous counties the question of issuing bonds for the building of good roads will be voted upon. There is much to be said in favor of this method of securing trunk line roads, provided the bond issue proposed is not out of proportion to the valuation of the county and the future ability of the taxpayers of the county to discharge the burden of cost as it may come due without material hardship. Without doubt, where roads are built in considerable stretches, much greater economy in construction can be practiced and the advantage of letting a contract for considerable stretches on a competitive plan will be enjoyed. Then, too, the roads will be of greater benefit to a larger number of people than would be the case for many years were the piecemeal policy to be continued for the building of trunk lines or county roads. This policy is well adapted to the needs as well as the means of townships which are building permanent roads under the state reward plan, but the trunk line roads to be of greatest value should be completed within a short space of time.

Short stretches of good road on a route used mostly for longer hauls or

distances of travel are of far less value than is the case where the whole stretch is improved at one time. Then, too, where the roads are constructed in considerable stretches at a time, the problem of their maintenance is simplified to some extent. The experience of counties in which the county road system has been in force for some time is to the effect that bonding the county for a sufficient sum to make a good showing on permanent road construction is a wise course.

Where this proposition is to be voted upon, however, the voters of the townships involved should not permit this question to overshadow the question of proper preparation for the betterment of the dirt roads within the township. Here, too, the selection of suitable highway officers is important. While the utility of permanently improved trunk line roads is unquestioned, there is a great need for the improvement of all earth roads in practically every township, and for this purpose liberal appropriations should be made and competent officers selected, to the end that road improvement may, like a popular type of charity, begin at home.

Education as an Asset.

In a farm survey recently made in a representative Missouri county, the advantages of high school training were even more clearly illustrated than in other similar surveys, although such training has constantly been shown to be a valuable asset to the farmer who has enjoyed it, wherever the facts have been brought out in a farm management survey. In this case the average length of high school training was approximately two years, yet, with this brief high school training a markedly increased efficiency was shown by the group of farmers who had enjoyed it as compared with the group of farmers who had had no instruction beyond the rural schools.

One factor in which this class excelled was in the matter of efficiency, the better educated men accomplishing about one and one-fifth times as much as men with less school training, measured by the average number of crop acres handled by each man. The greatest benefit enjoyed by the better educated farmers as a class was, however, a larger income which averaged 71.4 per cent greater than the average man with less training. Adjusting the labor income of each class in accordance with the size of the business conducted by each, it was found that other things being equal, the man with high-school training still had about 40 per cent greater income than the man with only a rural school education. It was also found that the better educated men kept more live stock and seemed to show greater ability in the organization and handling of their business.

It is a very natural effect that education should broaden a man's mind and increase his ability along every line; this is generally accepted to be the case in most lines of human activity, but too long the notion has prevailed that mental training was not essential to the best success on the farm. This theory is, however, being shattered in practically every case where data of this kind is collected in farm management surveys. It means that the farmer of the future will not only have high school training but technical training as well. This promises much for the future of agriculture as a business.

HAPPENINGS OF THE WEEK.

Foreign.

The European War.—The German offensive against Verdun has, in the eyes of military experts, practically failed. Not only have the French forces been able to repulse the attacks of the enemy, but after withstanding repeated assaults they are now starting offensive operations themselves. Unofficial information intimates that the failure has had a demoralizing effect upon internal affairs in Germany. The

French have made several aerial attacks upon the fortress of Metz and other positions back of the German lines in the district of Verdun. In Belgium British forces captured trenches early in March, a portion of which were retaken by the Germans last week. Berlin reports that the violent Russian assaults on the front of Drisvatsy Lake, at Postavy and at Narocz Lake have all been repulsed with extraordinarily heavy Russian losses. On the other hand, the Russians report a German offensive in the northern division of the front cut short through an active response by the Czar's forces. The Russians continue to drive the Turks before them in Asia Minor and are now operating in the region of Mamahatun. Small engagements have occurred between French and German forces on the frontier between Greece and Macedonia, in which the French were successful. Greek troops also drove Bulgarian invaders out of Greek territory. The Austrians have been pushing forward in Albania and have now arrived before the Italian positions at Avlona which is 58 miles south of Durazzo.

The Brazilian government, according to reports, has seized 42 German and Austrian merchant ships interned in Brazilian harbors.

Frank Danby, novelist, really Mrs. Frankau, author of a score of novels, died in her home in London, England, last Saturday.

National.

The Mexican Expedition.—United States troops crossed into Mexican territory last week following the attack on the town of Columbus, N. M., by a force of Mexican revolutionists headed by Gen. Villa. The American troops under command of General Funston are co-operating with Mexican forces under the direction of the Carranza administration in an attempt to capture Villa and his followers. Early this week it was reported that the bandit chief was hemmed in on three sides near Babricora Lake, which is about 55 miles south of Galeana. Although he appears to be surrounded, Villa is occupying a country in which it is difficult to attack him, and much will depend upon the co-operation of the Mexican and United States forces.

United States ships operating on the Pacific coast have placed an embargo on freight destined for any Mexican ports.

The first annual national assemblage of the League to Enforce Peace will be held in Washington on March 26-27. Former President Taft will preside at the session.

During the spring elections in Illinois, 59 "wet" townships, in which there are 1,002 saloons, and 77 townships now "dry" will ballot on the question of local option. Two weeks later 17 cities and villages of the same state will be confronted with the same issue.

Efforts will be made for an early adjournment of the present session of Congress, probably about the first of June. President Wilson and members of Congress are reported to be co-operating with the purpose in mind.

The torpedo boat destroyer Tucker during her trials off the Maine coast showed speed of 30.85 knots per hour, which is over a knot faster than her contract calls for.

Railroad trainmen on practically every road in the country are demanding a reduction in hours of labor from ten to eight, but with the same pay they are now receiving.

The Pennsylvania Railroad has awarded a contract for the erection of a \$9,000,000 hotel opposite its terminal in New York City.

The German-American Alliance of Iowa in annual session at Davenport adopted resolutions opposing the election in November of either Woodrow Wilson or Theodore Roosevelt for the presidency of the United States.

Six barns and 12 horses were burned in a fire at the Michigan State Fair grounds north of Detroit Sunday. The damage is estimated at \$60,000. Large quantities of automobiles and trucks were being stored in adjacent buildings, but were saved through the response of the Highland Park fire department.

A movement is afoot to build a big drain to reclaim several thousand acres of swamp land in Midland county. The drain will extend across into Bay county, and will necessitate the dredging of a portion of Kawkawlin river.

The Homer Co-operative Live Stock and Produce Association, at its annual meeting March 6, reported a membership of over one hundred, and a business exceeding \$80,000 during the past year. The principal business is shipping live stock, of which they handled over 70 decks during the same period. The association also ships in corn, cottonseed meal and mill feed and other products used by farmers. The outlook for the future of the society looks very promising.—C. D. Sabin, Sec.

Doing the Best We Know

By
R. D. BAILEY

BY the time this article is in the hands of the reader the month of March will be well advanced. In the southern portion of Michigan such a date is close to the edge of spring activities. In the northern portion that date will probably find farmers going about in sleighs. In neither locality will there be a day more than is needed for an adequate preparation for the farm and field activities of 1916.

Intelligent preparation is a great factor in the success of an army, an athlete, a race horse, a great constructive enterprise, or in the successful management of a farm. Watch the construction of a great building in the city, or of the lock at the Soo. Every emergency is met successfully because it has been anticipated and planned for; thus, the work swings confidently forward to successful completion.

Not so with the typical farmer. Too few of us are well prepared to successfully attack the routine occurrences of a typical season, to say nothing of the emergencies of that season. Too many begin a season's operations in apathy; in time-honored routine, in lack of mental preparation; in lack of physical preparation.

Preparations for the Season's Work.

Have we all had the chance to make that preparation? We have, or are in the midst of the chance. The season of farmers' institutes and one-week schools is practically past, and its opportunities have been ours. Tens of thousands of Michigan's best citizens have availed themselves of its information and its inspiration.

If chores actually kept some away, there have been the long winter evenings, in which the wealth of good things could have been garnered from a high-class farm paper, a high-class dairy paper; a high-class scientific magazine; the bulletins from our agricultural college and the United States Department of Agriculture, all containing precious information. No inner circle nor select few have a monopoly of these. If there is any farmer or member of his family, who has failed to secure what he needs of these it is his own fault.

For the shut-in there are a few books, too, that he could use with much profit; no matter how long his years of experience—Vivian's "First Principles of Soil Fertility," Agee's "Crops and Methods for Soil Improvement," King's "The Soil," Warren's "Farm Management," Henry's "Feeds and Feeding," for a farmer who does not read a reasonable amount of the recent literature of his great business is only half as good a farmer as he might be.

Applying Our Knowledge.

Let us take the hopeful view that the farmer, really entering into the spirit of his business, has faithfully used his opportunities for information, he now has the test of putting this information and these reminders into timely practice. The writer has often heard at institutes: "These things are all right; but I can't take time to do all you recommend." Brother, isn't it more the lack of disposition to do the best we know? All through life, "Not failure, but low aim is crime."

Some engineers, making their runs have more than a hundred signals to observe while passing over their divisions; but, not all at once. They need only promptly and intelligently to observe them as they reach them. So with the successful farmer: he need but take one thing at a time and at the right time. If he lacks seed corn, he will write in time to secure a sufficient amount from the east, west or north. If it has arrived he can earn fifty dollars, on a stormy day, by testing it; and, at the same time place himself in the earning class with doctors, dentists, lawyers, and consulting engineers. If the winter's studies have shown him the necessity of treating

oats and wheat for smut, and potatoes for scab, he will now secure a gallon jug of formalin at wholesale for that purpose. If he has determined to raise potatoes, he will now secure his supply of Paris green, or arsenate of lead, in quantities. If he intends to use Bordeaux mixture on potatoes or fruit, he will secure his copper sulphate now, in large quantities, preferably in a club order. The same is true of his binding twine. Following on the heels of the unprofitable season of 1915, the price that is now asked for these necessities is alarming. The price that will probably be exacted of the belated user, before the period of use is past, will probably goad many to a frenzy.

More "Preparedness."

Agricultural preparedness has been urged at all these institutes, and in all our standard agricultural papers; so the shop that should be on every farm, will be a scene of activity while tools are sharpened, repaired, adjusted, painted.

Has the farmer, during the winter, become convinced of the benefits of lime? It is none too early, and none too late, to have that car of marl or of ground limestone arrive, while its contents can be hauled most conveniently. Does he, at last, believe that phosphoric acid is a seriously lacking element of plant food in his soil? This is a good time to order some, to be applied after the lime is well worked in. Does the self-binder need new can-

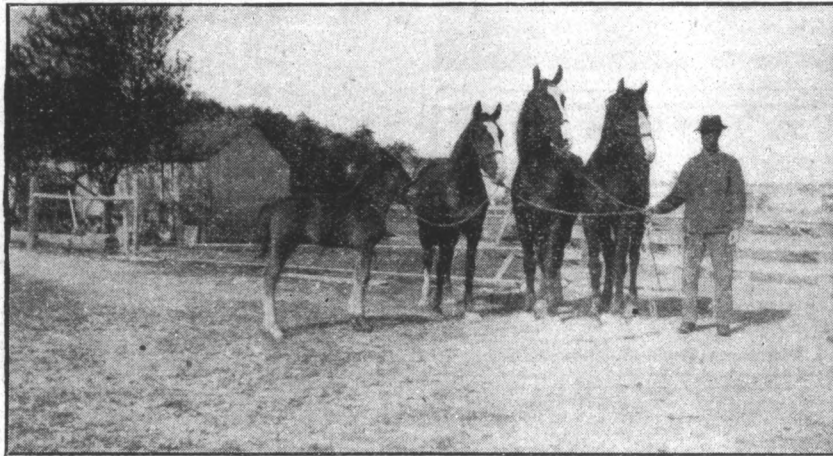
chasers, if it can be found at any price.

The Farm Work.

Having done all these, and many more things of the same tenor, we will suppose that spring has arrived, and that it is time to fit the soil. Shall our farmer be overcome by an unwise haste to put seed into the ground, and neglect vital points in the preparation of the seed bed? Will he do what he knows is right, or will he say: "O, well, I guess this way will do for one time more. I'm in a hurry." Will he neglect to disc before he plows; to roll each day what he plows; to drag what he rolled and plowed that day; to drag more frequently than usual, thus renewing the soil mulch that conserves water so valuable in plant growth? Will he remember to drag the fall plowing, the first field operation of the year? We hope so.

Will he remember that, in a sense, fine tillage is manure? Will he remember what he learned during the winter about the importance of bacterial life in agriculture, and make conditions favorable for bacterial action? Will he remember, in sowing his grass seed, that a ton of timothy takes as much plant food from his soil as a ton of corn; that the Department of Agriculture states, in Farmers' Bulletin 339 that, when the actual feeding value of digestible nutrients in a ton of timothy hay is worth \$9.80, that in a ton of clover hay is \$14.12, and in a ton of alfalfa hay \$20.16?

When he is preparing his seed pota-



Providing Against the Depreciation of the Farm Horse Power.

vasses or other repairs? A winter's day is a good time to order them.

The engineer, rushing through the night, notices his signal lights, one by one, and methodically obeys them. Were he to contemplate all these at once, with the many times he must stop and start his train, with other cares of his run, it would be almost too much for his mental balance. So, all the requirements of the new type of farming can be taken in their turn, and be brought into successful practice.

Knowing that winter vetch has great value as a nitrogen gatherer, cover crops, and source of organic matter, our thoughtful farmer will watch for an early chance to secure an adequate supply of this seed, and will remember to sow it in his corn just before he cultivates that crop the last time. He will secure all his grass seeds now. He will now write on his desk calendar at a date about two weeks before he will need it: "Send for culture for legume seed today."

If the farmer intends to bring new blood into his herd, he will send for that brood sow, or that young registered boar, and get the pick of the breeder's offerings. He will begin looking for a chance to sell surplus horses, for they will sell well with the spring work so imminent. He will begin early to look for horses or hired man, if he needs either, and get the pick of the lot. If he grows potatoes or beans, he is unwise if he delays another day his search for seed. Suitable seed of either will be scarce and high to late pur-

chases will he have patience to cut a few slices off the stem end in search of a discolored area, the sign of disease? Will he remember that the three great things in his farming will always be lime, organic matter, and water; and that organic matter is the keystone of the arch in agriculture?

If he has had the rare privilege of having an agricultural survey made of his farm, will he have faith enough to reorganize his operations in accordance and strive for the good size, good quality, and good diversity which government agents find necessary? Will he have the courage to apply the acid test of the milk scales, Babcock test, and account book to the cows?

When he comes to harvest the splendid corn crops that will again be grown will he remember that the Colorado Experiment Station found that 43 per cent of the dry matter weathered out of corn stover kept in small shocks; and that the Wisconsin Station found a loss of 24.3 per cent of protein in stalks so kept, while the losses of dry matter through well-made silage need not exceed five per cent?

Will his idealism be great enough to cause him to breed his stock always to pure-bred sires? When he repairs his barn, will he remember the light, fresh air, and outlet for foul air his stock requires? Will he go on wasting plant food, every year becoming more valuable, by allowing his stable manures to leach and heat; or will he cover and compact them when he cannot spread them almost daily? We trust so.

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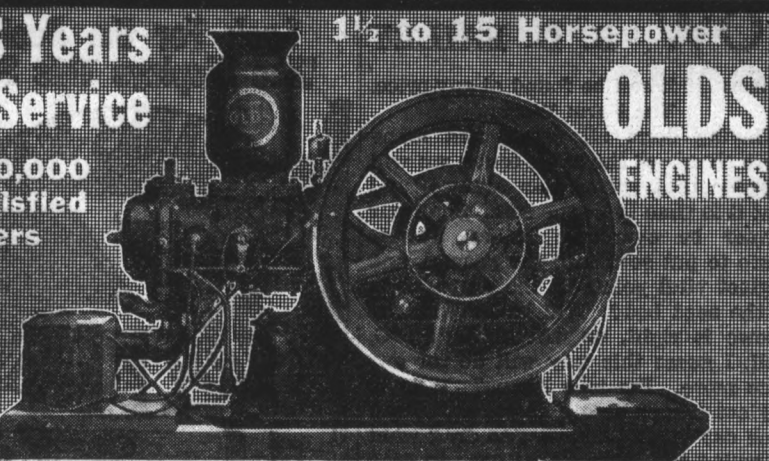
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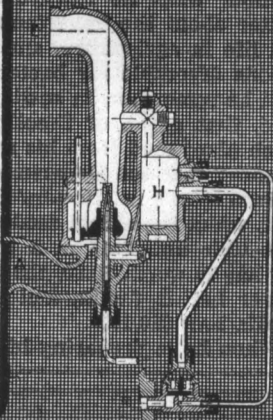
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Farm Notes

Liming for Alfalfa.

I have a field of four acres which I seeded the spring of 1912 to alfalfa with a little June clover, also one bushel of barley to the acre. I got a fair crop of barley, but not a very good stand of alfalfa. I sowed a little lime but not near enough. I cut the first crop in 1913, another in 1914, then pastured the balance of the season. Last spring, 1915, I plowed it up and planted it to beans. Had over 20 bushels to the acre, which was good for last year. This field is in a good state of cultivation. This spring I intend to sow it to oats. Will fit the ground with my lever drag, as it was clean from weeds and grass. After oat harvest I will plow the ground and fit it for alfalfa. Now, which will be the best time to lime this field, before I sow the oats or after I get it fitted for alfalfa?

Jackson Co.

L. C. L.

There is no question but that it would be better to apply the lime this spring so that it may have plenty of time to act on this soil before the seed is sown. Ground limestone does not have an immediate effect in sweetening an acid soil so as to permit the rapid multiplication of bacteria peculiar to the alfalfa plant, hence the desirability of having the application made some time before the seed is to be sown.

The writer has had quite satisfactory results in seeding the alfalfa in oats on land that had previously been in alfalfa and was well inoculated. The oats were sown at the rate of only 20 pounds per acre with the idea of making a cover crop rather than an oat crop. The oats were sown very late when the conditions were thought to be most favorable for alfalfa, yet under these conditions a yield of better than 30 bushels per acre was secured last year. We shall try the same plan this year, since half an oat crop and a vigorous stand of alfalfa is better than a full crop and a weak stand of alfalfa where the main object is to get the land into alfalfa as soon as possible.

Plowing oat stubble after harvest to seed to alfalfa is an uncertain proposition, since if a drought should prevail it would be quite impossible to prepare a good seed bed and be sure of favorable conditions for the quick germination and rapid growth of the alfalfa plants, which is very essential where they are sown late in the season. Unfavorable conditions at this time would spoil the prospect of getting a stand of alfalfa, since one cannot be sure of getting a stand which will pass the first winter successfully unless sown not later than August first. We believe that a much better stand of alfalfa would be secured in oats or barley than was secured at the first seeding of this field, particularly if a liberal application of lime was made, and that in a normal season this plan would be preferable to plowing the ground and fitting the same after oat harvest.

Seeding with Vetch and Rye.

I have a field of three acres of sand vetch and rye that went into the winter with a good growth. Would I be able to sow clover seed on this field and expect a fair stand? I will cut the vetch and rye for grain. Can hairy vetch be sown with oats to be plowed under after the oats are harvested or used for pasture? Would it be safe to top-dress oats that I expect to seed, with manure that has considerable straw in it?

Clare Co.

L. R. S.

We have no data with regard to the feasibility of seeding clover with vetch and rye. Ordinarily vetch is sown as a green manure crop for increasing the humus content of light soils which have become depleted in fertility, and on which clover seeding is secured with difficulty. On land of this type the difficulty of getting a stand of clover in vetch and rye would be less than with a grain crop alone, owing to the more dense shade which these two plants growing together would produce. The ordinary hairy or winter vetch does not give maximum results when sown in the spring with oats; it is better sown in midsummer with rye. Oats could be safely top-dressed with hog pasture during the midsummer manure, provided a spreader is used or

care is taken in spreading to get an even distribution of the material.

Seeding Alfalfa on Low Land.

It is my desire to start a field of alfalfa clover and I have planned as follows: I have a 10-acre field of black clay loam, heavy land and very sticky when wet, with a hardpan underneath about three feet down. This field is in excellent shape, always raises heavy crops, was manured last spring with spreader, and raised a crop of corn that went 125 baskets to the acre. This field has always had for 15 years back at least every third crop to clover; the only drawback this field has is that it is quite level. I drain it by plowing in 10-pole lands and cleaning out the dead furrows. I should think it had about one and a half to two foot fall for drainage. Now I thought I would plow it in June and work it until I got a good seedbed then sow to alfalfa without any nurse crop, in order to give it the best chance possible. In this case do you think I would have to inoculate the soil, and would I be able to cut a crop the first year? What do you think of my plan? I never had any experience with alfalfa and must confess I have not paid much attention to the articles along that line in your paper, because I did not think it was adapted to this vicinity. Last year I saw some very fine stands within ten miles of here so I have made a start by getting two and three-fourths bushels of choice seed.

Huron Co.

G. K.

There is some question about the advisability of sowing alfalfa on ground where the water table is so near the surface as three feet. This is one condition which alfalfa does not readily overcome. It may be possible to get fairly permanent stands of alfalfa on land not having a greater depth than three feet, but this is probably the minimum depth of drainage for the alfalfa crop, and a greater depth would be much better. The fact that clover has done well upon the land year after year is a factor in its favor, however.

We would suggest that a better way to try this plan would be to seed to clover again this year, using about one-half alfalfa seed, and sowing a little more seed than is ordinarily used on this land, so that you will be assured of a profitable seeding in case the alfalfa does not inoculate readily, or does not survive the shallow drainage conditions with which it has to contend.

Forage Crops for Sandy Land.

Kindly advise me as to the following: I have 120 acres of high, dry sand here that is getting poorer every year through failing to get clover to grow. Have done most of the seeding with rye. Corn does very well. I tried an acre of cowpeas and they did fine. I cut them for hay. Does sand vetch and cowpeas make good cattle and sheep pasture? Would you advise planting rye and vetch the last of August for pasture next year. Would not turn in until it was a good size and when that was gone I would start on the cowpeas, which should be a good size then. Would put the vetch field in wheat.

Washtenaw Co.

H. W.

The best method of procedure with an open sandy soil which has gotten into such condition that it will not successfully grow clover is to restore its fertility and mechanical condition so that clover can again be grown. Other forage crops such as cowpeas and sand or hairy vetch, can in the meantime be used to provide necessary forage and also as a means of adding humus to the soil by plowing same down in preparation for other crops. Probably one reason why clover seedings are procured on this soil with increasing difficulty is its need of lime. Nearly all soils of this character in Michigan are found upon test to be acid, and a liberal application of ground limestone will produce markedly beneficial results in the matter of securing clover seedings.

The crops mentioned will make good substitute pasture and forage crops, although for sheep particularly dwarf Essex rape will provide a better substitute forage crop than either of those mentioned, particularly for midsummer pasture. Rye and sand vetch sown in midsummer will make excellent early spring pasture, and rape sown in early spring will afford good sheep and hog pasture during the midsummer season. If rye and vetch pastured in

the spring are to be plowed down for wheat, the crop should be turned under before the seed is formed and matured to a point where it will germinate, as the selfseeded vetch coming up in the wheat would make it necessary to run the wheat through a vetch separator in order to separate the vetch seed before it could be marketed to advantage. With the use of lime and the turning down of green manure crops this depleted sandy soil can again be put into condition to grow clover successfully, which will be the most profitable method of handling it.

Alfalfa on Sandy Soil.

As my land is sandy soil I would like your advice about alfalfa. Will it do as well as red clover or alsike, does it make as good hay and as good pasture? Would like to know also if sweet clover makes good hay and pasture.

Tuscola Co.

SUBSCRIBER.

Alfalfa can be grown on any fairly fertile sandy soil if the right conditions are provided. Practically all sandy land needs a liberal application of lime in preparation for alfalfa, and enough available fertility should be provided to give the plants a vigorous start. Ordinarily on sandy land which has been somewhat run in previous years, it is better to summer fallow the ground until July, then sow whenever soil and weather conditions are favorable without any nurse crop. This involves the loss of the field during the year, but where the crop has not previously been grown and the soil is not inoculated for it, success is apt to be much better where this method is followed at the first seeding.

Alfalfa makes excellent hay for all kinds of animals and gives a much better yield than clover after it is well established, although the first year it is cut it may not give as heavy a yield where it is seeded for the first time. It is better for the inexperienced farmer to experiment with alfalfa on a small scale unless he can well afford to give his soil proper preparation for the crop.

Seeding Clover with Rape.

I have ten acres of sandy soil which was in corn last season, which I wish to seed down this spring in order to obtain some pasture from it during the summer. What is your opinion of seeding this to clover, with rape, and how long after seeding before I can turn cattle on it?

Eaton Co.

F. H. B.

The seeding of clover with rape is an entirely feasible proposition in a normal season. The writer has several times gotten good seedings in this way where the rape was pastured with sheep and hogs, not being pastured too closely. Cattle, however, should have some other pasture with the rape for satisfactory results. A few oats sown at the time of seeding the rape and clover would keep back the weeds and help to make a better pasture for the cattle during the early part of the season. A combination crop of this kind could be used for pasture within eight or ten weeks of the time of sowing, depending upon the weather conditions which prevail. A liberal amount of clover seed should be sown, since the tramping of the live stock will have a tendency to thin it.

Hulled vs. Unhulled Sweet Clover Seed.

I have ten acres of sandy land, now in rye, which I want to seed to sweet clover this spring. Can get unhulled seed at \$17 per 100 lbs., hulled at \$20 per 100 lbs.; which is the cheapest and how much should be sown of each? Is one more sure of getting a stand using hulled seed, and how about scarified seed?

Sanilac Co.

J. C. T.

At the prices mentioned there would perhaps not be a great difference in the cost of hulled and unhulled sweet clover seed; however, the hulled seed would, in the writer's opinion, be much the better proposition to buy. It is claimed as the result of some scientific investigations recently made, that the hulling of the seed has a very beneficial effect in scarifying the hard shell of the seed, which is frequently almost impervious to water, thus making the immediate germination a doubtful proposition. Then, too, the seed can

be distributed much more satisfactorily and can be examined for purity with some degree of certainty as to the results.

Ten to twelve pounds per acre of good hulled seed should be sufficient to insure a good stand if fair germination is secured.

Seeding Sweet Clover in Rye.

I have a field sown to rye last fall which I am anxious to seed with sweet clover this spring. Would it be better to go over it with a spiketooth harrow after seeding? Would the chances be better to get a good catch to inoculate the seed?

Kalamazoo Co.

C. B. F.

It would, in the writer's opinion, be better to insure a light covering of the sweet clover seed by harrowing or drilling it in, particularly if it is to be sown on a light open soil. It would be a wise precaution to inoculate the seed with a pure culture, although this will not insure the success of the seeding unless the soil is in the proper condition to encourage the development of these bacteria.

Longevity of Bean Seed.

Will two-year-old beans make as good seed as those grown last year? Have been told they would sprout, but wouldn't do anything afterward. My beans this year were not very good, but the two-year-old beans are fine.

Ionia Co.

H. H. V.

There is no doubt that any seed loses something of its viability in storage. However, any ordinary seed that has been kept under reasonably favorable conditions will be found to give practically as good results the second year as the first year after it is grown.

The best authorities state that the average period for which bean seed will retain its vitality is three years, and the extreme limit eight years. In using bean seed, or in fact any other seed which has been stored over even one season, it is better to make a germination test to determine its vitality. If good, vigorous germination is secured in the making of such a test, there need be no fear but that the plants will grow and make a normal development. If the sprouts are weak, then weak plants are likely to result. In making a test of this kind it would be better to use some fresh seed as a check on the tests, then by comparing the vigor of the sprouts secured in the germination test, the comparative vigor of the seed could be accurately estimated.

There is no question, however, but that good clean bean seed which had been carried over one year, if free from the evidences of fungous diseases such as bacterial blight and anthracnose, it would be better policy to use it than to use seed of last season's growth that is infected to a greater degree, provided a fairly good germination test is secured.

The Value of Wheat Straw.

I have seven acres of wheat on shares, three and one-half acres for my share, and one of my neighbors would like to get the wheat. I pay for the wheat threshed out and thresh it at his barn with his thresher. I would like to know if you or some reader could give me an idea how much straw there would be on an average crop per acre, or how much I could figure for the whole of it.

Wayne Co.

J. H.

Under normal crop conditions perhaps the most correct way to estimate the value of the straw from the wheat crop is to estimate it in relation to the number of bushels of wheat grown per acre.

The approximate amount of wheat straw from a 25-bushel per acre wheat crop is approximated by the best authorities at around 2,500 pounds, thus with a normal growth of straw on this basis, there would be a yield of approximately 100 pounds of straw for every bushel of wheat. Given, then, the value of the straw, which, of course, varies with different localities, it would be easy to estimate the approximate value per acre through the application of this plan, by making the proper allowances for variations from the normal in the growth of straw as compared with grain in any given season.



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Planning the Home Garden

THE home garden or "kitchen garden," which is to supply the bulk of the family living during the summer should receive a great deal of co-operation from every member of the family. It is now time to study this garden and the work begins with the ordering of seed catalogues. These catalogues are rather interesting, the pictures look much more appetizing than the best vegetables you will ever product, but if they stimulate you to think of the home garden with hope and optimism they have served their purpose and you owe a debt of gratitude to the artist. However, do not select your seeds because you like the picture. There are varieties of every vegetable which are especially suited to your locality and these varieties have usually proven their worth in your own or the neighbor's garden. If you are in doubt a note to the State Experiment Station will be worth the trouble and this is especially important when trying out new varieties on a large scale when considerable money may be lost by the venture. Buy seeds of reliable dealers, select well known varieties, and then test the seed before planting. Poor seed means a poor garden.

In planting the home garden study the appetite of the family and base the area of your production on the taste of your consumers. There are too many gardens with no partiality shown. Ten rows of one thing means ten rows of another and so on until the space is nicely crowded with the stuff that Bill and father do not relish. Bill likes beet greens and so does father, lettuce is only used for garnishing anyway, so it will pay to plant about ten times as much space to beets as you have in lettuce. If they like lettuce better than anything else, you will be able to use a lot of it. A good variety with plenty of the favored vegetables in abundance will cut down the cost of living when too much of the wrong crop will mean indifferent care for the entire garden.

mand the farmer's time and the "kitchen garden," which is to supply the bulk of the family living during the summer should receive a great deal of co-operation from every member of the family. It is now time to study this garden and the work begins with the ordering of seed catalogues. These catalogues are rather interesting, the pictures look much more appetizing than the best vegetables you will ever product, but if they stimulate you to think of the home garden with hope and optimism they have served their purpose and you owe a debt of gratitude to the artist. However, do not select your seeds because you like the picture. There are varieties of every vegetable which are especially suited to your locality and these varieties have usually proven their worth in your own or the neighbor's garden. If you are in doubt a note to the State Experiment Station will be worth the trouble and this is especially important when trying out new varieties on a large scale when considerable money may be lost by the venture. Buy seeds of reliable dealers, select well known varieties, and then test the seed before planting. Poor seed means a poor garden.

