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Lime for Better Agriculture

By W. W. Weir

HAVE you ever seen a field of clover (?) so poor that it was a waste of time to cut it; and later, have seen that same field growing clover or alfalfa in abundance? When you asked the reason why, and were told that lime brought about the transformation, were you not impressed with the great importance of lime in the development of a better and a greater agriculture? The best scientific and practical information points to the fact that liming is the first step in the improvement of an acid soil.

If the soil is acid and clover fails, lime is the only cure. If on good land, alfalfa fails, even though the soil was inoculated, lime is absolutely necessary for success. A field of thin clover is usually full of sheep sorrel, plantain and other weeds. If the soil is acid, lime the land and grow better clover to smother the weeds. How often alfalfa grows thin and spindling because of a deficient lime supply in the soil. The grass and weeds thrive because the weak alfalfa offers little or no competition. Why fool away time with such alfalfa? Why allow the weeds

to triumph over the crop you want? Lime the land. The alfalfa will then grow strong and thick. The weeds and grass have no chance. It's the survival of the fittest; and it's lime for the fittest.

Soy beans will grow fairly well on acid sandy soils, but they grow best on sands sufficiently supplied with lime. Peas are a profitable crop, but they are more profitable on soils that are not acid. Mammoth clover is the best clover for sands, but real success can be attained only when this crop is supplied with lime.

Of the small grains, barley responds best to liming. I have seen ninety per cent of a barley crop stand up on the limed portion of an acid field, and ninety per cent go flat on a portion of same field not limed—other conditions being equal.

Hemp grows best on lime soils. The best hemp-growing sections in the world are in areas in which the soils have been derived from limestone, or where the soils are not acid.

A fifteen-ton sugar beet crop re- (Continued on page 104).

The Michigan Farmer

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VOLUME CLIV. NUMBER TWO

DETROIT, JANUARY 17, 1920

CURRENT COMMENT

In New and Better Quarters

OUR readers will note our change of location in the street address in our "masthead." We have moved our offices and plant into new and larger quarters at 432 Lafayette Boulevard. This new home of the Michigan Farmer, in our own building, is much larger and better adapted to our needs than the old quarters which we have occupied for nearly a score of years. We have spared no expense in fitting it up to enable us to give better service than ever before to our subscribers. The latch string hangs out to all our friends. Come and see us! Or if you can not make it convenient to do that, let us know how we can serve you or your community.

Future Grain Prices

PRES. BARNES, of the United States Grain Corporation has issued a warning to the licensees of the corporation to the effect that there may be a serious slump in wheat prices when the government guarantee expires next June. In this warning Mr. Barnes calls attention to the depleted credit of foreign countries and to the ruinous exchange rates which they are obliged to pay in order to purchase goods in our market.

In itself and as applied to general trade this is a good argument. Undoubtedly the stabilization of foreign credit is one of the most important international reconstruction problems. Likewise the ability of foreign peoples to purchase our goods on an equitable basis is bound to be an important factor in our continued commercial prosperity. But the outlook does not seem to be as immediately alarming as Mr. Barnes' statement would indicate. The government's price guarantee of \$2.26 per bushel at primary markets has been left away behind in the advancing price of wheat, probably due in part to the influence of the strong position of other cereals, but to no small extent to a general demand for milling purposes. The premium above the guaranteed price is even more marked than was the case last year, which may, however, be in part due to less stringent government control, but is also we believe, to no small extent due to a steady milling demand for the grain. Speculative holding is also doubtless a factor in the situation, but this is indicative of the judgment of the trade with regard to the future of the wheat market, when the marked shrinkage in wheat acreage and the

uncertain effect of the winter on the growing crop is taken into consideration.

Then, too, it must be considered that governmental policy to reduce the cost of living may have been a moving factor in Mr. Barnes' statement. In case the United States Grain Corporation is in possession of the holdover of wheat next June, or of a large proportion of it, it would be in a position to make the price on that residue and to some extent on the new crop. It is a reasonable conclusion that on the present market little if any wheat is being turned over to the grain corporation at the guaranteed price. No. 2 red wheat is now selling at around \$2.62 per bushel in this market, or around forty-five cents above the government price, notwithstanding Mr. Barnes' statement.

Of course, no man is sufficiently wise to predict the future of the foodstuffs market with any degree of accuracy. These are uncertain times and many unusual disturbing factors enter into the situation. Wheat Director Barnes has but done his duty in issuing this warning to his licensees if it represents his best judgment as an advanced student of the grain situation with unusual opportunities for its comprehensive study. But his judgment in the matter is not infallible. With present price tendencies strong on commercial products of all kinds, foodstuffs are not likely to slump badly or permanently, since under the conditions which surround their production, an immediate shrinkage in production would undoubtedly result, thus causing a reaction.

Stabilized values at the present time and in the near future, would best serve the interests of consumers as well as producers. Let us hope that trade conditions will continue to favor them, notwithstanding Director Barnes' pessimistic predictions. Continued confidence on the part of a busy people will go far toward accomplishing that result.

Reading in the Home

COUNTRY life has broadened in recent years and now occupies a place much larger than the little round of daily routine that formerly constituted the total activities of many folks. The knowledge and the spirit which have led rural life out of its old past came very largely from homes supplied with libraries and reading tables. We have competent leaders who have not had a wide acquaintance with books, but considering people in the mass, it is true that the reading community is almost invariably the progressive community, and the reading farmer an influential one. The homes with libraries include our best homes, while homes that send out the incorrigible specimens of the race are generally without helpful books.

Libraries usually change the general atmosphere of the home, for when the members of the household have the advantage of ideas gleaned in reading, their conversation rises above the petty things of everyday living that annoy the unread, and dwells upon subjects of new interest which carries the mind to things worth while. Good reading is an efficient alterant for complaining, gossiping and imaginary ill health, and supplies a person with a reserve from which to draw in times of sickness, during old age, or whenever the hours are not filled with employment.

Then, too, it is easier to keep the boys and girls interested in the home where reading has been emphasized. Such an interest is a standard antidote for harmful outside influences. The farmer who takes pains to provide his home with good reading is making an investment that will return larger dividends than any stocks ever offered by the brokers of Wall Street.

Agricultural News

COMMITTEE SELECTS GUBNATORIAL CANDIDATES.

LAST week the legislative committees of the State Grange, the State Association of Farmers' Clubs and the Gleaner organization met in Detroit, in pursuance of the plan inaugurated by these bodies some time ago to unite in naming a choice for governor of Michigan in behalf of the farmers of the state. Several meetings of these committees have been held, at some of which prominent farmers of the state have been invited to participate, but no definite action was taken until the meeting held in Detroit last week, when Milo D. Campbell, of Coldwater, was petitioned to make the race for governor in the 1920 primaries, and tendered the support of the organizations which they represent.

The members of the joint committee who took this action were as follows: For the State Grange, J. C. Ketcham, N. P. Hull and J. C. Hutchins; for the State Association of Farmers' Clubs, A. B. Cook, Alfred Allen and James N. McBride; for the Gleaner organization, Grant Slocum, Ross Holloway and George Strachan.

The Committee's Candidate.

Milo D. Campbell, who was petitioned by the committee to enter the race for Governor of Michigan, needs no introduction to many Michigan Farmer readers, since his later public activities have been closely connected with the industry, notably as president of the National Milk Producers' Association, and Chairman of the General Board of the National Board of Farm Organizations. Mr. Campbell has always been a resident of Branch county, Michigan, having been born in Quincy township, that county, in 1851. He is in every sense of the word a self-made man, having secured his general and technical education by his own efforts. He made the law his profession, but was repeatedly called to public service.

He has served a term in the legislature and two terms as private secretary to Governor Luce. Later he was connected with the state prison board and the railroad crossing board of the state by appointment of subsequent governors. Governor Pingree appointed him as state insurance commissioner, and later to the state tax commission upon its creation, of which body Mr. Campbell was chairman. Mr. Campbell has served as mayor of the city of Coldwater, and has served several terms as United States Marshal for the eastern district of Michigan. He is the owner of a fine and highly productive farm in his home county, and in his more recent activities as representing the membership of the farm organizations of which he has been a prominent official, he has been a ready and efficient spokesman for agriculture.

CONTEMPLATE A COMMUNITY POWER PLANT.

FARMERS and residents of the towns and villages of northern Ionia, southeastern Montcalm and southwestern Gratiot counties have launched a movement looking toward the establishment of a hydro-electric plant at Hubbardston on Fish Creek for supplying electric current to these villages and surrounding farming communities for both lighting and power purposes. The enterprise will require an investment of about \$150,000.

News of the Week

Wednesday, January 7.

DVINSK, an important railway center in western Russia is captured by anti-Bolshevik forces. The Bolsheviks, however, capture Mariupol in southern Russia and the civil popula-

tion of Odessa is leaving as the Soviet armies approach that port.—The United States Department of Labor asks for \$1,000,000 to fight alien communists.—The Department of Justice launches a nation-wide campaign against profiteers who are said to be largely responsible for the high cost of living.—The English railways face a labor crisis.—Sinn-Fainers confined in Cork, Ireland, go on a hunger strike.—Rhode Island ratifies the suffrage amendment to the federal constitution.

Thursday, January 8.

A STATE of siege is proclaimed throughout the riot district of Spain.—Bolshevik troops make further advances in southern Russia.—New earthquake shocks are felt about Mexico City. The estimated number of casualties attending the recent earthquakes at Mount Orizaba is now placed at two thousand persons.—The New York assembly votes to exclude socialist members from that body.—A strong feeling has arisen between British and Italian soldiers at Cairo, Egypt.—The steamship Petoskey with supplies low, is trapped in the ice four miles off the Muskegon shore.—A movement is started to raise \$400,000,000 to aid the smaller colleges of the country.—A meeting of the premiers of France, England and Italy is being held in Paris.

Friday, January 9.

PRESIDENT WILSON and William Jennings Bryan speak at the Democratic Jackson Day dinner at Washington.—The strike in the steel mills and furnaces called September 22, is officially called off by the national committee of the American Federation of Labor.—A violent volcanic eruption near Cordoba, Mexico, results in two hundred deaths.—Plans are completed for the ratification of the Versailles treaty by thirteen nations at Paris.—Secretary Baker asks congress for a larger force for service in the far east.—Fire destroys buildings worth \$50,000 belonging to motor concern at Muskegon.—The value of the leading crops in Michigan for the past year is estimated at \$342,602,000.

Saturday, January 10.

CONGRESS is being urged to send food supplies immediately to the starving people of central Europe.—Packers are charged before a senate committee with circulating propaganda against the United States Trade Commission.—The shipping board announces plans for increasing the tonnage and passenger service between this country and Porto Rico.—Holland decides not to surrender former German kaiser to the entente allies for trial.—A revolutionary movement in Bulgaria is spreading among the peasants and the workmen.—Eight battlefield sites in Belgium and France which marked points of supreme resistance by Canadian troops are obtained for permanent memorials.—German railroads are kept operating by the use of government troops.—Fire sweeps packing plants in Rio Janeiro, causing damage estimated at \$10,000,000.

Sunday, January 11.

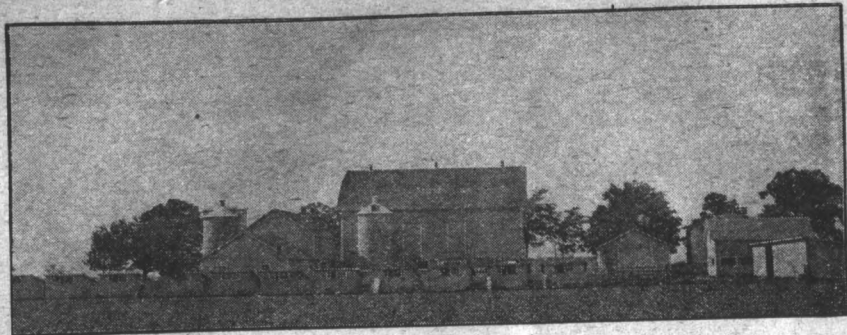
GERMAN bankers have practically given up hope of securing financial assistance from the United States government.—Premier Clemenceau, it is reported, will make a trip to the United States in behalf of the League of Nations.—Thousands perish in blizzard that sweeps over Estonia.—The supreme council will demand the surrender of the former-kaiser this week.

Monday, January 12.

IT is officially stated that all American troops have been ordered to evacuate Manchuria by March 1.—Early returns indicate that New Zealand will remain wet.—The United States steamship Buford is expected at Helsingfors, Finland, with 249 undesirable aliens deported from this country aboard.—Several persons in Tulsa county, Oklahoma, have died, and 500 are seriously ill of a disease resembling cholera which baffles physicians.—Coal production in the United States decreased 133,949,000 tons during 1919.—Julius H. Barnes, wheat director, warns against a break in wheat prices upon the removal of the government guarantee on June 30.

Tuesday, January 13.

PRESIDENT WILSON issues the call for the first meeting of the council of the League of Nations to convene in Paris next Friday.—Detroit Police Commissioner James Inches reports that drunkenness has declined in Detroit from 2.34 per cent of her population in 1917 to .0625 per cent in 1919.—A French steamer sinks in the Bay of Biscay and 539 persons are believed to have been lost.—The Oregon legislature ratifies the suffrage amendment to the federal constitution.



Our Experience With Stover Silage.

By *Albert G. Wade*

BEING attracted by the reports of other farmers in other states, and particularly the experiences and tests of the Illinois University with stover silage, the writer became quite deeply interested in this apparently new, yet after all, quite old method of producing very low cost roughage, which seems to have very high feeding value, according to practical experience, as well as scientific analysis.

The problem we were up against on our farm each year was insufficient grain production, especially corn, because we keep more live stock than the grain we raised on the usual method of feeding would feed.

We usually fed out our ninety-acre corn crop by the first of February, (that being the average acreage of corn we plant each year), and then were obliged to buy, which very materially reduced our profits.

Having three one-hundred-ton silos it took about one-half of our corn acreage to fill these silos as this was done while the stalks and ears were comparatively green, as is the usual custom in making corn silage.

This left us about forty to fifty acres of corn to husk and represented our season's ear corn supply, averaging thirty to forty bushels per acre, as we usually experience considerable dry weather in our locality during the latter part of July and all of August.

These conditions naturally made us keen for anything which would enable us to get more feed out of our corn crop and I am happy to say that stover silage not only solved our problem, but added very materially to our profits and proved to us that we had been wasting tons and tons of very valuable feed, just as the majority of farmers are still doing and have done for years, as we had, by letting their corn fodder go to waste standing on the hill in the field or even feeding it out of the shock or as shredded fodder.

Two years ago I decided we would harvest our corn crop on the newer plan—that is, the stover silage plan, but I found some objection on the part of my farm help, particularly my herdsman. While my investigations seemed to be conclusively favorable to stover silage, the herdsman did not like to take a chance on silage which had little or no ear corn in it. His testing season was coming on and he did not like the idea of experimenting as we had several thirty-pound prospects in the herd.

So I compromised with him. We filled one silo with corn silage in the usual way. The other two with stover silage, taking out the ears and putting them in the crib. We cut and shocked the balance of our corn crop doing this at the usual time and did not fill the two silos in which we put stover silage at the time we filled the one with corn silage because in making stover silage the fodder must be ripe, also the ears, for two reasons.

Not until the fodder is matured does it possess its full food value. The same is true of the ears, and the ears must be ripe before it is safe to put them in the crib.

Finally all three silos were filled, and when the one filled with corn silage had been fed out, the herd was put on the stover silage. Did our production fall off? No. Our daily milk sheets and our cream checks showed no material change and naturally we were highly gratified.

We re-filled again in January and last of March and although we fed just as many hogs as usual we had ear corn in the crib when husking and filling time came around the following fall, something we never had on the corn silage plan.

During that first experience we also wintered twenty head of purebred young heifers ranging in age from four months to fifteen months on stover silage and oat straw. They did not have a mouthful of grain and they came through in splendid condition.

By saving half of our corn crop by not cutting and putting it, ears and all, into our silo as corn silage, we figured we saved about 1,500 bushels of ears, as that year our corn yield was above our average and as the stover silage seemed to furnish us with silage of as good food value as the corn silage the ear corn was clear gain. At the prices prevailing then, about \$1.50 per bushel, it was a saving of over two thousand dollars.

Last year we cut and shocked every hill of our corn and filled our three silos with stover silage, putting the ears in the crib. The balance of the crop is standing in the shock (it would be better if in stacks) and will remain in the field until we refill, which we will do twice before spring work opens. In this way we get enough ear corn to run us and will have silage until filling time again.

Stover silage has effected a big saving in feed costs for us, not only in ear corn, but in hay. And when we think of the tons and tons of fodder we have allowed to waste away in the field, it makes us almost weep.

Many farmers feed their cornstalks in the bundle, others shred, and in this way figure they are not wasting it, but there is where we fooled ourselves, too, because fodder fed dry in bundles or shredded has only about fifteen per cent food value. Stock will not eat it up clean, especially when not cut up and a great deal of the food value is in the hard, flinty stalk.

But when you cut it up and put it in a silo with plenty of water as silo is being filled (not afterward) the sugars and starches are released and this is the reason that stover silage has as much food value as corn silage made from immature stalks, leaves and ears.

The experiment conducted at the Illinois University is the best proof of the food value of stover silage as compared with corn silage. It showed that breeding cows were wintered on stover silage at a cost of 7.8 cents per head per day, while on regular corn silage the cost was 24.8 cents per head per day.

When the farmers of this country become more acquainted with the value of stover silage, it will be considered.

(Continued on page 80).



Niagara DUSTERS and DUST MIXTURES

have proved of such value in practical commercial use for the control of insect pests and fungus diseases that every year many more successful fruit growers are finding the Dusting method indispensable in making summer application, not alone on account of the results accomplished but because dusting is so much faster and cleaner it has proven itself about one-third less expensive than spraying when both labor and materials are taken into consideration.

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Don't Pay Freight on Water

One, one hundred pound drum of Niagara Soluble Sulphur compound is equivalent to a 600 pound barrel (50 gallons) lime sulphur solution. This year it actually costs less than any other sulphur spray material. Costs less to haul and handle. No barrel to return, no leakage, no crystallization. Keeps indefinitely anywhere.

Again we say, Don't Pay Freight on Water. Send for Free Spray Calendar and get our prices.

Niagara SPRAYER COMPANY

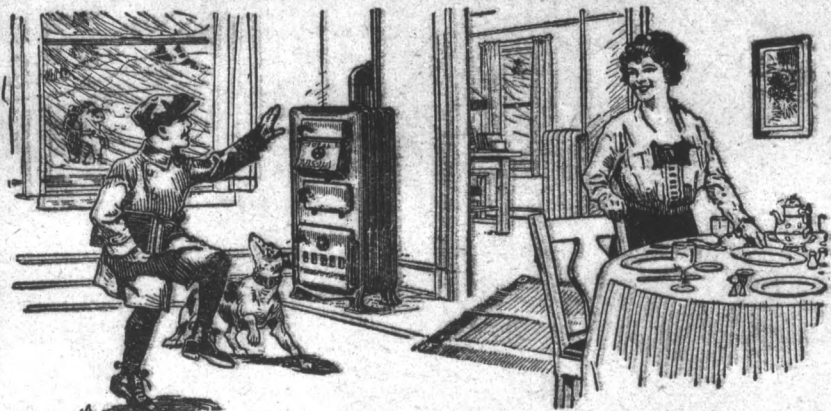
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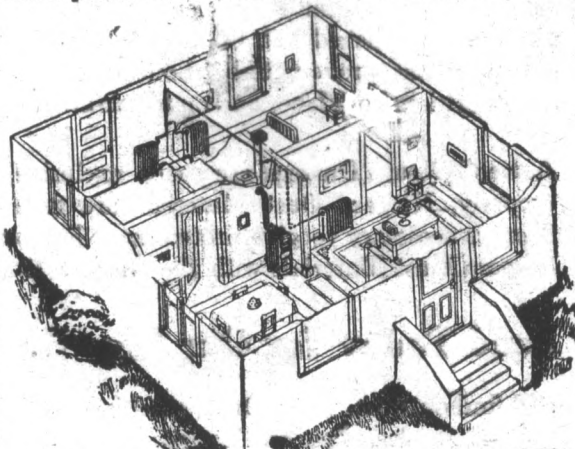
The IDEAL-Arcola takes the place of a parlor stove. But a stove wastes much of its heat up the chimney, whereas the IDEAL-Arcola is water-jacketed, and conveys its heat by hot water circulation through pipe-connected AMERICAN Radiators stationed in the adjoining rooms. Every bit of the big volume of heat developed from each pound of fuel is therefore made useful in keeping ALL the rooms uniformly, healthfully warm. There is no coal-waste. The IDEAL-Arcola does not rust out or wear out—will outlast the building—is a genuine, permanent investment!

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Unlike stoves, there are no coal-gas leaks into the living-rooms. The IDEAL-Arcola delivers the soft, radiant warmth of hot water—not the dry burnt-out atmosphere of stove heating. There is no fire risk to building—no danger to children—fire lasts for hours! The Arcola burns hard or soft coal. Brings cost of heating down to the lowest notch—and gives IDEAL comfort.



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To Upbuild Nation's Farms

By John Fletcher

OUR national wealth has increased from seven billions at the time of the Civil War to more than two hundreds of billions of dollars. With but five per cent of the earth's population, we have subjected to cultivation more than one-fourth of the cultivated lands of the earth, producing an annual yield that has aroused the envy and admiration of the world.

Of the total agricultural products of the earth, we are producing more than twenty-two per cent of the wheat, thirty-five per cent of the oats, sixty per cent of the cotton, eighty per cent of the corn. Of all the farm animals upon the earth, we produce twenty-five per cent of the horses, twenty-seven per cent of the cattle, forty per cent of the hogs, while our dairy products amount to twenty-five per cent of the total dairy supply of the world. We are taking from the earth fifty per cent of the world's production of pig iron, fifty-six per cent of the copper, sixty per cent of the petroleum.

Likewise in manufactured products we excel any nation. We are producing twenty-two per cent of the total earth's products of woollens, twenty-five per cent of the linens, twenty-five per cent of the cotton cloth, forty-five per cent of the paper, twenty-five per cent of the glass, thirty-six per cent of the shoes and fifty per cent of the steel products. In other words, of the total earth's production we are contributing twenty-four per cent of the agricultural products, forty per cent of the mineral production, thirty-four per cent of the manufactured goods. And we are accomplishing these results with only five per cent of the earth's population.

The greatest menace to prosperous times in this country at the present time is our agricultural situation. We hear on all sides that labor is too high—that supplies of all kinds have advanced in price until the burden of living becomes a serious problem.

The United States today is facing an agricultural crisis. Not only are we confronted with an era of extraordinarily high prices for foodstuffs, but also with an economic revolution growing out of this abnormal condition. The population of the country is growing by leaps and bounds; the demands of other nations for our products are becoming more and more insistent. Instead of meeting these conditions with increased farm crops, we are going backward.

Here is a cause worthy of our mightiest effort, not only to meet this call from foreign lands, but to save ourselves. No greater, no more important, no more far-reaching work lies before the leaders of this nation today than the upbuilding of our agriculture in all its phases. It means the very life of our nation, the perpetuity of our government. Increasing shortage and continued rising of prices of foodstuffs inevitably develop a precarious economic condition, tending toward social disturbances and the encouragement of political radicalism.

It is high time the people of the United States awakened to their situation. Lack of preparedness in our national food production is just as criminal as lack of military preparedness. Never has this question of "preparedness" sunk so deeply into the hearts and conscience of American citizens as since this world war in Europe. We have seen demonstrated the tremendous power and efficiency of centralized, co-ordinated cooperation, both industrially and economically. We have been taught the terrible lessons of self-complaisance, of lack of preparedness, of lack of cooperation.

Why do we emphasize the agricul-

tural possibilities of the United States more strongly than its many other resources? Because therein lies our future greatness. Our mining interests will continue and may increase; the development of our waterways is in its infancy. Manufacturing will assume much greater importance, but progress in all these lines must be and will be overshadowed by our progress in agriculture. No nation is more richly endowed. The greatest markets of the world within its limits, a vast and rich farming country surrounding them, ample transportation facilities, large jobbing interests, great coal fields—with such endowment who dares name the limit to the growth, the prosperity and the beneficent influence of this nation? We should always stand in the front rank in grain production, our farming should be diversified, each section or half section should have its proper complement of live stock, which in aggregate number will far surpass the range herds and flocks of the past. Then will our railroads, manufacturing, banks and general business prosper; then may the hungry millions look to the United States for food and other supplies. Bright robed in the garments of plenty, she will respond ever generously to their calls.

The future of the country does not depend upon the government of the United States: it depends on the business men of the United States.

You cannot have prosperity conducted by small circles of individuals. It will take the unity of purpose and definite cooperation of every association in the country to place this nation in the commanding position it deserves by reason of its own natural resources. This country is always greater than its political leaders—it never was as great as it is now.

Democracy will stumble through this valley of reconstruction and many other problems before it reaches the height on which it will learn how to find the best men to guide it. In the meantime the common sense of the country and the great power it has always shown in correcting its leaders' mistakes will drive it forward along the path of progress. Formidable problems face it, but compared with the menace over which it has lately triumphed, they can be tackled with cheerful confidence. We have got to work and turn out the stuff and then make good use of it.

For twenty-five years, as a banker, I have watched the individual expansion of business. I have seen many individuals so interested in the success of their immediate enterprises that they felt no responsibility to industry and trade as a whole, thus clouding their vision for larger things and later resulting to their own detriment.

A dwarfing of vision from the collective to the individual viewpoint has often been destructive of America's interests. It will be equally destructive in our foreign trade. The private business man intent on making money and developing his own bank account often turns down the large opportunity which would not only have made him a factor in city or national life, but would have increased his own business had he possessed a larger vision.

Europe will not always be in the position she is in today. She will retrieve her losses much more quickly than we think, and, incidentally, be seeking to regain her own foreign markets. When that time comes foreign competition will again be keen. The one thing then which will give America her supremacy will be the same thing which has made America great ever since she entered the war—an appreciation of her international responsibilities.

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supplies what many breakfast cereals lack

—solid nourishment including the vital mineral salts so necessary to encourage normal growth in children.

A body-building food that tastes real good

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Management of Dairy Herd

By Thos. J. Robertson

THE subject of managing a dairy herd has a great bearing upon the future profits of the business. The demand for dairy products in the form of whole milk, butter, cream, cheese, condensed milk, etc., is stimulating the business of dairying. The dairy business is also proving the salvation of many Michigan farms where a too one-sided system of crop growing, without the necessary provision for plant food, has rendered the land unproductive.

Years ago, when the land was new and the fertility seemingly adequate to last for centuries, farmers did not recognize the importance of feeding live stock and returning the fertility to the land, but today the farmer is finding it necessary to help nature to sustain life in the soil if he is to succeed in doing his share toward feeding a hungry world.

The statement that two-thirds of the twenty-three million dairy cows in the United States do not make a profit for their owners leads us to sit down and do some mighty hard thinking and start out with a determination to weed out our own herds and send every inferior animal that is not able to pay for its board to the shambles. With land valued at from \$175 to \$400 per acre it requires no close figuring to convince us that we cannot afford to decorate our pastures and fill our barns with scrub cows that eat their heads off and fail to say "I thank you" for their daily food.

How are we farmers going to set about the problem of cleaning out the robber cows in our herds and put our business on a basis that will pay us the customary ten per cent profit for what we do for them? Now, we cannot go into every cow stable and sell every cow that is not a high producer and put in their places a few purebred animals, and then go to our bank and start making heavy deposits. A lot of us would be worse off with purebred dairy cows than we are with our grade herds, because we would not have the experience necessary to care for and feed them so as to bring out their best qualities. The desire to own purebred stock is praiseworthy, but unless a man is thoroughly qualified to care for them they will prove as useless, and far more expensive, than vigorous grade animals. Always bear in mind that scrub feeding and scrub care will make a scrub out of the best purebred animal in the land.

I have no purebred cattle on my farm at present, neither have I the most convenient barns and equipment like many of the wealthy farmers in the state, but we are endeavoring to do the best we can with what we have and with the feed we can raise, and to bring our land up to a higher state of fertility. With better cows and the growing of corn, oats, clover and alfalfa and feeding them out on our farm we hope to build up a better system than the one we are now practicing.

My advice is not to keep more cows than you can give proper care and sufficient feed. Do not think because your milk check, cream check, or whatever it may be, is a large one from a herd of twenty cows that you cannot make a greater profit by cutting down the herd to ten of the real good cows and giving the ten cows better care, better feed and growing better crops adapted to their requirements. You may get a

smaller check at the end of each month but you will have more money at the end of the year if you feed only the better producers. It is not always the large herd that makes the most profit.

Use better sires, raise the best heifer calves from the best cows and give them the best of all calf-foods—skim-milk. I do not know of a single instance where a dairy farmer has succeeded in raising good thrifty calves by feeding them water and prepared calf meals. These calf meals come near to being a substitute for skim-milk, but they do not give good results unless they are fed along with skim-milk, which is necessary to promote growth and build body tissues. Proper development of the calf is one of the prime essentials of developing a high-producing dairy cow. It is nothing less than a disgrace to the dairy industry to visit farms where the calves are neglected and see the poor, scrawny little creatures humped up in fence corners. Such stunted animals can never develop into high-class cows, no matter how well they may be fed and cared for after they reach maturity.

We must breed and feed so that we will have yearling heifers that weigh between five and seven hundred pounds without carrying an excess of fat by the time they are one year old. Then we will know that there is some chance of our making progress in the way of developing a profitable herd of cows. In my experience in feeding calves I have found ground oats, with the hulls removed, an excellent feed to mix with skim-milk, gradually teaching the calf to eat the dry grain and hay. A little grain is needed to keep them growing until they are a year old.

So much for the calves, now for the time when the calf becomes a cow. Is she going to be properly developed to pay you for all you have done for her? That is the big question. If she had a good sire for a father and a fairly good cow for a mother, the rest is up to you. If she has good care the chances are that she and her offspring will be worthy of a place in your herd.

The day of guesswork in feeding the dairy cow has gone. If we are to make a profit from our herds we must fix certain standards and do our best to bring each animal up to them. We must figure out well balanced rations by using what feeds we raise on the farm, with the addition of such feeds as may be needed to properly supplement them in making up the required amount of protein.

Every dairy farmer should breed and feed for the six thousand pounds of milk per year per cow at least, weigh her milk at least once a week and keep a record of her butterfat yield. The scales and Babcock test will prove of untold value in keeping you posted regarding the production records of the individuals in your herd. If some of the cows should fail to produce the six thousand pounds of milk a year take an inventory of your methods of care and feeding and if you are thoroughly convinced you have done the best you can by them, sell them to the butcher.

Grow all of the good clover and alfalfa hay that you can and enough good corn to fill a silo. If you have enough land to grow corn and oats for grain you can keep production costs down very low. We must balance our feeds so that the cows will be furnish-

(Continued on page 87)

The world's welfare will be, to a great extent, determined by the dairy farmer's efficiency in the production of dairy foods.

(Signed)

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Fighting Apple Scab

Modern Methods of Control Were Given in Mr. Hendershott's Prize-Winning Address at Recent Horticultural Meet.

APPLE scab is, today, one of the most, if not the most, extensive diseases confronting the apple grower in the state of Michigan.

While it is readily controlled by sprays, it annually causes a heavy loss, because of inattention to spraying, inefficient spraying materials, careless methods of application, or failure to spray at the right time. Crop yields in certain localities have frequently been cut from forty to sixty per cent and unsprayed fruit is usually so unsightly that it is practically worthless for marketing.

The climatic conditions of Michigan are ideal for scab infection which requires frequent rains followed by muggy weather which does not allow the trees to dry, causing a favorable condition for scab growth.

The character of the injury is perhaps known to all of you. The fungous attacks fruit, foliage and twigs, but the greatest damage is done to the fruit on which it produces the sooty-appearing spot. These spots are irregular in shape and size but as a rule when the fruit is infected at an early stage it becomes deformed as it enlarges. This naturally is a very objectionable feature.

The fungus may also attack the buds and blossoms on unsprayed trees causing a great reduction of the crop.

