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Eastern Edition!



The Aéroplane

The Editor's Letter

The Sunny South Welcomes County Agent



THAT community helper, the county agent, is spreading like the proverbial green bay tree. In a score and more States it has come to be a common sight any day to find these expert advisers and farm owners with their heads together discussing ways and means for getting better results. Now that the county agent is here, the only wonder is that he wasn't here sooner. To-day our industrial motto is, "Get Results and Get 'Em at Once." The South, as well as the North, East, and West, has fallen into line to make the most of every good idea that these county helpers can suggest. Just note what Mr. P. C. Henry, a North Carolina grower of fruit and vegetables, has to report:

"Two years ago when a county agent was first employed in our county, I could not see the value of such a man to the taxpayers. Now I can. He has helped us in more ways than one. Let me narrate a pleasant change that has taken place in our school district the past year. Our district is about four miles from the county seat and it was selected as one of the demonstration places for the work of our county agent and of the domestic science teacher of the Farm Life School. The county agent, Mr. Mask, organized an agricultural club consisting of members of the corn club, the pig, the poultry, and the tomato clubs, to which he gives valuable instruction each visit. Miss Mather, the domestic science teacher, organized a sewing class of twenty-six members, and taught them the very things they will need in later life—instruction that would cost considerable if secured from a private source. The county agent, however, would not rest content until he induced many of the fathers and mothers of the district to meet at the school every other Friday afternoon in a community betterment club. One trip Mr. Mask brought a fireless cooker and demonstrated it. The next visit he made one for one of the members, so others, seeing how it was done, might make them also. Then he arranged a pruning and spraying demonstration in the orchard of a member. A fruit grower was heard to remark, 'I learned to-day just what I wanted to know about pruning, and the why.'"

Pleasant Change Takes Place

I was glad to find that Mr. Henry voiced his change of heart just as he did in the words, "A pleasant change has taken place in our neighborhood." That statement makes clear his belief that an immediate increase of dollars is not the greatest thing to be desired after employing a county agent. Nevertheless, additional profit must gradually follow as clearer thinking and better living pave the way. Employment of these expert county farm helpers is the logical thing to do in this age of specialization. The big manufacturers, mine operators, and department-store managers do exactly the same thing when they bring in specialists to make a study of their methods and business equipment in order to find the weak places which are responsible for poor results. The training such specialists have received enables them to put their finger on the particular thing or things that are out of joint. The factory operator or the farmer may have possibly located the trouble, but years might have passed before just the right remedy would be found for which the specialist can accurately prescribe at first glance.

Even in the case of what we men are pleased to consider small matters, such as fireless cookers, there is a lot of difference between reading or hearing about making and using them and having one made and demonstrated before one's own eyes. So too with the mixing of spray solutions, treating seed grain, disinfecting poultry houses and stables. Seeing is understanding, and the improvement is soon put into use after once learning how easy the operations are. When Mr. Henry's letter reached me the fly-pest problem was also being attacked here in Springfield, so his account of their community fly crusade was especially interesting. Note how their campaign was introduced:

"Another meeting of our club was devoted to the discussion of 'Sanitation in General and the Fly in Particular.' Much interest was shown in hearing all that can be done to avoid the spreading of typhoid fever. Mr. Mask then arranged a Saturday for the boys to meet him at the schoolhouse, and he assisted them in making a dozen large fly traps so as to catch thousands of flies on the outside of the house while the insects are on their way from the barn to the house. We have used such an outside fly trap for two seasons, and would not be without one. I baited this trap with skim milk poured over light bread, and a few drops of molasses. The flies pass up into the trap through a funnel of wire screen, and perish in a few days."

How a Box Supper Helps

The teacher of these boys might have continued to read and talk about those big fly traps for years without getting them into use. But when the boys could have the fun of a half-holiday helping to build the traps, then setting them to work outside their own houses and catching gallons of flies that would otherwise get into their dwellings, a deep dent was sure to be made in the community mind in favor of getting rural school work on a more practical basis. There is nothing quite so effective for getting a neighborhood on the upgrade as a dozen or two of boys and girls who have become interested in and conversant with improved ways of doing things, and who can go ahead and show their elders that the new way is better than the old. All this wonderful accomplishment brought about by boys' and girls' clubs, which has upset so many old-fashioned ideas, would never have convinced the older heads had there been nothing but reading or talk in it. But when Johnny grows his acre of corn which, by following new methods, is made to yield 20 to 40 bushels above the best in the neighborhood, and Sammy's pig tips the beam at the 300-pound notch at six months old, the new order of things gets a footing at once.

I want to bring one more exhibit from Mr. Henry's neighborhood, which shows how social enjoyments were used to advance educational improvement. Mr. Henry closes his letter thus:

"The members of our tomato club needed some funds to purchase a canning outfit, build a hotbed, etc. How should the necessary funds be raised? The county agent suggested a box supper. This enjoyable social feature did not take great preparation, and yet it brought in the tidy sum of \$26, thus giving the girls sufficient for all their needs. I believe the public school can be made of much greater service to the community than it has been made in the past, if all the people will only show an active community spirit and try to make the community in which they live the best one in the whole county. And our county agent is helping us to make a better use of the schools we have."

Every FARM AND FIRESIDE reader who, as boy or girl, has taken part in a box-social gathering on a balmy spring evening, after the week's work was finished on the farm and in the home, can picture that occasion when \$26 was raised for the girls' club. From this distance, as I write, I can even catch the appetizing odor of those home-cooked viands as the box covers are removed. As my memory harks back, I can yet remember bidding high for the lunch box of a certain girl in which she had stowed the cookery made by her own hand, which she well knew I wanted (both viands and hand). But there is no need to describe the occasion further. It meant jollity, good feeling, and better acquaintance for all taking part. With fuller knowledge of each other came willingness and desire to help work and boost their community to a better, broader standard of living. I can well believe, too, Mr. Henry was one of the best boosters of the lot.

The Editor

In this Matter of Health

one is either with the winners or with the losers.

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More Wheat to the Acre

The Part a Thorough Preparation of the Seed Bed Plays in Yields

By HARRY M. ZIEGLER

WHEAT yields have been increased from 10 to 30 bushels to the acre in nearly every State in the winter-wheat belt by deep and early plowing and disking from time to time before planting—a thorough preparation of the seed bed. Wheat that followed corn or potatoes or some other crop requiring a thorough cultivation has yielded best in a majority of cases in the spring-wheat regions.

The early and special cultivation of the acres and the preparation of the seed bed produces conditions favorable in midsummer for the formation of plant food and the conservation of moisture. It also destroys insect pests such as Hessian fly, which is in the flax seed at that time. The cultivation prevents the evaporation of moisture and gives the bacterial and chemical agencies a chance to work. This results in more available plant food. The amount of available plant food in the soil in the fall is a good index of the yield the following year.

Where the rainfall is only sufficient to grow a crop of wheat every other year, summer fallow accomplishes the same thing that deep and early plowing and disking does in the districts of greater rainfall. Summer fallow is letting a field lie idle and keeping the surface of the soil cultivated enough to prevent evaporation of moisture and to assist in the production of available plant food.

"You will get double the yield to the acre that you will on any other ground if you grow wheat after a crop of corn or potatoes or some other cultivated crop," said G. H. Carroll of Hand County, South Dakota, in discussing wheat-growing in his State. "All the seed bed I want is a good piece of ground that was cultivated to corn the year before, clean and free from weeds. I usually sow with an end-gate seeder, 80 acres a day—sow early, as soon as frost is out of the ground. I send a lot of pulverizers after the seeder, six horses on each pulverizer. I sow one bushel of wheat to the acre. I know of no better way than to harrow the ground after the pulverizer.

"I had 750 acres in wheat last year, and threshed 15,000 bushels—that is, 20 bushels to the acre. The average here on cornstalk ground is equal to the average for the United States, about 13½ bushels."

Mr. Carroll grows two crops of wheat after a crop of corn, but the second crop is rarely as good as the first. Some wheat growers in South Dakota grow three crops of wheat after a crop of corn. The third crop, however, is generally not very good. Sometimes Mr. Carroll has cultivated in his wheat—covered it with a corn cultivator. He has also tried drilling; in fact, he has tried all of these ways side by side in the same field and found no difference.

"I have found it a small matter," continued Mr. Carroll, "as to how I covered the wheat. I knew one man who sowed his wheat and, owing to excessive rains, never got to cover it at all. He got as good a crop as anyone. I don't recommend this. It might have happened so for him, but it was a wet year."

Usually spring wheat begins to ripen in South Dakota about August 1st. It is generally cut with a header, running the wheat heads with a foot of straw into the header box, and stacked up like hay. It is threshed as soon as it goes through the sweat, which generally takes about six weeks. Some farmers use binders, shock the grain, and thresh out of the shock. Others stack it after they have cut it with the binder.

"I haul my wheat to the railroad station from the machine," concluded Mr. Carroll. "I am right near the station. Of course the farmers farther away cannot do that; they put it in their granaries and haul it all winter. I haul mine off in big wagons or tanks that hold 125 bushels—four horses on a tank. We use no sacks. The big wagon or tank sits under the spout of the machine, the four horses on, and all in the hands of a good driver. When his wagon is filled with wheat he drives away; another wagon backs in without stopping the machine. It is a fascinating business, threshing and hauling wheat to town. There are always buyers here at the station. Nobody ever had to take a load back because he could

in raising wheat," explained Mr. Bolland. "To overcome this I use early varieties, such as Marquis and Kubanka, a durum wheat. These two varieties, besides being early, seem to resist rust better than the blue-stem varieties, but possibly the most efficient method of fighting rust is to sow the grain early. I cut my wheat with a grain binder and shock it at once. I thresh from the shock, a practice which is quite general in this part of South Dakota. The wheat is fit to thresh after having been in the shock about a week. The wheat is stored in granaries, and hauled to market during the remainder of the year."

Exclusive wheat-raising is a thing of the past in Day County, South Dakota. Many of the farmers

are working into a three-year rotation of corn, some seed grain, such as oats, barley or emmer, and wheat. Sweet clover is also being worked in many of the rotations. The clover follows wheat and precedes corn. This system of farming allows the keeping of live stock, with the result that the farms are manured once in three years, and greatly increased yields have been the consequence.

Ninety-day wheat, a variety originally popular in Montana, is used and liked by many wheat growers in the irrigated sections of Bingham County, Idaho. The expense of growing wheat under irrigation is so much that it doesn't pay unless the grower can command a high price or produce a large yield to the acre. Wheat is grown quite a bit in the irrigated sections of the West as a nurse crop for alfalfa.

"I believe in a firm seed bed that has been fall plowed," declared Arthur J. Snyder of Bingham County, Idaho, "then thoroughly prepared in the spring by first using a spring-tooth harrow, lapping half, following with a spike-tooth harrow, and going over the ground

two ways. I follow this with the float or leveler, and always drill the way the water is to run, using a hoe drill, a drill very much out of date but which gets results. I irrigate but twice, unless the third time is an attempt to wet spots partly missed before. I delay the first irrigation until the wheat begins to burn and turn black. The second irrigation I give just as the kernels begin to fill."

Mr. Snyder cuts his wheat before it is ripe, stacks it, and later threshes it. There have never been enough threshers in the community to reach all of the growers at the right time to thresh from the shock. The wheat is then hauled to the granaries.

"There are especially adapted varieties of wheat for the different localities in the irrigated sections of the west," concluded Mr. Snyder. "Marquis is a variety of rust-resistant wheat, but under irrigation it may not hold the qualities which made it a prize-winner when grown on unirrigated tracts. On my farm it has not been a heavy yielder, but I am trying it again on better soil. Dick Lowe, a favorite on the Twin Falls Tract, is being tried out here for the first time this year. Blue Stem does not shatter, nor does it yield well. When sown as a nurse crop with alfalfa I sow one bushel of clean seed, always treated with formaldehyde, to the acre. When sown alone I use five pecks of seed on rich ground."

The experiences of many wheat growers in Oklahoma have shown that a proper seed bed is the most important part of the operation of growing wheat.

"I have found that early deep plowing, with plenty of cultivation afterward, reduces the chance element with wheat very greatly," said [CONTINUED ON PAGE 17]



Wheat yields on this Middle West farm were increased from 25 to more than 40 bushels to the acre by a thorough preparation of the seed bed and early planting

not sell it. I shipped my wheat to Minneapolis myself last year, just to try it; but I would have done about as well if I had sold it here at the station."

The farmers in Hand County don't fall plow very much. They have found that fall plowing dries out worse than any other kind of soil preparation, probably owing to their light rainfall, which is only 20 inches.

Advises to Plant Wheat Early

"I DO not know of a single thing that is of greater importance than to plant wheat early," E. L. Bolland of Day County, South Dakota, told me when relating his wheat-growing experiences. "I make a practice of plowing all ground for wheat in the fall. If wheat follows corn the ground is not plowed as a rule, but disked in the spring. Before the wheat is seeded the ground is thoroughly dragged with a spike-tooth harrow. A single disk drill is used for sowing. This works the ground considerably, and puts the seed at a uniform depth. The ground is given a second dragging after the grain is sown."

Nothing but the best seed obtainable is planted on the Bolland farm. The seed is graded thoroughly, and cleaned by running it through a fanning mill at least once. Just previous to seeding it is put through a smut machine so constructed that it skims off all light seed and any weed seed, such as wild oats, and at the same time gives it the formalin treatment. This is an absolute safeguard against smut. Four to five pecks of this high-grade seed is sown to the acre.

"Rust is the worst enemy I have to contend with

Fertilizer on Wheat

Its Use Checks Dwindling Yields and Sets New Records

By A. J. LEGG

THE first question that occurs to the practical farmer who considers his farm crops in a business way is, does it pay? A certain yield may be a losing proposition in one part of the country while the same yield may be profitable in another. So the local conditions must be considered when we are making our calculations.

Wheat here in West Virginia may not yield a sufficient crop to pay much above the cost of production. Yet it occupies the soil at a time which, in the absence of other crops on the soil, would permit a waste of plant food from leaching. Nitrogen, the most costly of all plant foods, is also the most easily wasted by leaching. The wheat crop can thus be used to save a waste of nitrogen during the fall and winter months.

When the locality in which I live was first settled, the farmers could grow fairly good crops of wheat on freshly cleared lands, especially the hill lands that faced the south or southeast. They could not get such large yields as were obtained on the virgin soils of the West, but it was reasonable to expect a yield of from 12 to 20 bushels per acre of well-matured wheat. In the course of a few years, however, the wheat failed to fill well, though the straw was usually large enough. The farmer who would grow wheat must go into the forest and clear more land. Finally the wheat crop was almost a complete failure. I feel safe in saying that the average yield of wheat here did not reach five bushels per acre and most of our farmers had quit trying to grow it.

That was about twenty-five years ago. Flour was cheap then, and many farmers preferred to buy their flour even after they found that the use of fertilizer would aid them materially in growing wheat. Some bought fertilizer and used it on their wheat and found that with the aid of fertilizer they could grow from 10 to 18 bushels per acre on old sod fields that were turned and prepared for wheat by harrowing. Most of them used 200 pounds per acre of a complete fertilizer; a 2-8-2 fertilizer was the favorite.

There was a prejudice against an acid phosphate alone, as we were told that the cheap fertilizers were only stimulants and were injurious to the soil. The complete fertilizers, on the other hand, were costly, and it was a difficult matter to calculate any profit from the wheat crop with fertilizer costing from \$25 to \$28 per ton. So one after another dropped out, until very few farmers grew wheat at all.

Use Legumes

ONE farmer of my acquaintance told me that he had used a good grade of complete fertilizer, also a phosphate, potash, and acid phosphate separately, drilling them in strips clear across his wheat field. When harvest came he had a good crop of wheat, but could not tell by the looks of the wheat which fertilizer gave best results.

I have experimented with different kinds of fertilizers on wheat several times, and my experience is that for the money expended acid phosphate always comes out best. I am supported in this by Professor Hunt, who says in "Cereals in America," page 75: "While field experiments indicate that the relative importance of fertilizing constituents depends upon the soil, throughout the drift area of the United States, phosphoric acid is the only fertilizing ingredient which, when applied singly, has been found generally to influence the yield of wheat."

An analysis of wheat and straw shows that the crop takes much more nitrogen and considerably more potash from the soil than it does phosphoric acid. We are naturally led to conclude that a nitrogenous fertilizer would be required for the crop. This would be true if our soil had plenty of phosphorus and was deficient in nitrogen.

I will refer to a recent bulletin issued by the West Virginia Experiment Station, which says that there is ten times as much potash in the average West Virginia soil as nitrogen, and vastly more nitrogen than phosphoric acid. Of course, the nitrogen supply must be kept up in the soil, but this must be done by the use of legumes and the application of stable manure. Commercial nitrogen is too costly to convert into a wheat crop, or into any other cereal crop.

Phosphorus is the most deficient element in our soils, and since an application of phosphoric acid not only furnishes the needed plant food but also tends to rush the crop to maturity, it is especially well adapted to the wheat crop.

By consulting the threshing-machine men last fall, I was able to get a pretty accurate estimate of the wheat grown last year in this (Nicholas) county. At a conservative estimate it was 50,000 bushels. Ten years ago the county's wheat crop was probably not over 5,000 bushels.

A few years ago I spread caustic lime over a small plot of ground just before the wheat drill, then drilled acid phosphate in with my wheat. At harvest time I found a marked difference in favor of the limed part. A few farmers recently have used about one ton of caustic lime per acre on their wheat ground before sowing the wheat, and then sowed the wheat with acid phosphate drilled in with the wheat. In some instances this has resulted in a crop of from 25 to 27 bushels per acre from this plan.

Save the Manure

It Contains Well-Balanced Plant Food

By G. M. TREDWAY

SOME years ago the farmers of this section (southeastern Kansas) were imbued with the idea that they could raise better crops as well as enrich their soils by the use of commercial fertilizers.

Consequently the implement dealers began shipping it in by carload lots to supply the demand. The dealers did a thriving and profitable business in the



This field of wheat threshed 37 bushels to the acre, and the straw was of excellent quality. Sufficient plant food of the right kind makes such yields a regular occurrence

sale of drills, too, which would broadcast the fertilizer while seeding the grain.

The various packing houses compounded special fertilizer for the varied small grains, corn, grass, potatoes, etc. The cost varied from about \$22 to \$30 per ton. Some who first used it claimed that the fertilizer was distasteful to chinch bugs.

Well, when the season was favorable, the wheat crop was good; but when the season was unfavorable the crop was as poor as if no fertilizer had been used. Finally, after a series of years, it was abandoned as a failure. And, oh, how much the "season" is blamed! Failure to get a crop in on time, failure to cultivate properly, failure to get a large crop through any other cause, is invariably attributed to the "season." However, fertilizer has been abandoned universally in southeastern Kansas. The dealers no longer handle it, except an occasional order from someone in the town who wants to plant half of his 50-foot back lot to potatoes and puts a handful in each hill.

Nevertheless, the farmer has at hand a cheap fertilizer in the ordinary barnyard manure. The term "barnyard manure" is used through force of habit. The best farmers nowadays are saving all the manure made, and keep it under a roof. This is better for the manure as well as for the stock.

Practically all the nitrogen, phosphorus, and potash in the feeds is voided in the manure, except in the case of growing animals. While all these elements are used to build up the tissues of the animal, at the same time these processes involve the breaking down of body cells, and this is thrown off in the waste.

By careful handling the greater part of the ele-

ments taken from the soil by the crop can be returned in the manure. The liquid portions of the manure contain about three fourths of the nitrogen and practically all of the potash voided by the animal. It is of great importance that as much as these be saved as possible. This can be accomplished by using sufficient material as bedding to absorb it, or by draining it into a concrete pit.

It is also important to have the manure hauled to the fields as soon as possible after it is made. To leave manure exposed to rain, wind, and sun is to lose about one half its value. Then, too, the manure improves the physical condition of the soil, increasing its aeration, water-holding capacity, and temperature.

Soil Requirements

Fertilizers Double Crop on Poor Land

By CLYDE A. WAUGH

THOSE 50 and 55 bushels to the acre wheat crops don't "just grow" any more than does a load of prime finished baby beeves. The cattle are never allowed to lose their calf fat and are fed liberally of a balanced ration from the day they are born until they go in the car for market.

Fifty-five-bushel wheat crops, such as seventeen-year-old Dewey Haines of Ohio grew last year, must have plenty of a balanced plant-food ration to give them a quick start in the fall, to enable them to resist disease and insect attacks, to make enough growth in fall to cover the ground before winter sets in, to start out early in spring, and to make a straight standing, early maturing bumper crop of first quality. It is just as important that you know the food requirements of the wheat crop as it is that the "eye of the feeder know his cattle."

Many of the same principles that apply to animal feeding apply to plant feeding. For instance, it is the same nitrogen that forms the essential constituent of protein in animal foods that is the principal constituent of ammonia in fertilizers.

In feeding young animals, protein is the muscle and bone builder; in plant feeding it is ammonia that gives the plants a quick start and heavy stalk or stem growth.

Balance Manure

BESIDES the nitrogen in ammonia and proteins, plants and animals need other foods to make their growth complete. Phosphoric acid, for instance, fed to plants is a crop ripener and a grain plumper. Potash is the stalk strengthener and the grain filler. Wheat needs a fair amount of ammonia for a quick start, a large amount of phosphoric acid for plump, hard, early maturing grains, and a fair amount of potash to give strong straw and well-filled heads.

All soils contain the plant-food ingredients for crop production, but in varying proportions. Sandy soils, for instance, contain little of the element nitrogen in the form of ammonia, only a fair amount of phosphoric acid and a small amount of potash. Hence a wheat crop on a sandy soil usually requires a

greater amount of plant food than on a loam soil, and also requires a plant food carrying a higher percentage of all three of the elements of plant food than does the loam.

The addition of 40 pounds of acid phosphate to a ton of manure makes it a balanced plant food, and almost doubles its value. Every farm should utilize all the manure it can produce, but even when all manure is carefully conserved and applied, not one farm in a hundred produces enough to maintain sufficient fertility.

Commercial fertilizers contain the same plant-food ingredients found in manure, but supply them in a more available and concentrated form.

On extremely poor soils an application of fertilizer has been known to double wheat yields. On our home farm last year it enabled us to raise 50 bushels of wheat per acre. In tests on farms in thirteen Indiana counties, fertilizers increased wheat yields 8.44 bushels per acre. Thirty years of experimental work at the Pennsylvania State College of Agriculture has shown that judicious applications of fertilizer on wheat made a gain of 74 per cent in yield per acre.

If no manure is used on the wheat crop, 300 to 500 pounds of fertilizer through the fertilizer attachment of the wheat drill at time of planting, or through the broadcast lime and fertilizer distributor previous to planting, should be applied. If manure is used, apply 200 to 300 pounds per acre in the same manner.

On a sandy soil a fertilizer analyzing 2 to 4 per cent of ammonia, 8 to 10 per cent of available phosphoric acid, and 3 to 5 per cent of potash is likely to make up for the deficiencies of the soil and meet the needs of the wheat crop.

Getting Alfalfa to Grow

Experience Brings Out Many Helps Not Found in Books

By B. D. STOCKWELL

I FOUND at the outset that I would have to decide which of the various theories about the best way to grow alfalfa was correct. I talked with men who had given it a trial, and I read all I could find on the subject. Out of the conflicting advice I finally arrived at a few truths, and here they are: Alfalfa must have a well-drained soil. Mine was rolling except for one hollow, which I drained with tile. If the soil is not naturally well drained and you are unwilling to drain it, don't try to grow alfalfa.

The next important thing is to find out whether the soil needs lime. Alfalfa will not do well on an acid soil, and if moss, plantain, or crab grass is growing on the land, it is nearly always a sure sign of a sour soil. A more accurate test is to take a few small handfuls of soil from different parts of the field and mix them together in a clean dish. Add rain water till the soil is just stiff enough to hold its shape when you put your finger down into it.

Having procured from a drug store a few strips of blue litmus paper (they cost but a few cents) put one of the strips in the hole left in the mud by your finger. Press the soil up tight around the litmus paper and leave for an hour. Litmus paper is what chemists call an "indicator." It will stay blue if the soil is sweet, will turn pink if it is only slightly sour, and red if strongly sour.

If at end of the hour it turns pink, as mine did, that means the land needs from a ton to a ton and a half of lime to the acre. I didn't know whether to put on quicklime, slaked lime, or ground limestone. I had heard all of them advocated. But I finally chose ground limestone. It doesn't burn the soil, is the cheapest, and is high in lime carbonate, which neutralizes the acid in the soil without leaving any injurious by-products.

Here let me give a word of caution about ordering lime. A friend of mine who had been watching my alfalfa experiments came to me last year and said: "I'm in an awful fix. My limestone is all mud." He had bought a carload of lime which had been shipped to his depot in an open freight car, and the night before he was ready to unload it there was a heavy rain. It was just one mass of slime. The most convenient way to buy lime is in sacks, but if you get it in bulk be sure to have it shipped in a covered car.

After I had spread my limestone over the land at the rate of a ton and a half to the acre I began to hunt around for good seed. The advice "Buy good seed" didn't mean any more to me than it has probably meant to you. You can say to yourself: "I might as well go down to Bill Jones' store and get my alfalfa seed there. I don't think he'll beat me." Or you can send off to a good seed house and get it. But if you send off, don't send too far. Seed from the South, especially, may winter-kill in States farther north.

The Seed Germinates Slowly

THE next thing, if you wish to economize on seed, is to put it in a condition to germinate. I have heard alfalfa growers say they couldn't get a good stand

with less than 15 or 20 pounds of seed to the acre. I don't doubt it, because alfalfa seed will sometimes lie in the ground year after year without germinating. You can figure that unless you do something to the seed about half of it will fail to germinate. One way to treat seed is with a home-made scarifier. Professor Hughes of the Iowa Experiment Station at Ames invented this device a few years ago. It works something like a fanning mill and the seed is driven

take your alfalfa seed and spread it out over the sand. I sow my alfalfa seed at the rate of eight pounds to the acre, so I put in about a bushel of seed for an eight-acre field. A hotbed 6x8 feet is about the right size. Then I take a board and work the alfalfa seed into the sand in about the same manner as you would level off a cement sidewalk. I leave it there for forty-eight hours, and at the end of that time the seed is ready to plant. The warm, moist sand swells and softens the outer hull of the seed so that when the seed is put in the ground it sprouts quickly and vigorously.

To get the seed out of the hotbed, simply shovel up the sand and put the sand, which of course contains the seed, through a sieve made of fly screen (14 meshes to the inch). This will retain the seed and some of the sand. Put the seed-and-sand mixture in a drill and it is ready to sow. Be sure to allow for the amount of sand when setting the drill. Another method which I am now working on as a means of hastening germination is still simpler, and prevents any possible loss of seed. Here it is:

Put down a layer of sand on a moist surface, cover with a cloth, spread your seed on the cloth, then spread another cloth over the seed and put more sand on the upper cloth. Sprinkle warm water over it and leave forty-eight hours; then remove your seed from between the cloths. This method promises to be the most practical of all.

I sow my alfalfa with a four-inch drill set at a light depth and with all the pressure off the disks. This puts the seed in the ground from one half to three fourths of an inch deep. Some growers prefer to broadcast the seed, but by so doing you run the risk of loss by birds, winds, and surface washing.

On a field where alfalfa is grown for the first time inoculation is absolutely necessary. I prefer a commercial culture rather than using soil from someone's alfalfa or sweet-clover field. If you get soil from such a place you are bound to get all kinds of weed seed, and alfalfa can't work against weeds, especially at the start. Full directions for using the culture come with the package. There are various companies making cultures. I prefer to deal with a reliable bacteriological laboratory.

In preparing the ground for alfalfa, I plow in the fall and let it alone till spring. Then I harrow it well and use either an alfalfa cultivator or a very heavy roller. The idea is to work the soil till there are no air spaces left below the surface and so the alfalfa roots will find plenty of firm, mellow ground. Then I cultivate the land during the summer and drill in the alfalfa seed in August. I am opposed to spring seeding of alfalfa because one is generally too busy at that time and there is a tendency to slight the work.

Air Spaces Prevent Heating

DON'T cut alfalfa the first year if seeded in the summer. One grower who has had long experience with it tried that once, and he never got that particular field back in shape. The temptation is to clip it and get the hay, but it will winter well only when left uncut.

Cultivating alfalfa with the proper tools is a good thing. Cultivate at right angles to the direction of drilling. A disk-drill with the disks set at a slight angle to the line of draft makes a good cultivator.

My alfalfa field is now well established, and I have been getting three good cuttings a year for the last four years. Several times I have been tempted to take a fourth cutting, but as the three cuttings give me about four tons per acre I have been satisfied with that. Here in Ohio it is not advisable to cut alfalfa after the fifteenth or twentieth of September.

Opinions differ somewhat as to the time of cutting. I watch for the tender offshoots from the base of the plants, and when these appear I start the mower. After cutting it is best handled about like clover hay, but if stored in a barn mow put in old planks, empty barrels, or almost anything to make air spaces and prevent heating.

Alfalfa can be grown by anyone who is willing to go to the trouble of starting right. But you must first have a good seed bed, good drainage, sweet soil, inoculation, and seed that will germinate. Providing just a few of these conditions is not enough; you must have them all to be sure of success. Occasionally one hears such remarks as: "Will Smith didn't inoculate his seed, and his alfalfa grew all right, and he has the nodules on the roots to prove it. I don't think your theory is any good."

Such cases are common, the nodules coming from the nitrogen in the soil, and the second year such an alfalfa field will turn yellow. But if the plants get nitrogen from the air, by inoculation, they will store it in the roots, thus continually enriching the soil.



When a field is well established it will yield three good cuttings, and sometimes more if the growing season is long. But clipping too late in the fall will reduce next season's crops

by a blast of air against a curved piece of sandpaper that scratches the outer hull of the seed and causes it to germinate more quickly.

Good Culture is Important

I ASKED for information, and he sent me a blueprint plan. Hundreds of home-made scarifiers have been made for from \$4 to \$5 apiece. Naturally you would think the seedsmen would have scarified seed to sell, but they have not taken to the idea very eagerly. Already they have to clean the tons and tons of seed they handle, and putting it through a scarifier would mean a tremendous lot of bother.

Professor Hughes reports the germination of scarified alfalfa seed to be more than double that of untreated seed.

There is still another way to treat alfalfa seed which I have found simple and convenient, as it saves the trouble of making a scarifier. I know it is a good thing because I have seen the difference on my own farm between treated and untreated seed. This plan I am about to describe has been used for years by florists for other kinds of seed, but it works admirably with alfalfa seed.

Take a couple of bushels of fine, sharp, moist sand, put it in a hotbed, and spread it out smoothly. Then

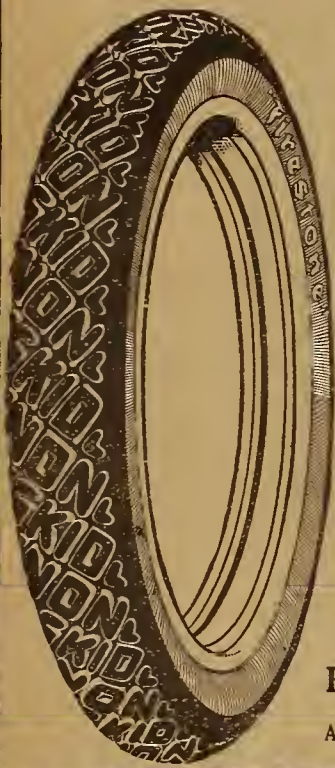


Lime is a soil sweetener that is good for most any crop, but for alfalfa especially. It may be applied by a special lime spreader, as shown here, or you can scatter it from a wagon



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Interest Rates

Hollis Bill Involves Farm Mortgage Returns

By JUDSON C. WELLIVER



WASHINGTON, D. C.,
June 5, 1916.

THERE is going to be a lot of trouble over the Hollis bill for establishment of a rural credit system "to provide capital for agricultural development, to create a standard form of investment based upon farm mortgages, to equalize rates of interest on farm loans," etc. The measure has passed the Senate, and at the time of writing the opposition to it is getting exceedingly busy.

There is just one thing about this measure that pretty nearly everybody agrees is good. That is its title: Rural Credit. It's hard to get anybody to vote against even an undesirable measure with that title and pretending to contemplate a great benefit to the farmers. The folks in the cities assume that it will make farm production larger and thus reduce living costs. The farmers presume that if it works it will give them cheaper money and wider credit. So there is difficulty in its getting such insistent examination as might defeat the bill; nobody wants to vote against a measure that has so much plausible demagoguery in its title.

As it has passed the Senate it provides for a farm-loan board at Washington to manage the system, twelve federal land banks, and, subsidiary to these, an indefinite number of farm-loan association and joint-stock land banks. The Government will provide the \$500,000 minimum capital for each federal land bank, and if there is need shall add as much more each year.

Ten or more farmers may form themselves into a co-operative farm-loan association and borrow from the federal land bank in their district up to half the value of their farms, on mortgages. These mortgages will be held by the federal land bank as collateral security underlying bonds to be issued by the Farm Loan Board. Thus it is simply the old scheme of debenture bonds against deposited collaterals. The money for which the bonds sell would come back to the federal land bank to be loaned on other mortgages, which in turn would be made collateral to more bonds, to be sold to the general investing public; and thus an endless chain of cash and credit would be created, its operations limited only by the desire of farmers to borrow and the willingness of investors to buy.

It is thought that three to five billions of dollars' worth of farm mortgages, now paying from five to ten per cent, and even more, would be offered by farmers for refund at probably four per cent under the new scheme. But this assumption involves confidence that the investing public would consent to have its five, six, and eight per cent paper taken away from it and four per cent paper given back to it. Would the investors do it?

Four per cent investments are not very enthusiastically snapped up nowadays, when even the joint bonds of the British and French nations draw more than that. Of course the original government contribution of capital would soon go out, and if after that the general public didn't buy the bonds promptly there would be no more cash to be dragged in by the endless chain.

Who'll Loan at Four Per Cent?

Meanwhile, general investors in farm loans would be justified in worrying about the future of that business; fearful that investments made with the expectation of running a long period might be taken up shortly with the cheaper land-bank funds. The last state under this scheme might be worse than the first. The real question is whether there is any great supply of four per cent money in the country; whether there is likely to be any considerable supply of it in the world for a good many years after the war. The whole world is going to want capital to get back on its feet.

The other side of the proposition is that, with all the world bidding high rates for money, this federal project might, by putting at least the color of government security back of farm loans, stabilize the market for them, keep the interest rates from rising still higher

than they are now, and do a useful service to the farmer. The time may come when six per cent money will look positively cheap even to the

Middle Western farmer who has been used to borrowing at five

The disappointing thing about this legislation is that it doesn't recognize the need for any but mortgage loans. The country is full of farmers who haven't any land to mortgage but who need money for investment in a thousand things to make their farming more efficient.