Every crop can be produced in a right and a wrong way and the right way pays. It is a good investment for the farmer to purchase one or two of the well written books on vegetable growing which have been brought out from the experiences of practical growers. These books are not expensive and the make vegetable growing at least more interesting. Furthermore, they emphasize good points that are worth knowing. Planting the home garden does not necessarily consist only of sticking in a "few things" wherever there is a spot handy. Every farm is usually streaked with different kinds of sites and soils and the grower who knows the demands of the different vegetables can select his ground with some skill and thus produce better crops. The onion likes muck and the radish will flourish in sand, some crops will do well in almost any location while others are particular. It pays to know when, how and where. It cannot be learned all at once, but spring is coming and right now there is a chance to do some good reading and some careful studying in the planning of the "kitchen garden."

Ingham Co.

R. G. KIRBY.

FRUIT TREES AND CUTTINGS.

This is the season of the year when many farmers are ordering their fruit trees from agents and nurserymen. Often these trees come from nurseries at a distance, and although trees will carry safely in fresh condition for a month or two when properly packed, it sometimes happens that they reach their destination in a more or less dried condition. To revive such trees, unless they are completely dried out, as soon as unpacked dig a trench in the ground, in a sloping direction, place the trees therein and then cover them completely with earth. They should remain buried for three or four days, when they may be uncovered and properly planted. It will be found that the shrivelled bark has become plump again. Fruit and all other trees of a deciduous nature may be revived in this way, but not evergreens, for they have a resinous sap which will not re-flow if it once becomes dry.

A great deal of the well doing of freshly planted trees depends on their being properly planted. The preserving of the roots in a moist condition is the first requisite. Then the hole to receive them must be of suitable dimensions to receive the roots without cramping, and soil should be loamy and full of available plant food.

The soil should be firmly packed around the roots. This is accomplished by working the tree up and down as the ground is being thrown in the hole, and followed by pounding or tramping the soil. The soil should be as dry as possible, so that it will crumble up well as it is used. In spring planting, watering is not as necessary as it is in autumn when the ground is drier, but at all times the pouring in of water packs the soil about the roots. Whenever water is applied, it should be given just before the hole is finally



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filled in, letting it soak away and then adding the remaining soil to fill to the hole level.

Plants from Cuttings.

Every farmer can easily secure a nice lot of grape vines and currant bushes with only a little labor. They are grown commercially from cuttings of the present season's growth. All that is necessary is to put the ripened wood in the ground, where it will start to grow next year and form a plant which will be suitable to transplant one or two years later.

Grape cuttings are made with either two or three buds. Well ripened, short jointed wood should be selected, and the lower cut made squarely across and under the bud, the upper cut slanting an inch or two above the bud. In this way the cutting can be planted right side up. Currant cuttings are made six or eight inches long in the same manner, but they contain several buds.

The cuttings may be tied in bundles with the lower ends even, and buried in moist sand over winter. The ends will callous over and they will be ready to put out roots as soon as planted in the spring. They can also be planted in the open ground as soon as made. The cuttings should be planted somewhat slanting in rich, mellow soil several inches deep and covered to the top bud.

A light mulch of coarse manure, when the ground freezes, will help to protect them from being thrown up by the alternate freezing and thawing. They should be planted in rows two and one-half to three feet apart and set four to six inches apart in the row.

New York. S. VAN AKEN.

A PROBLEM IN STRAWBERRY GROWING.

The location in view for our new strawberry bed for 1916 is a clover sod of one year's growth, i. e., the seed was sown in rye the spring of 1914. The rye was cut early in the milk stage, both to conserve land fertility and to give the clover the best chance possible. The clover was the mammoth variety growing large and maturing late. It grew so large that it lodged badly in places. So the machine did not do clean work. The portion left by the machine, with the stubble and aftermath and the root growth of the two seasons will supply humus in considerable quantities; while the free-air nitrogen gathered in by the clover and stored in its roots, will add materially to the supply of that constituent of plant food already in the soil.

Now, under certain conditions a clover sod is objectionable for strawberry growing, in that such land is frequently infested with white grubs. But as the white grub requires three years for full development, and the ground had not been in sod for several years previous to seeding with clover, I figured that it would be a safe proposition to plant the plot to strawberries. But afterward, information came to us of an almost entire annihilation of a strawberry bed of a half acre or so, by white grubs last season. Then I began to have a doubt as to just how the matter would terminate.

To assure myself that the proposition was a safe one, I wrote the Professor of Entomology, of the M. A. C., for advice, as I had often done before in like predicaments; and, as usual, I got a courteous, helpful reply. Prof. Pettit wrote as follows:

"The grubs that you will have next year will not come from eggs laid last season. The white grub takes three years under ground before getting full size and making the most trouble. The eggs are usually laid in sod, or sometimes in strawberry patches, and for this reason we are advising the avoidance of crops likely to white grub attack, or land that was in strawberries or in grass sod three years previous. I would rather put out my new strawberries on land that was in cultivation the third year before. Of course, I

cannot guarantee that you would be free from these grubs, but you need not worry about getting grubs from eggs laid last season, that is, if you get any grubs, they will be so small that they will not make you very much trouble."

So we shall expect no great trouble next season in our new strawberry bed from the white grub. Of course, there will be some grubs, this is to be expected; but a few can be hunted out and destroyed before they can do any great harm to the patch. Barring untoward conditions we shall expect exceptional results from this piece of land.

Emmet Co. M. N. EDGERTON.

WITH MICHIGAN FRUIT GROWERS.

The South Haven Fruit Exchange will expend \$10,000 on a site and new packing house. Though twice enlarged the present building is now too small.

The St. Joseph Michigan Fruit Association met at St. Joseph and elected one director from each loading station as follows: Baroda, Arthur Marrs; Benton Harbor, L. W. Ruth; Berrien Springs, E. F. Garland; Derby, J. F. Kowalski; Fairplain, F. L. Bradford; Glenford, H. P. Rentfrow; Hilltop, Fred Arenz; Hinchman, Ira R. Stemm; Riverside, John Stonecliff; Scottdale, S. B. Miners; Sodus, Hale Tennant; Stevensville, F. P. Cupp; Vineland, Alfred Moore. Each director will have charge of the loading at his station. It was voted to adopt the contract system, similar to one in use by the California Fruit Exchange, calling for shipment of all fruit through the association.

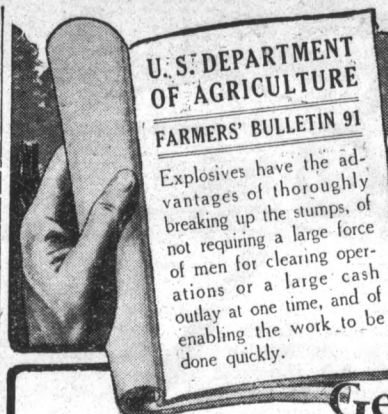
The Hartford Fruit Growers' and Farmers' Exchange in Van Buren county will be managed by Miss Mertie Conaway this year, and she is probably the first woman elected to run a co-operative exchange of this kind in the country. Last year she was book-keeper at the exchange offices. The association has 35 members and includes some of the largest growers in that section. A modern packing house is operated in a former canning factory at Hartford and all fruit is packed and marketed under the co-operative plan.

Over 150 Berrien county growers met at Bridgman and it was decided to adopt the ventilated 16-quart package for strawberry shipments. A committee was named to consider the erection of a large loading shed along the Pere Marquette tracks. The association will select a selling agent soon and is understood to favor Victor Carlton, a Bridgman farmer, who filled this position satisfactorily last year.

The village of Bridgman, in Berrien county, 15 miles south of Benton Harbor, is claimed to be the biggest town of its size in the world in the business of growing nursery stock, having six different concerns there, with the Baldwin, Whitten and Weston farms as leaders. The O. A. Baldwin farm has 400 acres out to plants. It is estimated that 30,000,000 strawberry plants and some 3,000,000 cane plants are shipped out annually and that this industry yields over \$100,000 each season.

The Berrien County Horticultural Society held an enthusiastic two-day meeting at Benton Harbor, February 24-25, with over 200 fruit men in attendance. The need of a fruit expert for Berrien county was discussed and 52 names were taken of members willing to pay a minimum fee of \$10 toward securing the same. Business men of Benton Harbor and St. Joseph are in sympathy with this movement so that the county fruit expert is practically assured. Free rooms were secured for monthly meetings of the society, and there were strong addresses by Prof. Hibbard of the University of Wisconsin, J. H. Carmody, of the M. A. C., James Nicol, of the South Haven Fruit Exchange, M. H. Pugsley, of the Southern Michigan Fruit Association, Lawton, Dr. Mumford, of East Lansing, and others.

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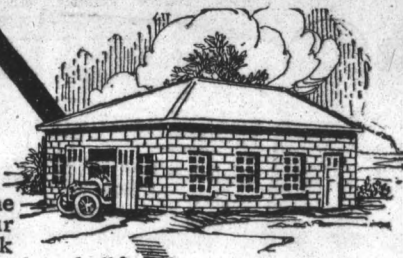
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Horse Efficiency

THE efficiency of the farm horse may be greatly increased if the proper care is given him during the early spring months when the farm work begins. Often a long period of idleness or light work has left him soft and unfit for a plunge into the heavy work. Unless he has been worked during the winter he must go slow for a while. Often he has contracted ailments in the stall, is out of condition and easily injured when hitched to the plow or other implement.

Sore shoulders probably hinder the efficiency of more work horses than any other one thing. They are found among horses in the hands of farmers of all degrees of horsemanship. Many shoulder sores are the result of neglect, others of ignorance and a few of blood disorders which can only be remedied by the cleansing of the animal's system by the use of a good blood tonic and perhaps the services of a veterinary. The ordinary collar sores usually give a hint of their appearance by a slight swelling. This becomes feverish and painful and when noticed should be given proper attention at once. If possible let the animal rest for a few days but if that course is impossible use a sweat pad with the center cut away to protect the injured spot. Use some healing lotion and never use any of the more drastic concoctions such as blue vitriol, or other caustics. These only make conditions worse. Boric acid, zinc oxide, carbolated vaseline and, in fact, any of the healing, soothing remedies that tend to assist nature are good. If the sore is watery and runs, a mixture of one part tannic acid and one part powdered alum proves valuable. Here again prevention is better than the remedy and great care should be exercised in fitting collars. Leather collars may be soaked over night and fitted to the horse while wet and pliable. If worked in this condition they will adjust themselves to the shoulders. Under no circumstances work a collar that slips around on the animal's shoulders. An application of salt water several times a week, or of vinegar and salt water, or of tannic acid dissolved in glycerine will prove beneficial in hardening shoulders and fitting them for the steady pull of heavy work.

Scratches, grease heel and mud fever are perhaps identical so far as symptoms and actual results are concerned. The names vary according to the locality and stage of the malady. The symptoms are familiar to all horse owners. The treatment consists in removing the causes. The afflicted hoof and fetlock should be washed thoroughly for currying often irritates and starts a rash. In some cases it is better to clip the hair from the fetlock then wash again with a quart of lukewarm water to which has been added a teaspoonful of carbolic acid and castile soap. Dry and apply zinc oxide ointment and wrap well with a cotton bandage. Often it is economical to have the services of a veterinary and always call him rather than experiment with untried remedies if one is at all available.

No matter what the work of the horse will be, it is well to prepare him for it if he has been idle any length of time. Even if he has been worked he should have a small amount of oil meal added to his ration as spring approaches. Besides being beneficial to the digestive organs its effect is shown in his general appearance and particularly in his coat, which he shed readily and appears smooth and clean for the warmer days. Shoulders should be looked after and the feet cared for. Harness should be repaired and fitted so that there will be no bindings and no occasion for galled sides or shoulders. In this respect the owner can save much time and worry and greatly add to the efficiency of his work animal by beginning before the heavy work comes on.

W. C. SMITH.

STAY WITH ONE BREED.

It is surprising to observe how many stock farmers have been inclined, after having bred grade cattle for a considerable number of years to use upon these females a cross of some other breed. The writer has known a number of instances of herds having been graded up in Shorthorn blood for a period of 10 to 25 years and then all of these years' efforts abandoned by the introduction of a sire of another breed. In some cases, the first cross on such a foundation appears entirely satisfactory, but the later crosses are less reliable and in a large percentage of cases, prove a disappointment.

It takes years to grade up a herd, and when this is done by the continuous use of registered sires of any breed the results show a steady improvement, assuming the sires used, to be of a higher standard than the foundation females. After a few such crosses are made, the herd becomes for all practical purposes as useful as a full-blood herd; but when a cross of another breed is introduced, further improvement becomes uncertain. It opposes an established law of heredity and that breeder is doomed to disappointment who runs counter to this law.

It is unfortunate that this practice has been more or less frequent. Yet, experience teaches that the breeder of grade herds who expects to make progress has only one practical course open and that the use of sires of one breed and of meritorious ancestry and individuality.

Wayne Co.

F. D. T.

SECURING A GOOD LITTER OF PIGS.

Caring for brood sows and the manner of feeding them to secure the best results are important questions. A great deal depends on the care and treatment the brood sow receives while carrying her pigs. She needs plenty of sunshine and outdoor exercise during the day and a nice warm place to sleep at night. Avoid letting the brood sows run in the same lot with colts or horses or in the same barnyard. Do not give them the opportunity to go from one field to another by jumping over broken fences, or crawling through narrow openings. Give them a place where they can root to their heart's content. It is good exercise, they enjoy it and it is in keeping with their nature.

In addition to good care and kind treatment the feed must be looked after carefully. Throughout the middle states hogs are being fed largely on corn which supplies in excess starch a heat and fat producing material. At the same time corn is deficient in protein, the flesh, bone, muscle and strength-producing material.

When feeding corn alone food is not supplied to all parts of the animal system uniformly; in other words, the ration is not properly balanced. The excess of starch produces too much fat and keeps the sow's blood in a feverish condition. Animal life, before birth, derives its nourishment from the blood, and if by improper feeding the brood sow's blood is not in good condition it will reflect in the size and strength of the pigs at birth. The litter will probably be small in number and the pigs sickly and runty.

To balance a ration simply means to stop feeding an excess of starch, and feed more of protein, the strength, flesh, bone and muscle-producing material.

Tankage, while fed before farrowing, has many advocates among hog men, but it must be used sparingly when the pigs are under three weeks old as it is very easy to ruin a litter of pigs by feeding the sow too heavily on this feed. Shorts, or mill feed, oil meal and tankage will balance the ration and are sold at prices that enable the farmers to feed them at a profit.

Illinois.

U. D. S.

OX WARBLER IN THE NORTHERN STATES.

It has recently been learned that the ox warble situation in the northern states is more serious than most of us had supposed. We have been wont to consider the warble as more or less closely confined to the southern states and therefore not of much importance in the north. It transpires now, however, that a new species, the European warble, has been introduced into this country, and that this parasite is of importance in the cooler regions of the country. On this account, it will be necessary in the future to pay more attention to the warble evil than we have in the past, more especially as the damage done by making holes in the animals' skins is now known not to be the greatest damage caused by the insect. As a matter of fact, it has been shown that the irritation to the animal, due to the presence of the grub under the skin, is so great as seriously to interfere with milk production or growth, and that the loss from this source is much greater than that from the holes in the hides.

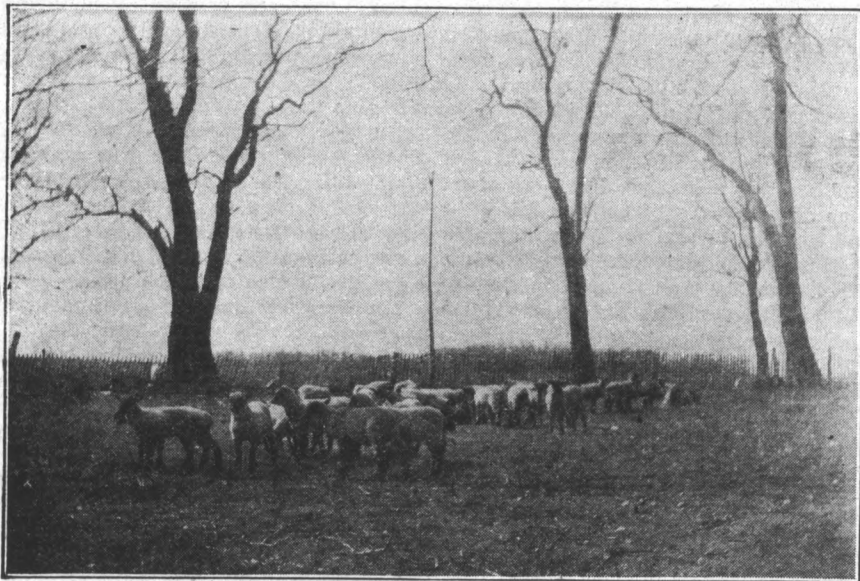
The only method of preventing losses by the insect is to prevent any of them from maturing. The method of doing this is to remove and destroy the grubs from the backs of infested cattle. When nearly mature they can be squeezed out of the swelling by pressure with the fingers. Where they are too young to be squeezed out, they

It is necessary, however, to keep her in a good healthy condition. The diet should consist largely of roots supplemented with skim-milk or swill for a drink. Perhaps the principle item of attention, one which is too often neglected, is exercise. This is one of the great essentials to success in saving the spring litter. The ideal place for the brood sow is in the barnyard, unmolested by other stock. She should be allowed to run there every day for an hour or two, and if the weather be favorable, half a day is not too long. Wood ashes should be kept where the sow may have access to them every day.

The next consideration is a suitable place for farrowing. When arranging her quarters I nail a piece of studding around the wall horizontally, about six inches from the floor. This is a great protection for the little pigs. A basketful of cut straw makes a good bed; chaff is not so good, as it is apt to smother the little ones.

As a sow about to farrow is a very suspicious animal, it is necessary to gain her confidence by kindness so that when the critical time comes she will not be disturbed or excited by an attendant or a lantern. It is very easy to do this by making repeated visits to the pig pen during winter evenings.

When the time of farrowing arrives, if the sow is restless or rash, and is likely to trample or crush the little ones, they should be taken to the fire and dried, kept away until the



Good Care of the Young Lambs Will Insure a Profitable Crop at Maturity Next Fall.

may be extracted with a pair of slender forceps; and it may even be necessary to slit the skin in order to get at them. At any rate it is important to get them just as early in their development as possible in order to reduce to a minimum the damage that they may do. It is also important that they be destroyed after being removed, because normally they escape and change to the adult fly in the ground. If removed and not destroyed they might complete their maturity in the usual way. For destroying them a broad heavy heel planted gently but firmly on top of them, one or two at a time, is very effective. The cattle should be examined about once every two months, beginning in February.

It is scarcely needful to call attention here to the advantage of community co-operation in such work as this, for it is perfectly clear that the isolated efforts of one or two men in a neighborhood will be largely abortive in the absence of such co-operation. It would seem that where testing associations exist the matter of overseeing the examination of the herds could well be undertaken by those in charge of the testing.

Indiana. H. E. MERN.

THE SPRING LITTER.

In expectation of the spring litter the first thing calling for attention is feed and exercise of the sow. The feed need not be very stimulating or heating, nor should the sow be kept too fat.

mother is quieted, and returned. When feeding her let it be more in the shape of a drink than a solid food, gradually bringing her to full rations in eight or nine days, but never overfeed. From this out the judgment is taxed. The losses caused by injudicious feeding are not generally understood. The nursing sow's food should be of such a nature and composition that the little pigs by degrees will learn to eat with her at an early age. If shallow troughs of good length are provided instead of deep short ones, they will soon commence. This will obviate at weaning time a radical change and lessen the danger of derangement of the digestive organs. I prefer not to have the weaning process completed before the pigs are eight or nine weeks old. The profit or loss will largely depend on the progress they then make. Feed liberally with succulent food, such as skim-milk, shorts, roots, etc. Remember that a stunted pig is dear as a gift, and one overfed with heavy grain is equally as bad, as it becomes foundered and ceases to make satisfactory growth.

Canada.

J. H. MCKENNEY.

"The Farmers' Special to California" is the title of a handsomely illustrated art pamphlet distributed by C. L. Seagraves, General Colonization Agent of the Atchison, Topeka & Santa Fe Railway, 1115 Railway Exchange, Chicago, Ill. This booklet of 28 pages contains a large number of fine engravings reproducing western points of historical and scenic interest touched by this railroad system.

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THAT'S the way one owner expresses it, referring to the absolute protection given every working part. Not only is every gear and every part of the transmission encased, but all are running in oil.

Another owner writes in, "It does the work of ten good mules and is the nearest fool-proof, water-proof, dust-proof and oil-proof of any machine I have ever seen."

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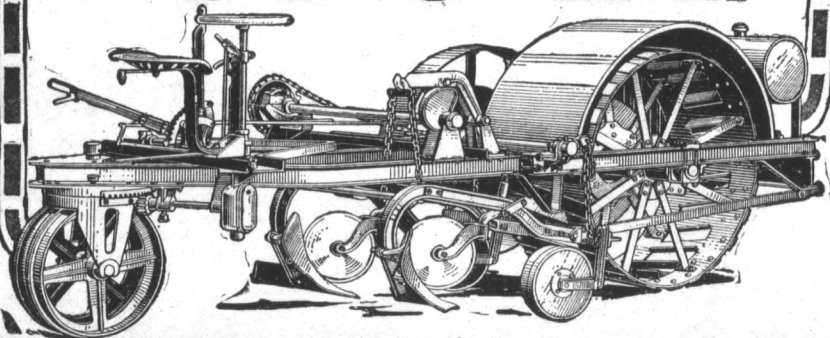
The three-plow size, "12-24," is \$990 cash, f.o.b. La Porte.

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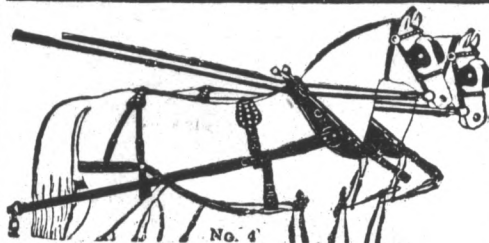
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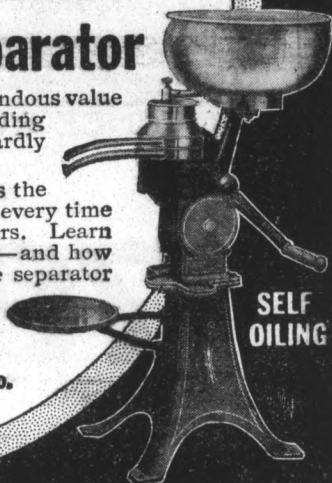
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With West Bend Automatic Swinging Stanchions you can lock up or release 2 to 50 cows at one throw of a lever as easy as you can operate one stanchion with other equipment. This is only one of the many valuable, time-saving, labor-saving features of West Bend Equipment.

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We fully co-operate with all Silo
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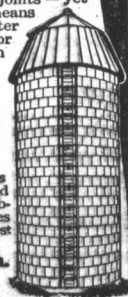
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How Many Cows to an Acre?

How many cows can one keep on an 80-acre farm of medium good oat land and if I raise hay and corn what grain would you give cows beside silage twice a day and clover hay once? How big a hay barn would one need if the cattle are in a small barn just by themselves? E. P.

Nobody knows the answer to this question. The limit has never been reached. It all depends on the man. Many would say that it depends on the man, but the crop producing power of the land must be considered if we figure on the number of cows that can be kept at present. But the man can build up the fertility of the land almost at his will. If it is not rich he can make it rich. So the question narrows down to the one factor—the man. One 80-acre farm will carry twice as many cows as another, because the man is a better farmer, a better business man and one knows how and is willing to apply himself. The other either does not know how or is not willing to do the business.

Intensive Dairying.

I have read that Hiram Smith, one of the pioneer dairymen of Wisconsin, kept one cow to the acre. This would mean 80 cows on 80 acres. Rev. Deitrich, in a report of the Department of Agriculture, states that he kept 34 head of live stock on a 15-acre farm, and that two acres of this was taken up with buildings, lawn, etc., so that he really kept this amount of live stock on 13 acres of land. Of this 34 head, 17 head were milch cows. In this case the roughage only was grown on the farm, the grain, which, of course, constituted a good bit of the ration, was purchased. But the particular year that the report was made more roughage was produced than was needed and hay was actually sold off the farm. One would scarcely believe this if it did not come from an unquestionable source. This wonderful intensive live stock farming was not possible when Rev. Deitrich first began on this farm but year by year he gradually built up the fertility of the farm until it produced this enormous amount of forage.

I give these illustrations to show what is possible—what has been done and what can be done in intensive live stock farming. Whether it is most profitable to intensify in live stock farming like this is not the question under discussion. On an 80-acre farm it would not be an easy job to keep 80 cows, but I firmly believe it can be done. I think it would be more profitable to attempt to produce only a portion of the necessary grain. Some cash crop, like potatoes, sugar beets, or some canning factory crop could be worked into a rotation, the sale of which would purchase more feed, and cheaper than could be produced on the farm on the same area.

The Crops to Grow.

In intensive dairy farming we want little or no pasture. We can't afford it. If some of the farm is adapted to pasture only, why, of course, make the most of it but not so many cows can be kept on this kind of a farm as where every acre is tillable. With corn silage the year round and abundance of clover or alfalfa hay, we have the basic ration for the largest number of cows to the farm. The best farmers have not reached anywhere near the limit in the production of ensilage. I venture to say the average yield is not much, if any, above 10 tons per acre and yet Mrs. Harris, (think of it, a woman), of Adrian, Mich., actually produced 70 tons, 800 pounds, of ensilage corn on one acre. This is enough ensilage to supply seven cows for one whole year and have ensilage left. With 10 acres of corn like that, (only one-eighth of the farm), there would be sufficient for 80 cows, or the one cow to the acre. One could have room for 30 acres of corn on an 80-acre dairy farm, besides he could ensilo green peas and plant the ground to corn and get a good crop, the same season. Clover hay can be cut early and the land planted to ensilage corn. One will

grow into the right rotation of crops if he is the right man, so he can produce the maximum amount of forage.

As the editor of the Michigan Farmer well says editorially, the soil is the basis of prosperous farming. On rich land you have rich farmers, but on poor land you can have only poor farmers. The farmer's wife on rich land can wear silks and diamonds if she choose, but the farmer's wife on a poor soil is doomed to drudgery. There is that much difference in rich and poor land.

Solving the Hay Problem.

An enormous quantity of alfalfa can be produced per acre. As much as eight tons of cured hay has been grown per acre. This is enough for the seven cows for a year, with a little soiling perhaps in the summer. The average yield of alfalfa is not more than three tons. Even at that one could grow enough hay on 20 acres for the 80 cows. We are trying to grow alfalfa on infertile land. When we try to produce it on our richest land, on land as rich as it can be made, there is no trouble to produce sufficient hay on 80 acres for 80 cows. One can do almost as well with red clover if he will cut it early enough and cut it three times each season. Besides, he can produce oat and pea hay and then plant the same land the same season to ensilage. Rye can also be grown in a double crop system of farming.

But for grain what are we to do? There is the rub. Oats will make a good ration to feed with corn silage and alfalfa hay. Forty acres of oats yielding 100 bushels per acre will furnish the required grain for 80 cows.

Furnishing the Grain.

I never grew 100 bushels of oats per acre but a man wrote me just the other day that he produced 100 bushels per acre on a good-sized field. If we can do that there is all the feed for 80 cows and all produced on an 80-acre farm.

Now the only rational advice to give E. P. is this: Begin with the number of cows you have room for and gradually increase the number as your improved conditions will warrant. You must find out yourself how many cows you can keep on 80 acres. No one can tell you.

Again, as to the size of the barn. It is much the same kind of a problem. I would suggest that you build a basement barn 36 feet wide. This is wide enough so you can have two rows of cows and have room for driveway behind them to take out manure, and feeding alleys in front of them wide enough for ensilage cars, grain car, etc. Have 16-foot posts and a gambrel roof. This, with a silo, will furnish storage room sufficient to feed all the cows you can keep in the basement. Now, as you need more room build on to the end of this barn, and if necessary build another like it.

COLON C. LALLIE.

BUILDING A DAIRY HERD FROM COMMON STOCK.

A herd of full-blooded registered dairy cows is always a desirable possession but very few farmers are financially able to own the same. They must be content with common stock yet this need not mean that they shall work with cows that hold a low position as result givers. By careful selection of the cows and sire to which they are bred, it is possible to build any dairy herd up to a point where it equals in the results obtained, if not in blood, any registered herd.

The work of building up a herd from common stock requires much careful study and observation. The owner must be able to select a good cow by her general appearance. Some of the

things that he can judge by are a large and capacious barrel, open and rather wide spaced ribs that spring well downward. A rather long head, a long and slim neck, and limbs that incline to fine. A nice, soft hide and silky coat may usually be considered as indications of quality in a cow. Good stamina is usually indicated by a generous width through the lower part of the chest, a bright full eye and an active carriage.

The selection of a sire for use in the building up of a herd is of the utmost importance and must not be done without careful consideration of the subject from the various standpoints. Select the breed that would seem best to meet the requirements as to milk or butter as your market may demand. When a breed has been chosen and a sire selected the program should not be changed for that would annul, in a great measure, the work that had already been accomplished.

The individuality of the sire should be considered with care. Not only should he be as nearly perfect a specimen of his breed as possible, but he should possess all of the indications of stamina and bodily vigor. His ancestry should be looked into, also. The sires should have been result getters and the more ancestral dams he has that have records of large quantities of rich milk and persistence in milking the more desirable he will be.

If the system planned out is carefully adhered to the development of the herd should prove rapid. Each successive generation will show improvement although this will be much less marked in after years when the herd has reached a point much nearer to perfection. A continuous sizing-up of each individual of every generation if a high quality of standard is to be reached and maintained. There must be a great deal of culling and discarding. Frequently the eye will be able to decide that a calf is incapable of being made into a good member of the herd and can be discarded without any further consideration. Other individuals will require further observation but as soon as their unfitness is recognized they should also be discarded.

In making an effort to improve the dairy herd the dairyman should set a standard of attainment—the highest possible. If this be done more and more pleasure will be derived from the work as it proceeds. In the end the satisfaction of mind with the results obtained will be worth as much as the increase in financial results.

Ohio.

SHERLEY CONNELL.

DAIRY PROBLEMS.

Can Green Oats be Ensiled?

Will green oats keep in a silo, cut before they come to head?

R. D.

The oat plant is not well adapted to preserve as silage. It has a hollow stem or stalk and this hollow stem contains so much air that when put into the silo there is too much fermentation, that is fermentation goes too far for best results. This plant can be preserved in this way if great pains is taken in packing it down well and using plenty of water. But it will not keep as well as corn.

I would suggest that the oats be dry-cured as oat hay, and save the silo for the corn plant.

Weight of One Gallon of Milk.

What is the legal weight of a gallon of milk? I have been selling milk for the past year, giving eight and one-half pounds to the gallon. It is impossible to get 20 gallons in two new gallon cans of standard size.

Kent Co.

C. S.

There is no law governing the weight of a gallon of milk. Milk differs in weight in proportion to its richness, or in proportion to the per cent of fat in the milk. A gallon of three per cent milk will weigh more than a gallon of five per cent milk because the water in milk is heavier than the butter-fat. Cream rises on the top of milk simply because it is lighter than

the milk, and not from any mysterious cause.