The fungus that attacks the apple is not the same fungus that troubles the pear but is of another species closely related. It persists over winter, not only on twigs but also on fallen leaves. Infected leaves remaining on the ground over winter permit the fungus to complete a stage in its life history. In the spring about the time the buds are breaking, "winter spores" are matured from the old scab spots on the fallen leaves. These spores are spread by the wind and if moisture conditions are favorable infections take place at once on the leaves. These new infections can produce "summer spores" in a period of two weeks, if conditions are favorable. The summer spores serve as a constant source of infection, all throughout the season and the fungus becomes established.

In spraying for scab the fundamental point to remember is that it is a preventative and not a curative measure. The fungicide must be applied before the infection takes place, for the actions of the spray is to prevent the germination of the spore or to destroy the fungous growth before it can penetrate the cuticle.

From the results of the experiments carried on by the federal government, for the purpose of determining the best fungicides to use in controlling apple scab it has been definitely proven that the best control has been effected when commercial lime and sulphur has been used. Bordeaux mixture also gave very good results and either one of these two fungicides may be depended upon. The time of application and number of sprays to put on are often questions in the mind of the grower. The first spray should be put on at the time the bud clusters are just beginning to separate and perhaps a few of the buds are showing slightly white at the tip. This is a very important spray if scab infection has been heavy in previous years; otherwise it is often omitted, depending a great deal upon weather conditions. The second spray is, of course, the "pink" spray, and the third the "calyx" spray. These are

the two most important sprays and should never be omitted if complete control is to be looked for. After the "calyx" spray, additional sprays in the spring will depend upon weather conditions. A dry spring will be very unfavorable for scab infection and further spraying will not be necessary until fall when the orchard should be covered again about a month before picking time to prevent late infection.

In conclusion let me say that in carrying out this spray schedule or any spraying practice there are three very important principles that should be kept in mind.

1. Choose a good reliable fungicide and be sure of the proper strength to use for each application.
2. Cover the tree thoroughly, carefully and do the work conscientiously.
3. Apply the spray at the proper time, and at the critical time and not at any indefinite period when you have nothing else to do.

If this spray schedule and these few suggestions would only be carried out by the commercial grower of apples alone, the millions of dollars lost annually at this time could be saved to a large part for the grower and his money and time spent in spraying would be indeed well repaid.

THE LATEST FARMER-BANKER MOVEMENT.

THE bankers for many years have been cooperating with the farmers in increasing the acreage of farm products, improving the quality of live stock, and in helping them manage agriculture on a business-like basis. A new slant to the banker-farmer movement is now at hand, brought about by the heavy depreciation in foreign exchange rates. Foreign exchange is somewhat of a mystery even to the average business man of the city, but the American farmer most likely can understand one phase of the foreign exchange problem when it clips fifteen to twenty dollars from the price of the hog he is about to market.

For several years past the enormous demands of war encouraged the farmer to raise record crops and increase live stock to the highest production. When the fighting suddenly ended a year ago, these demands for farm products, both by our own government and European nations, suddenly dwindled to comparatively small proportions. During the war period European nations were exerting every energy in providing means for carrying on the conflict, so when the war ended they had very little in the way of goods to ship to this country. On the other hand our government had extended nearly ten billions of credit to Europe and our own investors had bought back some six billion of American securities held abroad. This upsetting of the normal relations of commerce and international finance has resulted in utter demoralization of the rates on foreign exchange.

So we see that the American farmer today is keenly interested in whatever financial legislation or credit arrangements large corporations may make in order to bring foreign exchange rates nearer to normal, and thereby further promote our foreign trade. Not only the price of live stock, but other farm products as well are being adversely affected by the penalties that foreign nations are compelled to pay in order to purchase goods here.

WHEN WE ARE BUILDING.

BY E. L. VINCENT.

ON nearly every progressive farm we are sure to hear these words sooner or later: "I wish I had built my barn a little larger while I was about it. I am cramped for room now. It would not have cost me much more to have added a little to its size, and it would have been so much more convenient." And it is a fact that few of us have as much room as we need for stock, feed, and tools.

For some time after we came on the farm we found it was so with us. We often wished we had room to store feed enough to last for a number of months. We were compelled to let several chances go by to lay in a stock of grain when it could be bought at a low price, for the simple reason that we had no place to store it where it would be away from rats and mice.

The time came, however, when we saw our way clear to build a granary, and we determined to build it large enough to enable us to lay in the needed stock of feed to carry us through the winter in the years when that seemed best. That called for strong sills and a floor that would sustain a great weight. But we anticipated this fairly well, so well that we have had the house piled full to its limit of capacity without giving way.

And we have saved money several times by reason of buying our feed early. Last year we bought in June and saved ten dollars a ton or a little more. That was on gluten feed. As our purchase amounted to ten tons, we figured that we were ahead at least one hundred dollars. It is a matter of uncertainty, however, whether we will not have even now to make an addition to the stock barn. It gets running over full so fast. One thing is certain; it does not pay to leave anything out in the storm, stock, feed or tools.

PLANTS PROTECTED AGAINST DISEASE.

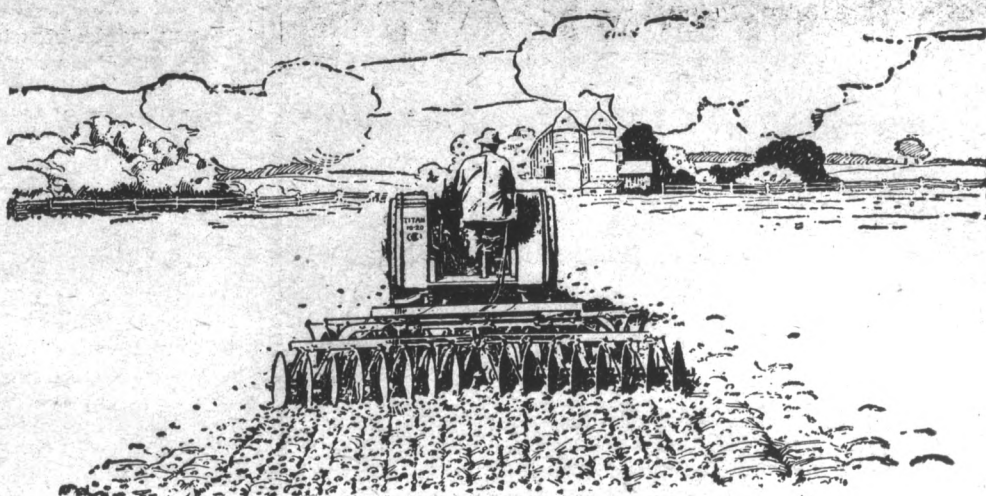
THAT experiments have shown that vegetables and grain under electric stimulus, beside showing increased yields, resist disease in a most remarkable manner, is indicated by William Fleming French in an article in the September number of the Illustrated World. "A test was made with some infested cucumbers—a hard vegetable to raise under any conditions—and in eighty-two per cent of the instances the current overcame the disease. It is now recognized," says the writer, "that electric stimulation makes a plant practically fungus proof."

Quoting from reports of an experiment to determine the effect of the use of positive (from air to earth) currents in stimulating the growth of crops, conducted by the British government in connection with the Imperial College of Science and Technology, at Lincluden Mains Farm, Dunfries, where an acre of oats was treated with electrification, Mr. French gives the following information:

"Field selected had been in pasture without manure for three years previous to experiments, having been grazed by cattle.

"One plot of one acre electrified. One control plot of one-half acre nearby not electrified. One control plot of one-half acre at considerable distance not electrified. The soil in all plots identical.

"Electrified plot of one acre produced 62.8 bushels of oats, or 2,637 pounds and 4,924 pounds of straw, as against a total on the two half-acre control lots of forty-two bushels, or 1,764 pounds of oats, and 2,619 pounds of oat straw—showing an increase of forty-nine per cent in the grain and eighty-eight per cent in the straw."



Help Mother Nature

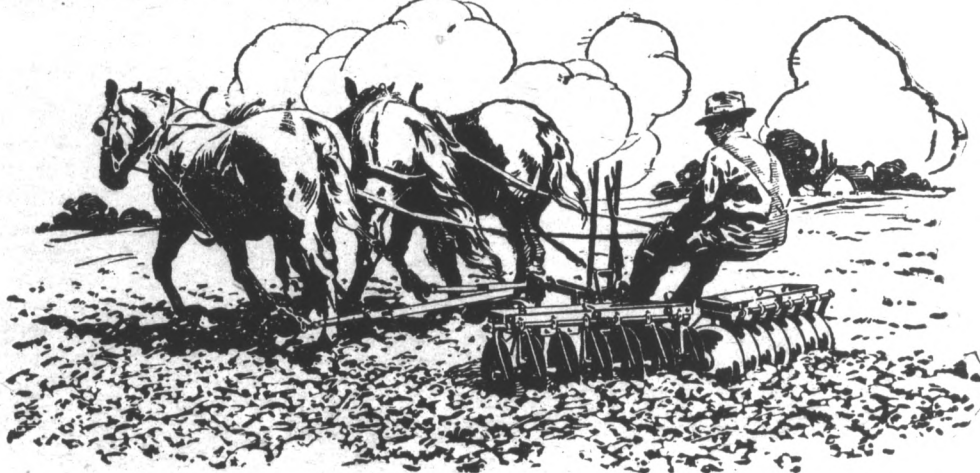
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Mineral Feeds for Hogs

If you want strong-boned hogs, hogs that will carry their flesh well, give them the feeds to make bone," an old hog breeder told me, and this should be evident to every breeder who expects to make a name for himself in the sale ring or simply as a breeder of market hogs. A good bone development is a great asset to growing hogs; the lack of it is seen in the big stock yards where hogs with a light or weak bone are crushed or mashed, legs broken or ribs caved in through shipping and handling.

Mineral matter in the feed, or available, will produce good bone growth if of the proper kind. Most of the mineral feed eaten by hogs is utilized in the bony structure or skeleton. The grain we commonly feed hogs contains such a small proportion of the needed mineral elements that additional mineral feed must be supplied by some means in order to properly nourish the bones.

Often times conditions are such that the hog picks up the minerals himself. Hogs having access to lots where ashes and limestone are dumped may supply themselves in liberal quantity of the calciums. Hogs running in the woods or woodlot or on pastures of most kinds commonly grown, supply their bodies with mineral nutrients. Recently I visited the farm of a well-recognized hog breeder who pointed with pride to this big-boned, well-developed boars and brood sows. He lays emphasis on strength of bone in his stock and keeps them in excellent breeding shape. He had a small piece of woodland and a clover field adjoining in which he said his hogs licked up most of their mineral feed rather than take so much from the self-feeder.

I have never seen a weak-boned hog where they have access to pastures. I have heard it said that that was because the pastured hog got sufficient exercise to stimulate a good bone development, which has some weight, but forage crops contain a great deal of calcium which enters into the bone structure. One breeder told me that he never thought of feeding mineral feeds to his hogs, but he was doing it just the same when he allowed them to run on pasture and fed them skim-milk and tankage.

If hogs are confined it is very essential that their bodies be supplied with mineral feeds; especially is this true of hogs kept for breeding purposes. Hogs that are finished for killing at two hundred pounds or so will need little mineral feed after put in the feedlot besides what they get in milk and tankage.

Wood ashes and cinders are eaten by hogs to satisfy a craving for mineral food. I have seen them crunch the fresh cinders as if they were corn. Corn cobs are suitable in some respects if they are charred; they can be charred by putting them in a metal drum that is closed at the top, or the pile of cobs may be covered with dirt and charred in the old-fashioned way. Charcoal can be purchased for the purpose. Charcoals are beneficial to the digestive tract. Besides these, bone flour is valuable to furnish phosphorus and lime, also. Growing pigs require salt in their ration; it is an aid to digestion.

A good mixture which can be fed to pigs confined in small lots or that may be given to pigs on range, is made up of the following ingredients: One hundred pounds of wood ashes, thirty pounds of salt, forty pounds of slaked lime, four pounds of copperas, thirty pounds of charcoal; mix well and feed three or four times a week.

A good mixture to keep before hogs in a self-feeder is made up of three parts air-slaked lime, three parts of wood ashes or charcoal, and one part of salt. If tankage is being fed there

is no need of feeding ground bone or any other phosphorus carriers, as tankage carries sufficient.

GROWERS OF CANNING FACTORY CROPS ORGANIZE.

BELIEVING that there is no sufficient reason why growers should be paid a variety of prices for canning crops, according to the section and that in general prices paid growers for canning crops are too low, a representative meeting of canning crop growers was held at the Powers Hotel in Rochester, N. Y., recently. The Monroe County Farm Bureau, New York State College of Agriculture, Cornell University, and state department of farms and markets were represented.

The skeleton of the organization was formed with the following directors: O. J. Burley, Barnard; W. G. McIntosh, Churchville; H. W. Bradstreet, Honeoye Falls; Joseph M. Zimmer, Penfield; H. A. Bacon, Adams Basin. Papers of incorporation will be filed and the organization perfected without delay.

It was argued at the meeting that the time for the individual to bargain successfully with the canning industry for the purchase of his peas, corn, tomatoes, beans and other canning crops, has passed, that only through collective bargaining can the grower hope to get fair returns for his effort and capital invested.

H. C. Thompson, of the New York State College of Agriculture, asserted that checks in Ontario county show that farmers there last season lost an average of \$16.82 an acre on the pea crop. C. R. White, of the Department of Farms and Markets, declared that collective bargaining is the hope of the growers of canning crops. Labor is very scarce, he pointed out, and city wages are such that the farmer cannot hope to compete with unless he can get a higher price for his products. He suggested that after the organization is perfected, that a five-year average of production costs be taken as a basis for fixing contract prices for canning crops. There is no disposition to play a hold-up game with canners and the public, but only to see that growers get a fair return that will encourage continuance in business.

Meetings of similar nature have been held in several of the counties of western New York and in some counties a canners' organization is already perfected. There is much interest in the general plan in Niagara, Wayne, Ontario, Livingston, Orleans, Wyoming and Monroe counties with the possibility that the growers' county organizations may federate.

OUR EXPERIENCE WITH STOVER SILAGE.

Continued from page 75).
ed a crime to let cornstalks wither and waste away in the fields, as thousands and thousands of acres do now. Stover silage is without doubt the cheapest roughage a farmer can put up and the saving of ear corn is even a greater factor, because it is held by many that ear corn put in a silo before it is mature is largely a loss.

Our experience with stover silage converted us and we will not put ear corn in our silos again. We have our own machine for filling, which has paid its cost over and over again, has done away with all hand-husking, as it husks the ears out at the same time it fills the silo. Three or four men is all the help needed as you can take all the time you want. The men can haul up two or three loads, put it in the silo, stop the machine and go back for more thereby cutting out the necessity for a large crew and exchanging or hiring a lot of extra help.

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"RIGHT the other day (Oct.) I got \$14 a hundred for a bunch that I'd fed corn and HOG-TONE, with some pasture. Now, that meant that I got a little over \$1.80 per bushel for the corn I'd fed—by selling it 'on the hoof.'

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each bushel of my corn brings me back in pork-profits when I feed it with HOG-TONE.

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on my corn if I feed it with HOG-TONE (and pasture), where I'll barely clear 93c a bu. if I feed the corn alone in a dry lot!"

There is a lot for any hog raiser to think about in these facts.

Saved Over Half the Corn

"For instance, one of my neighbors fed about 60 bushels of corn to 3 of his hogs without any change in condition and got about 550 lbs. of meat in all. I fed only about 25 bushels to only 2 of my hogs with HOG-TONE, and the butcher who killed these 2 said that he would give 275 pounds apiece (550 lbs. for the 2) for them dressed."—S. T. Hinckley, Mt. Vernon, Ill.

Figure it out for yourself, friend. 60 bushels of corn fed (without HOG-

TONE) to 3 hogs helped get 550 lbs. pork. And 25 bushels corn fed (with HOG-TONE) to just 2 hogs resulted in 550 lbs. pork.

That is the kind of results that has caused raisers and feeders of over 10,000,000 hogs all over America to use AVALON FARMS HOG-TONE. Results like these are the reasons why big feeders and breeders like G. H. Howdle of Parker, S. Dak., says: "HOG-TONE is unequaled by anything I ever used and far cheaper, too!"

Now—why not try HOG-TONE? That's all I ask. Don't send any money. Don't bind yourself to pay a penny for it. Just try it—at my risk—and just see for yourself what it will do for your hogs.

Send me the coupon (no money) and I will send you all the

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Send me the coupon below and I will send you one \$1.00 bottle of HOG-TONE for each

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This is a liquid medicine for hogs alone. Highly concentrated. Wonderfully successful in freeing hogs from all worms that infest swine. Possesses remarkably effective liquid ingredients that can not be used in any Powders, Salts or Stock Foods now on the market. Easily fed to hogs in slops, drinking water or dampened feed. Very economical, because it is given only every third day for six weeks and then only once a week.

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Let me emphasize this—send no money with coupon

I don't want you to risk a penny. That's my way of doing business. Over 50,000 farmers throughout the country think it "fine business" and have profited big by trying HOG-TONE. Furthermore, you know and I know, that my ads couldn't be in this paper as they are and have been for years, unless both my offer and HOG-TONE were on the level.

W. O. Gandy, Pres.

Avalon Farms Company
531 Orleans St. Chicago, Ill.



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"Last year I had a hog that couldn't get up on his feet at all. He didn't grow any and everyone said he would die. After using HOG-TONE for only ten days he got on his feet and began to gain rapidly." Howard Helms, Morley, Mich.

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"Received your HOG-TONE and when I did I had five shoats that would not go to the trough to eat. I mixed a dose for each one at night and poured it down them and the next time they were at the trough as soon as any of them. They all began to gain after a few doses. So HOG-TONE is what you claim it to be." Mark McGauley, Fowlerville, Mich.

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"My runt pigs have straightened out and have made a most remarkable showing while I have only used about one-fourth of the bottle." James Chubb, North Branch, Mich.

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"I can truthfully say that AVALON FARMS HOG-TONE is just as good as you claim it to be, providing the directions are followed. I had lost two pigs, but HOG-TONE saved the balance of the litter and they pulled through all O. K. and can recommend the remedy on its merits." John Kelley, Fife Lake, Mich.

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"I am well pleased with the results of using HOG-TONE. I consider it to be the best worm expeller I have ever used." Leonard K. Grueber, Frankemuth, Mich.

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to treat all my hogs for 60 days. I am to pay nothing now except transportation charges. I agree to report results to you at end of 60 days and pay for the HOG-TONE at that time if it has done all that you claim. If it does not, I will return the labels to you and you agree to cancel the charge. Also send me a FREE copy of your valuable book, "Feeding Hogs for Profit," when you send my 60 Days' Free Trial Supply of HOG-TONE, which book I am to keep whether I pay for HOG-TONE or not.

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Our Agricultural Service Bureau can help you to select the fertilizers best suited to your crops and your own farm conditions. This Bureau has made fertilizer tests in many states. It is under the personal charge of Dr. H. J. Wheeler, formerly Director of the Rhode Island Agricultural Experiment Station. Write for information. The service is free.

Ask our nearest office for our book, "How to Make Money with Fertilizers." It is full of practical fertilizer information and contains 46 illustrations.

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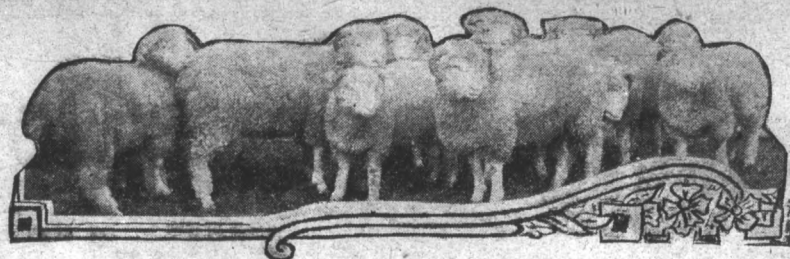
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Keeping Sheep on Shares

By Leo M. Geismar

LETTERS thus far received from Wisconsin, Illinois and Ohio indicate that considerable interest was taken in a news item which recently appeared in the Houghton Mining Gazette with reference to the forty per cent dividend declared by the Houghton County Live Stock Association which was organized less than two years ago. An unobtrusive statement, mentioning that part of the forty per cent was due to sales of sheep, was embodied in the original news item but evidently disappeared while in transit or while being trimmed out in the tonsorial department of some editor's sanctum.

Primarily the Houghton County Live Stock Association came into existence as a war measure. Food production at that time was being increased beyond anyone's expectation, the women of the country doing far more than "their bit." The wheat crop was increased by more than four hundred per cent and the mining companies led the way by giving free use of vast tracts of land which they first fenced, plowed and harrowed, thus helping to increase a potato crop which for the first time in the history of the county was not only sufficient for local needs but left a surplus of over twenty thousand bushels which were shipped out. When first approached with the suggestion that mutton and wool being important war necessities, sheep might prove a good investment when furnished to farmers who were financially unable to secure them, one of the leading business men answered, "Never mind the investment, put me down for a couple of hundred dollars and if I never see it again it will have been worth far more than that if it helped to provide extra meals and blankets for the boys over there." This spirit prevailed to a large extent until after the Live Stock Association was organized and when the number of needy farmers proved to be greater than anticipated, the First National Bank of Hancock offered to supply the necessary funds to all farmers who were willing to buy the sheep on time.

Sheep were therefore supplied to all farmers who could be induced to keep some and among these were a few who offered to pay cash, while quite a number accepted the offer to give notes payable in from six to twenty-four months. Those who preferred taking the sheep on shares from the Live Stock Association entered into a contract which has unique features from an economical standpoint and is calculated to provide a stimulant for better cooperation and for the general improvement of live stock.

All of the sheep on shares were placed with farmers who formerly worked in the mines and after saving up a few hundred dollars bought some cut-over land which they are gradually developing into farms. Originally they came from northern Europe where they had handled a few sheep, using methods generally unknown in American sheep husbandry, such as shearing sheep two or three times a year, breeding without regard to the time when lambs would be dropped, cutting brush during the fore part of the summer and storing it for winter feed and carding

and spinning the wool and knitting it into various garments. No attempt was made to "educate" these farmers in American methods. It was deemed more advisable to remember that education is the summed up experience of great numbers and that even he who knows it all may still be young enough to learn from others and often from those he least expects it. Nor was there any provision inserted in the contracts to guard against the dog nuisance, even though it is well known that a poor man keeps one dog, a very poor man keeps two dogs and a d— poor man keeps three dogs. Care was taken, however, to place the sheep only with those who would agree to fence off with woven wire five to ten acres of cut-over land for sheep pasture and as most of them were unable to pay cash for the fencing, arrangements were made with one of the local hardware firms to sell it to them on time. The object in placing these sheep on cut-over land pastures of partly developed farms was to enable the farmers to find out that sheep will do most of the land clearing and pay for doing the work.

The best high-grade yearling ewes obtainable were secured and placed on these farms early in the spring, while during late fall purebred rams of the same breed were furnished at the rate of one for every fifteen to twenty ewes, the several groups of farmers agreeing among themselves as to who would take care of the rams, the others paying the custodians a fee sufficient to pay for the feed and care. The contract specifies that the rams are to be exchanged each year among the several groups of farmers in order to prevent inbreeding, and as the contract runs for five years, one of its clauses provides for the castrating of all ram lambs during the first four years, thus enabling the farmers to raise practically purebred rams during the fifth year. These clauses should enable the farmers to appreciate that cooperation is the keystone of successful farming; that inbreeding is to be avoided, that one breed within a community is more profitable than several, and that purebred stock held cooperatively is cheaper than scrubs kept individually.

The contract provides that sheep not properly cared for may be taken away without giving previous notice and the farmer held for damages equal to the difference between the original value and the appraised value when taken away. Being a case of learning as much as one of educating, this was considered more advisable than an attempt to condemn old-world practices in shearing oftener than once a year, breeding at any time or using brush as winter feed. Whether these practices are to be condemned is still an open question, judging from results obtained up to the present time.

The sheep have passed through one winter and came out in fair to excellent condition, while the ewes had their first lambs last spring. Sheep sheared twice a year yielded an average of ten pounds per fleece, while those sheared once yielded an average of eight and a half pounds. As all of the wool was used locally, the actual

(Continued on page 107).

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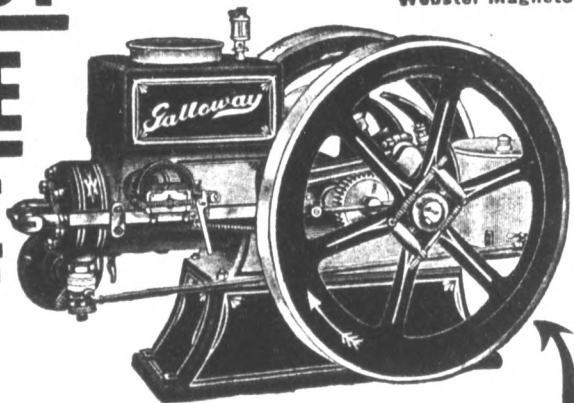
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WM. GALLOWAY, President

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185 Galloway Station, WATERLOO, IOWA

Our Service Department

SELLER'S LIABILITY FOR TAXES.

I sold my farm with crops, stock, and implements, possession to be given next April and in consideration of taking care of the stock, I am to have the income to the extent of eggs and dairy products. Must I pay the taxes this year? Am I entitled to the calves born between now and spring, and meat for home consumption.

SUBSCRIBER.

In the absence of agreement as to the payment of taxes the seller warranting title is liable for the taxes if the sale is made after the tax roll is made in June. Land contracts usually take care of this by providing that the purchaser agrees to pay the tax. The right to the calves and meat depends on the terms of the contract. The sale of the cows would include the calves unborn in the absence of agreement to the contrary.

J. R. R.

SALE SUBJECT TO LAND CONTRACT.

I bought a farm on land contract, paying \$500 down and giving notes for the balance. The person of whom I bought writes me he has an opportunity to sell and offering the first chance to buy. Can he give another deed when he has a contract to give a warranty deed to me? Can he sell the notes?

The person who gave the contract cannot sell free from the contract if the buyer is in possession or if his contract is on record, but can sell subject to the contract rights and can sell the notes.

J. R. R.

MAINTAINING A LAWN.

I would like your advice as to making a new lawn. I have had the yard graded one year, filled in with a dark rich loam and well worked last summer. Would it be advisable to use any fertilizer? If so, what kind? Do you think chicken manure well worked into the soil would help. Yard is well tiled. Have about nine thousand square feet. How much lawn grass seed will it take?

Isabella Co.

E. G. D.

It is quite probable that your soil for your new lawn would be much improved by an application of fertilizer. If either stable or chicken manure is used, it would be well to have it well decomposed to prevent the introduction of weeds into your new lawn and to make this fertilizer more quickly available to young plants. Poultry manure contains a higher percentage of nitrogen than stable manure, hence, if not applied too heavily, is a very good fertilizer to use. If the amount of poultry manure available is quite limited, it may be used as a top-dressing over the lawn after the grass has started and has become more or less established. We recommend the use of about fifty pounds of lawn seed to the acre, using one-fourth English rye grass, one-fourth Red Top, and one-half Kentucky Bluegrass.

C. P. H.

NOTICE TO QUIT.

How long a notice does a land-owner have to give a renter to leave his farm after he does not want him?

SUBSCRIBER.

On a lease for a definite period no notice to quit is necessary if you desire the renter to leave at the time the lease expires. He is bound to leave at his peril. By the terms of our statute three months' notice given to the other party to quit is sufficient to terminate a tenancy at will, and by the same statute a tenancy from year to year may be terminated by a notice to quit at the end of a year from the time the notice is given. Also without statute a tenancy from year to year may be

terminated at the end of any year by six months' notice to quit. If possible the better way is to make an agreement with the tenant as to when he is to quit, and thus save any question as to sufficiency of notice. If things are not moving smoothly it is usually cheapest to buy the tenant off at once.

J. R. R.

CROPS FOR MUCK LAND.

I have bought a farm in Michigan which has about twenty acres of muck or black sand, which did have a ditch through it but is rather filled up now and would take about ten days in the spring to clean it out. After it is cleaned out, would you advise sowing some of the muck to onions? Will corn thrive on muck? Also, will soy beans grow in Livingston county?

J. L. S.

It is assumed that the muck in question is well drained. If this muck has been put to a cultivated crop the year before and is well decomposed and has been plowed this fall, then it is possible to sow the muck to onions next spring. It is a mistake to attempt onions on a poorly prepared ground or ground which is likely to be weedy. It is only on muck which has had a cultivated crop which has been kept very clean, that spring plowing will do.

The question asked, "Will corn thrive on muck?" may be answered in this state: Yes—if no late spring frosts interfere and if the variety is properly chosen. Corn for grain on muck is not a safe proposition, speaking for an average of years. If the corn is grown for the silo and soy beans interplanted to make up for the lack of ears, the corn is a relatively safe proposition.

Soy beans will grow in Livingston county on muck. In fact, it has been grown as far north as Traverse county with splendid success. The soy bean is one of the best forage crops for muck. It is interesting to note that some growers have had as high as five tons of soy bean hay to the acre. The matter of varieties has not been sufficiently tested to know what to recommend. The Ito San has done well. It grows much larger than it does on high land and in favorable seasons will go to seed if it is planted thickly.

The growth of the soy bean on muck is not similar to its growth on high land. There are several things which have been observed during the last year which may be of interest. In the first place, soy beans will grow on muck where they will not make any nodules and still make a very large growth. Secondly, the soy bean will stand a very severe drought and still make a good growth. Third, in Traverse county it was noted, that even where corn actually failed this year the soy bean grew well enough so that it could be harvested for hay. Merle Young, of Paw Paw, who grew soy beans this year, said that he had a growth of vines before frost which probably would have gone five tons to the acre. If the soy beans are planted thickly, as they should be on muck, they will have a tendency to flower early and fill. Therefore, I would say about three quarters of a bushel to the acre is not too much planted in rows. One thorough cultivation to allow the beans to get ahead of the weeds is all that is necessary, provided thorough preparation was given to the soil before this. Fourth, the soy bean is valuable because it grows quickly in between the frost limits on muck in southern Michigan. That is, if soy beans are planted June 20 they will make a satisfactory growth before September 1 in ordinary seasons on muck.

ERRA LEVIN.

How About It?

Are you going to install a modern water supply system this year, or will you be obliged to pump and lug water by hand for another year?

THERE'S a lot of convenience to be had from a Hoosier Water Supply System. It benefits every member of the household, eliminates drudgery, and provides a worth-while comfort.

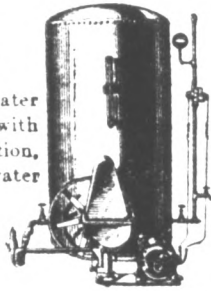
Any form of power may be used for operating a Hoosier System—gasoline engine, electric motor, or windmill. We supply motors which will operate from farm lighting plants. Hoosier Systems are easily installed and easily operated.

HOOSIER
Water Service

The interiors of Hoosier water service tanks are treated with a rust resisting preparation, which prevents rust and water contamination.

Send today for Bulletin P and become acquainted with Hoosier Systems.

FLINT & WALLING MFG. CO.
Dept. C Kendallville, Indiana



Farm Hand Wanted on a general stock farm—no dairying. Cow, etc. furnished. Good living conditions. Apply to O. F. Foster, Pavilion, Michigan.

AS we have gone out of the bean business we offer for sale one power Clipper bean cleaner and one Gibbs picker at a very low price. These machines are in good running order.
HOMER FARMERS ELEVATOR CO. Homer, Mich.

Logs and Lumber Wanted. Poplar and other kinds in car lots only.
HELENA WOODWORKING CO., HELENA, OHIO

CLOVER—free from Buckthorn. Timothy and Alsike mixed. Soy Beans, all Field Seeds. Write for free samples and the freight-paid prices on our absolute Money Back guarantee. **Farmers Commercial Seed Company** 140 WEST VAN BUREN STREET CHICAGO, ILL.



There's a Satisfied User Near You

Do you realize what this means?

No matter where you live—in Maine or California—Oregon or Florida—Somewhere among your neighbors and friends you will find Delco-Light.

And where you find Delco-Light you invariably find "A Satisfied User."

And these satisfied users—over 80,000 of them altogether, are the concrete evidence of Delco-Light leadership in the Farm light and power field.