Present Plan Favors Landlord

The advanced students of this problem believed, when rural credit legislation was proposed, that some adaptation of the co-operative personal credit and loan associations, such as they have in Europe, would be worked out. It has not been done. How would the tenant farmer be helped by a system that would enable the landlord to get more and cheaper money, and thus farther expand his holdings? Would not the tendency be to increase large holdings and decrease the tenant farmer's chance of becoming an owner? Until he could get something to mortgage the tenant farmer couldn't get at any of the cheap money; and he's the fellow who most of all needs better credit, cheaper capital.

These and other difficulties have been discussed by men of wide experience, like Myron T. Herrick and others. The discussion seems likely not to defeat the legislation now in hand, but it does give promise of forcing further legislation, later, to provide the distinctively personal credit that is needed by the small and tenant farmers.

Another important financial question is that of foreign competition after peace returns to Europe.

It looks as if, after peace returns to Europe, the American farmer would have a greater competitor than ever before, in Russia and Siberia. The representatives of the entente allies have been holding conferences in Paris, planning a great and close co-operation for the purpose of keeping business among themselves, and preventing Germany in regaining power to make another big war.

In effect, this plan is to establish mutually discriminating tariffs, financial arrangements, money systems, etc., in order to make it advantageous to do their business with one another. Thus Russia is going to quit spending money buying things in Germany, because she doesn't want Germany to save it up to start a new war after a while.

Germany has been making most of the agricultural machinery for Russia. Russian farming is pretty bad—partly because the agricultural machinery adapted to German uses isn't the thing needed in Russia.

Now, when the Russians get American cultivators and self-binders and gang plows and the like, they're going to be some competition in agriculture. Uncle Sam will be making profits—for his manufacturers—from selling the machinery, but he will be rubbing it into his farmers a bit.

Atop all this the great scheme of industrial and commercial co-operation among the allies looks to a tariff scheme that will, if it works out, ultimately give the other manufacturing countries among the allies a preference in Russian markets, so that England, for instance, will have the better chance to sell Russia her agricultural implements. If it ever comes to that we are going to be a good deal isolated commercially, and there will be need for measures to protect ourselves effectively. That's the reason why there is a great revival of sentiment in favor of a tariff commission.

Nowadays you hear endless talk here in Washington about a tariff commission endowed with real powers—powers not merely to investigate and report so that Congress may fix duties intelligently, but powers actually to fix the duties and to change them when necessary. Even the Democrats, who started with determined opposition to a commission, are coming around to it, and the President has strongly urged it.



Henequen fiber is here undergoing the drying and natural bleaching process which changes its color from green to the familiar whitish-yellow



The cargoes of these barges are henequen bales ready for shipment to the United States. This picture shows the harbor of Progreso, Mexico

Story of Binder Twine

Growing Henequen is the Chief Industry in Yucatan

By BERNARD GALLANT

VERY few people, indeed, are acquainted with the story and romance of the ordinary binder twine that is so extensively used by farmers in the United States. Still smaller, perhaps, is the number of people who know anything at all about henequen, or sisal hemp, from which binder twine is manufactured; and yet a most remarkable tale could be told about that wondrous plant.

In Yucatan, Mexico, where henequen grows and whence nearly all the sisal hemp used in this country comes from, the natives call it "the noblest plant in the world." Others have dignified it by the title of the "Green Gold of Yucatan." Those are the feelings of the Yucatecans, as they are called, for the henequen plant.

The most important of the numerous fiber plants in Mexico is the *Agave sisalana*, which produces the sisal hemp from which our twine is manufactured. That plant is the basis of the prosperity of the State of Yucatan, and represents one of the chief values in the list of Mexico's agricultural productions.

Scientifically the plant belongs to the maguey (agave) family. The ancient Aztec Indians used the plant very extensively. They employed the leaves for roofing, the fiber of it for weaving, the pulp as a food, and the juice as a beverage. The henequen plant played an important part in the history of the Aztec Indians, as their ruins indicate.

The henequen plant resembles very closely the century plant of the United States. The arid and stony regions of Yucatan afford the most suitable soil and climate for the plant. Other cultivation there is almost impossible. The plants are produced from seeds, cuttings, and from sprouts which the natives call *hijos* (children).

Requires Little Cultivation

AFTER a field has been cut of all the henequen plants the surface is burned. Three months or so before the rainy season the *hijos*, which are usually about 18 to 20 inches high and which have sprouted from the parent plant, are rooted up and thrown into a heap, where they lie exposed to the weather. When they appear to be almost dried or decayed they are gathered, and carried to the cleared field ready to be planted.

Usually they are planted in rows about four yards

apart, each plant removed about seven feet from its brother. About 1,100 plants are generally placed to the acre. The space between the rows are for the purpose of facilitating the cutting and carrying off the plants, also to prevent the wounding of the leaves by the spines and thorns of adjacent plants.

This remarkable plant needs practically no irrigation or cultivation of any sort. But twice a year the fields have to be cleared of the weeds, and a great

deal of patience is required before the plant reaches maturity. Under favorable weather conditions it takes six or seven years before the plant is ready to be cut and begins to yield fiber. The plant grows in the form of a sharp, conical spike which springs from the center. Soon it is encircled by successive rings of long, sword-like leaves which radiate from it. A mature plant will bear from 6 to 8 rings, and will contain from 10 to 15 radiating leaves. The cutting of the leaves is almost continuous, however, the older the leaf the stronger and the better the fiber is. The lower or older rings are cut every year. The yield of fiber is largely influenced, however, by the weather conditions.

There is no fixed harvesting season, as this is determined by the individual degree of maturity of the plant, which in turn is indicated by the position of the leaves on the stalk.

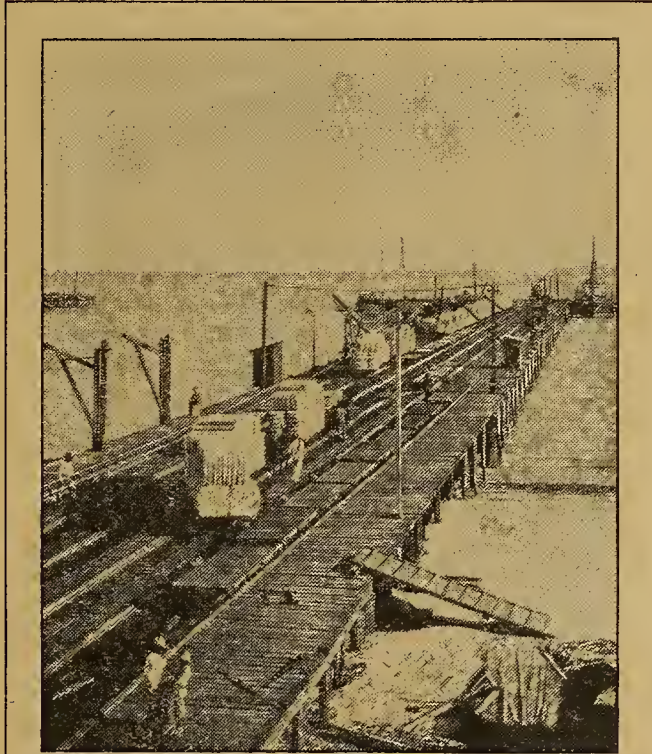
The average productive life of a plant is about fifteen years. Replanting is not required more than every fifteen or twenty years.

They Raise No Other Crops

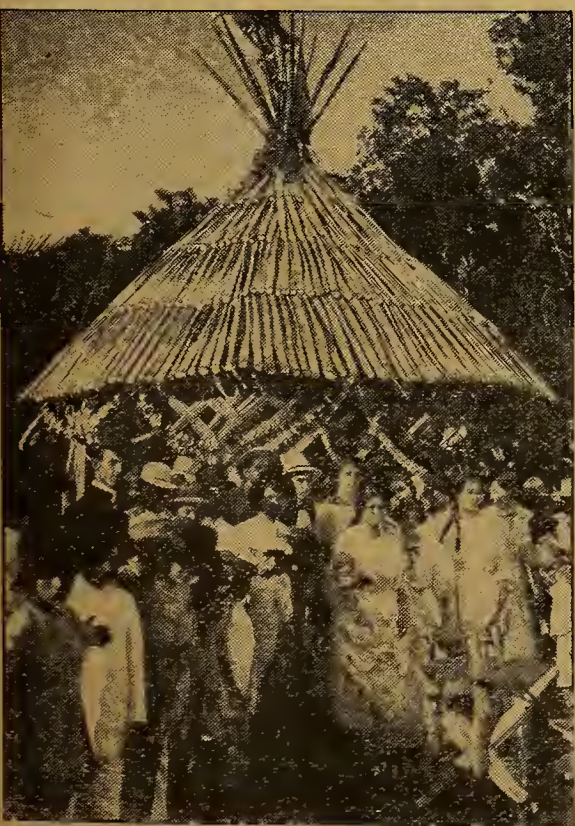
THE leaves are cut with a *cerba*, a hook with a cutting edge. To this instrument an ingenious device is attached which cuts off the side spines without injuring the fiber. The leaves are subsequently cleaned by a machine consisting of a large disk furnished with knives revolving about a plane table. The thick, pulpy henequen leaves are inserted between the table and disk; the pulp is removed and the fiber is left. The fiber is then left in the sun to dry, undergoing at the same time a natural bleaching process, changing from a bright green to the well-known whitish-yellow color. When the pulp has dried thoroughly it is pressed into bales weighing about 500 pounds and is ready for shipment.

Everything the Yucatecans possess comes from but one thing—henequen. Raising that wonderful plant is practically the only industry of the state. The soil is unsuitable for any other crop. All other products in the form of vegetables, fruits, and foodstuffs have to be imported from the outside. Seven eighths of the total exports of Yucatan is henequen, and three fourths of its people earn their living from it.

At present Yucatan annually ships more than a million bales of henequen to the United States.



Seven eighths of Yucatan's exports is henequen. You see it everywhere



Here the henequen workers are holding a little celebration. They are fond of pleasure



The "Green Gold of Yucatan." Binder-twine fiber is made from the leaves



An Indian loading a train with henequen. The bales weigh about 500 pounds each

Good Health Talks

By DR. DAVID E. SPAHR



GREEN soap is prepared from potassa and fixed oils. Tincture of green soap, the preparation usually used and referred to, is an alcoholic solution of green soap, sixty-five per cent, and oil of lavender, two per cent. This preparation is used

as a local application to the skin as an antiseptic cleansing and cleaning article in preference to common soaps. It can be obtained from any druggist.

Sore Feet

The bottoms of my feet are so sore it is painful for me to walk, especially on hard ground. The balls of my feet are calloused something like a corn and it extends across to my little toe.

L. P., Oregon.

SOAK your feet in warm water until the callosity loosens up, and then peel it off. Wear some soft inner soles and see to it that the soles of your shoes are not too rough and stiff or too thin and limber.

Effervescing Summer Drinks

How would you make a good effervescing summer drink? I have used bicarbonate of soda with vinegar or lemon juice and a little sugar, but I suppose that phosphate of soda would be better. How about acid phosphate? I have heard that recommended.

T. A. H., Minnesota.

YOU have answered your own question. Mineral waters containing carbonic-acid gas sufficient to make them sourish make a cooling, palatable drink in feverish and dyspeptic conditions. For home use, your preparation is probably as good as any.

For Dandruff

Miss J. L. W. of Texas and Mrs. F. R. of South Dakota ask for a remedy for dandruff.

AUTHORS on skin diseases recommend the following: Resorcin, 2½ drams; hydrarg. bichlorid, 2 grains; ol. amygdal. dulc., 2 drams; tinct. cantharid, 2 drams; spts. vin. rect., 2 ounces; aqua distill., q. s. ad. 6 f. ounces. This is to be rubbed into the scalp daily.

Bright's Disease

My husband is forty-two years old, a carpenter by trade, and has kidney trouble very badly. Has pains and dizzy spells, also blind spells, and agonizing pains about his heart. After one of these spells he is not quite right in his mind.

Mrs. I. C. W., Texas.

AQUIET life in an equable climate and a plain mixed diet, avoiding meats and salt as much as possible, is the best thing.

For his dyspepsia, insomnia, and cardiac pain he needs the personal attention of a physician. The medicines required for such a case as his can only be administered under a physician's supervision.

Lumbago

I am fifty-four years old and a farmer, and am otherwise healthy, but my kidneys pain me so when stooping, and have for five years.

A. D. M., Washington.

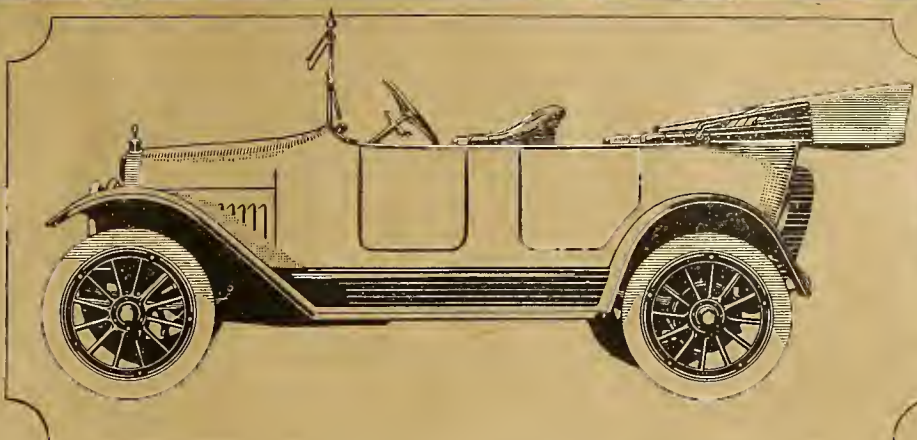
KIDNEY trouble hardly ever causes a pain in the back, especially as you do not speak of other symptoms. No doubt you have sprained your back. Perhaps you have lumbago.

Impacted Cerumen

About two months ago I began to have dizzy spells when I would lie down on my left side, everything would whirl around, and I felt as if I were falling on my head, then when I would sit up I would be sick at my stomach. It seems as if something passes from one side of my head to the other. It soon gets better, until I turn over, and then it begins again. This, however, does not occur if I lie down on my right side.

Mrs. E. L., Texas.

HAVE your doctor remove the hardened wax from your ears, especially the right one, and if that is the cause you will be relieved at once. If not, it may be chronic catarrh or Ménière's disease.



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But still more important is the Company back of the car. Still more important are the company's local representatives who sell you the car and whom the company must hold responsible to fulfill its just obligations and keep its pledge with you.

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Brief Specifications—Four cylinder motor; cone clutch running in oil; unit transmission (3 speeds) bolted to engine, ¾ floating rear axle; left-hand steering, center control; 56" tread, 103" wheelbase; 30 x 3½" tires; weight 1,960 pounds. **Equipment**—Electric Head-lights (with dimmer) and tail-light; storage battery; electric horn; one-man mohair top with envelope and quick-adjustable storm curtains; clear vision, double-ventilating windshield; speedometer; spare tire carrier; demountable rims; pump, jack, wrenches and tools. **Service**—16 complete service stations, 54 district branches, over 2,500 dealers and agents—so arranged and organized that service can be secured anywhere within 12 hours. **Prices**—2-Passenger Roadster, \$635; 5-Passenger Touring Car, \$655. Three other body styles.

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Dairying

Twin Calves Reproduced

By Mrs. M. James

IN a previous number of FARM AND FIRESIDE the question was asked, "Will twins reproduce?" My husband bought a large white cow at a sale some years ago, and soon after she had two fine white heifer calves. In due time they reached maturity, and each of them raised a good calf. Cannot state further, as they were sold. But as far as our experience was concerned they reproduced as well as any ordinary heifer.

Adopt Local Breeds

A PENNSYLVANIA reader who is about to move onto a new farm in another part of the State asks what breed of dairy cows, and also of hogs, is considered best. He apparently wants to start in with pure-bred stock.

As far as dairy values are concerned there is very little difference between Jersey, Guernsey, Holstein, and Ayrshire cattle. The difference between the best cows of those breeds is much less than between individuals of any one breed.

Neither is there very much difference between such breeds of hogs as the Poland China, Berkshire, Chester White, and Duroc Jersey. Of course, many breeders have strong personal preferences, but where such preference is lacking the best plan is to adopt the same breeds as are already being raised in the neighborhood.

By so doing one is able to dispose of surplus stock more readily, and he can also buy necessary stock to replenish his own herd as occasion may require. In addition, breeding operations and the exchange of sires are more convenient when several neighbors are raising the same kind of stock.

For Better Ice Cream

ICE-CREAM making as commonly conducted on a small scale results in a product that is sometimes very good and at other times of poor quality. This is not a matter of chance but, as in the case of butter-making, depends on the kind of material you have to work with, and also the methods used.

If the operation of making ice cream is standardized, uniformly good results may be expected. The best grades of ice cream have a smooth, velvety texture, a coarse, crystalline texture being undesirable.

Cream which has been aged for twenty-four hours, or slightly more, will make smoother ice cream than perfectly fresh cream. It will also keep better in case you wish to hold it a few days. The amount of over-run, or "swell," is likewise greater when the cream has been aged. Being thicker, it gathers and holds more air than fresh cream equally rich in butterfat.

Freeze 17 Per Cent Cream

Cream that is to be used for ice-cream making should test at least 20 per cent butterfat, 30 per cent being ideal, and 25 per cent being very good. Most commercial ice cream is made from approximately 17 per cent cream, which requires a starchy or gummy binder to

assist in forming a good texture. However, butterfat is the best body-giving material.

The speed of freezing also has a distinct influence on the quality of ice cream. The purpose of the dasher of an ice-cream freezer is to whip the cream into a smooth consistency. Too rapid freezing will make the product coarse-grained, due to the formation of water crystals which freeze before the cream does. Ice cream that freezes in about fifteen minutes will be of high quality if other requirements have been followed. If the time is twenty minutes or longer, the product is likely to become foamy and light. The best speed of the dasher is about 100 revolutions per minute.

If ice cream is to be kept a day or so before being eaten, use more flavoring extract than if it is to be consumed at once. Flavors weaken when the ice cream is stored.

Start with a Cold Mixture

The best method of regulating the rate of freezing is by the amount of salt used. One part of salt to eighteen parts of ice, by weight, will freeze ice cream if the salt is placed near the top.

The more salt used the lower will be the freezing temperature. A little water poured over the salt-and-ice mixture will hasten freezing.

Have the cream and other ingredients—commonly known as the "mix"—cold before starting the freezer. If the temperature is higher than 50 degrees, the cream is likely to churn instead of freeze. Butter on the dasher indicates too high a temperature.

Ice cream of high quality requires pure sweet cream. Mixing sweet cream with sour cream for the purpose of sweetening the sour cream gives an inferior product, and is a waste of the good cream.

A Jersey Venture

By B. Musser

BEING a poor boy and working on a farm by the year, I asked my employer to keep a cow for me in place of a horse. I bought a nice registered Jersey heifer for \$80. In two years and six months she produced \$100 worth of butterfat, besides raising two calves which I sold for \$25 each.

Last December I sold the cow for \$125. My net cash returns were therefore \$195. I consider this a much better investment than putting the \$80 in a bank.

Faith in Farming

THE dairy scene shown below is not in Wisconsin, New York, Illinois, or any so-called dairy community. It was taken in central Florida. The price of milk in Florida ranges from 10 to 14 cents a quart, and the dairies are for the most part small. Florida depends on the States north of her for a large share of her dairy products.

No small amount of faith is required for a man to build a substantial silo and barn and other permanent improvements in a locality where dairying is virtually untried. The faith of a nation in its army and navy is inspiring, but what shall we say of our faith in farming?

This man believes that his carefully selected dairy cows will more than repay his investment in buildings and in the cows themselves. And it is hard to defeat faith of that kind. His stock doubtless has implicit faith in his care and kindness. More faith of this kind, one for the other, makes the farm a little bit of heaven, and likewise contributes to the material comforts of life on earth. Faith in farming is the kind of faith that makes a man or woman search for his own errors when the farm fails to pay. It is faith in nature.



This man has faith in dairying. He invested in good, permanent buildings, knowing that his cows would pay for them

What a DE LAVAL Cream Separator SAVES Over any other Separator or Creaming System

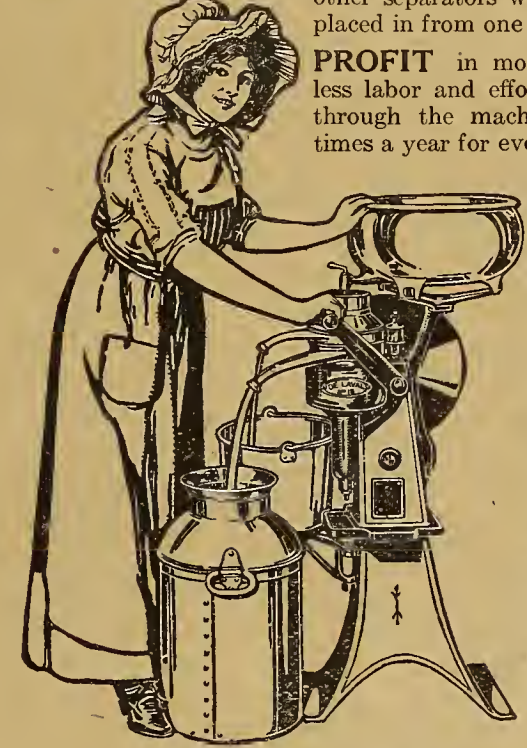
QUANTITY of cream that no other separator will recover completely, particularly under the harder conditions of every day use.

QUALITY of cream as evidenced by De Laval butter always scoring highest in every important contest.

LABOR in every way over any gravity system, and also over any other separator, by turning easier, being simpler, easier to clean and requiring no adjustment.

TIME by hours over any gravity system, and as well over any other separator by reason of greater capacity and the same reasons that save labor.

COST since while a De Laval Cream Separator may cost a little more than a poor one to begin with it will last from ten to twenty years, while other separators wear out and need to be replaced in from one to five years.



PROFIT in more and better cream, with less labor and effort, every time milk is put through the machine, twice a day, or 730 times a year for every year the separator lasts.

SATISFACTION, which is no small consideration, and can only come from knowing you have the best separator, with which you are sure you are at all times accomplishing the best possible results.

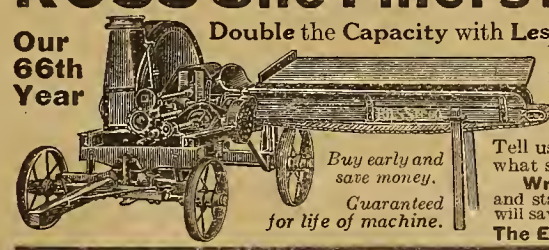
EASILY PROVEN—these are all facts capable of easy demonstration and proof to any user or intending buyer of a cream separator. Every De Laval agent is glad of a chance to prove them by a De Laval machine itself—without the slightest obligation to the prospective buyer unless entirely satisfied.

If you don't know the nearest De Laval agent simply address the nearest main office as below.

THE DE LAVAL SEPARATOR CO.

165 Broadway, New York 29 E. Madison St., Chicago
50,000 BRANCHES AND LOCAL AGENCIES THE WORLD OVER

ROSS Silo Fillers for Gasoline Engine Power



Double the Capacity with Less Power and considerably Less Speed.

We make Silo Fillers of extra large capacity to meet the special requirements of all silo users. These machines are specially designed to be operated by popular size Gasoline Engines—6-8-10-12 and 14 H.P.

Tell us what your power is and we will advise you what size Ross Silo Filler you require.

Write for Our Special Proposition Today and state if you intend to buy this year. Early orders will save you money.
The E. W. Ross Co., Box 119, Springfield, Ohio

Three Hundred Million Bushel Crop in 1915

Farmers pay for their land with one year's crop and prosperity was never so great.

Regarding Western Canada as a grain producer, a prominent business man says: "Canada's position today is sounder than ever. There is more wheat, more oats, more grain for feed, 20% more cattle than last year and more hogs. The war market in Europe needs our surplus. As for the wheat crop, it is marvelous and a monument of strength for business confidence to build upon, exceeding the most optimistic predictions."

Wheat averaged in 1915 over 25 bushels per acre
Oats averaged in 1915 over 45 bushels per acre
Barley averaged in 1915 over 40 bushels per acre

Prices are high, markets convenient, excellent land low in price either improved or otherwise, ranging from \$12 to \$30 per acre. Free homestead lands are plentiful and not far from railway lines and convenient to good schools and churches. The climate is healthful. There is no war tax on land, nor is there any conscription. For complete information as to best locations for settlement, reduced railroad rates and descriptive illustrated pamphlet, address

M. V. McINNES, 178 Jefferson Ave., Detroit, Mich.
W. S. NETHERY, Interurban Bldg., Columbus, O.
Canadian Government Agent.

No passports are necessary to enter Canada

What She Was Telling Teacher

The Awards Made by the Editors After Reading the Answers of the 31,237 Contestants

FIRST place and a prize of \$5 was won by Miss Josephine Willis of Vine Grove, Kentucky, in FARM AND FIRESIDE'S contest, "What's She Telling Teacher?" which closed June 1st with 31,237 contestants entered. Miss Margaret K. Railey, R. F. D. No. 2, Clarksdale, Missouri, was awarded second place and the prize of \$3. Third place and a prize of \$2 was won by Miss Rachel Sheldon, Fresno, California.

The other awards with a prize of \$1 were: Fourth place, Rev. F. A. Bisbee, Boston, Massachusetts; fifth place, Mrs. D. C. Parshall, R. F. D. No. 1, Box 21, Cimarron, Kansas; sixth place, Miss Sena M. Rath, R. F. D. No. 1, Avoca, Minnesota; seventh place, Miss Fay Speck, R. F. D. No. 1, Dalton, Georgia; and eighth place, Miss Daisy O. Gebberding, La Grange, Indiana.

Few men entered the contest, because they were so busy in the fields, with the result that all of the prize-winners except one were women. The youngest contestant was six years old, while the oldest person was 93 years old. Every State in the United States was represented. With few exceptions all of the letters were remarkably well written.

Among the 31,237 persons entering answers in the contest, 389 were so close on the heels of the leaders that it was indeed difficult to select the prize-winners.

Several very fine sermons on prohibition were among the answers. Other contestants told about the early history of the United States and Ohio, the agricultural wealth of Ohio, the Dayton flood, Billy Sunday, the number of Presidents of the United States that have come from Ohio, the educational system of Ohio, and the natural resources of Ohio.

Several thousand of the answers were: "Springfield, Ohio, where FARM AND FIRESIDE is printed." Others said the girl was telling about the motion-picture reels that the Ohio censors wouldn't permit to be shown in Ohio. A number of Indian legends were among the answers submitted. This announcement will have to serve as a personal reply to the 31,229 contestants that didn't win a prize. The editors desire to thank you all for your interest and enthusiasm.

Stands the Test Best

First Prize: By Josephine Willis

OF ALL farm papers that stand the test, My dad says, FARM AND FIRESIDE'S best. It tells us all we need to know, And is published at Springfield, O-hi-o.

Ought to Subscribe

Second Prize: By Margaret K. Railey

DEAR TEACHER, I want you to know Of a town that is located in Ohio, The city of Springfield it is named, For issuing a paper it is famed, Which teaches women to read and to sew, And many things they ought to know. Teaches the men to sow and to reap, To care for their cattle, their hogs and sheep; So everybody ought to subscribe For the good old FARM AND FIRESIDE.

The Home of My Paper

Third Prize: By Rachel Sheldon

THERE is Springfield, the home of my paper—FARM AND FIRESIDE.

The Human Factor

Fourth Prize: By Rev. F. A. Bisbee

AT SPRINGFIELD but a few years ago was the center of population of the United States, a fact more impor-

tant than the geographical center, because the human factor must always be chief in the life of a nation. Now it is the center of the most healthy and wholesome human interest of the nation, which finds most adequate expression through FARM AND FIRESIDE, here published.

For All the Family

Fifth Prize: By Mrs. D. C. Parshall

WE HAD quite an argument at our house last night. You see our FARM AND FIRESIDE subscription expires soon, and we all want to take it, but each of us wanted one of the others to pay for it.

Joe said Pa ought to pay because he told Neighbor Jones that one article in the Live Stock Department saved him \$50 worth of pigs.

Then Pa said, "See here, Joe, it seems to me I saw a lad about your size studying the Poultry page a good many times last winter, and who is it turns to the Automobile or Motor-Power articles first thing, hey?"

"Oh, I know," said Joe. "Estella should pay because she is always copying some crochet patterns or some

clear print is a great thing in its favor to me. So many farm papers either use such small type or are printed so badly, or both, that they are hard to read, and still harder on the eyes—but not FARM AND FIRESIDE. When I was actively engaged in farming it was my authority on every subject, and since I am retired I think the editorials and Sunday Reading are worth many times its price. It is the kind of paper I want my children to read. I noticed our subscription would soon expire, and so I sent in one dollar last week to have it renewed for three years."

Stories for Boys and Girls

Sixth Prize: By Sena M. Rath

THE little girl is telling teacher Ohio is the home of FARM AND FIRESIDE, the National Farm Paper, and that it is published for the benefit of the entire household. She says she likes to read the stories for boys and girls, and she also says the whole family can hardly wait until the next issue of FARM AND FIRESIDE—it is so interesting in all its departments and everything pertaining to the farm and household.

She says her papa and big brothers all read about the Farming, Dairying, and all such useful and interesting matters, and her mama and big sisters read the Poultry pages, Garden and Orchard columns, Housewife's Club, Household Hints, recipes, etc., and she says Mama often sends for dress patterns from there too, as their patterns are always up-to-date and easy to understand. And there are always so many useful hints on Needlework too. And we have many interesting moments together trying to solve the puzzles in the FARM AND FIRESIDE.

She says that none of the family can get along without FARM AND FIRESIDE any more. She says there is also always a good story in each issue of the FARM AND FIRESIDE, for everyone to read.

An Indian Story

Seventh Prize: By Fay Speck

MANY, many years ago a ship set sail from the old country, it came across the ocean and cast anchor on the American coast. The new settlers scattered far and wide, but one family came to Ohio. They were among the first settlers of the State. There was a little girl of ten and a baby boy of three years. For many months they got along very well with the Indians, but it was not very long until they began to show signs of hostility. One day, late in the fall, when the father had gone to mill and the mother to see a sick neighbor several miles distant, the two children wandered off into the woods to play. As they returned they beheld that the house was surrounded by Indians. The children knew it would mean certain death to go on, so they turned and fled. They ran for about a mile, and as it was then growing dark they crawled into a hollow tree and spent the night. That little girl was my great-great-grandmother, and that tree stood upon the place where the FARM AND FIRESIDE building now stands.

This story has been handed down through the family, and Grandmother says that tree proved a blessing, but not only was the tree to prove a blessing but the spot was to be a still greater one in the future.

FARM AND FIRESIDE has been in our family ever since it was published. It has helped my father and grandfather to solve the problems of farm life. It has made my mother's and grandmother's household work a great deal lighter. And last, but not least at all, with only a few hours work, it has rewarded me with one of the finest ponies and outfit that anyone ever owned.

Not only our [CONTINUED ON PAGE 17]



The editor's secretary opening the letters received from the 31,237 contestants. Your letter is in the pile

fancy-work idea she gets from the Housewife's Club."

"Well," said Estella, holding up the spider-web lace she had copied from the April 22d issue of FARM AND FIRESIDE, "Isn't it pretty? But, really, Mother gets more benefit from the home page than I. She gets all her new recipes and helps about the housework from FARM AND FIRESIDE."

Then Mother said: "If real benefit is what settles the question, surely your uncle Benjamin should pay. The prescription he got from the Good Health column helped him more than all the doctors he has had in five years, and his success as a dairyman is the outcome of the knowledge he gained from the Dairying and Live Stock pages."

Grandfather had been silent, but his little amused chuckle occasionally told he was listening. No one had suggested his paying, though he does enjoy it too, for, you see, he is so old and cannot work, and only has his pension.

Then Estella spoke up again: "Really, I think Cousin Adeline ought to pay for it, because she is just wild over the good stories in it—can scarcely wait for the next number to come."

That made Cousin Adeline out of patience. Just as though she spent her time in reading stories! And, you know, she sews most of the time. "I should like to know who makes all the dresses, shirts, and underwear for this big family," said she.

"And where do you get all your styles and patterns?" said Estella.

"Why, from FARM AND FIRESIDE, of course," Cousin Adeline answered. That made us all laugh.

Then dear old Grandpa spoke up. "My children," said he, "I am glad you all think so much of FARM AND FIRESIDE. It has been my stand-by for nearly forty years. It is the best farm paper I know of, and I have read many in my time. It is low in price and has more than twice as many numbers in a year as most farm papers. Its very

We are at Your Service

Your subscription to Farm and Fireside entitles you to the services of the Editorial and Business Departments of the paper free. We spend a lot of time and money to collect information on the things that affect you and your business. We wish to give you the benefit of this information. Feel free to write to us if you need information or desire advice.

Address the Editorial Department for any information you may desire on any or all of these subjects: Live Stock, Dairy Methods, Poultry-Raising, Crops and Soils, Seeds and Nursery Stock, Market Packages, Automobiles, Garden and Orchard, Farm Machinery, Household Equipment, Insect Pests, Handy Devices, Recipes, Good Books, and Health.

Address the Circulation Department if you wish to know about Premiums, Agencies, Subscriptions, or Clubbing Offers. Address the Pattern Department if you have questions concerning Patterns and Fashions. Address the Business Manager if you desire information about Advertising Rates, or Reliability of Business Concerns.

If you are in doubt about which department to write, address the Editorial Department and your inquiry will be cared for properly.

If there is something in Farm and Fireside you like or don't like, let us hear about it. Don't wait until you have a question to ask.

Farm and Fireside
Springfield, Ohio

Practical Summer Patterns

Order these patterns from Pattern Department, FARM AND FIRESIDE, Springfield, Ohio.



No. 3076—Russian Blouse with Sash. 12 to 18 years. Pattern, ten cents



No. 3075



No. 3073



No. 3075—Men's Outing Shirt with Attached Collar. 14, 15, 16, 17, and 18 inch neck. Price of pattern, ten cents



No. 3064—Yoke Waist with Box Plaits. 34 to 40 bust. The price of this pattern is ten cents

No. 3065—Three-Piece Skirt with Tab Pockets. 24 to 30 waist. Width, three yards. Pattern, ten cents



No. 3073—Boy's Waist with Detachable Collar. 6 to 12 years. Price of pattern, ten cents



No. 3067—Slip-on Dress, Perforated for Smock. 34 to 42 bust. Width, two and three-fourths yards. The price of this pattern is ten cents



No. 3067

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Recipes

Strawberry and Pineapple Preserves—Take three large pineapples, peel, and cut up so as not to have any core. Now weigh them. Cover with water and cook until tender. Then take eight quarts of strawberries, stem, wash, and weigh them. Having the weight of pineapple and strawberries before being cooked, take one-half pound granulated sugar to one pound of the fruit. Add the sugar to the water in which pineapple was boiled, bring to a good boil, add pineapple and strawberries, and let boil slowly until the juice is thick, being careful not to let it burn. Put in pint glass cans. Be sure to put on new rubbers each year, as the heat spoils the rubber. This quantity will make about eight pints.
E. B. P., Kentucky.