Average milk which is understood to be about four per cent fat, will weigh close to eight and one-half pounds to the gallon, and that weight is sometimes said to be the weight of a gallon of milk, but there can be nothing definite about it. For four per cent milk this would be as accurate a way to reduce weight to gallons as could be found. Possibly more accurate than actually measuring it with a gallon measure. The only correct way to determine the value of milk is to weigh it and test it for fat. The fat content is the index of its food value.

More Protein than Necessary.

I would like to know if cottonseed meal, wheat bran, and buckwheat middlings make a balanced ration for the dairy cows? We have ensilage, mixed hay and cornstalks for feed.

Van Buren Co.

J. G.

All the concentrates in this ration are protein foodstuffs. It furnishes an excess of protein. I would suggest corn meal or ground oats in place of cottonseed meal. This will furnish sufficient protein and will also cheapen the ration.

COLON C. LILLIE.

COWS AT CALVING TIME.

Few farmers appreciate the real weight which care at calving time has upon both the productivity of the cow and the value of the offspring. If they did they would exert greater care and consideration. The dairy cow, when dry, should be fed chiefly on roughage. A small allowance of grain, about two pounds daily, will be quite enough, provided she is in reasonably good physical condition, and this ration should be rich in protein.

Bran or oats, or a mixture of bran and oats with a little oil meal, makes a good combination to be fed previous to calving. Corn silage and roots are very good feeds if the cow has no pasture, or if it be before pasture season. The succulent feed should include liberal allowances of clover or alfalfa hay, or a roughage rich in protein.

But the cow should not be fed more roughage than she will eat up clean. If fed too much there will be danger of her getting into the habit of eating the most palatable parts of the roughage and wasting much good feed. The cow on pasture will need no grain, but a little roughage is good. Of course, if the animal is thin in flesh it would be well to feed some grain; but the amount should depend upon her condition entirely.

When the cow has been properly fed there will be no necessity of medicine, contrary to the views of many dairymen. A bran mash over which some warm water has been poured is a very good ration, especially in cold weather. Ground oats mixed with grain and a pail of warm water should be given, for her feverish condition and exhausted body at this time demands considerable water, and this should be warm. Be careful that she is not exposed to cold draughts.

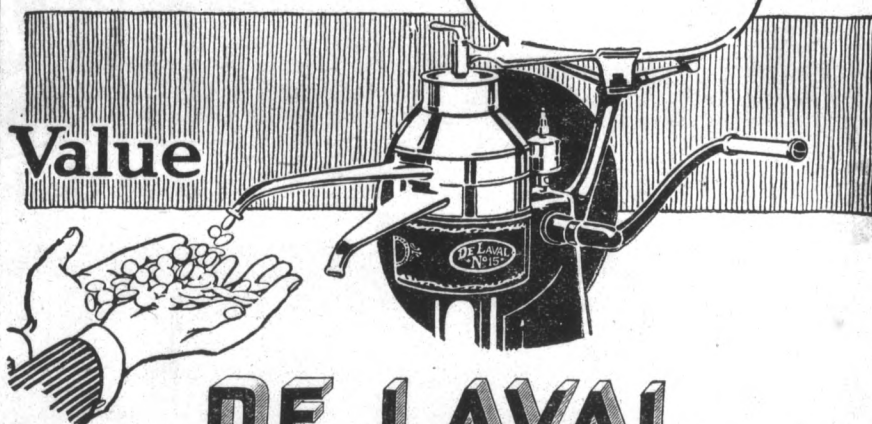
Feed very lightly on grain at the beginning of the milking period, allowing a liberal amount of silage, roots and hay. As the cow gains in strength and resumes her normal condition, the grain portion of her ration should be increased. Keep increasing gradually as long as she responds to the extra feed. When she has reached her maximum flow of milk she should be fed a little less grain.

It will take three to four weeks to bring her to a full flow of milk and to reach the stage where she is eating a full ration. The time to establish the milk flow of the cow is when she is fresh. There is no other time in the lactation period when care and judicious feeding have a more important bearing upon her year's record. Feed her liberally, but never overfeed or carry her beyond her capacity. This will work great injury on her milk function and breeding powers.

New York.

E. W. GAGE.

It isn't what you put into a Cream Separator—but what you get out of it that counts.



DE LAVAL Cream Separators are by far the most economical

REAL economy is never short-sighted. In never confuses PRICE with VALUE.

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VALUE depends upon the amount and quality of service the article gives you—what you get out of it.

You get by far the greatest actual VALUE for your money when you buy a De Laval—BECAUSE it will give you much better and longer SERVICE than any other separator.

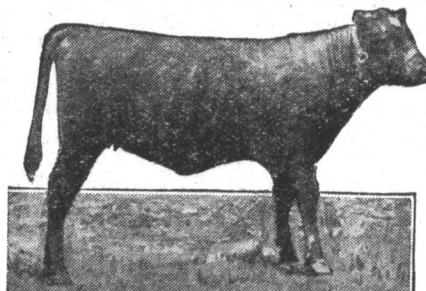
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A De Laval catalog to be had for the asking tells more fully why the De Laval is the most economical cream separator, or the nearest local De Laval agent will be glad to explain this and many other points of De Laval superiority. If you don't know the nearest local agent, simply write the nearest De Laval main office as below.

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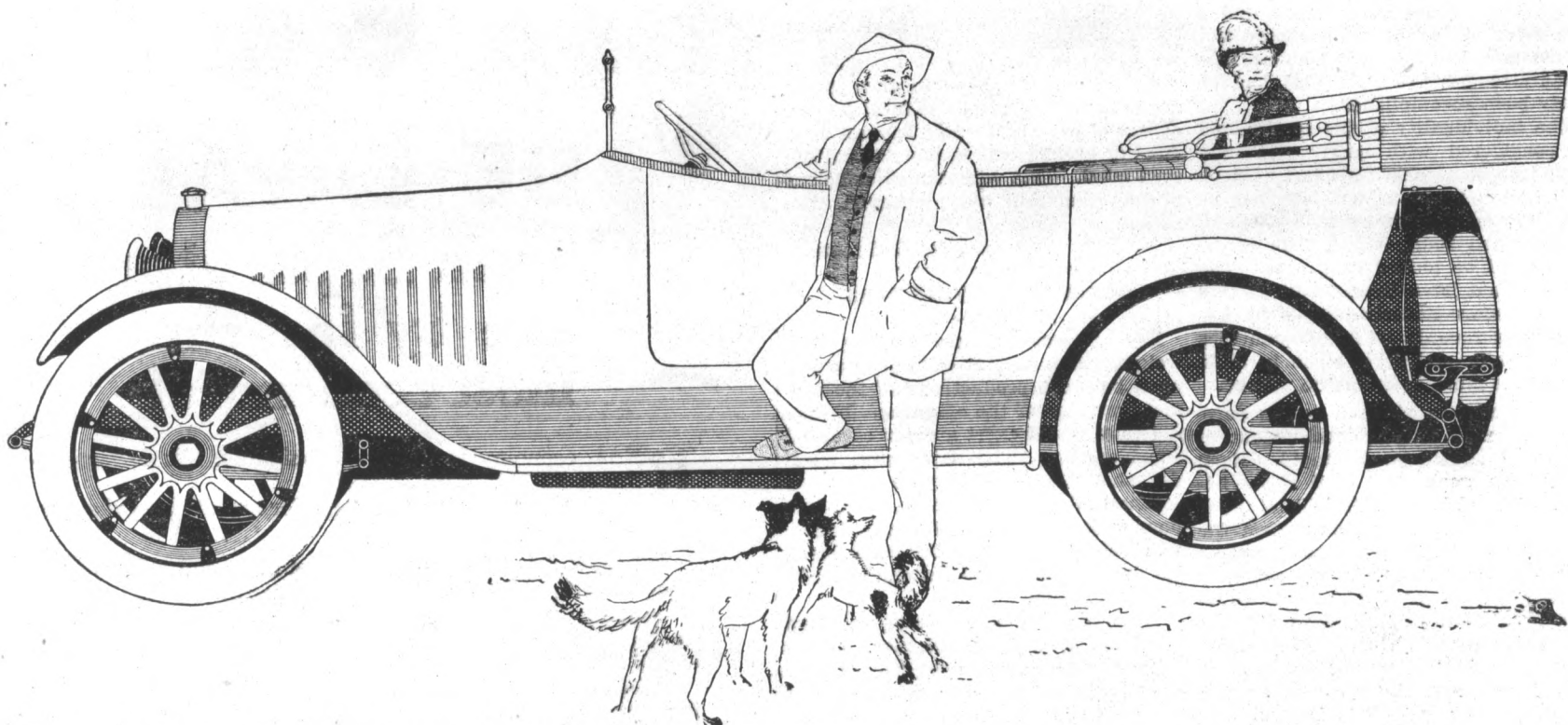
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The new 3400 r. p. m. Chalmers, by facing all kinds of conditions on all kinds of roads without whimper, apology or flinching, has proved that she's got the stuff in her.

She has proved that she is no mere citified, boulevard performer; for no car on earth of her price or size has ever gone about its business everywhere with her energy, endurance, strength and spirit.

Her conquest of hills and rut-riven roads is the talk of every county seat. She has climbed hills on high gear and pulled through country roads on "high," where conditions were so bad that the running boards dragged.

These are two of the reasons why the 3400 r. p. m. Chalmers is such a sensible car for the farmer to buy. She does not boast of fantastic records of performance made by a tuned-up, doctored-up, professional driven car on the race track. Her achievements have all been recorded with ordinary drivers at the wheel and ordinary roads beneath her tires.

Owners throughout the country have driven her over roads on which they admitted it was a shame to drive any car, and she has made amazingly good.

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Long engine-life and high engine-speed have always been twin features of the most successful engines of all kinds. 3400 r. p. m. means long life because it reduces side-thrust of the crankshaft to the minimum. And side-thrust means wear and tear.

The 3400 r. p. m. Chalmers is a sturdy, long-lived piece of machinery, built not only to endure, but to economize.

You get 18 miles of light-footed going out of every gallon of gas. You add 1000 miles to the life of your tires because of the smooth velocity with which her engine delivers might.

The same throbless, fretless engine-action, whether you travel at the rate of 3 or 60 miles and hour, whether one or five are aboard, means riding comfort that springs, good leather and 9-inch cushions only partially explain—riding comfort that has never been dreamed of before in a \$1050 car.

Her pick-up responds with the same velvety obedience in the Dakotas as on Michigan Boulevard. She economizes with fuel over Kansas gumbo, just as on Fifth Avenue.

From every angle you'll find the 3400 r. p. m. Chalmers a sensible, practical, value-delivering car to own and to drive.

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The FARM BOY
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SCIENTIFIC and
MECHANICAL

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

The Community Without a Program

It was an old Flemish wood carver who placed the motto, "Where there is no vision the people perish," on the town clock. He might have added, "where there is no program to make the vision real the people will still perish."

Never was the writer more forcibly impressed with the need of a program in rural life than at a recent country

life conference held in our own state. Nearly all of the interests of a rural population were represented at this meeting; there was vision a plenty, but there was no program.

The meeting was held under the auspices of a local church. The first speaker was a city minister who urged the farmers to support the country church with more vigor and more cash.

It was at the point of the "more cash" that the discussion which followed seemed to center. After considering the average labor income for farmers in this section of the state there seemed to be a general consensus of opinion that the church would not get its just share of the farmers' income until that income could be materially increased.

Good roads as a solution to most of the problems of the farm was next discussed. A local buyer of beans urged a wider use of this crop as a means of increasing the money income of the farm. A prominent potato grower of the district followed by saying that he believed in beans and urged his neighbors to raise them, and then added very significantly, "And, while you fel-

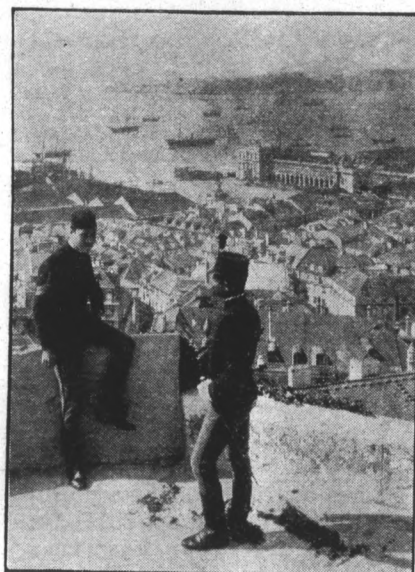
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lows are making one dollar on beans I will make two dollars on potatoes." This speaker also startled his hearers by telling them that one of the greatest evils of the district was too much cattle. His argument was that a large proportion of the farmers were allowing cattle to crop the land too closely. Immediately following this speaker came the leading live stock man of the community who emphatically declared that the bane of the entire district was lack of cattle, both in numbers and in quality.

Then came the inevitable topic, marketing. This was discussed from the co-operative standpoint and was, of course, proposed as the remedy for nearly all of the troubles affecting the farming business. The women and children were not omitted from this varied and comprehensive program. A

try church until late in the afternoon. Everyone was eager, not only to listen but to take part in the discussions. The most significant element of the entire conference was unmistakably the lack of program. Here was a live, enthusiastic community with plenty of leadership but no program. To prove that the leadership was there one needed only to witness the eagerness with which those who were elected on the advisory board of the boys' and girls' club accepted their responsibility. Again, one needed only to see the fervor with which each speaker contended in favor of his cure for the problem to be assured of the dormant leadership.

If such communities could agree upon a program the day of better things on the farm would be hastened. Is it possible to reach such an agreement?



The School Children Took an Active Part in the Program.

pathy, pointed and suggestive talk was given on the subject of the possibility of a cure for the drudgery of the farm household. Boys' and girls' clubs were also discussed. In fact a potato club for boys was organized and a garment-making club for the girls of the community quickly followed.

These two clubs for boys and girls constituted the only definite result of the conference. What the indefinite results will be cannot be estimated, for it could be plainly seen that the community was groping to find itself. Over two hundred people came in the morning and stayed in the little coun-

The writer believes that the time must come when all members of a community must decide upon a few of the vital needs of that community and then devote themselves vigorously to the attainment of the goal which they have set. For example, if this community could decide that its three most vital needs were better church, better marketing and better live stock then every member of the community would know what every other member was striving for. It might take twenty years to follow such a program and get results but it would be worth one hundred years of effort without a definite goal.

Light of Western Stars

By ZANE GREY

"It wants only life! Ah, there's a horse climbing the hill! See, he's up; he has a rider."

Before she looked Madeline knew the identity of the man riding up the mesa; but she did not know until that moment how the habit of watching for him at this hour had grown upon her. He rode along the rim of the mesa and out to the point where, against the golden background, horse and rider stood silhouetted in bold relief.

"What's he doing there? Who is he?" inquired the curious Helen.

"That is Stewart, my right-hand man," replied Madeline. "Every day when he is at the ranch he rides up there at sunset. I think he likes the ride and the scene, but he goes to take a look at the cattle in the valley."

"Is he a cowboy?" asked Helen.

"Indeed, yes," replied Madeline with a little laugh. "You will think so when Stillwell gets hold of you and begins to talk."

Madeline found it necessary to explain who Stillwell was and what he thought of Stewart; and while she was about it, of her own accord she added a few details of Stewart's fame.

"El Capitan—how interesting!" mused Helen. "What does he look like?" "He is superb."

Florence handed the field-glass to Helen and bade her look.

"Oh, thank you," said Helen, as she complied. "There, I see him. Indeed he is superb. What a magnificent

horse! How still he stands! Why, he seems carved in stone."

"Let me look," said Dorothy Coombs eagerly.

Helen gave her the glass.

"You can look, Dot, but that's all. He's mine—I saw him first."

Whereupon the feminine guests held a spirited contest over the field-glass; and three of them made bantering boasts not to consider Helen's self-asserted rights.

Madeline laughed with the others while she watched the dark figure of Stewart and his black outline against the sky. There came over her a thought not by any means new or strange—she wondered what was in Stewart's mind as he stood there in the solitude and faced the desert and the darkening west. Some day she meant to ask him. Presently he turned the horse and rode down into the shadow that was creeping up the mesa.

"Majesty, have you planned any fun, any excitement for us?" asked Helen. She was restless, nervous, and did not seem to be able to sit still a moment.

"You will think so when I get through with you," replied Madeline.

"What, for instance?" inquired Helen and Dot and Mrs. Beck in unison, while Edith Wayne smiled her interest.

"Well, I am not counting rides and climbs and golf, but they are necessary to train you for trips over into Arizona. I want to show you the des-

(Continued on page 434).

Yucatan, the Home of Sisal

By L. L. DeBRA

ASK the first ten persons you meet what they know about Yucatan, and nine of them will either tell you that it is a far off country where they make chewing gum, or that you can look it up in a geography yourself. And, indeed, although Yucatan is one of the most interesting little spots in the world, being known as the Egypt of America, it is doubtful if we would ever hear much of it if it were not for the fact that since the Spanish-American war, when the capture of Manila and the Philippines paralyzed the sisal industry of that country, the American farmer has been dependent upon the sisal growers of Yucatan for twine with which to bind his grain crop.

Many efforts have been made to find a satisfactory substitute for sisal, but so far, nothing has been accomplished. Efforts have also been made to start sisal plantations in other parts of Mexico, but this, too, has not been very successful, and it appears that for some time to come we must look to that romantic little spot for our binding twine.

For Yucatan has a history unequalled by any country in America, save, possibly, the land of the Incas. Within its 35,214 square miles forming the northwestern portion of the Yucatan peninsula, there are miles and miles of wild jungle in which the traveler quite frequently stumbles onto the crumbling ruins of great cities so old that even their origin is lost in the dim mists of antiquity. Several of these cities have been carefully investigated and studied by scientists. It is known that the ancient inhabitants of Yucatan, known as Mayans, had a remarkable civilization and that they built wonderful cities showing a very advanced knowledge of architecture. These cities have been placed at from one thousand to eleven thousand years old. And in the picture writings of the ancient Mayans are many allusions to henequin, the plant from which sisal fiber is obtained. What calamity swept away the civilization of the Mayans, and left their cities in ruins, history does not record. Today, the sleepy-eyed Mayan Indians, descendants of the original tribes of that romantic spot, are toiling in the henequin plantations under the lash of the overseers for the British and American capitalists who own the plantations.

What part of Yucatan is not jungle, is given over to the growing of henequin, for the soil of that little state is peculiarly adapted to the growing of the plant. It is a loose layer resting on a coralline limestone. Hence the heavy rainfall does not run off in surface water (there are no rivers in Yucatan) but percolates rapidly into the soil, thus giving plenty of moisture at all times.

We have heard of the wonderful maguay, known in our country as the "Century Plant." There are many, many varieties of the maguay, and the henequin is one of them. There are three varieties which produce sisal, one of which is wild and useless, the other two being cultivated, producing respectively a green and a white fiber.

As soon as a field is in shape after the jungle has been cleared off and burned back, the plants are set out in rows ten to twelve feet apart. This distance is necessary because of the long, sword-like leaves which the plants bear. If too close together these spike-points would ruin adjoining plants, as well as making it impossible to harvest the crop.

As the plant grows, it takes on the form of a conical spike, on the body of which grow rings of leaves. It is these large leaves which produce the fiber of commerce. Six years after the planting, the oldest ring, the bottom one, may be cut off, and each year thereafter, the two lower rings may be re-

moved. The plant bears for ten years. On the tip of each leaf is a sharp spike-like point which is slightly poisonous, necessitating care in harvesting. A special knife is used to cut away the leaves, and the Mayan Indians, whole families of whom work in the henequin fields, are very adept at the cutting. The leaves are laid in piles to dry, and after drying, are taken to the sisal mill where the fiber is extracted by macerating the grayish-green leaves. The sisal fiber is then bleached, dried, pressed into bales, and is ready for shipment to the twine factory.

The henequin mills are located at Merida, a city in the interior. From there, the bales of sisal are shipped by rail to Progreso, the only sea-port. In fact, these two cities are the only ones of importance in Yucatan now, though ruins of ninety-two flourishing cities have been found in the jungle wilderness. And the fiber of the henequin which the ancient Mayans used to make ropes with which to raise the stones for building their wonderful temples, is now in world-wide demand to make binding twine for the grain-growers of the world.

IN THE OTHER FELLOW'S SHOES.

It had become a confirmed habit with Allen Crosby to keenly sympathize with himself over the mistake he felt he had made in not breaking away from the farm while he was yet young enough to get a fair start in something else. In his early forties his chief regret centered in the fact that an unkind fate still fettered him to the monotony of farm work. It seemed to him that the routine of the seasons carried no variation unless it might be that oftentimes instead of "work" the day's program called for "more work."

"It's the same old story—world without end," he thought to himself somewhat bitterly as he unhitched his team that evening in the yard. "I've done two men's work today in the hot sun and now I've got to sit on a milking stool and cool off close up to nice warm cow."

He cast an envious look toward the shimmer of silver which shone through the trees half a mile distant. Smoke curling over the tree tops indicated that the summer colony housed on the lake shore was beginning to think of supper.

"If I didn't have any more to bother me than those campers down there in the grove I'd think that Kingdom Come was at the door. Git up!" He hit the off mare a sharp clip which startled her into the barn on a trot.

"Nice evening," suggested a voice from the stable door some time later. Allen looked up from his milking to find Judge Marshall, from the camper colony, standing in the entrance. The Judge was a regular caller each evening, since it proved convenient to stop for the milk on his way from the train to the cottage where he spent the night with his family.

"Yes! A nice evening for such as don't have to work," retorted Allen.

The jurist ignored the inference which the remark carried. Having summered his family several seasons at the lake, while he came and went as he could, he knew Allen well enough to know that the remark was not intended to be particularly personal.

"Sounds to me as though you're out of sorts tonight," he returned pleasantly.

"I am," the other shot back. "Some days farming goes against the grain and this is one of them. I'm ready to chuck it all when I feel like I do tonight. Guess it won't be much different with me until I move to town and go into something else."

"That so?" queried the Judge quite surprised. "Well, if you do make a



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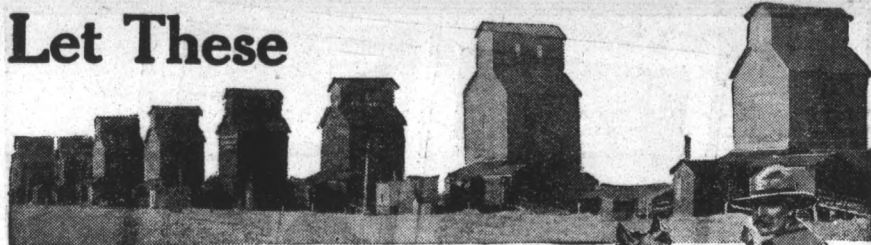
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Some hearts are barren, cold as mountain rocks
Born in some sudden earthquake's rending shocks;
The windblown seeds that rest upon them die;
Iron-faced they stare toward the sunniest sky.

Then comes the rain with chisels small and keen,
The frost and snow from winter's far demesne;
Again the seeds the summer casts around,
And on the fock wee cervices are found.

There slow seeds grow from spring-time on to fall,
Until the creeping vines have covered all,
And where the gray rock harshly watched the sky,
Green leaves and swaying leaves in beauty lie.

So to some cold, hard heart do sorrows come,
Defeat and pain; with years of toiling dumb,
They bring love's gentleness where hate had been
And clothe with good the barrenness of sin!

LIGHT OF WESTERN STARS.

(Continued from page 432).

ert and the Aravapai Canon. We have to go on horseback and pack our outfit. If any of you are alive after these trips, and want more, we shall go up into the mountains. I should like very much to know what you each want particularly."

"I'll tell you," replied Helen promptly. "Dot will be the same out here as she was in the east. She wants to look bashfully down at her hand—her hand imprisoned in another—and listen to a man talk poetry about her eyes. If cowboys don't make love that way, Dot's visit will be a failure. Now Elsie Beck's one desire is to be revenged upon us for dragging her out here. She wants some dreadful things to happen to us. I don't know what's in Edith's head, but it isn't fun. Bobby wants to be near Elsie, and no more. Boyd wants what he has always wanted—the only thing he ever wanted that he didn't get. Castleton has a horrible, bloodthirsty desire to kill something."

"I declare now I want to ride and camp out, too," protested Castleton. "As for myself," went on Helen, "I want—oh, if I only knew what it is that I want! Well, I know I want to be outdoors, to get into the open, to feel the sun and wind, to burn some color into my white face. I want some flesh and blood and life. Beyond all that I don't know very well. I'll try to keep Dot from attaching all the cowboys to her train."

"What a diversity of wants," said Madeline.

"Above all, Majesty, we want something to happen," concluded Helen with passionate finality.

"My dear sister, you may have your wish fulfilled," replied Madeline soberly. "Edith, Helen has made me curious about your especial yearning."

"Majesty, it is only that I wanted to be with you for awhile," replied this old friend.

In the wistful reply, accompanied by a lark and eloquent glance, there was something which told Madeline of Edith's understanding, of her sympathy, and which was perhaps a betrayal of her own unquiet soul. It saddened Madeline. How many women might there not be who had the longing to break down the bars of their cage, but had not the spirit!

In the whirl of the succeeding days it was a mooted question whether Madeline's guests or her cowboys or herself got the keenest enjoyment out of the flying time. Considering the sameness of the cowboys' ordinary life, she was inclined to think they made the most of the opportunity.

Stillwell and Stewart, however, found the situation trying. The work of the ranch had to go on, and some of

it was sadly neglected. Stillwell could not resist the ladies, any more than he could resist the fun in the extraordinary goings-on of the cowboys. Stewart alone kept the business of cattle-raising from a serious setback. Early and late he was in the saddle, driving the lazy Mexicans whom he had hired to relieve the cowboys.

One morning in June Madeline was sitting on the porch with her merry friends when Stillwell appeared on the corral path. He had not come to consult Madeline for several days—an omission so unusual as to be remarked.

"Here comes Bill—in trouble," laughed Florence.

Indeed, he bore some faint resemblance to a thunder-cloud as he approached the porch; but the greetings he got from Madeline's party, especially from Helen and Dorothy, chased away the blackness from his face and brought the wonderful, wrinkling smile.

"Miss Majesty, sure I'm a sad, demoralized old cattleman," he said presently. "I'm in need of a heap of help."

"What's wrong now?"

"Wal, it's so amazin' strange what cowboys will do. I'm jest about to give up. My cowboys are all on strike for vacations. What do you think of that? We've changed the shifts, shortened hours, let one an' another off duty, hired greasers, an', in fact, done everythin' that could be thought of; but this vacation idee grewed worse. When Stewart set his foot down, then the boys begin to get sick. Never in my born days as a cattleman have I heard of so many diseases. There's Booley. I've knowed a hoss to fall all over him, an' wunst he rolloved down a canon. Never bothered him at all! He's got a blister on his heel, a ridin' blister, an' he says it's goin' to blood-poisoinin' if he doesn't rest. There's Jim Bell. He's developed what he says is spinal mengalootis, or some sich like. There's Frankie Slade. He swore he had scarlet fever—because his face was burnst so red, I guess. When I hollered that scarlet fever was contagious, an' he must be put away somewhere, he up an' says he guessed it wasn't that; but he was sure awful sick an' needed to loaf around an' be amused. Why, even Nels doesn't want to work these days. If it wasn't for Stewart, who's had greasers with the cattle, I don't know what I'd do."

"Why all this sudden illness and idleness?" asked Madeline.

"Wal, you see, the truth is every blamed cowboy on the range except Stewart thinks it's his bounden duty to entertain the ladies."

"I think that is just fine," exclaimed Dorothy Coombs, and she joined in the general laugh.

"Stillwell, you needn't be so distressed with what is only gallantry in the boys, even if it does make temporary confusion in the work," said Madeline.

"Miss Majesty, all I said is not the half, nor the quarter, nor nuthin' of what's troublin' me," he answered. "Very well—unburden yourself."

"Wal, the cowboys, exceptin' Gene, have gone plumb batty, jest plain crazy, over this heah game of gol-lot."

A merry peal of mirth greeted Stillwell's solemn assertion.

"Oh, Stillwell, you're joking," replied Madeline.

"I hope to die if I'm not in daid earnest," declared the cattleman. "It's an amazin' strange fact. Ask Flo. She can tell you. She knows cowboys, an' how, if they ever start on somethin', they ride it as the ride a hoss."

Florence, being appealed to, and evidently feeling all eyes upon her, modestly replied that Stillwell had scarcely misstated the situation.

"Cowboys play like they work or fight," she added. "They give their whole souls to it. They are great big simple boys."

"Indeed they are," said Madeline. "Oh, I'm glad if they like golf. They have so little play."

"Wall, somethin's got to be did if we are to go on raisin' cattle at Her Majesty's Rancho," replied Stillwell. "You recollect what pride the boys took in fixin' up that gol-lof course out on the mesa, an' how they all wanted to see you an' your brother play, an' be caddies for you? Wal, whenever you'd quit they'd go to work tryin' to play the game. Monty Price, he was the leadin' spirit; an' he an' Link Stevens—both cripples, you might say—joined forces an' elected to beat all comers. They did beat 'em, too, an' that's the trouble. Long an' patient the other cowboys tried to best them two game-legs, an' hev'n't done it. Mebbe if Monty an' Link was perfectly sound in their legs, like the other cowboys, there wouldn't hev been such a holler; but no sound cowboys 'll ever stand for a disgrace like that. Monty and Link hev got the books an' the directions of the game, an' they won't let the other boys see them. They show the rules, but that's all; an' of course, every game ends in a row almost before it's started. The boys are all turrible in earnest about this gol-lof; an' I want to say for the good of ranchin', not to mention a possible fight, that Monty an' Link hev got to be beat. There'll be no peace round this ranch till that's done."

"What in the world can I do?" Madeline asked.

"Wal, I reckon I couldn't say. All I'm sure of its that the conceit has got to be taken out of Monty and Link. Wunst, just wunst, will square it, an' then we can resooome our work."

"Stillwell, listen," said Madeline. "We'll arrange a match game, a four-some, between Monty and Link and your best picked team. Castleton, who is an expert golfer, will umpire. My friends will take turns as caddies for your team. Caddies may coach, and perhaps expert advice is all that is necessary for your side to defeat Monty's."

"A grand idee!" declared Stillwell with instant decision. "When can we have this match game?"

"Why, today—this afternoon. We'll all ride out to the links."

"Wal, I reckon I'll be some indebted to you, Miss Majesty, an' all your guests," replied Stillwell warmly. He rose with sombrero in hand and with a twinkle in his eye. "An' now I'll be goin' to fix up for the game of cowboy gol-lof. Adios!"

The June days had set in warm—hot, in fact, during the noon hours; and Madeline's visitors had profited by the experience of those used to the southwest. They indulged in the restful siesta during the heated term of the day.

Madeline was awakened by Majesty's well-known whistle and pounding on the gravel. Then she heard the other horses. When she went out she found her party assembled in gala golf attire and with spirits to match their costumes. Castleton, especially, appeared resplendent in a golf coat that beggared description. Madeline had faint misgivings when she reflected on what Monty and Nels and Nick might do under the influence of that blazing garment.

"Oh, Majesty," cried Helen, as Madeline went up to her horse, "don't make him kneel. Try that flying mount. We all want to see it. It's stunning!"