Look up a Delco-Light user in your neighborhood—

Ask him what Delco-Light is doing for him—

Note the smile of satisfaction that comes over his face as he tells you of the never-failing, day-after-day service that Delco-Light is giving him—

Of the abundant electric light that it is furnishing for his house and barn—

Of the electric power that it is providing to pump the water, operate the washing machine, the churn, the cream separator and the milking machine—the vacuum cleaner, electric iron and other similar conveniences—

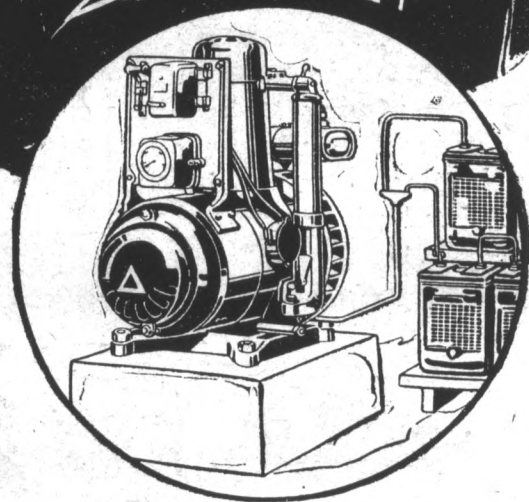
Of the contentment and happiness that it has brought into his home on account of the improved living conditions.

And of the actual saving in time and labor that make it the best paying investment he has on the farm—It is little wonder that Delco-Light users are Satisfied Users.

DELCO-LIGHT COMPANY, DAYTON, OHIO

M. L. Lasley, 23 Elizabeth St., East, Detroit, Mich.

Pringle-Matthews Co., 18 Fulton St. W., Grand Rapids, Mich.



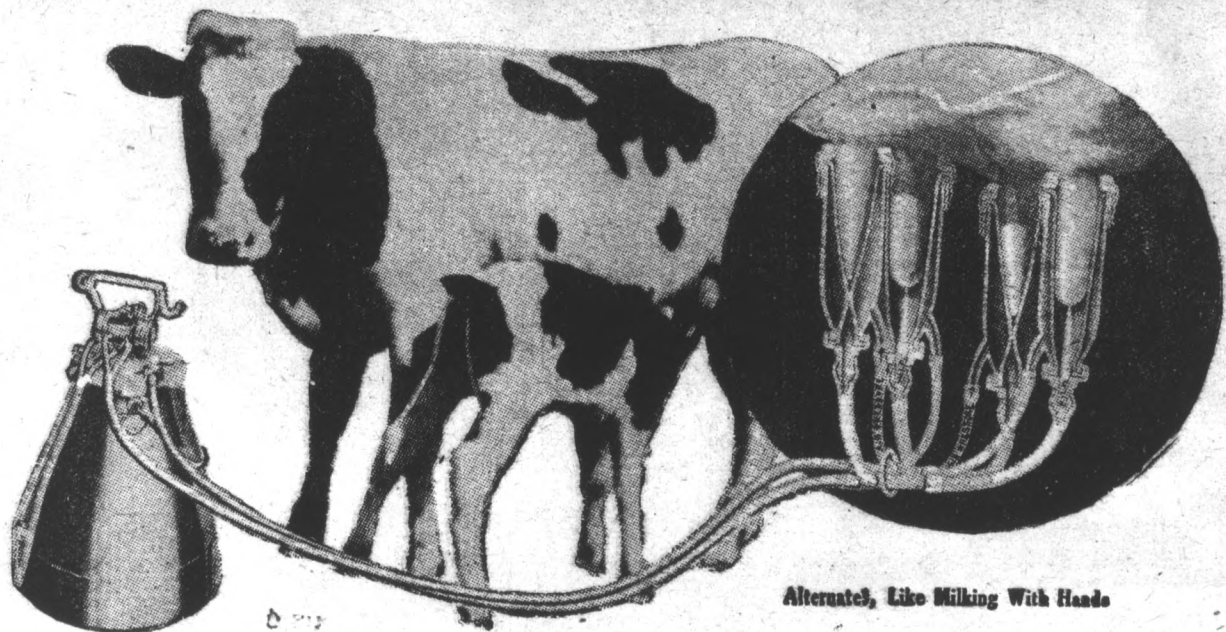
A complete electric light and power plant for farms and country homes, self-cranking—air cooled—ball bearings—no belts—only one place to oil—thick plates—long-lived battery.

**Valve-in-Head Motor
—Runs on Kerosene**

DELCO-LIGHT

There's a Satisfied User near you

Universal natural milker



Calf-Like In Its Action

THE Universal Natural Milker is likened to nature's own method.

It is calf-like in its action and effect. While gently milking two of the four teats it softly massages the other two in a manner as gentle as a calf's tongue.

It alternates like milking with the hands, its uniform pulsations serving to produce a more steady flow than is possible even with expert hand-milking.

Simple, easy to attach and to operate, readily cleansed, it has been found to be more economical and, therefore, more profitable than the older method.

The owner of six or of 600 cows will find the Universal a long-lived, paying investment. Its rubber-lined teat cup adjusts itself, like the hand, to the teats of all cows.

Write for a catalog or visit our dealer, today.

Dear Sirs:

You have in my judgment the best machine on the market.

G. P. Ashbocker,
Sunnyside Stock Farms,
Evans Mills, New York

Universal Milking Machine Company, 1306 Mound Street, Columbus, Ohio



MILK CANNERS IN MERGER.

ACCORDING to reports from the west, the Carnation Milk Products Co., of Seattle, Wash., and the Helvetia Milk Condensing Co., of Highland, Illinois, have been merged, creating the largest evaporated milk manufacturing concern in America. It is stated that the name for the new corporation has not yet been decided upon, it is planned to incorporate for \$30,000,000, and the company will thus be in a position to handle the largest volume of domestic trade in evaporated milk.

The new concern will control and operate forty-five large factories, located in Pennsylvania, Maryland, Ohio, Illinois, Wisconsin, Kansas, Oregon, Washington, and in Canada. Tentative officers proposed for the new company are as follows: President, L. R. Hardenberg, now vice-president of the Carnation Company; vice-president, W. T. Nardin, now vice-president of the Helvetia Company.

DAIRY SNAPSHOTS.

The mistress of a dairy farm shipped a pretty calf from the northeastern part of Pennsylvania to Louisiana the other day. To the frame of the crate she fastened a note running as follows: "I am Nora of Darmerie Farms. I am going to John Doe, in Louisiana. Feed me hay and give me a measure of grain twice a day and do not let me get thirsty. Thank you for your kindness." On top of the crate was a sack of hay and another little bag had grain in it. As I saw the crate on the platform of the station part way on its journey, I wondered how many of the trainmen would ever think or consider it worth while to comply with the kindly note of this good woman. All of them, I hope.

E. L. V.

NEW YORK FEDERATION OF FARM BUREAU MEETS.

AT the annual meeting of the New York State Federation of Farm Bureaus, held at Syracuse recently, two resolutions of much importance were unanimously adopted. One places the farmers of the state on record as opposed to Samuel Gompers and his program for organized labor. The other urged the prompt return of the railroads to their owners under such conditions as will insure reasonable returns on the value of the property and reasonable rates for transportation. Other resolutions of importance were, that congress tax the importation of beans to protect American growers, and that the state legislature give proper consideration of needed improvements at the state fair grounds, either by bond issue or appropriation.

CORN BORER SPREADING.

EXTERMINATION of the European corn borer is "probably out of the question," Secretary Houston informed congress recently in asking an additional appropriation of half a million dollars for immediate use in an effort to prevent the borer's spread. Wide areas in New England and New York have been found to be infected, and similar discoveries elsewhere are likely from surveys planned for next spring.

You saw wood

The coal situation demands wood fuel. The labor situation demands sawing by machine. Saw with **Appleton Wood Saws**

Solid construction means safety and long service. Frames so strong and rigid, they don't get rickety or out of line under hardest strains. Self adjusting boxes are non-rigid, dust proof and non-heating.

Free booklet shows 10 styles and sizes—tilting or sliding table types, drag and circular log saw, complete mounted saw rigs, etc.

Appleton Mfg. Co.
620 Fargo St., Batavia, Ill.
Largest Manufacturers of High Quality Saw Frames.

SCOTT'S TIMOTHY

This is one of the few field seeds that is reasonable in price this year. Ask for samples and our Seed Book telling "How to Know Good Seed". All other varieties of superior quality.

O. M. Scott & Sons Co., 274 Main St., Marysville, O.

BUY FENCE POSTS direct from factory. Prices delivered your station. M. M. Case of Michigan Farmer.

Married man wanted by year on farm. If you are a good one and wish to better yourself write giving particulars about self and family wages desired, and references. Kope-Kou Farms, Coldwater, Mich.

Maloney's
FRUIT and ORNAMENTAL TREES

Maloney Fruit and Ornamental Trees, Shrubs, Vines, Roses, etc., are guaranteed true to name and free from disease by the largest growers in New York State. We recognize our responsibility to the fruit growers and we have this year issued a novel wholesale Descriptive Catalog, that tells the things you ought to know about our business. Write for your copy today—it's free. No order is too big or none too small for us to handle personally. There is going to be a shortage of fruit trees this year, because most of the fruit tree seedlings come from France, and owing to the war the number sent to the United States for three or four years was way below the usual shipment. Be sure and get your order in early so as not to be disappointed.

BEARING AGE COLLECTION
3 Bearing Age 8-10 ft. trees for \$3.48: 1 Bartlett Pear, 1 Montmorency Sour Cherry, 1 York State Prune
We prepay transportation charges on all orders for over \$7.50

MALONEY BROS. & WELLS CO., 73 East St., DANVILLE, N. Y.
We're responsible; look up our rating. Dansville's Pioneer Wholesale Nurseries

I Want to Send You My New GATE BOOK

of "Can't-Sag" Gates

FREE!

Just send me your name and address. I will mail you my big new Gate Book, free—postpaid. Quotes prices over than it costs you to build homemade all wood gates. Can't-Sag Gates are the only farm gates that are

GOOD Enough to Use ANYWHERE
CHEAP Enough to Use EVERYWHERE

Always hang straight and true. Never sag, drag or warp or twist out of shape. No nails used. No wood joints. Every board double bolted between eight angle steel uprights. Self-locking hinges—won't injure stock—easily repaired—outlast several all wood, stock, wire or gas pipe gates. Cost less than any other gates you can build or buy. Nearly a million now in use. Write for free Catalog today.

ALVIN V. ROWE, President
ROWE MFG. CO. 3303 Adams St., Galesburg, Ill.

Please Mention The Michigan Farmer When You Write Advertisers



CHICAGO HOG MARKET.

JUST at the time when most needed as a stimulus to hog prices the eastern packers started in to make liberal purchases in the Chicago market, and despite heavy receipts, prices shot upward at a lively pace. Receipts on Monday last week aggregating 60,200 hogs failed to bring about any signs of weakness but, on the contrary, prices ruled as much as twenty-five cents per hundred pounds higher, while on the following day there were further advances of fifteen to thirty cents, notwithstanding a run of approximately 60,000 hogs. The general average prices were the highest in four weeks and \$1.80 above early December prices. On Monday shippers purchased 13,723 hogs, and they shipped out about 10,000 on Tuesday. Hogs coming to market are averaging extremely well in quality, and the bulk of the sales take place within a range of twenty-five to thirty-five cents per hundred pounds, sales being made of heavy and light butchers and light bacon grades weighing from 160 to 190 pounds at about the same figures. Hogs continue to sell at much below the highest prices paid in 1919, as well as much lower than one and two years ago, while far higher than in other years. A year ago hogs were selling at a range of \$16.50 to \$17.90, two years ago at \$15.50 to \$16.80, three years ago at \$9.35 to \$10.60 and fifteen years ago at \$4.35 to \$5.05. Not many pigs are marketed, there being less sickness among them than usual, but a farmer of western Iowa reports a loss of considerably more than one hundred hogs from the cholera.—F.

ABANDONS SEVEN-DAY TEST.

MR. E. C. SCHROEDER, the Minnesota Holstein-Friesian breeder, who has made pages of interesting Holstein history with the Bess Burkes and the Ormsbys, announces that after a most careful study of the testing business he has decided to discontinue all seven-day test work and confine his efforts to the 305 and 365 day divisions. It is his aim to run his entire herd on the longer test, and only those not qualifying in the division will be run the full year. Mr. Schroeder is one of the most prominent men connected with the Holstein-Friesian breed and it is quite likely that his decision will have a tendency to influence other breeders to devote more attention to the longer test records.

MANAGEMENT OF DAIRY HERD.

(Continued from page 77).
ed the required amount of digestible nutrients to supply her own body needs and the extra feed required to maintain a profitable flow of milk. With a properly balanced grain mixture it will seldom pay to feed more than one pound of grain for every three or four pounds of milk the cow produces. The following rules in the care and management of the herd will prove of value to many farmers who are new in the business:

1. Keep as many cows as you can properly feed and care for.
2. Use purebred sires and raise only the best heifer calves.
3. Use the scales, Babcock tester and pencil.
4. Grow as much of your feed as possible.
5. Provide a comfortable and sanitary stable.
6. Feed all the good roughage they will eat up clean.
7. Have faith in your cows and in the dairy business.



Make Your Milkers Pay

Good Health—Good Appetite—and Good Digestion are the essentials of a good milker.

Dr. Hess Stock Tonic promotes health—makes cows hungry. Remember, it takes a healthy, hungry cow to convert a big mess into pails of milk day after day.

Dr. Hess Stock Tonic produces appetite, aids digestion, conditions a cow to stand the stuffing, cramming process necessary for heavy milking. Dr. Hess Stock Tonic contains the salts of Iron that supply rich red blood so necessary to cows in milk. It contains Laxatives and Diuretics that assist the kidneys and bowels to throw off and carry off the poisonous waste materials that so often log up the system during heavy feeding.

Dr. Hess Stock Tonic

Ever notice a cow slack up on her milk—not quite so keen for her mess—apparently not sick? Her system is clogged. This never occurs where Dr. Hess Stock Tonic is fed. Start right—by conditioning your cows for calving with a course of Dr. Hess Stock Tonic before freshening.

There is not a day during lactation that Dr. Hess Stock Tonic cannot be fed to cows at a profit. This is especially true where heavy feeding is the practice. Dr. Hess Stock Tonic is good alike for cattle, horses, hogs and sheep. It makes the ailing animals healthy, the whole herd thrifty. It expels worms.

IMPORTANT: Always buy Dr. Hess Stock Tonic according to the size of your herd—five pounds for each cow to start with. Get it from the responsible dealer in your town. Feed as directed, and note the results in the milk pail.

25-lb. Pail, \$2.25; 100-lb. Drum, \$7.50

Except in the far West, South and Canada.

Smaller packages in proportion.

DR. HESS & CLARK, Ashland, Ohio

Dr. Hess Dip and Disinfectant
Keeps the Dairy and Stables Healthful and Clean Smelling

Try This Stump Puller 30 Days FREE

Don't Send Any Money! Prove all my claims on your own stumps—at my risk. See how **ONE MAN ALONE** with a Kirstin pulls big, little, green, rotten, low cut, tap rooted stumps—also trees, hedges or brush. Does it quick!—Cheap!—Easy! If satisfied, keep the puller. If not, return at my expense. No risk to you. Six mos. to pay.

FREE BOOK Book tells why the Kirstin Way reduces land clearing cost to the lowest figure ever known! Filled with valuable land clearing facts. Also get Special Agent's Proposition. Write for it today.

Kirstin ONE MAN STUMP PULLER Weighs less—costs less. Has greater power, speed, strength. Lasts longer. Guaranteed against breakage. A few pounds on handle exerts tons on stump. Single, double, triple power. Wonderful success! The "FREE" Book shows One Man and Horse Power Models. Also Special Agent's Proposition. Write today.

WESTERN BRANCH—199 East Morrison Street, Portland, Ore. **A. J. Kirstin Co., 306 Lud St., Escanaba, Mich.**

MAPLE SYRUP MAKERS
Champion
Evaporator

saves labor, makes finest quality syrup and sugar, and gets better returns from your sugar bush. Write for catalog and terms today. Order Sugar Makers' Supplies Now. Freight moves slowly.

CHAMPION EVAPORATOR CO., Hudson, O.

Fistula & Poll Evil

Approximately 10,000 cases are successfully treated each year with **Fleming's Fistoform**. No experience necessary; easy and simple; just a little attention every 5th day. Price \$2.50 a bottle (war tax paid)—money refunded if it fails. Send for free copy of **FLEMING'S VEST-POCKET VETERINARY ADVISER**. Valuable for its information upon diseases of horses and cattle. 197 pages, 67 illustrations. Write today.

Fleming Bros., Chemists 282 Union Stock Yards, Chicago, Ill.

EVERGREENS For Windbreak Hedge and Lawn

All hardy, vigorous and well rooted. We ship everywhere. Write for Free Evergreen book. Est. 1866. World's Largest Growers.

The D. Hill Nursery Co., Inc., Box 2301, Dundee, Ill.

Mention The Michigan Farmer When Writing Advertisers

Empire FEEDING MOLASSES

TRADE MARK REGISTERED

Richest of all concentrated feeds. Now acknowledged a NECESSARY feed on every farm. Write today for lowest price & No-Risk Trial Offer.

CHICAGO MOLASSES COMPANY 1131 East 77th St., Chicago, Ill.

SPRING plowing in damp ground presents no difficulties to the Bates Steel Mule.

Its dependable Crawler traction makes the Bates Steel Mule independent of poor footing conditions.

This feature brings quick appreciation from the farmer who knows.

Yet, its reliability for Spring work is only one of the reasons why each season sees a greater demand for the Bates Steel Mule by experienced tractor farmers.

The front wheels make easy steering and comfortable riding.

Descriptive catalog sent upon request. Ask today.

GEO. A. EATON
Lansing, Mich.

Bates Machine & Tractor Co.

Established 1883

Joliet, Ill.

Bates Steel Mule

-The most efficient tractor in America-

\$1 Buys \$2 Seed Collection

Think of it—30 packets of Olds' Wisconsin Standards, seeds of highest germinating quality, worth \$2.00, for \$1.00.

Here's the List—One Packet Each

Stringless Gr. Pot Beans	10	Ex. Lge. Red Weth. Onion	10
Pencil Pod Wax Beans	10	Scallion Pot. Wh. Globe Onion	10
Imm. Blood Turnip Beet	10	Fine Double Curled Parsley	10
Crosby's Egyptian Beet	10	Imp. Greenway Parsnip	10
Ex. Jer. Wakefield Cabbage	10	Best Extra Early Peas	10
Onionheart Carrot	10	English Wonder Peas	10
Golden Bantam Sweet Corn	10	Ruby King Pepper	10
Es. Evergreen Sweet Corn	10	Quaker Pie Pumpkin	10
Early Fortune Cucumber	10	Imp. Fr. Breakfast Radish	10
Sei. White Spine Cucumber	10	Crimson Giant Radish	10
Earliest Feeding Lettuce	10	White Icicle Radish	10
Early Prize Head Lettuce	10	Bloodsail Spinach	10
Select Orange Muskmelon	10	True Hubbard Squash	10
Tom Watson Watermelon	10	Speckle Earliest Tomato	10
Yel. Globe Danvers Onion	10	Pur. Top Wh. Globe Turnip	10

Entire Collection Only \$1.00

Olds' Catalog Tells the Truth

Send for a copy. Lists all kinds of field and garden seeds. Free! brings it.

L. L. OLDS SEED CO.
Drawer 536
Madison, Wis.



BROWN'S BARGAIN FENCE BOOK

WRITE FOR THAT BOOK TODAY

FREE GET MY

LOW PRICES BEFORE YOU BUY

Don't neglect to send for my New Bargain Fence and Gate Book and see for yourself how you can SAVE BIG MONEY buying

DIRECT FROM FACTORY

Don't buy any fence until you get this book and compare my prices with those of other dealers. I will save you 25% to 40%. Over 150 styles. Also Gates, Barb Wire. Write for Bargain Book today. (R)

THE BROWN FENCE & WIRE CO., Dept. 249 Cleveland, O.

LEARN AUCTIONEERING

at World's Original and Greatest School and become independent with no capital invested. Every branch of the business taught. Write today for free catalog. **JONES NAT'L SCHOOL OF AUCTIONEERING**, 22 N. Sacramento Blvd., Chicago, Ill. Carey M. Jones, Pres.

Warranted to Give Satisfaction

Gombault's Caustic Balsam



Has Imitators But No Competitors

A Safe, Speedy, Positive Remedy for

Cuts, Sprains, Swells, Capped Hocks, Strained Tendons, Founder, Wind Puffs and Lameness from Spavin, Ringbone and other bony tumors. Cures skin diseases or Parasites, Thrush, Diptheria. Removes Bunches from Horses or Cattle.

As a Human Liniment and Antiseptic for external use it is invaluable.

Every bottle of Caustic Balsam sold is warranted to give satisfaction. Price \$1.75 per bottle. Sold by druggists, or sent by parcel post, with full directions for its use. Send for descriptive circulars, testimonials, etc. Address **The Lawrence-Williams Co., Cleveland, O.**

Lower Feed Cost!

Stock keep healthier and fatten faster if they drink lots of water. Save feed by giving them plenty of warm water in winter time.

Western Tank Heater will provide warm water for your stock in coldest weather. Simplest, most economical tank heater for wood, metal or concrete tanks.

No Waste Heat—Burns like a base-burner—no heat loss. Burns coal, wood or waste material—burns quicker on less fuel and with less trouble. Sold on absolute money-back guarantee.

FREE Send for illustrated folder and special low price offer. At the Western Mfg. Co., 640 Depot St., Washington, D.C.

WHAT ARE FARMERS' NEEDS?

WE know very well what labor wants and have a reasonably clear idea what capital wants, but there are comparatively few people except actual farmers who have listed the things the farmers want or ought to have. Gifford Pinchot, a member of the original Roosevelt Country Life Commission, and one who has been in constant contact with farm life and farm leaders, has attempted to give what he considers an incomplete list in the following general statement:

Effective recognition that the farmers make up a full third of our people, that in feeding all the people they perform the first and most necessary of all services, and that their right to be heard in the consideration of the great problems which face the nation is second to none.

Representation of farmers in proportion to their numbers and their services in the government of the nation, and especially on general boards and commissions (in whose membership various interests are recognized) whether directly concerned with agriculture or not.

Effective recognition of the fact that the decline of agriculture constitutes the central danger to civilization, and that the demand for cheap food at the expense of a decent standard of living on the farm, if successful, always has and always will lead to agricultural decline, food scarcity, and national decay.

Effective recognition of the fact that agriculture is declining in America, and that decline in agricultural production compared with population, in the number of our people who live and work on farms, and in the fertility of our soils, must be stopped.

Effective recognition of the fact that the farmer is not a profiteer; that less than half of the consumer's dollar gets back to the farmer, and that since crops are not produced throughout the year, the storage of food supplies is absolutely necessary if the people are to be fed; but that hoarding must be severely punished and vigorously suppressed.

The full, free, and unquestioned right to organize and to bargain collectively, through cooperative purchase and sale, (and to that end the passage of the Capper-Hersman bill, thus providing cheaper food for consumers, better prices for farmers, and better living for both).

For every sound and normal man a fair and workable chance to earn a good living and get what he earns; a fair and workable chance for a decent, useful, and desirable life; a fair and workable chance to marry and support a family, and to give his children a reasonable start.

The complete and immediate restoration of the rights of free speech, free press, and free assembly guaranteed by the constitution of the United States.

Extension of the benefits of modern civilization to the open country, if necessary in part at the common expense.

Universal free education for farm children universally accessible and specifically directed toward life on the farm.

Substantial equality of reward for equal services, equal toil, and equal skill with men and women engaged in other occupations.

Substantial equality for farm people with those of other callings in social, political, and educational opportunities.

A secretary of agriculture in sympathy with farmers, and satisfactory to the great farm organizations of America.

Closer studies on a broader scale of farm production costs at home and abroad, and uncensored publication of the facts.

Calculation of the cost of farm production on the basis of a standard (Continued on page 109).

SPARK STRONGEST LAST LONGEST

Ask your dealer
Under every condition, regardless of weather and no matter how rough the going

RED SEAL

Dry Batteries

will keep your tractor running at par. Thousands of tractor owners will use no other! Best also for farm engines, autos, door bells, hand lanterns, telephones, etc. Study the label on genuine Red Seal Dry Batteries.

Get Our FREE BOOK!

Send for our FREE Book. Tells you how to get the most power out of a gas engine.

MANHATTAN ELECTRICAL

SUPPLY CO., Inc.

118 S. Wells Street, Chicago

New York St. Louis San Francisco

Factories: Jersey City St. Louis

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Guaranteed for all

Open Circuit Work

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DIPHTHERETIC ROUP.

I am writing for information about my chickens. They have a growth in their eyes that resembles pus as nearly as I can explain it, and enlarges so it covers all the eye so they are perfectly blind in a few weeks. We have lost so many this fall, we would be thankful for a remedy or preventive. I think it is contagious, as only a few have had it at a time. What is the cause of others having swelled jaws and going blind from the first? Also, some are affected with throat trouble, they sneeze and open their mouths when they breathe, as if they had a bad cold.

Livingston Co.

SUBSCRIBER.

The symptoms described indicate roup. It is best to kill and burn all of the sick birds as this disease is very contagious and will spread rapidly through a flock. The healthy birds remaining can usually be saved by promptly adopting preventive measures. It is caused frequently by damp and draughty hen houses or poor feeding methods which cause a devitalized condition of the birds. Spray the house thoroughly with a good commercial disinfectant. If the house is tight and without ventilation it will pay to make it into a house of the open-front type.

Roup is so serious that a flock is of little value as breeding stock when a large portion of the birds have had to be killed because of the disease. It will pay best to obtain new foundation stock or hatching eggs in the spring and then use the best kind of poultry management to keep the birds vigorous and free from colds and all the injurious exposure which sometimes results in roup.

BLACK-LEGS ON BARRED ROCKS.

Last spring we bought thoroughbred Barred Rock eggs. All the pullets and some of the cockerels have black legs. What causes this? Is it a sign that they are not thoroughbred?

Kent Co.

Mrs. E. O.

According to the Standard the legs and toes of a purebred Barred Plymouth Rock should be yellow. It is a disqualification if they are any other color. The writer has ordered hatching eggs from several different Barred Rock breeders of both bred-to-lay and exhibition stock. The stock from the exhibition eggs had yellow legs and toes which is according to the standard. Some of the stock from the bred-to-lay strain had very dark legs and toes. However, we believe that the birds were purebred in spite of the color of the legs. The birds with rich yellow legs were simply bred from stock with which every effort had been made to breed prize winners. The dark-legged birds came from a strain where the birds had been selected for egg records and not for fancy points. They would not be prize winners although they were undoubtedly purebred.

However, all of the best Barred Rock bred-to-lay flocks which we have seen contained birds with yellow legs. The yellow legs in this breed are one of the factors which make it a fine market fowl and for this reason we would make an effort to breed from the most vigorous yellow-legged birds.

R. G. KIRBY.

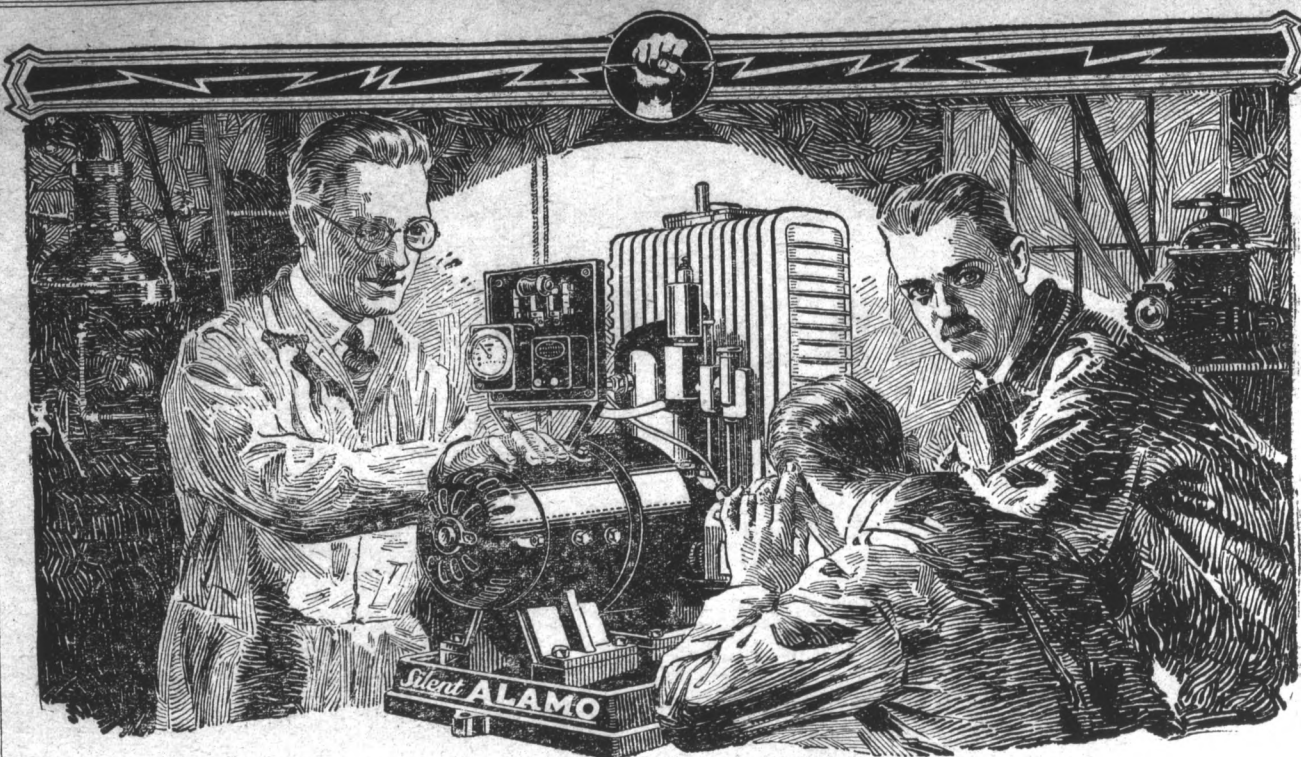
RIGHT OF WAY BY USE.

In 1880 two persons bought adjoining land and agreed by word of mouth that a drive three rods wide between the two should be used by both. The driveway has been in continual use ever since. Both are now dead. Can the son of one close it up?

SUBSCRIBER.

Title to land cannot be passed by word of mouth, but the adverse use for the statutory period the right has in this case been acquired by prescription and cannot be revoked by either party nor by their heirs or grantees. In order to get rid of the drive now it is necessary to have either a deed of release from both parties or have the drive closed up for the statutory period.

J. R. R.



Ruinous Vibration Conquered!