Filling for Sandwiches—Two cans of pimentos, one-half pound cream cheese, one-half pound salted peanuts, mayonnaise to mix. Grind all the ingredients together. This makes an excellent filling for sandwiches.
G. W. C., West Virginia.

Mayonnaise Dressing—Two eggs, three tablespoonfuls of cream, one-fourth cupful of water, one-fourth cupful of vinegar, one teaspoonful of mustard, one-half teaspoonful of salt, two tablespoonfuls of sugar. Beat eggs, add cream, mix balance thoroughly, and add slowly to cream and eggs, stirring continually. Cook in double boiler, stirring until thick.
C. O. B., Idaho.


Jam Cake—Three-fourths cupful of butter and lard mixed, one and one-half cupfuls of sugar, three eggs (lay aside whites of two for icing), one teaspoonful of soda dissolved into one cupful of sour cream or milk, one pint of jam (blackberry or raspberry), one teaspoonful of cinnamon, one-half teaspoonful of cloves, one-half teaspoonful of allspice, flour enough to stiffen. Bake in layers. Icing: Boil two cupfuls of granulated sugar until it threads. Beat white of eggs and pour the boiled sugar in, stirring constantly until the desired thickness. Flavor.
C. A. M., Wisconsin.

Beets are always boiled, dropped into cold water, and the skins slipped off as a preliminary to any preparation. They may be sliced and put into a pan with butter, salt, pepper, and a little lemon juice, and set over another pan of boiling water till hot.
They may be boiled, chilled well, cut into small dice and served as a salad on lettuce, with French dressing.
J. V. K.; B., Ohio.


Stew chicken for invalids in salted water till tender, pick the meat off the

bones in rather small pieces. Thicken the broth as for ordinary chicken gravy, then add the flaked chicken. Make a batter as follows: For ten cupfuls take one-half pint of sour milk or buttermilk, add a pinch of soda to sweeten, one rounding teaspoonful of baking powder sifted with one cupful of flour, one-half teaspoonful of salt and one heaping tablespoonful of lard rubbed smooth with the flour. Mix with the milk, beat well, then add two well-beaten eggs, add more sifted flour if necessary to make about the consistency of pancake batter. Fill individual cups about two-thirds full of the hot chicken mixture, pour over the top enough batter to cover chicken, but the cups should not be full when put into the oven, as they will rise to the top while baking. Bake until a delicate brown.
C. B. B., Kansas.

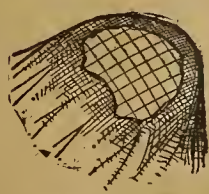
Household Hints

 A putty knife. I find very useful. I like it better than any pancake turner I have ever had. It is also handy in taking up eggs or frying potatoes, and it makes a good scraper for my pans and skillets. It is convenient because of its wide blade and short handle.
Mrs. B. H., Texas.

To prevent lamps smoking soak the wicks in strong vinegar and dry well before using. This will make a pleasant light and give satisfaction.
L. R. J., Missouri.

 When a splinter has been driven into the hand, fill a wide-mouthed bottle nearly full of hot water, place the injured part over the mouth and press it slightly. This will draw the flesh down, and in a minute or two the steam will extract the splinter and also the inflammation.
DELL W., Washington.

To Stiffen Eggs—When the whites of eggs for a meringue will not stiffen, either from a little of the yolk being mixed with them or any other reason, add a small quarter of a teaspoonful of baking powder and whisk again. The result will be a firm white snow.
M. H., New Jersey.

 When darning stockings, baste a piece of netting over the hole, then proceed to darn in and out of the net. The result will be a neat patch, and one that will not hurt tender feet.
A. B. R., Illinois.

You and Your Friends—and



You tried it because we told you how good and delicious it was. But your friends began drinking it because you told them how good it was. This is the endless chain of enthusiasm that has made Coca-Cola the beverage of the nation.


THE COCA-COLA CO., ATLANTA, GA.



10C

Demand the genuine by full name—nicknames encourage substitution.

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at a small cost by using our Attachable outfit. FITS ANY BICYCLE Easily attached. No special tools required. Write today for bargain list and free book describing the SHAW Bicycle Motor Attachment. Motorcycles, all makes, new and second-hand, \$35 and up.
FREE BOOK
SHAW MANUFACTURING CO. Dept. 88, Galesburg, Kansas.



Shoo Fly Plant
KEEPS FLIES OUT OF THE HOUSE
Flies will not stay in a room where it is grown. Very mysterious, but tests show such to be the case. Blooms in a short time (60 days from planting). Flowers both summer and winter. Package of seed by mail with catalogue, 10 Cents. JAPAN SEED CO., Desk N, South Norwalk, Conn.



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\$133 TO \$640 CASH
and small monthly payments secures for you any of 150 models of high grade Autos, priced at \$235 to \$1,265. Touring Cars, Roadsters, Trucks and Jimneys, originally costing up to \$4,000
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WRITE FOR 144 PAGE FREE CATALOGUE
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ASK FOR DEALER'S TERMS



“Wear-Ever”
50c Aluminum Stewpan FOR ONLY 25c

if coupon is mailed on or before July 20, 1916. See for yourself the difference between “Wear-Ever” and other kinds of aluminum and enameled utensils. “Wear-Ever” utensils lighten your work. You will be surprised how quickly they absorb heat and how thoroughly your food is cooked. Replace utensils that wear out with utensils that “Wear-Ever”

Fill out the coupon—get your pan today!

Look for “Wear-Ever” trade-mark on bottom of every utensil. REFUSE SUBSTITUTES



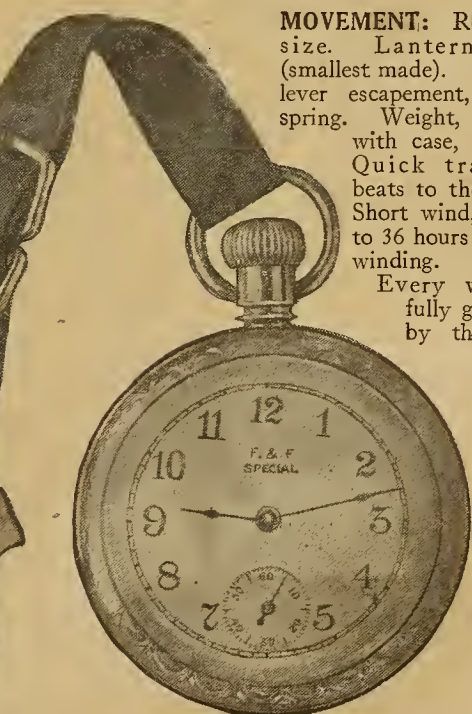
The Aluminum Cooking Utensil Co. Dept. 57, New Kensington, Pa. (or if you live in Canada) Northern Aluminum Co., Limited, Toronto, Ont. Send prepaid, 1-qt. “Wear-Ever” stewpan. Enclosed is 25c in stamps or coin—money to be refunded if not satisfied. Offer good until July 20th, 1916.
Name.....
Address.....

GET A WATCH AND FOB

HERE IS A CHANCE to obtain a handsome and useful watch and a fine leather fob with a gilt metal charm. FARM AND FIRESIDE guarantees that this fine watch will please you.

DESCRIPTION: This watch has a handsome nickel case, with open face. It is a stem-wind and a stem-set, just like other high-priced watches. It has a close-fitted snap back. It is only 3/8 inch in thickness. It is a perfect timekeeper, tested and regulated before leaving the factory. It is engraved front and back and is a watch of which anyone would be proud.

The Fob is of handsome black leather with a polished buckle, with a rich gilt charm hand-somely engraved.
Act Quick



MOVEMENT: Regular 16 size. Lantern pinion (smallest made). American lever escapement, polished spring. Weight, complete, with case, 3 ounces. Quick train, 240 beats to the minute. Short wind, runs 30 to 36 hours with one winding.

Every watch is fully guaranteed by the manufacturers and by FARM AND FIRESIDE

The manufacturers will make all repairs for a year free, as explained on the guarantee.

HOW TO GET THE WATCH

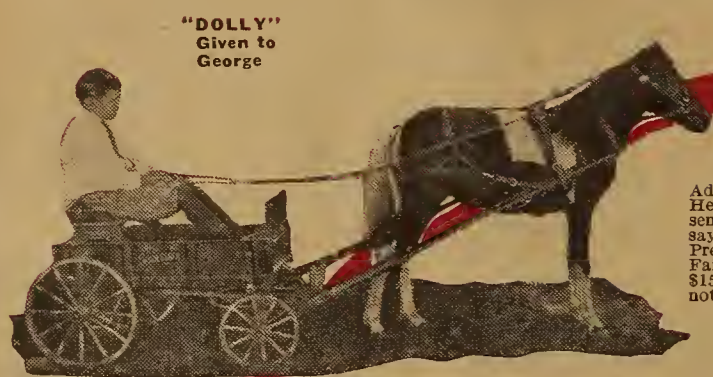
You can get this dandy watch and fob very easily. Write a postal card to the Watch Man. Tell him you want to get this watch and fob without spending one penny. He will be glad to help you get your watch. This is a chance you must not overlook.

Thousands of delighted men and boys have secured their watches this way with the help of the Watch Man. You can do it, too. Any one that really wants a watch can easily do the little task that we require. Just send your name and address to the below address. To-day is the time to act.

Write a Postal To-Day to THE WATCH MAN
FARM AND FIRESIDE, Springfield, Ohio



All These Ponies Given Away to Boys and Girls



"DOLLY" Given to George

This is George Edwin Adams of New York State. He sent me his name and I sent him "Dolly." George says "Dolly" took the first Premium at the County Fair, and he was offered \$150 for her, but he would not sell at any price.

Edwin Larson sent me his name and received "Early Bird." Edwin says "Early Bird" is a fine name for his pony because he and his friends go for early morning rides in the summer. Edwin lives in Worcester Co., Massachusetts.



"EARLY BIRD" Given to Edwin



"HEINIE" Given to Clarence

Clarence Niemoeller, Bartholomew Co., Indiana, sent me his name and I sent him "Heinie." Clarence says, "I would not take \$1,000.00 for 'Heinie' for I have more pleasure out of my pony than I would out of the money."

READ about these beautiful Shetland Ponies I have given away to boys and girls, all over the United States. Besides these eight shown here, I have given away more than 375 others. Now, I am going to give away several more Ponies—some of the finest Shetland Ponies I could buy—and I want every family that reads this paper to have an equal chance. If you are a boy or girl, send in your name, and if you are the father or mother of a boy or girl be sure to send your child's name. Remember, no charges of any kind and nothing to buy. Just send in your name.

Raymond Krueger lives up in northern Minnesota, where there is much snow. However, Raymond doesn't worry since I sent him "Trusty." If Raymond had not sent me his name, he wouldn't have "Trusty" now.



"TRUSTY" Given to Raymond



"KIP" given to Anna Ruth

Here you see Anna Ruth Miller of Logan County, Ohio, and her new friend "Kip." Anna Ruth says she is glad she sent me her name because "Kip" is the finest pony in the whole state of Ohio.



"PAT" Given to Flossie

Little Flossie Meredith looks as though she is training for a circus, but she is just having good times with "Pat," the pony I sent her. Flossie lives in Jasper Co., Iowa.

Children Don't put off this chance. Don't wait. Write it out and send it to me. I will then send you the beautiful free Pony Picture Book and you will have an equal chance to receive one of the Real Live Ponies that I am going to give away soon. You stand just the same chance as any other child, and it doesn't cost you a cent. Get a pencil and write your name now.

Parents Please show this offer to your child and send in the Coupon. You will be interested in the free Pony Book I send and your child will enjoy it immensely and profit by it. I receive many letters from children telling me how they enjoyed reading the book. Besides, your child may win one of the Shetland Ponies I am actually giving away this season. Your child stands the same equal chance as any other child, no matter where you live.

Pony Book Free

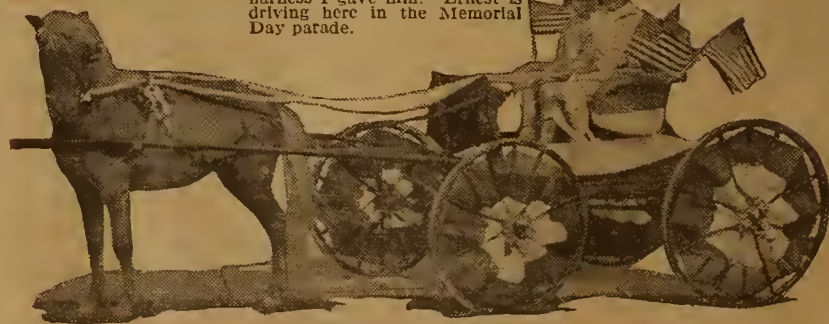
Here is a wonderful Pony Picture and Story Book. It tells the stories of hundreds of children and the Ponies I gave them. It tells how the children won them, how the Ponies were shipped to them and the good times they are having with them. I will send a copy of this wonderful Pony Book free to every Boy or Girl who really wants a Pony and who sends in his or her name. Write your name in the Corner below and mail it to me right away.

The Pony King 591 Webb Bldg. St. Paul, Minn.



"MAC" Given to Ruth

"DAPPLE" given to Ernest Ernest L. Heckert of York Co., Pa., saw my advertisement and sent in his name. This is the pony "Dapple" and the buggy and harness I gave him. Ernest is driving here in the Memorial Day parade.



THE PONY KING, 591 Webb Bldg., St. Paul, Minn.

Send me the Free Pony Picture Book, containing pictures and names of children to whom you have given Ponies. Also send me pictures of the Ponies you are going to give away soon, and Certificate of Membership, so I can join your Pony Club and get a Pony

My Name is.....

P. O.....

State..... R. F. D.....

Cut out this Coupon and Mail To-day

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FARM *and* FIRESIDE

The National Farm Paper - Twice a Month

ESTABLISHED 1877

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Eastern Edition



PHOTOGRAPH BY CLARENCE A. PURCHASE

Reminiscences

The Editor's Letter

So a Young Man Can Get a Farm of His Own



WHEN the Goodyear Service Station Dealer talks to you about Goodyear Tire Accessories, credit him with trying to render a real service.



The Goodyear Service Station Dealer Sign

He will show you that the Goodyear Tire Saver Kit contains materials for making road repairs when accidents occur.

He will test your wheel alignment; he will suggest an Inside Protector if such can add to the mileage of an old tire; he will recommend Goodyear Tire Putty to fill tread cuts and prevent damage from dirt and water.

He sells *tire satisfaction* in addition to tires; he is not content until you are fully and finally pleased.

GOOD YEAR
AKRON
TIRE ACCESSORIES



Goodyear Tires, Tubes and Tire Saver Accessories are easy to get from Goodyear Service Station Dealers Everywhere.

WHAT a quick-growing, mighty young giant our country is!

Yesterday, prairie, plain, great valleys and foothill country stretched away westward practically unoccupied. To-day, all really desirable farming land open to settlement must be sought for diligently. I call myself still a young man, with the fifty-year mile post just behind me, but there were members of my parents' families who made the "trek" to the California bonanza gold mines in '49. Then practically all of our magnificent grain-belt area had never known the plow. As a boy I tasted something of near-pioneer life. Where do you suppose that taste was experienced? Not in the Dakotas or even Minnesota or Michigan, but far east in Pennsylvania. My father, as a boy of twenty-two, emigrated from England and found great stretches of still unbroken forests in Pennsylvania from which he carved a farm of more than one hundred acres. Yes, our country is still very new, and yet our young men keep insistently asking, "Where is there good farm land that I can secure and pay for, for myself and growing family?"

At present this oft-recurring question is coming oftenest from the rich grain-belt States where desirable farm lands are now selling for from \$100 to \$200 an acre. Boys and young men ambitious for success in the grain-belt and fruit-specializing sections are confronted with this high price of land just as soon as the home-making instinct develops in them. I have considered this matter heretofore in these letters, but it is a question in which people are always interested and which is constantly becoming more difficult to answer helpfully. It is so vital that it deserves careful thought from every reader of these columns. Let me ask everyone having any new light on this farm-home problem to write me their ideas on the subject.

The grain-belt farm boy's training and associations lead him to think his farm must be one of the level, deep-soil, fertile kind, free from obstructions and adapted to modern tillage machinery. One boy in northern Illinois says: "I am reading FARM AND FIRESIDE Editor's Letters, and they seem to ring true. I believe the young men readers on the farms ought to get our problems into this forum of discussion. The most perplexing thing that now confronts me is how best to secure a good farm for a home of my own. I am a little past my majority, and know practical corn-belt farming from A to Z so far as raising good crops and good stock is concerned, and I think I know how to keep fertile land from deteriorating.

Capital Totals \$2,000

"I have my future wife picked out, and we are ready to get into the farming game. But here is the rub: the kind of farm I want will cost, with machinery equipment and reasonably stocked with cattle, hogs, and horses, not less than \$25,000 for a quarter-section farm. This means an annual load of interest to carry, at the start, of from \$1,000 to \$1,200, to say nothing of taxes and depreciation on buildings, fences, and equipment. At most my capital for first payment cannot exceed \$2,000. I have never been charged with lack of courage, but I confess I lack nerve to undertake such a move. I have been advised to go to a cut-over land country or dry-farming section. My objection to such a move is that I know corn-belt farming and I don't know the other kind. I shall appreciate any slant you may give on this matter. I know of at least a dozen farm fellows and young married men who are in about the same fix as myself."

When an actual case of this kind confronts us squarely, we begin to comprehend just what modern farming business has grown into on higher-priced land. This young man, still in his early twenties, is a bit ambitious, to put it mildly. Just consider a boy of his age expecting to buy a merchandising or manufacturing business costing \$25,000 on a capital of \$2,000! His \$2,000 would not adequately equip his farm with ma-

chinery and horses or tractors with which to operate it.

I grant that our ambitious, capable young men should not be satisfied with beginning on the slow, plodding basis that was common a few generations ago. But neither should they expect to begin on a par with farmers who have already borne the burden and heat of the day for half a century. No matter how well equipped a young fellow may be with scientific farming aids, it won't do any harm to let him demonstrate that he can make good in the employ of some farmer who has already won his farming spurs.

Instead of considering the purchase of the farm of his ideal with a capital of \$2,000 or \$3,000, "right off the bat," it would be better business for him to find a 60- or 80-acre tract of productive land where, if possible, an option can be had on the remainder of the farm or on adjoining land.

Another similar recent call has reached me from Kansas. An ambitious young newly married man explains his situation thus: "Three years ago, at the age of twenty-one, I married a girl who is just as much of a true-blue farmer as I am. We settled on a good quarter-section grain farm as tenants on a combined cash-rent-and-share basis. The farm is well equipped, and we have succeeded in growing and harvesting our crops much better than I expected.

Wants to Buy a Farm

"The one big thing that disappoints us most is the smallness of our profit after the cash rent and expenses are paid at the end of each year. We thought six years of tenant farming, by pushing production to the limit, would find us in position safely to undertake the buying of a less well-improved farm for ourselves. But instead of six years it will be twelve at the lowest estimate before we should dare undertake buying even a \$15,000 farm. The one we are on is priced at \$150 an acre. I don't like to contemplate ten or fifteen years more of tenant farming and then be only at the half-way mark toward owning a farm of our own. Unless health and good fortune are with us, I can see our struggle continuing for most of our natural lives before we can get from under the load of debt. I am a son of Kansas and like the State, and doubt if there is any use in chasing rainbows into other sections of country."

Both of these letters from ambitious experienced young farmers deal with conditions, and not theories. It is extremely doubtful if either of these men would succeed with cut-over land or cheap, run-down farm conditions. Their training has made them farm manufacturers—in the one case, of beef and pork, and in the other case of grain.

In both cases, I believe these men have the best chances for success in finding a good farm where the landlord will be wise enough to make a liberal long-time lease which will insure building up the farm in fertility, or at least holding it in a first-class state of productiveness, and at the same time enable the tenant to earn the greater part of the value of the farm in the period of fifteen to twenty years. When that time comes, if the tenant and landlord have each given a fair deal, the probabilities are the tenant can become the owner of the farm he has so long operated. Of course, this plan only works when a fair-minded, far-seeing landlord and an equally fair-minded and far-seeing tenant are brought together.

But I cannot close this letter without a word of warning to my two young correspondents. I'm for them and their plans with all my heart, but they must not forget that small beginnings should not be despised. The average prosperous farm is often less than a quarter section, and my advice is: Look for a good eighty, or even forty, and get it on the right basis, and when that is all cleared up go after the quarter section.

The Editor

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No. 20

Missouri's Good Roads Days

When a State Sets Aside 48 Hours for Working the Public Highways

By SARA L. LOCKWOOD



This is one of the many road-grading crews that were so conspicuous in Missouri during the two days of the good roadwork

LESS talk and more work will throw a lot more dirt" has literally been the slogan of Missouri since Governor Elliott W. Major in 1913 issued that first proclamation for Missouri's Good Roads Days, which brought together such an army of men and women as had never before in the history of any State co-operated in a peaceful enterprise. While the echo of the proclamation is coming back from the many States which have followed Missouri's example and adopted Good Roads Days, the first formless enthusiasm of the Missouri people has broadened into a steady determination to make their State famous for its good roads as well as for its mules.

The two "working holidays" chosen by the governor out of each year since August, 1913, have done more than bring together the banker, the shoemaker, the artist, and the farmer as common laborers with one interest. They brought together the wives. Governor Major's suggestion, "Let the women of Missouri share in the work and the glory. I therefore call upon them to prepare dinners and see they are served to the laborers along the way," was not an idle one, and the women have answered the call gladly each year. Those days popularized road-making, and turned the minds of Missourians to the study of the road question from its every phase and standpoint. Those days were the seed from which sprang community good roads days. Trenton, Wellsville, Macon, Clayton, and many other towns and communities of Missouri now have their individual days when the roads of the community are put in good condition. Of course, the roads are worked on at all times of the year when the weather is favorable. The results: Investigation shows that where this community road work has been done, invariably there are improved farms, better stock, better homes, better outbuildings. There are better schools and better churches than in districts where public roads are neglected. Farm land is valued higher and people are eager to locate there.

Pioneer Road Apostle Aids Work

THE popularization of the Good Roads Days movement was aided greatly by the work of such a road leader as D. Ward King, a Missourian, and inventor of the road drag that bears his name. Mr. King had been preaching good roads for years.

Missouri's Good Roads Days were not the result of a sudden inspiration, nor of months' or even a few years' study. Governor Major grew up on a farm, and the roads that connected that farm with the rest of the world were dirt roads—many months of the year they were mud roads. Because of the many disastrous experiences he had during his youth the governor vowed that some day he would start a crusade against bad roads. And that was why, on July

nothing short of marvelous. Commercial clubs, agricultural clubs, members of the Missouri State Board of Agriculture, automobile clubs, good roads organizations, religious bodies, labor organizations, and many others issued calls and formulated plans for effective results. The county highway engineers all over the State proved the efficiency and merit of the law creating their offices by doing practical work in formulating and developing plans for managing the army of willing toilers for the common good. Wholesale and retail dealers in farm machinery and road tools loaned large quantities of equipment, including many thousands of new shovels and picks. On these days practically every traction engine of every type available in salesrooms and warehouses were freely offered for use, and these good roads days did more than any series of prior years to prove and popularize the worth of traction machinery for road-making in Missouri.

It was at a banquet in Kansas City shortly before Missouri's first good roads days that Governor Major bantered Gov. George H. Hodges of Kansas and Gov. Lee Cruce of Oklahoma to come to Missouri to see good roads built. Governor Hodges agreed to come if Governor Major would furnish the overalls. Major accepted the offer on condition that Hodges work after he put on the overalls. Governor Hodges not only came and worked, but he started good roads days in Kansas, which have been continued since his term of office expired.

"I would rather," Hodges declared, "see more money go into the permanent construction of roads and less into battleships and things of that sort. Let's bring it right back to Kansas. Let us begin the construction of a great permanent system of rock roads all over the United States, uniting every capital and every city of consequence in these United States of ours. And then we will have more intelligence, better schools, bet-

ter citizenship; we will have that which you and I and all others are wanting—a moral atmosphere that means the safety of the nation."

To Governor Major's mind the dirt road is of the utmost importance, and it is to the dirt road that he turned his great attention. "While we favor the construction of macadam, concrete, rock, and other improved roads because every road that is constructed in the State and passes through a section of the country that produces something is an improvement of which we can feel proud, yet these are not the roads which mean the most to the whole people," he declared. "It is the dirt road—the road which enables Smith, Jones, and Brown to bring more products to the railway stations and to the first markets of the country, the road which enables them to double the size of the haul, make the transit in less time, save wear and tear of harness and wagons and the lives of horses, the road that brings additional hundreds of thousands of acres under cultivation, the road that will increase the value per acre of all the lands through which it passes, the road every tendency of which is to improve community life and make it better morally, civilly, and commercially. Ninety per cent of the roads of the State and the nation are dirt roads. They will ever be in the majority, hence they are most important."

That gave only 30 days to agitate and educate in the state-wide campaign for a new thing in road work in a State having 277,244 farms and a total population of 3,293,335. And it was one of the driest and hottest summers in the history of the Middle West. The way the people of Missouri answered this call to "pick and shovel" was

ter citizenship; we will have that which you and I and all others are wanting—a moral atmosphere that means the safety of the nation."

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Governors of Two States Work Roads

IN WORKING clothes and with proper equipment, Governor Major and Governor Hodges were foremost among the laborers, helping to make bad dirt roads into good dirt roads.

Jackson County was one of the most enthusiastic and tireless in its good roads movement. The report of R. W. McCurdy of Independence, Missouri, a banker who was appointed by the county court to supervise the roadwork of the county, shows that during those first two road days the total amount of work done was: 266 days' work with teams and graders; 144 days' work with teams and wheel scrapers; 1,136 days' work with teams and slip scrapers; 216 days' work with teams and plows; 3,017 days' work with single hands, using picks, shovels, axes, and scythes; 47 days' work with teams hauling supplies; 13 days' work with steam engines and graders; 1,665 pounds of dynamite used; 82¼ miles of roads graded; 78¼ miles of weeds cut; 156 hills worked on; 2,180 feet of culverts, from 12 to 36 inches in diameter, put in; 10.5 miles of road dragged; 12¼ miles of hedge cut; 30 corners rounded; 21 bridges repaired; and 23 culverts repaired.

The money value of the work done in this one county, if paid for at the current rates for such work, would amount to \$14,780. In [CONTINUED ON PAGE 17]



In working clothes and with shovels, Governor Major of Missouri (left) and Governor Hodges of Kansas were foremost among the workers

Highways to Market

Where Crossroads are Good and the Crops Move Freely

By THOMAS A. LEADLEY

PROPER grading followed by frequent and timely dragging is the solution to the problem of maintaining good dirt roads at small expense in Nebraska and the Dakotas. Outside of the sand-hill area of Nebraska and the hilly lands of the Dakotas but little difficulty need be encountered in maintaining good dirt roads.

In 1915 Nebraska spent \$41.66 a mile for road improvement, exclusive of bridge construction, or more than \$3,000,000 for the approximate 80,000 miles of laid-out roads in the State. Nevertheless, Nebraska still has many miles of ungraded and impassable roads, which indicates that road funds are not always spent most efficiently, and that roadwork is not done properly.

Good dirt roads have been built and maintained in Nebraska, however, at a comparatively low cost. Under efficient supervision and road management in one county in the State, grading has been done at an average cost of \$43 a mile for a season, and dragging has been done at an average cost of \$6 a mile for the season.

This amount is but very little more than the average annual expenditure on every mile of laid-out road in the State, and is strong proof that road improvement need not depend so much on increasing road funds as on more efficient expenditures of those already accessible, and in better road management all around.

No other county in Nebraska offers a better illustration of the low cost of building and maintaining good dirt roads than Polk County, especially during the time when a county highway engineer was employed to supervise the road and bridge work in that county. That period began in the spring of 1911 and continued until the beginning of the year 1915.

Tractors Save \$41.21 a Mile

DURING that time 525 of the 820 miles of road in the county were graded. Previous to the services of the county engineer only 153 miles of road in the county had been graded. During his term of office, contracts were let to grade every mile of road within the boundaries of the county, which shows that the crossroads received attention as well as the main traveled ones.

It is true that the county engineer worked under favorable conditions, for the soil and lay of the land in Polk County are favorable for efficient roadwork; the soil absorbs water rather rapidly, and most of the land is level.

The cost of grading in Polk County was reduced during the county engineer's supervision from \$84.21 a mile the first year, when a steam engine and a few teams were hired to do the work, to \$43 a mile in 1914, when two tractors owned by the county were used to do practically all the grading. Grading in adjoining counties cost from \$65 to \$100 a mile with blade and elevator graders.

The use of the tractors in Polk County reduced the cost of the work one half, and in addition gave much more satisfactory results in the type of grading done. The tractor packs the road more than do teams, and consequently the highway soon becomes in good condition for travel.

In Polk County no work was done with elevator graders, except in low places or where a high grade was required. All new grades were disked and harrowed immediately to smooth and pack them. Newly graded roads were in good condition for travel within a few days after grading. The slope from the center of the road to the ditches was made one inch to the foot and the ditch banks were cut down to permit mowing the roadside and thus add greatly to its appearance.

Farmers were hired to drag the roads at a cost of 50 cents a mile per dragging, but no means were used to enforce the dragging. In busy seasons it was sometimes neglected because of urgent field work. In 1913, a dry year, the average cost of drag-

ging the average mile of road was close to six dollars.

Proper drainage is the most important thing in dirt-road maintenance; the surface should be kept well drained and as smooth as possible. Open ditches at the side of a road, a grade built high enough to give a fair slope to these ditches, and the use of the drag after rains make possible the maintenance of good dirt roads.

Grading should be done in the spring and summer so that the road will have time to become packed and smooth before the fall rains come and with them weather that is not conducive to rapid drying.

Government statistics on road-building credit Nebraska with next to the fewest number of miles of improved or permanent road-building of any State, and the impression is quite general outside the State that Nebraska roads are in very bad condition. But there is no occasion for such belief, though there is room for a great deal more improvement in road-building in that State. Probably a misunderstanding of the term "improved" leads to this assumption.

By "improved roads" the government statisticians refer to paved, macadam, and clay and gravel surfaced roads. Of these Nebraska has but 250 miles, ranking just above North Dakota, which has the fewest miles of such roads of any State. However, instead of drawing attention to the amount of poor roads in the State, such a small mileage of improved roads should emphasize the number of miles of good dirt roads and the needlessness of improved roads. Were paved or otherwise improved roads a necessity and an economic benefit for farmers, Nebraska would have more miles of them than she has.

To be convinced of the excellence of Nebraska's dirt roads it is only necessary to travel over them. It is true that when a great deal of snow falls in the winter, and when excessive rains come in late fall, dirt roads become quite badly cut up, but it is surprising in what good condition they can be kept and the manner in which they shed water when graded up well and dragged at the right time.

Bond Question

Good Plans First—Funds Later

By A. J. LEGG

IMPROVEMENT of public roads is a live subject for discussion in this central section of West Virginia. This is largely due to the automobile coming into common use. The man who travels in a car of his own can see the need of good roads as he never saw it before. However, the farmers, whether they use cars or not, have come to understand the need of good roads.

In the past, whenever an effort has been made to get better roads it resulted in a heavy tax and but little improvement to the roads. After so many experiences of this kind it is but natural that farmers take a rather conservative view of any great road-improvement scheme that may be launched, particularly if this scheme involves the issuing of bonds at interest.

The good roads boosters in this part of the country are recommending the bonding of county and district as a practical means of raising ready cash for permanent road improvement. They cite the fact that the people have been spending money year after year on the roads, and because of the fact that they cannot raise sufficient money by taxation we have no better roads than we had twenty years ago.

It is a fact that our roads in West Virginia are not being improved by the system now in operation,

but this is not wholly due to the lack of money. There is no competent supervision and no standard to work to, and we cannot expect much from such a careless management. Neither is it safe to borrow money until some definite plan is worked out.

In one county of this State there is a project before the people soon to be voted upon to bond five districts of the county for \$1,400,000 for permanent road improvement. The old James River and Kanawha Turnpike runs through this county, and it is proposed to spend a large part of the money on this old road and make it a great state thoroughfare.

The roads in which the farmers are most directly interested run directly across this old turnpike, and it is not to be wondered that most up-to-date farmers who live back some distance from this road are opposed to being bonded to pay for a road that they will have little occasion to use.

Tired of Politics

People Demand Real Road Experts.

By E. L. VINCENT

IN a number of ways there has been definite improvement in road-making and road maintenance in the part of the country in which the writer lives—south central New York. For one thing, the

people are coming to see that if they are not to be buried alive under the burden of taxation they must see to it that the roads which are built are properly constructed and made of the best possible quality of material.

This is worth making a note of, for in the early history of road-making here the taxpayers were so glad that at last something was going to be done that they did not pay very much attention to either the quality of material or to the workmanship.

But when roads began to go to pieces in a little while through the action of frost and weather and because they had not been constructed properly or of good material, so that everything had to be done over again, they began to get interested in the real problems of highway improvement. For one

thing, they demanded that the men chosen to look after the road-making interests should be men of ability and integrity, emphasis being laid on the uprightness. They also began to insist that good material should be used in road construction.

Comparatively little new work has been done with us for some time, owing to complications that need not be mentioned here. Suffice it to say that the embargo seems to have been lifted now, so the highway work will be resumed with new zeal. But where old work has been taken up or repairs have been made on roads that were early destroyed by the natural wear and tear of the traffic over them, or by the elements, a better class of work has been done. This shows itself in the more durable kind of stone used and the methods employed in laying it down.