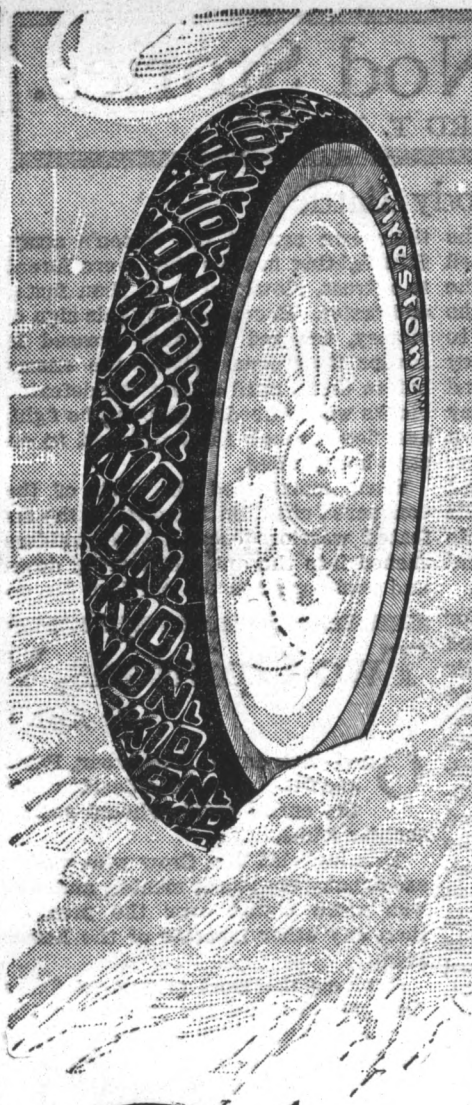
"But that way, too, I must have him kneel," said Madeline, "or I can't reach the stirrup. He's so tremendously high."

Madeline had to yield to the laughing insistence of her friends and, after all of them except Florence were up, she made Majesty go down on one knee. Then she stood on his left side, facing back, and took a good, firm grip on the bridle and pommel and his mane. After she had slipped the toe of her boot firmly into the stirrup she called to Majesty. He jumped and swung her up into the saddle.

"Now, just to see how it ought to be done, watch Florence," said Madeline.

The western girl was at her best in

(Continued on page 435).



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Land O' Nod Stories.

By HOWARD T. KNAPP

A Bloody Battle

THE colony of Negro ants the Queen's army had just located was too small to supply all the slaves they needed, so as soon as the soldiers turned their captives over to the old slaves in the home city, they hurried back to the scene of action and mustered for another raid. Soon they were off through the oat forest in a solid column, headed toward another Negro city some distance away, and no army of men ever set off to battle in more orderly array than this horde of tiny insects which had no general or officers to direct their movements.

The city they now were headed for was large and flourishing and, warned by the fate that had befallen their neighbors, the inhabitants had made every preparation to defend their home. Workers hastily barricaded the passages and closed the gate with pellets of dirt, while the nursemaids gathered up all the eggs and cocoons and baby ants and carried them to the very bottom of the city for concealment or readier escape. Sentinels had been posted on every road leading to the city, and as the foe advanced to the attack, these retreated and warned the Negro soldiers to be ready for battle. So when the Queen's army arrived at the city, they found the plain alive with Negro warriors determined to defend their home or die in the attempt.

Nothing daunted by this show of resistance, the Queen's soldiers rushed boldly forward to the attack, but they were met by warriors as savage and determined as themselves. Hosts of the angry blacks hurled themselves on the invaders, and soon the plain surrounding the city was covered with a confused mass of struggling insects. The red helmets and armor of the invaders distinguished them from the black coats of mail worn by the defenders, but here and there groups of fighters were mixed up together in such a hopeless tangle of interlocked jaws and legs that only the warriors themselves could tell friend from foe.

The toothed mandibles, or upper jaws, were the chief weapons of both invaders and defenders, and with these wide open the ants rushed together. Often two soldiers would lock jaws in a death struggle, and then a big red soldier would make use of another weapon. Bending its abdomen upward until the nozzle of the poison gland at the end of its body was pointed at the foe, the ant would squirt a stream of formic acid into the face and mouth of the Negro warrior. Now this formic acid, which nearly all ants can secrete at will from their tails, is a strong, burning fluid that bites and stings everything it touches. So when this poison was squirted in an ant's face, the victim was blinded and forced to loosen its grip, and the other was then able to crush it to death between its powerful jaws.

Although they were greatly outnumbered, the little black ants fought bravely, holding their own and not giving way an inch before the savage attack. Back and forth surged the ranks of struggling warriors, tearing and biting and tugging at each other and never stopping to rest. For more than an hour the result of the battle was in doubt, and I can tell you, Billy Be By Bo Bum was glad he was perched safely in the top of an oat tree and not mixed up in the fray.

Now one side seemed to be winning, now the other, and although hundreds of soldiers were killed and wounded on each side, the fighting was as fierce as when the battle started. But at last so many of the Negroes were killed or disabled that they no longer could hold

their own against the Queen's army. Still fighting bravely they were forced to retreat, slowly at first, then faster and faster. Encouraged by this sign of victory, the red invaders pressed in harder than ever, driving the enemy before them, until at last the defeated blacks were forced to give up the fight, and flee through the oat forest to escape being killed.

Then commenced the sack of the conquered city. Satisfied to let the defeated warriors escape, the raiders rushed into the ant hill, tearing down and pushing aside the barriers the de-

fenders had erected in the passages in the hope of protecting the nursery from being plundered. In a few minutes the victorious soldiers came out, each bearing an egg or cocoon in its jaws, the precious treasure in the defense of which so many of the brave little Negroes had sacrificed their lives.

Soon the battlefield was deserted except for the heaps of dead ants which covered the plain surrounding the city like a red and black carpet. The Queen's army now began the triumphant march back home. Now, however, they did not march in orderly array as when they went forth to battle. Each soldier shifted for himself, taking the easiest path, and each either carrying an egg or cocoon or dragging a dead or wounded prisoner.

And next week I'll tell you of an adventure that befell Billy Be By Bo Bum on his way back to the city.

Two Opinions, Yet Practically One

By AUNT QUILLIA

ONE dark day in December, Pater and Mater Familias decided that the entire family should seek a sunnier clime.

This included Jim Crow who was to accompany his young master, and who was more elated over the prospect than any other member of the household.

Jim was the most prominent figure that perambulated the grounds of Mapleshade. Especially was his presence familiar to the inhabitants of the poultry yard which he delighted to visit, and whose residents he loved to astonish with strange tales of life in the northern forest from whence he came. In short, there was no end to his stories of lumber camps, hunting lodges, blood curdling situations, and hair-breadth escapes.

But now, said he, with a wink of the eye, there will be mouths wider agape than ever, more profound bows, more regard for my personality, in those benighted quarters than heretofore, for my stock of entertainment henceforth will consist of tales of parlor cars, great hotels, midwinter flowers, moonlight excursions, and music furnished to charm tourists like ourselves.

But alas! Unknown to Crow, the master of Mapleshade in some way had been ensnared by a conscienceless Development Company, and, without first seeing them, had been induced to invest in lands in the midst of a dismal southern swamp.

Jim himself, as well as the rest, was dumfounded on reaching the end of the journey. However, he braced up and watched with apparent interest Pater-Familias in his rubber boots, and the ladies with their elevated spirits as they waded around building the shack which was to winter them.

This done, all settled down to a lonely, humdrum life, subsisting on a little fish and game, a few sweet potatoes, and turnip greens, which an old colored man now and then brought to their camp.

By no means should the climate of Florida be malign. Many, very many, of its late fall, winter, and early spring days are simply heavenly. Her moods, although not very ill, nor very lasting, are subject to changes however, and the quality of the weather during this particular winter, and in this special locality, somehow gave the entire family the most unspeakable chills they had ever experienced. In the clinging vapors of the early mornings, and sometimes till mid-day, Jim himself shook like a miniature earthquake and, like the rest, was glad when the time came to find himself headed for the north star.

Once at home, he found himself, as a traveled gentleman might expect, the center of attraction. His imagination had not in the least been impaired by his poor fare and hard chills. Strange to say it seemed more active than ever,

and marvelous were the tales he told of his tourist life, his delightful winter home, and how, above all, he had been petted in the grand hotels for his smart appearance.

Day after day the rostrum in the poultry yard was occupied by him, and day after day did his audience seem more spellbound by the recital of his adventures.

Two old hens, however, always remained on the outskirts of the crowd, and a close observer might have noted a shade of incredulity on their faces. Finally, one day Topknot turned to Speckles saying, "I have my opinion. What is yours?"

"Well," replied Speckles with a clever grin, "it reminds me of what I have heard that a joker in the man-world once said: 'Some travelers can't tell all they have seen; others can tell more.'"

"Very good," answered Topknot, "but I believe I can go one better. A wit once said: 'Truth is valuable; let us be economical of it.'"

A SONG OF SPRING.

BY T. G. MORRIS.

There's a breath of Springtime 'n the air,

The crocus notes it too;
The pussy-willows lift their heads,
And the violets peep through.
The sun grows brighter every day,
The skies wear deeper blue;
All Nature feels the thrill of Spring,
And clothes itself anew.

The little buds on shrub and tree,
Peer forth to view the sun,
The birds returning from the South
Preen feathers, every one.
The flow'rets all awaken
From long and wintry sleep;
And take on brighter, fairer hues,
Spring's holiday to keep.

I cannot hide the laughter,
Nor can I quell the song
Which rises gaily from my heart,
And echoes all day long.
My cares grow light and lighter,
And work seems all but play;
A little voice keeps urging,
That Spring is on its way.

And every face is wreathed in smiles,
All fears and cares must drown—
For who with Gentle Spring would quarrel,
Or on Dame Nature frown.
The new world seems so bright and good,
We're happy—and we sing;
Old Winter's shadow moves along,
And in his place comes Spring.

"Love is the sum total of life, and it is only according to our measure of it that we are accessible to truth. Man has part in the eternal only so far as he cherishes in himself the Divine spirit-love. Pray and work is the great maxim for young and old.—Frederick K. Perthes.

He who would gather immortal palms must not be hindered by the name of goodness, but must explore if it be goodness. Nothing is at last sacred but the integrity of our own mind. Absolve you to yourself, and you shall have the suffrage of the world.—Emerson.



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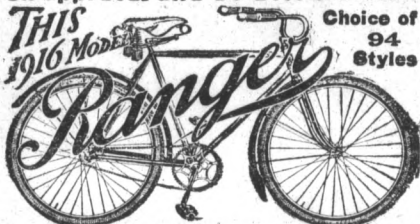
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LIGHT OF WESTERN STARS.

(Continued from page 433).
a riding-habit and with her horse. It was beautiful to see the ease and grace with which she accomplished the cowboy's flying mount. Then she led the party down the slope and across the flat to climb the mesa.

Madeline never saw a group of her cowboys without looking them over, almost unconsciously, for her foreman; but this afternoon, as usual, Gene Stewart was not present. She could not help feeling disappointed and irritated. He had not been attentive to her guests, and he, of all her cowboys, was the one of whom they wanted most to see something. Helen, particularly, had asked to have him attend the golf match; but Stewart was with the cattle. Then Madeline thought of his proven faithfulness, and was ashamed of her momentary lapse into that old imperious habit of desiring things irrespective of reason.

Stewart, however, immediately slipped out of her mind as she surveyed the group of cowboys on the links. By actual count there were sixteen, not including Stillwell. The same number of splendid horses, all shiny and clean, grazed on the rim in care of Mexican lads. The cowboys were on dress parade, looking very different, in Madeline's eyes, at least, from the way cowboys usually appeared. But they were real and natural to her guests; and they were so picturesque that they might have been stage cowboys instead of real ones. Sombreros with silver buckles and horsehair bands were in evidence. Bright silk scarfs, embroidered vests, fringed and ornamented chaps, huge swinging guns, and clinking silver spurs lent a festive appearance.

"Wal, you-all raced over, I seen," said Stillwell, taking Madeline's bridle. "Get down, get down. We're sure amazin' glad an' proud. An', Miss Majesty, I'm offering to beg pawdin' for the ways the boys are packin' guns. Mebbe it ain't polite, but it's Stewart's orders."

"Stewart's orders!" echoed Madeline.

"I reckon he won't take no chances on the boys bein' surprised sudden by raiders; an' there's raiders operatin' in from the Guadaloupes. That's all. Nothin' to worry over. I was just explainin'."

Madeline, with several of her party, expressed relief, but Helen showed excitement and then disappointment.

"Oh, I want something to happen!" she cried.

Sixteen pairs of keen cowboy eyes fastened intently upon her pretty, petulant face; and Madeline divined, if Helen did not, that the desired consummation was not far off.

"So do I," said Dot Coombs. "It would be perfectly lovely to have a real adventure!"

"Wal, I reckon you ladies sure won't have to go home unhappy," Stillwell said. "Why, as boss of this heah outfit I'd feel myself disgraced forever if you didn't have your wish. Just wait. An' now, ladies, the matter on hand may not be amusin' or excitin' to you, but to this heah cowboy outfit it's powerful important, an' all the help you can give us will sure be thankfully received. Take a look across the links. Do you-all see them two apologies for human bein's prancin' like a couple of hobbled bronks? Wal, you're gazin' at Monty Price an' Link Stephens, who have of a sudden got too swell to associate with their old bunksies. They're practisin' for the toornament. They don't want my boys to see how they handle them crooked clubs."

"Have you picked your team?" inquired Madeline.

Stillwell mopped his face with an Stillwell mopped his red face with an immense bandanna and showed something of confusion and perplexity.

"I've sixteen boys, an' they all want to play," he replied. "Pickin' the team ain't goin' to be an easy job. Mebbe

it won't be healthy, either. There's Nels an' Nick. They just stated cheerful like that if they didn't play we won't have any game at all. Nick never tried before, an' Nels, all he wants is to get a crack at Monty with one of them crooked clubs."

"I suggest you let all your boys drive from the tee, and choose the two who drive the farthest," said Madeline.

Stillwell's face lighted up.

"Wal, that's a plumb good idee! The boys 'll stand for that." He promptly broke up the admiring circle of cowboys round the ladies. "Grab a rope—I mean a club, all you cow-punchers. March over hyar an' take a swipe at this little white bean!"

The cowboys obeyed with alacrity. There was some difficulty over the choice of clubs and who should try first. The latter question had to be adjusted by lot. However, after Frankie Slade had made several ineffectual attempts to hit the ball from the teeing-ground, at last to send it only a few yards, the other players were not so eager to follow.

Stillwell had to push Booley forward; the cowboy executed a most miserable shot and retired to the laughing comments of his comrades. The efforts of several succeeding candidates attested to the extreme difficulty of making a good drive.

"Wal, Nick, it's your turn now," said Stillwell.

"Bill, I ain't so particular about playin'," replied Nick.

"Why? You was roarin' about it a little while ago. Afraid to show how bad you'll play?"

"Nope, jest plain consideration for my fellow cow-punchers," answered Nick with spirit. "I'm appreciatin' how bad they play, an' I'm not mean enough to show them up."

"Wal, you've got to show me," said Stillwell. "I know you never seen a gol-fof stick in your life. What's more, I'll bet you can't hit that little ball square—not in a dozen cracks at it."

"Bill, I'm also too much of a gent to take your money; but you know I'm from Missouri. Gimme a club."

Nick's angry confidence seemed to evaporate as one after another he took up and handled the clubs. It was plain that he had never before wielded one; but also it was plain that he was not the kind of a man to give in. Finally he selected a driver, looked doubtfully at the small knob, and then stepped into position on the teeing-ground.

Nick Steele stood six feet four inches in height. He had the rider's wiry slenderness, yet he was broad of shoulder. His arms were long. Manifestly he was an exceedingly powerful man. He swung the driver aloft and whirled it down with tremendous swing. Crack! The white ball disappeared, and from where it had been rose a tiny cloud of dust.

(Continued next week).

DO IT WELL.

BY CORA B. HOWDEN.

If you do a thing at all,
Do it well!
Never half done, finished call,
Do it well!
Never shirk the task you find
Bear it carefully in mind
Leave no bad record behind
Do it well!

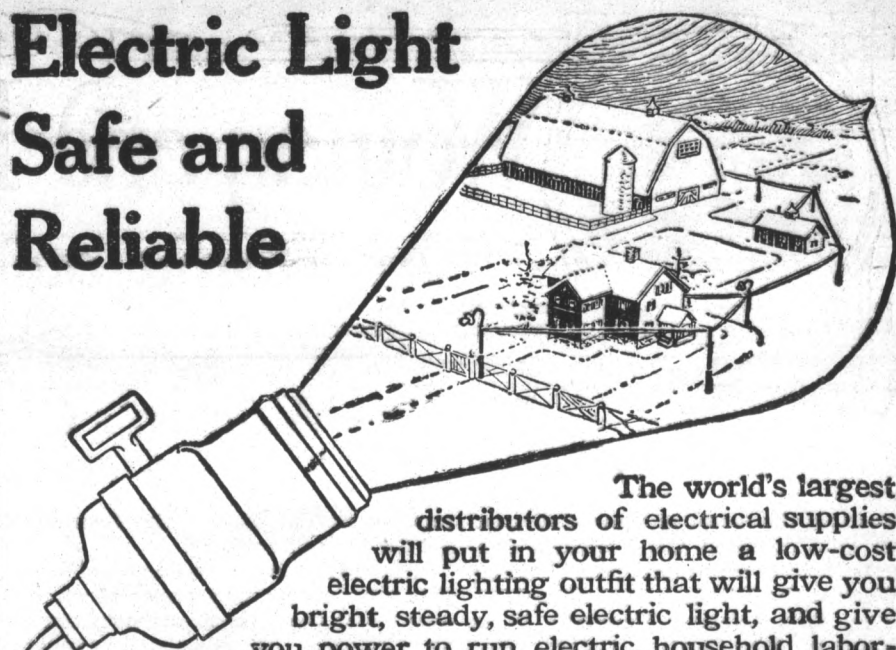
If you're given ought to do,
Do it now!
Pause not lest you later rue,
Do it now!
Men that loiter at their task,
Stop and in the warm sun bask,
Never earn half what they ask
Do it now!

Taking each task as it comes
Murmur not!
If you ugly feel, stay mum,
Murmur not!

More than one may need your smile,
We must labor yet awhile,
Keep away from sham and guile,
Murmur not!

It will always be the hills that lift themselves highest in the dark . . . that will first and most richly catch the glory of the rising sun. Therefore keep your life pure that God may some day make it holy—Phillips Brooks.

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Woman and Her Needs

At Home and Elsewhere



WHAT is being done for housekeepers, present and future, by the government, colleges, normals, high schools and grade schools not to mention experiment stations, was told the crowd of interested women who attended the Women's Congress held in connection with Farmers' Week at the Michigan Agricultural College, East Lansing, February 28 to March 4. Miss Carrie A. Lyford, Home Economics Specialist, United States Bureau of Education; Miss Paulina Raven, extension worker for the college; Miss Mary E. Edmonds, head of the domestic science department at the college; Mrs. Lillian L. Peppard, head of the domestic arts department, and Dr. Georgia L. White, Dean of Women, were among the speakers at the meetings which lasted from Monday until Friday, with a big mass meeting in the armory Thursday night in charge of the women.

Everything pertaining to women, from cutting up meat to the psychology of clothes, was demonstrated and discussed at some time during the week, the demonstrations especially proving of great interest to the housekeepers present. The use of potatoes in the diet was demonstrated by Miss Raven and Miss Clara King Morris; the preparation of salads, by Miss Edmonds and Miss Morris; the preparation of meals, by Miss Lyford; the preparation of meats for the table, by Miss Edmonds and Miss Louise Clemens, and meat cutting by Prof. G. A. Brown.

Practical and helpful was the lecture on "Floor Coverings," by Mrs. Peppard. Mrs. Peppard told of the composition and weave of every sort of floor covering, from simple matting to oriental rugs, illustrating her talk with samples of the different coverings which the women could examine. "The simplest sort of matting is the Chinese," said Mrs. Peppard. "This is made from grasses grown in China and both warp and woof are fibre. It is cool for porches and bedrooms in summer, but is objectionable because the dirt sifts through it, and as it has to be tacked down the dirt and dust must remain on the floor until the matting is taken up. A little better is the Japanese matting, with a cotton warp and fibre filling. This is waterproofed, so that it can be wiped up. Sometimes paper is used as a filling instead of fibre.

"Next to the mattings come the cotton carpets, which are being used more and more on bedrooms. These wear well and may be washed but the colors are not fast. However, they come in pleasing designs and can be bought in colors to match any scheme of decorating, so they are rather popular. Better than these cotton rugs, because they hold their color, are the rugs made half of wool and half of fibre, either jute or hemp.

"There are three weaves in rug making, the over and under weave, illustrated by rag carpets and ingrain, the Brussels weave and the Axminster weave. Of the first weave rag carpets are just now popular for bedrooms, bath rooms and summer cottages. Ingrain carpets have fallen off in popularity because the increased price of wool makes it impossible for rug makers to give the same quality of rug as formerly at a price the mills can afford to make. A good warp is often used with a poor filling, but the result is not satisfactory to the woman who

The Women's Congress at M.A.C.

By DEBORAH

remembers the quality she formerly got for the same money.

"The Brussels weave rugs and carpets are woven over a series of wires, over which the loops are thrown much as in knitting. These loops are caught by a series of threads running back and forth to hold the loops in place, and the wires are then drawn out and new loops thrown over them. The so-called velvet carpets are nothing more nor less than tapestry Brussels with these loops cut and sheared to give a nap. In Brussels rugs proper the loops are never cut, but in the velvets or Wiltons, the wires are supplied with knives which cut the loops as they are drawn out. Another machine shears and brushes the ends, giving the appearance of velvet. A body Brussels has as many sets of warp threads as there are colors in the rug, while a tapestry has only one set of warp threads. In addition to the velvet carpets the mills are just now turning out a plush carpet. This is of a looser weave, with a longer fibre. At present on account of the difficulty of getting dyes from Europe the mills are not guaranteeing colors.

"The Axminster weave is not so closely woven as the Wilton and is of longer fibres. The back threads are very far apart and the colors can be seen straight through. On account of the loose weave, a heavy piece of furniture left on an Axminster rug crushes it so it seldom regains its original look. Axminsters and moquettes are practically the same thing."

"To live means to be healthy, to enjoy the senses, to learn to work, to serve and to love," Miss Edmonds told her audience in her talk on "Efficiency in Home Making." "Home-making has to do with all of these, and for home-making intuition is not enough to teach women the correct way. Neither is the experience of others alone, though these experiences are of help. The home-maker must learn to do many things at once, and she must know what is the most important thing to do. When I ask what is the most important thing for the home-maker to know I am invariably told to know how to cook well. But this is not enough. She must not only know how to cook the food, but she must know its composition and nutritive value; how to adapt the foods to those she is feeding so as to fit all ages and sizes, occupations, seasons and conditions of health. She needs to know, too, the nutritive value as compared to cost so that she will not serve the most expensive proteins when a less expensive one would do.

"Then she must understand sanitation, the disposal of sewage and the necessity for pure air and water and how to secure them in her home. We spend \$3,000,000,000 annually on sickness, disease and death, when by knowledge and care we might save this money, and the suffering it represents. How few of us stop to think of the absolute necessity of fresh air. None of us would think of wearing another's soiled linen, yet we breathe soiled air from other people's lungs. To secure fresh air the housewife should start in the cellar, for much of the air from the cellar comes up to the kitchen. In farm homes the cellar is used for storing vegetables, so it is

impossible to have windows open all the time, but there are always warm days in winter when the windows can be opened without fear of freezing and this should be done. The necessity for fresh air in kitchen, living-room and bedrooms has been emphasized so much as to need no mention. Darkness, dampness and foul air have been called the three modern fates and must be eliminated.

"Our homes should be as beautiful as it is possible to make them, too, for our houses have a decided influence on their inmates. We need, also, a knowledge of economy, how to spend money wisely. True economy does not mean going without necessities, but planning to get the most for our money, in learning to decide between the must have and the may-haves. We should learn to economize time, too, as well as money, and to do this we must have proper tools, sharp knives, labor saving devices and handy arrangements.

"True efficiency in the home necessitates time for the children, time to talk to them, to read to them and with them. It includes time to read for our own culture and pleasure and time for the social life of the community. In short, the ideal home life must help ourselves and others to good living."

What is being done by the schools of the country to train girls for home-making was told by Miss Lyford. How the girls are taught to make work aprons, children's suits and baby clothes. In many rural schools throughout the country, teacher-cottages are built in connection with the schools where the girls are taught housekeeping, home gardening, dairying and poultry raising. The schools are trying to place before the girls an idea of the breadth of woman's opportunity, of her place in the world as well as in the home. Miss Lyford also called attention to the number of farm bulletins which can be secured by writing the bureau of education.

Miss Raven told what the extension workers are doing in Michigan. The work was begun last year, and when twelve one-week extension schools were held in different parts of the state. In these schools food principles, the preparation and place of proteins, textiles and school lunch boxes were considered, bulletins distributed and recipes demonstrated. This year the workers returned to half of the places and continued the work with lessons on household management, demonstration of carbohydrates and the care and diet of the sick. They also acted as judges at the state fair and at several county fairs and got out score cards which they hope to make standard at all fairs held in Michigan.

During the summer cold pack bulletins which the department has prepared will be sent out, and the workers will give demonstrations wherever they are requested by groups. They are also prepared to give lectures for clubs, granges, etc. To answer queries through their bureau of information and to send out bulletins. Household engineering and plumbing is taken care of by O. E. Robey, of the farm mechanics department.

These traveling schools may be secured by petitioning the director of ex-

tension, at the Agricultural College, at East Lansing, with a pledge of thirty women to pay fifty cents each for the course. The money is to pay for cost of material, hall rent and other local expenses.

Mrs. Dora Stockman called attention to the traveling libraries which may be secured from the state library by paying the cost of transportation both ways. Among these there are ten home economic libraries, which are busy all the time. A collection of pictures for exhibition in clubs or Granges may also be secured in the same way.

Mrs. Thomas E. Gunson, of East Lansing, spoke of the amount of educational literature which is being sent out as advertising by large manufacturers. A collection of these circulars and booklets would almost make up a home economics library.

The talk on "Home Gardens," by R. E. Loree, of the horticulture department, brought forth many questions from the women. From Mr. Loree the audience learned that they could grow parsley in ordinary eight-inch flower pots during the winter as well as in a window box. Asparagus should be planted in rows four feet apart, the plants eighteen inches apart in the rows instead of in the old-fashioned beds. It is better to get plants one year old than to set out those older, as they get established quicker than the older plants. The plants should be set out in trenches twelve inches deep. In the trenches should come first a layer of well-rotted manure, then a layer of soil rounded up in the center to give more room for the roots to be spread out, and then the plants. Over the roots put only two inches of soil, leaving the rest to be filled in during the season as the asparagus bed is cultivated. The asparagus should not be cut before the third year, and it is better to wait until it is three years old. The cutting system should last only six or eight weeks, then top fertilizer should be put on and the bed cultivated. No especial treatment is needed in the fall unless the leaves turn red and drop. Then they should be cut down and burned. Fertilizer should be applied in the early spring.

When the cucumber vines wither, Mr. Loree told his hearers, it is safe to decide they have been attacked by cucumber wilt, though sometimes green plant lice cause them to wilt. Cucumber wilt is caused by bacteria, and the only thing to do is to pull up the plants and burn them. There is no known remedy for the disease. It does not stay in the soil, but is thought to be spread by the cucumber beetle.

To get the best results from tomato plants they should be staked up and the liberal stems trimmed off. In this way you do not secure so many tomatoes to the plant, but you can get in more plants to the acre so the yield is practically the same. Besides you get the fruit from ten days to two weeks earlier.

BETTER BABIES DEPEND UPON PURE MILK.

"It's clean. You can't see the dirt," is the reply given by many people when told that pure milk is one of the necessary things for babies. Straining a little of the milk through a sample of cotton will often show settleings in the milk not visible in the glass. Even

if there are no such settlings milk may be dangerous to grown folks, and especially to babies without giving any warning in the form of dirt that can be seen, or any bad taste whatever.

Impure milk is more dangerous than most other foods because the baby to whom it is fed is less able to resist many diseases, and proper cooking of other foods will kill the disease germs while milk is rarely pasteurized.

Consumption or tuberculosis, summer complaint of babies, typhoid fever, diphtheria, scarlet fever, sore throat, diarrheas, and dysenteries are among the more common diseases that are certainly spread through milk. There are people who do not believe that tuberculosis of cattle can cause the same diseases among children, but the best authorities believe that one out of every four cases of this disease in children is contracted from cow's milk and one excellent authority states that 95 per cent of the tuberculosis of glands in children is caused by the cow germ.

Improvement in a community's milk supply has been proved to lower the death rate of babies and particularly those under one year of age. To get the safest milk we must test cows for tuberculosis, keep them clean, particularly the hair and skin of the udder, avoid dust where milking is done, see that dirty or unhealthy persons, especially those that have recently had such diseases as typhoid fever, have nothing to do with milking or handling the milk, scald all milking utensils, or better, heat them to the boiling point, use only pure water and, even after taking these precautions, pasteurize the milk.

It is not necessary to boil milk or heat it so that its food value is decreased. If there is no thermometer at hand, put the milk in bottles, place the bottles in a vessel full of cold water on the stove, bring the water to a boil, remove the bottles at once, chill them quickly and keep the milk so cold that germs cannot develop in it before it is used. If a thermometer is available, put the milk into lightly stoppered bottles, heat it to 145 degrees F. and keep at this temperature for 30 minutes, then cool rapidly. A double boiler will help in doing this.

This is some work but it pays big dividends in better, healthier babies and may prevent sickness among the older members of the family as well.—Missouri College of Agriculture.

GENERAL RULES FOR USING BAKING POWDER.

"I always have to use sour milk and soda," say many women. "I never have any luck with baking powder."

One wonders when biting on a lump of soda in their cakes and eating their biscuit, yellow-streaked, why they think they have luck with soda? And if a baking powder biscuit which didn't rise quite enough would not be preferable to a sour milk biscuit which came up plump and puffy and was flavored and colored with soda.

Given a good baking powder, there is no reason why any woman should not have good luck with it, provided she uses good flour and follows practical, scientific rules in mixing her ingredients. And as baking powder can be used with either milk or water, it is certainly handier than soda which depends for its success on sour milk or cream.

Heat and moisture acting on baking powder set free its leavening properties, that is, cause the batter in which it is used to rise. For that reason it should be kept tightly covered when not in use or it will "lose its strength." It should also always be sifted with the dry ingredients when used, to keep it as dry as possible until the liquid is added, after which the substance should be set to cooking as soon as practicable. Even where soda is used experienced cooks use a bit of baking powder as well to add to the lightness of the dough or batter, and everyone

now, who wants flaky pie crust, sifts a pinch of baking powder in with the flour for the crust.

The general rule for quantity is two level teaspoons of baking powder to a cup of sifted flour for all batters and doughs where no eggs are used. In cakes with eggs the usual amount is two rounding teaspoons of baking powder to the cake, that is where two cups of flour are used. Special recipes calling for different amounts should be religiously followed.