The Silent Alamo operates anywhere—no special foundation needed

HERE is a Farm Electric Power and Light Plant in which that awful jar and shake and rattle are missing. It needs no specially built foundation. It requires no anchoring. As proof of this the Silent Alamo will operate *under full load* when mounted on three ordinary drinking glasses. That's why thousands and thousands of farmers are today using or installing the wonderful



Portable Power Stand



Electric Iron



Electric Sewing Machine Motor

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FARM ELECTRIC POWER AND LIGHT PLANT

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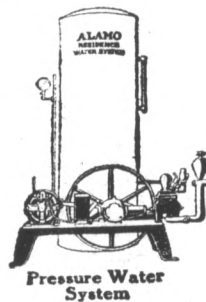
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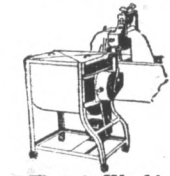
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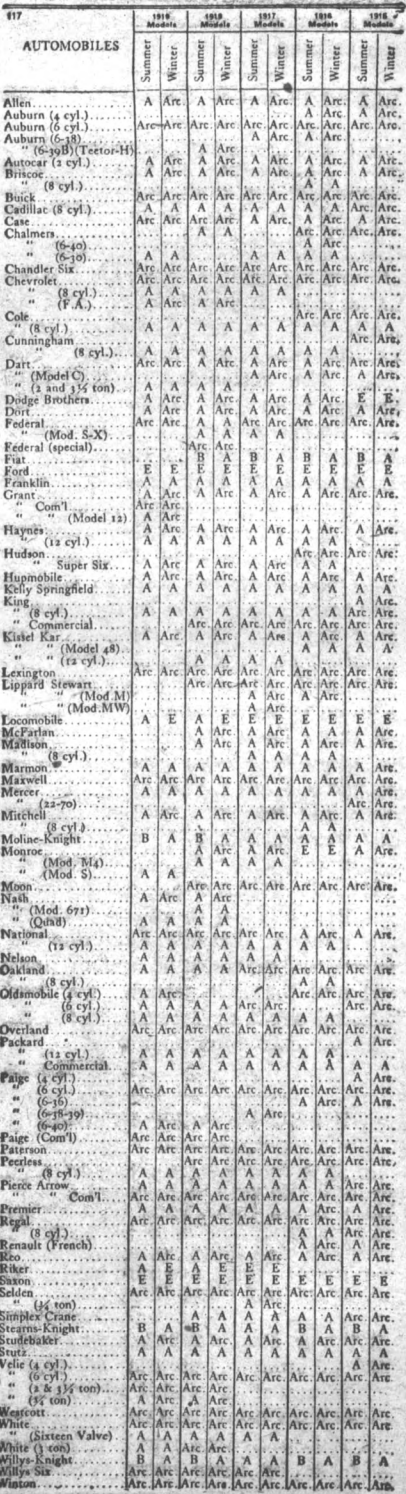
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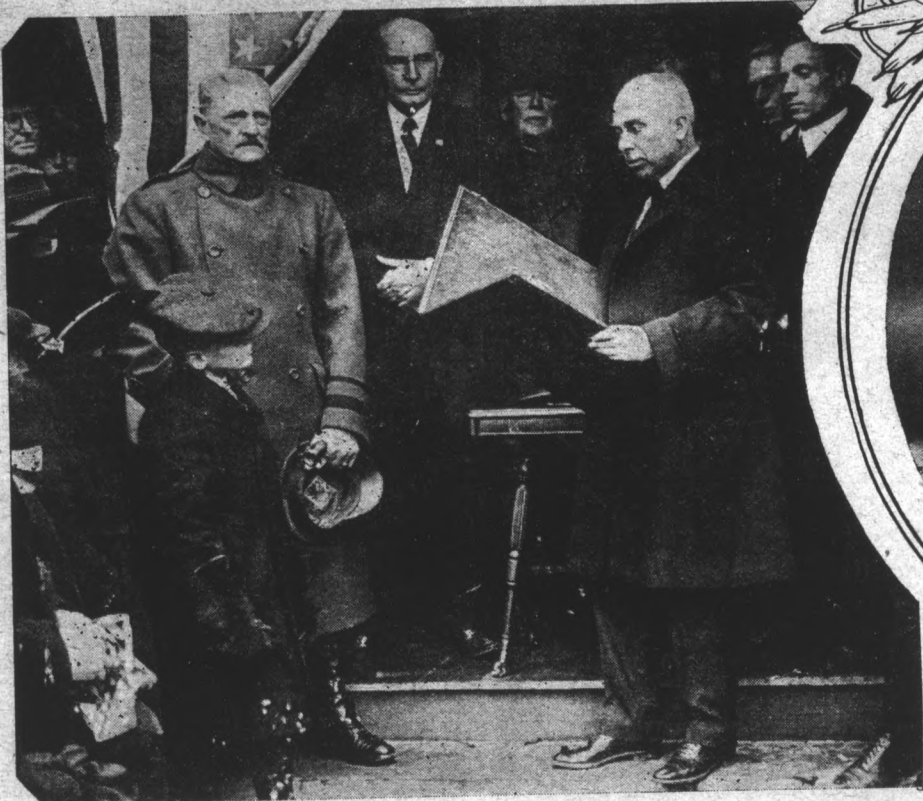
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Governor F. D. Gardner reading the presentation statement for gold medals from citizens of Pershing's home town, Laclede, Mo.



Ellen McAdoo, President Wilson's little grand-daughter.

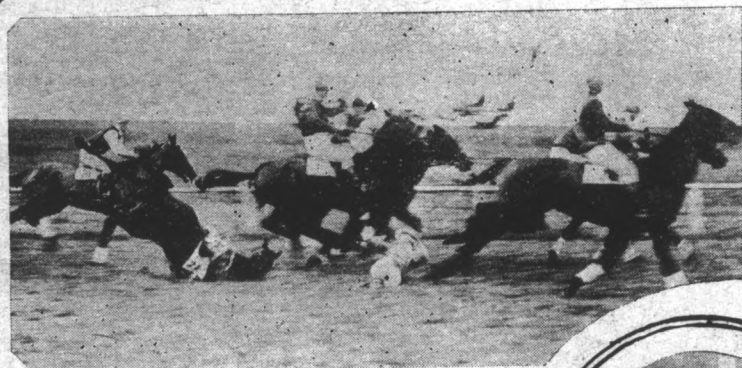
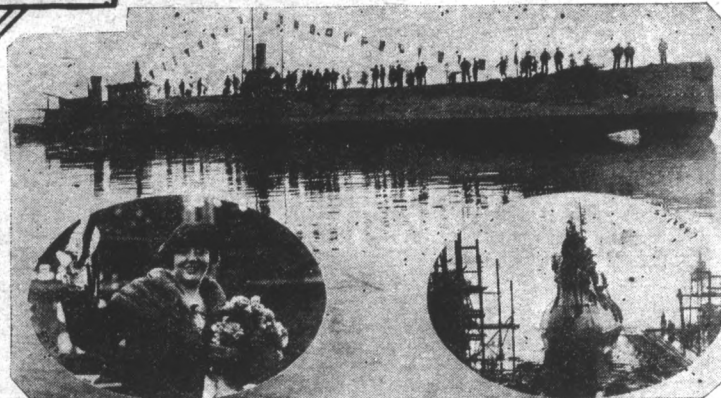


Photo shows Capt. Ian Straker landing on the track after being unseated from his mount, "Kirkdale," in the Mover Hurdle Handicap at Lingfield, England, while his horse is rolling over from the force of the fall.



The launching of the new U. S. Submarine S-16, the largest and latest afloat, and its sponsor, Mrs. Archibald McNeil, Jr.



Nature's dancers, headed by Ruth St. Denis and Ted Shawn, who have evolved a new dance called the "Feather Dance."



Mrs. John Drake, a worker with the American Free Milk Committee, was decorated by President of the Italian Red Cross, Mayor of Rome, and Gabriel D'Annunzio at Fiume.



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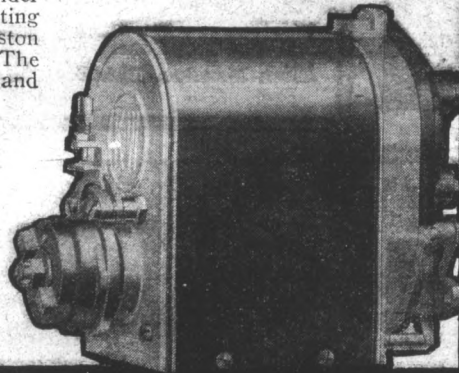
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"Running the Gauntlet"

By Lemuel L. DeBra

IT was near nightfall of a hot November day that Dannie Martin came face to face with a band of Apache warriors and had to "run the gauntlet."

All that afternoon the boy had ridden the hills searching for cattle that had strayed from their ranch in the valley. "Watch sharp for strays—and Indians," his father had told him. Dannie had watched sharp, but he had seen neither cattle nor Indians.

Late in the day Dannie halted his Indian pony on the top of a rise just beyond the woods about ten miles from their settlement. The broiling Arizona sun, like a ball of fire, had dropped behind the dull, copper haze that hung over the distant horizon; and it seemed to throw a sullen shadow over the sun-baked valley and the lonely, yellow hills. Dannie began to wish he was safe at home.

Just ahead of him, however, was another rise, somewhat higher than the one on which he had halted. Beyond this, he knew, the hill dropped sharply down to a fertile valley. Often he had found his strays grazing in the sweet buffalo grass in this hollow. So, although he was eager to be on his way home, he knew he would not have done his full duty if he turned back without taking a look beyond that hill.

"Go on, Pet," he called to his pony, giving her a gentle flick with his quirt. He bent over the pommel. Pet, seeming to realize that this was their last task, flew down the slope and up the other side of the hollow.

It was the pony who first scented danger. Dannie, watching her flying feet, saw her suddenly grow stiff. She came to an abrupt, jolting halt just as they topped the rise. Dannie looked up; and a cry of dismay escaped him.

Coming up the trail just ahead of him was a band of Apache warriors mounted on ponies. They were in full war dress. Their faces were hideously painted. Weapons of all kinds hung from their saddles, and their belts bristled with knives and tomahawks.

They were coming up the hill in two files. The leaders were not fifteen feet ahead of Dannie. He could see their dark eyes looking at him in surprise; and, he fancied, exultation.

For several days there had been rumors of Indians being on the warpath. Scouts running in from the Deer Band section had told harrowing tales of the cruelties inflicted by the Apaches on the lone settlers in that region. There had been as yet no sign of hostile Indians in the hills around West Gulch; but the settlers were much perturbed over the uprising.

"Running the gauntlet" was one of the tortures that the Apaches liked to practice on the white settlers who fell into their hands. For this, the Indians stood in two parallel rows. The white man, his hands and feet free, would start at one end and run between the two rows of warriors. As he passed, the reds would strike at him with war-clubs, rifle butts, knives, tomahawks, or whatever weapons they had. If the captive got through alive, which he seldom did, he was given his freedom, according to the Indian code.

Whenever Indian cruelties were mentioned, it was always this form of torture that came into Dannie Martin's mind; for Dannie's father was one of the very few white men who had managed to gain his freedom in that way. Dannie had often seen the knife scars on his father's arms, and had listened to the story of that run.

"If I had become excited, I would have been lost," his father always wound up the story. "But I took it coolly. I used my eyes and my head." And so that trait of taking things coolly and using his eyes and his head had come to be a part of young Dannie. It had served him well on many a lone, perilous trip through the wilds after their stray cattle; and it came to him instinctively now as he looked at that double file of Indians and saw one of them—he seemed to be the chief—raised his bronzed arm and heard him utter a harsh command.

Instantly, the files halted. Dannie, his nerves tingling, but his mind clear, watched and waited.

The chief looked at the white boy. Then he motioned with his hand, first at Dannie, then toward the aisle between his warriors. The meaning was unmistakable. Dannie was expected to run the gauntlet between those two files of warriors.

It was useless, Dannie knew, to think of escaping by turning and fleeing back toward the settlement. The Indians could overtake him, or slay him with their rifles, before he could get a mile. There was only one chance; and to Dannie that seemed a very slim one. The Indians had given him that one.

Oppressed as he was with the realization of his own peril, a new and more alarming thought flashed into Dannie's mind. Where were these warriors going? Why, to the West Gulch settlement, of course! They would reach there about dusk. Their approach would be made with Indian cunning and, aided by the growing darkness, they could reach the very fringe of the settlement unseen. Dannie knew what that would mean. The settlement, unarmed and unprepared, would fall an easy prey to the Indians.

As all this trooped through Dannie's mind his own peril seemed to shrink by comparison. If there was only some way he could escape and warn the settlement? Perhaps he could get through that gauntlet? And then, with good luck, he could possibly circle around that band of warriors and reach the settlement ahead of them.

The Indians were drawing their weapons. Dannie smothered his growing fear, and took a firm hold on the reins. Suddenly he gave Pet a sharp command, and at the same instant, a blow with the quirt.

The faithful pony, realizing perhaps that only something of grave importance would cause her master to strike such a blow, leaped forward as though hurled from a catapult. Horse and rider were past the first half dozen warriors before they could strike a blow.

The memory of that ride was always hazy and frightful in the boy's mind. He heard the Indians yelling. He saw them raise their gleaming weapons. He felt his pony leap beneath him and heard her snort with pain. Twice, in his own body, he felt sharp, stinging thrusts.

Pet was fleet of foot. Stung by those grazing blades that missed the boy, she whipped through the lines like a (Continued on page 101).

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Bumper the White Rabbit Plays King

By George Eshelberg Walsh

SHIKE the Butcher Bird was as good as his word. He was a vindictive bird, and it actually gave him pleasure in spreading Spotted Tail's message because all the other birds had refused. First he went to White Tail at the far end of the woods, for he knew that White Tail was a big rabbit who, at one time, had had trouble with Old Blind Rabbit.

"Oh, White Tail," called the Shrike, "here is news for you. Bumper the White Rabbit has been proclaimed king of the woods by Old Blind Rabbit, and he intends to make all of you his slaves."

White Tail reared himself on his hind legs, and clicked his teeth. "If you'd come with good news, Shrike, I wouldn't have believed you; but as the carrier of bad news I think there must be something in it. Who sent you?"

"Spotted Tail!"

"Ah! Spotted Tail! I never did like him, but I never knew him to spread false news. If Bumper comes to interfere with my family, he will—Well," leering, "I will tell him what I think of him: Good-day, Shrike, and much obliged for your trouble."

Next, Shrike the Butcher Bird interviewed Brindley the Lame, so named because of a limp he had from infancy. Brindley was a good-natured rabbit, and ruled over his burrow with kindness, and was loved wherever he went.

"Ah, Brindley!" cried Shrike, when he met him in front of his burrow sunning himself. "You look well today, and as fat as butter. Too bad to spoil your rest with bad news."

"Bad news never spoils my rest," was the grinning reply. "I always sleep over it, and then when I wake up I find it isn't so bad as it seemed."

"Well, you'll think differently when I tell you this. All the rabbits in the woods are rising in revolt against Bumper the White Rabbit that has come here to rule over them as king."

"Indeed! Who are all the rabbits you speak of?"

"Spotted Tail, White Tail, and many others."

"Ah! Um!" sighed Brindley. "Then Bumper'd better look out. I wouldn't want to be wearing his crown."

"But aren't you going to join the revolt?" asked the Shrike. "Or are you so good-natured you'd submit to any tyrant who came along?"

"I'm never so good-natured as when I'm thinking seriously, Shrike," was the reply. "Now, I'll tell you what I'll do. I'll sleep over it, and then I won't do anything hasty."

There was Crooked Ears, a big rabbit who ruled over a family of twenty in a burrow buried deep under the cliff; Pink Nose, whose family was noted for the remarkably pinkish tinge that decorated the tips of their noses; and Rolly Polly, who was so round and fat that he could roll down a hill faster than he could run. They lived in different parts of the woods, and it took all the morning for the Shrike to find them and spread the news.

They accepted the tale with different degrees of surprise and distrust. Rolly Polly was too fat and pleasant to let it worry him much, and Pink Nose was more interested in what Bumper looked like than his mission in the woods. When the Shrike explained that he was a pure white rabbit, with pink eyes, Pink Nose eagerly asked:

"What's the color of his nose?"

Knowing his fondness for pink-nosed rabbits, and fearing that he might lose his kinship with Bumper if he said

he had a pink nose, Shrike purposely stretched the truth.

"It is all white, the same as his fur—everything white except his pink eyes."

Pink Nose looked disappointed. "I wish he had a pink nose," he said sadly. "Then I'd know he was related to me."

"Pink! Oh! Ho!" laughed Shrike. "He hates pink-nosed rabbits."

"Who told you that?" snapped Pink Nose.

"Spotted Tail!" he lied without blinking.

Pink Nose's eyes turned a dark green, and the Shrike flew away, knowing that he had planted the seeds of discord in the mind of a perfectly good-natured rabbit.

Crooked Ears was a big surly rabbit, whose disposition had been spoiled when very young by an accident which had twisted his ears so they looked more like pretzels than anything else. The Shrike was quick to detect Crooked Ears' weak point. He was forever trying to hide his crooked ears, and he lay stretched out in the sun with his paws drawn up over them as if ashamed to have anyone see them.

The Shrike told him the news, but Crooked Ears said peevishly: "Oh, go away! Don't disturb me now. I am very sleepy."

The Shrike whistled and fluttered his tail feathers in disdain. "All right, Crooked Ears," he added. "I thought you'd like to know of the revolt, and of Bumper's threat."

"What was his threat?" asked Crooked Ears, sleepily.

"That he'd bite and twist the ears of every rabbit that opposed him until they all looked like yours."

"He said that!" growled Crooked Ears, rising. "He made fun of my ears!"

"Made fun of them! Oh! Ho! My, what a joke! Listen, Crooked Ears, and I'll tell you what he said about them."

Crooked Ears seemed to be all ears now, for his anger was aroused. "He said," continued the Shrike, "that all rabbits with crooked ears should be run from the woods. They were not fit to live with rabbits that had good, straight ears. Does that interest you?"

When Shrike again saw Spotted Tail, Spotted Tail thanked him profusely, saying that Shrike had proven himself a friend of the rabbits by helping to warn them against the tyrant.

"You needn't thank me, Spotted Tail, for I didn't do it to please you. It was just to spite the other birds."

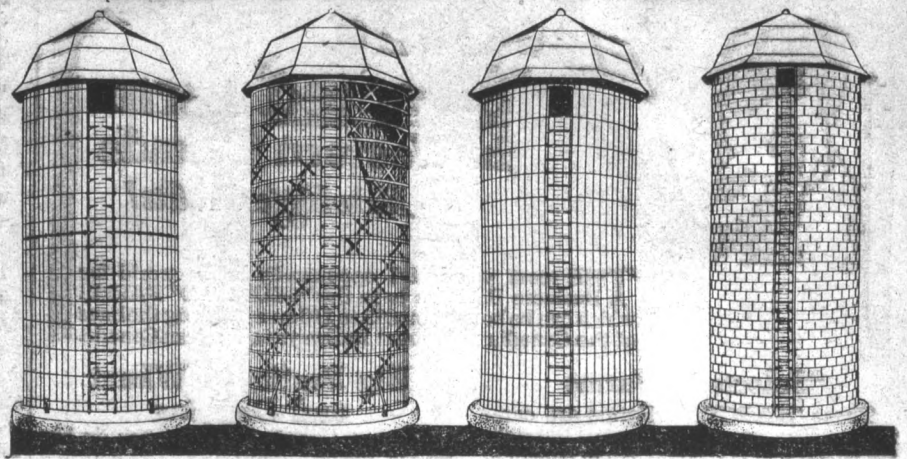
"Just the same you have done me a great favor, and I'm grateful for it," was the answer.

"Favor! Favor, you call it! Ha! Ha! Ha! Wait and see, Spotted Tail. My mission isn't done yet."

"You haven't told all the rabbits?" "Yes, and now I'm going to tell all the animals—Buster the Bear, Mr. Fox, Billy the Mink, Washer the Raccoon, and all the others. There'll be a right merry time when they see you fighting among yourselves. I think Mr. Fox and Buster may take a hand in it. What a chance they'll have for a good meal!"

And still laughing shrilly, he flew away, leaving Spotted Tail in a very unpleasant frame of mind. Suppose the other animals should take advantage of the revolt to pounce upon the rabbits. How much innocent blood would be spilled because of his treacherous trickery.

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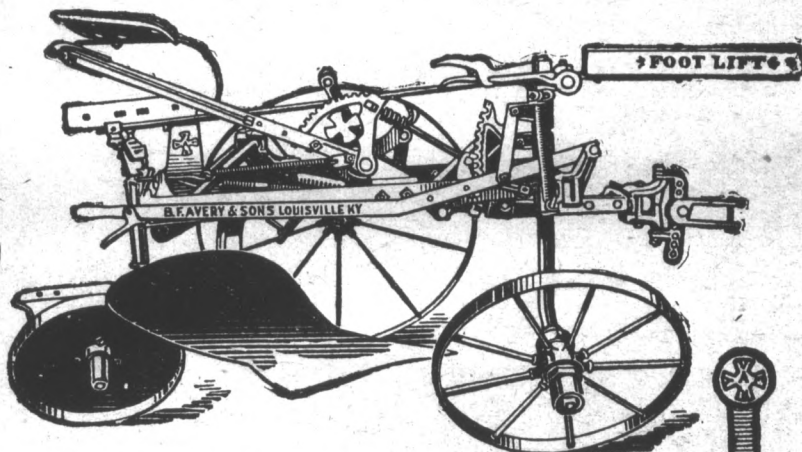
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Crooked Trails and Straight

By Wm. MacLeod Raine

The thing was devilishly simple and feasible. Luck, still looking out of the window, felt the blood run cold down his spine, for he knew this fellow would never stick at murder if he felt it would be safe. No doubt he was being well paid, and though in this workaday world revenge has gone out of fashion there was no denying that this ruffian would enjoy evening the score. But his confederate was of another stripe, a human being with normal passions and instincts. The cattleman wondered how he could reconcile it to his conscience to go into so vile a plot with a villain like the convict.

"So you see I'm right; you'd better pray your friends won't find you. They can't reach here without being heard. If they get to hunting these hills you sure want to hope they'll stay cold, for just as soon as they get warm it will be the signal for you to shoot the chutes."

Luck met his triumphant savagery with an impassive face. "Interesting if true. And where will you be when my friends arrive? I reckon it won't be a pleasant meeting for Mr. Blackwell."

"I'll be heading for Mexico. I tell you because you ain't liable to go around spreading the news. There's a horse saddled in the dip back of the hill crest. Get it?"

"Fine," Cullison came back. "And you'll ride right into some of Bucky O'Connor's rangers. He's got the border patrolled. You'd never make it."

"Don't worry. I'd slip through. I'm no tenderfoot."

"What if you did, Bucky would drag you back by the scruff of the neck in two weeks. Remember Chavez?"

He referred to a murderer whom the lieutenant of rangers had captured and brought back to be hanged later.

"Chavez was a fool."

"Was he? You don't get the point. The old days are gone. Law is in the saddle. Murder is no longer a pleasant pastime." And Cullison stretched his arms and yawned.

From far below there came through the open window the faint click of a horse's hoofs ringing against the stones in the dry bed of a river wash. Swiftly Blackwell moved to the door, taking a rifle from its rack as he did so. Cullison rose noiselessly in his chair. If it came to the worst he meant to shout aloud his presence and close with this fellow. Hampered as he was by the table, the man would get him without question. But if he could only sink his fingers into that hairy throat while there was still life in him he could promise that Mexican trip would never take place.

Blackwell, from his place by the door, could keep an eye both on his prisoner and on a point of the trail far below where horsemen must pass to reach the cabin.

"Sit down," he ordered.

Cullison's eyes were like finely-tempered steel. "I'd rather stand."

"By God, if you move from there—"

The man did not finish his sentence, but the rifle was already half lifted. More words would have been superfluous.

A rider came into sight and entered the mouth of the canon. He was waving a white handkerchief. The man in the doorway answered the signal.

"Not your friends this time, Mr. Sheriff," Blackwell jeered.

"I get a stay of execution, do I?"

The cool drawing voice of the cattleman showed nothing of the tense feeling within.

He resumed his seat and the reading of the newspaper. Presently, to the man that came over the threshold he spoke with a casual nod.

"Morning, Cass."

Fendrick mumbled a surly answer. The manner of ironical comradeship his captive chose to employ was more than an annoyance. To serve his ends it was necessary to put the fear of death into this man's heart, which was a thing he had found impossible to do. His foe would deride him, joke with him, discuss politics with him, play cards with him, do anything but fear him. In the meantime the logic of circumstances was driving the sheepman into a corner. He had on impulse made the owner of the Circle C his prisoner. Seeing him lie there unconscious on the floor of the Jack of Hearts, it had come to him in a flash that he might hold him and force a relinquishment of the Del Oro claim. Cass had done it to save himself from the ruin of his business, but already he had regretted it fifty times. Threats could not move Luck in the least. He was as hard as iron.

So the sheepman found himself between the upper and the nether millstones. He could not drive his prisoner to terms and he dared not release him. For if Cullison went away unpunished he would surely send him to the penitentiary. Nor could he hold him a prisoner indefinitely. He had seen the "personal" warning in both the morning and the afternoon papers. He guessed that the presence of the ranger, Bucky O'Connor, in Saguache was not a chance. The law was closing in on him. Somehow Cullison must be made to come through with a relinquishment and a pledge not to prosecute. The only other way out would be to let Blackwell wreak his hate on the former sheriff. From this he shrank with every instinct. Fendrick was a hard man. He would have fought it out to a finish if necessary. But murder was a thing he could not do.

He had never discussed the matter with Blackwell. The latter had told him of this retreat in the mountains and they had brought their prisoner here. But the existence of the prospect hole at the foot of the Devil's Slide was unknown to him. From the convict's revenge he had hitherto saved Luck. Blackwell was his tool rather than his confederate, but he was uneasily aware that if the man yielded to the elemental desire to kill his enemy the law would hold him, Cass Fendrick, guilty of the crime.

"Price of sheep good this week?" Cullison asked amiably.

"I didn't come here to discuss the price of sheep with you." Fendrick spoke harshly. A dull anger against the scheme of things burned in him. For somehow he had reached an impasse from which there was neither advance nor retreat.

"No. Well, you're right there. What I don't know about sheep would fill several government reports. Of course I've got ideas. One of them is—"

"I don't care anything about your ideas. Are you going to sign this relinquishment?"

Luck's face showed a placid surprise, but the rifle was already half lifted. "Why no, Cass. Thought I mentioned that before."

"You'd better." The sheepman's harassed face looked ugly enough for anything.

"Can't figure it out that way."

"You've got to sign it. By God, you have no option."

"No?" Still with pleasant incredulity.

"Think I'm going to let you get away from here now. You'll sign and you'll promise to tell nothing you know against us."

"No, I don't reckon I will."

Cullison was looking straight at him with his fearless level gaze. Fendrick

realized with a sinking heart that he could not drive him that way to surrender. He knew that in the other man's place he would have given way, that his enemy was gamier than he was.

He threw up his hand in a sullen gesture that disclaimed responsibility. "All right. It's on your own head. I've done all I can for you."

"What's on my head?"

"Your life. Don't you see you're driving me too far?"

"How far?"

"I'm not going to let you get away to send us to prison. What do you expect?"

Luck's frosty eyes did not release the other for a moment. "How are you going to prevent it, Cass?"

"I'll find a way."

"Blackwell's way—over the Devil's Slide?"

The puzzled look of the sheepman told Cullison that Blackwell's plan of exit for him had not been submitted to the other.

"Your friend from Yuma has been explaining how he has arranged for me to cross the divide," he went on. "I'm to be plugged full of lead, shot down that rock, and landed in a prospect hole at the bottom."

"First I've heard of it." Fendrick wheeled upon his accomplice with angry eyes. He was in general a dominant man, and not one who would stand much initiative from his assistants.

"He's always deviling me," complained the convict surlily. Then, with a flash of anger: "But I stand pat. He'll get his before I take chances of getting caught. I'm nobody's fool."

Cass snapped him up. "You'll do as I say. You'll not lift a finger against him unless he tries to escape."

"Have you seen the Sentinel? I tell you his friends know everything. Someone's peached. They're hot on our trail. Bucky O'Connor is in the hills. Think I'm going to be caught like a rat in a trap?"

"We'll talk of that later. Now you go look after my horse while I keep guard here."

Blackwell went, protesting that he was no "nigger" to be ordered about on errands. As soon as he was out of hearing Fendrick turned his thin lip-smile on the prisoner.

"It's up to you, Cullison. I saved your life once. I'm protecting you now. But if your friends show up he'll do as he says. I won't be here to stop him. Sign up and don't be a fool."

Luck's answer came easily and lightly. "My friend, we've already discussed that point?"

"You won't change your mind?"

"Your arguments don't justify it, Cass."

The sheepman looked at him with a sinister significance. "Good enough. I'll bring you one that will justify it my pronto."

"It will have to be a mighty powerful one. Sorry I can't oblige you and your friend, the convict."

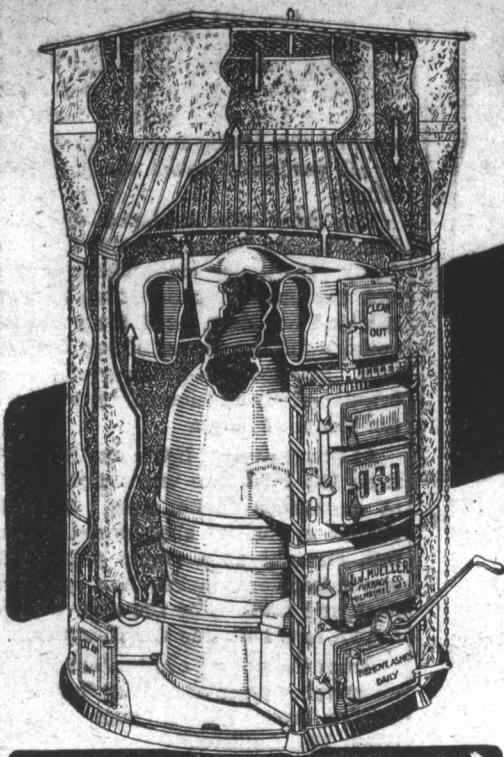
"It'll be powerful enough." Fendrick went to the door and called Blackwell. "Bring back that horse. I'm going down to the valley."

CHAPTER X.

Cass Fendrick Makes a Call.

KATE was in her rose garden superintending the stable boy as he loosened the dirt around the roots of some of the bushes. She had returned to the Circle C for a day or two to give some directions in the absence of her father. Buck and the other riders came to her for orders and took them without contempt. She knew the cattle business, and they knew she knew it. To a man they were proud of her, of her spirit, her energy, and her good looks.

This rose garden was one evidence of her enterprise. No ranch in the county could show such a riot of bloom



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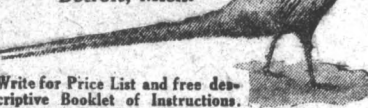
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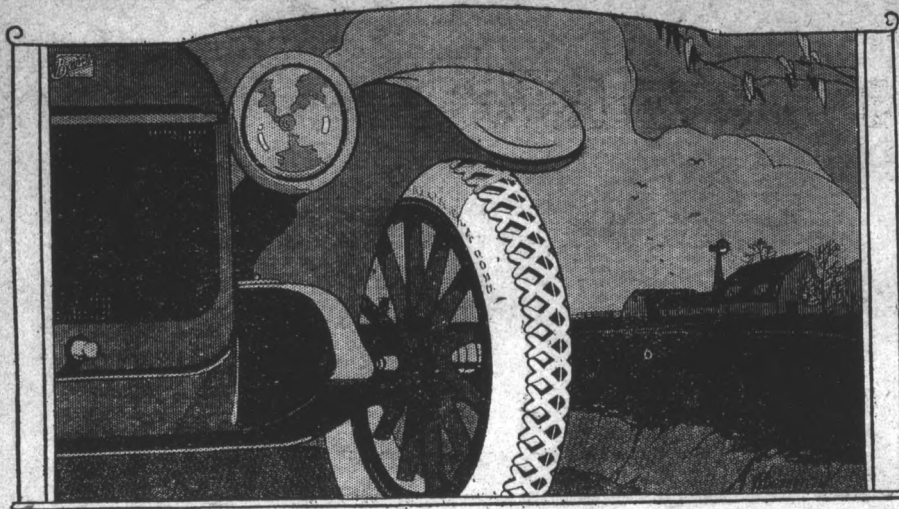
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Poultry Ads. Continued on Page 103



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as the Circle C. The American Beauty, a penitentiary offense? I don't say it the Duchess, the La France bowed gracefully to neighbors of a dozen other choice varieties. Kate had brought this glimpse of Eden into the desert. She knew her catalogues by heart and she had the loving instinct that teaches all gardeners much about growing things.

The rider who cantered up to the fence, seeing her in her well-hung corduroy skirt, her close-fitting blouse, and the broad-rimmed straw hat that shielded her dark head from the sun, appreciated the fitness of her surroundings. She too was a flower of the desert, delicately fashioned, yet vital with the bloom of health.

At the clatter of hoofs she looked up from the bush she was trimming and at once rose to her feet. With the change in position she showed slim and tall, straight as a young poplar. Beneath her long lashes her eyes grew dark and hard. For the man who had drawn to a halt was Cass Fendrick.

From the pocket of his shirt he drew a crumpled piece of stained linen.

"I've brought back your handkerchief, Miss Cullison."

"What have you done with my father?"

He nodded toward the Mexican boy and Kate dismissed the lad. When he had gone she asked her question again in exactly the same words.

"If we're going to discuss your father you had better get your quirt again," the sheepman suggested, touching a scar on his face.

A flush swept over her cheeks, but she held her voice quiet and even. "Where is father? What have you done with him?"

He swung from the horse and threw the rein to the ground. Then, sauntering to the gate, he let himself in.

"You've surely got a nice posy garden here. Didn't know there was one like it in all unbaked Arizona."