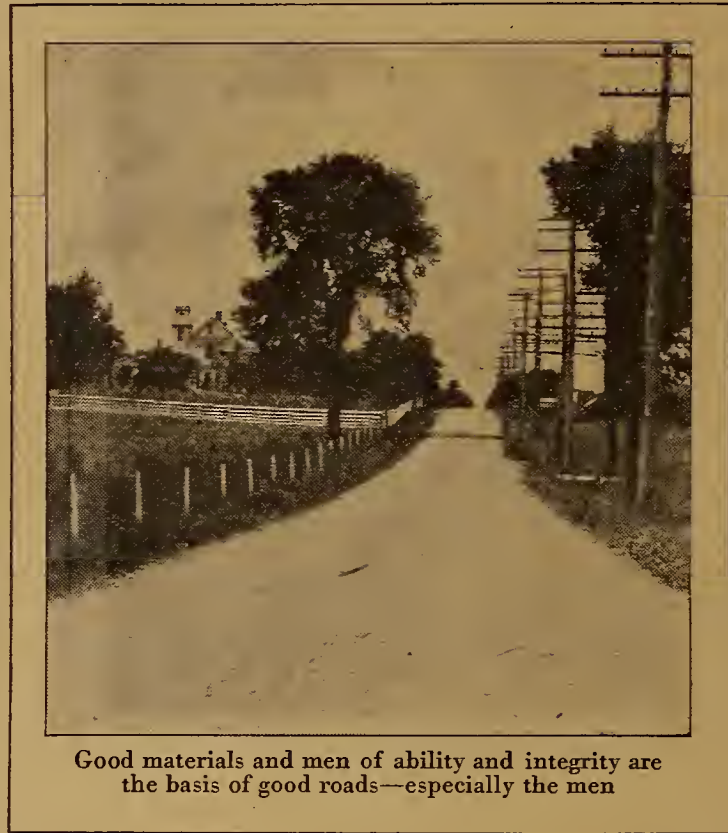
Then, too, the people of the rural districts are showing increased interest in road-making because so many of them are becoming the owners of automobiles. Perhaps this fact has been the leading factor in creating a spirit of liberality, even amounting to community sacrifice in some instances, in the matter of appropriations for highway purposes. When a man gets a nice machine he likes to keep it nice. Everyone has learned that the better roads we have the greater the saving in time and upkeep of vehicles when hauling loads and in moving about from place to place generally.

This change of opinion on the part of the rural sentiment is also apparent in roads that have not as yet come under the laws governing state or county highways, but are still maintained by the local authorities exclusively. The crossroads are kept in a more workmanlike manner. This can be done because our people are coming to understand better the necessities of proper highway construction. So we have better bridges, better sluices, better culverts, and better control of streams.

Knowing that these improvements cannot be made unless the right kind of men are elected or appointed to do the work, more stress is being laid on the qualifications of men for these important offices.

As never before men are seeing that no political standing or favoritism of any kind ought to count in this respect but what a man knows about road-making and road-repairing and his reliability should determine his fitness for office. Good sense, not political pull, counts for most in road construction.

Summing up, then, we may say that the improvement made in this section of the country in the way of building and caring for highways lies in added knowledge and increased interest on the part of the people. Now when a road is made the people are watching to see how the work is done and that the right kind of material is used. Heavy taxes have forced the taxpayers into giving greater attention to the men in charge of public work, for self-protection.



Good materials and men of ability and integrity are the basis of good roads—especially the men



Here is a concrete bridge that easily holds up the heaviest motor trucks and every other kind of load. Floods don't affect it

Builds Better Bridges

Iowa Has Nearly 500 Modern Designs—and Uses Them

By E. W. LEHMANN

WITH the advent of power farming with tractors and grain separators, it became dangerous for the farmers of the Middle West to attempt to pass over the old type of bridges. Many serious accidents have occurred during the last few years. In Iowa alone, 14 engines and threshermen outfits crashed through bridges during the months of July and August, 1914.

Besides being prominent in agriculture, Iowa is now becoming one of the leading States in the construction of adequate bridges. This part of highway construction is of vital importance to the public, and those who are best informed realize that the bridge of to-day must be of a different type than that of twenty years ago. All through the Middle West can be found scores of bridges made of wood, steel, and concrete that are too light for the present traffic.

The wooden bridges that we find in use are perhaps the most extravagant of all types of bridges. They are not only dangerous but very expensive to keep in repair. Many such bridges have cost much more than a permanent structure in repairs and damage suits. Quite often they are being replaced by a fill and concrete culverts.

While there are still a great many wooden bridges over which travel is dangerous, the condition can usually be detected and danger avoided. Such is not the case with many of the old bowstring bridges and light steel trusses. The danger may be as great, but it is not so apparent until a heavy engine suddenly crashes through the floor or the whole structure collapses.

Rust is the chief agency in causing the failure of steel in bridges. High water, due to excessive rains, also destroys a great many bridges. The light steel and wooden bridges are affected more by high water than the heavy structures; many of them, in fact, are so light that they float on the surface of the stream. The failure of concrete bridges has been found to be due in most cases to insufficient foundation and improper reinforcement. There is no record of a properly designed and constructed concrete bridge being destroyed.

Strength is the Main Slogan

THE bridge work of Iowa is entirely under state control. The state highway commission has general supervision over all bridge improvement, and must approve all plans, specifications, and contracts for bridge work costing more than \$2,000.

It is the duty of the board of supervisors of each county to construct all bridges and culverts. Each county also has an engineer who supervises the work. This puts the actual spending of the money into the hands of local men, the highway commission simply acting as a check. The district engineer inspects the new bridge and checks up the work of the contractor and bridge foreman.

Strength, durability, and beauty are the three essentials kept in mind by the designers of the new bridges of Iowa. New standards for both concrete and steel structures have been developed. Nearly 500 standard designs were furnished the different counties of the State during the past year.

Concrete bridges, especially those having several arches and concrete railings, are among the most attractive. Captain Head, a wealthy landowner of Green County, made substantial contribution to the bridge fund of such a bridge, which is called the Head Memorial Bridge. It consists of two spans, each 55 feet in length, with an 18-foot roadway. The footings are carried down six feet, and rest upon solid foundations. The contract price was \$6,176.85, a unit price of \$9.23 per cubic yard.

This bridge is not only a handsome structure but is heavy, well built, and permanent. It has ample room to take care of the water, and has been relocated to improve the carrying capacity of the stream, to make a better foundation, and to avoid a dangerous turn on the roadway. Bridges of this type have been criticized as being too massive and too expensive, but critics are beginning to realize that a concrete bridge to be permanent must be heavy and well reinforced.

An investigation of a great many of the bridges of the State show that failures are due to the following causes: Foundation areas too small; not carried down deep enough; inadequate reinforcing; wall sections too thin; wing walls inadequate; members so placed that stream erosion and frost upheaval takes place; and inferior materials and workmanship. With these points in mind the present designs are made.

Some other common bridge designs of concrete are: The slab bridge with span of 16 to 25 feet; the girder bridge with span of 16 to 60 feet. For spans of less than 16 feet a box or arch culvert is recommended.

In a great many localities it is better economy to use steel bridges rather than concrete, but the

steel trusses of to-day are a striking contrast to the steel bridge of a few years ago. They are made very stiff and rigid, with sufficient strength to carry reinforced concrete floors. Many are provided with special expansion bearing.

In spans of more than 40 feet the first cost of steel is usually less than for concrete. Steel bridges must never be neglected; they must be painted regularly, and if a plank floor is used it should be watched.

There are several types of steel bridges recommended: the steel I-beam for spans up to 30 feet in length, the plate girder for spans of 20 to 80 feet in length, riveted pony trusses for spans of 30 to 100 feet, and riveted high truss for spans 100 to 140 feet. There are more of the riveted pony-truss span steel bridges with concrete floor and abutments being built in the State than any other type.

A typical pony-truss span is shown in illustration. It is a much heavier type of steel bridge than we are accustomed to see, but this is necessary with a concrete floor. The maintenance of plank bridge floors is expensive under best of conditions, and it has been found it is cheaper to build strong enough for concrete.

Iowa people are fast realizing that it is greater economy to build a permanent structure of high first cost than to pay a low first cost and a high yearly upkeep on a temporary wooden or steel structure.



This style of bridge is known as the pony truss. The floor and abutments are of concrete

Welcome to Farm

Let Your Driveway be an Invitation

By CARLTON FISHER

THERE are roads—and good roads too—found on the road maps. I encountered such a road the other day, branching off from the main pike. It was as smooth as the pike and, being nicely shaded by trees (the day was warm), I decided to follow it and then make a record of its course on my motor map.

Though this delightful road was somewhat narrower than most country highways, I had no misgivings until rounding a curve at a good clip I ran through a gate right into a farmer's barnyard swarming with little chickens. They flocked to meet me in a manner much too friendly for their own safety.

A young woman's face peeked from behind a curtain of the house, and from the expression I judged

that I was not the first one who had mistaken their private lane for a public road. However, there was plenty of room to turn around and I made a safe get-away, miraculously missing the chickens.

The "house by the side of the road," so famous in poetry, really has few advantages over the house set back from the road; and it has a number of disadvantages. Setting a house back from a main traveled road gives it seclusion and privacy, freedom from noise and dust, less annoyance from tramps, usually greater attractiveness, more safety for children.

There are other obvious advantages, including in many cases better drainage, which is coming to be an important matter as we think more seriously about modern plumbing and sewage disposal for country homes.

Another consideration is the city buyer. "My farm lane and gateway will cost me about \$200," the owner of a small farm remarked the other day, "but

I am expecting to make it a profitable investment nevertheless." He already had built two massive stone gate posts, setting the base of the posts three feet in the ground. The stones were from the foundation of an old house lately moved, and required only a small amount of preparation. He showed me how he was going to line the driveway with an evergreen hedge. A cement sidewalk was to be laid beside it, and the roadway graded.

"It is all work I can easily do in my spare time," he explained, "and this is why I am going to all the trouble. In the first place it will make the farm attractive as long as I live here, and we shall all enjoy it. But here we are only about a mile from the present city limits and some day a city

man will be looking for just such a place as this. "He will be glad to pay extra for property which is as attractive and which has a prosperous-looking approach. If I set our shrubbery and a small hedge now, it will be well established by the time I am ready to sell, and will save the purchaser several years of waiting."

Another farmer has this year set out a thousand barberry plants along the roadway leading to his house. This year they will not amount to much, nor perhaps next year, but by the time other improvements are completed those barberry bushes will be in flourishing condition.

Another farm family with an eye to beauty has cedars planted along the land.

Put Gravel in Slough Holes

IN ALL the cases I have mentioned the roadway has been of gravel, which is perhaps the most satisfactory material easily obtainable, barring concrete. If the surface is drained to a small ditch at each side and kept well crowned, it will bear traffic at all times of the year. Of almost equal consideration are the roadways between the different fields. I have seen wagons loaded with grain sink halfway to the hubs in soft ground, especially near spring holes, when a load of gravel distributed there earlier in the season would have made a firm surface.

The practice of lining driveways and the approaches to gates or buildings with whitewashed stones seems to have fallen off in popularity. As a rule, stones do not keep an ordinary whitewash coating very well. But an Ohio farmer, whose principal gate posts are of concrete, whitewashes them every spring, and each year the whiteness becomes more permanent. The concrete posts are more pleasing in appearance than the stones, are more easily seen at night, and look a trifle more up-to-date.

Here is the government formula for making weather-proof whitewash:

1. One bushel of quicklime; slake with twelve gallons of water.
2. Twelve pounds of rock salt dissolved in six gallons of boiling water.
3. Six pounds of Portland cement. Pour 2 into 1 and then add 3.

NOTE: Alum added to whitewash prevents its rubbing off. Use an ounce of alum to a gallon of whitewash.

A pound of common bar soap dissolved in a gallon of boiling water and added to five gallons of thick whitewash will give it a gloss resembling that of oil paint.

EDITORIAL NOTE: For information on concrete construction, construction of driveways, and selection of shrubbery and trees for making farm approaches more attractive address the Landscape Editor, FARM AND FIRESIDE, Springfield, Ohio.



What you see here is only a beginning. An ornamental metal gate will replace this wooden one, and an evergreen hedge will line the lane on both sides

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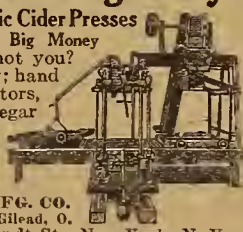
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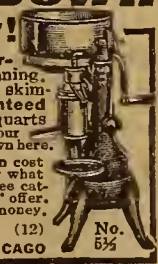
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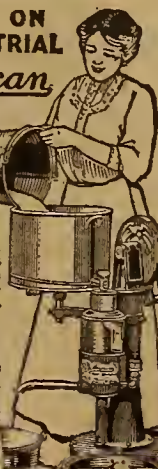
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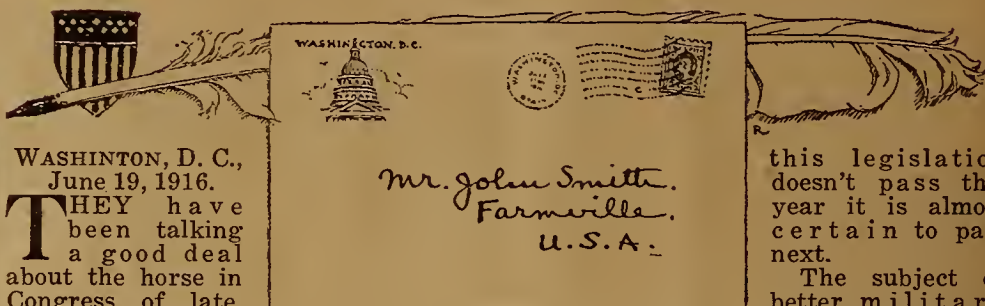
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Cavalry Horses

Government Plans to Increase Supply

By JUDSON C. WELLIVER



WASHINGTON, D. C., June 19, 1916.

THEY have been talking a good deal about the horse in Congress of late, and the case for the horse and his owner looks rosier than some folks would have us believe. Reports from all over the country indicate that the horse market is getting better—prices are higher and demand more active.

Considering the amount of nonsense about the "horseless age" supposed to be just ahead, here are some facts pertinent:

There has been an increase of over 10 per cent in the number of horses in the country in fifteen years.

There has been a decrease of more than 10 per cent in the number of cattle, hogs, and sheep in the same time.

There are over 24,000,000 horses in the country now, and about 2,000,000 automobiles. Most of the automobiles are owned by people who never owned horses. Outside the cities the part of the auto in "crowding out the horse" is negligible.

Prosperity has sold a powerful number of autos; but, on the other hand, it has caused buggy and carriage builders in great number to report that their business is better than in many years—in numerous cases, that it is the best they ever had.

The motor truck has been investigated by the Department of Agriculture with great care, and the conclusion is that trucks have in comparatively few cases displaced horses. They compete with railroads and trolley lines more than with horses.

There are less than four horses, on an average, to every farm in the country. Motor tractors cannot be economically used on a farm where one tractor will not displace as many as four horses. Therefore the use of tractors is much less menace to the horse than seemed probable when the tractor business first began to be accounted a factor.

From a half million to a million horses have been shipped to Europe for war use. Europe is killing its horses at a fearful rate, and will keep on needing ours after the war. All this is preliminary to explaining what the Government is going to do for horses. There is no doubt that the best horses are going to continue to bring high prices indefinitely. The good horse will compete better with the tractor and motor car; moreover, he is getting fashionable again in cities; and, finally, the increase in the army is opening a much larger market for him in that direction.

Recently the army authorities made a horse census to learn how many horses suited for cavalry use could be had in the country, and only 250,000 were reported. There has been introduced in both houses legislation to appropriate \$200,000 to provide stallions for breeding horses suitable for army and also agricultural work. Farmers may breed the right kind of mares to them free, by agreeing that the colt may be taken by the army at three years old for \$150; or, if the owner doesn't want to sell at that figure, he shall pay \$25 for the service.

Plan to Distribute Stallions

That sounds as if the Government were going to pay a fair price for its horses; but, in fact, it desires to get more horses of this type raised than will be wanted. The plan is to fill the country with the right sort of horses so that they will be available at any time the Government may want them.

Experiments with government stallions in Colorado and Vermont have brought very good results, especially the work with the Morgan breed in Vermont.

Right now is the time for communities that want to improve their horses cheaply to get busy. Get up the best possible showing for your neighborhood of the number of suitable mares available for breeding on these terms, and send it, preferably through your Congressman, for submission to the right authority. Your chance of getting a strictly first-class stallion located in your community will be excellent, for if

this legislation doesn't pass this year it is almost certain to pass next.

The subject of better military training is also receiving the most thorough consideration. If the war in Europe lasts two years longer—and there is a pretty general belief in the best-informed circles in Washington that it is very likely to do so—it is altogether likely that some form of universal military training will be provided by Congress.

How many people realize that that development would have a more impressive effect on country life even than on city life? How many have tried to estimate the meaning of it and the wide-reaching consequences in rural districts?

Armory Improves the Village

The other day I was in the country with a party one of whose members was a public man who, when at home, lives in a country village. We drove through a crossroads hamlet whose most pretentious buildings were a county high-school building and an armory. The armory looked—because it was by far the biggest structure in many miles—like the greatest pile ever erected. My friend said:

"Here's a village much like the one where I live, and we, also, have an armory. The young men from the village and the surrounding country for several miles belong to the national guard company in our town, and after seeing the thing in operation for several years I admit it has converted me to a firm belief in universal military training. It's the greatest thing for country youth that I have seen since the rural delivery, the country telephone, and modern roads were devised."

He represents a district in a State that isn't strong for preparedness or universal military service, and I was curious for the explanation. He went on:

"Some of us were dubious when they organized a militia company in our village. We doubted the influence of it. Five years after it was started most of the doubters contributed to help build the new armory. It had proved a social and intellectual center for the community; had helped get us all acquainted with each other.

"I am certain that in the country such an organization is worth more than in a city in these directions. We have better dressed, smarter, better set-up young men. They talk more serious affairs. They study the war nowadays, and have quite a library of books about it. That has led them into consideration of social and economic questions that the war naturally brings forward."

Another public question which continues in interest is rural credit legislation, but I heard an argument against it the other day that doesn't appear to have been used by any of the critics of that measure. It was stated thus by a man who has studied the measure carefully:

"This bill provides that the government land banks will loan on first mortgage up to 50 per cent of the land's value as appraised. I hope it passes, and I'll tell you why.

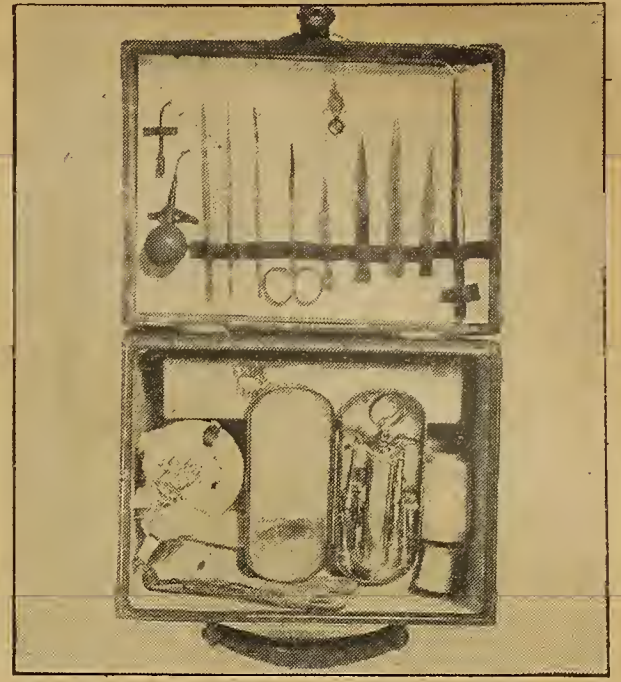
"I own a big tract in a Southwestern State that cost me \$5 an acre. It is worth \$12 now; would readily appraise, and is taxed on that basis. But there are millions of acres more just like it, and no sale. Interest and taxes are costing me a lot of money annually.

"If this land-bank measure goes into effect I shall have that land appraised, borrow \$6 an acre on it—which is \$1 more than I paid for it—and then deliberately let it go under the mortgage. I know a number of other speculative holders who plan doing the same. I'd rather take \$6, or even my original \$5, per acre than to carry it any longer. There are millions and millions of acres that would be treated in just that way. The worst trouble is that politics would get into the business and the regions that wanted money would get it; and would, I am afraid, prove the very ones in which it would be most dangerous to lend it."

All of which sounds like a telling argument against the land-bank plan.



Here is a six-acre plot of Buffum's No. 17 Winter Wheat that yielded 72.4 bushels to the acre. This variety has proved hardy as far north as Saskatoon, Saskatchewan



This kit shows the principal pollinating instruments used for making grain crosses

MORE bread! More bread! That has been the cry of the growing human race since the days of the Pharaohs. The answer to the cry for more bread must come through more intensive farming methods and from more prolific grains.

To grow not more acres of wheat but more wheat to the acre is the problem. Proper tillage, fertilizers, and rotation of crops are doing half the work; much of the other half has fallen to the lot of a spectacled professor out in Wyoming—B. C. Buffum. He is breeding and developing the grains that will produce more to the acre than the old sorts.

Like Edison and Marconi, Professor Buffum is a practical scientific producer of results. We have other great plant breeders in this country—Burbank, Webber, Van Fleet—but none has done so much toward gratifying the cry for bread.

Not to go too technically into the theories of Mendelism, it is sufficient to say that Professor Buffum has caught and harnessed that strange power of Nature to produce variations, sports, and mutants in the course of her evolution. He has by means of cross-fertilization produced variations which are now reproducing themselves in a form that is strictly true to the new type.

Professor Buffum spent four years studying the matter of location for his seed-breeding farms. He wanted a location in the mountain region with favorable conditions of soil and climate, but far enough north to bring out only hardy products. He wanted abundant water for irrigation and also land for the development of drought-resisting seeds for dry farming. The most suitable combination of these conditions was found in the Big Horn Basin, Wyoming, at an altitude of 4,000 feet, where the annual rainfall is only six inches.

An Improved Winter Emmer

IN THE summer of 1907 Professor Buffum obtained two quarts of winter emmer from the U. S. Department of Agriculture. In the spring of 1908 he found that only 72 plants had survived, among the survivors being a few which seemed to be of a different type, with large coarse-growing straw and very large

New Grains From Old

Skillful Cross-Breeding Develops Promising Varieties

By **ROBERT E. MOULTON**

composite heads which were different in appearance and of darker color than the ordinary ones.

These plants were used by Professor Buffum as the basis of an improved strain of winter emmer. With this as a basis the seed was replanted and subjected to many experiments to increase its drought and winter resisting qualities. It is perhaps the most drought-resistant and prolific of all small grains, and has been successfully raised from Montana to Mexico, and is being planted in Louisiana to replace oats because it is not affected by rust.

Some of the yields recorded are enormous, varying from 40 to 104 bushels to the acre under dry farming, and as high as 152 bushels per acre under irrigation.

In appearance the grain somewhat resembles barley, as it is bearded and the berry is held tightly in the hull, which further increases its feeding value. The hull is dark in color, and the heads large and heavy, in some instances six or seven inches long and containing half an ounce of grain. The improved emmer is planted in the fall, which enables it to take advantage of the winter moisture, and mature with the minimum amount of irrigation or rainfall the next season.

Professor Buffum has also succeeded in removing the heavy beard from the grain by breeding and in further breaking up the species, so that now he has over 40 distinct varieties of beardless emmer on his breeding and increasing plots. He is also changing the improved winter emmer to spring types, and has again experimented with the beardless emmers by crossing the most-promising sorts with improved varieties of wheat and other less-known grains, and some remarkable hybrids have been developed.

One of these, which he calls May Wheat, carries a club-like head resembling emmer, but surrounding the straw are several broad, succulent leaves that remain green until the grain ripens. This plant was

primarily developed for regions like the Pacific slope, where grain is widely grown for hay by dairymen and stock raisers.

Another of these hybrids Professor Buffum has named Ovem. Ovem is an entirely new species of beardless grain resembling emmer in some respects, but differing radically in others, especially in possessing a central

stem like wheat. Feeding tests have proved its high value as a ration for sheep and cattle, the grain being fed directly from the stack without threshing.

Several years ago Professor Buffum imported some Turkey Red Winter Wheat, which is the type commonly planted in the West. When this wheat was growing, Professor Buffum noticed one stalk differing in many ways from all known varieties, principally that the head was over eight inches long, whereas the ordinary Turkey Red Wheat has a head of only four or five inches.

Results are Permanent

FROM this one stalk was developed Buffum No. 17 Winter Wheat. The heavy beard was eliminated and the grains or kernels in each spikelet increased. By subjecting it to extremely cold, dry winters he caused this wheat to become extremely rugged and drought-resistant. Its hardiness, together with its remarkably large head, gives promise of a splendid new wheat for the West.

In more than two thousand years man has made great changes in cultivated plants and given rise to many varieties, but the greater number of these varieties have come into existence through mere adaptation to soil and climate.

The number which have resulted from direct effort to secure a definite improvement is comparatively small, and yet the improvements made by direct-breeding work have been the most important and lasting of all. The improved wheats by Le Conteur in the Island of Jersey, and by Hallett and Sheriff in England and Scotland from eighty to one hundred years ago, are still standard sorts.

Grains like animals readily respond to skillful breeding, and the varieties so produced are not only of unmeasured economic value but they are lastingly stable.



Professor Buffum has specialized in breeding grains for drought resistance and productiveness



The head at the left is Buffum's new pedigreed Club Wheat. Next to it is his No. 17 Winter Wheat. Other heads are second generation results of crosses between the two

FARM AND FIRESIDE

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July 1, 1916

"Chuck-Hole" Clubs

LYMAN COUNTY, South Dakota, is the home of "chuck-hole" clubs. What is a chuck-hole club? It consists of four or five men or boys one of whom has an automobile. Each member provides himself with a pick, shovel, or spade; they climb into the car and fill every chuck-hole, bad bridge approach, and any other bad spot in their neighborhood that does not require the work of a regular road gang.

Each member agrees to fill at least one chuck-hole a month, and to encourage others to help improve the roads. County Agent Dick Lewallen organized these clubs, thus adding one more item to the list of activities in which county agents may help a community.

Apparently there is nothing about the scheme which will not bear transplanting to any locality that is interested in better roads.

For Better Horses

OUR Washington correspondent makes a suggestion in his letter in this issue that is worth thinking about. Indications are that Congress will make a large appropriation to provide high-class stallions in localities where there are good mares, in order to increase the number and improve the quality of horses. Now is the time for neighborhoods to get in line for their share of this service. It is going to be made cheap and profitable to raise the best colts in communities where these government stallions are placed. When Uncle Sam goes in for this sort of thing he always does it well. Get together the showing for your neighborhood as to supply of good breeding mares, willingness of their owners to co-operate, etc., and forward it to the right authorities in Washington. Your Congressman or Senator will see that it gets to the proper place. First come will be first served, other things being equal.

The Editor's Mail

THE office boy brings to the editorial rooms a big wire basket full of letters three or four times a day. They are opened and separated into piles—those for the poultry editor, those for the live stock editor, others for the machinery expert, and still others for the household editor; letters to Mr. Welliver, letters to Dr. Spahr, letters on every conceivable subject from crop rotation to baby care. A visitor once asked us why we received so many letters, why our readers asked so many questions if the paper was properly edited? Why don't the articles answer the questions in the first place? It seemed a reasonable enough question—but the visitor had forgotten for the moment that no two farms are exactly alike, that no two families have exactly the same problems, that every situation that arises is more or less individual, and that every combination of circumstances has to be worked out with the means at hand. Letters? Yes. Questions? Yes. The more the better: that's the editor's job. He can only

state in the paper the general situation: he wants to help you on your individual problems, if you will let him. Your comment, your suggestions, your help are wanted. Has there been a letter from you recently in the editor's mail?

Uncle Sam's Road Money

WE ARE going to see whether federal aid in building country roads will help or hinder. There are people who seriously have urged that if the Federal Government offers to help to a limited extent the States will build only as much road mileage as is necessary to get all the federal aid, and then will stop. Maybe it will work that way, but it doesn't seem likely. The state interest in roads is nowadays too deep-seated and genuine.

The House passed the Shackleford bill, which provided that the nation give not exceeding \$25,000,000 a year to aid in state road-building. The Senate substituted the Bankhead bill, and passed it, providing that from 1917 to 1921 a total of \$85,000,000 should be

The Schools Consolidate

THE Iowa newspapers tell of the success of a recent consolidation of country schools and the erection of a fine modern schoolhouse and the establishment of a graded school system at the village of Dow City. A territory of 42 sections of land contiguous to the village was taken into the district, which voted \$75,000 bonds. At 4½ per cent these were snapped up, and a premium of \$1,200 paid on the issue.

There had been doubters and determined objectors, and the promoters of the plan adopted a clever scheme to silence or convert these. Representative opponents of the plan were induced to go and visit districts in other counties where consolidation had been effected. They were asked to talk to school patrons, especially to those who had themselves opposed the plan at first. They found almost nobody to criticize—the actual working of the scheme had steam-rolled all opposition out of existence. So the Dow City district carried its bond issue with a good majority.

rural carrier is a deserving and faithful employee, going rain or shine, cold or hot, good roads or bad roads. He is right on the job. Some of them are now driving 50 or 60 miles each day. So have a heart and give this faithful servant six days off, the same as city carriers, and if the Doctor wants his mail let him drive to the post-office on the holidays and he will find the rural carrier at the office for two or three hours to hand out mail to any of his patrons who may call for it. At least it is so here. I would go without my mail on those days before I would be guilty of asking the carriers to make the trip.
J. HASTINGS, Florida.

Pioneer Conditions

DEAR EDITOR: On page 8 of your issue of February 26th you quote a subscriber who asks: "Do you think homesteading is profitable?" Allow me to say that I certainly do, just as I think that farming elsewhere is profitable.

I spent two years in Montana just over the line from the Dakotas, and can say that there is considerable land close along the state line which is still open to settlement. Of course there are some crop failures, but they are the exception, not the rule. Such crops as oats, spring wheat, flax, potatoes, and most of the common garden vegetables are grown. Corn is also grown to some extent. To be sure, one could not expect to raise as much corn on an acre there as he could in Indiana, but this crop furnishes considerable fodder and some grain. The winters are cold but not extremely long. Stock thrive on the open range, and usually come through the winter without much feeding. As the range gets taken up more and more, the stock will require closer attention.

Perhaps the crop which thrived best in the section where I was located was potatoes. One small plot produced at the rate of more than 500 bushels per acre, and were sold for \$1.20 per bushel. Wheat produced at the rate of about 40 bushels, oats from 75 to 90 bushels, flax from 16 to 25 bushels.

Lest I be thought to have some axe to grind by writing this, let me say that I do not own a foot of land in that section, nor do I have any friends who wish to sell any there.

J. H. HULETT, Indiana.

Anchor for Last Stump

DEAR EDITOR: In your issue for April 22d I note a request for information "How to Pull the Last Stump." You answered the question well, but the usual advice is, "Borrow one of your neighbor's stumps for an anchor."

The next best plan is the "dead man." A pole set at an angle of 45 degrees is not much of a success if you have a big stump to pull. In order to hold much it is necessary to place three or four poles in this position, each back of the other and anchor from one to the other.
J. F. GORMAN, Washington.

About the Hired Man

DEAR EDITOR: In your issue of March 11th I read an article from a hired man's wife, signed K. M. P., Illinois. She says on the farm the hired man is up at 4 A. M. and out in the field before six. I have been running a farm now thirty-six years, and with very few exceptions I have never called my men before five, and I am always out first, and we do the chores and eat our breakfast and get out in the field about 7:30 or 8 A. M., and the same rule holds good with most of the farmers in this neighborhood. She says when they live in the city her husband leaves home at 6:30 A. M., but she forgot to mention that in order for him to leave at 6:30 he must get up nearly an hour earlier and get himself ready and eat breakfast so he can get off in time. Then he must work in the shop until the clock strikes twelve, go home and eat dinner, and back to the shop when the clock strikes one. When he gets home at 6:15 P. M. he must eat his supper after that, while on the farm, if the men get done at 7 or 7:30 P. M. they have already had time to eat supper long before that. When she says that the farmer charges the same price for lard that the merchant charges, she should not forget that when a farmer takes a jar of lard to the store the merchant pays him in trade and allows him the same price for it that he sells it for, and when a farmer goes to town to do his trading it is just as easy for him to put his jar of lard in the buggy and take it with him as it is to put his purse in his pocket and take that with him.

I worked out on farms myself before I started farming, both in Illinois and Wisconsin, but I never was asked to get up at four o'clock, and I have noticed that many times the men that work on the farm have a far better bank account at the end of the year than those that work in the city.

R. P. RASMUSSEN, Wisconsin.

EW

Thoughts for the Discouraged Farmer

By James Whitcomb Riley

THE summer winds is sniffin' round the bloomin' locus' trees;
And the clover in the pastur' is a big day fer the bees,
And they been a-swigin' honey, aboveboard and on the sly,
Tel they stutter in theyr buzzin' and stagger as they fly.
The flicker on the fence-rail 'pears to jest spit on his wings
And roll up his feathers, by the sassy way he sings;
And the hossfly is awhettin' up his forelegs fer biz,
And the off mare is aswitchin' all her tale they is.

You can hear the blackbirds jawin' as they foller up the plow—
Oh, theyr bound to git theyr brekfast and theyr not acarin' how;
So they quarrel in the furries, and they quarrel on the wing—
But theyr peaceabler in potpies than any other thing:
And it's when I git my shotgun drawed up in stiddy rest,
She's as full of tribbellation as a yellor-jacket's nest;
And a few shots before dinner, when the sun's ashinin' right,
Seems to kindo'—sorto' sharpen up a feller's appetite!

They's been a heap o' rain, but the sun's out to-day,
And the clouds of the wet spell is all cleared away,
And the woods is all the greener, and the grass is greener still;
It may rain again to-morry, but I don't think it will.
Some says the crops is ruined, and the corn's drowned out,
And prophasy the wheat will be a failure, without doubt;
But the kind Providence that has never failed us yet
Will be on hands onc't more at the 'leventh hour, I bet!

(By permission of Bobbs-Merrill Company)

spent by the National Government in helping build state roads. The Secretary of Agriculture will control apportionment of the fund, and the Office of Roads will have general supervision of construction all roads in which federal money is invested.

There is considerable difference between the House and Senate plans in detail, but they get to the same place. It is a testimony to the increased interest in roads that this legislation passed both houses by large majorities, whereas a very few years ago it was impossible to get such a proposal out of committee.

It may be good business or bad business for the National Government to invest money in such works of internal improvement. That has been debated since the days of James Madison; but it is certain that whenever public sentiment got sufficiently insistent on the public works the Federal Government has found a way to make the investment.

The present is only a beginning of investment in public roads. If the Federal Government is going to wield most of the worth-while powers in this country, it will have to pay a big share of the expenses; and almost everybody seems nowadays to favor a strong central government.

Our Letter Box

Pig Shakes Its Head

DEAR EDITOR: I saw in looking over an old issue (January 15th) of FARM AND FIRESIDE an inquiry from L. M. R., Iowa, about a pig that would shake its head from side to side and travel in a circle.

A friend of mine had a small pig in town and it acted just that way, and finally they discovered the trouble. One of its ears had mud caked in it, and after cleaning out that ear the pig acted normal and thrived again.

Wish I had noticed the inquiry sooner. That might have troubled L. M. R.'s pig. Hope this may help someone anyway.
SAM MILLS, Illinois.

Keeping Chickens Well

DEAR EDITOR: All of my chickens are in good condition now, and laying pretty regularly. I treated the sick ones as you directed, and they all got well but one. G. L. BRINGAM, Massachusetts.

Give Carriers Holidays

DEAR EDITOR: In your issue of May 6th, B. E. Reeves, M. D., of North Carolina sets up a fight against the poor R. F. D. carriers. He says that he is sure the people and he would not demand anything unfair at the hands of our Government. I say, give the rural carriers Christmas day besides the other six days they already get. The

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Then it was introduced into city homes where it quickly became firmly established.