No better retreat for the family supper can be thought of these spring days than nice, light, flaky biscuit with maple syrup. And with a good powder every cook can serve them. To make them, sift together two cups of flour, one teaspoonful of salt, and four level teaspoonfuls of baking powder. Work in two tablespoonfuls of shortening as carefully as for pie crust, and add one cup of milk or water. This can be dropped by spoonfuls in gem tins and baked, or rolled out and cut with a biscuit cutter. These measurements make eight biscuits.

Dumplings, so often like leaden bullets, may be white and feathery if properly made. Sift together two cups of flour, one teaspoonful of salt and four level teaspoonfuls of baking powder. Add one cup of milk or water, remove the meat from the broth, drop in the batter by small spoonfuls, cover immediately and boil ten minutes with the cover on.

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No. 7669—Ladies' Skirt. Cut in sizes 24 to 32 inches, waist measure. The skirt is cut in three gores and may be made with or without the belt.

No. 7645—Children's Rompers. Cut in sizes, 2, 4 and 6 years. The rompers close at the back and may have long or short sleeves.

No. 7636—Ladies' House Dress and Cap. Cut in sizes 34 to 42 inches, bust measure. The dress has a three-gored skirt with high or regulation waistline.

The above patterns can be secured from the Michigan Farmer. Price 10 cents each.

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Rumford THE WHOLESOME BAKING POWDER

DOES NOT CONTAIN ALUM

Farm Commerce.

Cultivating the Grocerman

THE fact that the middleman has been so successful in the conduct of his business seems to prove that he is filling a public want. The difficulty of the producer and the consumer dealing with each other through the medium of the parcel post is evidence of the fact that the general public approve of the methods of their local dealers, or at least are too busy to make business dealings with the farmers and prefer to pay the local grocerman for his service in filling their daily needs. It is popular to accuse the middleman of boosting the price of living, of paying the farmer too little money and charging the consumer too much. An inspection of the stock in your local grocery will convince you that the farmers of this state are never going to close up the grocery stores through the aid of the parcel post, municipal market, or any other agency. The grocerman carries tea from Japan, canned fish from Scotland, coffee from Brazil, and a thousand and one other articles which the farmers of this state do not produce and the buyers demand.

When you watch Johnson stop at the village store on the way home at night he may emerge with half a dozen packages and at least half of them will contain articles which you do not produce on your farm and your grandfather seldom thought of buying. The list will include bananas, oranges, tea, salmon, sugar, grapefruit, etc. These articles which were once luxuries are now considered necessities on the table of a man who does not earn more than two or three dollars per day. It is certain that the grocerman is a middleman that has come to stay for he is filling a public need. The best of mail order houses will never prove as handy as the corner grocery store.

It seems that the largest manufacturing institutions of high-class food products are willing to use the grocerman as their agent. Outside of the mail order houses nearly all of the standard advertised products are delivered to the public through the agency of the local dealer. These institutions are highly organized and managed according to the most modern of business principles. They recognize that the local dealer is their best and cheapest road to the home of the ultimate consumer.

Farming is a business. There is nothing new about that definition, absolutely nothing original in the statement. However, many advocates of business farming fight the middleman on paper while in reality they see no way to market the bulk of the farm products except through the regular channels of trade which have been gradually evolved through the necessity of an economical distribution of food products. Farmers' elevators are winners in many sections because to a certain extent the farmer acts as his own middleman. They can handle the grain crops to the best of advantage. However, farming does not stop with that and we have millions of dollars' worth of other products such as garden truck, poultry, small fruits, etc., which must be marketed.

The Department of Agriculture is fighting to organize various clubs for the marketing of farm products and in many sections they are successful. However, the majority of us live in a section where general farming is the order of the day. We cannot belong to a berry club, creamery association, egg club, broiler club, and half a dozen other organizations because the science of such marketing has not been far enough developed to insure the success of so many ventures. In the

future co-operative selling of farm products will probably be no experiment and we will all enjoy its benefits. At present the local dealer is performing that service for the majority of us and we will have to make the best of the situation. Under these circumstances why not own up to our misfortune and cultivate the local dealer to a larger extent as individuals. Possibly our efforts will some day work into an efficient means of community co-operation.

Quality Counts in Marketing.

The dealer is not all to blame for present conditions. Food products often come from the farm in poor condition, packages are carelessly thrown together, vegetables are often dirty and carelessly tied. Such messes are a great speculation and the grocerman stays on the safe side of the fence and the farmer pays for the risk. The grocerman has heavy bills to pay in order to furnish his customers with the service which their manner of living appears to demand. The delivery system is one factor and credit is another. The farmer expects cash for the products he brings to the grocerman and he gets it. The grocerman may expect cash from his buyers but he has learned not to demand it for fear of losing a good customer. Credit means risk and again the farmer has to pay the bill. All of these things are expected of the middleman and that is the big-

gest fault of our entire system of marketing farm products. The honest men pay the bill for the "dead beat" buyers and the lazy buyers who depend on the delivery system when it is unnecessary. Mr. Townsend does not recommend the shipment of honey outside of the first or second zone by parcel post, because the present rate for greater distances would render the expense prohibitive. Freight or express should be used for longer hauls. A thirty-pound can was recommended for family use.

There are many instances of this kind of co-operation between the producer and the consumer. The busy farmer cannot profitably become a huckster. The minutes are too valuable to spend them in knocking on doors only to learn that the order has already gone to the local store. The municipal market is fine but not every town has a municipal market as yet

and even in sections where they are established, it is still good business to appear at the market and cultivate the grocery store trade with quality products at the same time. The best buyers in the average city do not take the time to visit the municipal market to the extent that they should. In many families the market basket is out of date and a terrible financial jar would be necessary to bring the said basket down from the attic. The middleman is here to stay as long as the public demand his service. When selling the ordinary run of goods, meeting with competition everywhere, there will probably be little profit in co-operating with the grocerman, but where quality goods can be marketed the proposition is different. First-class products please the grocerman because they satisfy his best patrons and that being the case he cannot afford to lose the friendship of the producer. It is still true that the middleman receives the largest share of the consumer's dollar, but as long as the middleman is with us, it may prove profitable to cultivate him a little more efficiently.

Ingham Co.

R. G. KIRBY.

Marketing the Honey Crop

ONE of the most interesting subjects discussed at the annual convention of the National Beekeepers' Association held in Chicago in February, was that of the shipment of the product of the apiary. Many different phases, from the mailing of a small sample case to the sending of carload lots were handled, different experiences serving to throw considerable light on the subject.

E. D. Townsend, of Gratiot county, Michigan, gave some interesting parcel

ed by making use of tight-capped tin containers in cartons of at least two parts.

Some of the shippers said they had had trouble in making use of friction-top cans. At least two of them strongly advised the sealing of the top clear around, some said they had had no trouble by soldering in two or three places.

Mr. Snook spoke of the importance of shippers closely examining a car to ascertain whether it was in proper condition to receive a cargo of honey, it should be clean, free from offensive smell and with a wet-proof roof. Shippers were urged to ship in large as against small packages, to use roads on long hauls that have through runs on schedule time, as against any short road system with its consequent transfers. Shippers were advised in all cases to keep their freight expense bills, for this is the paper instrument on which claims for delay, damage, or loss are the most expeditiously settled. He advised the shipping of filled sections in wood cases as against the fiber-board because of the liability of the latter to be cut and honey pilfered enroute.

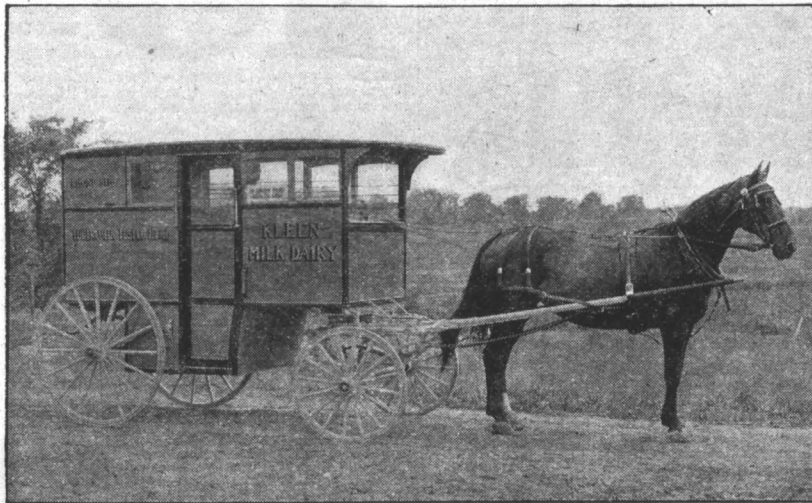
J. L. GRAFF.

SELLING CRACKED CHERRIES.

Better than three hundred crates of cracked Windsor cherries were sold to advantage last July. It happened this way. A prolonged rain storm was followed by a day of blistering sunshine. As a result many of the Windsor cherries, which were then in their prime, swelled and cracked open. This was Sunday. Monday morning the question was, what to do with the fruit—leave it on the trees to rot, harvest it for the hogs, or try to market it?

The problem was laid before the manager of the co-operative marketing association in the fruit capital of the cherry section of Northwestern Michigan. He made a trip of inspection along the business streets, stopping at the fruit stores and groceries to note the quality of the cherries offered for sale, and the prices. An advertisement was then placed in the local daily. This ad said that cracked Windsor cherries would be sold at one dollar the crate, that these cherries came from the same trees as the fruit that was being shipped at two dollars a crate, that it had the delightful flavor ascribed to the cherries of this region, and that while the fruit was not suited for shipment it was entirely satisfactory for immediate use and for canning.

Within half an hour from the time the paper appeared on the street the consumers began to arrive at the Fruit exchange office. The trial load brought



The Dairyman who Retail Milk Finds that the Public Holds a Higher Opinion of the Produce Delivered if the Milk Wagon is in Good Repair, Clean, Neatly Painted and Drawn by a Well-Groomed Horse.

gest fault of our entire system of marketing farm products. The honest men pay the bill for the "dead beat" buyers and the lazy buyers who depend on the delivery system when it is unnecessary.

After considering the middleman problem from every angle it is apparent that we are not ready as yet to drift away from that system and as farmers we cannot do it because the public must have what they pay for and should be willing to pay the bill. The question arises, "Why not cultivate the grocery store with quality products, become the friend of the grocerman by giving him the goods that his customers demand?" In that way he will become your agent in the same manner as he is now the agent of the large manufacturers of food products. By increasing friendship with him you will be assured of a square deal and his profit will not be any more than it would cost you to reach his trade with the same goods.

There are many quality products on the market today which are handled in this manner and their producers are making money. A certain brand of pop corn put up by a farmer in small packages is being sold through the local dealers to a vast number of con-

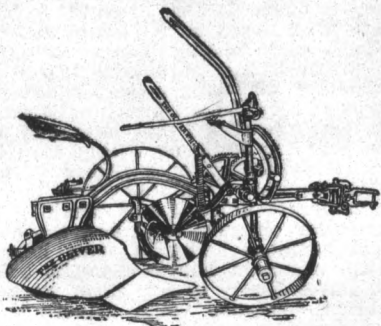
sumers. It is good pop corn and the dealer is proud to send it out as he knows it will prove satisfactory. An egg farm is sending out fresh eggs in neat cartons stamped with their brand and address. The grocerman is paying extra for these eggs because they are worth more to his consumers. A fruit farmer ships first-class peaches every year and in spite of glutted markets his grocerman friend knows where he can obtain a few hundred peaches of quality for his consumers.

The green onion season comes on in the spring. Mr. Grocerman has been buying fine onions of a farmer near town. They are clean, fresh and neatly tied and look fine in his store. He is a friend of the producer and the producer benefits from his friendship.

There are many instances of this kind of co-operation between the producer and the consumer. The busy farmer cannot profitably become a huckster. The minutes are too valuable to spend them in knocking on doors only to learn that the order has already gone to the local store. The municipal market is fine but not every town has a municipal market as yet

and even in sections where they are established, it is still good business to appear at the market and cultivate the grocery store trade with quality products at the same time. The best buyers in the average city do not take the time to visit the municipal market to the extent that they should. In many families the market basket is out of date and a terrible financial jar would be necessary to bring the said basket down from the attic. The middleman is here to stay as long as the public demand his service. When selling the ordinary run of goods, meeting with competition everywhere, there will probably be little profit in co-operating with the grocerman, but where quality goods can be marketed the proposition is different. First-class products please the grocerman because they satisfy his best patrons and that being the case he cannot afford to lose the friendship of the producer. It is still true that the middleman receives the largest share of the consumer's dollar, but as long as the middleman is with us, it may prove profitable to cultivate him a little more efficiently.

Oliver



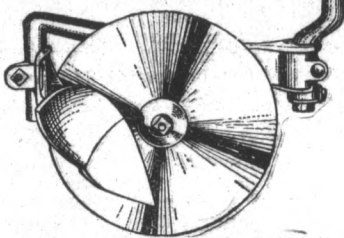
James Oliver No. 11 Sully

The farmer who owns a James Oliver No. 11 sully is prepared to do good plowing whether the ground is hard and dry or in good condition. He plows an even depth in uneven ground and turns in or out with the bottom cutting full depth.

This sully has few parts, giving low cost for repairs.

The Oliver combined rolling coulter and jointer, the most successful weed covering device, can be used on the No. 11 sully.

If you are not familiar with the features of the No. 11 sully and the combined rolling coulter and jointer, ask your dealer to show them to you. If he cannot, write us direct.



Oliver Chilled Plow Works
Flowermakers for the World
South Bend, Ind.

NOTICE Our 1916 Booklet ON

FIELD TYPE

America's Best Engine
IS OUT

A Postal card request will bring one to you,

**FIELD-BRUNDAGE
COMPANY**
JACKSON - MICH.

WANTED-Honest, Energetic Men

In every county to sell our big line of goods direct to farmers. EXPERIENCE NOT NECESSARY. We fully instruct you. Farmers, laborers, mechanics, or any men willing to work can make

\$1000 to \$3000 a Year

handling our big sellers. Exclusive territory given. We furnish you the capital. You furnish the team to carry the goods. Be your own boss in a pleasant, permanent and profitable business. Write at once for full particulars, giving age and occupation.

THE DUOFORM COMPANY,
Dept. 2, North Java, N. Y.



TIMOTHY AND ALSYKE \$4.50
Per bu.
Bags extra at 20c each. Send us your order.
Young-Randolph Seed Co. Owosso, Michigan

in from the orchards was soon sold and the growers who had reported in the morning that their crop was ruined were informed by telephone that their cracked Windsors would bring a dollar a crate, and to bring them in as fast as they could.

Business started at five o'clock on Tuesday morning, the first customer arriving at that hour and taking two cases away with him. A number of men on their way to work came, bought crates, and had them set aside till they went home at night. The news that Windsor cherries could be had for one dollar a crate, seemed to spread and the customers came faster and faster. They came in autos, in carriages, on drays, they came with bicycles, baby carriages, go-carts, express wagons, and even wheelbarrows. Some carried their crates home on their backs and one fellow had a switch engine on a near-by track carry away his purchase.

The rule was spot cash and first come, first served. The pickers in the orchards were unable to keep up with the demand and the pile of one dollar bills, with a slip of paper bearing a name pinned to each, kept getting higher and higher until towards the end of the week when the demand seemed to be satisfied and the supply of cracked cherries ran out.

The final footings showed that the growers had received many dollars for fruit that Monday morning they had looked upon as only fit for hog feed. Advertising turned the trick.

Gd. Traverse Co. R. H. ELSWORTH.

Crop and Market Notes.

Michigan.

Emmet Co., March 13.—Enough snow for sleighing, and fields are well protected. Wheat, rye and meadows in good condition. Feed rather short, not much for sale. Considerable logs and wood being marketed. Butter 28c; eggs 25c; potatoes 75c; beans \$3@3.50.

Gladwin Co., March 13.—Not much snow here this winter. Farmers are busy getting up wood. There has been a large amount of live stock sold during the fall and winter. Cows selling high, from \$65@100; some hay being sold at \$11.50@13; butter-fat 34c; eggs 15c; potatoes 85c; chickens 13c; hogs \$8.50; beans \$3.55. The Beaverton Co-operative Produce Co., incorporated last fall, has commenced operation and doing a good business. A large number of farm buildings will be erected the coming summer.

Mecosta Co., March 13.—March has been very rough, with much more snow than usual, which is, however, a good protection for fall seeding. Not many hogs and cattle being marketed now. No feed whatever shipped out. About 40 per cent of potato crop in farmers' hands, the price now being 85c; rye 82c; corn 45c; butter-fat 28c; butter 22c; eggs 18c.

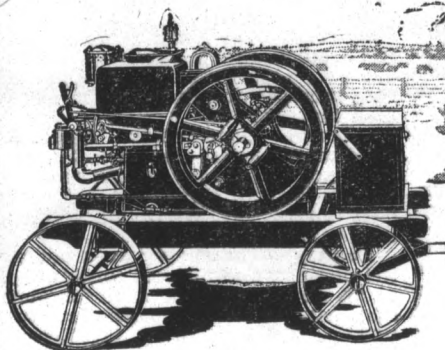
St. Clair Co., March 14.—The weather has been rather cold, but fall grains have not been injured, as they have been protected with a light snow. Live stock wintered well and there is plenty of roughage, but corn is scarce. Quite a lot of wheat in the farmers' hands. There have been quite a number of auction sales. Hens laying fairly well. Wheat \$1.05; oats 43c; beans \$3.40; potatoes \$1.25; butter-fat 32c; eggs 19c; cattle \$5@7.25; hogs \$5.50@7.50.

Van Buren Co., March 14.—There is no snow, and wheat and rye are not in very good condition. Young seedling looking good. Condition of live stock is fair. Not much feed for sale. A great deal of corn is in bad shape in cribs, and good seed corn will be in good demand this spring. Wheat \$1; good corn 75c; oats 40c; beans \$3@3.75; potatoes 80c; hogs \$8.50@9; cattle \$7; dairy butter 25c; eggs 17c.

Washtenaw Co., March 13.—There is no snow, but wheat and clover do not seem to be damaged thus far. Live stock has come through the winter in good condition. Aside from a scarcity of corn, farmers have plenty of feeds to last through the season. Hay is mostly marketed at \$12@13 baled. Milk \$1.25 for 3% per cent butter 30@34c; eggs 18c; wheat \$1; potatoes \$1; beans \$3.40; cattle \$6.50@7; hogs \$8@9.

Eaton Co., March 15.—No snow to speak of and the roads are somewhat rough. Wheat and rye prospects not very good. Meadows fair. Live stock seems to have wintered well and feed is plentiful. A considerable amount of live stock being marketed. Cattle \$5@7; sheep \$3@5.50; hogs, live \$8.75; calves \$8.10; wheat \$1; oats 37c; corn 70c; rye 80c; beans \$3.10; potatoes (Continued on page 440).

Power for Forty Farms



Mogul and Titan Engines

TWENTY Titan engines of all sizes, all kerosene burners, were lined up in front of the I H C dealer's store at Litchfield, Minn., one day last summer. That day their new owners took them out to supply good, reliable power on twenty farms. A few months later Litchfield saw twenty more farmers take Titan engines out to their farms.

Two big I H C engine delivery days in that town last year. In many hundreds of towns you will find this same popularity of I H C Mogul and Titan engines—the best farm power—Grand Prize winners at San Francisco.

You must have an engine—then buy an International Harvester engine—Mogul or Titan. It will keep down your fuel and repair bills, deliver the most power with least trouble, and save you more hard work than you can realize now.

International Harvester engines are made in all approved styles, sizes from 1 to 50-horse power, operating on low as well as high-grade fuels. Some local dealer near you handles Mogul or Titan engines. If you don't know him, drop us a line. We'll send you full information, and make it easy for you to get the best farm engine made.

International Harvester Company of America

(Incorporated) **CHICAGO** **USA**
Champion Deering McCormick Milwaukee Osborne Plano

Save 20% Buy the Famous Riverside Tires

Guaranteed
5000 MILES
Ford Size
4000
All Others



GET our 1916 prices before you buy tires. We save you one dollar out of every five, of others prices. And we unconditionally guarantee the mileage. Famous racers have broken all records on Riverside Tires.

SEND FOR AUTO BOOK

Showing Riverside construction—wrapped tread—one cure—toughest fabric, with pure Upper River Para Rubber, extra thick tread. Book shows similar saving on all automobile accessories. Sent free on request. Write today

Montgomery Ward & Co. Dept. C110

New York Chicago Kansas City Ft. Worth Portland
Write to the house most convenient to you

HAND POWER K Stump Puller

Land clearing an easy one-man job—big stumps pulled clean with this wonderful machine.

Works on any land. Operated by hand! No horses; no digging. Made of forged Krupp steel—guaranteed. Adopted and used by U.S. Government officials and many states. Send for FREE illustrated book on Land Clearing and stump pulling.

Drop a postal to:
W. J. FITZPATRICK
Box 4, 182 Fifth Street,
San Francisco, Calif.

DOUBLE TREAD TIRES

Are splendid serviceable shoes. Combined by our special process with the bead of another, stout well-made tire, giving you a tread of unusual strength and resistance. Wears splendidly on roughest, hardest roads, gives big mileage at 25% of the cost of new tires.

Big introductory offer during March. Send for booklet and prices. We are the original "Double Tread Tire Company," and have been selling direct to farmers since 1914.

Size	Plain	Non-Skid	9 Ply Gray	Red Tubes	Tube
30 x 3	\$5.00	\$5.50	\$7.85	\$2.05	\$2.05
30 x 3 1/2	6.00	7.00	2.20	2.45	2.45
32 x 3 1/2	7.00	8.00	2.30	2.55	2.55
33 x 4	9.00	10.00	3.15	3.50	3.50

Also all sizes up to 38 x 5 1/2, state whether clincher, "Q.D." or straight side.

The Double Tread Tire Co., Inc.
106 West 52d St., New York City.

CLOVER CHEAP

Now is the Time to Buy
Crop very short. Buy before advance and save money. Get our special low prices and free samples of our pure, Iowa Grown, New Crop Re-cleaned Tested Clover and Timothy Seed. Also Alfalfa, Alsike, Sweet Clover. All kinds grass seed. 100-page catalog free, quoting all field seeds. Save money by writing at once.

A. A. BERRY SEED CO. Box 191 CLARINDA, IOWA

SCOTT'S FIELD SEEDS

Wet weather damaged nearly all seeds. Most are full of blasted grains and weeds. Bushhorn, Thistle, and Dock. Ours are not, and are far the cheapest to sow. Scarcity of good seed makes early buying advisable. Samples and instructions "How to Know Good Seed" Free. Write today. O. H. SCOTT & SONS CO., 36 Main St., Marysville, O.

WHITE SWEET CLOVER

Specially treated for quick germination. ALSO FANCY MEDIUM MAMMOTH ALSIKE AND ALFALFA CLOVERS, TIMOTHY SEED, WINTER VETCH, etc. Ask for samples and special price list.

YOUNG-RANDOLPH SEED CO., OWOSSO, MICH.

SWEET CLOVER

Builds Worn Out Soil. Has higher protein content than alfalfa. Write for prices and information.

Everett Barton, B. 129, Falmouth, Ky.

SEED CORN

Mich. Yellow Dent, 1914 crop. Order quick. Supply limited. \$3.25 bu. shelled. Early Snow Seed Potatoes. Pleasant Point Farm, Hillsdale, Mich.

Seed Corn

Limited supply of Mich. Yellow Dent. Home grown, fire dried and tested. Price \$3.00 per bu. Shelled. Sample on request. F. A. Bywater, Memphis, Mich.

Frost Proof Cabbage Plants

Head long before home grown—prepaid post—\$2 thousand. Farmer's Plant Co., Martins Point, S. C.

Markets.

GRAINS AND SEEDS.

March 21, 1916.

Wheat.—Values were sustained last week and on Monday a substantial gain was made on the Detroit Board of Trade. Rumors of peace and of the probable opening of the Dardanelles appeared influential in preventing advances in this grain last week, notwithstanding an apparent lack of any foundation for the reports. Although exports are large, Liverpool shows a firmer tone. Crop damage appears quite general in this country, and the late spring will cut deep into acreage of spring wheat, which, with a short winter wheat acreage in this country and also in Russia should give the trade genuine support. One year ago No. 2 red wheat was quoted at \$1.53 on the local market. Prices at Detroit last week were:

	No. 2	No. 1	
	Red.	White.	May.
Wednesday	1.13	1.08	1.14½
Thursday	1.14	1.09	1.15½
Friday	1.12	1.07	1.13½
Saturday	1.10½	1.05½	1.11¾
Monday	1.13¾	1.08¾	1.14¾
Tuesday	1.13½	1.08½	1.14½

Chicago.—May wheat \$1.08½; July, \$1.07½; Sept. \$1.06½.

Corn.—Corn values have advanced with those of wheat following a slight improvement in railroad transportation. The trade is active. An increase of 1,289,000 bushels is shown in the visible supply. One year ago No. 3 corn was quoted at 73½c. Detroit's prices last week were:

	No. 3	No. 3	
	Mixed.	Yellow.	
Wednesday	72	74½	
Thursday	72	74½	
Friday	72	74½	
Saturday	71½	74	
Monday	72	74½	
Tuesday	72	74½	

Chicago.—May corn 75½c per bu; July 76½c.

Oats.—Improved demand from eastern markets and the continued dry weather in the southwest were bullish factors in the oat trade and helped to advance prices. The visible supply shows a slight decrease. Standard oats a year ago were quoted at 61c per bushel. Detroit's last week's prices were:

	Standard.	No. 3	
		White.	
Wednesday	47	46	
Thursday	47½	46½	
Friday	48	47	
Saturday	47	46	
Monday	48	47	
Tuesday	48	47	

Chicago.—May oats 44½c per bu; July 43½c.

Rye.—Market slow, with cash No. 2 1c higher, or 93c per bushel.

Barley.—Malting grades steady at Milwaukee at 69¢76c, and 61¢75c at Chicago.

Peas.—Prices unchanged at \$2.40@2.50 per bushel, sacks included, at Chicago.

Beans.—An active demand and small offerings boosted prices here 15c last week. Cash beans \$3.65; April, \$3.70. At Chicago trade is firm and supplies small. Pea beans, hand-picked, best \$3.80@3.90; do. prime, choice, common to good \$3.60@3.65; red kidneys \$4.75@5.25.

Clover Seed.—Prime spot red clover \$11.75; prime alsike \$9.50. At Toledo prime \$11.60; prime alsike \$9.40.

Timothy Seed.—Steady at \$3.50 per bushel.

FLOUR AND FEEDS.

Flour.—Jobbing lots in one-eighth paper sacks are selling on the Detroit market per 196 lbs., as follows: Best patent \$6.50; seconds, \$6; straight \$5.70; spring patent \$6.70; rye flour \$6.

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

Hay.—No. 1 timothy \$18@18.50; standard timothy \$17@17.50; light mixed \$17@17.50; No. 2 timothy \$15@15.50; No. 1 mixed \$14@15; No. 1 clover \$12@13.

Chicago.—Choice timothy \$18@18.50; No. 1 do \$15@16; No. 2 \$13@14.

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

DAIRY AND POULTRY PRODUCTS.

Butter.—A scarcity and brisk demand have brought higher prices for all grades. Extra creamery 36c; firsts 35c; dairy 24c; packing stock 20c.

Eggs.—Scarcity of fancy goods still continues. The demand cleans up ev-

everything offered. Price for the week, based on sales, is 36c, which is 1 cent higher than last week.

Chicago.—Market is firm at higher prices. Fancy goods are especially scarce. High prices have curtailed the consumption some. Extra creamery 36c; extra firsts 35@35½c; firsts 33@34½c; extra dairies 34c; packing stock 22½c per pound.

Eggs.—The demand is good for the fresh stock and prices have advanced over last week's quotations. Current receipts are quoted at 19½c; candled firsts 20c.

Chicago.—Consumptive demand is good and supplies are large but prices have gone up about a half cent. The feeling is firm. Firsts 19@19½c; ordinary firsts 18@18½c; miscellaneous lots, cases included 18@19c.

Poultry.—The supply does not equal the demand and market continues firm at an advance of about 1c for springs and hens. Turkeys 16@17c; spring turkeys 21@22c; fowls 14@19½c, according to quality; spring chickens 18@19c; ducks 19@20c; geese 17@18c.

Chicago.—Moderate receipts and a good demand keep the market firm. Fowls are slightly higher, other kinds unchanged. Turkeys 12@21c, depending on the quality; fowls 16½@17c; springs 15@17½c; ducks 18c; geese 10@13c.

FRUITS AND VEGETABLES.

Apples.—Apples easy at unchanged prices. Greenings \$2.50@3.50; Spys \$3.50@4; Baldwins \$3@3.50; Steel Red \$4@4.50. At Chicago choice fruit is steady and is higher. Poor quality offerings are sold to peddlers. No. 1 Greenings are quoted at \$2.50@3.25 per bbl; Jonathans, No. 1 \$3.50@4; Baldwins \$3@3.25; Spys \$3.50@4.50.

Potatoes.—Market is easy with a plentiful supply on hand. Prices are unchanged. Carlots on track, white \$1.05@1.08; red 95c@1 per bushel. At Chicago market is easy at unchanged prices. Supply is plentiful and demand lacked vim. Michigan whites 90¢@95c per bushel; other kinds 85¢@96c.

WOOL AND HIDES.

Wool.—Interest is shifting to the west where a larger number of contracts are being made at producers' prices. The situation continues firm, and the outlook is hopeful since manufacturers are working their mills at full capacity and new orders are forthcoming. About half the sales at Boston last week was of foreign grades. Michigan unwashed delaines were quoted there at 31¢32c; do. combing 32¢37c; do. clothing 26¢31c.

Hides.—No. 1 cured 17c; do. green 15c; No. 1 cured bulls 13c; do. green 10c; No. 1 cured calf 25c; do. green 24c; No. 1 horsehides \$4.50; No. 2 \$3.50; No. 2 hides 1c lower than the No. 1.

GRAND RAPIDS.

Maple syrup is higher this season, ranging from \$1.50@2 per gallon. The high price of other sugars and the advancing price of tin, together with the steady inroads on the sap bush, account for the higher market. Wheat is a cent lower at the mills, with No. 2 red quoted at \$1.01 and No. 1 white at 96c. Oats are 43¢45c; corn 75c; rye 75c; buckwheat 70c; white pea beans \$3.10. Fresh eggs are worth 18¢19c.

DETROIT EASTERN MARKET.

Volume of business was limited on Tuesday morning with apples in fair supply and the bulk going between 80c@1.30 per bushel; parsnips 65¢70c; carrots \$1.15; inferior potatoes 75¢85c; lettuce 65¢75c; cabbage 70¢85c; eggs 25c; loose hay moving slowly at \$18@22 per ton.

LIVE STOCK MARKETS.

Buffalo.

March 20, 1916.

(Special Report of Dunning and Stevens, New York Central Stock

Yards, Buffalo, N. Y.)

Receipts here today: Cattle 160 cars; hogs 100 d. d.; sheep and lambs 50 d. d.; calves 1400 head.

With 160 cars of cattle on the market here today, including 35 to 40 loads of shipping cattle, the general market was about 10¢15c lower, and in some cases the medium cattle showed as much as 25c lower. There was a new top reached today for a prime load of Ohio heavy cattle at \$9.65. The bulk of the butcher steers, cows and heifers sold mainly 10¢15c lower. The bull trade was steady. They only had 16,000 cattle in Chicago today, but the trade was slow with a decline of 10¢15c. We look for a fair run of cattle here next week and a steady market.