She stood rigid. Her unfaltering eyes, sleet-black in the pale face, never lifted from him.

"There's only one thing you can talk to me about. Where have you hidden my father?"

"I've heard folks say he did all the hiding that was done."

"You know that isn't true. That convict and you have hidden him somewhere. We have evidence enough to convict you both."

"Imagination, most of it, I expect." He was inspecting the roses and inhaling their bloom.

"Fact enough to send you to the penitentiary."

"I ought to be scared. This is a La France, ain't it?"

"I want you to tell me what you have done with my father."

He laughed a little and looked at her with eyes that narrowed like those of a cat basking in the sun. He had something the look of the larger members of the cat family—the soft long tread, the compact rippling muscles of a tame panther, and with these the threat that always lies behind its sleepy wariness.

"You're a young lady of one idea. No use arguing with you, I reckon."

"Not the least use. I've talked with Mrs. Wylie."

He raised his eyebrows. "Do I know the lady?"

"She will know you. That is more to the point."

"Did she say she knew me?" he purred.

"She will say it in court—if it ever comes to that."

"And just what will she say, if you please."

Kate told him in four sentences with a stinging directness that was the outstanding note of her, that and a fine self-forgetful courage.

"Is that all? Comes to this, then, that she says I heard her scream, ran in, and saved your father's life. Is that

oughtn't to be, but is it?"

"You helped the villain take his body into the cellar. You plotted with him to hold father a prisoner there."

"She says that, does she—that she overheard us plotting?"

"Of course she did not overhear you. You took good care of that. But she knew you were conspiring."

"Just naturally knew it without overhearing," he derided. "And of course if I was in a plot I must have been Johnny-on-the-spot a good deal of the time. Hung round there a-plenty, I expect?"

He had touched on the weak spot of Mrs. Wylie's testimony. The man who had saved Cullison's life, after a long talk with Blackwell, had gone out of the Jack of Hearts and had not returned so far as she knew. For her former husband had sent her on an errand just before the prisoner was taken away and she did not know who had helped him.

Kate was silent.

"How would this do for an explanation?" he suggested lazily. "We'll say just for the sake of argument that Mrs. Wylie's story is true, that I did save your father's life. We'll put it that I did help carry him downstairs where it was cooler and that I did have a long talk with the fellow Blackwell. What would I be talking to him about, if I wasn't reading the riot act to him? Ain't it likely too, that he would be sorry for what he did while he was angry at your father for butting in as he was having trouble with his wife? And after he had said he was sorry why shouldn't I hit the road out of there? There's no love lost between me and Luck Cullison. I wasn't under any obligations to wrap him up in cotton and bring him back this side up with care to his anxious friends. If he chose later to take a hike out of town on p. d. q. hurry up business I ain't to blame. And I reckon you'll find a jury will agree with me."

She had to admit to herself that he made out a plausible case. Not that she believed it for a moment. But very likely a jury would. As for his subsequent silence that could be explained by his desire not to mix himself in the affairs of one with whom he was upon unfriendly terms. The irrefutable fact that he had saved the life of Cullison would go a long way as presumptive proof of his innocence.

"I see you are wearing your gray hat again. What have you done with the brown one?"

She had flashed the question at him so unexpectedly that he was startled, but the wary mask fell again over the sardonic face.

"You take a right friendly interest in my hats, seems to me."

"I know this much. Father took your hat by mistake from the club. You bought a brown one half an hour later. You used father's to manufacture evidence against him. If it isn't true that he is your prisoner how does it come that you have your gray hat again? You must have taken it from him."

He laughed uneasily. She had guessed the exact truth.

"In Arizona there are about forty thousand gray hats like this. Do you figure you can identify this one, Miss Cullison? And suppose your fairy tale of the Jack of Hearts is true, couldn't I have swapped hats again while he lay there unconscious?"

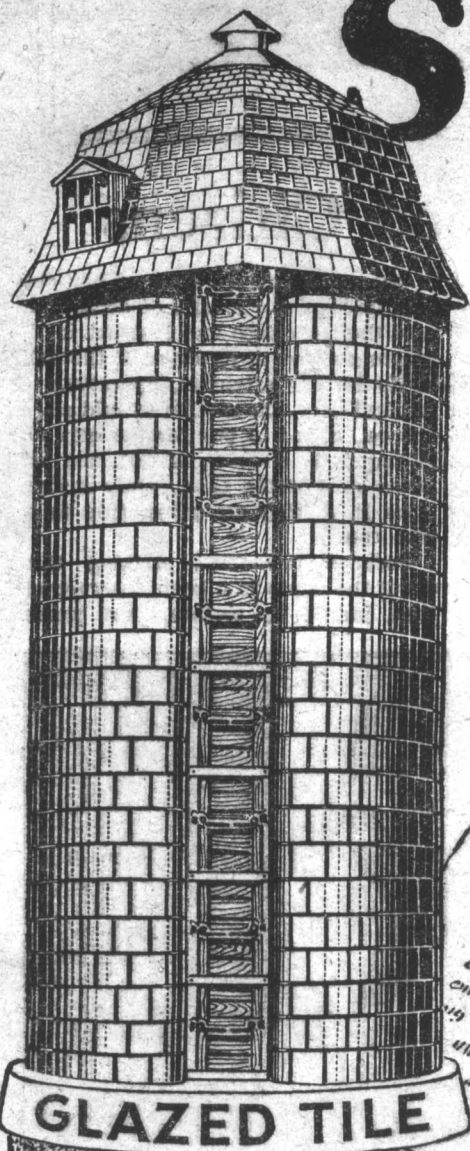
She brushed the explanation aside with a woman's superb indifference to logic.

"You can talk of course. I don't care. It is all lies—lies. You have kidnapped father and are holding him somewhere. Don't you dare to hurt him. If you should, Oh, if you should—you will wish you had never been born." The fierceness of her passion beat upon him like sudden summer

that she says I heard her scream, ran in, and saved your father's life. Is that (Continued next week).

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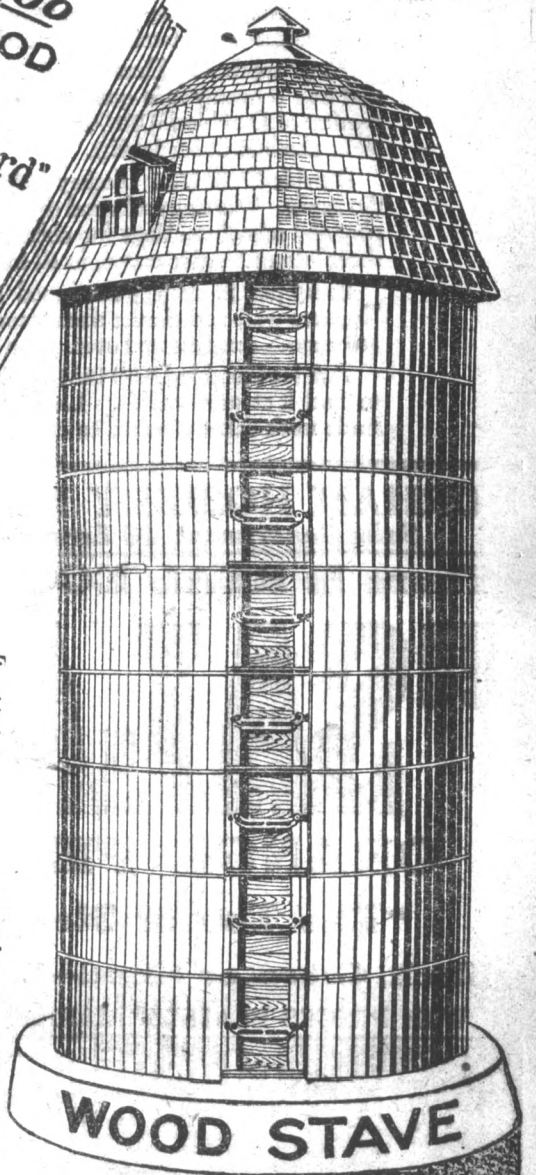
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Woman's Interests

Making Good Citizens

THIRTEEN pounds and seven and three-quarter ounces. She's gained ten ounces and a half this week," the gray-gowned nurse lifted the tiny baby from the scales and, with a look of satisfaction, handed it to its flushed and radiant mother. "Doesn't she look much like the wraith you brought in here two months ago, does she?"

It was at a regular session of the baby clinic.

"It's just a miracle," the mother said gratefully, "I never can be glad enough I brought her to the clinic."

to get advice on the care of her children under five. A staff of doctors donate their services and instruct in the proper method of feeding. If the baby needs further attention, operations or medical care, the mother is told so. If she can afford to pay for the care she is required to do it, if not, the city takes care of the case. Only instructions in dieting are given free to all who come.

Perhaps the most striking thing about the clinic to a keen observer was that, judged by clothes, no woman



The Clinic Doctor Believes that Prevention is Better than Cure.

"Miracle, nothing," laughed the nurse, "It's just knowing how to feed her right and having the will to do it after you are told. Better take her over in that corner out of the draft to dress her."

Other mothers crowded around with babies of assorted sizes, undressed and wrapped in the little blankets provided by the clinic, awaiting their turn to have baby weighed before the doctor came in. There were all sorts of conditions represented. Babies in perfect health whose mothers believed in preventive measures and wanted to be sure they were feeding right as they went along. Babies like the first who had been under direction long enough to begin to pick up, but still show the effects of a wrong start. Babies just brought for the first time, whose pinched, weakened faces and plaintive little wail told all too plainly to the experienced eye the effect of wrong feeding. There must have been fifty mothers with infants in the room, and wandering through the crowd were two-year-old brothers and sisters who had to be brought along. It was an interesting crowd viewed from any angle, full of pep and noise and human nature, from the two mothers who wiggled their disgust at the crowding and elbowing of a third, to the small person of the aggressive mother who showed his devotion to her side by pulling the curls of the other women's small daughters.

But the greatest interest lay in the purpose underlying the clinic—the attitude of the city in saying it is fully as important to give money to start children right as it is to keep up courts and jails to correct them after they go wrong. The baby clinic is maintained by the city, plus a few private contributions, and any mother of whatever station in life is privileged to go there

there need accept free medical attention. There were none of the really poor in the room. Every woman was well clad and well fed, and many talked glibly of milk tests, pasteurization, percentages of sugar, proteins and fats. The well-to-do seemed to be the only ones to take advantage of the price-less opportunity offered them to start the baby right. Either there are no poor in the city in question, or the poor do not know they need help.

Working with the clinic is a corps of nurses who go out to homes when it is impossible to bring the child to the doctor. One baby who was brought to the attention of the nurses too late to save its life had twenty-two calls from nurses in six weeks, and a part of the time two nurses were together working to save the little life. Not many cases are lost, however, unless there are other complications besides wrong feeding. Even the most hopeless-looking tots are brought along if it is simply a question of what to feed. One thirteen-month-old baby was brought in who weighed only ten pounds and six ounces. She had never had a tooth, could not sit alone, and was altogether as helpless a bit of future womanhood as you could ever find. A diet of modified milk, thoroughly cooked cereals, and orange and prune juice was prescribed. In six weeks Miss Baby had perked up amazingly, had a suspicion of color in her cheeks, positively smiled when you looked at her, and even acted as though she might cut a tooth some day.

Then there was the five-months-old baby whose mother had to live with children right as it is to keep up courts and jails to correct them after they go on "giving them a taste of real food." wrong. The baby clinic is maintained "Real food," however, was not baby food for this young man, and he some- la. Mother took him to the clinic and

learned that milk is the only real baby food for a five-months-old boy. She took her lesson to heart and insisted on trying the doctor's way, so long as grandma's way hadn't proven altogether a success. Six weeks of clinic feeding converted even grandma, and now baby is as rosy and fat as the best.

Many pitiful cases among the older children are treated, and warped lives straightened. There was the four-year-old boy with club feet. His parents couldn't pay for an operation, but the attending physician told them the city could. The child was operated on, one leg is now perfectly straight, the other is still in a cast, but the child has no trouble in walking.

When you hear all the things accomplished by the clinic you wonder just why they call it the "Baby Clinic." For while it is primarily intended as a place where mothers can get advice on the care of babies, it seems as though the nurses thought they had to take the whole family under their wings. There was the mother who brought her eighteen-months-old boy down. The nurse took one short look at the child and two long ones at the mother. Then she asked a few kindly questions. She found out that the mother was again in a delicate condition, that she was tired all the time, could not do even the lightest housework, and lived in conditions not of the best. She advised the mother to go to the anti-tuberculosis society for an examination. The attendants found that the woman was developing tuberculosis. They prescribed a rest period morning and afternoon, some time daily in the open air, got her to sleep alone in a large room with three windows open, and prescribed a diet. The mother made her visit to the clinic in August. In October she was in good condition



Mothers Receive Advice on Feeding, Bathing and Caring for the Baby.

and able to do her own housework. Every week, in fact, every day brings to light even as important cases of human beings helped to health and enjoyment of life by instruction in right living.

Can there be any better way to spend a part of the tax money? It doesn't cost nearly as much to maintain clinics to keep people in health as it does to keep up hospitals and homes, with their staff of nurses and help, to take care of the invalided. The new way, prevention rather than cure, is surely the best.—Mrs. A. L. L.

YOUR CHILD'S EYES.

PARENTS believe, and rightly, that home lessons are ruining their children's eyes. Yet, there is no real reason why a boy or girl should suffer any eye-strain if certain precautions are taken by parents and if attention is paid to the child's complaint of headache.

1. Never let your child sit in his own light when he is reading or writing. Do not let a girl do any sewing or knitting for long at a time.

2. It is a great mistake to allow the

children to sit in twilight. They want to see things, and in endeavoring to distinguish them they strain their eyes.

3. Don't let children read by fire-light. Each flicker means a fresh focus.

4. Have a lamp suspended from the ceiling. This is an obvious advantage where children are allowed to romp.

5. Lastly, you, seeing your child at night, may be able to observe signs of eye-weakness not noticed by the teacher. Inform the principal of the school at once. It will make a great difference to your child. M. MEREDITH.

ARE GIRLS NATURALLY MORE REFINED THAN BOYS?

FROM early childhood boys are subjected to rough associations from which girls are protected. Boys are permitted to hear obscene language, which girls, speaking generally, never hear. Vulgar people try to restrain their coarseness when a girl is present but they never think of doing so before a boy. Even in public performances, as in the theatre, obscenity is often indulged in if only men are present, whereas little if anything of the kind would occur before girls or women. Lewd actions are exhibited before boys and men; while girls are never admitted to places where such actions are permitted.

Thoughtless, though doubtless well-meaning people are constantly seeking to improve the environment of girls so as to keep their thoughts, feelings and conduct wholesome, sweet and refined, but they let boys grow up under debasing conditions and then lament over the fact that they are not naturally refined and scrupulous about their speech and manners. Many parents expend more time and money in getting nice clothes for a daughter than for a son and then they wonder why he is not so particular about his appearance.

The result of this general indifference to a boy's esthetic nature is, of course, that the boy, as a rule, is coarser in his thought, speech, and action than the girl. But is the difference due to sex or to the fact that we neglect the boy and permit him to look out for himself, with the result that he is often subjected to vicious suggestion? It is a wonder that, take boys as they go, they are not worse than they are.—National Kindergarten Association.

FROM ONE HOUSEKEEPER TO ANOTHER.

To Apply Hair Tonic.—Use a medicine dropper to put hair tonic on the scalp, separating the hair with the fingers. This is an excellent method of putting sweet oil on the baby's or small child's scalp to loosen the dandruff and dirt before shampooing.—Mrs. J. J. O'C.

Treatment for a Bruise.—To remove discoloration from a bruise, apply a cloth wrung out of very hot water and vinegar, and renew frequently until the pain ceases.—M. A. P.

Two Uses for the Thermos Bottle.—Make enough coffee at supper time for the one who has an early breakfast. Put this boiling hot into the thermos bottle without cream or sugar. It will be just as good as if made fresh, and saves time. If there is sickness in the home, fill the bottle with hot water while the range fire is going. This may save time in the night if you should have to make a hot drink or a poultice.—Miss E. A. F.

Home Disinfectant.—An earthen dish of quicklime placed in closets will absorb moisture, act as a disinfectant and it is said that it will also keep away mice and rats.—E. C.

Home-made Cough Remedy.—To a tablespoonful of maple syrup add eight drops of eucalyptus oil. Take one teaspoonful every two hours.—M. E. F.

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"Only a Housekeeper"

I MAY be old-fashioned and hopelessly out of date, but even at the risk of being classed with Godey's

Lady Book I feel I must register my solemn protest against the growing modern tendency of taking women out of the home, which at the altar she has solemnly sworn to serve, and placing her side with her husband as a wage earner. True, with the present terrific struggle to meet rising prices the temptation to do this is hard to resist. But I still maintain that the woman with children, especially in these days with indifferent domestic help or none at all, cannot afford to leave the care of her children to the mercy of help. Yet more and more women are going outside of the home to find their sphere, and more and more certain magazines which should be in better business are advocating it. If this home-destroying tendency is to be continued indefinitely our boasted American institutions are doomed to go down in the general wreck which a few pessimists are even now predicting.

The whole trend of our reading of recent years has been wrong. There has been a little smatter of mawkish stuff, about homes and mothers, but the real heroines of fiction and magazine articles have not been prosaic cooks and housemothers. The woman in business, in the professions, in society has been the real thing. If a married woman was the heroine of the story, she was either a creature who toiled not nor spun, or a dynamic individual who managed husband, children and servants with a single finger, and devoted the other nine to household decorating, architecture, engineering, a profession, or an art, in which chosen field she was the bright and shining star. We felt when we read about her that our little sphere as humble housekeeper was too trivial for even our limited abilities.

"Only a housekeeper," sounds rather simple when arrayed with "The world's most famous prima donna," "greatest living actress," "prominent lawyer," "private secretary to Congressman Kearney," and a score of other occupations held by women. But to be a perfect housekeeper, or better still, a perfect homemaker, requires ability even higher than to become a shining light in a profession. To become a private secretary, for instance, you need know only one line of business—your employer's. To become a great singer you need only the voice. At least, if you have the voice and are trained to use it people will pay to listen to you, even though you may be ignorant in hundreds of ways.

But to become the perfect homemaker you need to know almost everything. It is no longer enough to know how to keep the house clean and how to cook. Now you must know how to keep the house sanitary, well ventilated, properly drained, properly planned and properly kept. In addition to knowing how to cook you must know the value of the food you cook and its proper place in the diet. You must understand balanced rations for your family as the farmer understands it for his stock. You must know all about physical hygiene, child development, and growth, how to dress the children properly and how to feed their minds and souls as well as their bodies.

In the matter of clothing, see how much we must know today when it seems everything we buy has a cheaper imitation. Are you sure you are getting pure wool? Or is there a life of a rubber bottle, always press thread of cotton? Is it linen or a mercerized substitute you are offered? Will the silk bear up or will it crack under the strain of making the garment? And after you have bought your cover made of outing flannel or any fabric, can you plan and make your soft material and never let any oil or garment? If you hire it done can you tell good work? If the garment does

not fit, can you tell why? To be a perfect home-maker you must know all these things.

You must know, too, something of nursing. The little things to be done in a sick room if the patient is to be comfortable, must be at the command of the present-day home-maker. And there are the dozens of preventives which will ward off illness. You must know symptoms and take quick measures. If you overlook them and disease appears, or if an accident occurs you must know what to do till the doctor comes.

Then, aside from looking after the animal wants of your family, you must keep up with the times. You must read your papers to know what is going on in the world political, and somewhere you must find time to keep your eye on the world of literature. In fact, to be the perfect home-maker you must be a veritable walking encyclopaedia of universal knowledge. And a very suave, diplomatic and polished one. For home runs smoothly only if the wheels are well greased with the oils of politeness and good manners.

"Only a housekeeper," doesn't sound like much. But it is the biggest profession and the most important for women. If the world is to be kept running in the right direction we must use all our influence to combat the propaganda which would lure mothers out of it and into trades and professions. Instead of advocating the idea that the wife should go out and help bring in the bacon, let us order her to stay inside and cook it. Leave outside jobs for men. Wages would adjust themselves to conditions if women would all agree to stay in home-making professions. The question of domestic help would settle itself, for women would be doing their own work instead of looking for someone else to do it for them. Class distinctions would be eliminated in time, too, if we could only make it fashionable for everybody to do her bit in her proper place.

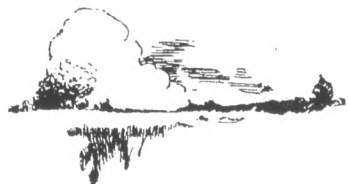
DEBORAH.

DELICIOUS PIEPLANT IN WINTER.



LAST December we dug up a good-sized rhubarb root, and after letting it get well winterized, or frosted, brought it in in a box and set it in the cellar near the furnace. It did not get much light, but we watered it well, and were rewarded by having about five cuttings of delicious pink pieplant along in February and March.—G. E. McD.

If you would make the hot water bottle last a little longer than the usual life of a rubber bottle, always press out the steam before you screw down the stopper. Never leave the water in the bottle any longer than is necessary. When in use keep the bag in a cover made of outing flannel or any soft material and never let any oil or grease get on it, for grease shortens the life of rubber.—Mrs. E. A. F.



GRAIN TO SUPPLEMENT HAY AND SILAGE.

I have had such good results from following your ration recommended for dairy cows that I want to have you give me some more advice. Last fall I built a silo and filled it with corn partly husked. The silage is in good condition and I have good clover hay to feed with it, also plenty of good straw. Will you tell me how to make up a grain ration to get the best results from such roughage?

Benzie Co. C. J. S.

No doubt your silage will give you splendid results. If you have plenty feed all the cows will eat up twice a day. The same way with the clover hay. You can feed one good liberal feed of clover hay once a day and one feed of straw once a day and get good results by feeding proper grain rations. I would recommend that you feed your cows either two pounds of cottonseed meal or two pounds of oil meal each per day. I would prefer the oil meal if you can get it without too much trouble, then ground oats or corn meal mixed with wheat bran would make a splendid ration. Feed enough corn and oats ground together and mix with equal parts of bran so that your cows get with the two pounds of oil meal a pound of grain for every three or four pounds of milk they produce in a day. You can get along with a little less bran if you left out the corn meal and feed only ground oats.

COOKED BEANS FOR HOGS.

I have nineteen fall pigs that weigh between eighty and ninety pounds. I have been buying beans at \$2.00 a hundred and feeding ground barley. Would you advise me to keep on buying beans to have them on the market by the last of March? I am out of corn. What would you advise me to buy to feed them?

Tuscola Co. J. D.

Cooked beans and ground barley theoretically makes almost an ideal ration for growing feeding hogs. Barley will practically take the place of corn. In this ration you might get a little better results if you substitute corn meal for the barley, but you could not expect to get enough difference to pay for making the change. If your hogs seem to tire of this ration get a little wheat middlings and mix it with barley and cooked beans. I don't believe you can get a more economical ration.

"RUNNING THE GAUNTLET."

(Continued from page 92).

flash. It was all over in a brief moment.

The Indians turned and gave chase, but suddenly abandoned it. By their own code, they realized that the boy had earned his freedom. When, a moment later, Dannie paused and looked around, the Indians were trotting over the brow of the hill.

After that experience it was a trying task to gallop down the valley to the woods, turn and cross the hill again, and race through the timber. But Dannie made it; and when he halted at the edge of the timber and surveyed the prairie ahead of him, the Indians were not in sight. After resting Pet a few minutes, Dannie sped down the trail toward the settlement. Several times he tried to look back but in the dusk and flying dust he could see nothing.

Soon after, Dannie's mother was dressing his wounds, which proved not to be serious. A party of well armed ranchers rode out and gave the Indians a surprise and a severe defeat. To this day, however, the story goes that it was Dannie who saved the settlement because he kept cool and "ran the gauntlet."



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IT'S the big potatoes of marketable size that count at sorting time. This means that every hill must do its share. Fertilizer makes every hill yield more big potatoes.

The potato crop has a short season in which to make its growth. Its root system covers only a small area. Plantfood must be in the ground in large quantities during the growing season. But the soil cannot be depended upon to supply all the plantfood required.

Fertilizer provides the additional plantfood necessary for continuous, rapid growth. It supplies the three essential plantfoods—ammonia, phosphoric acid and potash—in the right proportions.

Select the potato fertilizer that is suited to your conditions. Apply it in sufficient quantity. The investment will be returned to you with a handsome profit from increased yield and greater market value.

Write for our Bulletin, "Potato Production." You should also have our Automatic Formula Finder, which helps to select the right fertilizer for every crop on the farm. Both are free for the asking.

"High Analysis" Fertilizers for Potatoes

One of These Will Fit the Conditions on Your Farm

The figures represent the percentages of ammonia, available phosphoric acid and potash, in the order given:

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at Auction Feb. 4, 1920 1 P. M. 1 Farm of 100 acres, 2 miles from South Lyon on gravel road direct line to Ann Arbor, Pontiac & Detroit, running water, located so that all fields have access to same.

1 Farm of 30 acres, on same section, Virgin timber lot and pasture. Must be sold to close an estate. J. Halsey Sayre, Executor, So. Lyon, Mich.

For sale 125 acre dairy farm Clio, Mich. Best of land. 180 acres under cultivation balance pasture. Fine buildings \$15,000, easy terms. B.J. Wilson, Clio, Mich.

Farm WANTED—Wanted to hear from owner of farm or good land. Price reasonable. L. C. JONES, Box 551, Olin, Illinois.

I Have the Farm you are looking for. Write or call on me. J. W. LE BEAN, REAL ESTATE AGENT, MINERVA, O.

For Sale 100 acre farm 14 miles from Orion, Mich. Well fenced, good buildings, electric lights, telephone and mail delivery. Some good lake frontage. Good reasons for selling. O. L. Hemingway, Orion, Mich.

Farm Wanted in exchange for good hardware store. Best location, good business. I. W. WALTER, Helena, O.

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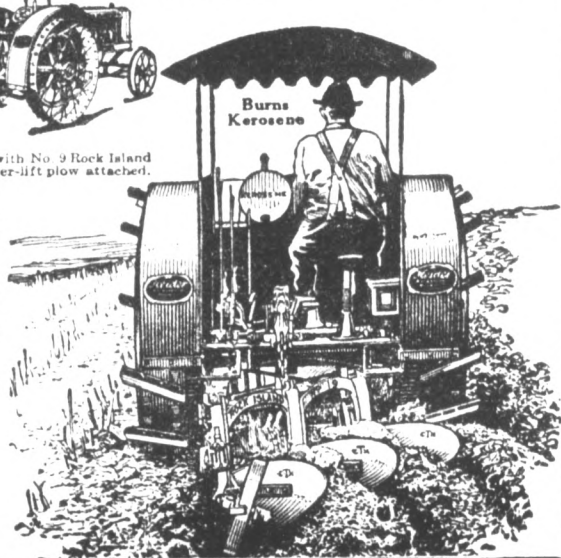
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Our Boys' and Girls' Page

The Junior Farmer

By N. A. McCune

THE other day I was talking with a man who told me how he was training his little son to study. The boy is taking Latin, as one of his studies as a high school freshman. He was taking half an hour to learn what a list of words meant. His father said, "Just look at the list closely for a few minutes, and get it." The boy tried it, and was surprised how he succeeded. The father then turned to a younger boy in the sixth grade. This lad has been very poor in history. He has come pretty close to "flunking." His father told him to underline the important words on a page. He did so, and "now," said his father, "look at the underlined words on this page, and tell me all the important facts." The boy did so, and was able to tell quite fully all that the page had to say. He has kept this up, and now is very good in history, and takes a new interest in school. The father of these lads is a

before, listening to the rector's sermons.

I thought of this the other day when I read over a report of Mr. R. A. Turner, State Leader of Boys' and Girls' Club Work. This report shows what the Boys' and Girls' Club Work is doing, in teaching boys and girls to love agricultural life. It is one of the finest pieces of work being done in the state today, it seems to me. It is catching them young. And they take to it, as the records show. A prominent educator said to the writer a year ago: "I'm tired of teaching graybeards. It's time we were working with the boys and girls." That doesn't mean there is no hope for graybeards, for some of the things done by old people today are hardly short of wonderful. Clemenceau will probably be elected president of France shortly, and he is close on eighty. But still the fact remains, that it's nature's way, to begin to form



Junior Farmers who took the Seventh Degree at the National Grange Meeting. They are, standing left to right, Carl Hawley, Ralph Lovejoy, J. C. Ketcham Jr. Seated, Mary Illenden, Ruth Ketcham, Jessie Needham.

wise man. He is beginning young. Some one has said, you know, that if you catch a Scotchman young enough, you can do almost anything with him. The same is true of Americans as of Scotchmen.

A very excellent instance of this, is told of Sir Robert Peel, England's great prime minister, some people calling him England's greatest prime minister. When Robert was a midget of a lad, his father took him to church. When they got home, the father said, "Now Bobby, tell me something the minister said and I'll give you a piece of candy." Little Bobby had a hard time to think of anything the minister had said, for he had slept most of the time. But finally he managed to think of something, and he got his candy. The next Sunday Mr. Peel did the same thing, and Bob again remembered something that had been said. Sunday after Sunday, this was continued, until Bobby was able to tell a lot of what had been said in the sermon. By the time he was a dozen years old, he could give the entire substance of the sermon, and some of it word for word. Years passed and little Bobby was now Sir Robert Peel, and held the highest office in the nation, under that of king. Night after night he would reply to his opponents, going over their speeches, and refuting their arguments. His colleagues wondered how he remembered so well what had been said. His mastery in speech was superb. By and by someone discovered what has just been told. He had acquired this art long

habit while we are young, and the mind is plastic.

For instance here is a boy who cleared a net profit of \$40.90 off an acre of beans, and another cleared \$60.70. Here is a girl who canned 858 quarts of fruit and vegetables, and netted nearly two hundred dollars thereby. One girl raised an acre of beans. Her father marked off her acre, in the corner of his field of sixteen acres. She was very careful about the seed she used, and he laughed at her. He said one bean was as good as another. She hoed and cultivated those beans, as if her life depended on it. She insisted that the ground should be prepared just so, and that vexed her sire a trifle. But when the beans were harvested, she had nearly twice as many on her acre as her father averaged on his crop. Then the neighbors came and wanted to know how it was done. That is teaching dad how to farm, isn't it? And it came from the Boys' and Girls' Club Work.

The potato club young folk did very well. One boy in the upper peninsula netted \$467 from his acre, and from that on down to \$163. The pig clubbers did well, \$67 was the profit on one Duroc, and \$49 was cleared on a Poland-China.

The reports of these young people are full of interest. A girl who raised a pig with a good profit, writes: "My pig weighed thirty-three pounds May 29, 1919, and fifty-four pounds June 15, 1919. He had acquired this art long

Ditching and Soil Washing Problems Solved

LET me show you how to solve the drainage, irrigation and soil washing problems at low cost. I'll show you how two men can now do more ditch work than 100 men by old methods. This is the year to save labor and do this work swiftly and efficiently. I'll show you the way. Write for the new book that tells the story.

THE Martin
OD & GCO REGISTERED

Farm
Ditcher,
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I Want You
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Facts

Cuts V-shaped ditch for open drainage, irrigation or tile any depth down to 4 feet, leaves smooth, hard sides. Also use it for back-filling tile ditches and holes. Perfect machine for cleaning old weed-clogged ditches. All steel—reversible to throw dirt either side. Adjustable for narrow or wide cut. No wheels, cogs or levers to get out of fix. Lasts a lifetime.

Farm Terracing

Builds farm terraces which stop washing of soil on rolling and hillside land and hold the water where it should remain; reclaims abandoned washed land; throws up dikes and levees; grades roads; works in any soil, wet or dry; 2, 4 and 6 horse sizes; large size fine for tractor. Needed on every farm.

Get Your Farm in Shape

Chance of a lifetime to make big money the next five years. Here is crop insurance at a low cost. Write and find out how to make big crops sure. New free book on drainage, irrigation and terracing. Write for this and our proposition. Address W. A. Steele, Pres.

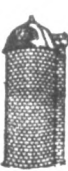
OWENSBORO DITCHER & GRADER CO., Inc.
Box 915, OWENSBORO, KY.



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"The Fruit Jar of the Field"
A Special Discount for Early Orders
Send for catalog No. 9.