Then steamships and railway trains adopted it as the most efficient and economical light.

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And now Delco-Light brings electricity with its efficiency and economy to the suburban and farm home—thus extending to the rural districts this greatest convenience of city life.

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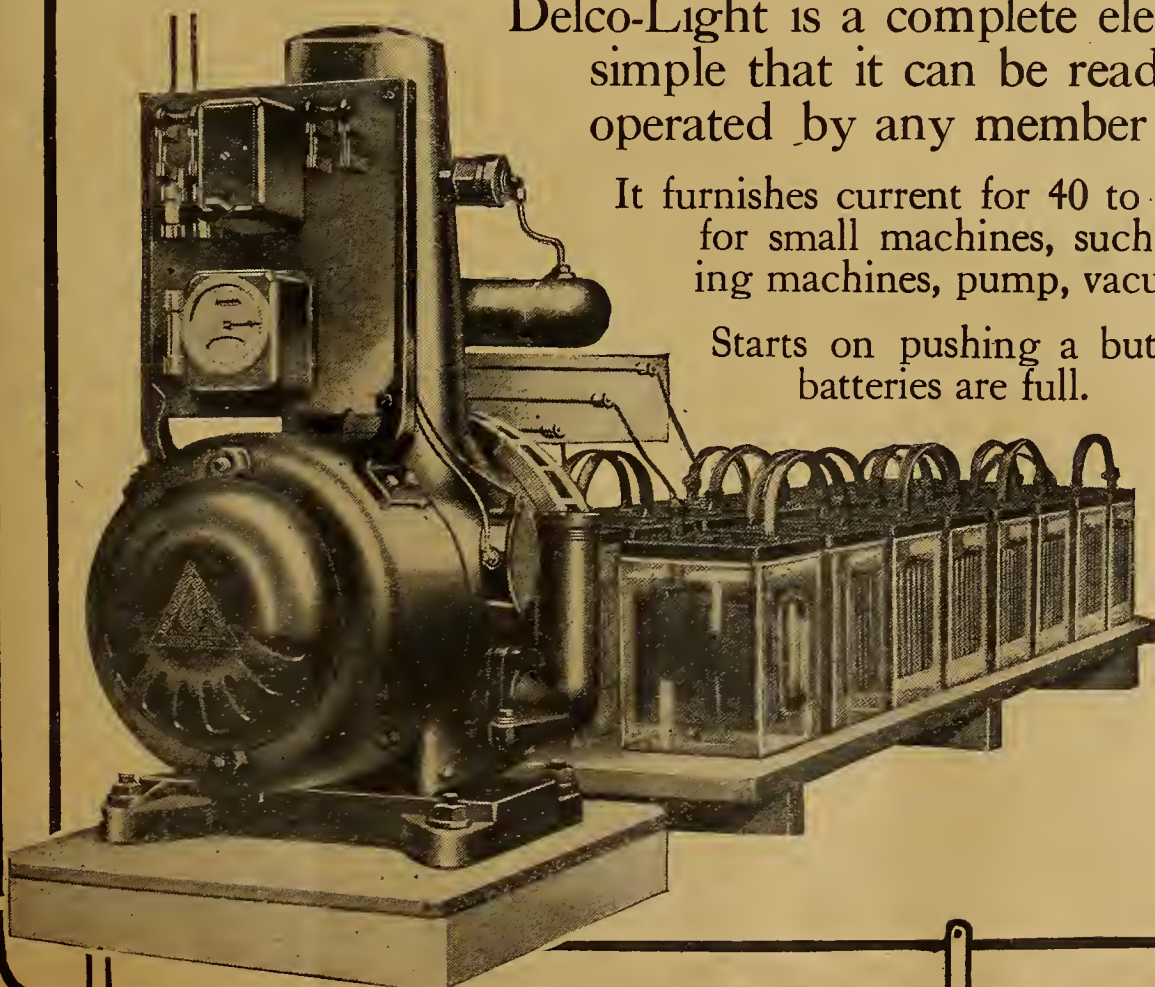
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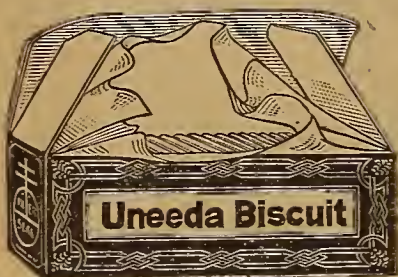


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Garden—Orchard

Asparagus Plot After Cutting

By S. H. Garekol

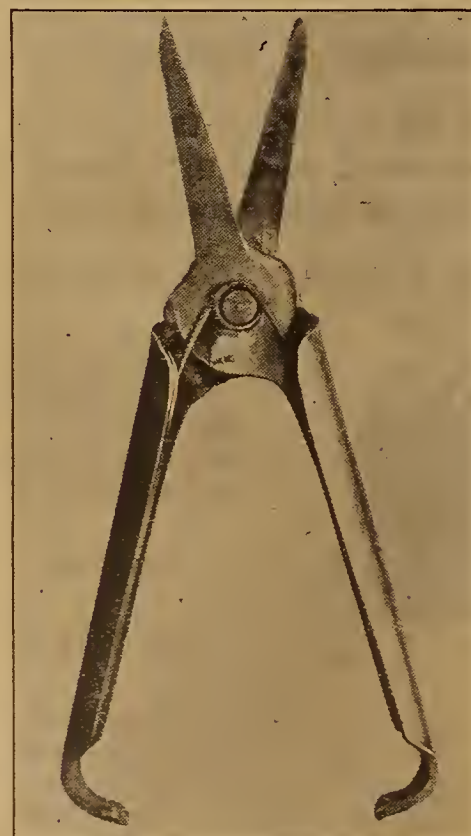
THE asparagus plot needs careful attention after the last cutting. I harrow the beds the same day that the last cutting is made, distributing an application of 200 to 300 pounds per acre of kainit broadcast over them. This supplies the supposed need of the plant for salt and at the same time supplies potash. I cultivate the plot often and thoroughly to encourage and preserve leaf growth, as the size of stalks and the general strength of the plants depend very greatly upon the vigorous growth of the plants. There is some difference of opinion as to the exact time the plants should be allowed to grow. However, growers agree that seedling asparagus is one of the worst weeds in the field. In order to avoid these seedlings starting, it is necessary to remove all old tops just before the berries become fully ripe. When cut I rake the tops in piles and remove them to an open field while still green, and burn as soon as dry. I run a light harrow over the whole field after the tops are cut, as it leaves the field in very good condition for winter and spring, and it may also expose the winter quarters of some insects. Then the beds are manured with well-rotted or very short-strawed manure, for when long-strawed manure is used there will be great damage to the field when harrowing. The manure is lightly worked into the soil in the spring by very shallow surface plowing:

Two Pickles Apiece

By W. F. Wilcox

TWO pickles for every man, woman, and child in the United States will be grown in eastern Colorado this season by the C. E. Frink Cannery of Fort Lupton. This company has already contracted 100 carloads of pickles to the Heinze Pickle Company of Pittsburgh. The Heinze Company pays over \$80,000 for this contract. They will be shipped in tank cars. An estimate of the number of pickles in this shipment is made as follows:

One hundred and thirty casks to the car, with 5,000 in a cask, makes 650,000 pickles in a car and 65,000,000 pickles in the train load. The total production of the Frink Company this season will be 230 cars, requiring over 400 acres for this crop. Allowing the cannery 10 per cent profit on the \$80,000 shipment to Heinze, or \$8,000, this latest and biggest pickle contract ever made in Colorado will bring \$72,000 to land-owners, pickers, cannery employees, and others who may be connected with filling the order.



Thinning shears hasten thinning work, particularly when trees are badly over-loaded and many entire clusters must be removed

Late Peas Among Corn

By J. T. Timmons

I HAVE found it a desirable plan to plant the tall-growing or medium-height peas in the cornfield in the low places or near a stream where there will be plenty of moisture.

Planting the peas near the hills of sweet corn in the garden often works well. The support is sufficient to sustain quite a bunch of vines. Sometimes I thus secure a heavy crop. The corn shades the vines enough to produce fine large tender peas and if planted to bear in September, and even in early October, they will be found to be even more delicious than those grown in early or mid summer, and few persons will fail to appreciate peas at this time.

Housewives hereabouts are canning the late-grown peas, and they declare they keep better than those grown earlier in the season. Late peas sell readily in the markets.

Fire Blight

By George F. Potter

THE accompanying photograph shows a twig of an apple tree attacked by fire blight. The leaves at the end are shriveled and dried, and in nature are dark brown in color, giving the twig



When the fire blight, generally known as leaf blight, is not severe, only some of the terminal leaves turn brown and die. In bad epidemics half of the leaves of pear and apple trees look as though they had been scorched with fire

the appearance of having been singed with fire. From this the name fire blight results.

The disease is of bacterial nature, and cannot be controlled except by cutting out the infected part. To be certain of getting rid of all the infection, it is necessary to cut off the twig at a distance of about 12 inches below the lowest visible marks of the disease. A solution of corrosive sublimate at the rate of one 7½-grain tablet to a pint of water should be applied to the stub. This disinfection of the stub is especially important because without it the pruning-out may spread the disease.

Control of Blackberry Borer

THE blackberry cane borer has been seriously troublesome in many parts of the country recently, killing the canes and thus ruining the chances of the crop. No spraying is of any use, but I find cutting and burning does the trick. There are two ways of doing this work. One is to look for, cut off, and burn all the swelled parts of the regular winter or early spring pruning. There is no mistaking these swellings, because they are fully double the diameter of the cane itself. It is not necessary to bother with the whole cane—just the swelled part with an inch or two above or below the swelling. The cut pieces may be easily carried in a basket.

Where a very serious attack has occurred, and where other blackberries are growing in the neighborhood, I have found it a good plan to cut off all the young shoots produced before the end of June, so as to destroy the young grubs in them. By that time all the adult beetles will have died, so the canes produced during July will be free from the borers. There is no use saving a "galled" cane, for it can't produce a decent stand of berries. The sooner it is burned the better. It is not necessary to burn the green shoots, because the borers being footless cannot crawl to new canes, and are also unable to live on dead wood.



Automobiles

What the Exhaust Tells

By W. V. Relma

EVERYONE who drives a car should try to drive it economically. If the money saved is of no importance the satisfaction of having a smooth-running motor and the freedom from frequent adjustment bills ought to repay sufficiently for the effort of the driver to run his car in the most economical manner possible.

For example, the appearance of the exhaust smoke will tell a very plain story of the motor's performance.

A dark heavy smoke from the exhaust indicates a rich mixture. In other words, the proportion of gasoline is too great for the amount of air used in the carburetor. This is accompanied by a disagreeable odor. A heavy blue smoke from the exhaust will indicate too much oil is being fed to the cylinders, or faulty rings which allow the oil to enter the firing chamber.

Lean Mixture Saves Gasoline

A rich mixture will have a tendency to overheat the motor, waste gasoline, and cause the motor to carbonize quickly. The driver should learn to run upon as lean a mixture as possible up to the point of making the motor back-fire. In taking long drives it is possible to cut down the gasoline consumption very materially by adjusting the carburetor for a very lean mixture. In fact, a much leaner mixture can be used on long drives than for city work, and where frequent stopping and starting is necessary.

A good driver will give his attention to these things not only for economy sake but for the freedom from trouble which will result from observing these precautions.

Low Inflation a Luxury



Proper inflation

SOME motorists say that they want to have their tires soft on account of the greater comfort. Of course, if dollars and cents have no connection with the riding, such an attitude is all right. But if economy is to be considered, proper inflation will save money.

For instance, with a \$20 tire continual underinflation may lessen its life a thousand miles. If the tire is guaranteed for 3,500 miles, this would mean a loss of about \$5.70 for each tire. On four tires the loss would amount to \$22.80 plus the costs of inner tubes which would be destroyed by premature blowouts.

Overloading the car produces about the same results, but this is not so common a cause of tire deterioration. An underinflated tire is continually undergoing a process of kneading which serves to separate the various layers of rubber and fabric. Underinflation shows its work in a tendency of the tire to lose its tread. This will pull loose and be torn upon a sharp stone, and then flap in the wind as the tire revolves, gradually causing the rest of the tread to tear loose in chunks and strips. Dirt, stone, sand, and water get in between the tread and the fabric and gradually loosen it till it is torn off by road contact.

Putting a large delivery body on a light car frequently makes it under-tired; that is, the tires are too small for the average load. This produces the same effect as underinflation, because the walls of the tires are bent and the tread uselessly kneaded in the same manner. The remedy for this is to apply what is known as oversize tires to the present wheels on the car. For all standard wheels there are larger-sized tires made which will fit the rims. These larger sizes will hold more air, are built more substantially, and have a larger inner



Too flat

tube, so it is easy to see that they will carry a considerably larger load.

A taxi driver of my acquaintance, who is a very careful driver, and who keeps a very accurate record of expense, has found that oversized tires have lessened his tire expense just one-half. A taxicab is very hard on tires, and is a good car by which to judge tire values.

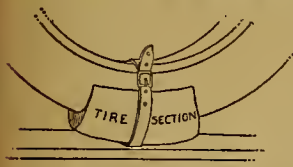
The chief point in tire service is so to load your car that the tires do not bulge to a very great degree. It is the bulge and consequent kneading of the tires that cause the damage.

Delivery cars frequently have an appalling tire expense, due to the fact that the tires are run without the slightest attention to small cuts and bruises. If these small cuts and bruises are corrected when they start they will usually cause no further trouble, and the life of the tire will be prolonged. As long as a coating of rubber is kept upon the tire fabric, little damage can be done. But as soon as small holes allow water and dirt to enter and grind the tread from the fabric, trouble is sure to result.

Usually small cuts can be filled with some of the various cut-filler preparations upon the market, and the larger cuts should be vulcanized immediately.

Better Run on the Rim

If the front wheels are badly out of alignment, the entire rubber tread can be worn off the front tires in a few days' driving.



Prevents chafing

Where the alignment is not so bad, it will require some time to wear the tread off, but it is accomplished just as surely. Abrupt contact with a curb or some large object in the road will frequently alter the front-wheel projectment so that the tires will rapidly wear. A frequent checking up of the front wheels is good insurance against rapid wear. In fact, any peculiarity of the steering apparatus should be immediately investigated, as it may be dangerous.

Running a flat tire is costly even for a short distance. It usually means a new casing and a new inner tube. A stone bruise, which is a break in the tire fabric, is most often caused by sharp contact with a fair-sized stone. This should be remedied at once by having the tire vulcanized, as it will result in a continual procession of pinched tubes, and finally end in a blowout. The proper care of spare tires is important so that they will be in good condition when it is desired to use them. The third illustration shows a method of preventing chafing when carried on the running board.

Weight of Auto

A SUBSCRIBER asks whether a light-weight or heavy car is better for year-around service and for all kinds of road conditions; also if there is any way to find the weight of a car, knowing the horsepower, wheel base, number of cylinders, bore, and stroke; also whether you can determine the horsepower if you know the number of cylinders and the bore and stroke.

It is impossible to determine the weight of the car from such information as is suggested. Either weigh the car on scales or write to the manufacturer, giving the model of car and mentioning all equipment.

A light car is probably better for year-around service in the country. It is generally cheaper to run, but a heavy car is easier riding.

Horsepower may be estimated from the size and number of cylinders, but the more accurate method, especially in the case of used cars, is to make a brake test of the actual performance.

Car Owners and Others

THE Automobile department gives the opinions of motor-car owners on various topics, but they are not limited to the men and women who drive. The experiences of those who dodge are equally welcome. If you are considering buying a motor car and are still undecided, or if you are in doubt about the cost of upkeep, perhaps we can help you find the answer.

Or if you want to know about touring maps, accessories, or anything else in motordom, let's have your questions. They will be answered either by return mail or, if not urgent, in this department. No trouble; we're glad to do it. Address the Automobile Editor, FARM AND FIRESIDE, Springfield, Ohio.

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One mile at the rate of 102.53 miles per hour.

1819 miles in 24 hours at average speed of 75.8 miles per hour.

Over 3800 miles at speed exceeding 75 miles per hour without evident wear on any engine part.

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Fastest Time for Such Distance ever made by a Traveling Machine

No man today—if he knows the facts—doubts the Super-Six supremacy.

At first the truth seemed like a romance. Think of one new invention, applied to a light six, adding 80 per cent. to its power.

Then official records began to pile up, certified by the A. A. A. The whole motoring world then had to concede this the greatest motor built.

But many men asked, "What about the endurance? Can a motor so flexible, so speedy, so powerful, stand up in years of road use?"

So we asked Ralph Mulford to take a stock Super-Six chassis and, under official supervision, show the world its endurance.

All Records Broken

He took a Super-Six stock chassis—certified by A. A. A. officials.

It had already been driven over 2000 miles at speed exceeding 80 miles per hour.

It had made a mile at Daytona at the rate of 102.53 miles per hour.

And he drove that car 1819 miles, on Sheepshead Bay track, equal to the distance from New York to Denver—in 24 hours of continuous driving—at an average speed of 75.8 miles per hour. At the end of that test—after nearly 4,000 miles of record-breaking strain—the car, when officially examined, showed no appreciable wear.

How Much Endurance Has It?

It will be many years from now before we can tell you how long a Hudson Super-Six will last. But the records we cite cover the greatest strains a motor car ever met. Many a great engine has gone to pieces under far lesser strain. Years of ordinary driving would never tax a motor like those thousands of miles of speed tests.

Yet the wear on the Hudson Super-Six was almost nothing. Certain it is that no man has ever built a traveling machine to compare with this car in endurance.

Greatest Endurance Proved

That was the last question—this one of endurance. In all other ways it has long been evident that the Super-Six stands supreme. Never has a motor of this size shown anywhere near such power. Never was an engine made to match this in smoothness. Never has a stock car recorded equal performance—in hill-climbing, quick acceleration or speed.

Handsome cars have never been shown. Finer engineering is simply unthinkable, with Howard E. Coffin at the head of this department.

You are getting the car of the day when you get the Super-Six. Every man who knows the facts knows that. And, in view of our patents, rivalry is impossible.

No Need to Wait

It is natural to say, "Let us wait and see," when we meet such radical advancements. We think that nothing can excel in so many ways without falling behind in one.

But not one fact about the Super-Six is left unproved today. Not in one respect has its performance been matched. Not in any way has a rival motor been made to compare with this.

There is no need to wait to get Time's verdict on the Super-Six. The records prove the Super-Six supreme. A half-hour's ride without those records would convince any man of the fact.

Thousands of these cars are now running. You will find them in every locality. And every owner will tell you that he never meets a car to compare with his, in looks or performance.

These are things to consider when you buy a car.

Phaeton, 7-passenger, \$1475 Roadster, 2-passenger, \$1475 Cabriolet, 3-passenger, \$1775
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The winnings of Western Canada at the Soil Products Exposition at Denver were easily made. The list comprised Wheat, Oats, Barley and Grasses, the most important being the prizes for Wheat and Oats and sweepstake on Alfalfa. No less important than the splendid quality of Western Canada's wheat and other grains is the excellence of the cattle fed and fattened on the grasses of that country. A recent shipment of cattle to Chicago topped the market in that city for quality and price.

Western Canada produced in 1915 one-third as much wheat as all of the United States, or over 300,000,000 bushels. Canada in proportion to population has a greater exportable surplus of wheat this year than any country in the world, and at present prices you can figure out the revenue for the producer. In Western Canada you will find good markets, splendid schools, exceptional social conditions, perfect climate, and other great attractions. There is no war tax on land and no conscription.

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2nd If you have a very old De Laval or an inferior separator of any kind—

BECAUSE THE LOSSES OF the poor separator from incomplete skimming and the tainted product of the hard-to-clean and insanitary separator are greatest at this season.

more easily handled and cared for than any other, and you cannot afford to waste time these busy days "fussing" with a machine that ought to have been thrown on the junk-pile long ago.

BECAUSE OF THE GREAT economy of time at this season in having a separator of ample capacity to do the work so much more quickly.

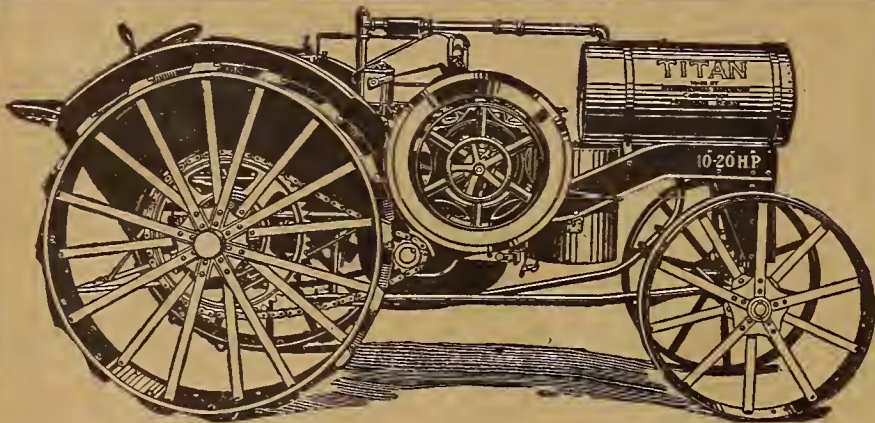
BECAUSE THE DE LAVAL separator of to-day is just as superior to other separators as the best of other separators to gravity setting, and every feature of De Laval superiority counts for most during the hot summer months.

BECAUSE AN IMPROVED DE Laval is so much simpler and

These are all facts every De Laval local agent is glad of the opportunity to prove to any prospective buyer. If you don't know the nearest De Laval agency simply write the nearest main office, as below.

THE DE LAVAL SEPARATOR CO.

165 Broadway, New York 29 E. Madison St., Chicago
50,000 BRANCHES AND LOCAL AGENCIES THE WORLD OVER



\$900 Cash
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Chicago

Titan 10-20

\$900 Cash
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The New International Harvester Kerosene Tractor

Latest in Design — Backed by Over Ten
Years' Experience in Tractor Building

AFTER years of searching tests, the new Titan 10-20 takes its place in the regular line-up of International Harvester Kerosene Tractors.

Here are a few of the features you want to know about:

It develops full 20 mechanical H. P. in the belt—10 at the drawbar.

It works on kerosene—common coal oil—a fuel saving of about \$200 on an average year's work, over gasoline at present prices.

It has a smooth running twin-cylinder engine, 6½" bore and 8" stroke.

Entire crank case enclosed—no dust or grit can get to engine. Shields over drive wheels help to keep out dirt.

No batteries needed—start and run on magneto.

Automatic oiling—keep the oil tank full and the engine does the rest.

Two forward speeds, 1.85 and 2.50 miles per hour—and one reverse.

Powerful, flexible chain drive to each rear wheel.

Turns in 28-foot circle. Handles like an automobile.

Powerful brakes on both rear wheels.

Length 147", width 60", height 66½". Approximate shipping weight, 5,225 lbs.

Titan 10-20 is now ready for delivery in limited quantities. Orders will be filled in turn as received. Now is the time to get posted. Write for complete information about the full line of tractors, from 8-16 to 30-60-H. P. sizes.



International Harvester Company of America

(Incorporated)

CHICAGO

USA



Dairying

News of Dairymom

By C. O. Reeder

MILK retails in Milwaukee, Wisconsin, for six cents a quart. The best spring water sells at 15 cents for a two-quart bottle, making it a fourth more expensive than milk.

THE State Prison of Minnesota has built a creamery, but according to last reports was unable to find a butter-maker among the prisoners, though nearly every other profession was represented.

ALABAMA has over 2,200 dipping vats, of which about one fourth were built last March. Nine counties are waging a systematic campaign against the cattle tick, and have already dipped over 35,000 cattle this year.

DAIRYING in northern Wisconsin continues to advance with leaps and bounds. Marinette County has 400 silos, of which about 100 were built last year, and there will be over a hundred more this year.

AN ALTERNATE electric current is claimed to hasten the ripening of cheese by stimulating chemical and bacterial changes. If perfected, this method will revolutionize the cheese industry.

Drying Heavy Milkers

THE customary method of drying off the average dairy cow is simply to omit every other milking until the milk flow diminishes, and then skip still more milkings till it stops entirely. Sometimes the process will require two or three weeks, but usually less. A cow producing less than 10 pounds of milk daily may be dried off any time, without injurious results, simply by stopping milking.

High-producing cows are more difficult to handle in this respect, and some dairymen claim it is impossible to get their best cows to go dry. The first step to dry off an animal producing 20 pounds of milk a day or more is to change the feed. If she is on pasture, remove her to a dry feedlot. If she has been receiving alfalfa or clover hay, give her timothy or similar non-succulent feed. In winter time take away the grain.

Then milk at irregular intervals and the flow will soon decrease. At the end of a week it will fall off about five pounds, and in a few more days milking may be stopped entirely. The udder may fill up, but in a few days the milk will be reabsorbed, and finally the udder will become normal. A rest of about six weeks is beneficial to the cow, and experience has shown that cows will have a greater annual yield if they are dried off instead of being milked up to the time of calving.

Dairy-Calf Problem

By Frank G. Davis

WHAT is the best thing to do with dairy calves? Can we make more by selling them when young or by raising cows or beef for the market? Experience along this line differs, but we can make more by keeping heifer calves

and disposing of the bull calves. It costs very little to keep a calf, especially if one has a good place for it to run in the summer, and the feed it consumes in the winter is scarcely missed.

For a long time we had been selling all our calves when they ranged in age from six to nine weeks, at from \$7 to \$12.50. Finally, when a very pretty little female was born we decided to keep her for a cow. The cost of raising her amounted to but little. She made a fine cow, so we decided to keep her first calf.

This calf, however, did not make a good milcher, but stayed rolling fat all the time. We sold her for \$55 for beef, this being a good price in our section at that time, for average cows were selling at \$40 all around us.

This gave us an idea. Why not raise all the female calves? If they made good cows we could keep them. If they did not, then we could dispose of them for beef. We have followed this plan out and got some good milchers this way and made good money on those we sold.



Eighteen dollars was offered for this calf

Were I asked advice along this line I should have to say, "Keep your calf by all means if you have a good place to let it run."

Prospective buyers are mostly farmers who expect to take the calves to their own farms to develop into milch cows, so what is the use in parting with them at such a price as is offered?

Garlic in Milk

WHAT is the best way to remove the garlic taste in milk? This question is asked by a New Jersey reader.

Though large milk establishments have mechanical processes for taking odors out of milk and cream by means of an air blast, there is no practical method for use on dairy farms. An aërotor would perhaps be of some slight advantage, but prevention is the best cure. Keeping the cows off garlicky pastures several hours before milking is the most effective means of overcoming the trouble.

One of the best ways to kill wild garlic in pastures is to turn in sheep. They like the tops, and in a few years the garlic will disappear.

Feeding Shed with Silo

THE picture, which is sent by an Illinois reader, shows a rather uncommon construction of feeding shed that is especially suitable for the summer months when pastures are scant and silage is the best succulent feed to be had.

The building is not yet completed, as may be observed from the piles of gravel and sand which are to be used in laying a concrete floor. The space overhead contains a passage way for convenience in throwing down the silage and also storage room for hay and bins for grain.



Though new in style, this feeding shed is designed along practical lines. When not occupied by cattle it may be used for implements



Patrick Henry Addressing the First Continental Congress, Philadelphia, 1774

One Nation; One People

WHEN Patrick Henry declared that oppression had effaced the boundaries of the several colonies, he voiced the spirit of the First Continental Congress.

In the crisis, the colonies were willing to unite for their common safety, but at that time the people could not immediately act as a whole because it took so long for news to travel from colony to colony.

The early handicaps of distance and delay were greatly reduced and direct communication was established between communities with the coming of the railroads and the telegraph. They connected places. The telephone connects persons irrespective of place. The telephone system has provided

the means of individual communication which brings into one national family, so to speak, the whole people.

Country wide in its scope, the Bell system carries the spoken word from person to person anywhere, annihilating both time and distance.

The people have become so absolutely unified by means of the facilities for transportation and communication that in any crisis they can decide as a united people and act simultaneously, wherever the location of the seat of government.

In the early days, the capital was moved from place to place because of sectional rivalry, but today Independence Hall is a symbol of union, revered alike in Philadelphia and the most distant American city.

AMERICAN TELEPHONE AND TELEGRAPH COMPANY
AND ASSOCIATED COMPANIES

One Policy One System Universal Service

Ditching and Terracing
Made Easy—Bigger Crops—better farms with *Martin* Farm Ditcher & Road Grader
Cuts ditch to 4 ft. Grades roads.
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Cleans ditches, cuts and works out dirt at same time. Does work of big machines. Soon pays for itself. Write for free booklet and introductory proposition. Owensboro Ditcher & Grader Co., Inc., Box 845, Owensboro, Ky.

10 days' trial. Money-back guarantee.

This Car GIVEN and the Agency for your Territory

5 Passenger—26 H. P. Electric Lights and Starter—Demountable Rims—Non Skid Tires in Rear—Fully Equipped. A wonder car and you can get one without cost. Write now for full information. Learn how you can get this car without cost and make big money in the automobile business. Don't delay—the offer is strictly limited. Write at once. A postal will do. Address me personally. **Ralph Birchard, Pres.**
Birch Motor College, Inc. Dept. 770, Tower Bldg., Chicago

Eli HAY BALERS makes clean, compact bales of anything balable. Built by pioneers. Highest award at four exhibitions.

40 Styles and Sizes for every need. Biggest results and profits for users. Write for latest Catalog. **COLLINS PLOW CO.** 1116 Hampshire St., Quincy, Ill.

AGENTS—FARMERS—SALESMEN!

DO YOU WANT THIS FORD AUTOMOBILE

WILBUR'S FARM REMEDIES
SPICES—HERBS—TINCTURES—TOILET GOODS

AND A BIG PAYING BUSINESS BESIDES

We want a man in each community to work with us on our big new plan—to travel by automobile and handle the big Wilbur Line of Stock Tonics, Farm Remedies, Medicines, Extracts, Spices, etc. We equip each man with an automobile and set him up in a business of his own that will pay him

\$2,000.00 TO \$3,000.00 A YEAR.

This offer is open to you, no matter who you are or where you live. No experience necessary—we teach you everything. No capital required—everything furnished. Liberal credit—big commission—exclusive territory—brand new plan. Write us at once—today—don't put it off. Full details of our plan, how to get started, etc., will be sent at once.

WILBUR STOCK FOOD CO., 111 Huron St., Milwaukee, Wis.

ROSS Silo Fillers for Gasoline Engine Power

Our 66th Year

Double the Capacity with Less Power and considerably Less Speed.

We make Silo Fillers of extra large capacity to meet the special requirements of all silo users. These machines are specially designed to be operated by popular size Gasoline Engines—6-8-10-12 and 14 H. P. Tell us what your power is and we will advise you what size Ross Silo Filler you require.

Write for Our Special Proposition Today and state if you intend to buy this year. Early orders will save you money.

The E. W. Ross Co., Box 119, Springfield, Ohio

Live Stock

The Flock in Summer

By Andrew M. Paterson

AFTER shearing when pasture is abundant a very common practice is to turn the sheep out and let them shift for themselves. Where feed and water are plentiful the sheep will generally take care of its own wants, but a little attention on the part of the shepherd will add greatly to the comfort of the animal, and the profits from the flock will be materially increased. Where the pasture is large it should be divided in order that the sheep will have a change in pasture and at the same time get a maximum amount of feed from the land. When sheep graze on large areas they will graze the grasses they like best and leave the unpalatable kinds, which are wasted.

The ewes which are very poor in condition should be separated from the rest of the flock and given a little more feed and attention in order that their condition may be brought up to the average of the flock.

The sowing of rape in the feedlots provides an excellent place to graze the thin ewes, and by utilizing the feedlots in this manner the farm flock can be pastured from land which lies idle during the summer.

Lots of fresh water and shade are essential to the flock. Where natural shade cannot be obtained, a few old

poles and boards put together will protect the animals from the hot sun. Care should be used when changing from one kind of pasture to another, especially if the new pasture is more succulent than the old, as the change may cause the animals to bloat and result in a few deaths. The health of the sheep should be guarded in summer as well as other seasons. Avoid cold, damp weather after shearing. Sheep should not be exposed to cold, driving rains after the wool has been removed, as this is liable to result in pneumonia and cause a loss to the flock. Sheep should be dipped when the weather has become warm, or directly after shearing. Dipping kills the external parasites, puts the skin in healthy condition, and helps make a luxuriant growth of wool. One of the greatest pests the sheepman has to contend with is the stomach worm. It is probably the cause of more losses in sheep than any other of the internal parasites. The best remedy is prevention. Avoid, if possible, getting sheep from a flock infested with the stomach worm, occasionally change pasture and graze the lambs on land which is put under the plow each year. The stomach worm is a twisted worm found in the fourth stomach, and can be seen by the naked eye. Once in the flock it affects them all, the animals which are weak in vitality showing the first signs of the pest. When infested with the stomach worm the animal lacks appetite, has diarrhea, and the skin is hard and dry. The animal gradually weakens and, if not treated, usually dies. When the stomach worm is known to be in a flock the animals should be put on a good rich ration. Never put them in a worm-free pasture. A good many proprietary medicines have been offered, but they are more valuable as a preventive than a cure. A teaspoonful of gasoline in some milk has proved a good remedy.

The weaning of the lambs should be given some thought. The time of weaning should depend upon the ewes and the lambs. The lambs should be weaned between the ages of four and five months, but where the lambs are strong and growthy and the ewes thin they should be weaned earlier in order to allow the ewe to get into the proper condition for breeding. Where the lambs are backward and the ewes are thrifty, they should be allowed to run with their dams for a longer period. At weaning time the ewes should be taken off feed that is very nutritious and succulent, and given some dry feed that will stop the flow of milk. The udders should be closely watched. The ewes with a large supply of milk should be milked a few times to avoid spoiled udders.

At weaning time the lambs should be put on fresh, nutritious pasture with some grain. They should be separated far enough from their mothers that neither the lambs nor the ewes will be disturbed by the bleating. Lambs should be so handled at weaning that they will keep on growing and gaining in weight.

Success in sheep husbandry depends upon the man. Every farm should have a small flock of sheep; the size of the flock will depend upon conditions. If sheep are properly started and cared for they will prove a valuable source of income.



Where the pasture is large it should be divided, or the sheep will graze the grasses they like best and leave the rest

Peddling Hog Cholera

By B. F. Roderick

WHY does hog cholera become more prevalent soon after the harvesting and threshing season? Is it not quite possible that the crews of harvesters and threshers distribute the cholera germs from place to place?

The threshing job is quite often done in hog lots or yards of farm buildings to which the hogs have access. The loss of a few score hogs brought about in this way would pay for an individual threshing outfit, which with the help of a few near-by neighbors would take care of the threshing job without danger of peddling infectious diseases.