We had a fairly liberal supply of hogs here today, about 100 double

decks, and the quality very poor; a big supply of pigs and light steers and this class was hit hard from the close of last week; the bulk of the best pigs selling around \$8.75, and light ones from 100 lbs. under almost unsalable. Best grades of hogs sold at \$9.90 generally, with a few selected loads of weighty kinds up to \$10. Roughts generally \$9; stags \$6.50@7.50. About everything sold at the close and we do not look for much if any change in the next few days.

Market was active on choice sheep and lambs, but slow on medium and coarse, with prices steady with the close of last week. About all sold and we look for steady to shade lower prices last of the week.

We quote: Lambs \$11.85@12; cull to fair \$8@11.75; yearlings \$8.50@10.50; bucks \$4.50@7.25; handy ewes \$8.25@8.50; heavy ewes \$8@8.25; wethers \$8.75@9.40; cull sheep \$4.50@7; veals, good to choice \$11.25@11.50; common to fair \$8@11; heavy \$6@9.

Chicago.

March 20, 1916.

Cattle. Hogs. Sheep.

Receipts today..17,000 53,000 14,000
Same day 1915..15,557 30,941 14,596
Last week.....41,731 176,528 62,182
Same wk 1915...32,227 142,795 57,462

Hogs open largely 5c lower this week with extreme sales at \$9.05@9.70. Hogs received last week averaged 215 lbs. Shipments of hogs from here last week amount to 32,745 head, comparing with 41,755 a week earlier. Steers open very slow and weak to a little lower today, but butcher stock is active and firm. Sheep and lambs of the best class are firmer.

Cattle prices started off last week generally 10¢15c higher, with a Monday run of only 14,398 head, but weakness was developed on subsequent days, with less urgent demands from different classes of buyers, and the greater part suffered a moderate decline, Monday's improvement disappearing. The week's receipts were not what could be called large, however, and high prices were maintained for the best class of steers, which sold at \$9.50@9.95, the top price making a fresh high record. There were not a great many sales of steers below \$8, and the greater part of the steers sold at \$8.40@9.40, with cattle classed as really good purchased at \$9@9.45 and the usual scarcity of choice little yearling steers. A medium to good class of steers brought \$8.60@8.95, while a fair to middling class of steers, mostly light in weight, sold for \$8.10@8.55, with thin steers of light weight taken at \$7@8 to a limited extent. Butchering cattle were good sellers as a rule, with cows taken at \$5.25@8.35 and heifers at \$5.25@9.35, although there was a rather slim representation of choice yearling heifers good enough to go over \$8.50. Cutters sold freely at \$4.60@5.20 and canners at \$3.50@4.55, while there was a good outlet for bulls at \$5.25@8 for common canners to prime heavy lots. Calves sold during the week at an extreme range of \$4.50@11.25 for coarse heavy to prime light vealers, eastern shippers taking the choice of the heavy shipping lots. There was only fairly good trading in stockers and feeders, these selling on a basis of \$6@8.25 for the common to prime offerings, and prime stockers that averaged 508 lbs. sold up to \$8.25. The fast ascending prices for beef steers have caused killers to purchase quite a number of thin-fleshed steers carrying very little meat on their bones, depriving buyers of feeders of such stock. At the week's close cattle averaged 15¢25c lower than a week ago, the best excepted.

Hogs were marketed freely during most of the past week, the previous boom in prices that landed the prime swine at \$10.10 per 100 lbs. starting large numbers marketward. The packers naturally took advantage of the opportunity and caused several declines in prices that placed the market on a much lower level, although the sentiment of the trade was that ultimately prices will react and go higher than ever. One weakening factor was the accumulation of large numbers of hogs through owners refusing to accept the bids and carrying over to the next day, packers discriminating against such holdings. Recent receipts averaged in weight 211 lbs., comparing with 203 lbs. a month earlier, 191 lbs. two months ago and 232 lbs. one and two years ago. Receipts averaged well in quality, and stockmen made handsome profits, despite the fall in recent prices. At the week's close hogs sold at \$9.05@9.75, comparing with \$9.40@10 a week ago, while pigs brought \$7@8.85. The best heavy sold highest, with best light shipping hogs 10c below top.

Lambs, yearlings, wethers and ewes suffered reactions at times last week, prices ruling higher and then lower, but at all times values were far higher than in former years at this season. Colorado and western lambs, western

yearlings and western ewes comprised most of the receipts, with native lambs and sheep very scarce. A city butcher gave \$8.60 for some prime 90-lb. Colorado-Mexican ewes and established a new high mark for the season. At the week's close lambs brought \$8.50@11.40, with heavy native lambs at \$9.50@10.50 and feeding lambs at \$10@10.90. Yearlings brought \$9@10.40; wethers \$7.50@9.25; ewes \$5@8.60 and bucks \$6.50@7.50. A bunch of 87 fancy Wisconsin wethers that averaged 144 lbs. sold for \$9.25, or within a nickel of the highest price on record.

Horses were in smaller supply and in moderate demand last week at no particular changes in prices, the principal business being in army horses. Little southern horses brought \$45@65, and ordinary to fair farm workers sold at \$60@100, while drivers were quoted at \$100@200. A good class of chunks weighing from 1300 to 1400 lbs. brought \$165@185, and better ones sold up to \$200. Drafters were worth from \$225@300 for good to prime offerings.

CROP AND MARKET NOTES.

(Continued from page 439).

90c; hay \$10@12; butter-fat 35c; butter, dairy 18¢25c; eggs 16c.

Wisconsin.

Jackson Co., March 13.—Weather has been severe, but is now mild and snow is about gone. Too early to judge of winter grains and meadows. Live stock thin, with all kinds of feed almost used up, though farmers had more than usual on hand last fall. There is some complaint of the quality of the hay. Butter-fat 35c; oats 50c; eggs 28c; potatoes 60¢80c.

Illinois.

Marion Co., March 13.—We have not had enough snow this winter to afford protection for wheat and meadows, which are very poor. Roads have been very bad but are now settling. Live stock in fair condition. Wheat \$1; potatoes \$1.05; butter-fat 34c; eggs 16¢17c; cattle \$4@6; hogs \$8.

Ohio.

Fairfield Co., March 14.—No snow, and wheat appears to be in bad shape. Cattle and hogs in good condition for this time of year, and farmers generally have enough feed for own use, but not much to sell. Roads are in bad condition, some being impassable for heavy hauling after the three days' rain of last week. Wheat \$1.08; corn 70c; potatoes \$1; cattle \$5@5.75; hogs \$9; butter 30c; eggs 20c; milk 15c per gallon.

Brown Co., March 14.—There is now about two inches of snow and the roads are frozen solid. Wheat and rye not looking well owing to the lack of snow for protection. There are a good many hogs going on the market on account of present high prices. Cattle \$6; heavy hogs \$8.50; lambs \$8@10; wheat \$1.05; corn 75c; timothy hay \$18; butter-fat 35c; eggs 20c.

Indiana.

Noble Co., March 15.—There have been light snowfalls and the roads are good for the time of year. Wheat is not looking as good as we would like, some late sowings being badly damaged; clover meadows have also suffered. A good deal of live stock is being marketed. Cattle \$6.50@7.50; hogs \$8.50@9; lambs \$10@10.25; wheat \$1.08; oats 38c; corn 70c; potatoes 90c@1; butter 27c; eggs 18c.

Jay Co., March 13.—The roads have been in bad condition. There has been no ice to spoil the wheat on bottom lands. Meadows have suffered from freezing and thawing. Live stock is scarce and prices are good. Local butchers are scouring the country for a summer supply. Sales are unusually numerous. Renters are having a hard time locating, as with increased taxes land owners are demanding cash in advance. There was little fall plowing done here, so that farmers will be rushed this spring. Butter-fat 33c; eggs 17c; wheat \$1.15; potatoes \$1.30; cattle \$8; hogs \$9.10. Farmers have plenty of apples.

Kansas.

Trego Co., March 13.—The weather is unusually mild. Wheat is in need of moisture. There has been little snow during the winter and the roads are very good. Wheat is looking fine for this time of year. Stock doing well and farmers have more feed on hand than can be used. Very little grain is going to market since the recent slump in price. Wheat is worth 90c; corn 55c; potatoes retail at \$1.75; butter 25c; butter-fat 28c; eggs 15c; hogs \$8.90.

"The Bull Tractor Bulletin" is a tractor magazine issued by the Bull Tractor Co., Minneapolis, Minn. It contains articles of interest to every present and prospective tractor user and many illustrations of tractors in operation on the farm. Write for a copy of same, mentioning this paper.

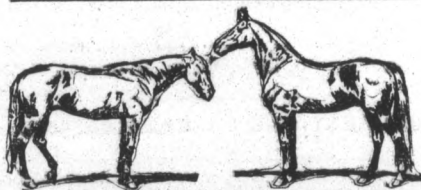


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CHOICE SEED CORN—Selected at husking time and fire dried. Yellow Dent. Had yields of 150 bu. per acre and 20 tons fodder per acre. Ripens in 90 days. \$2.50 per bu. of ears. Also Dusty Rural seed potatoes, true to name, and as nearly free from disease as can be found anywhere, \$1.50 per bu. A. A. Lamberton, Cedar Springs, Mich.

Wanted Position on Farm by young man, married, one child. By year preferred. Carleton McNaughton, Box 11, Appleton, Mich.

THIS IS THE FIRST EDITION.

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

DETROIT LIVE STOCK MARKET.

Thursday's Market.
Cattle.

March 16, 1916. Receipts 2810. In all departments but sheep and lambs at the local yards there was a good fair run and the best of service was handed out by all the local railroads.

In the cattle division the trade started off very active and big 15c higher than they were a week ago on all grades, but at noon on Thursday the advance was mostly all lost and the close was 15@25c lower than a week ago. Quite a large number of good quality steers were in the receipts and found a ready sale. While good milch cows are selling well, the common grades are extremely dull and selling very low, bringing no more than canner prices. The demand from the country for stockers and feeders was more active, but owing to the high prices few were returned for feeding purposes. The close was very dull at the decline. Best heavy steers \$8@8.30; best handy weight butcher steers \$7.50@8; mixed steers and heifers \$7@7.50; handy light butchers \$6.50@6.75; light butchers \$6@6.50; best cows \$6.25@6.75; butcher cows \$5@6; common cows \$4.25@4.75; canners \$3@4.25; best heavy bulls \$6@6.75; bologna bulls \$5.25@5.75; stock bulls \$4.50@5.50; feeders \$6.50@7; stockers \$5@6.75; milkers and springers \$4@8.0.

Haley & M. sold Newton B. Co. 10 steers av 1081 at \$8.10, 2 do av 815 at \$6.25; to Bray 8 cows av 1034 at \$6.25, 4 do av 875 at \$5, 1 bull wgh 1530 at \$6, 1 do wgh 1100 at \$5.60, 1 cow wgh 980 at \$5.60; to Applebaum 6 butchers av 555 at \$6.35; to Mason B. Co. 2 cows av 1230 at \$6.50; to Bray 1 do wgh 1140 at \$6; to Hammond, S. & Co. 8 butchers av 551 at \$6.50; to Sullivan P. Co. 2 do av 710 at \$6.25, 4 steers av 930 at \$7.25, 1 bull wgh 1840 at \$6.50; to Mich. B. Co. 3 cows av 990 at \$5.75, 1 do wgh 920 at \$5, 4 steers av 980 at \$7.35, 6 do av 757 at \$6.35; to Newton B. Co. 4 do av 1365 at \$8.60; to Mason B. Co. 4 do av 1180 at \$8; to Sutton 16 stockers av 633 at \$6.20; to Costello 3 butchers av 693 at \$6.50; to Sullivan P. Co. 2 do av 810 at \$6.50, 5 steers av 1106 at \$8.15, 7 do av 963 at \$7.25, 2 cows av 940 at \$6, 7 do av 1121 at \$6.35; to Newton B. Co. 8 cows av 1055 at \$5.80.

Reason & S. sold Schuman 6 steers av 833 at \$7.50, 1 bull wgh 1080 at \$6.25, 1 cow wgh 920 at \$6.50, 1 steer wgh 900 at \$7.50; to Newton B. Co. 2 do av 1185 at \$7, 3 cows av 933 at \$6.25, 2 steers av 1030 at \$8, 1 bull wgh 1840 at \$6.25, 2 cows av 1010 at \$6.50, 7 steers av 897 at \$7.40, 2 do av 1115 at \$7.25, 1 bull wgh 1530 at \$6.25; to Mich. B. Co. 17 steers av 1060 at \$7.85, 2 bulls av 1305 at \$6.25, 3 butchers av 940 at \$6.50; to Costello 4 steers av 815 at \$7.50; to Kull 9 do av 920 at \$7.70; to Newton B. Co. 6 cows av 978 at \$5.75, 9 do av 1060 at \$5.75; to Breitenbach 14 butchers av 812 at \$6.75, 8 cows av 1091 at \$6.25, 2 do av 940 at \$5.25.

Veal Calves.

Lowenstein sold Newton B. Co. 20 cows av 897 at \$4.90.

Receipts 1128. The veal calf trade was steady with last week, a few of the choice bringing \$12, with bulk of the sales for good at \$11@11.75; common grades were dull at \$7@10.

Sandel, S. B. & G. sold Sullivan P. Co. 6 av 155 at \$11.50, 5 av 125 at \$11.25, 8 av 130 at \$11.25, 3 av 130 at \$11, 5 av 150 at \$11.25; to Nagle P. Co. 9 av 130 at \$11.50, 34 av 140 at \$11.25, 3 av 160 at \$11.

Sheep and Lambs.

Receipts 919. The run of sheep and lambs was very small and the quality none too good. Prices averaged about steady with last week. One or two small bunches of choice brought \$11.15, but bulk of sales was from \$10.50@10.75. Best lambs \$10.75@11.15; fair lambs \$10@10.50; light to common lambs \$9@10; yearlings \$9.50@9.75; fair to good sheep \$7@7.25; culls and common \$5@6.

Bishop, B. & H. sold Parker, W. & Co. 202 lambs av 85 at \$11.50, 52 do av 83 at \$11.15; to Thompson Bros. 16 do av 60 at \$9.50, 29 do av 70 at \$11, 28 do av 80 at \$10.50; to Newton B. Co. 111 do av 86 at \$11.15.

Sandel, S. B. & G. sold Nagle P. Co. 8 lambs av 70 at \$10.50, 11 yearlings av 80 at \$8.

Hogs.

Receipts 11,337. The hog trade was a dull draggy affair on Wednesday and none were sold until nearly 5:00 p. m. On Thursday they were no better and prices averaged as follows: Pigs \$8.25@8.75; yorkers and heavy grades \$9.60@9.70.

You Men Who Have Pipes

Discarded and forgotten pipes—inactive, retired, "out-of-commission" pipes—pipes you've tried to smoke and couldn't smoke—you men try Tuxedo.

You can smoke a pipe—every man can—but you can't smoke any kind of Tobacco without making your tongue rebel and your throat get angry. Put the blame where it belongs—the pipe was innocent—the tobacco was the guilty party.

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Tuxedo is a good hearted, gentle, quiet, soft-voiced tobacco—it's as genial as a sunny day and as comforting as a raise in salary—no "fighting spirit" in it anywhere to muss up your tongue—or fuss up your throat—as "bite-less" as a baby.

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YOU CAN BUY TUXEDO EVERYWHERE

Convenient, glassine-wrapped moisture-proof pouch . . . 5c

Famous green tin with gold lettering, curved to fit pocket 10c

In Tin Humidors, 40c and 80c
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Judge of the Circuit Court of Illinois
"Tuxedo tobacco is pleasantly mild, yet has a fragrance that is most satisfying. I enjoy Tuxedo more than any tobacco I've ever smoked."

A. M. Rose

100 PURE BRED REGISTERED 100 Holstein-Friesians

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AT SAGINAW FAIR GROUNDS, SAGINAW

OPENS 10 A. M.

April 6, They Come from Some of Michigan's Best Herds.

This sale represents the blood of such great sires as—King Keka Fayne, King Segis Alcartra Homestead (a son of the \$50,000 bull), Flint Butterboy Hengerveld, King Korndyke Oriskany Pontiac, Calamity Travis Lad, Wolverine Sir Prilly Hengerveld, and other sires of equal quality.

Among the cows offered will be a Thousand Dollar Bay County female, and the cow that won the sweepstakes at the 1915 Saginaw County Fair, "Highland Farm Lady Korndyke, (264,608)."

You Cannot Afford to Miss This Sale

Auctioneer, Col. D. L. PERRY, assisted by D. T. PACKER, of Saginaw.

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Ship your good quality to us. Highest Market Prices. E. L. Richmond Co., Detroit.

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BARRED PLYMOUTH ROCK EGGS from full blood stock, \$1.50 per 100. Have won at leading shows for years. J. A. BARNUM, Union City, Michigan.

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BABY CHICKS FROM STANDARD BRED S. C. White and Brown Leghorns, bred to lay large white eggs, \$9.00 per 100; \$85.00 per 1000. Safe arrival guaranteed. Catalog free. Wolverine Hatchery, Box 2221, Zeeland, Mich.

BABY CHICKS: S. C. W. Leghorns only—none better at any price—\$10 per 100. Hatching eggs, \$1.50 per 100. guaranteed delivery and fertility. Hatch weekly. **BUCKEYE HATCHERY, Ionia, Mich.**

CHICKS—S. C. W. Leghorns mated with 'Barron Cockerels, \$10 per 100. Snowflake Poultry Farm, Route 1, Grand Rapids, Mich.

Choice Barred Cockerels

MICHELSON strain \$1.50 each until sold.

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BIG Beautiful Hen hatched Barred Plymouth Rocks sold on approval \$2 to \$3 each. (4 females and male \$10) good layers. Circulars and photos. John Northon, Clare, Mich.

Cousins Northern King Strain Barred Plymouth Rocks. Have won many prizes. Some nice Cockerels and Pullets for sale. Write for prices. David W. Cousins, Northport, Mich.

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CHICKS, S. C. W. Leghorns, 8c each. Barred Rocks, 10c each. **JOS. NEUMAN, Prop., Eureka Farm, Dor, Mich.**

CHICKS. We ship thousands each season. Ten varieties, Ancona's \$11 a hundred, free booklet. **Freepost Hatchery, Box 12, Freepost, Mich.**

CLEARVIEW Poultry Farm Established 1900. Trap, nest strain of S. C. W. Leghorns Eggs for hatching, 15, \$1; 50, \$3; 100, \$5. Thos. H. Barnes, Creston, Ohio

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

EGGS—S. C. W. Leghorn, good as offered, 15 eggs \$1.00, 30 eggs \$1.75. Catalog free. **M. MAYER, Jr., Merrill, Mich.**

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

Eggs from pure bred S. C. W. Leghorns 5c each J. Melvin Reid, Glenwood Farm, Warren, Mich.

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

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R. and S. C. R. I. Red Cockerels, eggs and baby chicks. W. Emden Ganders, B. O. Ducks. Fine stock. Prices reasonable. O. E. Hawley, Ludington, Mich.

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

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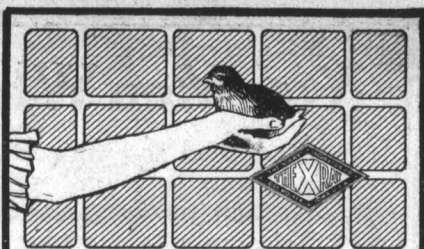
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Both Machines \$10
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Think of it! These two UNBEATABLE Wisconsin Machines—Winners in five great National Hatching Contests, both for only \$10, freight paid east of Rockies. Guaranteed 10 years and sold on 30 Days' Trial.

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Incubator 402,000 in use. Get the whole story told by the Championship Winners in my big free book, "Hatching Facts." With book comes full description of incubator and brooder—my 10-year money-back guaranty—low prices—full particulars—and my \$1300.00 Gold Offer. Learn how I paid one user \$156, another \$50, many from \$45 down. Write me today for Free Book. **Jim Rohan, Pres. Belle City Incubator Co. Box 14, Racine, Wis.**

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Buy the Gem and be sure. 25 years highest success. Capacity 50 to 270 eggs. Gem chicks always lively and thrive because our unique system of ventilation conserves natural egg moisture. Walls six-ply (4 layers of insulation). Built of Cypress, the "wood-eternal." Gem hot-water heating system of cold-rolled copper distributes and equalizes warmth. Best double-wafer regulator. Removable chick trays. Many more features in big, free catalog. Get our special offer, also "How to Buy an Incubator," and save money. Write today. **GEM MFG. CO., Box 20, Greenville, O.**

Tells why chicks die
E. J. Reefer, the poultry expert, 4383 Reefer Bldg Kansas City, Mo., is giving away free a valuable book entitled, "White Diarrhoea and How to Cure it." This book contains scientific facts on white diarrhoea and tells how to prepare a simple home solution that cures this terrible disease over night and actually raises 98 per cent of every hatch. All poultry raisers should certainly write Mr. Reefer for one of these valuable FREE books.

Raising Poultry for Profit

THERE are failures in all classes of business. There are men who fail, even when opportunities are golden. The poultry business is no exception.

A person must be adapted to the work, and must have grit, pluck, ambition and cash. It does not take as much of the latter as it does of the others. To make a success, it is necessary to have both experience and money. A beginning can be made without experience, but it must necessarily be on a small scale. The beginner must grow with the business. The successful large farms of the country today started in a small way, and grew as experience, facilities and capital grew.

Poultry Success Means Work.

Poultry keeping is not the "Easy Job" so many imagine, the sameness of the work soon discourages the faint-hearted. It means labor every day, Sunday included. The man who can master his own disposition and can put the same vim in the work day after day is the man who succeeds. But the person who gets the "Blues" falls by the wayside.

It will take several years to get a poultry plant on a firm foundation. There is always something new cropping out, and no man ever lived that knew it all. Why should men, who enter a business they know nothing about, expect to be successful from the start? Can any business of any class offer such a guarantee? There is no line of work that a person can take up that will yield as much profit for the money invested as will the poultry business, carried on by intelligent men in an intelligent manner. Men in the poultry business often try to walk before they are able to creep.

With reference to the care of poultry, we should see that we have a good hen house, well ventilated, with no drafts, but sufficient fresh air, as they need lots of fresh air and sunshine.

Keep Poultry House Sanitary.

Then to keep it clean and sanitary, supplying them with plenty of grit and oyster shell. A good dust box with sifted ashes is very essential, as it helps to keep down the lice. Dishes with plenty of grit and oyster shell should be kept on hand. A scratching pen should be provided with plenty of clean fresh straw and the hens kept busy all day, by throwing all the feed, except the evening meal, in the straw. If the hens are kept busy and in a healthy condition, you will obtain good results.

Fresh water should be given two or three times each day, and the dishes should be thoroughly cleaned twice each week. If any water is in the dish when you go to give more, throw it out, as the hens like clean water as well as we do.

In the morning I feed whole wheat and barley, equal parts, and dry mash as much as they will consume during the day. My dry mash consists of bran, middlings, alfalfa, charcoal, heat scraps, bone meal and salt. All this I mix in a large box.

At noon they get wet mash, with some stimulant, such as cayenne pepper and salt, or dry mustard. About three quarts of mash will do for ninety hens. In addition one and one-half quarts of oats should be thrown in the scratch pen. For green feed I feed cabbage, but intend to use sprouted oats soon. In the evening in winter I feed whole corn and in the summer barley.

If a person expects to get eggs in winter he must have early hatched chicks, hatched in April or May, or even in March. If hatched too early they will molt, and that will give them a setback. You cannot expect hens to lay the year round. They must have a rest. So in order to realize a profit you must get eggs in winter. The old saying is, "Old cows give the butter

but young hens lay the eggs," and that is true.

I feed my chickens regularly each day and I think that is one of the essentials of success with poultry. When the days are short I feed before daylight, and in cold weather I give warm water. When the hens get warm feed and water they do not mind the cold weather. I have had them lay better in cold winters than in a mild winter. It all depends on the care. A person must be very gentle with the hens, they get frightened so easy, and a fright means a loss to you, so it pays to be gentle with them.

The Result of Good Care.

We live in town and I take care of the chickens myself. I had two hundred and forty, single-comb White Leghorns at the beginning of the year 1915, but lost over twenty during the year. We have only one acre of land, so my chickens are never on free range. It is rather hard for me to get early matured pullets in a park. They will do so much better if on free range. I have tried both ways.

This is what I sold during the year, and what the feed cost me for the year for hens and raising young chickens.

Disbursements.

For feed \$358.93
Eggs used in incubator 61.65

Total \$420.58

Receipts.

Eggs sold \$553.56
Day-old chicks sold 162.35
Broilers sold 47.92
Old hens sold 87.50

Total \$851.33

Total disbursements 420.58

My profit \$430.75

Sanilac Co. Mrs. W. F. STEINKOPF.

SUGGESTIONS ON BEE-KEEPING.

We bought a few hives of bees with the intention of producing honey for our table. My brother and I are partners in all our farming endeavors and have five boys each, all lovers of honey. I would like advice. We have 10 nice swarms and a few extra hives, and a good supply of sections, etc.

Lake Co. S. M. L.

With ten good colonies of bees you want to make up your mind that you are going to produce a great deal more honey than you and your family can eat. With good management you should produce an average of three hundred pounds of comb honey or about five hundred pounds of extracted honey per year, and it would not be a big crop if you produced three times the above amounts. So you see there is no reason why the bees should not give you some profit besides supplying you with one of the purest and most healthful sweets that we can secure.

You do not say what experience you have had so I am going to advise you as though you were a beginner and then you can help yourself to the needed advice and leave the rest. First, I would write to the Secretary of Agriculture, Washington, D. C., and ask him to send you the following bulletins on bees, and their care. These bulletins are free and if you will but follow the advice given you cannot go astray:

Farmers' Bulletins Nos. 447, on Bees; 442, on the Treatment of Bee Diseases; 503, on Comb Honey, and Bulletin No. 75, Part 1, on the Production and care of Extracted Honey. The bulletin on Comb Honey is very valuable and should be studied by all beekeepers. With these bulletins in hand you will be in a position to commence the season, knowing what method or system you are going to follow through the season. It is the lack of some well defined and worked out system that causes so much failure among beekeepers.

For ten colonies you should have on hand the following supplies: Four section supers, to each colony spring count, or forty supers in all, and as you are going to produce comb honey you

No More White Diarrhoea

Last season several thousand poultry raisers found a way to prevent White Diarrhoea. One of these was Mrs. C. G. Richards of Piqua, Ohio. For the benefit of other poultry raisers she gives her experience below:

"Last year I hatched 700 little chicks, but lost over 300 of them from White Diarrhoea before I found anything to prevent it. Then I learned about Chictone, sent for a box, and after using it I never lost another chick. I think this wonderful remedy has no equal and will always keep a supply on hand." Mrs. C. G. Richards, Piqua, Ohio.

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15 grain and meat meals and a portion of Nutro Salts blended into a perfect chick mash.

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writes Mrs. Angell, Milford, N. J.
June 24, 1915.

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See and Try BEFORE YOU PAY 30 DAYS

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No other such open liberal offer as this, because no other outfit equals the UNION Incubator hot water; Brooder hot air. Both galvanized iron. Satisfaction guaranteed. We take all the risk. Cash price both only \$9.45.

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For Sale: Write W. A. Ewalt, Mt. Clemens, Mich. for those pure bred, Sable and white Scotch Collie Puppies, natural heelers from trained stock.

will also need ten more complete hives for your swarms. You may think that this is rather a lot of supplies but if you have a fair season and give your bees care you will probably need more. Dr. Miller, of Illinois, in 1913 produced two hundred and seventy odd, full sections of comb honey per colony from over seventy colonies. While this was an exceptional crop, he could not possibly have secured this amount if he had not been well prepared with ready supers.

In both your sections and your hives use full sheets of foundation, this will be the best investment you will be able to make. It takes from ten to twenty pounds of honey to make one pound of comb honey, besides the time the bees lose while they are making the comb, so that if you can supply them with a part of this comb you save time and honey. If you secure a bee supply catalog and look through carefully you will find illustrations of these points.

The bulletin on bee diseases will show you what to look for in the hives, and the bulletin on bees will give you much instruction on points of management.

You say you have five boys, so why not let one or two of these take care of the bees? Once they get interested they will have a business that they can easily turn to good account in later years. The best thing you can do is to let one or two of them attend the "Bee-keepers' Short Course" at the M. A. C., East Lansing. This course is free to all, and will include lectures on various systems and principles of management. Full particulars can be obtained by addressing the Department of Entomology, East Lansing.

You should get your supplies as soon as possible and get these already so that when the busy season comes you will only have to spend a little time with the bees. This is a feature that so many bee-keepers forget and then when the honey flow comes they are so busy with other work that the bees are neglected. If your supplies are all ready to put on, it is a small matter to place them on the colony but it may mean several dollars more profit.

Study the bulletins carefully, and you should manage to get all the honey you need for family use and then be able to supply the neighbors with a goodly portion.

Ingham Co. F. E. MILLEN.

DO NOT SELL EGGS FROM INCUBATORS.

According to specialists of the Department of Agriculture, a number of poultry raisers are putting on the market infertile eggs that have been tested in incubators from three days to a week. As soon as the breeder finds that the eggs will not hatch he takes them out and sends them to market along with his fresh eggs. After the eggs have been in the incubator this length of time they are distinctly stale and rot very quickly. Even when just taken from the incubator these infertile eggs are not, it is stated, fit for boiling or poaching, although they may be used for frying, and are good for cake or certain other baked foods. These eggs when they reach the market, however, are classified as low grade No. 2.

The farmer who sells incubator eggs to the dealer is very liable to injure his own market for fresh eggs. When dealers find a percentage of low-grade incubator or other eggs in their fresh spring egg supply they lower the price for all eggs so that they will be certain that they have covered themselves against losses from this cause. The Department's specialists advise farmers to use any infertile eggs they may take from their incubators for home consumption and to send only fresh eggs to market. If there are any surplus infertile eggs they should be hard boiled and chopped fine, shells and all, as feed for little chicks.

I Will Tell You How to Make Poultry Healthy, Make Hens Lay, Make Chicks Grow

Now that mating time has arrived, it's up to you to see that your poultry get a tonic and internal antiseptics to make them vigorous and free of disease. Therefore, feed Pan-a-ce-a.

In that condition your hens will lay better, you will get more healthy, fertile eggs and the chicks will stand a better show of reaching maturity. Therefore, feed Pan-a-ce-a.

And, before the hatches come, I want to warn against gapes, leg weakness and indigestion, for these ailments are responsible for half the baby-chick losses. Therefore, feed Pan-a-ce-a—it will save you these losses.

Dr. Hess Poultry PAN-A-CE-A

It's a Tonic—Not a Stimulant

Here are a few of the valuable ingredients in Pan-a-ce-a to meet the requirements of your poultry which I have just stated: Nux Vomica, a nerve tonic; Carbonate of Lime, a shell former; Hyposulphite of Soda, an internal antiseptic; Quassia, an appetizer; Iron, to enrich the blood, and other valuable ingredients, all well known and recommended by the highest medical and veterinary authorities.