W. S. DICKEY CLAY MFG. CO.,
MACOMB, ILL.
Kansas City, Mo. Chattanooga, Tenn.

CULL BEANS FOR FEED

Car lots or less. Ask for prices.
YOUNG-RANDOLPH SEED CO., OWASSO, MICH.



PERMANENCE

Build your own choice or need. Glazed or unglazed Tile Silos; reinforced every course of blocks; fire-proof, wind-proof; last for generations; continuous doors with double sealing clamps; doors set flush with inside wall insuring even settling of ensilage.

Wood Silos in fir and pine with binged doors. Cement Slabs Silos, padded concrete sealed and poured joints. Hollow glazed building blocks for farm buildings—last forever—cheaper than lumber. Buy early and save money.

Write for literature, prices and special agent proposition.

Hoosier Silo Company, DEPT. M-77
104 N. Mulberry St., Chicago, Indiana

of this club are Duroc Jerseys. We decided on this breed so as to have only one breed in the community. My pig is registered and her name is "Model Girl B. 2nd," but my pet name for her is Moxie. "I always liked this name for a pet. I fed my pig four times a day, up until September, and then three times a day. I spent my time with my pig, petting her, combing her, and carrying water for her to wallow in. My pig certainly enjoyed the wallowing place in hot weather." If this doesn't prove that farmers and farmeresses are to be caught young, it would be hard to prove anything. I venture to say that this maid will be willing to marry an up-to-date farmer, by and by. And doesn't this caring for an animal, or for an acre of ground show up as being a mighty fine thing for young folk? Doesn't it beat hanging around town, and gadding to the movies six nights out of seven? Congratulations to "Model Girl B. 2nd." The pig family would be a happy crowd if they all had such attentive owners as she had.

The champion potato grower for 1918 among Boys' and Girls' Clubs writes a very interesting report. His last paragraph sounds like a government bulletin: "Although the potato is used as a human food, it has several other uses. Starch potato flour, glucose and syrup are made from the potato. This club work has been of great interest to me as I have learned quite a few things about the growing of potatoes." It would not be at all surprising if this boy becomes a farmer. He is beginning at the right time and in the right way.

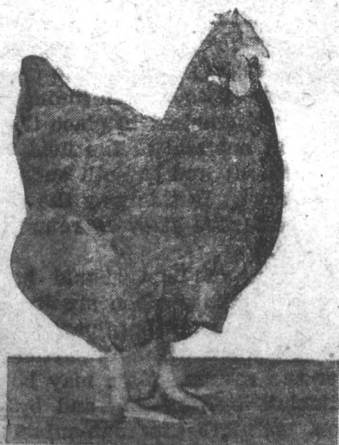
GIRLS MAKE POULTRY RECORD.

THE hens owned by poultry club girls in Mississippi do not lay golden eggs, but they lay enough of the ordinary kind to permit their owners to buy the golden variety if they so desire.

One of these successful young poultry growers is Gregory Russell, who lives in Lawrence County, Mississippi. This is her first year in poultry club work. She bought all of the dry feed for her flock but raised a tenth-acre of oats and rape for their green feed. This fifteen-year-old girl's net return this year from her poultry work, which was supervised by the United States Department of Agriculture and the state college, was \$256.

Vivian Smith, of Yalabusha county, Mississippi, has been in poultry club work for four years. This year her net return from the work was \$386.86. She started four years ago with seven chickens and made a net return that year of \$70. The next year she doubled this amount, and the third year she cleared \$240 from her poultry. Miss Smith has the largest flock in her section. She believes in selling the old hens, keeping the pullets for layers, and giving the birds plenty of green feed.

Both of these girls won a recent trip to Washington for making the highest return on their project of any girl in their districts.



SEEKING A MARKET FOR DAIRY BY-PRODUCTS

EVERY dairyman will agree that if he could sell his skimmed milk for what it is worth as a human food, the profits on his dairy business would be substantially increased. But where is the market for skimmed milk as a human food?

Authorities say that the milk supply of the country is twenty-five percent below the domestic market requirements, if each man, woman and child of this country, to say nothing of foreign needs, is to receive the amount of dairy products necessary for proper nourishment. This, then, is the market—helping to make up the 25% shortage by diverting to human use a part of the large quantity of skimmed milk which is fed to stock. And here is one method by which this can be done:

Skimmed milk lacks only a fat content to make it desirable for cooking and baking. The lack of fat, too, makes it unpalatable. Hence, it is just plain common sense that, with the addition of a vegetable fat, skimmed milk can be made palatable and more desirable as a human food for culinary operations, releasing whole milk so used for other more needed purposes.

Hebe Brings Skimmed Milk to Market as Human Food

HEBE was created to reach this additional market—to serve as an auxiliary to the daily milk supply for specific uses in the home. Hebe is labeled with the utmost frankness as to its contents and uses. It is advertised as it is labeled—honestly and frankly—"A Compound of Evaporated Skimmed Milk and Vegetable Fat," for cooking and baking. By the scientific emulsifying of refined coconut fat with the skimmed milk, Hebe makes it possible to market skimmed milk as a human food, and thus opens to the dairyman another and more profitable outlet for his by-product, without interfering with the markets already established for dairy products. In the production of every 100 pounds of Hebe 210

pounds of skimmed milk are used, and 7.8 pounds of coconut fat. Thus a small amount of vegetable fat serves as the vehicle for bringing a large amount of skimmed milk to market as human food.

Benefit to the Entire Industry

HOW is this new market to benefit the dairyman who is not near enough to a Hebe condensery to sell his product there? The Hebe industry is young, and Hebe plants few in number, but every can sold is helping to develop this new market, and every bit of advertising put out by the Hebe Company is helping to educate the people to the greater use of dairy products. This influence cannot help but be of great benefit to the entire industry, for every additional outlet for marketing a product puts a new value on the product, and skimmed milk, prepared and marketed for a human food, is bound to increase in value, thereby benefitting every dairyman.

Every By-Product Should be Utilized

BUSINESS has proved that no industry is completely successful until every by-product has been utilized in the most profitable way. To feed the skimmed milk to stock is not the most profitable method of utilizing this by-product, because only a very small percentage of the food value of the skimmed milk is recovered in the meat of the animal. The larger part is used up by the animal simply in living.

The dairy industry will reach a fuller measure of efficiency and economy when the skimmed milk is disposed of in the most profitable way—as human food. Hebe points the way. It is an ally to the dairy industry, offering one method of utilizing skimmed milk as human food and increasing the use of dairy products in the home.

You will be interested in reading our booklet, "The Missing Third." Ask us to send you a copy. There is no charge for this. Address 2160 Consumers Bldg., Chicago. The Hebe Company, Chicago and Seattle.

Chickens Sick?—Use Germozone Roup, colds, bowel troubles, sore head, limber neck, etc. At dealers or postpaid lists, with book Poultry Library. GEO. H. LEE & CO., Dept. F-39, OMAHA, NEB.

POULTRY

Baby Chicks S. C. White Leghorns, also eggs. Write for prices and order early. HILLSIDE POULTRY FARM, Hillsdale, Mich.

Barred Rock cockerels, Ringlet strain, \$3.00 each; pullets \$2.00. A. A. WOOD & SON, Saline, Mich.

CHICKS We have shipped thousands each season since 1894. Are looking for orders now for Spring delivery. Write for prices and testimonials. FREEPORT HATCHERY, Box 12, Freeport, Mich.

Cockerels and yearling hens, Orpingtons, Rocks, Reds, Wyandottes, Leghorns, Spanish, Minorcas, Campines. Tryon Poultry Farm, Fenton, Mich.

Fowler's Buff Rocks: Cockerels, cock birds and pullets. Write for prices. R. B. FOWLER, Hartford, Mich.

DANGER If chicks and eggs are not shipped right. **Chix 15c Up** 100,000 Chix this season. Best Blooded stock ever produced at low prices quoted. Selected Utility, Exhibition trapnested stock. 15 varieties. Hatching eggs. Hens, Ducks, Turkeys, Geese. Book your orders early. Avoid disappointment. Stamps appreciated. Beckman Hatchery, 26 E. Lyon, Grand Rapids, Mich.

For sale "Buy the Best" eggs for hatching from 200 Egg strain Barred Plymouth Rock \$2.00 per 15, \$5.00 for 45 eggs. H. B. PROCTOR, Grand Haven, Mich.

John's Big beautiful Barred Rocks are hen hatched grow quick, good layers, sold on approval, males \$4 to \$5. Circulars photos. John Northon, Clare, Mich.

Parks Strain Barred Rock Cockerels, \$4.00 each. Pullets \$3.00. O. H. WRIGHT, L.B. 103, Ypsilanti, Mich.

R. C. Br. Leghorn Hens and unrelated Cockerels. Mrs. CLAUDIA BETTS, Hillsdale, Mich.

S. C. R. I. Reds. Choice cockerel and pullets from pure bred quick maturing heavy laying strain. Cockerels \$4.00 to \$5.00. Pullets \$3.00 to \$5.00. Pens \$15.00 to \$25.00. H. J. PATON, Route 3, Box 115, Ypsilanti, Mich.

Rhode Island Reds, B. G. large fancy cocks, \$4.00 each. BURT SHISON, Litchfield City, Mich.

Silver, Golden and White Wyandottes. Choice quality cockerels and pullets \$3.00 to \$5.00 each. C. W. BROWNING, R-2, Portland, Mich.

S. C. R. I. REDS. Bred from Whitaker's Reds. Fine dark birds. ALFRED DEICHMANN, R. 3, Pigeon, Mich.

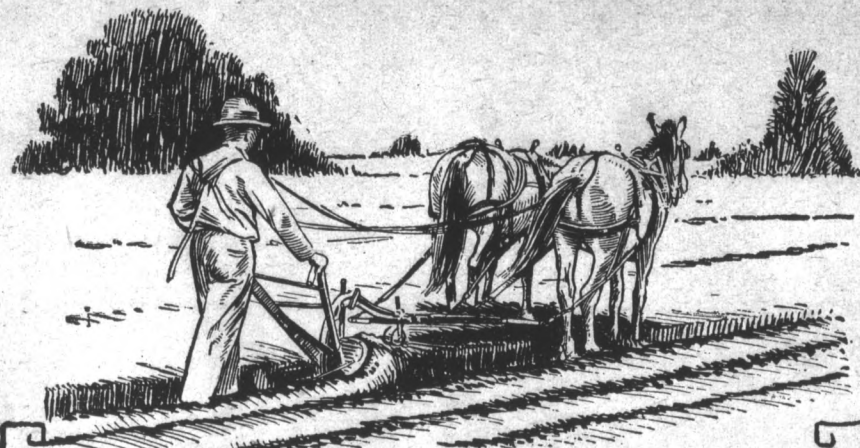
White Wyandottes Choice cockerels and pullets from pure bred quick maturing heavy laying strain. Cockerels \$4.00 to \$5.00. Pullets \$3.00 to \$5.00. Pens \$15.00 to \$25.00. H. J. PATON, Route 3, Box 115, Ypsilanti, Mich.

WHITAKER'S R. I. REDS Bred for color and eggs. Choice, farm raised cockerels at reasonable prices. Day old chicks. Order now for early spring delivery. Write for prices. INTERLAKES FARM, Box 39, Lawrence, Mich.

White Plymouth Rocks Stock for sale, breeding and quality of the best. Write wants. Richard M. Gretton, Mason, Mich.

Additional Poultry Ads. on Page 111

A MONEY SAVING GUARANTEE--



MOLINE CHILLED PLOWS

The Moline Plow Company is the only manufacturer of Chilled Plows that guarantees Chilled Plow Moldboards against breakage in actual field use, while at the same time guaranteeing them to properly fit and to have a deep chilled wearing face as hard as the hardest of chilled moldboards.



A guarantee means nothing if it does not give the advantages which it sets forth. Moline Chilled Plows give the users the best possible value when they buy and afterwards save the expense of repairs due to breakage. The hard surfaces on Moline

Chilled Plows resist the wear of gritty soils and the gray iron backs do not break.

The Moline Line offers a chilled plow for every plowing requirement and every plow is light in draft, easily handled and does excellent work.

See your Moline Dealer about getting a Moline Plow now or write us for full information.

Moline Plow Co., Moline, Illinois

Nearest Branches at Jackson, Columbus and Indianapolis.



SINCE 1865 "MOLINE" ON A FARM IMPLEMENT HAS BEEN A MARK OF QUALITY

BREEDERS' DIRECTORY

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

Wildwood Farms Angus

Bulls in service are, Black Monarch 3rd, Grand Champion Bull, Michigan State Fair 1914, 1915, 1916.

Imp. Edgar of Dalmeny, Grand Champion Bull, Michigan State Fair 1918.

President Wilson 4th, Grand Champion Bull, Michigan State Fair, 1919.

We offer for sale 6 choice young bulls by Black Monarch 3rd.

Edgars Calves, are as yet too young to offer for sale but are a promising lot of calves, and are going fast.

A visit will interest you, write for particulars to

WILDWOOD FARMS
ORION, MICHIGAN

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

WOODCOTE AUGUS

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

Cloverly Angus, 5 cows with calves, rebred; 2 bred cows; 1 two year old, 2 yearling heifers. Price \$2800. 6 yearling bulls, \$225 each. Geo. Hathaway & Son, Ovid, Mich.

For sale at reasonable prices, several Aberdeen Angus bull calves and yearling bulls sired by Lord Ida 2nd No. 248330. Lang Bros., Davison, Mich.

Registered Guernseys
A two year old bull, and nearly four months old bull calf. F. E. ROBSON, Room 307, M. O. R. R. Depot Bldg., Detroit, Mich.

GUERNSEYS

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

GUERNSEYS

First Prizes and Gold Medals were awarded to Guernsey milk and Guernsey cream at the 1919 National Dairy Show. Guernsey products are consistent winners at local as well as national contests. Write for our free booklets.

The American Guernsey Cattle Club, Box 138, Peterboro, N. H.

QUALITY
ECONOMY
QUANTITY

GUERNSEY BULLS FOR SALE

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

Avondale Farms, Wayne, Mich.

GUERNSEY bull calves whose sire's dam made 19,460.20 milks 909.05 fat. Their mother's sire's dam made 15,109.10 milks 778.90 fat.
T. V. HICKS, Battle Creek, Mich.

REG. GUERNSEY'S

The best of breeding—at prices you will pay—for good bulls—and bull calves—we can't beat the best.
J. W. WILLIAMS, No. Adams, Mich.

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

Registered Guernsey Bull calf 4 mo. old well bred; also B. T. Poland China boars ready for service.
JOHN GORKE, Owosso, Mich.

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

Watch Herd (State and Federal Tested) Ypsilanti Michigan. Offers young sires out of choice advanced registry dams and King Kovadyke Artis Vale: Own dam 34 16 lbs. butter in 7 days; average 2 nearest dams 37.61, 6 nearest 33.93, 20 nearest 27.83

Additional Stock Ads. on Page 106



Lime for Better Agriculture

(Continued from first page).

quires thirty and one-half pounds of calcium (lime) to produce it. A fifteen-ton cabbage crop requires twice that amount. For best results we must see to it that these crops can easily secure their lime requirement.

Any vegetable gardener who wishes to reach the highest success in his art should examine his soil. The common and best vegetables grow best in soils that are not acid.

Lime to Correct Poisons in Soils.

In soils certain poisonous substances may be formed which may prove injurious to crops if they are allowed to accumulate. The presence of lime destroys the poisonous effect of many of these harmful substances. The bacteria in the soil so helpful to the farmer cannot live in acid soils. Soil acidity seems poisonous to these tiny workers. This is a reason why it is best to lime an acid soil before it is inoculated.

Lime to Increase Returns from Fertilizers.

At one time I tried to increase the growth of alfalfa on an acid silt loam soil poor in phosphorus by the use of acid phosphate only. To my surprise the fertilizer reduced the yield. I had a strip on which I used lime alone. Here the increase amounted to several hundred per cent. On a third strip I tried both acid phosphate and lime in the same amounts as were used on the first two strips. Instead of depressing the yield the acid phosphate increased the yield fifty per cent over the yield on the strip receiving the lime alone. In this case, acid phosphate without lime was worse than no fertilizer at all; but phosphate with lime was a paying proposition.

The Ohio Experiment Station has published some interesting results along this line. In a twelve-year test on an acid soil, they used a complete fertilizer, acid phosphate, and manure on different portions of a field, on both limed and acid soil. The results in growing general farm crops are as follows: Lime increased the net profits from the mixed fertilizer forty-nine per cent; from the acid phosphate, fifty-nine per cent; from the manure, seventy-three per cent.

These results are typical, showing what liming an acid soil will do to increase crop production and farm profits. Is it any wonder that Director Thorne should say that farming acid soils without the use of lime is a waste of time and money?

Think of the hundreds of thousands of acres of land in the Pacific states, in the middle west, and in the southern and eastern states that can be improved through the use of lime. And think of the hundreds of millions of tons of limestone, a rich endowment of nature, to be found in all sections of the country—the great source of agricultural lime. We need but sense the importance of this carbonate of lime in our agriculture, and then make use of it, as we should.

What Kind of Lime to Use.

During my ten-year connection with the Soils Department, University of Wisconsin, I have used pulverized limestone, air-slaked lime, refuse lime, air-dried and kiln-dried marl, pulverized clam shells, coarsely crushed limestone, and tailings from lead and zinc mines. These are some of my conclusions based on results:

(a) When lime is used for the first time to benefit clover or alfalfa, it is highly desirable to use finely pulverized material, especially when the legume is to be seeded shortly after the lime is applied. Coarser material may be used for later applications if necessary.

(b) Pulverized limestone, marl and pulverized shells are to be preferred on sandy soils.

(c) The best lime to use is any agricultural lime that is pulverized sufficiently so that at least fifty-five to sixty per cent will pass through a sieve having openings one-sixtieth of an inch in diameter, and which contains the most lime, or lime carbonate equivalent, in a dollar's purchase. It is important, therefore, to know the moisture content and the carbonate of lime test of any material before buying.

(d) Material containing a little moisture is more agreeable to apply than perfectly dried material. The dry material will pass through lime spreaders better than very damp lime.

How Much Lime to Apply.

In some of these tests and demonstrations, I tried pulverized and crushed limestone in different amounts on the same field. On ordinary acid soils it is best to satisfy fully, or nearly, the lime requirement of the soil, especially for alfalfa. On rich, acid tobacco soils a two-ton application per acre of finely pulverized lime carbonate gave most excellent results for alfalfa.

If the soil is acid at all, at least two tons of finely pulverized carbonate of lime should be used to the acre for clover and other crops. It seems, best, however, to apply sufficient lime to neutralize all the acidity in the surface six inches of soil if possible, for alfalfa.

It is well to keep in mind the comparative value of different forms of lime.

(a) One ton of lump lime equals one and three-tenths tons of hydrated lime, equals one and eight-tenths tons of carbonate of lime—this on the basis of lime content.

(b) On the basis of neutralizing value when dry and of equal fineness, the same values of these three forms of lime hold true.

(c) On the basis of quickness of action—one ton of lump lime finely ground is equal to at least three tons or more of pulverized limestone (considering ordinary pulverized limestone).

(d) Finely pulverized limestone is much more quick-acting than coarsely crushed limestone.

How to Apply Lime.

When tests or experiments are made to test out the value of lime on individual farms, the material may be spread from the wagon by means of shovels, from little piles in the field, or by using a manure spreader. When acres are to be limed, a lime spreader is a good investment. In liming fields, it is very convenient to place the lime in piles at one end of the field, if the field is small; and at both ends if the field is large. In this way the spreader can be loaded at every round, or at each turn.

Any form of lime should be well mixed with the surface six inches of the soil. The more lime particles that come in contact with soil particles the better the results. This may be done by disking, by dragging and by cultivation. A more thorough mixing can

be done when the lime is applied to plowed land.

How Often to Lime.

Lime does not leach out of the soil so rapidly as is commonly supposed. On some fields receiving two tons of pulverized limestone eight years ago the soil seems as well supplied with lime now as seven years ago. Some experiments have shown that when lime is mixed with the top six inches of an acid silt loam soil, it passes downward very slowly. It becomes absorbed by the soil.

Tests at Cornell Experiment Station, New York, show that more lime is leached from a soil when it is not cropped than when it is cropped. Leaching experiments there show an annual loss of about four hundred and thirty-three pounds of carbonate of lime per acre to a depth of four feet when the land is cropped.

When an acid soil is limed sufficiently to neutralize all the acidity in the surface six or eight inches, liming need not be repeated for many years, especially when the soil is silt loam or clay loam. The need of more lime can be easily determined by testing the soil for acidity.

Lime a Soil-fertilizing Regulator.

Soil fertility, or the productive power of a soil, is determined by several factors. The presence of sufficient lime in the soil affects these factors in favorable ways, but when a soil is acid, and therefore lacks lime, these fertility factors are affected in unfavorable ways, and the productive power is correspondingly lowered. Soil acidity, therefore, is an indication of lowered productive power. The addition of lime means increased productive power. An ample lime supply means fertility more easily maintained.

FINDS FEEDING HOGS PROFITABLE.

I HAVE frequently read of other farmers' experience in feeding hogs so I will venture to give a bit of my own. On November 24, 1919, I purchased, of the local shipping association, seven hogs averaging in weight one hundred and thirty pounds per head. The cost of these hogs was \$12.10 per hundred pounds, or a total of \$112.70. I fed them sixty-three days. When I first got them I saved out my choice for a brood sow. Then, after feeding them for a time I killed one for our home supply of meat.

On December 30 I shipped the remaining five through the local shipping association, of whom I purchased them. The five weighed fifteen hundred pounds, or an average of three hundred pounds per head, and shrunk three pounds per head in shipping. After deducting shipping charges they left a net return of \$210.13.

I figure that the cost of feed was \$75, making a total cost of \$187.70 and leaving a net profit of \$22.43 in cash, a choice brood sow and the hog we had butchered for our home supply of meat. I figure that the value of the two mentioned was \$45 each, making a total profit of \$112.43.

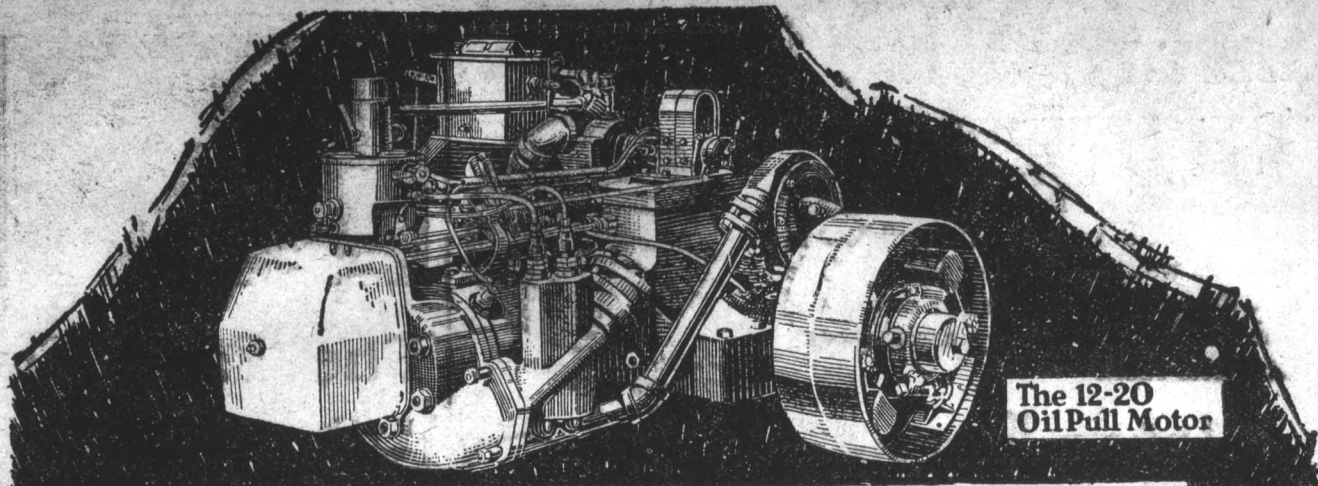
These pigs were a Poland-China—O. I. C. cross, which, it is my judgment, make a more rapid maturing hog than a purebred of either breed, and far superior to a scrub of mixed breeding.

The feed consisted of ground oats, barley and rye, fed in the form of a slop and they had free access to shelled corn at all times.

I have had people tell me that there is no profit to be made in feeding hogs for market when one has to depend upon purchased feedstuffs, but I have found that this popular belief is not always correct, both from this year's and last year's experience in feeding a small bunch of good hogs.

Eaton Co. F. H. FLEETHAM.

Wool is an important item in the sheep industry these times, with prices unusually high, and fine wools selling much higher than the coarse clips.



The 12-20 Oil Pull Motor

The OilPull Motor Demonstrates OilPull Quality

OilPull Quality—proved by the remarkable 10-year OilPull Record of Performance—is well demonstrated by the OilPull motor, the finest tractor motor in the world.

This is a broad statement—but it is amply borne out by the facts. The OilPull motor possesses more genuine quality in material and workmanship than many of the finest automobile engines. It is the type of tractor motor that has proved the most efficient and durable in public and private tests for the past 10 years—two cylinder, low speed, heavy duty, valve-in-head.

And these are the outstanding features of this OilPull motor:—

—it is built complete in Advance-Rumely factories.

—it stands absolutely alone for fuel economy—especially built for oil fuels and guaranteed in writing to operate successfully on kerosene under all conditions.

—it follows automobile practice in machining—37 motor parts, including the cylinders, are ground to the thousandth part of an inch.

—it is the only oil cooled tractor motor—unaffected by extremes of heat and cold.

—its crankshaft is built to U. S. naval specifications—80,000 pounds tensile strength as against the usual 50,000 pounds.

—it is throttle governed—the speed of the engine automatically and instantaneously adjusted to meet changes in the load.

—the belt wheel runs directly off crankshaft—no intermediate gears—clutch operated from driver's seat.

—it employs a fresh oil system of combined force feed and splash—equipped with Madison-Kipp lubricator.

—it is equipped with a Bosch High Tension Magneto, the best and most expensive magneto made.

—all moving parts, including the governor, are enclosed.

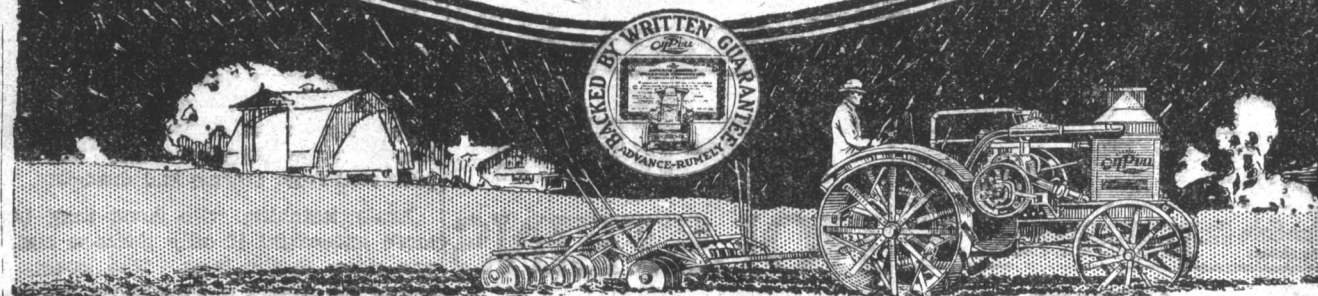
—all parts are easy of access.

The OilPull is made in four sizes—12-20, 16-30, 20-40 and 30-60 H. P.—standard in design. Advance-Rumely Service is guaranteed by 29 branch offices and warehouses and our 3,000 authorized dealers. Write for our 1920 catalog.

ADVANCE-RUMELY THRESHER COMPANY, Inc.

La Porte, Indiana

Battle Creek, Mich.



ADVANCE-RUMELY

\$19.95 Sent on Trial
Upward *American* Cream
SEPARATOR

Thousands in Use giving splendid satisfaction justifies investigating our wonderful offer: a brand new, well made, easy running, easily cleaned, perfect skimming separator only \$19.95. Skims warm or cold milk closely. Makes thick or thin cream. Different from picture, which illustrates our low priced. Bowl is a sanitary marvel and embodies all our latest improvements. Our Absolute Guarantee Protects You. Besides wonderfully low prices and generous trial terms, our offer includes our—

Easy Monthly Payment Plan

Whether dairy is large or small, do not fail to get our great offer. Our richly illustrated catalog, sent free on request, is a most complete, elaborate and interesting book on cream separators. Western orders filled from Western points. Write today for catalog and see our big money saving proposition.

American Separator Co., Box 1061 Bainbridge, N. Y.

HUDSON TANK HEATER

(Formerly Called Nelson)

Just put a few cobs into the fuel box when you do your chores and have drinking water at 70° for your stock all winter. No ice to chop. No chilled stomachs. No bother or fire danger with a Hudson Tank Heater. Stock gain faster—keep healthier. Milk checks increase \$2 to \$3 monthly per cow. Heater soon pays for itself.

Burns Straw, Cobs, Wood or Coal

Heats water twice as fast as any other heater and with less fuel. Made of 20 gauge galvanized metal with cast flanged joints bolted and packed with one piece asbestos. No welded seams to leak or rust. End of tank and pipe cast in one piece to above water line. Won't rust out. More than one inch of clearance for water to circulate under heater. Askes easily removed. Get one for your stock NOW. WRITE FOR FREE CIRCULAR.

HUDSON MFG. COMPANY

Dept. 54

MINNEAPOLIS, MINN.



Keeps water at 70°

LET US TAN YOUR HIDE.

Horse or Cow hide. Calf or other skins with hair or fur on, and make them into coats (for men and women), robes, rugs or gloves when so ordered. Your fur goods will cost you less than to buy them and be worth more.

Our illustrated catalog gives a lot of information. It tells how to take off and care for hides; how and when we pay the freight both ways; about our safe dyeing process on cow and horse hide, calf and other skins; about the fur goods and game trophies we sell, taxidermy, etc.

Then we have recently got out another we call our Fashion book, wholly devoted to fashion plates of muffs, neckwear and other fine fur garments, with prices; also fur garments remodeled and repaired.

You can have either book by sending your correct address naming which, or both books if you need both. Address

The Crosby Frisian Fur Company, 571 Lyell Ave., Rochester, N. Y.



\$20.00 FOR THIS FINE FUR COAT

Made from your own cow or horse hide to your own measure. We tan and manufacture the raw hide into a warm serviceable coat for this small charge.

Send Us Your Hides We make up any kind of skin to suit individual desire.

Also Ladies Coats and Furs, Auto Robes, etc.

We have been leaders in the tanning business since 1878 and guarantee satisfaction.

Free Book of styles of Men's and Women's Furs. Write for it today.

Reading Robe & Tanning Company, 110 East St., Reading, Mich.



Insures Cow Health

THE insulating blanket of still air in a Natco stable wall prevents sudden temperature changes. It protects the health of your cows and keeps up the milkflow in uncertain weather. Natco Hollow Tile walls do not gather moisture as do walls of solid masonry, nor do they absorb grease, dirt or foul odors.

Natco Barns

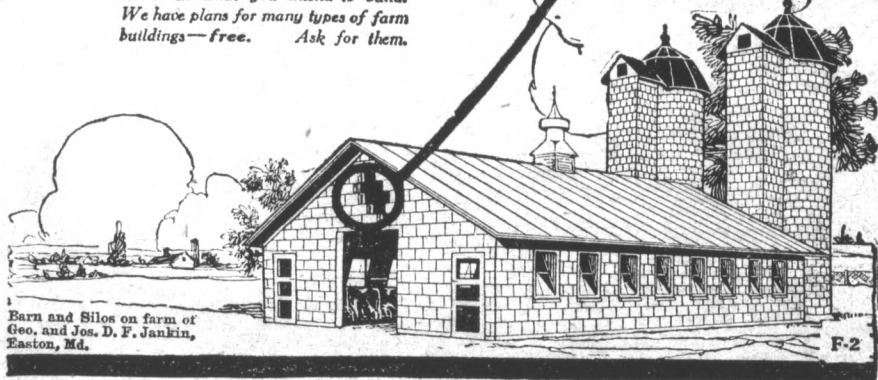
are a permanent investment—not an expense. They need no painting and very seldom require repairs. They withstand severest windstorms and are fire-safe, being constructed of burnt clay tile. Natco walls are exceedingly strong. Masons lay up these walls very rapidly, easily handling the large-size units.