To Cure Clover Bloat

CLOVER bloat in cattle has been cured by Healy and Nutter of Kentucky in twenty minutes by a drench of one liter of water containing 300 cubic centimeters of formalin. After the formalin was given, a block was placed between the animal's teeth. It did cows no harm except to make them refuse dry feed for a day or so, and shrink a little in milk yield. The dose is one-half ounce of formalin in a quart of water.

Patterns for Summer Sewing



THE patterns illustrated on this page may be ordered by mail from the Pattern Department, FARM AND FIRE-SIDE, Springfield, Ohio.

No. 2935—Belted Rompers with Short Sleeves. 2, 4, and 6 years. Pattern, ten cents

No. 2946—Middy Blouse with Novel Pockets. 12 to 18 years. Pattern, ten cents

No. 3070—Boy's Pajamas. 4 to 14 years. Pattern, ten cents

No. 3074—Men's Shirt with French or Straight Collar. 14, 14½, 15, 15½, 16, 16½, 17, 17½, and 18 inch neck. Pattern, ten cents

No. 3041—Boy's Straight Trousers with Attached Stay. 2 to 8 years. Pattern, ten cents

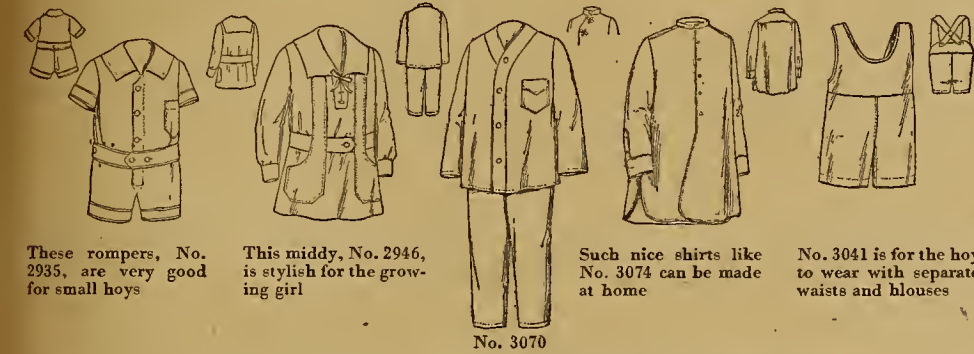


This is the kind of wrapper everyone needs: it is suitable for so many different materials

No. 3066—Kimono with Shawl Collar. 32, 36, 40, and 44 bust. Pattern, ten cents

No. 3021—Long-Shouldered Waist, Surplice Style. 34 to 40 bust. Pattern, ten cents

No. 3058—Two or Three Piece Skirt with Applied Band. 24 to 34 waist. Pattern, ten cents



These rompers, No. 2935, are very good for small boys

This middy, No. 2946, is stylish for the growing girl

Such nice shirts like No. 3074 can be made at home

No. 3041 is for the boy to wear with separate waists and blouses

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Recipes

Salmon Salad—Secure one can of good salmon, remove skin and bone. Cut into small pieces. Boil four eggs hard and cut them up in small pieces, also half an apple cut into small pieces or cubes. A little lettuce or parsley added makes it very attractive-looking. Mix with mayonnaise dressing and serve on lettuce leaves, with a slice of egg on top for garniture. C. O. B., Ohio.

To Can Beans—String and snap; then boil until tender. Have the glass cans ready, pour hot water in first, then empty out, fill with hot beans and liquid. Have some vinegar boiling. Put two tablespoonfuls in each can. Put on new rubbers, and screw the lid tight. Melt some paraffin and let it get partly cool, then plaster over the rubber so as to exclude the air. When ready to use the canned beans, unless the taste of vinegar is desired, the beans should be put in cold water several times and heated, each time draining the water off and putting fresh on. Then season with pepper, salt, and either bacon or ham fryings. These are almost as good as fresh beans from the garden. MRS. M. W. P., Indiana.

Sour-Cream Cake—Two cupfuls of flour, three teaspoonfuls of baking powder, one cupful of granulated sugar. Put into a bowl and mix. Melt one tablespoonful of butter in a measuring cup, break two eggs over this, and add one teaspoonful of flavoring and fill cup with milk. Bake in layers. Icing: Three tablespoonfuls of sour cream, thickened with confectioner's sugar; add flavoring and cocoanut. L. W. W., Montana.

To Pickle Beets—Wash and boil the beets until tender. Drain off water and cover with cold water. The skins will slip off easily then. To every quart of vinegar required (if the vinegar is too strong, dilute with a little water) add one cupful of sugar. Bring to a boil. Put in the prepared beets, bring to a good boil. Can in glass jars. B. E. C., Tennessee.

Fruit Salad—Cut the following into small cubes or pieces: Two oranges, two bananas, one apple, one small pineapple, or small can of pineapple, one cupful of green or white grapes, seeded, one cupful of English walnuts, one cupful of marshmallows. Put all to-

gether in a bowl and mix with mayonnaise dressing. Serve on lettuce leaves, with a cherry for garniture. D. S. B., Michigan.

Boston Brown Bread—One cupful of brown sugar, three tablespoonfuls of New Orleans molasses, two scant teaspoonfuls of salt, two teaspoonfuls of baking soda, two cupfuls of sour milk, one cupful of raisins (if desired), two cupfuls of Graham flour, one cupful of wheat flour. Divide this mixture into three cans which have lids. Let stand one hour, then put the lids on and bake one hour in a slow oven. T. M. D., Vermont.

Veal Loaf—One pound of veal, one-half pound of pork, season with pepper, salt, and summer savory, sage, or an onion. Break one egg in a cup filled with sweet milk, pour in the dish with the meat. Add two-thirds cupful of rolled crackers and mix. Place in a bake pan, shape in roll with the hands. Place two pieces of bacon on top. Put about one-half inch of water in the pan and bake. For picnics, or if you want to make the meat loaf look real pretty, boil two eggs hard, remove the shell, and when shaping the loaf place the eggs in the center of the meat mixture. When sliced down there will be the egg. M. E. S., Minnesota.

Household Hints

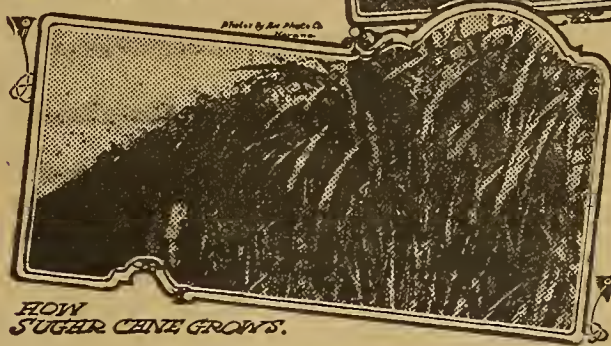
After the newspapers are read in our house, they are placed in a rack which hangs on the wall in the kitchen. There we find them of the greatest value. They are laid on the table when work of any kind is to be done, when pots are set down, vegetables peeled, cake mixed, or any other household tasks are in progress. If they are soiled they can be gathered up and burned in the range; if they are covered with peelings they can be picked up, refuse and all, and placed in the garbage can for collection, or burned in the yard as circumstances determine. In any case, when the newspapers are removed the oilcloth on the table is left white and inviting, and they save the continual wiping up which is necessary where only the oilcloth is used. JOSEPHINE HOWARD.

What The War Is Doing For The Farmer

The European war is not an unmixed evil; nor yet is it an unmixed blessing for this country. We shall not attempt to go into the ethical side of the question at all, nor shall we discuss "war brides", munition plants or other similar phases of the situation. We shall look at the war purely from the standpoint of prices for raw products, either produced here in this country or imported from foreign countries. And



GATHERING SUGAR CANE



HOW SUGAR CANE GROWS.

amongst them those that have not gone up in price in spite of the war.

For example, here is a peculiar situation in regard to a beverage which is so universally liked that it has become almost a staple. The name of that beverage is Coca-Cola.

Now Coca-Cola, as you know, is really an agricultural product—a product of the soil. Cane sugar—the very purest and finest—constitutes a large part of Coca-Cola syrup. As you know, sugar has gone way up—so every glass of Coca-Cola you drink makes some farmer's heart gladder.

So it is with the pure fruit juices that, combined, produce the inimitable flavor of Coca-Cola. Not so much in quantity seemingly when you consider—a single glass of this delicious beverage, but enormous when the entire Coca-Cola output is considered.

Yet this product of nature—of the farm—increased in cost though it has been to the makers, has not been raised one penny in price to dealer—or to you. The price at the soda fountain and in the bottle has not risen one iota.

Now inasmuch as the rural population alone of America consumes millions of bottles and glasses of Coca-Cola every year, you and the other agriculturists of this country will not only be able to continue to please your palates and get delicious refreshment with this beverage at no increased cost, but you will be sending back to the farm bigger profits and more money at no greater expense to yourself.

of course when we consider raw products we must carry the subject further on into the matter of the prices we get and the prices we must pay for finished products. We shall confine our consideration, too, to those products which have their origin on the farm either in the raw state or finished and manufactured into edible or wearable articles.

Let us take wheat, for example. We all know that the war has put the price of wheat way up. Very well—this means that the whole country: city, town and rural population as well as are paying more for their flour—therefore the wheat raiser should theoretically be getting rich on a product which it costs him no more to raise than formerly and for which he gets more money.

But wait a minute—there are other things to consider in this matter of growing rich off of the war. Cotton and wool and meats and farm machinery and sugar have gone up too. This means that while the wheat raiser is getting more for his product, he is also paying some other agriculturist more for his product. This cuts down somewhat on the profits the war is bringing to the farmer. Then it would seem that the best way to keep ahead of the game is for the farmer to pay the farmer who raises his necessities the increased prices that the war has brought about and when buying his luxuries or those things that are not bare necessities of life to pick and choose from

Evolution

Grandmother had the tub, mother the old style washer, you now can have the

Maytag

Multi-Motor Washer with Swinging Reversible Wringer

which gives the housewife without electricity in her home the advantages of power washing that the woman with the MAYTAG Electric Washer enjoys.

It Is Absolutely Safe
Smooth-running—quiet—clean. Runs on gas, gasoline, kerosene or alcohol. Does a big wash for 5c. Not only washes and wrings but the belt wheel enables it to do all work about the house that a machine should do.

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It runs the churn—the ice cream freezer—food chopper—bone grinder—runs anything that requires power. Servants do not object to washing the Maytag way. Your husband uses a machine to do a machine's work. Put a MAYTAG in your home to do the same for you.

FREE—"THE MAYTAG LAUNDRY MANUAL" containing valuable formulas, compiled by expert laundresses, on laundering all fabrics. A post card brings it.

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There is a Maytag Washer of every type—hand—power driven—electric—all built to the enviable Maytag Standard.

DEALERS—We sell through you and for you. Write. Address The Maytag Co., Newton, Ia.



What's Going On

—in the automobile industry

THE automobile has come into your life permanently—or it soon will—to serve you day in and day out, on down through the years.

Its appeal is irresistible.

It is a fundamental factor in the affairs of modern, everyday life.

In the car you now select you are casting your lot with the fortunes of some one producer—or should be—for it entails needless expense to switch from one make of car to another.

It's time to "get right" on the automobile question.

So it is important to know what's going on in the automobile industry—more important than ever before.

Automobile producers have settled down into three fairly clearly defined groups.

Whether you own and drive your car on an extravagant or an economical basis depends first upon which group you cast your lot with.

You can drift into extravagance by following either of two groups, both of which make a strong appeal to the unwary.

* * *

To follow one of these groups is to fall into the extravagance of cheapness—the appeal, of course, is price.

The extravagantly cheap cars are necessarily undersized—too small for comfort and as a rule lack equipment.

You begin by buying at retail prices the needed equipment.

Before you are through you have spent the price of a better car.

And in the end you sell out or trade in, take your loss and charge it up to experience.

* * *

In casting your lot with the other of these two groups you fall into the other extreme of extravagance.

The appeal is individuality—exclusiveness.

This group embraces the great majority of producers but their output is small so they do not provide the machinery and facilities for large production.

They must perform laboriously and expensively by hand many operations which could be done better, quicker, more uniformly, accurately and economically by great machines.

The price of these cars must cover extravagant manufacturing and selling costs.

And upkeep is correspondingly expensive for garage men are unfamiliar with these cars and service charges run high because mechanics must spend as much time learning what to do and how to do it as in actually doing the work.

* * *

The third group comprises the large producers of quality cars.

The Willys-Overland Company is by far the largest producer in this group.

Season after season, for many years, the Overland output has far exceeded that of any other producer in this class.

As the Overland output has been greater, Overland material cost, manufacturing cost advertising and selling costs have been correspondingly lower, per car, than that of any other producer in this class.

And we have always given buyers the benefit of our lower costs.

Certain it is that we have led the way in all the great price reductions which have finally placed quality cars within the reach of the many.

Certain it is that those who have followed the Overland fortunes from the beginning have owned and driven their cars on a more economical basis than those who have followed any other producer.

* * *

Past performance is the best promise of future performance, and several very great advantages of the present point to future advantage for those who cast their lot permanently with Overland.

Between the small, light Overland Roadster and the Willys-Knight Limousine at prices ranging between approximately six and eighteen hundred dollars, you have the most complete opportunity for selection within the entire "economy range"—excluding both the extravagant ranges of the cheap and of the fanciful, which fall outside any true idea of economy.

From season to season you may switch from one car to another as fancy or expediency may dictate, and without the needless loss entailed by changing from one make of car to another.

Whether you buy the small four cylinder Overland or a larger Overland Four, the big Overland Six or a Willys-Knight; you get the lowest possible first cost for a car of its class—the result of the greatest production attained in quality automobiles.

* * *

And just as standardized manufacturing methods applied to the largest output have resulted in lowest possible first costs—

So also have standardized service methods applied to the largest number of running cars resulted in minimum upkeep costs.

Not only are Overland service stations everywhere, but garage men and mechanics everywhere have twice the experience and knowledge of Overlands as they have of any other car because there are about twice as many Overlands running as there are of any other make of cars of the same class.

And the inevitable result is economy, for everywhere men know Overlands and the quickest and shortest way to render almost any service in connection with them.

* * *

So, if true values sway you—true values in every phase and all phases wherein the automobile touches your life—then consider these things and reach your decision and with your purchase this season cast your lot permanently with those who have established and are continuing to establish these very real and true values which determine true automobile economy.

See the Overland dealer now. Talk matters over with him frankly. He will help you from his rich experience; to decide which Overland or Willys-Knight will serve your particular needs with greatest economy.

Get right on the automobile question.

Catalogues on request. Please address Dept. 714

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Toledo, Ohio

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PHOTOGRAPH BY JOHN KABEL

Turning Low-Priced Feed into Wool and Mutton

FARM *and* FIRESIDE

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No. 21

The Mortgage Lifters

What the Hog Family Will Do for You if You Give Them a Chance

By HARRY M. ZIEGLER

WHEN I was nine years old I paid \$4 of my \$7 capital for two Duroc Jersey gilts, eight weeks old. I was going to make my fortune with hogs. I didn't make a fortune, but I did demonstrate what was far more important: that anyone with a love for live stock and a few dollars' capital can make money with hogs.

If a person has a lot of good land and plenty of capital, making money in any line of the farming business is simplified. Making a good living, putting away some money for a rainy day, paying for a farm, new machinery, household conveniences, a barn, a silo, or possibly an automobile—these are the things that profoundly interest most of us. Hogs will produce the money to do these things.

Two neighbor boys went with me to the farm where I bought the pigs. It took our combined efforts to put the gilts in a large burlap sack, place them in a little wagon, and pull and push the wagon home.

My father was raising Poland Chinas on our home farm. I knew they were not prolific, and that they didn't make sufficiently good gains in the fattening pens. This prejudiced me against Poland, and caused me to go to a neighbor and buy the two Duroc Jersey gilts.

When I grew older I learned that it was the specimens of the breed Father had, and not the breed itself, that was at fault. Pure-bred boars soon corrected this.

While corn at that time was worth 24 cents a bushel, Father said he would feed my two gilts, until they were ready for market, for the rest of my capital—the \$3.

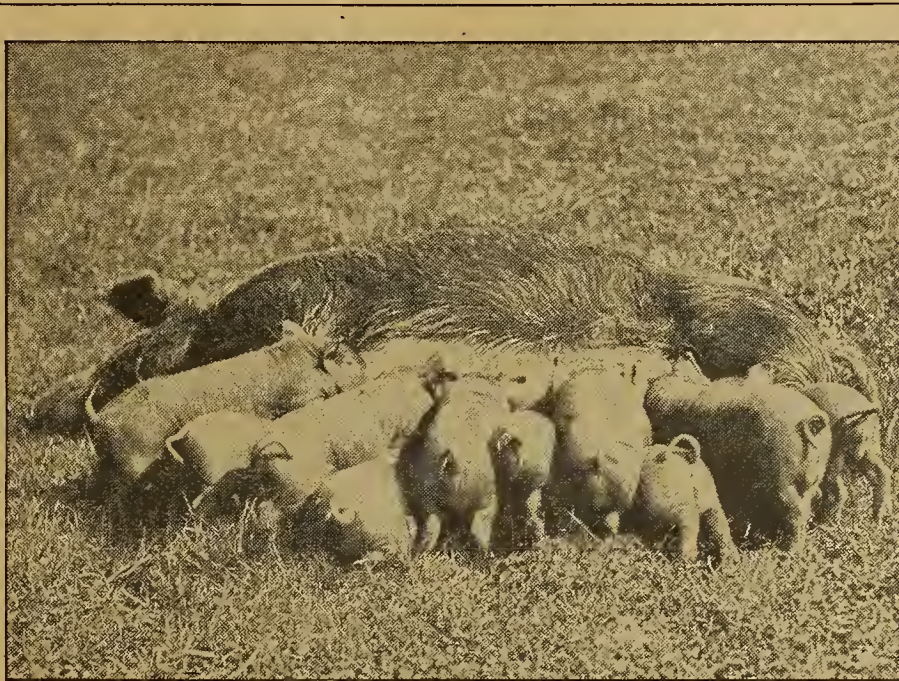
Many a morning that summer, after I had done my part of the chores, I pulled weeds to feed the pigs. I moved their pen around in the orchard so that they had plenty of clover to eat, in addition to the weeds I fed them. This pen was 16 feet square. It was made of fence boards. Across one corner was a shelter. I didn't want to let my pigs run in the pasture with Father's. I was afraid cholera might break out in the herd any time, as it was all around us, so I kept my stock isolated.

I fed them the scraps from the kitchen, and all the corn they would clean up nicely. I gave them ashes, charcoal, and salt, and kept a plentiful supply of water near all the time. The spare time I had that summer I sat perched on the fence, watching the pigs eat and grow.

We had an old worn-out galvanized iron bathtub that Father said I might use to wash the pigs in, so every few days that summer the pigs were given a good scrub with soap and water. Sometimes it took the help of several of the boys in the neighborhood to accomplish the scrubbing, but it was done.

The following June, when my porkers were more than a year old, the hired man loaded them into a wagon one morning when he was going to town for a load of coal for the kitchen. I went along. We drove down to the stockyards in the little town. I had the man stop in front of the office of one of the three live-stock buyers. I knew this hog buyer very well; his son and I were chums.

The hogs were of the same size, of excellent quality, and were well finished. The stock buyer climbed up on the wagon, looked at



It is quite evident that the sow that farrows ten to fourteen pigs is more profitable than the one that farrows six to eight pigs

the hogs, and said he guessed they weren't fat enough to be worth anything on the South Omaha market. My hopes fell. We started to drive on, when the stock buyer said he was only fooling. He agreed to pay me the top price, \$3.25 a hundred. We drove onto the scales, down in the yards, unloaded the hogs, and weighed back the wagon in record time. The two hogs weighed 660 pounds. I could hardly wait to figure up what I was going to get for them. The hog buyer wrote me a check for \$21.45.

Several days later a carpenter who was building a cattle shed for Father said he would give me a Berkshire sow and seven week-old pigs if I would do some work for him. He said that he had a seven-acre tract that adjoined town which was covered with a three-foot growth of sunflowers. He said his hogs had rooted up the ground so badly the surface of the field was too rough to use a mower.

The next morning I jumped on my pony and rode into town to see how much of a job it would be. I looked at the field, and decided that I could cut it with a brush scythe in three weeks. At this rate I

put the six pigs in a pen by themselves, and gave them all of the corn they would eat. One of them had been stepped on and killed by our Hereford herd bull early in the summer. I built a feeding floor for them 8x10 feet.

In February, when they were nine months old and weighed 260 pounds apiece, I sold them. I got \$3.65 a hundred for them. Here is the transaction itemized:

RECEIPTS	
Sow, 350 pounds @ \$3.50 cwt.....	\$12.25
Six pigs, 1,560 pounds @ \$3.65 cwt.....	56.94
	\$69.19
EXPENDITURES	
Cost of sow and pigs.....	\$15.00
Skimmed milk	8.00
Oil meal	2.00
Corn, 116 bushels @ 25c.....	29.00
	54.00
Profit	\$15.19

While the price of corn then was about a third of what it is worth now, the present price of hogs is nearly three times as much as I received, so the present proportions of hog and grain prices are the same.

In March that year I bought a Chester White sow and a Poland China sow at a sale. I gave \$12.65 for the Chester White, and \$11.25 for the Poland. Father joked with me a lot because I bought a Poland China hog. Each sow farrowed eight pigs and lost one. These hogs ran in the orchard and were fed skimmed milk and corn, and handled on the same plan as the hogs the year previous. I sold the sows in November and the pigs in January. The total cost of the hogs and their feed was \$115.25. I received \$165.90, leaving a profit of \$50.65.

The next February we sold our farm and all of our live stock except our pure-bred Hereford cattle, and moved to



The cost of producing a pound of pork has been decreased greatly by grazing hogs on succulent grasses. Alfalfa, clover, and rape are popular as pasturage for hogs

[CONTINUED ON PAGE 171]

For Food and Raiment

Competitor Clothed in Wool Walks with the Steer and Hog

By W. T. McCOY

THE sheep industry now promises good things ahead for the work of skillful shepherds. This opinion is not based on merely my own personal ideas. Figures speak with more force than words. There are now only about four million more sheep in this country than there were in 1879, and we now have eight million less sheep than were in this country in 1884, when our high-water mark in sheep reached fifty million head.

If questioned about the cause of present high prices of wool or mutton, the general offhand verdict will be found to be, "War prices now prevail." But war influence has but a small part in present high prices for sheep products. Shortage of sheep is the true answer.

The price of mutton has reached the highest point ever known, and the price of wool is rapidly approaching that point.

In 1913 there were 296,000,000 pounds of wool marketed at an average price of 15 cents per pound. In 1914 there were 290,000,000 pounds at 18 cents, and in 1915, 288,000,000 pounds averaging 23 cents. These figures tell the story and show why flocks must be increased.

The methods used in managing our flock have yielded very satisfactory results, and yet we realize that greater care will produce a correspondingly greater profit. About thirty years ago we began to breed pure-bred sheep, aiming to supply the demand for pure-bred rams to head mutton flocks. We have usually wintered about 60 head, 30 to 40 of them being breeding ewes, about 15 of them rams, and the remainder ewe lambs kept to replace the older ewes that had grown too old to be profitable.

Keep Ewes Fat in Fall

WE ALWAYS try to have breeding ewes fat in the fall before breeding them, and to accomplish this they are given extra good pasture, changed frequently, and sometimes were given a little oats once each day. We begin to breed our ewes about October 10th, the object being to have the lambs arrive during the month of March.

The ewes are allowed to run the fields without grain until snow covers the ground. But they are never shut in.

About January 1st they are given a small amount of silage each day, not over two pounds each, and no grain if there is clover hay. If there is no clover, some oats and bran are given very profitably. Care is necessary in feeding silage to breeding ewes just prior to lambing, as it is apt to induce a too liberal flow of milk when the young lamb is unable to consume it all, and thus cause udder trouble.

As soon as the first lambs arrive we put the ewes in small pens where they can be quiet and where the lambs cannot stray away, and we make sure the lambs suck freely and the udders are in good condition. At this time we begin to shut the ewes in every night, as otherwise they would be apt to wander off to the field to drop their lambs.

We do not practice visiting the barn every night, even during lambing season, unless in special cases. We always attend to everything about nine o'clock, then allow the stock to be quiet until five next morning.

The lambs are docked when from two to four weeks old by tying a string tightly around the tail close up to the body, and while an attendant holds the lamb the tail is cut off just below the string with a very sharp knife. The strings can be removed in from four to eight hours. What little castration we do is done soon after this time. Lambs intended for market should always be castrated, as they will fatten more rapidly and will not be annoying to the rest of the flock. We also provide a small creep in a convenient corner of the barn where the lambs can eat oats and oil cake at the regular feeding time.

Shearing is always done as early in April as the weather will permit. Early shearing has many advantages: work is not so pressing, the ewes are not feverish through hot days and nights with a heavy fleece, and without the fleeces the ticks, if there are any, will leave the ewes and go to the lambs, which can be dipped at once, and being shorn, ewes will not stay out in storms until

E W

they and the lambs are thoroughly wet and chilled.

In the early part of May our ewes are turned on good pasture, after which they receive no grain. But we try to see them every day, and always watch for scalded feet, maggots, and, most important, stomach worms. Any of these troubles are small in comparison with the latter. So far the best remedy for stomach worms we have found is two ounces of blue vitriol boiled in a gallon of water. Give each sheep two ounces of this mixture after they have been starved for twelve to sixteen hours.

Before going on grass, all sheep and lambs are dipped, and again in the fall before cold weather begins. We salt the sheep only once or twice each week during the summer, but keep salt before them at all times during the winter.

As soon as pasture begins to fail in July, we wean all the lambs and put them on fresh pasture, such as second crop clover or a piece of rape, keeping the ewes on poor pasture and milking them every few



Rotation of pastures enhances success with sheep just as rotation of crops adds to the returns in crop production

days for about ten days until they are all dry, then they are given good pasture and sometimes a little grain, to prepare them for another breeding season.

We generally have the cornfields sown to rape at the last cultivation, and turn the young lambs in to eat the rape and weeds and grass around the fences until they begin to injure the corn.

Our aim is to keep our flock healthy and doing well at all seasons of the year. We find that fat ewes always produce our best lambs, and our fat rams, when given proper exercise, prove to be the best sires.

Both the ewe and ram lambs are given the best possible care, as the ewe lambs are later to become our stock in trade to make sure of profitable continuance of our sheep business, and the ram lambs are to be prepared to sell as service rams. Too many sheep owners overwork their yearling rams, and thus ruin their future usefulness. By using sufficient care in this respect the first year of service, we are able to get good results from our rams for several years.

At lambing time, when the busiest time of the

year arrives, there can be no shirking. Some ewes will refuse to own one of a pair of twins, and have to be watched carefully. Some have but little milk, and some have too much. All these conditions must be dealt with, and good judgment, patience, and firmness are all essentials in getting the newcomers on a good developing basis. It is no time to have inexperienced hands about the lambing pens in zero weather.

Every shepherd must work out a system that is best suited to his needs. At the present prices of wool and mutton we consider our sheep the most profitable branch of our pure-bred live-stock business, and are confident we could make a grade flock equally as profitable.

Starting a Flock

Capital and Equipment is Small

By J. B. HENDERSON

THERE has been no time within the last twenty-five years when the sheep business has been in such good condition as the present, and the prospects for the future look bright. The Eastern farmer, as a rule, keeps his sheep in a more or less careless way. It is profitable in spite of his carelessness. There was a time when sheep were kept primarily for wool, but now, because of the increase in consumption of mutton and the prices realized, the mutton consideration stands first.

I find that sheep properly handled are the best paying animals on my farm, considering the initial investment and equipment. Sheep are economical producers, requiring less feed for producing a pound of gain than the average for my other farm stock. Land on which sheep are kept is never impoverished, and weeds will disappear and grass come in. In driving through a country I can pick out the farms that keep sheep.

I would not advise the beginner to start with a large flock. By beginning small the number can be increased as knowledge and experience grow. When selecting a breed take the one that most appeals to you, for you are likely to be more successful with that breed.

Ram Half the Flock

IFIND that high-grade animals give greater returns than scrubs, and the ram, being half of the flock or more, should be selected with much care, making sure of great vigor in all breeding animals. If the lambs are to be dropped before grass comes, clover or alfalfa hay should be provided for them, as timothy hay is dangerous to young lambs if they start to eat it. In case some kind of clover hay cannot be secured, oats and peas grown for hay and cut before they are ripe make a very good substitute.

My young lambs learn to eat grain and hay when only two weeks old, and they profit by having this solid feed. I partition off part of the sheep barn where the lambs can slip through and the ewes cannot go, and feed the lambs grain in this creep. To these young lambs I feed wheat bran, shelled corn, and oil meal. In starting them we usually prefer to use one part of wheat bran to ten of oil meal, by measure. Young lambs will never eat too much if started when they should be. When they are started nicely we then put in some shelled corn, say one-third corn by weight. If they are to be kept for breeding purposes, corn should not be used to any great amount, but feed high in bone- and muscle-making material. Oats are also a good feed for lambs intended for breeding purposes. It is hard to say just what amounts of feed should be fed at all times. The kind and quality of forage that is fed makes a lot of difference.

I prefer the coarse ground grain to the fine ground, and find the time to make the cheapest growth in the lambs is when they are young. They can then be sent to market sooner and escape the ills that await them in later life.

I think that the arguments are all in favor of getting the lambs to market as early as possible. To do this successfully, plans must be laid in advance. Poor, tick-bitten ewes cannot be expected to get with lamb in time, nor to grow their lambs to the early marketing stage when weak and unthrifty. All the successful shepherds I have known made sure of high vigor and good flesh of all breeding stock in the fall. Then proper wintering will turn the trick.



These lambs are well-bred and well-born. Their dams and sire were fed for vigor. Quality and finish is writ large all over them. Whether they go to the shambles or breeding farm, a fancy price is assured

Farm Dipping Vats

A Bath in Disinfectant Makes Live Stock Healthier

By B. D. STOCKWELL

THIS account of dipping and the construction of dipping vats is prompted by the remark of a Southern stockman. "My policy in running this farm," he stated, "is to take care of everything I have before I add anything new." He had been talking about his cattle, and had just showed me his dipping vat, a substantial one made of concrete, but it was neither large nor did it have an elaborate system of corrals and draining pens.

This man has the knack of getting cash returns from all of his farm operations. His cattle and sheep are his main dependence. He has a few side lines—only a few—but they all pay well. Everything was in good order and appeared to be running along smoothly. "There are farmers to whom the other side of the fence always looks better than the side they are on," he remarked, "and they can think of new things to do faster than they can ever hope to do them. Such men acquire more land than they can handle to best advantage; they raise more stock than they can feed or even keep fenced, and before they have caught up with themselves they take on still bigger things. Consequently there is an enormous waste because of neglect of what they have."

His dipping vat is just one example of thoroughness as applied to stock-raising. A steer or a hog or a sheep infested with lice or mites will not make the best gains. The cost of dipping ranges from three to about twelve cents per head, depending on the nature of the dip used and the size of the animal. While even this small figure will count up to quite a sum when many animals are to be dipped, the amount will nearly always be smaller than the losses, which troop along one after another if nothing is done to keep the stock healthy. Sickness, poor gains, medicine, veterinary fees, the occasional loss of an animal, and finally a cut in price because of poor market quality—these are some of the things which more than offset the cost of dipping.

In the South, where the winters are mild, animal parasites are a greater problem than in the Northern States, where the cold automatically keeps them partly under control. In the South Atlantic and Gulf States, the value of dipping has been demonstrated by the Government's work in eradicating the cattle tick, and in the West the control of sheep scab by dipping is now a common practice.

Pests That You Can Kill

DIPPING as a general farm practice is still something of a novelty, probably from the mistaken idea that it applies only to big ranches, stockyards, and other large-scale operations. On the contrary, any water-tight barrel or even a canvas dipping bag may be used for treating lambs, pigs, and other small animals. And anyone who has ever given a dog a bath in a flea disinfectant already knows the principle involved. It is simply to kill insect pests by poisoning them with a liquid fatal to them but harmless to farm live stock.

Here are a few animal parasites than can be best controlled by dipping:

- On hogs: Hog louse, flea, red mange, and sarcoptic mange.
- On sheep: Sheep tick, sheep-scab mite, mange.
- On cattle: Texas fever tick, mange, scab, various kinds of lice and mites.
- On horses: Lice and mites.

Formerly dipping vats made of wood or galvanized iron were largely used, and where a portable vat is needed, galvanized iron is still the first choice. But concrete is much the best material for making a vat for farm use. It is everlasting, relatively easy to construct, and seldom needs repairs. The cost of a concrete dipping vat that can be used for all farm animals will be about \$50 for materials, including fencing at the entrance and outlet. The vat illustrated requires approximately 45 sacks of Portland cement, 5 cubic yards of sand, and 15 cubic yards of gravel.

For dipping just hogs the vat may be made as small as 10 feet long, 4 feet deep, 20 inches wide at the top and 12 inches at the bottom. These are all inside measurements. Such a vat will require about a fourth as much material as the large vat. As a means of preventing the waste of dip, a dripping pen having a concrete floor should be located at the exit. The dimensions of such a pen should be about 5x5 feet for hogs and 10x12 feet for cattle. In

selecting the location of a dipping vat, the most important consideration is to have it near the water supply and, if possible, on high enough ground so it may be drained by gravity. As the vat will need cleaning from time to time, such a drain will prevent the necessity and work of pumping the contents out.

The dip used depends on the nature of the parasite to be killed. In fact, as in spraying trees for insect pests, the best results can be obtained only when the solution is of the proper strength and is applied at the proper time. For some parasites, such as the cattle tick, the first dipping will kill the tick but not the eggs. Accordingly, the animals must be dipped again in two or three weeks; the interval depends on the time of year, as they develop more rapidly in hot weather.

Dipping during the winter is not to be encouraged as a general practice, but it can be done if care is exercised. With sheep, for instance, which dry slowly, they should be watered and fed three to six hours before dipping, and it is best to have the operation over by noon. A sheep with a full stomach and with all afternoon to dry is not likely to be injured. But warm-weather dipping is much the safer and more satisfactory.

Soft water is best for mixing certain solutions, although it is not essential. But a water containing very much mineral matter is undesirable since lime, especially, unites chemically with some of the dips, and weakens the strength.



Looking down on a farm-size concrete dipping vat. The gate slides up to admit the stock

county and most of those in several adjacent counties. Senator Lahners' hobby, and his big idea also, is fish ponds. To the Eastern, Western, or Northern farmer with his many streams and lakes this sounds a trifle odd. But in Nebraska and neighboring States, where streams are few and far between and ponds are fewer still, the idea is being taken in all seriousness.

Mr. Lahners has a farm of 160 acres which he farms himself. Several other farms which he once owned he has presented to his sons. But each has its ponds.

When Mr. Lahners began to farm his place he had no water on it, save that brought to the surface by a windmill and deep well. But a couple of likely-looking draws ran through the farm.