Perhaps the strongest argument in favor of Pan-a-ce-a is the fact that it has been on the market for 22 years and is growing in favor each year. Read the guarantee in the right-hand panel—that is your protection. There is a Dr. Hess dealer in your town, a man whom you know, a man who stands back of my guarantee and will return your money if Pan-a-ce-a fails to make good. 1½ lbs. 25c; 5 lbs. 60c; 25-lb. pail, \$2.50 (except in Canada and the far West).

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25-lb. pail, \$1.60; 100-lb. sack, \$5.00

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Kills lice on poultry and all farm stock. Dust the hens and sprinkle it in the nests, or, if your fowl are provided with a dust bath, sprinkle Instant Louse Killer in the dust bath every other week—the hens will do the rest. Also destroys bugs on cucumber, squash and melon vines, slugs on rose bushes, etc. Comes in handy, sifting-top cans. 1 lb. 25c; 3-lb. can 60c (except in Canada and the far West). I guarantee it.

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White Wyandotte Eggs from heavy winter layers. \$2.00 per 15. \$3.75 per 30. \$5.00 per 100. Superb stock. Eggaday Poultry Ranch, Marshall, Mich.

Eggs, Eggs, Eggs the Year 'Round. That's the kind of White Orpingtons I have. Big beautiful birds. One Dollar Fifteen per 15 eggs. Seven fine Cockerels at \$3 each. D. W. WARD, Hillsdale, Michigan.

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Practical Science.

THE FORM OF THE ELEMENT IN FERTILIZERS.

BY FLOYD W. ROBISON.

When state inspection of fertilizers was first put into operation consideration was given solely to the content of nitrogen, phosphoric acid and potash which fertilizers contained. It was considered that upon this tripod, that is, the foundation of nitrogen, phosphoric acid and potash, successful agriculture depended, and inquiry was not made into the variety of compounds in which nitrogen, phosphoric acid and potash existed. Since that time a considerable amount of progress has been made in the application of manures and our fund of information as to the effect of these various fertilizing materials upon the soil has been greatly added to.

Fertilizers have Passed through a Prolonged Experimental Stage.

The conviction that the use of fertilizers was an advantageous thing has not grown upon our people without considerable opposition. A great many farms throughout the country have been made experimental farms by the owner to attempt to satisfy his own mind as to the desirability of the use of commercial fertilizers, and with a very varied result—sometimes quite satisfactory, many times highly unsatisfactory, and no amount of real scientific experimental work seemingly would convince the farmer of the desirability of the use of fertilizers over the adverse results of his own experimentation in the matter.

Experts in experimental work know that to accomplish results of any significance at all as many unknown quantities as possible must be eliminated from the problem. We know in mathematics how difficult it is to solve a problem with one equation containing both x and y as unknowns. How much more difficult it is in an actual experimental agricultural problem to determine whether the effect of a fertilizer is advantageous on a soil when we have several unknown factors entering into the problem.

Climate and Varying Weather Conditions make Fertilizer Results Hard to Judge.

Experimental experts therefore attempt to so standardize conditions of the experiment that there is only one variable factor. Even then the peculiar conditions of our climate many times introduce even other factors which we cannot account for. I have known farmers to use certain types of commercial fertilizers one year and, with favorable climatic conditions, be loud in their praises of the results obtained from the use of that particular fertilizer. Other farmers using exactly the same fertilizer in a year beset with unfavorable climatic conditions, cold weather, an undue amount of rainfall, etc., have concluded from the results of their year's work that the use of commercial fertilizers is not justified. These are the conditions which have made it exceedingly difficult to get the farmers of the country accustomed to the use, and satisfied that the use, of commercial fertilizers is worth while. Some of the other unknown quantities which have affected the farmer have been the varying sources of the element itself. Is the nitrogen contained in this fertilizer derived from nitrate of soda, is it derived from sulphate of ammonia, from tankage, fish scrap, cottonseed meal, bone meal, dried blood, green manure or ordinary barnyard manure? The value of the nitrogen content of necessity varies with the different compounds in which it exists. We know, for instance, that nitrogen of nitrate of soda, or sulphate of ammonia is much more quickly convertible than is the nitro-

gen of dried blood, or cottonseed meal, or tankage, or bone meal. We also know that the nitrogen of bone meal, organic manures, probably fish scrap, is more readily available than that of cottonseed meal.

Water Soluble Comes First.

We give now precedence in availability to those forms of nitrogen compounds which are simple and soluble in water. There is little difference between the nitrogen of nitrate of soda and the nitrogen of sulphate of ammonia although it is probable that the nitric nitrogen, or the nitrogen of the nitrate, is more directly assimilable than is that of any other form. Those types of nitrogen compounds which are in their highest state of oxidation more readily lend themselves undoubtedly to the office which they fulfill in plant growth than do other nitrogen compounds.

Second in Importance are the Easily Decomposed Compounds.

We take next in importance and next in availability those forms of nitrogen compounds which, because of their structure may be more readily converted into these soluble nitrogen compounds such as dried blood, fish scrap, tankage, perhaps, and also, bone meal. These are types of compounds which readily decompose in the soil. In the process of their decomposition the nitrogen compounds are broken down and presented in their simpler form, either in the form of ammonia or in the form of nitrates.

Finally we consider those compounds which break down with difficulty, such as the nitrogen existing in cottonseed meal and in grains and mature crops. Consequently farmers must learn that in applying a nitrogen fertilizer to a soil which needs attention in this respect it makes a difference whether the fertilizer which they buy and apply contains its nitrogen in the form of nitrate of soda or sulphate of ammonia, or in the form of cottonseed meal and those which give up their nitrogen much more slowly.

In the greenhouses and the vegetable garden where intensive plant culture is practiced we find the most successful farmers to be using almost exclusively fertilizers immediately available. Their problem is not one of building up the soil structure particularly, but assumes that the soil is in the maximum state of fertility, and their problem is actually feeding the plants through the medium of the soil which, in this instance, quite truly acts merely as a convenient place for the plant to stand and grow.

True, in addition to this, of course, the soil is really a laboratory through which extensive changes take place, brought about through the presence of the various administrative agents.

Soil and Crop Conditions Both Determine Kind of Fertilizer Needed.

If the farmer desires a fertilizer in order to build up the permanent productive capacity of his soil he will not use the nitrate of soda; he will not use sulphate of ammonia; he may use tankage, fish scrap, bone meal, but he is very certain to use all types of organic manures, such as cottonseed meal, barnyard manures, clover, alfalfa and the like, that he can get at his command. By their decomposition these products promote other favorable changes in the soil, such as the unlocking of the phosphoric acid, the increasing of the supply of humus, and the upbuilding permanently of the nitrogen in the soil.

Organic Materials Enhanced as Fertilizers by Passing through Animals.

It has always seemed to us like an economic error to spread upon the soil any manure which could be utilized first through the medium of an animal. Consequently we have not been able to

see any logic in the use of cottonseed meal as such in a fertilizer except, of course, in cases where cottonseed meal may be a drug on the market. Cottonseed meal suffers no deterioration which is not fully compensated for in other directions in its passage through the alimentary canal of an animal and there is a decided gain through the conversion of a portion of it at least into a decidedly more marketable material, beef or milk, as the case may be. The undigested residue found in the excrement of the animal is exactly as good for fertilizing purposes as it was originally and it has at the same time been stepped up several points in its availability. Not only this, but while the permanent productive capacity of the soil so far as its nitrogen content is concerned, has been added to, the immediate productive capacity of that soil has been likewise greatly improved because of the other soluble end products of the animal, digestion of the cottonseed meal, i. e., ammonia, uric acid, etc.

We have intimated before that it is a decided mistake to consider a fertilizer valuable solely from the standpoint of the amount of the three proximate principles present. With commercial fertilizers where a great struggle is made to secure these elements in available form these remarks should not apply because, of course, this product is bought and sold solely according to the percentage of nitrogen, phosphoric acid and potash which are present, but in direct nitrogenous manures, fertilizers which build up the permanent productive capacity of the soil, sometimes the very greatest benefit incurred from the use of such products comes indirectly through the effect of that fertilizer on other conditions existing in the soil.

There has never been devised satisfactorily a workable scale which will tell the value of the different fertilizers to a soil. We have been able to devise a scheme which would compare different fertilizers from the standpoint of the nitrogen or the potash, or the phosphoric acid which they contain, that is, comparing the forms in which these agents exist, but it has been very difficult to determine any other effect which they may have upon the soil. That seems to be an intangible proposition, difficult to get at, and yet we are absolutely certain of its relationship.

CATALOG NOTICES.

The 1916 catalog of Ross Bros. Co., Worcester, Mass., is a large sized, 120-page pamphlet listing a full line of vegetable, grass and flower seeds, together with field and garden implements, etc. It is illustrated profusely with half-tone reproductions of the product of Ross seeds.

"What the Automobile will do for you and your Family," is the subject matter of folders forwarded upon request by the Willys-Overland Co., Toledo, Ohio, to readers of the Michigan Farmer. In writing for same mention the Michigan Farmer.

"Aids to Better Dairying," is the title of a profusely illustrated catalog published by the Larrowe Milling Co., Detroit, Mich.—In it will be found a wide range of indispensable dairy equipment.

The Hoosier Silo Roof, described as the roof that ought to be on every silo, is fully illustrated and described in a 32-page pamphlet sent on request by The Sheet Metal Specialty Co., Goshen, Ind., manufacturers of these goods. Many types of silos are shown equipped with Hoosier roofs.

Case machinery is fully illustrated and described in a large sized 94-page catalog sent upon request by J. I. Case Threshing Machine Co., Racine, Wis. It lists this well-known company's line of threshing machinery, tractors, tractor equipment, road machinery, automobiles, etc. Mention the Michigan Farmer when writing for this handsome and complete catalog.

"Modern Irrigation for Farm and Orchard," is the title of a little booklet sent upon request by Goulds Machinery Co., Seneca Falls, N. Y. It gives valuable information on irrigation in general and illustrates the method of installation and use of the overhead sprinkling systems.

Farmers' Clubs

OFFICERS OF THE STATE ASSOCIATION OF FARMERS' CLUBS.

President—R. J. Robb, Mason.
Vice-president—C. B. Scully, Almont.
Secretary and Treasurer—Mrs. J. S. Brown, Howell.

Directors—Alfred Allen, Mason; C. T. Hainline, Alma; W. K. Crafts, Grass Lake; Edward Burke, St. Johns; Mrs. C. J. Reed, Spring Arbor; Roy E. Moore, Bellevue.

Address all communications relative to the organization of new Clubs to Mrs. J. S. Brown, Howell, Mich.

Associational Motto:

"The skillful hand with cultured mind is the farmer's most valuable asset."

Associational Sentiment:

"The Farmer: He garners from the soil the primal wealth of nations."

TAXATION VIEWS MISUNDERSTOOD.

To the Editor:—A correspondent, writing to the Michigan Farmer concerning the recent meeting of the Wise Farmers' Club at the home of Mr. and Mrs. J. H. Wilson, in Clare, referred to some remarks made by me on that occasion, and said:

"He stated that the state tax did not cut any figure in making the taxes higher but it was the township and county tax."

I regret exceedingly that anyone gained, from what I said, the impression which was made on the mind of the correspondent. I never thought that the state tax cuts no figure and I certainly did not say so. My thought was that most of us, when we consider the question of high taxes, when we are searching for the cause and for the remedy, are apt to think only of state taxes and to forget that there are other taxes which we have to pay. I had before me my 1915 tax receipt, from which it appears that the state tax in Grant township last year was 12½ per cent of the whole tax, the county tax was 20½ per cent and the township taxes, including school and highway, amounted to 67 per cent. This is approximately the relative proportion of state, county and township taxes for a number of years and shows that the increase in one tax has kept pace with the increase in all other taxes, the increase in every case being far in excess of the increase in population. I said that, in my judgment, the tax burden was getting to be heavier than the people ought to be compelled to bear and that it behooves us all to strive to make the burden lighter wherever possible. If, however, we think only of one tax, which is 12½ per cent of the burden, we are certain to neglect our own interests by failing to consider the remaining 87½ per cent of the load. The state tax does, indeed, cut some figure, but, in dollars and cents, the county tax cuts nearly twice as much figure and the township tax cuts five times as much. No one of these constitutes the whole burden of taxation but each demands our careful consideration.

This is the thought I attempted to bring out and I believe it is a thought worth while.

D. E. ALWARD.

CLUB DISCUSSIONS.

Discuss Preparedness.—Washington Center Farmers' Club held their March meeting at "Highland Home," with Mr. and Mrs. F. L. Cook. In the absence of the president the forenoon session was called to order by the vice-president, Mrs. F. L. Cook. Reading of the minutes was followed by miscellaneous business. The Club accepted the invitation to be present at the Rally Day held at the M. A. C. in August. After a reading by Mrs. C. W. Curren, the Club adjourned for dinner. The meeting was then called to order by the president and members responded to roll call by naming a noted college. The question box then brought out

some lively and interesting discussions on, "How to beautify our homes;" "How can the farmers' wives receive help?" "Have we a law to protect our roads?" "Should the United States prepare for war?" After listening to the subjects on "Is a Normal graduate the best teacher for a rural school?" and "The benefits of Tiling," the Club adjourned to go home through a blinding snow storm and to meet with Mr. and Mrs. W. W. Metta the second Thursday in April.—Mrs. S. A. Crowl, Cor. Sec.

An Institute Meeting.—A very successful institute was held at the Town Hall by the Salem Farmers' Club in place of their regular February meeting. Speaker Dean, who is himself a practical and progressive farmer, gave an instructive talk on "The care of the Dairy Cow," and "General Farm Management." He emphasized the need of care and feed for the dairy cow and a record kept of every cow to get economical results. On the subject of farm management he said: "I believe in education but it is not 'how much do you know?' but 'what can you do?' and 'when will you do it?' We must have efficiency and system on the farm and run it on a business basis. 'All things come to the man who waits.' But there is a rule that better. 'Do it yourself—and do it now!' and you'll get there all the quicker." Try to eliminate all the labor you can but still get the work done. Don't let the horses stand idle in the winter; if there is anything they can be doing. Idle horses are capital without interest. Always welcome the coming of the county agricultural agent, he can help you if you are willing to be helped." A general discussion followed. A very interesting question box was conducted by Mr. Preston, of Ypsilanti. He also gave some interesting recitations and talks. Music was furnished by a male quartette from South Lyon, and by a choir of girls. In the evening the subject of our boys and girls was given very helpfully. Mr. Daniel Smith gave a select reading. The Club voted to hold an institute next year. Robert Ross was to act again as vice-president of the county work. Club adjourned with music.—H. C. F., Reporter.

In Retrospect.—The Conway-Handy Union Farmers' Club met at the home of Mr. and Mrs. Julian Carr for dinner February 25. "The Life of the farmer and the farmer's wife of 1866," by J. B. Rambo, brought out many interesting facts of the day. Times were better, more money in circulation, cheaper help and better prices. Science began doing much for the farmer about then and gave them the reaper, mowing machine, single stitch sewing machine, etc. The life of the farmer and farmer's wife of 1966, was beautifully prophesied by Mrs. S. R. Holmes. People of today are trying to get out of work and after fifty years will be experts. Farmers of 1916 are far ahead of 1866, and in 1966 will be even more so. They will enjoy peace, temperance, Christianity and all troubles settled with pen instead of sword. Everything indoors and out will be on co-operative plan, brought about by advanced education, higher morality and keener business methods. Electricity will be the mainspring of the day on the farm. Eugenic laws in force. Liquor traffic driven out and ballots cast by women as well as men, making cleaner moral lives. In fact, the object of the farmer and his wife of 1966, will be to get the most out of life, with the least work and money so that they might do more for humanity.

Holds Annual Meeting.—The annual meeting of the Grass Lake Farmers' Club held Wednesday, March 8, at the home of Mr. and Mrs. W. K. Crafts, was well attended and proved to be one of the most interesting and enthusiastic sessions in the history of the Club. Shortly after 12:00 o'clock the members and invited guests sat down to a dinner, such as only the good housewives of the Club know how to prepare, to which everyone did ample justice. Following the dinner came the annual election of officers, resulting as follows: President, E. W. Hobart; vice-president, Norman Davis; treasurer, W. A. Taylor; secretary, Mrs. H. F. Updike; corresponding secretary, Mrs. Edwin B. Hurd. The committees to be appointed by the president will be named later. A practical and very excellent paper was read by W. K. Crafts on "Tenant Farmers," which was followed by an informal discussion in which a number of the farm owners participated, bringing out many interesting facts relating to the subject. Various other topics were taken up pertaining to the future work of the Club, in which much interest was manifested, and when the hour for adjournment arrived the prevailing sentiment was that the coming year gives promise of being the best the Club has ever known since its organization 30 years ago, in real practical benefit to the community.—Mrs. Edwin B. Hurd, Cor. Sec.

Grange.

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

AMONG THE LIVE GRANGES.

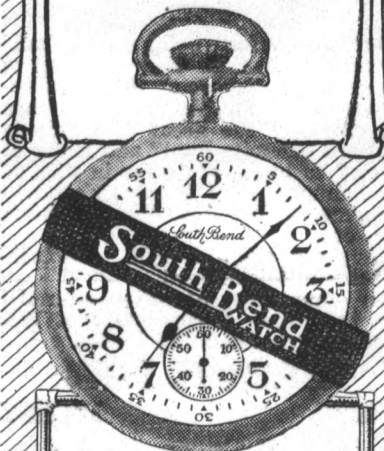
Sixty-eight sat down to the table at the first annual banquet of Benzonia Grange at Benzonia on the evening of March 7. Had there been more to sit down the table would not have been long enough, as every seat was occupied. The serving was by the high school girls and the young men in the Benzonia Academy. Following a five-course menu came a program prepared by the lecturer of the Grange, E. H. Brown, which brought the rural problems up-to-date. W. J. Pettitt, master of Benzonia Grange, made the address of welcome. The response was by one of the guests of the occasion. Farming in this Region Forty Years from Now," was considered by Martin Trapp, of Loyalty Grange. Alfred H. Upton, county commissioner of schools for Benzie county, responded to the toast, "How the School Teacher can be Interested in Agricultural Club Work." H. B. Woodward, president of the Central State Bank, discussed "How Banks are Co-operating with the Farmer." "Club Projects for Boys," and "Club Projects for Girls," were taken care of by interested parties. John Betts, president of the Farmers' Institute Society, spoke to the subject, "How the Farmers' Institute can Help the Farm Boy and Girl." The subject of "Co-operative Marketing" was covered by R. H. Elsworth, of Traverse City. The people of the Benzonia section of Michigan are anxious to play a more important part in the great rural development now taking place and the program was in the nature of an inventory of their social and industrial resources with the idea of mapping out a course for future activity.—R. H. Elsworth.

Van Buren County Pomona Grange met with Decatur Grange, Friday, February 25. The forenoon session was devoted to business, and the reports of Subordinate Granges. Six Granges were represented. Decatur leads in having the largest number of members and has just finished initiating a class of fifteen.

At the afternoon session about 300 were in attendance. L. C. Root, of Allegan county, was present and was called upon to explain the work of the State Grange Contract System. During the past year the per cent received from different firms having contracts with our State Grange netted us \$7,500. Hon. John C. Ketcham, State Grange Master, was the principal speaker of the afternoon. He gave an explanation of the unwritten work and afterwards spoke on the "Economic Situation of the People who Live on the Farm." An evening meeting was held at the Town Hall, with Supt. Washburn of the Decatur Public School in charge. Music was furnished by the Glee Club and orchestra of the high school. Prof. Washburn stated that D. P. S. had stood for Decatur Public Schools, but this year it means "Do Push Some," and asked all to co-operate in making it one of the best schools in the county. Mr. J. C. Ketcham was then introduced and lectured on "Federating Rural Forces," speaking on the Fraternal, Social, Educational and Spiritual situations. This was considered one of the best lectures ever given in Decatur.

Emma Grange met February 12 with a good attendance. E. G. Pray and Mr. Vieweg were present in behalf of the Dry Milk Company. After a discussion of that question the worthy lecturer presented the following program: Standard Grange Song; recitation, Mary Krebs; song, Ila Starkweather; Song No. 93, Grange Melodies, chorus; recitation, Rennie Sherman; recitation, May Vahs; recitation, Vera Johnson; song, chorus; recitation, Nahum Burnett; reading, Paul Vahs; reading Sam Williams; song, chorus. At the conclusion of the program Brother George Cooley, the assistant steward, brought forward Mr. and Mrs. Charles Powers, who were recently married, and seated them at the front of the hall while attendants brought in the many presents. Mr. Pray, in his usual happy way, made a few well chosen and appropriate remarks and presented the gifts. After detectives had been at work and brought out two other blushing couples to assist the bride in unwrapping and examining the gifts, all were invited to the dining-room where refreshments awaited them, the bridal table being appropriately decorated in red and white. Mr. and Mrs. Powers have the honor of being the first couple to receive a shower in the new hall.

The Honest Face of a Good Watch



Shake hands with this fine timekeeper, built especially for the men who operate farms. This watch is highest quality throughout. It combines life-time accuracy with the most modern ideas of beautiful design. Like all other

South Bend Watches

Model No. 217 is built for Service as well as Handsome and Distinguished Appearance. Adjusted to temperature and 3 positions,—this watch will time closely, day after day,—year after year. Prices \$25 and up according to kind of case.—South Bend Watches can be identified at jewelers by the Purple Ribbon which they wear.

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FROZEN IN ICE
KEEPS PERFECT TIME

Get the Most Out of Your Farm

By installing a drain system that will bring the soil to its greatest productivity—and your drain should be laid of

American Vitriified Tile

because it is the best tile made. It is salt glazed and is frost and acid proof and is everlasting. See your dealer or ask for carload prices.

AMERICAN SEWER PIPE CO., 200 St. James St. JACKSON, MICH.

Ponies Free



YES, that's just what we mean. We have given away 364 Ponies to Boys and Girls—every one absolutely free. If you want to know all about it—why we have given these Ponies away—to whom we have given them—why we are going to give away several more—and how you will stand the same chance to get one of these Free Ponies as any other Boy or Girl send in your name. The Big Pony Book tells the whole story and it is sent free. Send in your name for a copy before they are all gone.

The Farmer's Wife
Pony Club
255 Webb Bldg.
St. Paul, Minn.

Pony Picture and Story Book

BREEDERS' DIRECTORY.

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

SPECIAL NOTICE

Registered Holstein Females for Sale.

Our present farm being more valuable for real estate than dairy farming, we are going to dispose of fifty females—mostly heifers and young cows. Some are sired by the great bull "Pledge Spoffard Calamity Paul" and many are in calf to him. We offer in this sale granddaughters of Pontiac Korndyke, Hengerveld De Kol, Pontiac Butter Boy, etc.

They are priced to sell. Absolutely no tuberculosis in herd.

An opportunity not often offered to buy this kind. Farm at foot of West Genesee Street and City Limits.

ESPANORE FARM

LANSING MICHIGAN

CHASE S. OSBORN } Owners
ADAM E. FERGUSON }

CATTLE.

ABERDEEN-ANGUS

HERD ESTABLISHED IN 1900.
TROYAN-ERICAS and BLACKBIRDS only.
Also breeders of Percheron, Hackney and Saddle Horses.

ABERDEEN ANGUS

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

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

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

Aberdeen Angus, two registered bulls, 10 months old, good ones, for quick sale, price \$110. WILSON BROS., Lake Ann, Mich.

Aberdeen Angus Have to offer one good bull calf 9 mo. old. LOUIS CORDES, R. 7, Grand Rapids, Michigan.

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

THE VILLAGE FARM,

Grass Lake, Michigan,
GUERNSEY CATTLE.

MILO D. CAMPBELL CHAS. J. ANGEVINE

BEACH FARM
GUERNSEYS

No Tuberculosis Or Abortion

We are offering a number of fine Registered cows for sale. Some of these cows have finished their A. R. test and others soon will with records from 400 to 620 lbs. of fat in one year. We also have Reg. Bull calves from A. R. cows for sale, also one Bull old enough for service whose dam's record is over 620 lbs. of fat as a 4½ year old.

CAMPBELL & ANGEVINE

Coldwater, Michigan.

For Sale at Farmers Prices:

Choice Guernsey Bull calves sired by "Langwater Witchster" he by (Langwater Advocate & Langwater Daisy) and from excellent Dams, having A. R. records of 422 & 412 lbs. of B. F. as heifers. Write or call at "Sweet Orchard Farms" Birmingham, Mich.

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

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

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

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

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

Guernseys for sale from A. R. dams. 1 2-yr.-old bull and 3 bull calves. Geo. N. Crawford, Holton, Mich.

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

AT Farmers' Prices Registered Guernsey Bull calves from A. R. dams and dams being tested. If interested write for photo, breeding and price. Byers & Farnes, Coldwater, Mich.

GUERNSEY Bull old enough for light service, a few good bull calves all out of a Son Pauline Spottwood-A. R. O. 746 lbs. fat—prices reasonable. J. M. Williams, North Adams, Mich.

Duroc Jersey Boars and Sows
BROOKWATERS' WINNING COMBINATION

Best Blood Lines. Individual Merit. Prices that will make you money.

This is our record, one which we shall maintain. Choice fall and spring pigs and mature stock. Send for our new circular and state your wants. Write or better come. If you wish one of the best young Jersey bulls in Michigan we have him for sale.

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

HOLSTEIN BREEDERS, ATTENTION!

We Finished 7 Day Records for 6 in February. The Records Were:

No. 1, 4 years, Milk 458.8; Butter 20.26 lbs.
2, 7 years, Milk 586.7; Butter 30.08 lbs.
3, 4 years, Milk 386.9; Butter 20.46 lbs.

Our herd sire is a son of Pontiac Aggie Korndyke and Friend Hengerveld DeKol Butter Boy (World record series). Every cow in herd has A. R. O. record. 5 Bulls ready for service. Get our booklet.

LONG BEACH FARM, Augusta, Mich.

Herefords—3 Bull Calves

ALLEN BROS. PAW PAW, MICH

Do You Want A Bull?

Ready For Service.

From a grand daughter of The King of the Pontiacs. Sired by a bull that is more than a half brother to the Champion Holstein Cow of the World, and whose dam is a 30 lb. 6¼ fat daughter of Pontiac Aggie Korndyke who has more 30 lb. daughters than any other living bull. If you do write for pedigree.

EDWIN S. LEWIS, Marshall, Mich.

FOR SALE

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

HATCH HERD

YPSILANTI, MICHIGAN

Registered Holstein-Friesian sires, grandson's of World's greatest dairy sire, out of choice A. R. O. dams and King Pontiac Jewel Korndyke; Brother of K. P. Pontiac Lass 44.15; average record of 50 dams in his pedigree 31.25 in 7 days; average per cent of fat three nearest dams 4.37; of his own dam 4.93. Sires in first three generations already have over 600 A. R. O. daughters. A few females bred to "King". Prices reasonable.

Kalamazoo State Hospital offers
young bulls ready for service

Sired by Wolverine, Hengerveld, Cornucopia from A. R. O. cows. A number of calves are also offered. Write for prices. Address

HOWARD H. BUCKHOUT, Steward

HOLSTEIN Bull Calf: Born Nov. 5th. A nice individual, well grown, about evenly marked. His dam and sire's dam have A. R. O. records that average Butter 7 days 24.83 lbs. Milk 563 lbs. W. B. READER, Howell, Mich.

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

Choice Holstein Bulls. All from A. R. O. Dams. Semi-off-yearling records 720 lbs. butter in Jr. 4yr. old class to over 1000 lbs. in mature class. Breeding: Cross "King of the Pontiacs" and the "Demmel blood." Cherry Creek Stock Farm, Hilliards, Mich. M. E. Parmelee, Proprietor.

ALFALFA DALE HERD of Holsteins. Contains aged cows producing 32.94 lbs. of butter in 7 days; 4yr. olds producing 31.76; 3 yr. olds producing 28.37 and 2 yr. olds 25.69 all officially tested. Sons and brothers of these high testing cows for sale. Geo. H. Gillespie & Son, Mason, Mich.

For Sale or to rent after June a ¼ brother to a 30lb. Jr. 4yr. old Holstein. 6 nearest dams all have records above 20 lb. 28 nearest sires and dams all have A. R. O. daughters. M. L. McLaurin, Redford, Mich.

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

"TOPNOTCH" Holsteins

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

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

REGISTERED-HOLSTEIN BULL, 5 months old. 2 nearest dams average 26 lbs. of butter and 67 lbs. of milk in 7 days. Mostly white, grand individual. \$100, delivered, safe arrival guaranteed. Write for pedigree and photo. HOBART W. FAX, Mason, Mich.

REG. Holstein Bull 5 mo. old. Dam 23.73 Butter dam of Fint Burtjusca Pauline 56.16 milk, 28.51 Butter in 7 days at 2 years. Priced right. John A. Rinke, Warren, Mich.

FOR SALE—Registered Holsteins. One heifer 10 mos. old, also 3 bulls from 2 to 7 mos. old, sired by a 30 lb. Bull. Wm. GRIFFIN, R. No. 5, Howell, Mich.

A BARGAIN—A beautiful pure bred cow, nearly white, good size and large persistent milk, bred to freshen this fall. GEO. D. CLARKE, VASSAR, MICH.

Reg. Holstein Bull, 5 mos. old. Dam made 546 lbs. milk marked and well grown. E. H. Cornell, Howell, Mich.

Only \$25 Delivered: Handsome Holstein bull calf, ¾ white. Sire 25 lb. butter bull. Dam, heavy milk. Thoroughbred, not registered. Rougemont Farms, Detroit, Mich.

Ypsilanti Farms Holstein-Friesian Heifers and young bulls. Choicest breeding, sensible prices. Ypsilanti, Mich.

\$75 BUYS registered Holstein-Friesian bulls, ready for service. Best of breeding and good individuals. B. B. REAVEY, Akron, Mich.

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

For Sale 4 Reg. Holstein bulls, 6 to 13 mos. old. Also a few reg. females. Some will freshen soon. Frank Staften, R. 3, Box 38, Howard City, Mich.

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

The All-Around Jersey

is the farmer's cow. She's his friend and pride—the beautiful, gentle, ever-paying milk machine that lifts the mortgage, builds up the fertility of the farm, and puts the whole business on a sound, paying, permanent basis. She adapts herself to all climates and all feeds and does not need fancy care. She matures early and lives long. And she's so sleek, clean cut and handsome, as to be the family pet and pride. She produces well and sells well. Learn about her in our fine, free book, "About Jersey Cattle." Write for it now.

THE AMERICAN JERSEY CATTLE CLUB
346 West 23rd St., N.Y. City

Grade Jersey Herd For Sale

FORTY COWS

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

THE WILDWOOD Jersey Herd. Registered Jersey Cattle of Quality. Forty head Tuberculin tested Majesty's Wonder 90717 heads the herd. His daughters are producing from 400 to 500 lbs. butter in one year as two year old heifers, and are bred to Majesty's Oxford Fox 13424 a class Grandson of Oxford Majesty which combines type and production. Alvin Balden, Capac, Mich.

MAPLE Lane R. of M. Jersey Herd. Tuberculin tested by the U. S. Government. For sale bulls, cows, bull calves and heifer calves. The lowest record of any mature cow of this strain is 533 lbs. of 8½ butter. IRVIN FOX, Allegan, Michigan.