Whatever you intend to build, build it with Natco Hollow Tile. Many uses are pictured and explained in our book, "Natco on the Farm." Write for it today—free.

National Fire Proofing Company
1301 Fulton Building Pittsburgh, Pa.

23 Factories assure a wide and economical distribution

Write us what you intend to build. We have plans for many types of farm buildings—free. Ask for them.



Barn and Silos on farm of Geo. and Jos. D. F. Jankin, Easton, Md.

Guernsey Bull, Registered, For Sale, 8 Mo. old, from A. R. dam. Write for particulars. C. A. HENNESEY, Watervliet, Mich.

Reg. Guernsey Bull calf 4 mo. old for \$75, delivered. Sire Deasie's May Rose of Allenwood 33278. His 5 nearest dams average 726 lbs. fat, dam of calf Imp. E. A. BLACK, R. 3, Howard City, Mich.

For Sale Registered Guernsey Bull calves, sired by Starlight of Bonaville 53061, undefeated bull, yet cheap. John Ebels, R. 2, Holland Mich.

Facts in
BLACK & WHITE

Real Business Methods and Holstein Cows Will Win

You will find the keeping of a record of the cost of each cow, and her net net profit or loss, to be of great advantage. You will then feed only large milk yielders, and will be convinced that one good, healthy, big roughage-consuming Holstein Cow will take the place of two or three ordinary animals. You will save one-half on feed and labor.

Read how in our wonderfully complete booklets and—Send for them today.

THE HOLSTEIN-FRIESIAN ASSOCIATION
164 Hudson Street
Brattleboro, Vermont

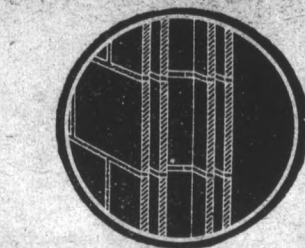
The Traverse Herd

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

TRAVERSE CITY STATE HOSPITAL
Traverse City, Mich.

GRADE UP YOUR HERD

with a young son of Spring Farm Pontiac Cornucopia 18th, whose five nearest dams have an average record of 36.22 pounds of butter in seven days. Have several priced to sell.
JOSEPH H. BREWER, Grand Rapids, Michigan



Section of Natco wall showing still air spaces



The Farm Flock in Winter

If old household scales are used in weighing dressed poultry for private customers, it may be best to have them tested by comparison with scales known to be accurate. If the scales underweigh it means a financial loss to the poultryman. If they overweigh it means a still more serious loss by casting a reflection on the honesty of the producer.

In advertising hatching eggs it is not best to place too much emphasis on home egg records even if they are good. Producers who wish to bring up their stock and charge high prices for the eggs should enter their birds in the official contests and obtain records supervised by disinterested parties. Poultrymen who do not enter their birds in the contests can obtain birds of good laying ability and sell the hatching eggs at a fair price. But they cannot expect buyers to place too much confidence in private records now that we have the egg-laying contests to furnish producers with official records.

A broody coop made of slats should be in every poultry house. Then the broody hens needed for hatching eggs can be quickly removed from the nest and fastened up until broken. These coops should be portable so they can be taken outside for sunning and spraying. And in the summer when it is very hot in the poultry house it may be best to place the broody coop outside in the protection of a shade tree. In the winter and early spring the broody hens must be locked up inside the laying house where they will be protected from storms and draughts.

Early hatching with hens may be more successful if only thirteen eggs are given to the hens. The average hen of the American breeds can hardly protect fifteen or more eggs during very cold weather. The eggs are slightly chilled by turns if the hen cannot cover them all. Often they are crowded and broken. When fully as many chicks can be obtained from thirteen as fifteen eggs it surely pays to use the extra two eggs for another purpose. The large Brahma and Cochins can probably cover at least fifteen eggs at any season.

When feeding laying mash for eggs the producer sometimes keeps it up for two or three weeks and then stops because the increase in egg production does not seem large. Often the birds may have just reached the stage for profitable egg production when their balanced ration is cut down. Poultry cannot stand neglect and it costs more than ever to bring them back into condition after they are neglected. The only way to earn a profit is to keep them on balanced rations at all times. Then if they cannot pay their board and a profit some other factor in the management is wrong. At least there is no hope for profit if the feeding methods are wrong.

Farmers using artificial brooders heated with oil or coal, incubators of any kind, or lamp-heated oat sprouters should give them careful attention to keep down the risk from fire. A handy fire extinguisher is one of the cheapest little insurance policies that can be purchased. Of course, it must be backed up with other forms of insurance.

When using lamps in brooders or incubators it is necessary to keep them clean and carefully regulated. At the present profit in the egg business, the poultryman with burned buildings might have to work a long time to catch up.

Look over the catalogs and plan on starting some fruit trees on the poultry range. Fruit prices are good and usually the farmer who does not raise fruit at home does not feel that the money can be spared to buy enough of it on the market. Poultry yards and ranges will be better for the birds if some shade is furnished. An evergreen windbreak may also protect the brood coops, furnish the birds a healthful, cool place in which to dust on hot days and enable them to use the range when strong winds might otherwise drive them to the houses.

If no less expensive green food is available it will be desirable to build or buy an oat sprouter as sprouted oats are valuable to bring summer conditions into the winter laying house and stimulate winter eggs. If there is no room in the house that is always warm enough for sprouting oats it will be necessary to use one of the sprouters equipped with a lamp. If home-made sprouters are made and heated, every precaution should be taken to make them fire-proof. When sprouting oats with heat from a lamp it is probably best to buy an all-metal sprouter which will be safer.

It pays to keep a few leg bands on hand. They are useful in marking the best cockerels that are to be kept for breeders, the late moulting hens which are to be the best layers, and all of the pullets before they become so mature that they may be mistaken for old hens.

In sections where the wild birds seem to become scarcer each year it seems as if more guineas and turkeys could do a great service in cleaning up the bugs and grasshoppers. Turkeys are a very speculative crop and few farmers have enough success with them to make substantial profits. A farmer needs quite an acreage for turkeys as they like to range and in spite of their bug harvesting skill, many farmers do not like to furnish pasture for their neighbor's flock of turkeys. But guineas will usually stay nearer home and while the market for them has been rather limited the demand is now increasing in the cities because of the scarcity of wild game. The guinea is a large-breasted bird with a gamey flavor. Both turkeys and guinea are fine sidelines on the farm and give a variety to the menu on the home table, even if only a few are raised and none are marketed.

If eggs are saved for hatching during cold weather, frequent collecting is necessary. Chilled eggs placed in an incubator are wasted and at the present cost of eggs the poultryman must use the greatest skill in incubation to prevent losses. The fresher the eggs when incubation begins the greater the chances of receiving vigorous chicks. If eggs are kept for hatching more than two or three days it pays to turn them each day. This keeps the germ and the yolk from gradually sinking to one side.

R. G. KIRBY.

"Top-Notch" HOLSTEINS

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

McPherson Farms Co., Howell, Mich.

GET A BETTER BULL WINWOOD HERD

BREEDERS OF
Registered Holstein-Friesian Cattle

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

JOHN H. WINN, (Inc.)
Lock Box 246, Roscommon, Mich.

\$125 Liberty Bonds or terms gets bull calf born May 29, 4 white, 9 nearest dams avg. 23.85 lb. bu., 333 lb. milk in 7 days. Dam gd. dam of Pontiac Cornucopia M. L. McLAULIN, Redford, Mich.

28 lb. Bull Calf

Dam, Canary Tet Hengerveld, 7 day, 4 year old record, 28.24 butter. She is a daughter of Woodcrest Hengerveld De Kol, a son of Hengerveld De Kol, and a sister to Nancy Lucy Hengerveld, a 49 lb. cow. Calf sired by a son of Rag Apple Korndyke 8th. Born Nov. 16, 1918. Splendid individual, ready for service. Dam will freshen soon and is a good 30 lb. prospect. Priced very low. Write for full pedigree and particulars.

WAH-BE-ME-ME FARMS,
WHITE PIGEON, MICHIGAN

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

KEEPING SHEEP ON SHARES.

(Continued from page 82).
market value of the shorter wool could not be ascertained, nor whether it had a sufficiently lower value to offset the one and a half pounds extra yield and the additional labor in shearing.

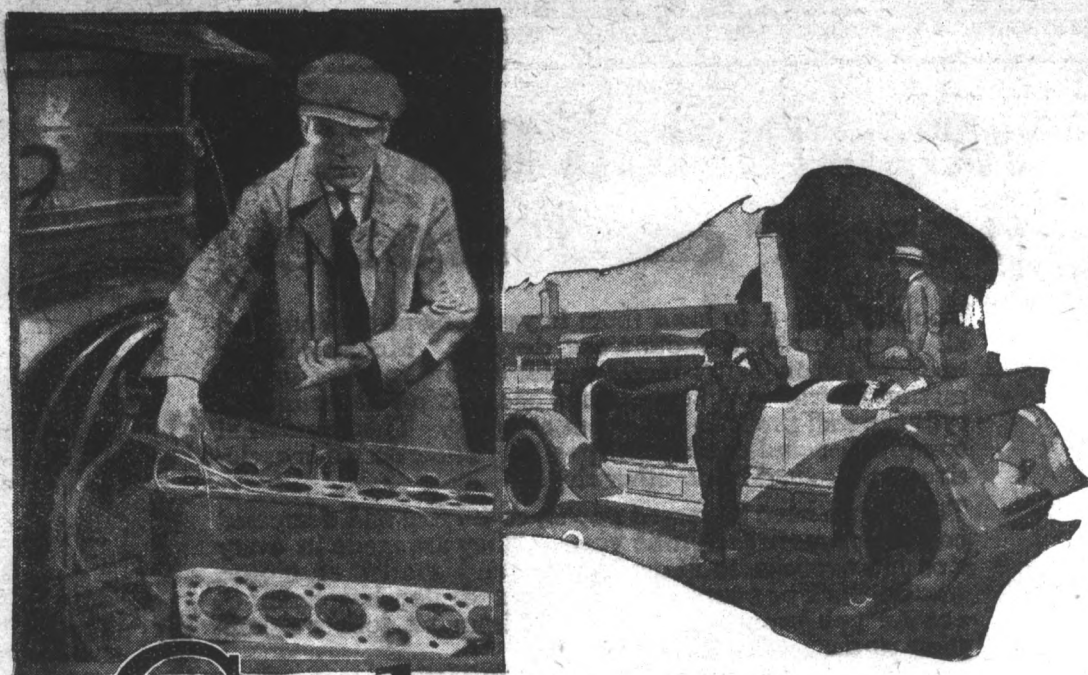
Brush cut by several of the farmers while clearing land during the fore part of the summer and cured in small bundles for winter feed was relished by the sheep in all cases. When given to them while being fed on mixed hay, the sheep invariably left the hay and began eating the brush.

Sheep sheared once a year gave a lamb crop averaging eighty-five per cent, while those sheared twice averaged 43.6 per cent. This great difference would condemn the practice of frequent shearing, were it not that the highest percentage, or 133 per cent, was obtained by one farmer whose ewes were sheared twice and dropped their lambs in February. In a larger flock not kept on shares and handled in a like manner, the increase was eighty-eight per cent, the lambs being dropped in January and February.

The amount of brush destroyed by the sheep on the fenced areas of cut-over land after the two seasons of pasturing, varies according to the original condition of the areas. The largest amount was destroyed where the brush was low enough to enable the sheep to reach the tops, and the least amount where the brush consisted mostly of tall saplings. Where the fenced areas consisted of brush and stump land, less brush was destroyed, the sheep preferring the clover and grass growing among the stumps but giving preference to brush during the fore part of the season. At a very conservative valuation, the saving in the cost of clearing the land on the fenced areas used for sheep pasture during the two seasons, represents an average of \$2.50 per acre, when comparing these areas with adjoining unfenced brush land.

As above stated, the contract provides for keeping the sheep five years, after which they, or an equal number, are to be returned to the Live Stock Association, the farmer meanwhile turning over one-half of the wool and one-half of the lambs to the association. In order to give an inducement to the farmers to retain all of the wool and the lambs, they are given an option to pay cash based on prices which are calculated to be below actual market values. Thus with a market value of sixty-five to seventy-two cents per pound for wool last year, and fifty-five to sixty cents this year, the price agreed upon is fifty cents, then forty cents during the third year; thirty-five cents during the fourth, and thirty cents during the fifth year. Likewise, the price of lambs, when ready for the market during late fall, ranges from \$10 the first year down to \$6.00 during the fifth year. While the ewes cost \$18.50 and the rams \$38.50, the farmers are also given the option to keep them at the end of the fifth year by paying \$10 a head for them.

Since placed on shares, some of the sheep have been sold by the association on account of having been returned by farmers who sold out and by others who wished to reduce the size of their flocks. These sales, of course, account in a great measure for the forty per cent dividend paid to the stockholders this year.



Carbon

a real danger to your engine

WHEN your car isn't pulling right—when the spark plugs start to miss fire and the engine knocks on the hills—when the water boils after a short run—then you know the engine is full of carbon again.

Carbon is the worst enemy of the gasoline or kerosene engine.

The causes of carbon and how to prevent its formation

You need not permit your engine to be fouled and damaged by excessive carbon deposits. There are but two natural causes of this rapid accumulation: 1. Inferior oil that forms sediment, or oil that is too heavy or too light in body. 2. Too rich a gasoline mixture. (This can be improved by a slight carburetor adjustment.)

Carbon is formed by ordinary lubricating oil which breaks down under the terrific heat of the engine—200°F. to 1000°F. Large

quantities of black sediment are formed. The oil is left thin and watery. This thin oil fails to hold the piston seal. It permits the broken-down oil and sediment to pass the pistons. In the firing chamber, it rapidly forms great plates of carbon.

The striking superiority of Veedol over ordinary oil is clearly illustrated by the two bottles. Veedol reduces sediment 86%.

With the correct grade of Veedol in the crankcase and with a proper fuel mixture, carbon does not form rapidly.

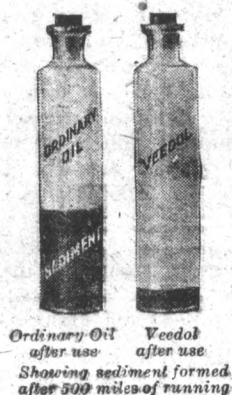
Buy Veedol today

Leading dealers have Veedol in stock. Ask for it today. The new 100-page Veedol book will save you many dollars and help you keep your engine running at minimum cost. Send 10 cents for copy.

TIDE WATER OIL

Sales Corporation

1623 Bowling Green Building, New York
Branches or distributors in all principal cities of the United States and Canada



BULL

READY FOR SERVICE

Good individual. More white than black. Sire's dam, 30.35; next dam 35.43. Full brother to Pauline de Nijlander 26 months 26.13. Dam—23.95 butter, 568 milk. Fine cow, straight top line, has daughter; at 4 yrs. Dam will be tested again this month and is expected to increase her record. Price \$300.00. Federal tested.

A. W. COPLAND, Birmingham, Mich.
Bull calves for sale.

Seven Yearling Heifers

FOR SALE—These heifers are of King Segs and Pontiac Komdyke breeding. All will be bred this month to "The Milk and Butter Champion", the only bull in the world whose dam is a world's record milk cow and whose sire's dam is a world's record butter cow, and both are yearly records. A good chance to get started right. L. E. CONNELL, Fayette, Ohio

CLUNYSTOCKFARM

A Semi-Official Bred Bull to Head Your Herd. Maplecrest Application, Pontiac No. 132652, heads Your Herd. His dam's record is 1344.3 lbs. butter, 23,421.2 lbs. milk in 365 days, and 35,103 lbs. butter and 515.6 lbs. milk in 7 days. One of his sons from our good record dams will carry these great blood lines into Your Herd. For Pedigrees and Prices write to R. BRUCE McPHERSON, Howell, Mich.

HOLSTEIN BULL half brother to Rag Apple the Great the \$25,000 bull. His dam a 19-lb. 3 year old, granddaughter of Colantha Johanna Lad and World's Record Cow, Pontiac Gladi, a daughter of Hengerveld De Kol. He was sired by Rag Apple Komdyke 8th. Will be 5 years old next March. A chance to get the best blood lines at a big bargain. ALBERT G. WADE, WHITE PIGEON, MICH.

LONG DISTANCE

Holstein calves of either sex. Can spare a nicely marked heifer backed by seven dams that average above 1200 lbs. butter and 2000 lbs. milk in one year. Choice Duroc Sows. A. FLEMING, Lake, Mich.

Reg. Holstein Bull, nicely marked, born Dec. 1, 1919, choice breeding, \$30 Reg. and Del. J. Robert Hicks, St. Johns, Mich.

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

For Sale 2 choice bred Registered Holstein heifers 2 yrs. old coming fresh in April. GEO. H. SCHLADER, B. 2, Freeland, Mich.

For Sale Four Reg. Holstein heifers due to freshen within a month. Good stock. MARTIN MOON, Brunswick, Mich.

MICHIGAN JERSEYS

Michigan is an ideal place for the raising of Jersey Cattle and there are no better cattle for dairying than Jerseys.

Jerseys mature early, live long, produce persistently, give the greatest amount of butter-fat obtainable from every pound of feed. They are hardy and vigorous, always on the job and the greatest mortgage-lifters that ever entered a barn.

Michigan should have more Jerseys and the Jersey breeders of the state are anxious to cooperate with anyone who is interested in successful dairy farming.

MICHIGAN JERSEY CATTLE CLUB

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

The Wildwood Jersey Farm

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

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

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

Bulls ready for service from our herd bull Marguerites Premier, grandson of Pegasus 99th of Hood Farm, and cows now on test for R. of M. Smith & Parker, Howell, Mich.

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

For Sale Two Jersey heifers, ages, thirty and eighteen months, both freshen in June, for particulars, address, Geo. Webster, South Haven, Mich.

HARWOOD HEREFORDS

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

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

HEREFORDS

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

Herefords. Just purchased 3 new herds, now have 150 head; we offer you anything desired either sex, horned or polled, any age. Priced reasonable. THE McCARTYS, Bad Axe, Mich.

Worn Piston Rings waste power and money

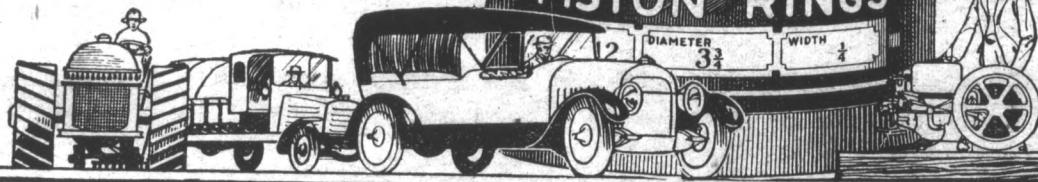
You can't afford to have them in your engines. You need all the power your motors can develop. McQuay-Norris **LEAK-PROOF** Piston Rings increase motor power. Not in any mysterious way—but because their equal action all around the cylinder wall prevents fuel from escaping. This insures full compression and consequent power. Their design is exclusive—can be had in no other ring.

These rings have increased power, saved fuel and decreased carbon for more than nine years. They are made in every size and over-size to fit every make and model of motor, tractor, truck or passenger car. Your dealer has them or can get you proper sizes promptly from his jobber's complete stock.

Write for Free Booklet

We will gladly send, without charge, our booklet, "To Have and to Hold Power," which explains why worn or imperfectly designed piston rings waste power and money. Address Dept. AE

McQuay-Norris Manufacturing Co., St. Louis, U. S. A.



HEREFORDS

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

ALLEN BROS.

PAW PAW, MICHIGAN

Hereford Herd Headers only the upper-crust retained, undesirables unsexed, not the largest herd, but few as good. Come and see. Farm adjoins town. E. J. Taylor, Fremont, Mich.

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

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

BIDWELL SHORTHORNS For Beef and Milk

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

BIDWELL STOCK FARM Box 2, Tecumseh, Mich.

Richland Stock Farms

Home of the Michigan Champions. Shorthorn Sires in Service:

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

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

Ionia Co. Breeders Ass'n

Have for sale Reg. Shorthorns, Herefords, Angus, Holsteins, Jersey, Red Polls and Brown Swiss Cattle. Shropshire, Hampshire and Rambouillet sheep. Poland China and O. I. C. swine.

FRED W. BRICKLEY, Sec., R. 3, Ionia, Mich.

Scotch Shorthorns Imp. Royal Bruce heads a select herd of females consisting of the Rosewood, Lovely Orangeblossom and Roan Lady and several other good females. Two bulls ready for service for sale also a few females.

CARR BROS. & CO., Bad Axe, Mich., Address Norman, Car, Secretary.

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

Branch County Farm breeders of American Polled Shorthorns. Herd headed by Grand Champion bull, Sultan's Standard, son of Sultan Creed. For sale choice young bulls & heifers priced to sell. Address G. E. Burdick, Mgr., Coldwater, Mich.

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

Shorthorns Good Scotch bred bulls, cows and heifers, priced right. W. B. McQUILLAN, R. 7, Howell, Mich.

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

Milking Shorthorns of best Bates breeding. Nothing for sale at present. E. H. KURTZ, Mason, Mich.

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

The Kent Co. Shorthorn Assn. have males and females of quality for sale. L. H. LEONARD, Sec., Caledonia, Mich.

FOR SALE Six Registered Durham Bulls Reds and Roan eight mths. to one year old all by Richard Fride 554679. HENRY C. LYNCH, Mayville, Mich.

HOGS

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

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

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

Duroc Opportunity

What would the earning capacity of a Brookwater Boar be in your herd? A mid-west breeder states that the Brookwater Boar he used added from \$75 to \$100 to every gilt bred to him. It paid this man to use one of our boars it will pay you.

We have several that we are offering at prices which appeal to the small breeder who must of necessity be a conservative buyer. We have a few that are good enough to be used in high class herds at prices in keeping with their individuality and breeding. Money invested in a good herd boar very speedily increases the value not only of what you sell but what you keep. Send for price list or better, visit the farm.

BROOKWATER FARM, Ann Arbor, Mich. HERBERT W. MUMFORD, owner, J. BRUCE HENDERSON, Manager.

DUROC BOARS

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

DUROC JERSEYS

CAREY U. EDMUNDS, Hastings, Mich.

DUROC JERSEYS

E. D. HEYDENBERG, Wayland, Mich.

Registered Duroc Boars

We have a choice lot of spring boars, sired by Michigan Cherry Col. No. 118478. Ira Jackson selected this boar to head our herd. Our prices are within every farmer's reach. The Jennings Farms, Bailey, Mich., R. F. D. No. 1

Duroc Jerseys Our herd won 15 firsts, 9 seconds, 3 thirds, 3 fourths, 3 fifths at leading Michigan fairs including State Fairs. We have some choice boars ready for service, reasonable prices. Some bred sows later on. RUSH BROS., OAKWOOD FARM, Romeo, Mich.

MICHIGANA FARM has a few good farmers Boars at farmer's prices. Also boars good enough to head good pure bred Duroc herds. Get our prices on bred gilts and sows. They will interest you whether you are planning to get a bred sow or not. O. F. FOSTER, Mgr., Pavilion, Mich.

Duroc Jerseys Two good yearling boars that are good enough to head the best herds in Michigan, also spring boars large enough for service. Sired by the Grand and Junior Champion boars. F. J. DRODT, R. 3, Monroe, Mich.

Duroc Boars. Spring boars, fashionable breeding, right prices. BOARDMAN FARMS, Jackson, Mich.

Duroc bred sows and gilts sired by Orion Cherry King Col. 2nd., bred to All Col. of Sangamo 2nd. First class lot, reasonable. W. O. Taylor, Milan, Mich.

For Sale, 3 fine Duroc Boars large enough for light service. Defender and Orion Breeding. Price \$30.00. F. A. LAMB & SON, Cassopolis, Mich.

Raise Chester Whites Like This the original big producers

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

Chester Whites, spring and fall stock for sale either sex. At Saginaw fair we won highest honors against strong competition. F. W. ALEXANDER, Vassar, Mich.

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

Additional Stock Ads. on Page 112

Veterinary.

CONDUCTED BY DR. W. C. FAIR.

Sore Neck.—I have a horse with a sore neck which makes him very touchy. The sore and itchy patch is about nine inches square. F. T. G., Homer, Mich.—Apply one part iodine and ten parts petrolatum once a day. If his neck is inflamed, dissolve one ounce of acetate of lead in one pint of cold water and apply three times a day.

Bowel Ailment.—About four months ago my twelve-year-old mare commenced to be troubled with looseness of the bowels. Her appetite is good. I feed her three quarts of oats and four ears of corn at a feed three times a day, besides she has plenty of good hay. For the past two months she has been idle. A. E. J., Walloon Lake, Mich.—Her grinder teeth may need floating. Give her one dram of dried powdered sulphate of iron, a teaspoonful of ginger and a dessertspoonful of powdered gentian at a dose in feed three times a day.

Abortion.—I would like to know if stepping on the edges of a concrete gutter will cause a cow to abort? One of my neighbors told me it would, and as I am going to keep my cows in this kind of stable I would like to know. W. R. P., Walkerville, Mich.—Accidental miscarriage, or abortion following an accident in cattle is not common in cows. Doubtless your concrete stable floor is all right and the kind all sanitary farm or dairy barns should be equipped with. Your neighbor is too easily frightened, the day of the wooden floor is fast passing, for no such floors can be kept clean.

Ovarian Cysts.—Have a registered cow that has had but one calf; since then she has been in heat and served by our herd bull three different times, but failed to get with calf. I then waited for three months and bred her to another bull. She does not come in heat regularly, remains in heat too long and I am afraid she may have tuberculosis. Had I better fatten her for the butcher? A. R., Stockbridge, Mich.—If she is not a deep milker, of good size and fine dairy type, fatten her. Your Vet. might advise crushing ovarian cysts, then she might get with calf. I do not believe she has tuberculosis. However, it is always good practice to ascertain whether a cow has tuberculosis or not.

Barrenness—Bruised Shin.—I have a cow that freshened last spring. Since then she has been in heat most of the time; has been served by our herd bull, but fails to get with calf. Have a mare that bruised shin near fetlock joint. Since then leg has remained thickened. Can this swelling be reduced? M. J. D., Alma, Mich.—Fatten her for beef. If not, call your Vet. and ask him to crush ovarian cysts. This is done by hand through the rectum, without casting the cow. She might perhaps conceive following this treatment. Apply one part iodine and nine parts fresh lard to thickened parts three times a week.

Chronic Cough.—For the past twelve months my nine-year-old mare has been troubled with slight cough, which she shows most in the morning and in fact, it is the only time in the day she shows it at all. Have given her oil of tar, also applied liniment, and I might add that our local Vet. prescribed for her, his medicine relieved her cough, but it seemed to return as soon as the treatment was discontinued. J. H. S., Fremont, Mich.—If you will dampen the feed, screen the barn windows and apply camphorated oil to throat every morning she should be benefited by it. Feed no clover or dusty, musty, badly cured fodder.

Injured Teat.—I have a promising heifer which lacerated one of her teats very badly with barbed wire, and in order to milk her from this quarter I had to use milking tube. After a few days it became almost impossible to insert the tube, or squeeze the milk out without it, so I let her go dry in this one quarter. Should I insert either a milking tube or teat plug and leave it in until she comes fresh, will the flesh heal around it soon? I am afraid to let her come fresh again with the teat plugged as it is. O. R. K., Mosherville, Mich.—All things considered, you had better leave the teat alone. If you are now milking her at a profit, perhaps it would not be a mistake to breed her again and keep her for dairy purposes. Doubtless the teat canal has closed.

WHAT ARE FARMERS' NEEDS?

(Continued from page 88).

working day for the farmer.

A system of sale and distribution through direct dealing between producer and consumer which will secure to farmers a fair share of the wealth they create, while reducing the burdens of a needlessly high cost of living for the consumer.

A law providing that supplies and service furnished to cooperative organizations of farmers must be equal to those furnished to private dealers under like circumstances, and equally accessible.

Credit on reasonable terms for farmers whose lands are not free and clear as required by the Farm Loan Board, but who need accommodation all the more on that account.

With the exception of lands adapted mainly for farming, the natural resources still in the public hands should be held and utilized for the public benefit.

National control of developed and undeveloped domestic fertilizer supplies, of the importation of fertilizer bases, and of the quality and contents of commercial fertilizers.

National regulation of the exportation of supplies essential to agriculture of which there is not enough for our own needs.

Effective national control over the packers and all other great interstate combinations of capital engaged in the manufacture, transportation, or distribution of farm products.

State or national control and supervision of stock yards and wherever necessary of elevators, drying and cold storage plants, and warehouses, and other terminal facilities.

Whatever solution of the railroad question as will best insure reasonable rates to the shipper, good wages with good conditions of work and living to the railroad employees, steady and reliable transportation for passengers and freight to the general public, and fair treatment, without fear or favor, to all concerned.

A national budget that will permit and require foresight, efficiency, and economy in public expenditures.

A system of good roads, national, state, and local, that will benefit the farmer not less than the transient automobilist.

The gradual abolition of farm tenancy, on the theory that no land should be held permanently for rental, and to that end a graduated land tax that will favor the operating farmer as against the non-operating landlord.

HIGH LAMB PRICES.

WITHIN a short time fat lambs have much more than fulfilled the expectations of their owners by selling up to \$18 to \$18.50 per hundred pounds for good to prime flocks offered on the Chicago market, while the few lots of prime feeding lambs sold up to \$15.50. These prices were the highest ever paid in December for fat lambs, and prices advanced in a single week \$1.30. The top price for lambs stood \$2.60 per hundred pounds below the year's top, established last March and the highest since May. With an insufficient number of fat lambs to meet the demand, the medium kinds sold much higher, although their advance was much less than that of the best flocks. A year ago the best lambs were selling at \$15.85, two years ago at \$16.75, three years ago at \$13.60, four years ago at \$9.90 and six years ago at \$8.40. One of the marked features of the recent market was the large spread in prices between average prices for aged sheep and lambs as compared with former years. The spread recently was \$7.60, comparing with \$5.10 one year ago, \$4.65 two years ago and only \$3.60 three years ago.

What the small packers say about meat competition

During a recent hearing, a number of the smaller packers were asked for their opinions of competition in the meat industry.

The following quotations, we believe, are typical of the feeling throughout the entire meat packing industry:

Michael Ryan, President of the Cincinnati Abattoir Company, said: "I have been a competitor of the large packers for the last 40 years, and I have never found a disposition on their part to crush competition. . . . They have concealed nothing nor attempted any unfair practices."

T. Davis Hill, Vice-President Corkran, Hill & Company, Incorporated, Baltimore, asserted that: "The big packers cannot control the market for the reason that there are too many outside packers. . . . Some days the small packers make the market for the big packers. We have no fear of the big packers' competition. . . . The large packers have never tried to undersell us or drive us out of business."

G. H. Nuckolls, President of the Nuckolls Packing Company, Pueblo, Colorado, said: "So far

as profits go, my company has made a larger percentage on its turnover than any of the so-called Big Five."

J. C. Dold, President of the Jacob Dold Packing Company, Buffalo, New York, testified: "I recall no instances where we were ever hampered by any packer in the control of any stock or in the purchase of our supplies at competitive market prices."

John J. Felin, President John J. Felin Company, Packers, Philadelphia, Pa.: "I have known all the packers for years and have never seen any unfair dealings on their part. I know of no methods that have been adopted by any of them that were unjust, unfair and monopolistic."

There is probably no business in America more keenly competitive than the packing industry, and none that serves the public on a smaller margin of profit.

Swift & Company's profits during the first eight months of our present fiscal year have averaged two-fifths of a cent on each pound of meat and all other products sold.

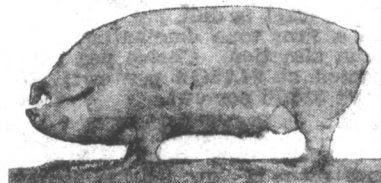
Swift & Company, U. S. A.

Founded 1868

A nation-wide organization owned by more than 30,000 shareholders



THE FAMOUS O.I.C. SWINE



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

CRANDELL'S PRIZE HOGS,

Cass City, Mich.