The senator and his sons, then mere boys, built a dam across one of these. When the spring snows melted and the spring rains came the senator had his first pond. This is the way he tells it:

"Well, sir, you never saw anyone as tickled as I was over that first pond. I went to the fish hatcheries and got a lot of catfish and bullheads, little fellows, and stocked my pond. In a few years I began taking out grown fish whenever I wanted them. From that time on fresh fish furnished the meat for our table about twice a week.

No Seiners

"**T**HIS may seem insignificant to you on first thought, but it was not to us. For we ate these fish for many years and still are eating them, and it has cut down our meat bill wonderfully. This again may seem queer, but even though we always raised our own stock, the fish cut down our meat consumption and left us more for the market.

"But this fish pond was not all. A few years after this one had proved such a success the boys and I dammed up the other draw and stocked this pond with carp. I now

have carp in there weighing 20 to 30 pounds. The carp is a good eating fish if one cleans it and salts it down long enough to take the wild flavor out of it.

"I sell some fish now, and give some away. How do I keep others from seining out my ponds? That is easy. I simply plant what I call mines. We rolled up a number of big bundles of barbed wire and scattered them about in the pond. We know where each bundle of barbed wire is located, but the fish thieves do not.

"Several seining parties paid a visit to my pond. Each got his net hopelessly entangled in these barbed-wire mines and had to leave them. So I am not bothered with seiners now.

"If persons want to fish with a pole and line, and they come and ask me for permission, I show them the places where they can fish and keep their lines free from the wire.

"The farmer neighbors to me like the idea, and many now have one or more ponds. All one needs is a slight ravine or draw. A dam and the winter snows and spring rains will do the rest.

"Then my ponds attract all sorts of birds to my place. I have plenty of doves the year round, and many a fine mess they make. Then I have ducks fall and spring, although it is but a small patch of water.

"And there is in addition always something green growing about the edge of my pond, no matter how dry a summer it may be."

Senator Lahners also puts up enough ice for his own and his sons' use, but does not attempt to put up any for sale, as distances are fairly great in that part of Nebraska, and those farmers who do not have similar ponds from which to put up ice employ the old-fashioned cave as an adjunct to the well house for cream and butter cooling. He puts up between 3,000 and 4,000 pounds a winter and could put up much more.

Senator Lahners, it might be added, is one of the most successful farmers in his county. An admiring host of friends elected him to the State Senate last winter as a slight token of their esteem.

The Farm Pond

Nebraskan Grows Fish for His Table

By K. P. FREDERICK

SENATOR THOMAS LAHNERS of Thayer County, Nebraska, and member of the last State Senate in his home State, is a farmer with a big idea. Not only is his idea big, but he has done so much personal and effective missionary work on it that he has converted all the farmers of his home

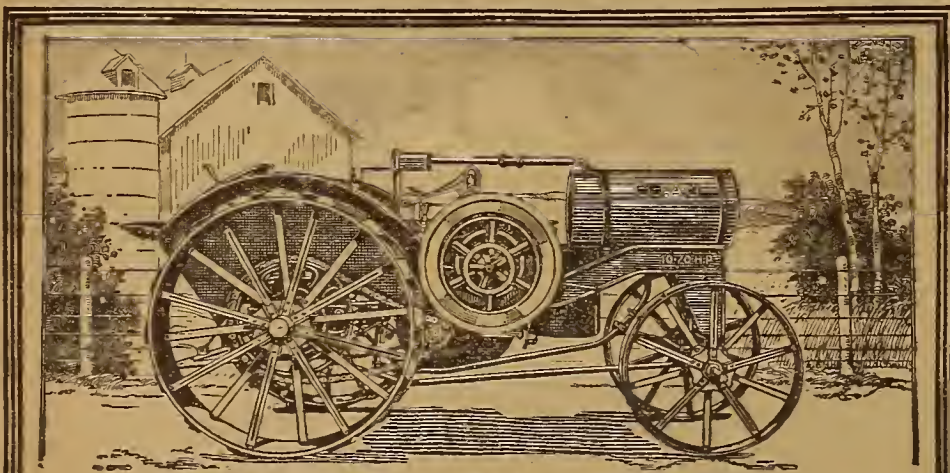


This shaded concrete wallow is pretty near hog heaven in midsummer. The water contains a disinfectant to kill parasites. The man who built this believed that hog comfort meant more pork, and found it so

Most Miles
Per Dollar
with the
**RED
SIDE
WALL
AND
BLACK
TREAD**

THE TRADE MARK OF

Firestone
NON SKID
TIRES



Titan 10-20 \$900 Cash
f. o. b. Chicago

THERE is hardly a farm with a hundred acres or more of tillable land but what has belt work enough to keep a 20-H. P. engine busy when not doing field work. This belt work alone will in most cases pay the entire yearly fuel bill of a Titan 10-20 tractor. Add to this the deep plowing, disking, harrowing, seeding, fallowing, harvesting and hauling the Titan will do during the year, at less than horse cost, and you see at once what a gilt edged investment this tractor is.

Power, strength and economy as combined in the Titan 10-20, mean everyday usefulness. It has power and strength to take care of the everyday work of the farm. It is small enough to run light machines with economy. It works successfully on kerosene. It reduces the number of work horses needed. It saves so much in so many different ways, and does so much that it cannot help but pay for itself long before it is worn out.

Write for full information about this Titan 10-20—the tractor that pays for itself, that furnishes power at kerosene cost (less than half the price of gasoline), and that is just the right size, weight, and style for farms of 100 acres or more.

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CHICAGO

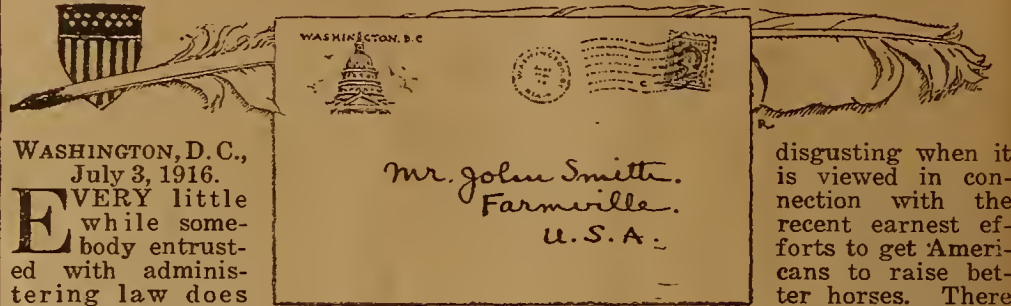
Champion Deering McCormick Milwaukee Osborne Plano

USA

Land in Alaska

Government Pamphlet Tells Best Locations

By JUDSON C. WELLIVER



WASHINGTON, D. C.,
July 3, 1916.

EVERY little while somebody entrusted with administering law does something to make the average, ordinary person wonder whether government is worth all its costs. There certainly is a fatality about the capacity of government management to make a spectacle of itself.

The other day a man in London shipped five fine stallions to this country to be sold for breeding. They were all famous animals, and it was assumed that they would be worth at least \$30,000. One of them was a full brother to Orby, the horse that Richard Croker entered for the great English Derby, and with which he won that race.

These were all of the particular sort of animals that this country needs, and for the importation of which the Government has long been extending special inducements. Among the rest, a law was passed providing that the tariff duty on such animals, when imported by American citizens for breeding purposes, should be remitted.

So when these five especially useful animals came to New York they were hailed as a real acquisition. They represented a further evidence that now is the time for America to make itself headquarters of the thoroughbred horse industry. The supply of Belgian and Norman horses has been cut off by the war, and importers and breeders have found it increasingly difficult to get the best stock. Europe is killing its horses almost regardless of their intrinsic value, in war. The cases in which it is possible to bring the best types of breeders here are rare indeed.

But when the New York port authorities looked over those five horses they shook their heads. The law provided that the duty should be remitted when the animals were imported by American citizens. In this case the horses were sent here on consignment, by their English owner, to an agent, for sale. They were not American owned when they appeared at the custom house; they were still the property of the British owner, and would be until they should get through the customs and be sold to Americans.

The collector of customs referred the question to his law officers, and they said with prodigious importance that the duty must be paid. If the horses had been sold before coming here they would have been duty-free, but their ownership being still alien, they must pay.

Proposal by the consignee that he would give a bond to sell the horses to American citizens was rejected. That would be too sensible and commonsense an arrangement to be considered. There was no way around the letter of the law. The duty must be paid before the horses could be released.

The agent to whom the horses were consigned for sale got disgusted—as, indeed, did about everybody else who got wind of the transaction—and declared he wouldn't pay the duty, which would be about \$3,000. Then he was told that he could ship the horses back to England, if he liked. He wouldn't do that either. There was nothing left but for the Government to take possession of the horses and sell them for the duty.

Finally Sold at Auction

Meanwhile several weeks had passed, and the horses were eating their heads off in an expensive establishment, and not getting the care they should have had. The bill for board and duty and interest and costs was piling up at a terrific rate.

So the customs officers took the horses out to the auction block and they were sold. The customs, expenses, and board bill will be deducted from the inadequate price thus received, and the balance turned over to the agent for remittance to the English owner.

Can anybody compute just how long it will be before that man will ship any more horses here to be sold for breeding purposes? Or how much faith he will have in laws intended to "encourage" the introduction of the best breeding animals here?

A ruling of this kind is particularly

disgusting when it is viewed in connection with the recent earnest efforts to get Americans to raise better horses. There is not a sufficient

supply of animals fit for military purposes, and so the Government some years ago imported stallions and distributed them where their services were offered to farmers on highly favorable terms, in order to get the right type of horses raised. The old Morgan breed was introduced in Vermont through government importation of stallions.

Having relieved my mind of that diatribe against some of the inanities of government methods, let me turn to something the Government has done lately that seems deserving of an appreciation.

More years ago than it is pleasant to admit, I was a boy on a prairie farm in northwestern Iowa, and the grasshoppers ate us all out of house and home, season after season. Some folks got disgusted, packed their schooners, and started "back east" to "York State," Michigan, Indiana, or wherever looked like home to them.

Tells Disadvantages Too

We know all about the grasshoppers now, or enough to be very sure that they will not do us any great damage. If we would have known it then, it would have saved a lot of people from ruin.

There aren't any bounding prairies left to be homesteaded; but there are still some pretty usable government lands, if they are handled in the right way, and the Government is making all possible effort to teach people to do that. The greatest piece of public domain still left to the nation is in Alaska, and there the modern methods of development are being tried. The lands have been surveyed and studied; the climate has been mapped and charted and classified; the soil is understood; experiments have been conducted for a long period of years to determine what crops can best be grown.

There is a vast agricultural area in Alaska which one day will produce a great supply of grains, vegetables, and live stock. Alaska has richer soil, better climate, a thousand times more variety of resources, than Iceland; yet if the southern half of Alaska could be given a population as dense as that of Iceland, it would number more people than most States of the Union!

The Department of Agriculture has just published a booklet of "Information for Prospective Settlers in Alaska" which every landless man ought to have. It will give any intelligent reader a pretty accurate idea in concise form of where to go and where not to go if he wants to farm in Alaska; and it is time for people to understand that Alaska is going to be a great country.

To open this great country for settlement the Government is building a system of railroads of its own. For the present, only about 1,000 miles of these lines are to be built, but it is fully realized that this is but a beginning of the system. The railroad scheme of the new country is likely to be the most efficient and economical in the world. In Europe and Asia, railroads have been built primarily to meet military requirements; in this country they were originally rather speculative. Alaska will have its railroads laid down on scientifically and economically correct lines.

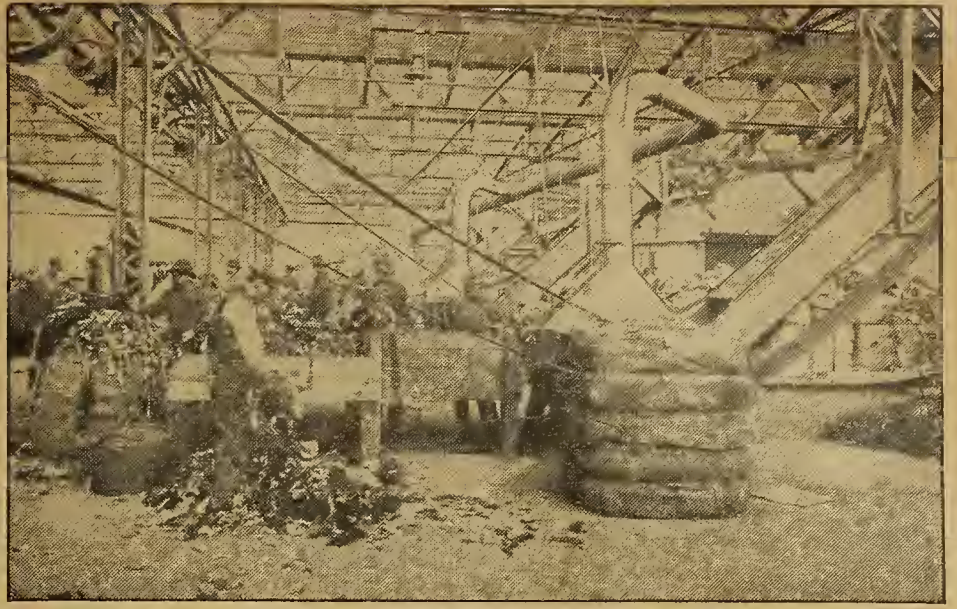
It would be impossible here to give a satisfactory synopsis of the pamphlet on Alaska. But this much can be said: It gives a fair and straightforward statement of the advantages and disadvantages. It is not an overstatement.

It describes climate and soil, and tells precisely why to avoid certain regions. It gives a good idea what crops can be grown in each area, and why. It tells in simple words the geological reasons for Alaska's disadvantages, and it explains the land laws, indicating exactly how one may get an Alaska farm, and in a general way at what expense.

After all, there is only one way to get a proper understanding of what this valuable little paper will tell you. Write to the Department of Agriculture for the pamphlet, and it will be sent.



Old rags are the basis of roofing felt. There is a well-established rag market with definite grades and standards of quality



Here the rags are being shredded for felt-making. The best roofing felt has long soft fibers that will absorb large quantities of asphalt compound

FELT and asphalt are the foundation materials used in the manufacture of prepared roofing. Roofing felt is made from rags, old carpets, the waste from textile mills—in fact, from any sort of material having a suitable fiber.

After the rags have been sorted, to remove suspenders, paper, tin cans, etc., they are shredded into long fibers, which are then carried to beaters. Here water is added and the wet shredded rags are gradually beaten into a pulp, which is the basis of roofing felt.

The pulp is then conveyed to the felt machine which presses the wet fibers together in a manner similar to the manufacture of paper. The felt comes out in a continuous sheet, and is dried by a series of steam-heated rollers. The rolls of this hot dry felt are next transferred to the saturating department. The water-proofing compound varies with different kinds of roofing, but asphalt and asphalt oils are the ingredients chiefly used.

The durability of prepared roofing depends largely on its ability to resist drying out; for when it is thoroughly dry—a matter usually of years—it ceases to be water-proof. In this respect it somewhat resembles rubber, which is strongest and most durable when new and pliable.

After the saturating process the roofing is put through a coating machine where the outer surface of asphalt compound is put on. This coating gives the roofing a hard, smooth surface, and also seals up the life-giving saturating compound in the felt.

To keep the roofing from sticking when rolled, it is surfaced with powdered soapstone or mica and, after an inspection for defects, is wound into rolls. Prepared roofing is regularly made to contain about 108 square feet, which, allowing for laps, will cover 100 square feet of roof. Two-square rolls (216 square feet) are also made.

Tearing Test Deceives Many

THE rolls are then capped at one end and are sent to the shipping department, where the cement and roofing nails are put inside. Finally the other end is sealed and the wrapping is put on.

The process differs somewhat according to the kind and grade of roofing. Where extra strength is desired, the roofing is reinforced with a layer of burlap. To satisfy the demand for greater attractiveness for residence use, crushed slate or stone is some-

Prepared Roofing

How It is Made and the Best Ways to Judge Quality

By D. S. BURCH

times pressed into the wearing surface of the roofing.

As in the case of paints, prepared roofing cannot be judged by its appearance. The quality of the felt and of the saturating compound, also the amount of each, determines how long it will last; consequently the guarantee of a reliable manufacturer is extremely valuable.

Some users of prepared roofing attempt to compare different makes by the tearing test, with the belief

that the roofing which tears the hardest is the best. This test, however, works exactly the other way, since cheap roofing, containing paper, straw, and other low-grade fiber, tears harder than the best grades of roofing, which are made from soft rags and consequently hold more asphalt and keep their "life" longer.

There is also a mistaken belief that two-ply roofing is twice as heavy as one-ply. It is only about half again as heavy. Even a three-ply prepared roofing does not have twice the total weight of one-ply roofing, but it has nearly double the amount of weather-proofing ingredients. For instance, a roll of good-grade one-ply roofing contains 9 pounds of felt and 12 pounds of saturation (asphalt, etc.) as compared with 17 pounds of felt and 24 pounds of saturation for three-ply roofing. Both roofings have about 8 pounds of coating, 2 pounds of talc, and 4 pounds of cement, nails, and wrapping. By selecting a three-ply roofing you consequently get one that is superior chiefly because it contains more weather-resisting material, and will consequently give longer service. The durability of prepared roofing depends on care in laying to a much greater extent than is generally realized.

A good method of testing roofing is to take a piece about two feet square, support the corners so as to form a bowl, and then fill it with water. All good grades of roofing will stand this test.

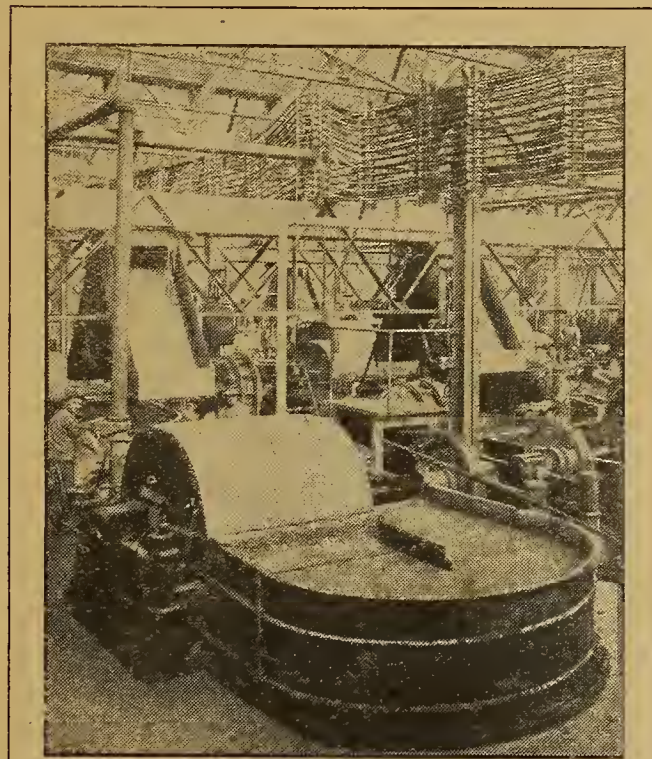
It's as Standard as Lumber

THE roofing business is now so well established that anyone can buy and use different grades as easily and with the same satisfaction that he can buy different grades of lumber.

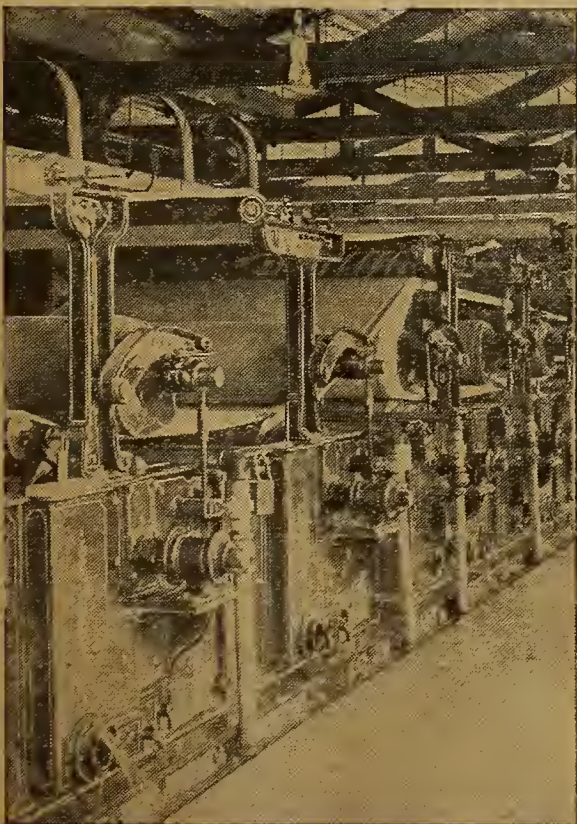
For lumber camps, contractors' shelters, and cheap farm sheds that will be used just a season, it would be poor economy to use high-grade, 15-year roofing. But most concerns make several grades of roofing, each of which bears a different form of guarantee.

Thus, when prepared roofing is made by a reliable concern, it is a commodity that you can count on for future service with reasonable certainty.

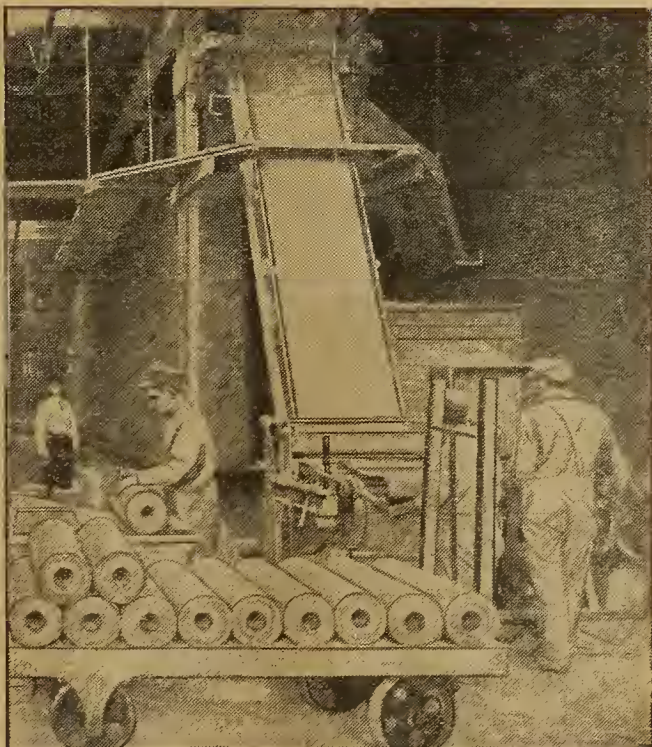
EDITORIAL NOTE: FARM AND FIRESIDE has made a careful investigation of the prepared-roofing market, and we shall be glad to suggest suitable roofings for any kind of farm buildings. This service is free to subscribers, and will be given by personal letter. Address the Roofing Editor, FARM AND FIRESIDE, Springfield, Ohio.



Water is added to the shredded rags, and beaters like this convert fibers into a pulp



Enormous felt machines then convert the syrupy pulp into dry felt



After saturation with asphalt compound, it is dusted with soapstone, to prevent sticking, and rolled



Here is shown a portion of five acres of prepared roofing over an oil reservoir

Good Health Talks

By DR. DAVID E. SPAHR



THE eradication of hay fever depends upon the eradication of the weeds that cause hay fever. Such measures have been started in several States with a measure of success.

The hay-fever weeds are on the farmers' black-list, as they have no redeeming features in utility, scent, or color. Hay-fever weeds are wind-pollinated, are very numerous, and produce great quantities of pollen.

All hay-fever weeds are wind-pollinated, otherwise their pollen would not be in the air to irritate the nostrils of susceptible persons. Bright colors and sweet scent are intended to attract insects for fertilization, and are therefore absent in hay-fever weeds, which are wind-pollinated.

Among the hay-fever weeds which will soon be in flower and distribute their noxious pollen are the yellow dock (*Rumex crispus*), careless weed (*Amaranthus hybridus*), cockle bur (*Xanthium strumarium*), etc. The grasses also are noxious to a certain class of hay-fever sufferers and should not be allowed to bloom unless intended for seed.

Dr. W. Scheppegegrell, president of the American Hay-Fever Prevention Association, calls attention to the daisy fleabane (*Erigeron*), which is beginning to bloom and whose toxicity has recently been established by this association. Children collect these flowers, and in one whiff will inhale sufficient pollen to cause a paroxysm of hay fever lasting three to five days. Such attacks are almost invariably attributed to "colds," the real cause not being suspected. It may, in addition, cause a sensitization, which will make the child susceptible to hay fever in later years.

For Nervousness

I have been very nervous for fifteen years, but much worse since being kicked by a horse and having six bones broken in my face. H. C. A., Ohio.

ANYONE as nervous as you are should keep from under the influence of drugs. Live out of doors as much as possible, sleep on a hard bed, take cold baths, drink hop tea or alfalfa tea, and eat lightly of good nourishing foods. You will build up your nervous system in this way.

Corns and Bunions

I am troubled with corns and bunions, and want treatment for same. Mrs. C. E. G., Colorado.

APPLY oil dressings and soak the feet in hot water every day, and see that your shoes and stockings fit; never too large or too small, too short or too narrow.

Keep the corns and bunions dressed down, and change your stockings three times weekly.

Loosened Teeth

Mrs. O. H. J. of Arkansas and J. H. A. of Utah write to inquire about a disease of the gums and teeth. From the meager description given I should judge that the disease is pyorrhea.

PYORRHEA invariably indicates autotoxemia of pronounced type. Keep the bowels open with some good liver pill and citrate of magnesia. Clean the mouth several times daily with standard menthol compound solution or gum wash (Talbet), using a stiff brush. Eat plenty of good nourishing food, and get your system above par.

Ringworm

Please give a remedy for ringworm. Mrs. Geo. N., Washington.

APPLY a one or two per cent formalin solution lightly for a few applications.

Intestinal Indigestion

Everything I eat or drink sours on my stomach, and my bowels get so full of gas that I am in misery all of the time. Can't eat anything sweet; can't stand severe physic. Am constipated most of the time. Mrs. N. S., Indiana.

TAKE a teaspoonful of soda bicarbonate in a glass of hot water to sweeten up your sour stomach; then take an ox gall compound tablet (Upjohn) after each meal, to supply the bile that is lacking for digestion.

1819 Miles in 24 Hours

As far as from New York to Denver

With a Hudson Super-Six

The Supreme Endurance Test

The Hudson Super-Six, in many a test, has proved itself the greatest car that's built.

No car has ever matched it in hill-climbing. No other stock car ever went so fast. None ever went so far at top speed. And no motor of its size ever showed such reserve power.

But here is a record which perhaps means most to farmers who buy cars.

Best Record by 52%

A Hudson Super-Six with stock chassis was driven 1819 miles in 24 hours on the Sheepshead Bay track on May 2nd. The average speed was 75.8 miles per hour.

That car, in a single round of the sun, went the distance from New York to Denver. It went 52 per cent farther than any other stock car had ever gone in that time.

One man drove it all the way. No man could do that in a car which was not vibrationless.

That man went farther in 24 hours than a man ever traveled before.

50 Miles in One

Some engineers figure that one mile at racing speed equals 50 miles of ordinary driving, in wear and strain on motor.

This car had run 2,000 miles before that test, at average speed of 80 miles per hour. So this 24-hour run made 3,800 miles which the car had been run at top speed—as high as 102 miles per hour.

Yet no part or bearing, when the engine was inspected, showed any appreciable wear.

The Thing You Want

What you want in a car above all else is reliability. And that's what these tests are proving.

It would take ten years of road work, perhaps, to show what we prove in a few days of speed work.

In all our tests we use a stock chassis.

The motor is exactly the same as in every Hudson Super-Six. So every man who buys a Super-Six gets the same super-endurance.

A Patented Motor

The Super-Six motor is a Hudson invention, controlled by Hudson patents. The principle which gives its utter smoothness is entirely new. That is why it out-performs any other car that's built. Or any car that can be built.

It develops 76 horsepower from a small, light Six. That is 80 per cent more than old types.

You rarely use that power. In ordinary driving you run at half its capacity, so the motor is never strained.

But the owner of a Super-Six knows that he has the power. He knows that his car is a master. He knows that in speed, in hill-climbing, in quick pick-up, no car can do what his does.

He takes pride in those facts. But his chief satisfaction lies in the car's endurance. He knows that his car will last. That another car at half the price might cost more in the long run.

Don't buy a fine car until you know the Super-Six. You would surely face years of regret.



7-Passenger Phaeton, \$1475 at Detroit

Seven other styles of Bodies

Hudson Motor Car Company

Detroit, Michigan

Silo filled in 8 hours

"This Silo 10 x 24, filled with No. 9 Blizzard with a 4 1-2 H. P. gasoline engine in 8 hours by R. A. Blood & Co., Goshen, Ind." was the information sent us with the picture shown. The

BLIZZARD Ensilage Cutter

is the tried and true machine for the farmer. Simple, safe, easy to run. Small engine big enough. Elevating ability unlimited. Capacity limited only to how fast you can bring the corn. Steady as a clock. Repair expense small. Earliest machines still in use, and none to our knowledge worn out.

WRITE US size of silos and engine for information and booklets.

The Jos. Dick Mfg. Co.
Box 28 Canton, Ohio



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You can get it for a postal. If it guides your summer and fall buying it will save you Four low from \$200 to \$500. It tells the truth about cream separators, it gives engine secrets and facts, it tells how and why the Galloway manure spreaders made Galloway famous. Our good fully describes my new 12-20 h. p. Farmobile or tractor. A copy of this book should be in the hands of your hands even if you are not now in the market for a single one of our bargains. Printed in four colors, handsomely illustrated. Ask for your free copy today. Address

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These Manure Spreaders made Galloway famous. Big, free book gives details of size and style.

Gasoline or kerosene engines from 1 3-4 to 16 h. p.

Equal to 3 men and 3 teams

Galloway's new 12-20 Farmobile. Low price.

We guarantee that every subscriber will receive fair treatment from advertisers. It therefore pays you to mention Farm and Fireside in answering advertisements.



Beet Seed "Made in America"

By W. F. Wilcox

THE sugar-beet industry was handicapped this year by lack of seed. War abroad, where we get our beet seed, made the supply short. The Great Western Sugar Company has planted 3,000 acres of "mother" beets in the vicinity of Fort Collins and Loveland, Colorado. These beets were laid aside last fall and stored during the winter. The beets were carefully selected last fall; by August they will have attained their complete growth and yielded their seed harvest for the planting of 1917. The present year's crop will yield the mother beets for the seed harvest next year. Several companies are engaged this year in producing their own beet seed, so it is hoped that hereafter America will be independent of foreign countries in the production of its beet seed.

Fight Bugs with Bad Odors

AN OHIO fruit grower, O. C. Emory, has furnished FARM AND FIRESIDE his plan of preventing insect injury to all kinds of tree fruits, which he has used for this purpose for about twenty years.

His remedy is a mixture of equal parts coal tar, turpentine, and kerosene oil. This strong-smelling mixture is placed in small baking powder cans or similar containers having tight covers. Just below the cover, holes are punched through which the fumes escape. Three or four of these boxes hung in each fruit tree, Mr. Emory claims, will effectually keep all insects from injuring the fruit or foliage during the season.

Another insect repellent Mr. Emory uses to prevent borers and other insects from injuring the trunk and large branches of fruit trees is a paint mixture made by dissolving a good quality of lye soap in water to the consistency of paint, and adding a little kerosene oil to this paint. (The quantity of kerosene oil was not stated by Mr. Emory.) These home-made remedies Mr. Emory recommends for a small orchard where the fruit business is not large enough to need a spraying outfit. An experiment with these simple remedies on a few plum, peach, and cherry trees for a number of years will tell the story of their value.

When Fruit Hangs Too Thick

By George F. Potter

IT PAYS to thin apples in seasons when trees are bearing too heavy a crop. Proper thinning reduces the number of fruits, but those remaining are so increased in size that the yield is practically as much as when no thinning is done, and there is a much smaller proportion of culls and poor apples.

The work should be done when the apples are about one inch in diameter. Fig. 1 shows a branch of a Wealthy

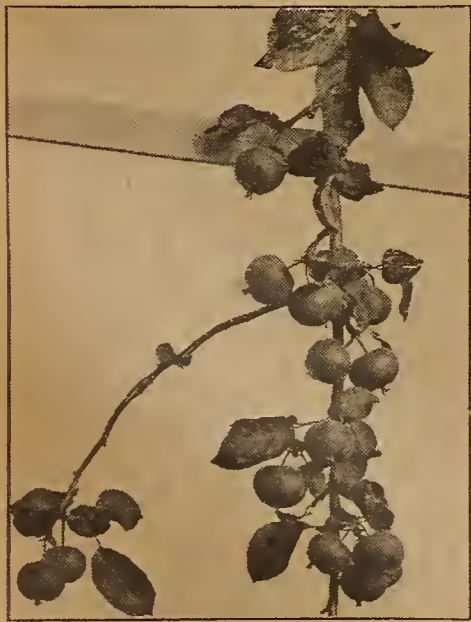


Fig. 1

tree which is too heavily laden with fruit, and Fig. 2 the same branch after it has been properly thinned. It is best to remove all apples borne terminally or at the ends of the

branches. Where two or more apples are attached to the same fruit spur, only the best one is allowed to remain. If the spurs are too close together, all the apples are removed from some of them so that the fruits are five, six, or sometimes eight inches apart. In this work the operator must endeavor, wherever there is a choice, to take off the apples which are smallest, which show marks of insects or disease, and which are poorly shaped.

Some prefer to do all of the thinning by hand, removing the apples by twisting them backward, taking care when removing an apple from a spur which contains more than one fruit not to disturb or injure the one which remains. An inexpensive pair of thinning shears



Fig. 2

is a great help, particularly where the apples are thick, as the small fruits can be clipped off without disturbing in the least those which remain. It is no small task to thin a large apple tree properly, but the crop is so much more easily harvested at picking time that it is economy of labor in the end to clip off the apples when they are small.

Making the Most of Water

By S. A. Wardlaw

IN SUMMER the hot sun gets a large percentage of the moisture whenever plants are watered in the usual way—that is, by application above ground. When water is scarce or must be carried to plants in a sprinkling pot or applied through a garden hose, the amount evaporated is a serious loss.

This water may be conserved to a great extent by perforating the bottoms and lower parts of the sides of discarded tin cans and sinking them close to the roots of the plants.

Shrubs and ornamental trees can be more effectually watered by sinking pieces of pipe (gas pipe or spouting have proved satisfactory) beside each plant at such an angle as to direct the water toward the roots of the plant.

If after refreshing the plants with a little water above ground, these cans and pipes are filled and covered so that no moisture can evaporate, every drop of water will go to the plants. For a small bed of pansies, violets, strawberries, or plants of similar growth that have been placed at even distances apart, lengths of tin or iron pipe will answer. Holes should be made in them at intervals to match the spacing of the plants, and the pipes placed in shallow trenches close to the roots. If there is more than one row of plants the pipe can be made to water two rows at the same time.