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

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

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

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

BIDWELL SHORTHORNS

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

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

Auction Sale Mar. 1st, 1916. 25 head shorthorns, 7 males, 18 "Locust" on D. U. R. between Almont & Imley City. WARNER BROS. Almont, Mich.

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

3 Choice Shorthorn Bulls for Sale H. B. PETERS, Carland, Mich.

SHORTHORN Cows and two year old Heifers and Yearling Heifers, for sale. From good families. E. R. HAWLY & SONS, Stockbridge, Michigan, R.F.D. 3.

DAIRY Bred Shorthorns of best Bates strains. Two extra fine yearling heifers for sale. Price \$200.00 each, registered. J. B. Hummel, Mason, Michigan.

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

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

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

HOGS.

Royalton Bred Berkshires—Fine October pigs both sexes, sired by Royalton Emperor, registered with papers at fair prices. Write to D. F. Valentine, Supt., Temperance, Michigan.

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

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

SWIGARTDALE FARM

BREEDERS OF HOLSTEINS AND BERKSHIRES

Stock for sale at all times. Berkshires of unsurpassed quality and breeding, at reasonable prices. A choice bull calf, nicely marked, five months old, sire's dam with record of over 27 pounds. Dam of calf a grand daughter of Hengerveld De Kol. Price \$50.00.

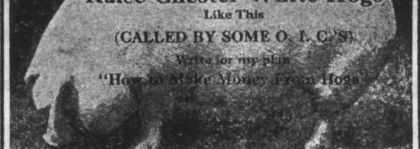
Swigartdale Farm, Petersburg, Mich.

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

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

Chester Whites Bred sows and Fall pigs for sale. F. W. Alexander, Vassar, Michigan.

TAKEN FROM LIFE
Raice Chester White Hogs
Like This
(CALLED BY SOME O. I. C.'S)
Write for my pig
"How to Make Money from Hogs"



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

Capitol Herd D.J. Swine. Young sows bred, young boars, pigs both sex. Express prepaid J. H. BANGHART, Lansing, Mich.

Chester Whites: Long type prolific kind. Orders booked for spring pigs. Write your wants. Meadow View Stock Farm, R. 5, Holland, Mich.

DUROC JERSEYS. We still have for sale six choice young boars and fourteen choice young sows due to farrow last of April and early May, bred to Michigan Masterpiece, No. 52835, Orin Chief Perfection No. 68945 and Jennings' Pilot Wonder, No. 73373. Prices very reasonable. Send for copy of pedigree. THE JENNING'S FARMS, R. F. D. 1, Bailey, Mich.

DUROC JERSEY BOARS a choice lot of spring boars. Fall pigs, pairs and trios not akin. W. C. TAYLOR, Milan, Michigan.

Duroc Jerseys—Fall and spring pigs either sex, from choice strains, B. O. STAHLMAN, CHERRY LAWN FARM, Shepherd, Michigan.

J. W. KEENEY, Erie, Mich. Gilts for April Farrow. D. M. & T. local from Monroe or Toledo, Keeney Stop.

DUROC JERSEY tried sows and spring gilts bred to E. D's. Defender Col. No. 72975. Inspection invite d. E. D. Heydenferk, Wayland, Mich.

DUROC JERSEYS, a few bred gilts for May farrow, fall boars, ready for service, also open gilts. Registered Holstein bull calf from high testing cows and evenly marked. F. J. DRODT, Route 1, Monroe, Mich.

Duroc Jerseys for sale—a few choice fall pigs of either sex. Fancy Buff Rock cockerels. JOHN McNICOLL, Station A, Route 4, Bay City, Mich.

Duroc Jersey—Sept. pigs either sex & Holstein bull calves & 2 Registered Holstein cows. E. H. MORRIS, MONROE, MICH.

DUROC JERSEYS Boars and sows all sold. Some good fall pigs either sex for sale. Wm. W. Kennedy, R. 3, Grass Lake, Mich.

DUROC JERSEYS—A few bred gilts for sale. Carey U. Edmonds, Hastings, Michigan.

Heavy Boned Durocs—A fine bunch of Bred sows and fall pigs for sale. M. A. BRAY, OKEMOS, (Ingham Co.) Mich.

Duroc Jerseys Six June Gilts bred for June farrow. Price \$25.00. Weight 180 lbs. to 180 lbs. H. G. Keesler, R. No. 5, Cassopolis, Michigan.

Registered O. I. C. Swine
Stock For Sale—All Ages
Correspondence Solicited, Visitors Always Welcome



Brightside, Grand Lodge, Mich.

O. I. C. BRED GILTS, Also young boars shipped O. I. C. Hogs, Stock J. CARL JEWETT, Mason, Mich.

O. I. C. SPRING BOARS of good type and Red Polled bull calves. John Berner and Son, Grand Lodge, Mich.

O. I. C. choice serviceable boars, bred gilts for April and May farrow. Fall pigs not akin. Write for low prices and photo. A. V. Hatt, Grass Lake, Mich.

O. I. C's. All sold except one July boar and a few Oct. pigs. C. J. THOMPSON, Rockford, Michigan.

Way Brothers Stock Farm. The home of the big bone O. I. C. Hogs, Stock for sale. Registered free. J. R. Way, Three Rivers, Mich.

O. I. C. Boars for service. Gilts bred for May and June farrow. June farrow, 1 prepay express. G. P. ANDREWS, Dansville, Mich.

O. I. C. Sows and Gilts for Spring farrow all sold. H. W. MANN, Dansville, Michigan.

O. I. C. Strictly Big Type

Sows & Gilts bred for March & April farrow all sold. Also fall boars. Have two extra good July boars and One May boar for sale and Three July gilts and three Sept. gilts right good ones. Address, Newman's Stock Farm, Mariette, Mich. R. 1.

BIG TYPE O. I. C's and Chester Whites. Special prices on all boars and fall pigs either sex. These are sired by Abo 2nd, this boar sired our unbeaten breeders young herd at every state fair we showed this year, other sires are Wonder Boy, White Hall and Allen, this boar was junior champion at Wis. State Fair last year. Now Mr. Buyer our pigs are all sired from champions, our price is no higher than other breeders and the Express Co. charges just the same for a poor pig as it does for a good one. Get our catalog and see where the good ones are. We are looking for Spring pigs sired by Schoolmaster, the highest priced boar of the breed and five times G. Champion. We Reg. Free and ship C. O. D. Rolling View Stock Farms, Cass City, Mich.

Registered O. I. C's. Attractive prices on fall pigs and last spring gilts. All from large litters. Elmer E. Smith, Redford, Mich.

O. I. C's 20 bred sows for sale. 8 last April gilts averaged 270 lbs. Jan. 10, 1916. They are a very growthy lot. Have some May gilts and last fall yearlings, also a few service boars and plenty of last fall pigs. Otto B. Schulze, Nashville, Mich.

O. I. C. Choice gilts bred for April and May farrow. Also last fall pigs of excellent quality. A. J. BARKER, Belmont, Michigan, R. R. No. 1.

O. I. C. September pigs, both sex. Bred E. B. MILETT, Fowlerville, Michigan.

O. I. C. SWINE I am offering choice gilts strictly O. I. C. type bred to farrow the forepart of May, also fall pigs price right. Stock registered in purchaser's name free of charge. A. J. Gordon, R. 2, Dorh, Mich.

O. I. C. Choice Boars ready for service. I ter fees. JULIAN P. CLAXTON, R. 3, Flint, Mich.

O. I. C's. FALL PIGS, EITHER SEX. Satisfaction Guaranteed. A. R. GRAHAM, Flint, Michigan.

Breeders' Directory—Continued on page 447.

HORSES



60 HEAD OF STALLIONS FOR SALE

PERCHERONS, CLYDESDALES and HACKNEYS

Also 20 head of Choice Hackney mares with foal.

Gentlemen I got on my selling clothes.

Write for prices.

JOHN CRAWFORD

Colby Ranch,

Stanton, Mich.



DUNHAMS Percherons
For Fifty Years The Best
Send for fine Photographic Catalogue.

Dunhams,
Wayne, Dupage County, Illinois
Percheron Stallions



Sixteen Head For Sale

No salesman need apply we deal direct and give terms to responsible parties.

A. A. Palmer, Estate,
(R.R.) Orleans, (F.O.) Belding, Mich.

20 Head of Percheron 20

Stallions and Mares

of high quality. Royally bred, some of them by the Great \$40,000 Champion Carnot (66,666). All recorded in P. S. A. Studbook. If you are in need of a good Stallion or mare, come and see us. We can suit you in both quality and price.
H. A. ROHR & SONS, R. D. No. 4, Napoleon Ohio.

Registered Percherons

2 rising two year old Percheron Stallions weight 1550 and 1600 lbs. Priced to sell. Inspection invited.
L. C. HUNT, Eaton Rapids, Michigan.

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

For Sale One registered Percheron stallion three yr. old, dark brown; also One of two registered Percheron mares. Wm. Graham, R. 1, Ada, Mich.

FOR SALE—Registered Percheron Stallion Mare and Fillies at reasonable prices. Inspection invited. F. L. KING & SON, Charlotte, Mich.

For Sale: Registered Percheron Stud colt folded in June 1915.
E. J. Aldrich, Tekonsha, Mich., R. No. 1, Bell Phone.

FOR SALE A Choice Bred Black Percheron Stallion coming three years old. Weight 1800 lbs. Reg. in American Percheron Registry. Bell Phone. D. H. McKinsey, Albion, Mich. R. 4

For Sale: three and six, black and grey. Will sell for 1/2 their value if sold soon. T. H. Love, R. 3, Howell, Mich.

LOESER BROS.

We have 100 head of Belgian and Percheron Stallions and mares. Imported and home bred. We have sold pure bred horses in Michigan for the last 25 years, and have the right kind, and at the right price. We can supply any number of work horses, both geldings and mares. Get in touch with us.

LIGONIER, INDIANA.

Veterinary.

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

Chronic Garget.—I have a six-year-old cow which had what we called a form of garget about three months before she came in. One hind quarter of bag swelled up and we could get no milk from it. We used a milking tube and had treatment from a local Vet. who said very likely when she came fresh she would be all right again. She came in about a week ago and I can only get about a cupful from that quarter. It is swelled a little and the teat feels as though there was something about the size of a lead pencil in it. N. P., Belding, Mich.—When the writer is told of some new remedy that has been discovered that will clear out a blocked udder and restore it to its normal condition, or by discontinuing to strip a cow that has suffered from chronic garget, and that she will get well by leaving her alone, it makes me smile. You will obtain fairly good results by applying iodine ointment and plenty of gentle hand-rubbing, but it is doubtful if your cow will ever get well. By giving 1 dr. doses of iodide potassium it will have a tendency to clear out her bag.

Anemia.—I have a heifer calf six months old that is not doing well and her horns and teeth are loose. A. M. N., Muskegon, Mich.—Increase her grain ration and give 20 grs. of ground nux vomica, 60 grs. of ground gentian and 60 grs. of powdered cinchona at a dose three times a day.

Sore Eye.—Some two months ago my seven-year-old mare commenced to have trouble in one eye and ever since the eyelids have remained swollen and now she is inclined to keep eye closed. L. H. B., Washington, Mich.—Dissolve 40 grs. of boric acid and 40 grs. of borate of soda in one-quarter pint of clean boiled water and apply some of this lotion to sore eyes twice a day. Also apply one part extract witch hazel and four parts water once or twice a day.

Sore Mouth.—One of my yearlings commenced to slaver some time ago and a few days ago I noticed another one of my herd slaving and I would like to know what can be done for them. F. K., Carsonville, Mich.—As your cattle show no other symptoms of sickness and are eating their feed and thriving, you need not have any fear of this ailment proving fatal. The two with sore mouth have picked up some irritating food or drugs which is making the mouth sore. Dissolve 1 oz. of alum in a quart of cold water and wash out mouth a few times a day. Or, dissolve an ounce of borax in a pint of water and use this, instead of the alum solution.

Soreness.—I have a seven-year-old mare that is lame on right fore-quarter. One Vet. claimed the trouble was just above hoof, but there is no swelling or soreness, but she stumbles on both fore legs. C. A. L., Lincoln, Lake, Mich.—From the symptoms you give I am unable to locate the lameness.

Acute Indigestion.—I have a calf that is nearly a year old which has several times bloated badly and if not promptly treated I thought perhaps it might die. Please tell me what causes it and what remedy to use. T. J., Ada, Mich.—Certain kinds of food are apt to cause bloating, therefore, you had better feed carefully and about the least expensive remedy you can give is hypophosphite of soda in two or three ounce doses, and don't hesitate to use the trocar and canula if you believe the calf in danger of dying.

Grease Heel of a Chronic Nature.—I have a four-year-old gelding that has had grease heel since last fall and he has been treated by our local Vet. ever since, without showing much improvement. E. W., Williamston, Mich.—Your Vet. has perhaps treated your horse properly. Clip off hair and occasionally apply tincture of iodine or dissolve 1 oz. of permanganate of potash in a quart of water and paint sores every day or two. Give 1/2 oz. of Donovan's solution of arsenic at a dose in feed three times a day. The sores should occasionally be dusted with one part iodoform and seven parts boracic acid. It is perhaps needless for me to say that a case of this kind never does well unless the horse is kept in a clean stable and has good care.

Brood Mare and Lymphangitis.—My 12-year-old brood mare, which is in foal, had a bad attack of lymphangitis some two months ago and some three weeks later quite a portion of the hair sloughed off, but the swelling has mostly disappeared. Our local Vet. tells me that her blood is in bad condition. J. H. B., Freeport, Mich.—Dissolve one part bichloride of mercury in 1,500 parts water and wet swollen leg twice a day. Feed her some roots. Give her 1 dr. potassium iodide at a dose twice a day. She should have exercise daily.

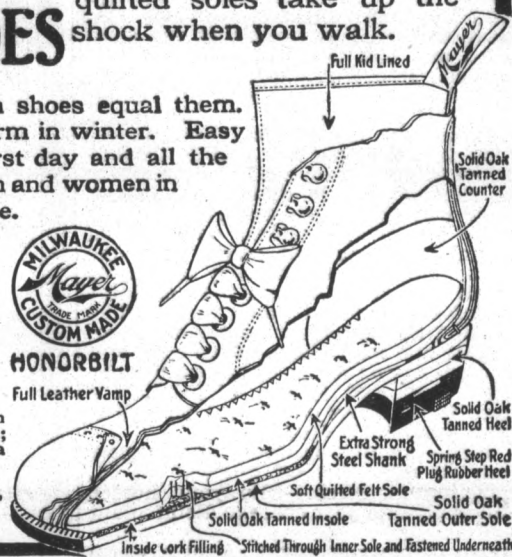
Mayer HONORBIT CUSHION SHOES

No other cushion shoes equal them. Cool in summer, warm in winter. Easy on the feet from the first day and all the time. Made for both men and women in all styles to suit every taste.

WARNING. Always look for the Mayer name and trade mark on the sole. If your dealer cannot supply you, write to us.

We make Mayer Honorbilt Shoes in all styles for men, women, children; Dry-Sox wet weather shoes; Martha Washington Comfort Shoes.

F. Mayer Boot & Shoe Co. Milwaukee



C. G. PHILLIPS, Manager



You Can PREVENT HORNS

This Dollar Bottle Contains Enough for 25 Calves Sent on 20 Days' Free Trial

With This Safe Easy Remedy

Don't let your calves grow horns. They are not only useless, but dangerous and if sawed or cut off when the animal is growing, usually cost from \$5 to \$10 in loss of growth, flesh and milk and sometimes the loss of an animal.

CORONA Horn Preventive

will do the work surely, easily and safely. Just apply it on the spot when the horns start and they won't grow.

20 Days' Free Trial At My Risk

Send no money—just write me you want to try Corona Horn Preventive at my risk. I'll send you the dollar bottle (enough for 25 calves) to try for 20 days. At the end of 20 days when you are satisfied of its value—send me only \$1 payment in full. If not pleased, tell me so, I'll take your word for it and cancel the charge. Send today. Address C. G. PHILLIPS, Mgr.

CORONA MFG. CO. 300 Corona Block KENTON, OHIO



"Corona Horn Preventive works fine."—C. E. Cassopolis, Mich.

FOR SALE, 1 Registered Belgian mare 5 yrs. old; 1 High Grade Belgian mare 8 yrs. old in foal; 1 Pair Registered Clyde Mares 5 and 6 yrs. old, one in foal. Write R. S. HUDSON, MICH. AGR. COLLEGE, East Lansing, Mich.

JACKS AND MULES

Raise mules and get rich. 200 head fine large jacks, jennys and mules, 14 to 17 hands high. Large registered jacks and draft stallions cheap now. Will trade for sheep, cattle or horses. Write for prices today. Stock guaranteed. Address KREKLER'S JACK FARM



West Elkton, Ohio

OVER STOCKED, MUST SELL.

FOR SALE: Six colts coming three year old, four colts coming two year old, and three yearlings, six Jersey cows; three being registered; four heifers, three, two year old, one yearling registered bull; one extra nice pair of bay colts. This stock may be seen at the Ternes Farm, Chase Road, one mile north of Michigan Avenue, Detroit, Michigan, Walnut 2091.

FOR SALE 2 Belgian Stallions, one imported 10 yrs old bay, weight 2200 lbs, colts to show, one registered home bred coming 4 yrs. old, weight 2200 lbs. Both outstanding good ones, sure foal getters. Would consider an exchange of one of them for another Belgian equally as good. Oscar Wolf, St. Louis, Michigan.

REGISTERED PERCHERON STALLION for sale at bargain. Write for Pedigree and breeding. F. D. NICHOLS, Homer, Mich., R. D. No. 1

HOGS

For Sale 5 Berkshire sows and 3 Boars five mos. old. \$7.00. Geo. D. Clarke, Vassar, Mich.

Boars at Half Price

We still have a few big boned, big type Poland China boars ready for service, weighing up to 250 lbs. not fat at \$20 & \$25 each. Registered in buyer's name. Also registered black Percheron Stallion 2 years old \$250.00. J. C. BUTLER, Portland, Mich., Bell Phone.

POLAND CHINAS

From our thousand pound Grand Champion Boar and Big Stretchy Sows of best breeding. Spring Boars at a bargain. Bred Gilts and Brood Sows. Hillcrest Farm, Kalamazoo, Mich.

POLAND CHINA gilts bred for March and April farrow. Fall pigs, satisfaction guaranteed. G. W. HOLTON, Kalamazoo, Michigan.

POLAND CHINAS Gilts, of the big type, bred for April and May farrow. A. A. WOOD & SON, Saline, Michigan.

Large Strain P. C. a few choice boars of spring and early summer farrow. A choice lot of spring Gilts bred for spring farrow sired by Big Defender the boar that every body goes wild over. H. O. SWARTZ, Schoolcraft, Michigan.

Large Type P. C. Gilts and sows, Bred for Mar. and April farrow. Sired by Big Defender, Big Knox Jr. and Giant Defender. Bred to Big Knox Jr. Smooth Wonder 3 and Big Jumbo, four great boars in state. Come or write. W. E. Livingston, Parma, Mich.

Cushion Shoes

Sensitive feet get quick relief. Wear Mayer Honorbilt Cushion Shoes. The quilted soles take up the shock when you walk.

For Sale Poland Chinas either sex, all ages. Some thing good at a low price. P. D. Long, R. F. D. No. 8, Grand Rapids, Mich.

Heavy Boned Poland Chinas. Fall and Summer Pigs. Sows Bred. Eggs from big Barred Rocks \$1.00 for 15. ROBERT NEVE, Pierson, Michigan.

POLAND Chinas—Big and medium type. Gilts bred to big type boars for April farrow. Fall pigs, either sex. L. W. Barnes & Son, Byron, Michigan.

PIG type Poland Chinas—Western bred, long bodied Bextra large bone, pairs or trios not akin. We have Peter Mow, H. Fesemeyer and Geo. Marshall breeding. Call or write. W. Brewbaker & Sons, Elsie, Michigan.

REGISTERED Poland China Spring Boars and Sows at \$15 each. Making this special price to make room for others. A. G. Meade, Stanton, Mich., Colby Ranch.

Large Type P. C. Sows & Gilts all sold. Have 3 extra good spring boars. Sired by Big Defender. W. J. HAGELSHAW, Augusta, Michigan.

Big Bone Poland China Brood Sows, bred for spring farrow. Few choice males ready for service. Also M. B. Turkeys. Maplewood Stock Farm, Allegan, Mich.

Large Yorkshires August and September pigs. 2 spring boars. Prices reasonable. W. C. COOK, Route No. 1, ADA, MICHIGAN.

Yorkshires Gilts

For March & April farrowing For Sale. Waterman & Waterman. Ann Arbor, Mich.

Large Yorkshire Swine all ages. Bred Polk Bulls ready to use \$75 each. E. S. CARR, HOMER, MICHIGAN.

GROWTHY THE DISEASE PROLIFIC "MULEFOOT" RESIST- PROFITABLE HOG ING

WE ARE NOW BOOKING ORDERS FOR SPRING PIGS

THE CAHILL FARMS
KALAMAZOO - - - MICHIGAN

Hampshire Swine, the great pasture hog. My herd contains the blood of some of the greatest champions of the breed. Bred by a son of the Great "Look Out." Bred sows and boars all sold. Booking orders for spring pigs. Can supply pairs and trios, not akin. Geo. E. Starr, Grass Lake, Mich.

Hampshire Hogs—Nothing for sale but Apr. Boars. Taking orders for spring pigs. Write your wants, John W. Snyder, St. Johns, R. No. 4, Mich.

Hampshire Swine, Pigs of both sex. Bred Sows Service Boars. Write for prices. Price to sell. FLOYD MYERS, R. No. 9, Decatur, Ind.

SHEEP.

Kope Kon Farms
SHROPSHIRE and DUROCS. KINDERHOOK, MICH

Oxford Down Sheep, no stock for sale M. F. GANSLEY, Lennon, Michigan.

Leicesters—Yearling and ram lambs from Champion flock of Thumb of Mich. Also select Berkshire swine. Elmhurst Stock Farm, Almont, Mich.

Indigestion—Contagious Scours.—I would like to know what is the matter with my calves; they are thin in flesh, bowels too loose and sometimes their passages are watery. They eat well but are weak. Have been feeding them warm milk from the separator, four quarts at a time, with a cup of oatmeal gruel three times a day; they also have clover hay to eat. I might add that I lost two some two weeks ago, and I believe two more will die. One year ago we had trouble of the same kind and lost some of our very best calves. R. J. P., Lake, Mich.—I am inclined to believe that your cow stable and calf pen should be thoroughly cleaned and disinfected, and unless this is done you will find it troublesome to get rid of the infection which is causing the death of your calves. You will find fresh made lime wash very effective; besides, shower and sprinkled floors and stalls with one part bichloride of mercury and 1,000 parts of water; or one part coal tar disinfectant and 24 parts water. The feeding utensils must be cleaned thoroughly and kept clean. Give each calf enough castor oil to clear out bowels. Give each calf 10 grs. of salol at a dose three times a day and be particular about their food supply.

Lice.—I wish you would let me know how to take lice off horses. A. R., Farmington, Mich.—Clip your horses and apply one part coal-tar disinfectant and 29 parts water. If you have a warm stable you might select a warm day and wash them with this solution occasionally before clipping.

Indigestion.—I have a cow that came fresh last week that is not giving enough milk for her calf. I feed her hay and cornstalks and she also has some bran and middlings. J. C. J., Kalamazoo, Mich.—Give your cow more nutritious feed. Also give her 1 oz. of cooking soda, 1 oz. of ground gentian and 1 oz. of powdered charcoal at a dose in feed three times a day.

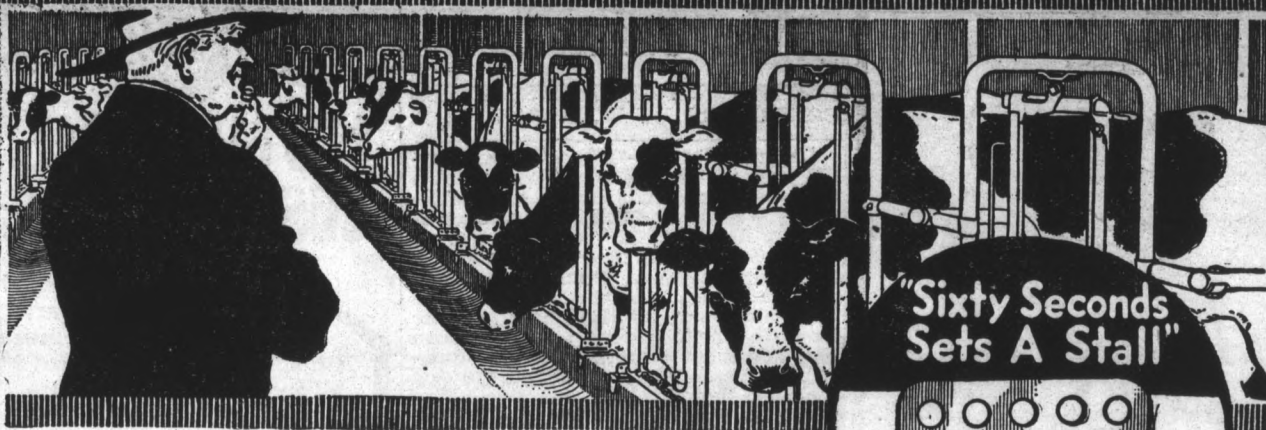
Enlarged Liver—Tuberculosis of the Liver.—Quite a number of my fowls have died and about all the symptoms they show is dullness and loss of appetite, which is followed by great weakness and death. After death I find that the liver is large and had quite a number of little white boils. E. N. S., Gagetown, Mich.—Your poultry suffer from tuberculosis and it is perhaps caused by feeding them milk from cows that have tuberculosis, or their digging in excrement passed by the cows; therefore, no treatment will do them any good. Apply one part kerosene and two parts vaseline to the fowls that have scaly legs, two or three times a week.

Unthrifty Horse.—I have a six-year-old gelding that does not thrive; appetite is good, but he don't flesh up; he seems to tire easily. Am feeding him four quarts of ground oats and corn three times a day; his teeth are in good shape. W. R. D., Port Huron, Mich.—Increase his feed, mix together equal parts by weight of powdered sulphate iron, ground nux vomica, powdered fenugreek, cooking soda, ground gentian and ground cinchona and give him a tablespoonful at a dose in feed three times a day.

Shy Breeder—Fresh Air for Cows—Nasal Catarrh.—I have 22 acres of land, am keeping four cows and a pony team, and also have a few hogs. Would you advise me to build a silo, and if so what size? One of my cows lost her calf two weeks after service and I believe has aborted twice during the winter. Is it best to keep cows in stable all the time or to turn them out on pleasant days? I have a few pigs that came last August that are not thriving; they have trouble in their nose and throat. J. W. S., Lapeer, Mich.—If I were you, should not go to the expense of building a silo until you have more use for one, and I do not believe that your cow aborts, but, of course, she does not get with calf. Dissolve 2 ozs. of cooking soda in three pints of tepid water and wash out vagina twice a week, and treat her four hours before she is mated. Turn your cows out for exercise during pleasant weather and be sure that they are well supplied with fresh air while they are in the stable. Keep your pigs in a dry warm, clean pen that is well supplied with straw and give them some cooking soda and ginger in each feed.

Worms.—We have quite a number of pigs that were farrowed November 1, which will weight about 50 lbs., but thrived until they were weaned; since then they are humped up and not doing well. M. J. M., Rushton, Mich.—Mix together equal parts ginger, gentian and charcoal and give each pig a half teaspoonful at a dose in feed twice a day. If you believe any one of them is very wormy, give it a half teaspoonful of fluid extract spigelia and a teaspoonful of fluid extract senna once a day for a few days.

Indigestion.—I have a filly that is 10 months old that gnaws feed box too much. W. H., Kingsley, Mich.—Give her a teaspoonful of cooking soda in each feed.



Gold Dollars for Common Sense—

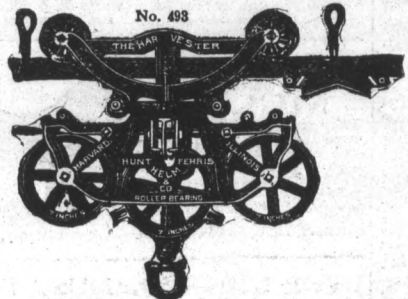
THE minute you, as a dairyman, realize what **STAR BARN EQUIPMENT** offers, "common sense" will tell you to install it—*quick*. And the "gold dollars" your investment yields are a year-in, year-out, never-ceasing dividend. Thousands of dairymen—*exceptionally* successful ones—will not only *tell* you but *prove* positively that **STAR BARN EQUIPMENT** means *better* milk—it means *more* milk—insures a *healthier* herd—and on top of it all—divides barn labor by *two*.

Now certainly any kind of modern barn equipment is better than none. But—some makes are better than others. On *that* basis we ask you to make your own comparison between other kinds and—

STAR Steel Stalls. Stanchions, and Litter Carriers

Basic patents make **STAR** features exclusive with our goods. **STAR STEEL STALLS** are built in our factory, *not* in your barn. Made and sold on the Unit System—Arched Construction insures strength and cleanliness—Alignment Device lines all animals straight at the gutter—the Star Curb Clamp does away with the use of templets and anchors. Equipped with the wood-lined **GIANT STAR STANCHION**—strongest made—with quiet Double Chain Hanging—One Hand Lock and Automatic Sure Stop—Adjustable to fit necks of all animals. **STAR LITTER AND FEED CARRIERS** are the last word in efficient labor-saving devices—Roller Bearing—Double Lock Tub—Swinging Boom keeps barnyard clear. "Way ahead of other types."

HARVESTER HAY CARRIER



Biggest in size and value. Roller Bearing and built for heavy duty. Ask your dealer or write us for details.

FREE BARN PLANS

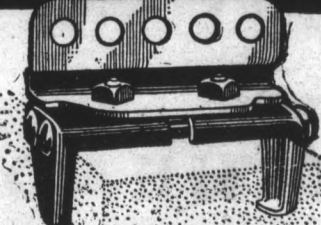
Let us help you design your new barn or remodel your old one. Our Drafting Department is at your service and Blue prints are free. Write us today.

In writing state whether interested in Stalls, Stanchions, Litter Carriers, Hay Tools.

Star Goods Sold by Best Dealers Everywhere

HUNT, HELM, FERRIS & CO.
13 Hunt Street HARVARD, ILL.

"Sixty Seconds Sets A Stall"



The STAR Curb Clamp

(PATENTED)

YOU can now finish your curb with the rest of your concrete work without using templets or anchors.

The new Star Curb Clamp sets the stall where you want it without fuss or bother. "Sixty seconds sets a stall" firm as a rock. In the same length of time you can remove it.

This is a revolution in time saving and an extra insurance of properly set stalls. On all **STAR STALLS** as regular equipment. Exclusive with us.



Write for Literature FREE
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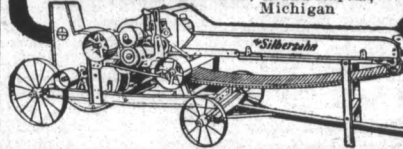
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