O. I. C. SOWS FOR SALE

One of the Best Herds in Michigan
Spring gilts and fall yearlings bred for March, April and May litters. I ship C. O. D., pay express and register in buyer's name. If you want a BIG TYPE sow, guaranteed right in every way, write me.
J. CARL JEWETT, R. 5, Mason, Michigan.

O.I.C. Gilts bred for March and April farrow, guaranteed safe with pigs. Fall pigs and a few service boars. Head immunized by D. T. F. C. Burgess, R. 3, Mason, Mich.

O. I. C's. Last spring boars all sold. Have an extra good lot of last spring gilts, good fall pigs not akin. Good stock, registered free 1/4 mile west of Depot. OTTO E. SCHULZE, Nashville, Mich.

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

O.I.C.'s. Big type serviceable boars, summer farrowed boars. Gilts, long bodied, short nosed, open or bred. G. P. ANDREWS, Dansville, Mich.

O. I. C. Gilts bred for March and April farrow. I pay express and register in buyers name. H. W. MANN, Dansville, Mich.

O. I. C.'s. Have some choice spring boars and gilts; also this year's fall pigs. WEBBER BROS., R. 2, Phone 498, Royal Oak, Mich.

O. I. C's. Service boars, fall pigs not akin also. Buff R. cks. at \$3.00 each. CLOVER LEAF STOCK FARM, Monroe, Mich.

O. I. C's. one 18 mo. herd boar, a few bred gilts and a choice lot of fall pigs. JOHN C. WILK, Alma, Mich.

L. T. P. C. 1 spring boar, (by Long Jones) the best pig you ever saw; price \$100.00. send check with first letter or the other fellow will beat you. If you don't like description will return check. A few good spring boars left at farmer's prices. Gilts will be bred to a grandson of Giant Buster and a Grand Son of Disher's Giant, no better pair of young boars in the state, and Wiley's King Bob. H. O. SWARTZ, Schoolcraft, Mich.

Additional Stock Ads on Page 111

Test Your Own Soil

FREE Test Papers

Learn if you are trying to grow crops in sour soil. We will send you Free Litmus Test Papers that tell.

Sour soil needs lime. Clover, alfalfa and other legumes that put plant food in soil won't grow unless soil is sweet. Sweeten your soil with the

HOLDEN

Lime and Phosphate Distributor

TEN DAYS FREE TRIAL

Try out the "HOLDEN" for 10 Days. See how it spreads evenly, 16½ feet wide, TWICE AS FAR as any other. Attach the "HOLDEN" in few minutes to any wagon. Load your wagon at cars with wet or dry material. Adjust to spread any amount from 100 lbs. to 10,000 lbs. per acre. You need handle material ONLY ONCE.

Send Your Name

Let us mail you the FREE SOIL TEST PAPERS together with literature, prices and 10 Day Trial Offer on the "HOLDEN." Write us a postal today.

The HOLDEN CO., Inc.
Dept. 9 Peoria, Ill.

DUROC AUCTION

60 pure bred registered Duroc-Jersey bred sows, boar pigs and gilts will be sold under the direction of the Michigan Duroc-Jersey Swine Breeders Association at M. A. C., East Lansing.

Friday, February 6th, 1920
1:00 o'clock

Every thing sold is backed by a guarantee by the State Assn. This offering will be a useful lot of sows and pigs that will go on any farm and make a profit to the purchaser.

Catalogue or further information address Newton Barnhart, St. Johns, Michigan.

SALE COMMITTEE;

Eugene Inwood, - Romeo
Henry Philips, - Milan
Newton Barnhart, St. Johns

Col. Andy Adams of Litchfield, Michigan, and assistants will conduct the sale.

Three Fine Young BULLS

Ready For Service

No. 1. Nearly all white, from an 18.9-lb. jr. three yr. old. Price \$175.
No. 2. About evenly marked, from a 20.75-lb. cow. Price \$150.
No. 3. Nearly all white, from an 18.6-lb. cow. Price \$125.

They are splendid individuals, guaranteed right in every way.

SINDLINGER BROS.
Lake Odessa, Michigan

Bargains on big type Poland Chinas, both sex, all ages. Shorthorn calves, either sex, and B. P. Rock cockerels. Robert Neve, Pierson, Mich.

Big Type Poland Chinas with quality, at reasonable prices. Pigs of both sex, and bred sows and gilts. G. A. BAUMGARDNER, R. 2, Middleville, Mich.

Miller Meadows, L. T. P. C. Ready to ship immune. None better in Mich. Write or come and see. 2½ miles west of Marshall. Clyde Weaver, Ceresco, Mich.

L. T. P. C. tried sows and spring gilts, from 1st prize sire and dams, bred for Mar. and Apr. farrow, also fall pigs. H. M. Jeffries, St. Louis, Mich.

HAMPSHIRE

Steuben's Hampshire Farm

A few No. 1 bred Gilts left, a few choice fall boar pigs, can furnish pairs not akin. Booking orders for spring pigs, large type, no better blood lines. Satisfaction guaranteed.

STEUBEN'S HAMPSHIRE FARM
ANGOLA, IND.

Pine Grove Hampshires, "Quality First" Michigan Boy, Grand Champion boar of Michigan, Bred and owned by us. Many other prize winners at Michigan State Fair 1919. Hog's for sale all ages, both sex. "Lookout Joe", a \$1000 boar heads our herd. GEO. COUPAR & SONS, R. 1, Marlette, Mich.

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

Hampshires Bred gilts now ready to ship, a few 160 lbs. boars left and fall pigs from new blood lines. JOHN W. SNYDER, R. 4, St. Johns, Mich.

Latest Market Reports

FIRST EDITION.

The markets in this edition were revised and corrected on Tuesday afternoon, January 13.

WHEAT.

One car of wheat was received here Monday against six one year ago, and stocks are 67,000 bushels against 68,000 bushels a year ago. Monday's quotations show an advance over last week. Present prices are:

No. 1 red	2.65
No. 1 mixed	2.63
No. 1 white	2.63
No. 2 red	2.62
No. 3 red	2.59

CORN.

The general situation in corn is not changed. The car supply, which was expected to weaken the market, has not materialized. The bears have made up their minds that receipts are to increase and take every opportunity to sell when the price shows a tendency to advance. Present Detroit prices are as follows:

Cash No. 3	1.53
No. No. 3 yellow	1.55
Cash No. 4 yellow	1.51
Cash No. 5 yellow	1.48
Cash No. 6 yellow	1.45

OATS.

The market is firm and the prices show an increase over last week. Monday's receipts were three cars and the present stock is 82,000 bushel. Present quotations are:

No. 2 white	90½
No. 3 white	89½
No. 4 white	88½

RYE.

Rye continues in good demand with cash No. 2 selling at \$1.86.

HAY.

Hay is scarce and firm. Demand is active. At Detroit the present values are \$30.50@31 for No. 1 timothy; \$29.50@30 for standard timothy; \$29.50@30 for light mixed; \$28.50@29 for No. 2 timothy; \$25@27 for No. 3 timothy; \$28 for No. 1 mixed; \$28.50@29 for No. 1 clover mixed; \$13.50@14 for rye straw; \$13.50@14 for oat straw in carload lots.

Pittsburgh.—Receipts not sufficient to supply demand. This is especially true of the better grades. There is no difficulty in placing all arrivals at top figures. Present prices are as follows: No. 1 timothy \$33@33.50; standard timothy \$32@32.50; No. 2 timothy at \$30.50@31; No. 1 light clover at \$32@32.50; oat straw \$15@15.50; rye straw \$14@14.50.

FEEDS.

The feed market is dull and prices are slightly lower than last week. Bran is quoted at \$47@48; standard middlings at \$49.50; fine middlings at \$60@61; coarse corn meal at \$62@64; oat chop \$53@55 per ton in 100-pound sacks.

SEEDS

The seed market remains firm and active. Prices on clover seed are up from 25@50c and timothy is 10c higher. The Detroit market quotes prime red clover seed at \$32.50 for cash and March; alsike \$33; timothy \$6.10.

BEANS.

Beans are quoted five cents lower and the market is not active. Present Detroit quotations are \$7.20 per cwt. for choice pea beans. At New York the market is dull, but there seems to be a firm tone dominating the white bean situation. Choice pea beans are quoted at \$7.75@8 per cwt; red kidneys \$14.75 per cwt.

POTATOES.

Supplies are light. Demand and movement is slow, market strong with prices slightly higher. Present quotations are \$6.75@7 per 150-pound sack for Michigan U. S. Grade No. 1 round white stock. At Cleveland the demand and movement is good with prices higher. U. S. Grade No. 1 Michigan round whites are quoted at \$6.50 per 150-pound sack.

BUTTER.

The demand is active and the market firm and steady. There is plenty of storage butter to come out. At Detroit fresh creamery butter in one-pound prints is quoted at 62@62½c; fresh creamery in tubs at one cent lower.

EGGS.

Storage eggs are firm and the demand active. Fresh eggs are quoted at 69@72c per dozen at Detroit; stor-

age eggs, according to quality, at 50@53c per dozen.

WOOL.

The transactions reported for the week in the Boston market indicate an increasing interest in medium wools. Among the sales of territory are more than 200,000 pounds by one house of three-eighths blood wool within the range of 60@63c in the grease. In fleeces, three-eighths blood Ohio has been sold during the week at 71c, the top price for recent business. Buyers have taken quarter-blood Ohio at 67@68c and some Missouri quarter-blood at 65@66c. Sales of fleeces have been confined to the medium sorts.

Live Stock Markets

(Reports for Tuesday, January 13).

BUFFALO.

Today hogs were steady to 10c lower at \$15.25@15.40; lambs steady \$20.50; calves steady at \$23.

DETROIT

Cattle.

Market strong.
Best heavy steers \$12.00@13.00
Best handy wt bu steers 10.00@10.75
Mixed steers and heifers 9.25@9.85
Handy light butchers 8.25@9.00
Light butchers 7.25@8.00
Best cows 8.50@9.25
Butcher cows 7.00@8.00
Cutters 5.75@6.25
Canners 5.50@5.75
Best heavy bulls 9.00@9.50
Bologna bulls 8.00@8.50
Stock bulls 7.00@7.50
Milkers and springers \$65@140

Veal Calves.

Market steady.
Best \$21.00@22.00
Others 9.00@18.00

Sheep and Lambs.

Best lambs \$19.00@19.25
Fair lambs 17.00@18.50
Light to common 12.00@15.50
Fair to good sheep 9.50@10.00
Culls 4.00@6.00

Hogs.

Market steady.
All grades \$14.80

CHICAGO.

Hogs.

Estimated receipts today are 58,000; holdover 13,318. Market steady to 10c higher. Bulk of sales \$14.40@14.70; tops \$14.75; heavy 250 lbs up, medium, good and choice \$14.35@14.60; medium 200 to 250 lbs medium, good and choice \$14.40@14.65; light 150 to 200 lbs common, medium, good and choice \$14.50@14.75; light lights 130 to 150 lbs, common, medium, good and choice at \$14@14.60; heavy packing sows 250 lbs up, smooth \$13.75@14.15; packing sows 200 lbs up rough \$13.25@13.75; pigs 130 lbs down, medium, good and choice \$13.25@14.25.

Cattle.

Estimated receipts today are 20,000. Market slow and early sales mostly steady; calves strong to 25c higher. Beef steers, medium and heavy weight 1100 lbs up, choice and prime \$18.25@19.75; do medium and good \$11.25@18.25; do common at \$9@11.25; light weight 1100 lbs down, good and choice \$14@18.50; do common and medium \$8.25@14; butcher cattle, heifers, common, medium, good and choice \$6.50@14.75; cows, common, medium, good and choice \$6.50@13.50; bulls, bologna and beef \$7.50@12; canners and cutters, cows and heifers \$5.25@6.50; do canner steers \$6.25@8; veal, calves light and handyweight, medium, good and choice \$16.50@18; feeder steers, common, medium, good and choice at \$7.75@12.50; stocker steers, common, medium, good and choice \$6.75@10.50; stocker cows and heifers, common, medium, good and choice at \$6.50@8.25; stocker calves, common, medium, good and choice \$8@10.75.

Sheep and Lambs.

Estimated receipts today are 18,000. Market steady. Lambs 84 lbs down, medium, good, choice and prime \$17.25@19.75; do culls and common \$13.75@16.75; spring lambs, medium, good, choice and prime \$13.25@18; ewes, medium, good and choice \$9@12; ewes, culls and common \$5.25@8.50; yearling wethers, medium, good and choice at \$15.50@17.50.

SCOTT'S RED CLOVER

Larger quantities than ever before are being imported. This seed is unfit to sow. Most home grown seed is of poor quality, so it is very necessary to use care in buying. Our Field Seed Book tells "How to Know Good Seed" and why imported seed is poor stuff. It, as well as samples, are free. We have all other field seeds that are practically weedless. O. M. SCOTT & SONS CO., 174 Main St., Marysville, Ohio.

All Steel - a Work Saver



THIS all-steel churn is just what you have been waiting for. Make good butter without the hard work. Drawn steel barrel, heavily tinned inside—easy to clean—sanitary—cannot soak up moisture. Beautifully trimmed in red and blue. Ask your dealer or write us for Circular No. 5

Sturges & Burr Mfg. Co., Chicago, Ill.

Established in 1866

Sturges Steel Churns

Auction Sale

—OF—

Registered Holstein Cattle

Having sold my pasture Farm I will sell all my Cattle at my Home Farm, 4 miles east of Clio, ½ north,

Tuesday, January 20th

Sale to commence at 2 p. m.

Consisting of 2 A R O cows, 7 years old, due Jan. 10 and 14, bred to 30-lb. bull; 2 cows 5 years old, one bred to 30-lb. bull; 4 heifers 2 years old, sired by 30-lb. bulls, or better, bred to son of Rag Apple Korndyke 8th, due in April. Very Fine Heifers.

4 heifers 1 year old, sired by 30-lb. bulls and from above dams, except one. 1 bull 13 months old, sire 30-lb. bull, A R O dam. These are all number one stock, no culls and no reserve.

I LEWIS J. BENJAMIN, Owner

ELMER POWERS, Auctioneer GALEY MAXWELL, Clerk

POST OFFICE ADDRESS:

1725 Lapeer St., Flint, Mich.

SPRAY YOUR FRUIT TREES AND VINES

Destroy the fungi and worms, and thus be sure of large yields of perfect fruit.

Excelsior Spraying
Outfits and Prepared Mixtures are used in large orchards and highly endorsed by successful growers. Write for our money-saving catalog, which also contains a full treatise on spraying Fruit and Vegetable crops.
WM. STAHL SPRAYER CO.,
Box 278 Quincy, Ill.

GOOD SEEDS

GOOD AS CAN BE GROWN
Prices Below All Others.

I will give a lot of new sorts free with every order I fill. Buy and test. Return if not O. K.—money refunded.

Big Catalog FREE
Over 700 illustrations of vegetables and flowers. Send yours and your neighbors' addresses.
R. H. SHUMWAY, Rockford, Ill.

Mr. POULTRY FARMER:

We make a specialty of White Hennerly Eggs and have created a profitable market for your eggs throughout the year around. We pay the highest premium for your Hennerly Whites—We remit same day shipments arrive. Ship Often—Ship by Express

GEO. R. ELDRIDGE CO.
494-18th Street, Detroit, Mich.

Remember! We guarantee your satisfaction with every shipment.

For Best Net Results

Ship to

CULOTTA & JULL
Detroit, Mich.

"Enough Said!"

HAY Ship to The Old Reliable House
Daniel McCaffey's Sons,
621-645 Wabash Bldg., Pittsburg, Pa.

GRAND RAPIDS

Milling companies advanced the paying price for all grains Saturday, that for wheat five cents per bushel. The prices are: No. 1 red wheat \$2.40; No. 1 white \$2.38; rye \$1.55; oats 85c; corn \$1.56; barley \$1.60; buckwheat \$3. Owing to the light receipts and increased demand jobbers in produce have advanced the price of potatoes to \$2.50 per bushel. Farmers are not marketing, owing to low temperature but they ask \$2.25 per bushel. Cabbage is now \$1.00 per ton at loading points and but little Michigan grown is obtainable at that price. Market is very strong. Loose and baled hay are the same price, \$29 per ton retail, and consumers preferring baled has caused many farmers to quit marketing for the present. There is an increase in the quantity of country dressed hogs at present. Wholesale dealers pay 13½¢ @20c per pound. Increase in winter lay of eggs has caused a decline in paying prices to producers to 64c per dozen by the case.

PRICES PAID FARMERS AT THE ADRIAN COMMUNITY MARKET.

The following prices were paid farmers for products delivered at the Adrian Community Market on Saturday, January 10:

Apples, green, per cwt \$4; red \$4.50; beans, choice hand-picked per cwt \$7; butterfat 63c; butter (packing stock only) 30c; cabbage, domestic \$60 per ton; Holland cabbage \$100 per ton; cream, butterfat 63c per pound; eggs, henry white 70c per dozen; do gathered white 65c; do fresh brown 65c; hickory nuts 8c per pound; honey, comb 32c per pound; do extracted 24c; dressed hogs 14¢@17c; lambs 15¢@20c; maple syrup \$2.25 per gallon; maple sugar 30c per pound; mutton 10¢@12c per pound; onions (dry) \$5 per cwt; do No. 2 \$2.50 per cwt; potatoes No. 1 \$5 per cwt; do No. 2 \$2.50 per cwt; dressed veal 100 to 140 pounds, 22c; do 80 to 100 pounds 18c.

Live Poultry.—Cocks 12c per pound; ducks 30¢@32c; hens, extra large and fat 27c; do ordinary 25c; springers 24¢@27c; turkeys 38c.

NEW YORK PRODUCE MARKET.

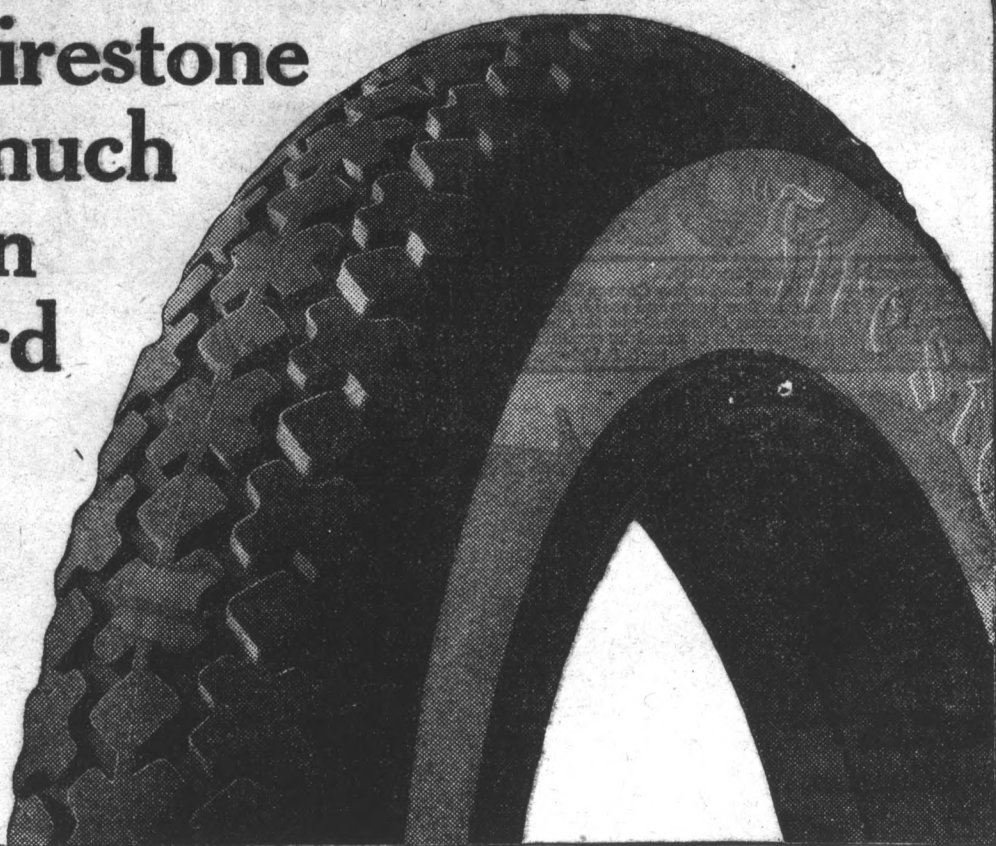
Butter.—The factor in the market this week that has attracted the most attention is the arrival of considerable quantities of Danish butter. As all of that butter scores at least 93 points, the scarcity of fancy butter that existed some time ago has ceased. As a result of that condition buyers have become very cautious and are securing only enough butter to meet their current needs. There is a prevailing feeling that this country will be flooded with foreign butter during the coming spring and that butter prices will drop to very low levels. However, it seems very improbable that such a condition will develop as with the arrival of foreign butter prices will drop to such a level that the destitute peoples of Europe will be able to purchase such butter. The market is very nervous. The Danish butter has been offered for sale at comparatively low prices and the result has been a decline in the price of all grades of butter, the decline in top grades being fully 3½¢ per pound. It is generally expected that another slump in prices will develop during the coming week. Quotations are: Extras 65½¢@66c; higher scoring than extras 66½¢@67c; firsts (90-91 score) 63¢@65c; firsts (88-89 score) 60¢@62½c; seconds 56¢@59c.

Cheese.—The cheese market has continued weak and irregular throughout the week. There is no export demand and local consumption is very low. Considerable western cheese has been offered on the market at materially reduced prices. Quotations are as follows: Field cheese, undergrades 26¢@30½c; average run 31¢@32c; specials 32¢@33c. Current receipts common to good 29¢@30c.

Eggs.—The egg market is sensitive and irregular. Demand for high quality stock continues strong but there is a scarcity of fancy eggs. The result has been an advance in the price of such eggs. There is no speculative trading. Practically all of the arrivals at present grade as firsts or lower. Established quotations are: Firsts 31¢@32c; extra firsts 33¢@34c; extras 35c.

Poultry.—Receipts of poultry have been light during the week and the demand has been strong. The result has been an increase in quotations of practically all classes of poultry. Established quotations are: Spring chickens 32¢@34c; heavy fowls 36¢@40c; medium to light fowls 33¢@35c; old roosters 23c; turkeys 42c; ducks 40¢@42c; geese 32¢@36c.

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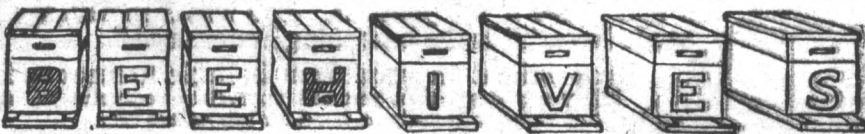
No wonder. It is built to the largest standard oversize of the industry. It has much greater air capacity than the average. It contains much more material and it delivers extra mileage in proportion. The thicker, heavier tread, that looks and feels the part of its extra mileage, is another reason why it sells itself.

And that tread is as good as it looks from the standpoint of preventing skid, slide or spinning of wheels. It has a tractive power never before equaled in a rubber tread, yet it has no inclosed hollows or suction features to be a drag on speed or a drain on power.

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Winter Problems solved by the Hive with an Inner Overcoat. Wintered 100% perfect, no loss of bees. Winters of 1916-17-18. The Inner Overcoat did it. Send for free 48-page catalog of bee keepers supplies. DEE WAX WANTED A. C. WOODMAN CO., Dept. M. F., Grand Rapids, Michigan

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INDemnifies Owners of Live Stock — Horses, Cattle, Sheep and Hogs
Against Death by Accident or Disease
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POULTRY

White Rocks. Choice Cockerel and Pullet from pure bred quick maturing heavy laying strain. Cockerel \$8.00 to \$9.00; Pullet \$7.00 to \$8.00. Post \$1.00. H. J. FADON, Route 3, Box 115, Ypsilanti, Mich.

White Wyandotte. Out of choice stock for sale: cocks, cockerels \$3.50 each, sent for my circular. DAVID RAY, Ypsilanti, Mich.

White Plymouth Rock. Cockerels, large birds, from good layers, \$5 each, F. W. SLEDGE, R. 4, Traverse City, Mich.

White Leghorns. Brown Leghorns, Essex chicks, all varieties. Catalog free. Triangle, Clinton, Mo.

Buy Turkeys Now. Michigan's best Giant Bronze breeding stock, young turkeys 25 lbs., pullets \$1. Excellent color. Health and vigor guaranteed. N. Evelyn Russell, Ionia, Mich.

FOR SALE:— Mammoth Bronze Turkeys hens \$5; toms \$12. Mrs. WALTER DILLMAN, R. 5, Dowagiac, Mich.

2 GIANT Strain Bronze Tom Turkeys, age 18 mo., wt. 35 lb., \$20 each. Also pure-bred White Wyandotte Okla. Mrs. W. A. Stedman, Ashley, Mich.

HOGS.

Boars also sows and pigs. Real Big Type Poland China. Bred big for 25 years. Sired by Mich. Buster by Giant Buster, litter 12 out of Wm. W. Miss Queen 2nd, some breeding, also by Butler's Big Joe by Rust's Big Joe, out of a Wonder Queen, nuf said. Write us your wants, we will treat you right, our prices are low. J. C. BUTLER, Portland, Mich.

LARGE Type P. C. (the largest in Mich.) Spring boars now ready to ship. Boars for the breeders and boars for the farmers. Come and see the real large type with quality. Free delivery from Parma furnished visitors. Look up my exhibit at the Great Jackson Co. Fair, Sept. 8th. to 12th, expense paid if not as advertised. W. E. Livingston, Parma, Mich.

M. R. E. C. Breeding if you want to get in the King row, buy a gilt bred to Big Bob Mastodon, more Grand Champion Blood in his veins than any other Boar in Michigan. C. E. Garmant, Eaton Rapids, Mich.

B. T. P. C. spring Boars all sold. One Oct. 21st yearling boar, wt. 425 lbs., as near perfect as any pig in Michigan. Price \$125. Gilt ready Jan. 1. Bred to a good son of \$10.00 Harrison's Big Rob. Every pig recorded free. JOHN D. WILBY, Schoolcraft, Mich.

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

Big Type P. C. Boars, best breeding, crest wonder. Also Fall Pigs. A. A. WOOD & SON, Saline, Mich.

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

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

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

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

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

B. T. P. C. Tried sow and gilts bred to our Grand Champion Boar Big Type King Junior Champion Gentle Duke Times and first prize Senior boar pig A Wonder Jumbo. W. Brewbaker & Sons, Elsie, Mich.

Big Type P. C. Bred gilts, Fall yearlings, prize winners, out 1100 lb. sire and mammoth sows from Iowa's greatest herds. E. J. Mathewson, Burr Oak, Mich.

Big Type P. C. Gilts bred to Big Orange Model and O. H.'s Defender. None better in State. Priced to sell. W. J. Hugelshaver, Augusta, Mich.

Big Type Poland Chinas. Up-to-date in breeding, with size and quality. We like good ones and believe you do also. Have three choice gilts for sale, bred for April 7, 9, 10, respectively. Their sire at 15 months weighed 640 lbs., not fitted, and stood 40 in. tall, 73 in. long and on a 10 in. bone. They are bred to a great son of Mountain Giant. Write or come and see. You're always welcome. WESLEY HILL, R. 6 Ionia, Michigan.

B. T. P. C. Gilts sired by Big Giant and O's Orange. Bred to O's Orange and Col. Jack Jr. No better breeding to be had. L. L. Chamberlain, Marcellus, Mich.

Additional Stock Ads. on Page 110

The Owners of This Prize Winning Team

USE AND RECOMMEND

CORONA

WOOL FAT

The Corona Mfg. Co., Kenton, Ohio.
Gentlemen:—We have been using Corona Wool Fat on our horses' hoofs for the past four years and are highly pleased with results, and would not want to be without this hoof ointment which keeps the hoofs soft and in a healthy condition.
Yours truly, MORRIS PACKING CO., per A. B. McLaren, Barn Boss.

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To prove
to YOU the won-
derful healing qualities of
CORONA WOOL FAT I will send you a
liberal size can FREE, all charges prepaid, if you will
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CORONA WOOL FAT is different from ordinary salves and blistering compounds. It is extracted from the wool and skin of sheep and is a soothing and quick-healing preparation. It will not blister or cause the hair to fall out, but penetrates deep into the wound, immediately relieves the animal from pain and quickly heals bothersome and serious injuries without leaving a scar.

For Galled and Sore Shoulders, Sore Necks, Collar Boils, Barb Wire or other Cuts, Wounds, Scratches, Split Hoofs, Sore and Contracted Feet, Sore Teats on Cows, etc., it has no equal.

This splendid remedy is used by over 1,000,000 farmers and stock owners. Thousands of letters have been received testifying to its healing powers. Many valuable animals that have received injuries which veterinarians pronounced incurable have been completely cured with this wonderful remedy. CORONA WOOL FAT should be in every barn—it is the best "first aid" remedy you can use when accidents occur.

Special Free Trial Offer

I don't ask you to take my word for the healing qualities of this remedy. I simply want you to send and get this free box and prove it for yourself. You will then say, as thousands have, "It is the best thing I ever used."

Some animal on your farm is liable to meet with an injury any day—then you will appreciate the value of having this valuable remedy on hand for immediate use.

Send for This Free Book Now

You will never lose the services of any of your horses for a single day because of Galled or Sore Shoulders or Necks, Split Hoofs or Scratches, etc., if you use CORONA WOOL FAT. It often saves veterinary fees and prevents a valuable animal from being disabled because of injury.

We also manufacture Corona Distemper Cure for Horses and Cows and Corona Balm for household use. Fill out and mail the coupon today.

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The Corona Mfg. Co.
Dept. 22, Kenton, Ohio

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CORONA MFG.
COMPANY
22 Corona Block, Kenton, O.

Dear Sir: Without obligation on cost to me, please send me postpaid the free trial box of CORONA WOOL FAT Compound. Also your book, "How to Treat Hoofs, Wounds and Sores."

My Name.....

Address.....

R. F. D.....

County..... State.....

My Dealer's Name is.....

Have you ever used Corona?.....

NOTE—Should you need a quantity of CORONA immediately for "First Aid" purposes along with Free Sample Box, we will mail you a regular 8-oz. or 20-oz. package and you can pay your postmaster when the package arrives. Just mark X in square below indicating which size package you want. If not satisfactory, your money will be cheerfully refunded.

- ☐ 8 oz. Can by mail, prepaid.....65c. At Dealers.....50c
☐ 20 oz. Can by mail, prepaid.....\$1.25. At Dealers.....\$1.00

PROOF

"Corona Wool Fat is fully as good if not better than its guarantee states. For cow's sore teats it has no equal, and for cuts on horses it **heals it up so smooth and nice** leaving no bad scars. All around it is the best remedy for stock that any farmer can use, and once tried will always be kept on hand."

Sincerely,

N. P. Nelson, Prop.
Riverside Ranch, Sheridan, Mont.

"Corona Wool Fat Compound is all you claim for it. I used it on an old wire cut and it healed it up all O. K. It is the best preparation I ever used."

E. T. Sheldon,
R. F. D. Carrier, Tracy, Minn.

"I have used Corona Wool Fat Compound on horses' feet that were so bad they could hardly travel. Since using it they travel like colts. I have never seen anything to equal it."

Harry Barr, Smyrna, Pa.

"I tried your Corona Wool Fat Compound on my horse which had a bad case of scratches. I had given up trying to cure him, but finally tried Corona; it did the work. Horse is now in good condition."

P. L. Tressey, Etna, N. H.

Corona Manufacturing Co., Kenton, Ohio. Gentlemen:—I received the can of Corona Wool Fat and tried it on a barbed wire cut. Your Corona Wool Fat is the right thing for wire cuts, and every stock man should have a big box of it on hand at all times.

Yours truly,
W. S. Dennis, Robinson, Kan.

Dear Sirs:—Your Wool Fat has done so much for me that I want to tell you about it. I had a young cow that split her teat on barbed wire. Seemed to be to the hollow, and 7 applications made it sound as ever. I worked a mare all spring with a bad sore shoulder. Nothing did any good, then I used Corona Wool Fat three weeks and made it sound. But listen to this. My horse stepped on my toe and slipped the nail and flesh off. I tried Wool Fat and in two weeks my toe was sound. I have never seen anything to compare with Corona.

Yours truly,
S. E. Bradley, Owingsville, Ky.



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Galled
Shoulders



Heals
Barb
Wire
Cuts



Heals Inflamed
Udders, Soreteats