These pipes should be closed up at one end, the other should be bent upward toward the top of the ground. Water poured into the upper end will be forced through the holes directly to the root of each plant. The earth should not be packed too closely around the pipe, which should be easily removable in case the holes become clogged.

This method is better than irrigating ditches above ground for garden beds where water is limited and the number of plants is small, as it puts the water where it does most good and foils the robber sun. Old pipings of various kinds can often be had at little cost.

TRY double cropping with plants like melons, pie pumpkins, late cabbage, cauliflower, and the like. A crop of quick-growing stuff can be ready to harvest before the slower growers cover the ground.

HELP the public rural-school youngsters to make a start in cleaning up and beautifying the school grounds. Many rural-school surroundings disgrace an otherwise attractive neighborhood. It starts the children right, too.

The Raspberry Coming Back

By F. M. Whittier

FOR some years both the red raspberry and blackcap raspberry have been somewhat out of favor among growers on account of the trouble arising from insect enemies and fungous diseases which made the returns more uncertain than from strawberries, blackberries, gooseberries, and currants. But of late a renewed interest is being felt in raspberries as a better knowledge of their protection is learned, and the shortage in the markets of raspberries occasioned by the less number grown makes the price attractive.

Experienced growers know that there is little difficulty in propagating most varieties of the red raspberry. Ordinarily all that is necessary is to take the young plants that sprout up from the mutilated roots of bearing canes and set them where a new plot is to be grown. A few varieties, however, send up suckers sparingly, and in these cases it is sometimes necessary to resort to root cuttings. In this method the roots of the plants are dug in autumn and cut into pieces three or four inches long. These are stored in a cool cellar, buried in moist sand. They are planted as soon as the ground can be worked.

The best results will be secured by setting these root cuttings in furrows, leaving one end of the cuttings just slightly below the surface of the soil.

Propagating blackcaps is a very simple process, as it is only necessary to cover the pits of the long canes when the fall rains begin, and roots will form and the new plants can be then cut off and set where wanted.

The old Cuthbert variety still remains the favorite in most localities for commercial crops, and Marlboro is the favorite for an earlier variety. The blackcap or black raspberry favorites are Kansas, Palmer, Black Diamond, and Cumberland. The old standard Gregg variety is still generally found in the "best sellers" of the most successful growers of black raspberries.

In some of the famous raspberry-growing sections of the Pacific Northwest there is now a tendency to grow raspberries in rows with the plants only a few inches apart in the row and the rows about six to eight feet apart. The old plan of growing plants six feet apart each way is becoming obsolete. The present practice among these large growers is to train the canes over wires. Instead of topping the vines they are bent down and fastened to the wires, and in some cases are woven among the wires instead of being tied. In one system used a wire is fastened to the post about 40 inches from the ground on the side toward the canes, and another wire about 52 inches from the ground on the other side of the post. The old canes are securely tied to the lower wire at three or four inches apart. The upper wire supports the weight of the canes when loaded with foliage and berries. With this system the canes are topped when about six feet in height.



Cultivation for raspberries should be given with just as much thoroughness as for corn. After the first spring plowing, to prevent too great width of the rows of red raspberries, thorough cultivation should follow at least every two weeks until picking time, except during the blossoming season or when the fruit is setting.

What is true with all small fruit and most crops, if productive paying crops are wanted, there must be plenty of plant food available with which to make a quick and vigorous growth of cane, with plenty of fertility left over to grow large and well-formed berries.



Dairying

Butter for Dairy Lunches

By E. H. Newman

LIVING as we do within the so-called milk-shipping district of southern Wisconsin, which supplies both Milwaukee and Chicago, it took considerable courage to begin making butter. Our neighbors considered there was more money and less work shipping milk. But as our farm was 4½ miles from the receiving station, we decided to try butter. And now, even though a milk-route wagon passes our door, we are still making butter, and getting better returns than the milk would bring.



The dairy-lunch market is just being discovered. Have you tried it?

At first we tried the direct-to-consumer plan, since we wanted to get the best possible prices. But the numerous small shipments, the varying tastes of the people—some wanting more salt than others, and some no butter color—also irregular payments, soon taught us that all is not gold that glitters. So we began to look for another field. About that time we heard that dairy lunches bought some of their butter direct from farm dairies, so we decided to try that market.

We selected a firm and made them the following proposition: "We will send you a sample of our butter. Try it, and if it meets your requirements set a price on it."

The firm we selected was very particular about the quality of their butter. The first sample we sent them did not meet their requirements. But they wrote us telling in what way we could improve it to suit their taste, and they asked us to ship them another lot. They said they would mail a check the following week for it. This they have never failed to do, the price being based on the Elgin market.

Likes Fiber Butter Boxes

The first few shipments were made by parcel post, but Uncle Sam failed to please, for they reported that the butter reached them in poor shape. So we tried express, which evidently is satisfactory, as we have never had complaints since. One of the first things we had to learn was the fact that our market was governed by standards over which we had no control, but which we were nevertheless obliged to live up to.

We are obliged to mold the butter into pound bricks. This is absolutely necessary because our dairy-lunch firm has a machine into which these bricks are put and molded into 200 small pieces, one going to each diner. For shipment these bricks are packed 50 to a case. The cases are made either of basswood or fiber. The fiber case looks neater, and I think stands the handling just as well. Besides, they are lighter, which makes expressage less. We use no special cases for summer shipment.

Up to this year we have used no ice, but last winter we built an ice house, and from now on we shall be able to control the temperature of our cream better than with just well water.

Our herd is composed of grade Guernseys and Jerseys, and we are using a pure-bred Guernsey sire. Most of our cows were purchased in the surround-

ing country, but we now raise all our heifer calves, no matter how large or small they may be. Until they are two weeks old we let them have whole milk; then we put them on skim milk. When they are getting skim milk, we keep before them all the time a mixture of two parts whole oats, two parts shorts, two parts bran, and one part oil meal. They learn to eat this ration very quickly. All skim milk not required by the calves is fed to the chickens. We find that this nets us more money than to feed it to pigs. The only time we feed milk to pigs is just at weaning time.

Our method of conducting the dairy is simple, and we find that a fixed system gives best results. We are always very regular about milking time. As soon as a cow is milked, the milk is poured into a strainer which also contains a piece of cheesecloth doubled.

Buttermilk for Starter

This removes dust which sometimes gets into the milk in spite of every precaution. The cheesecloth is washed and scalded after each milking, and is thrown away at the end of the week. When milking is over, the milk is taken to the separator room and separated. The cream is allowed to cool, and then is put into five-gallon cans, where we let it collect till there is enough for churning.

We then pour about one quart of buttermilk into each can for a starter. This buttermilk is from the last churning, and must be kept at a temperature of from 60 to 65 degrees. We prefer buttermilk to sour the cream because it leaves no white curds in the butter. After the buttermilk is added we keep the cream at a temperature of 64 degrees, and in twenty-four hours it is ready to churn.

We use a barrel churn. As soon as the butter comes in small particles (about as large as wheat or very small peas) the buttermilk is drained off through a milk strainer which catches all the butter that is likely to go with it. We then wash the butter till it is entirely free from buttermilk. This is never less than three washings, and we use the milk strainer with the water the same as with the buttermilk, so as not to lose any butter.

Average Price Thirty-two Cents

Then we weigh the salt, using slightly less than one ounce for each pound of butter. We never touch the salt, but pour it directly from the bag into a stone jar which is kept covered when not in use. From the jar we pour the salt onto the scales, and then use a wooden spoon to add it to the butter. We work it, and the final step is to print into molds ready for shipment. Though we have had many inquiries for our buttermilk, we have never been able to compete with the artificial buttermilk that is sold in the cities. People do not feel inclined to pay more, or to pay the express on it, and while we can obtain five cents per quart for it delivered in the city, the shipping charges eat up all the profit. So we feed that to the pigs and chickens.

Last year we shipped 3,001 pounds of butter, or an average of about 58 pounds a week. We milked ten cows, so that each cow produced close to six pounds. This is of course just ordinary production, but is satisfactory considering the cows were bought at sales. I like a large cow, the bigger the better. I find that the more feed a cow can eat the more milk I get. The price we re-

ceive is three cents above the Elgin market, and we pay the express, which amounts to less than a cent a pound. We received last year for butter \$960.32, which makes an average of 32 cents a pound.

If all farmers would try and meet the demands of the purchaser of his products, he has at his command an unlimited field. I have never been able to meet the demand halfway for my butter, eggs, and chickens since I started.

"Starchy" Milk Cloths

TEXAS subscriber writes: "Please tell me through FARM AND FIRESIDE what makes cream thick and slimy. In washing cream and milk vessels my cloth gets slick just as if it had been in thick starch. Also, what makes small white lumps in my cow's milk?"

Milk and cream both contain albuminous matter which, in addition with the fat, will always cause a cleaning cloth to become slippery unless something is used to "cut" the fat and albumen. A small stiff brush, lukewarm water, and a good washing powder or dairy cleanser are the best means of washing milk utensils. Do not use soap, and you will find that a brush does the work more thoroughly than a cloth.

If the cow is healthy and the udder is not inflamed, the small white lumps observed in the milk are probably bits of casein which are very often found in the milk of heavy producers. If the milk is normal in every other way, this should be no cause for worry.

Water Tastes of Paint

"I APPLIED black roofing paint to the inside of a metal water tank," writes an Ohio dairyman, "to prevent rust, and now the water tastes of paint and the cattle refuse to drink it."

The paint was probably a tar-containing preparation of some kind, and it may be impossible by air-drying to get rid of the taste in a reasonable time. If emptying and filling the tank with water several times does not cure the trouble, the only permanent remedy will be to remove the paint.

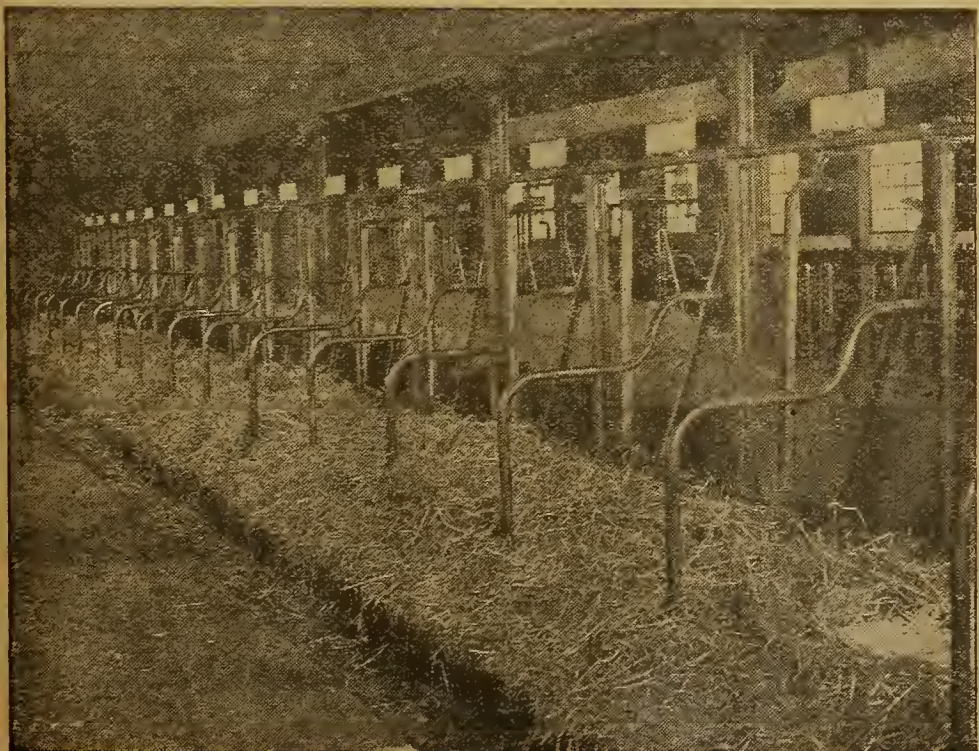
Coating the existing paint with enamel or varnish would give some relief, but no paint works satisfactorily over tar, as the tar will penetrate it and the surface coat will crack. The best method of procedure for the present is to try to overcome the offensive taste by filling the tank several times and taking pains to draw off the water completely each time before refilling.

Concrete Stable Floors

A READER has again brought up the question of concrete for the floor of cow stalls. There is no serious objection to concrete floors for warm or moderately mild climates, providing they are given a rough finish by means of a wooden float and are kept well bedded. The disadvantages of being somewhat cold and slippery when wet have in many cases been exaggerated.

Concrete is no more slippery than a wet plank, and is little colder than wet ground. Concrete has the advantages of being everlasting, easily cleaned, and is one of the very few substances that does not absorb the liquids of manure.

However, when bedding is scarce, the use of creosoted wood blocks or cork bricks laid on a concrete foundation make a warmer floor that is nearly as durable as concrete itself, and is used in many high-class dairies.



When plenty of bedding is used, a concrete floor is comfortable as well as sanitary. Cork bricks, wood blocks, and wood panels may also be used as floor coverings over concrete foundation

HOT WEATHER

the season a

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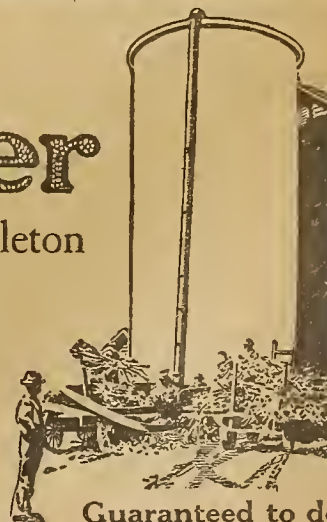
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Farm and Fireside
Springfield, Ohio



Live Stock

Breeding Experiment

By Frank D. Tomson

AN INTERESTING departure from the usual scope of experiments with live stock has been made by the Kansas Experiment Station at Manhattan in co-operation with the Animal Husbandry Division, Bureau of Animal Industry, Washington, D. C. A breeding experiment has been started with beef-breeding cows that is to run for twenty years, the purpose being to ascertain whether or not there is a specific type of cow which can be relied upon to produce beef calves of prize-winning merit.

Twenty Shorthorn cows have been put into this experiment, and were selected by Professor W. A. Cochel of the Kansas State Agricultural College and W. F. Ward, senior animal husbandman in Beef Cattle Investigations, of the Department of Agriculture, from the herds of the best Shorthorn breeders in the country. They were not selected upon the basis of their merit and breeding, but because each had produced an outstanding calf.

An inspection of this group of females furnishes the evidence that Professors Cochel and Ward had a clear and definite conception of the purpose in hand. They adhere to the type generally accepted by experienced breeders as the most reliable producing type. They are of breedy appearance, distinctly feminine in character, of smooth conformation, level lines, carrying an even distribution of flesh, and also displaying pronounced milking qualities. The shoulders are well laid, hips well covered, and there is ample depth of middle. Without exception they adhere decidedly to the breed type.

It is the purpose to mate with these females Shorthorn bulls bred along show-yard lines. The first sire to be used is Matchless Dale, the present stock bull in the college herd, a massive son of the noted sire Avondale.

The experiment is now under way. The first crop of calves will be dropped in September, and it is needless to say that more than ordinary interest will center in this first group of youngsters.

The purpose is to follow a process of elimination, discarding those cows that do not measure up to the required standard as producers and substituting others bred within this group. Whether the specific purpose for which this experiment is being conducted will be fulfilled or not, there is certain to be a vast amount of light shed upon the problems that confront cattle breeders who will attentively follow the progress of this undertaking. The result should have a far-reaching influence in the important field of cattle improvement.

Light or Heavy Hogs

By W. A. Graham

THE standard breeds of hogs as now so well developed are all good. No one can find objections to anything except too large a bone, which compels growers and feeders to take too much risk of disease and death before the hogs can be marketed.

While the big-boned and, consequently, extra-large hogs, when finished for market, are not objectionable in many ways, I have found that they are not as profitable or as safe to grow as light-boned hogs that mature and fatten well and are ready for market at from seven to ten months of age. I will give my reasons for advocating the growing and fattening of hogs that are, or can be, large and fat enough for butchering or marketing at a varying weight of from 150 to 250 pounds. First, such hogs can be grown cheaper than those of coarse bone, which take many more months to mature. Second, one gets rid of them without as much risk from disease and death as is experienced with large hogs weighing from 400 to 600 pounds when well fattened. I am met in this argument by the inquiry: "How is one to feed out all his grain or make hog-growing a good money-making proposition if he sells his animals so light in weight?" I am able to show the way out of any difficulty arising on this point. It is simply to grow more pigs—double the number if it is necessary, which is easily done.

There was in the past a better demand and a better price for the extra-

large and very fat hogs. The great quantity of lard they yielded was the main factor in stimulating an extra price a hundred pounds. The quantity of salable meat the carcass of a hog will yield from the butcher's block or the city packing house is the requirement now.

Finally, I must show that it is decidedly in favor of the small-boned hogs, which mature and get fat at from six to ten months of age, when it comes to growing them. And this is how such a thing is brought about: The first one hundred pounds of any hog is decidedly the cheapest to produce. All hog growers will agree with me about that. Then the second one hundred pounds costs more than the first; and so on up to any weight. The last hundred pounds put on an already quite fat hog costs the very highest price, because it is all fat that is being put on. So I find the lighter hogs, but fat, are the profitable ones for the average farmer.

Foot-and-Mouth Disease

THE biggest trouble in keeping foot-and-mouth disease under control lies in the fact that hogs carry it with symptoms which we are not likely to read correctly. A common symptom of the disease is sore mouth, and all cases of sore mouth should act as alarm signals. Hogs have infectious sore mouth which is not foot-and-mouth disease, and sore mouths often accompany hog cholera. Sore feet are not so very uncommon even in the absence of infectious disease. Yet sore feet are a symptom of foot-and-mouth disease.

We should all co-operate with the authorities in this matter.

If Pasture is Low

SELLING alfalfa hay to the hogs for \$25 a ton sounds like a good business proposition, particularly when crops of three to five tons to the acre can be grown annually. Hog-feeding tests made by the New Mexico Experiment Station show that when no pasture is available alfalfa hay fed to hogs in connection with grain concentrates will give good results.

These experiments show that 585 pounds of good alfalfa hay will make 100 pounds of grain, or save to the feeder 500 pounds of grain concentrates composed of ground barley and wheat shorts. The hogs used in these experiments weighed 170 pounds at the beginning of the test. The average gain per day for a period of thirty-six days was two-thirds pound a day on the alfalfa-hay, ground-barley, and wheat-shorts ration.

When the hogs were fed silage in place of the alfalfa hay, the gain of the alfalfa-hay-fed hogs was \$28.82 greater for each carload fed. Stated differently, the alfalfa hay that had a commercial value of \$10 a ton, and fed to the hogs in connection with grain concentrates, gave the feeder \$15 profit per ton on the hay.

The alfalfa hay consumed by the hogs during these experiments constituted nearly one third by weight of the food eaten. The average daily consumption of alfalfa hay was three pounds, and of silage five pounds, by hogs that weighed 170 pounds at the beginning of the experiment.

The Horse's Eyes

By F. H. Sweet

MOON BLINDNESS is a recurrent ophthalmia or inflammation of the conjunctival membrane of the white of the eye and the lining of the eyelids. Close, dark, ill-ventilated stables predispose the horse to moon blindness. The peculiar characteristic is its periodical recurrence until total blindness results. Because the attacks often follow each other at intervals of about a month, many erroneously suppose that they are influenced by some phase of the moon—hence, the name.

The ignorant recourse to knocking out the wolf teeth and cutting the haw, or winking cartilage, cannot be too severely condemned. Tonics are recommended for horses affected with moon blindness, as well as such other measures as tend to the improvement of the horse's condition.

As the conjunctival membrane is the same in the eyeball and the lid, the eyelids suffer more or less in all severe inflammations of the eye. Sometimes disease of the eye starts in the lids, while at other times it is exclusively confined to the eyeball. Inflammation may be caused by local wounds, stings of insects, or exposure to drafts.

Warts and tumors of the eyelids are removed by constriction or the lancet.

Not infrequently irritation and consequent inflammation known as trichiasis is caused by the turning in of the eyelashes. In case of a single eyelash it may be snipped off with scissors or pulled out by the root with tweezers. Where the divergent lashes are more numerous, a delicate surgical operation is necessary.

As heredity manifests itself to a marked degree in many diseases of the horse, including many forms of eye trouble, intelligent breeders will not accept animals with abnormal eyes for breeding purposes.

Internal ophthalmia, as well as the recurrent type described as moon blindness, commonly results in cataract.

A white worm from half an inch to an inch long is sometimes found in the lachrymal duct and under side of the eyelids and haw. This worm should be removed with forceps and the eye be treated as for external inflammation.

A Venture in Runt Pigs

By T. J. Wood

I GOT two runt pigs a year ago last April at \$6—worth about \$3—on a bad debt; and in July I bought four more for \$6.25, all runts but one, all two months old. I kept all six on the slop and waste out of the garden and some fallen fruit. In September I turned them on one acre of peas, and twice a day 14 cows were on for one hour, so the peas did not do the hogs much good.

They ran out until the first of November, when we put them in a close pen and fed corn twice a day, mostly nubbins, and I kept up the slop—just the dish water, no bran slop. In all I was out for hogs and corn \$28.25.

They dressed 775 pounds net, so by figuring everything after it is put away the way it sells here, lard and all, I have \$130 worth of meat. So many think it does not pay to put up meat; I think it pays, and pays big.



Many feeders rough steers through early winter. Then, beginning in February, they feed snapped corn. The steers are finished late in July

Fireman Duffy

A Love Story About a Girl, Two Men, and a Fire

By JOHN A. MOROSO

Illustrated by George Avison

PART TWO

WE WERE rolling at full speed when we crossed Church Street and went on for the Broadway and Chambers Street crossing. There was a swarm of Jersey commuters bound west for the Erie ferry, and another stream of people bound east for the Bridge and Brooklyn. Trolley cars, automobiles, and trucks were tangled up in a very little space at the crossing because of the overhead wooden structure above the new subway excavation. But there was a canary in the middle of the crossing, and as soon as that Cossack cop heard Cinders yelp at his heels he made that tangle straighten out. We went through a slit in it with a shriek and a bang.

Passing Broadway, we took Center Street on the bias and headed north to Franklin. We turned into Franklin and reached the Bend. A battalion chief, looking like he was glad to see us, waved us over to the south to Worth Street, where we coupled in record time. Duffy covered his team and turned them over to the engineer and a cop to look after, for he knew that every man of the company would be needed for hard labor.

A great ramshackle building, a half block wide and five stories high, was one huge bonfire. I could tell in a minute that it was a paper-box factory and that it would burn right down to the foundations. We stretched in through the door of a six-story tenement adjoining, our job being to save as much of that building as we could.

The roof of the factory had blown off, and as ugly a pillar of flames and sparks as I ever saw was shooting a good one hundred and fifty feet in the air and bending over under a good breeze from the northeast. The buildings in the block were jammed together and laid out so that the owners would grab every cent's worth of rent space. Only a little square patch was left open in the center of the block, and I knew we could do no fire-fighting from that kind of a death trap. We would be lucky if we saved half of the block.

I heard somebody say that all the girls in the factory were safe at home, as the blaze started just after the whistle blew. I thanked God for that as we pushed through the narrow hall of the tenement, dragging with us the first stretch of hose.

We reached the top floor and found that the flames from the factory had chewed a hole in the tin cornice of the tenement and were biting away at the rafters under the roof. The wood-lined dumb waiters were giving all the oxygen and tinder the fire above us needed, and the plaster ceilings on the top floor were cracking and falling in sheets on our helmets. The walls were too hot to touch with the bare hand, for the fire in the rafters had already begun to mushroom downward. I put two men with axes and two with picks to rip a hole big enough for us to get a start with the water. A second and third bright nozzle came up to us through the gloom of the stairway and in a minute I had them all going in good shape.

IT WAS only a question of a few minutes when we would have to retreat to the fifth floor and attack the fire from there, for I could get a flash of flame every now and then from beneath the wainscoting, and smoke was curling from under the carpet of the room from which I was directing my company.

In the tenement districts there is always danger of some sick old man or woman being left behind in the first panic that comes with a fire. A beehive hasn't got anything on a Mulberry Bend tenement. I've seen old people sleeping in bathtubs, and babies in soap boxes on the fire escapes.

Duffy and Johnny Graham were near me, holding a nozzle between them. I had two men relieve them and ordered them to go with me in a search of all the rooms on the floor.

It was pretty hot by this time, and the last one of us had turned his helmet. The smoke was so thick that we had to feel with our hands as we groped from room to room in the four little cubbyhole flats on the floor. We found nobody, and worked our way to a rear window for a breath of air. The window we reached overlooked the little space in the center of the block. The rear wall of the factory had fallen and all the contents of the building had spewed into the court, setting fire to the abutting tenements. The court was a patch taken right out of the middle of hell, and we breathed fire instead of air as we looked out of the window.

"Flooy!" I whispered to myself. "This is sure a nasty one."

Suddenly I heard Johnny give a cry at my elbow.

"Holy Virgin!" he yelled as I turned to see what was the matter. One of his long arms was outstretching and he was pointing to a window across the pit of fire. A young woman was standing on

the outside of the window sill, holding to the sash with one hand and clinging to a baby that was kicking and clawing on her breast.

"They'll look out for her on the other street," I shouted to him and Duffy above the roar and crackling of the fire in the court and in the rafters above us.

"Like hell they will!" he shouted back. "That's my flat over there, and that's my Annie and my baby!"

He pushed me aside and leaned out of the window, looking up. I knew he was measuring the distance to the cornice of the tenement we were in. Then he pulled back in the room and banged down the sashes. The frames creaked as he crawled over them and finally worked himself to a standing position. He balanced himself and then leaped outward and upward for the cornice, catching it. The next minute he disappeared over the edge of the roof, leaving me wondering whether he had burned off his hands on the hot tin.

The roofs of the tenements on three sides of the block were level and I knew his plan was to make his way to the roof of his own flat house and above the top-story window where his wife and baby were caught. I looked and saw smoke pouring out of the scuttle and knew that the way to the roof was cut off for Annie Graham and her kid.

"The son of a salamander, I hope he finds a rope on the way!" I shouted to Duffy, when I'm brushed by the second time and my red-headed engine driver wriggles up that window like a boa constrictor, balances himself, and leaps upward and outward. I thought my heart had stopped, but he made the cornice and was out of sight.

My business was with my company, so I beat it back to the front and ordered the retreat to the fifth floor.

IV

WE GOT three more stretches of hose and a full crew of axmen on the fifth floor, and I knew that the fourth alarm had been sent in. With the reinforcement I knew that we would check our fire, and I hurried to the back to look for my two men who had gone to the roof.

I got to a window just in time to see Graham reach the roof above his wife and baby. He was running about like a lost dog trying to get the scent of his owner, and I knew that he was hunting for a rope; but it wasn't wash day in the Bend and poor folks don't leave their clotheslines out to tempt other people. He gave up the rope hunt and went to the cornice and leaned so far over toward his wife and

baby that I thought his balance would be lost any second and he would drop to his death. He tried to reach them, but he couldn't do it by three feet or more. She was still holding to the sash with the baby. Johnny wriggled back to the roof just as Duffy came running up to him. I saw the two begin to talk, both jawing at once, and Duffy looked desperate.

"Suffering Tammany!" I thought. "If they try to settle that old row now, it will cost four lives."

But there wasn't any fight. My driver seemed to win the argument on its merits and dropped on his belly to the roof. He flattened out and wriggled to the cornice and over it. His shoulders went over the edge, then the whole trunk of his body, and finally his knees came heaving over and I saw Johnny's handsome face at his heels. He was holding his enemy by the heels over the brink of a red-hot entrance to eternity. He had spread himself out flat on the roof and the two of them had gone this far like a broken-backed snake.

"**JOHNNY GRAHAM** is a strong man," I said to myself uneasily. "I see he's got his elbows braced right against the sheet metal and he can hold the weight that way—but can he pull *them* up?"

By this time Duffy's face was close against that of Johnny's wife. She was crying, but if he was saying anything to her I don't know. Anyhow, she got her nerve back in a few seconds and give Duffy the baby. He caught it by its two fat wrists and I could hear it bawl as it swung out from the window.

"Now," I says to myself, "can Johnny Graham yank up my Mick and the kid? I believe he is going to do it, but it will be different when the woman gets on the far end of the line."

With a mighty tug Johnny got one of Duffy's feet to a shoulder and Duffy made fast with a toe-hold. Then Johnny got the other foot up and they were braced good and fast to the sheet-metal work. Then, instead of trying to crawl back and drag up Duffy and the kid, Johnny begins to roll on his belly and Duffy begins to swing like a pendulum. They ain't many men with the nerve and the strength to get away with the human pendulum, but it has been done before.

The arc widened as Duffy and the baby swung from side to side, until both men gave a shout and Duffy tossed the kid safely over his shoulder to the roof and caught hold himself. He skinned over.

Between smoke, clouds, and sheets of cinders I could get glimpses of Annie Graham on the window sill. The poor thing didn't have any too much time, for the fire was coming out of the window below and reaching up for a grip on her skirts.

On the roof Graham and Duffy didn't take much time to rest. I saw Graham examine his baby and then tuck it close to a chimney. He stretched his arms and Duffy did a little clog to get the kinks out of his knees. They talked for a moment and Duffy seemed to be bossing the job. Then the two of them unbuckled their waist straps and I saw as fine a piece of life-saving strategy as ever was pulled off by two smoke-eaters in New York. They both squatted on the roof, and with the belts and buckles Johnny made fast his wrists to the ankles of Duffy, his enemy. Tied together, they wriggled to the cornice, and over went my driver.

In a minute two links of real man was stretched from the roof to the one girl the two of them loved.

My lieutenant came and reported that the men had the fire driven back, and I told him to send what men he could spare to report to the battalion chief.

I turned again to the window, and the heat from below was so fierce that I wondered that my driver, hanging head down, could breathe. I saw his face come close to the face of Johnny's wife again and her arms outstretched to his shoulders. They stayed that way for a few seconds that seemed hours. And—they were kissing!

Then I noticed that there wasn't so much red hair on my driver's head and I knew that the heat from below was singeing it. How he stood it no human being could tell. He caught hold of Johnny's wife's wrists and she took hold of his. My big Mick lifted her up by the strength of his biceps and the shoulder muscles until she was clear of the sill, lifted her until her face was against his again, and then lowered her and the pendulum began to swing once more.

This time instead of a baby at the end of the pendulum there was a good one hundred and twenty-five pounds of girl. I held my breath. The whole strain was on Johnny's backbone, his elbows and wrists, distributed over the angle made by the elbow brace on the sheet metal.

Annie Graham's skirts flapped as she swung farther and farther on each side, the arc widening. Now it would be up to Duffy when he would try to heave her over the edge of the roof. If anything broke the three of them would



The arc widened as Duffy and the baby swung from side to side

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Recipes

OATMEAL COOKIES—One and one-half cupfuls of granulated sugar, one large cupful of shortening, one cupful of uncooked rolled oats, one cupful of dried currants, one cupful of sour milk, one level teaspoonful of soda, four cupfuls of flour, two eggs; flavor with vanilla. Mix dry ingredients, except soda, together. Work in shortening, beat eggs and put them in the milk, to which add the soda. Then mix with the dry ingredients. Drop in greased pan and bake.

To make the icing mix powdered sugar with milk until it makes a stiff paste, flavor with vanilla, and put on cookies. If chocolate icing is desired, add cocoa. K. W. E., Wyoming.

SALMON CROQUETTES—One pound or one can of salmon, one teaspoonful of salt, one tablespoonful of chopped parsley, juice of half a lemon, one cupful of cream, one tablespoonful of butter, three tablespoonfuls of flour, a dash of cayenne pepper. Chop salmon fine, add salt, parsley, lemon, and pepper. Mix thoroughly, put cream on to boil, rub flour and butter together, stir all into the boiling cream, cook two minutes, and turn out on a dish to cool. When cool, form into croquettes, roll in beaten egg, then in bread crumbs and fry in boiling fat. Serve on napkin, garnished with parsley. M. L., Nebraska.

SPICED RHUBARB—To two and one-half pounds of rhubarb, washed and cut in inch pieces, add one cupful of vinegar, two pounds of sugar, and a tablespoonful of mixed cinnamon and cloves. Put in a preserving kettle, and boil steadily for half an hour, then put in jelly glasses, covering with paraffin. S. E. H., Indiana.

CREAM OF TOMATO SOUP—One quart of tomatoes to which has been added two cupfuls of cold water. Bring to a boil. Put through sieve so as to remove all seeds and core. Salt and pepper to taste. In a dish make a thickening of four tablespoonfuls of flour and a little cold water. Add one cupful of sweet milk to the thickening. When the tomatoes are again brought to a boil add the thickening and butter the size of a walnut. Serve. E. L. K., New York.

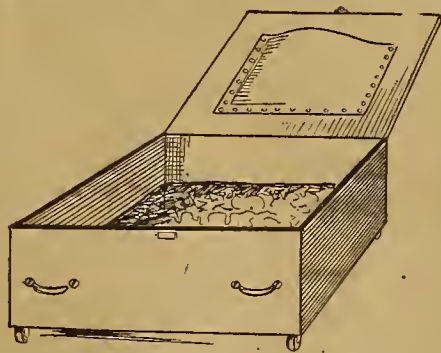
FILLING FOR CREAM PIES—Yolks of three eggs, one large tablespoonful of cornstarch, three tablespoonfuls of sugar. Mix. Then add just a little cream and gradually pour in a pint of milk. Pour into a double boiler, and let boil until thick, stirring continually. Remove from stove, flavor with one teaspoonful of vanilla, and let cool. Hav-

ing previously baked the shell in a deep pie pan, pour the filling in. Beat the three whites stiff, adding three-fourths cupful of sugar, and spread over the pies. Place in the oven for just a few minutes, until brown. This quantity makes enough for two pies. R. H., Colorado.

Household Hints

A SHEET OF ASBESTOS paper cut in pieces a foot square should be in every kitchen. If the cake is baking too fast on the top, cover it with a sheet of the paper; if too fast on the bottom, set a sheet under it. In making gravy, set a sheet of the paper under the frying pan if the flour is sticking to the bottom. In fact, the use of the asbestos paper makes a double boiler a luxury but not a necessity. LALIA M., Pennsylvania.

CHEST FOR BEDDING—Those having small bedrooms without closets in which to store extra necessary bedding may find this chest a help. Make a neat box, three inches larger each way than your comforts measure when quartered, and deep enough to hold as many as you think necessary. Make a lid which fits neatly over the top, and hinge it on.



Put casters under the four corners, and varnish or finish in any way preferred. Attach drawer pulls on the front, such as are used on dressers, and a fastener for the cover. Tack a neat cardboard pocket on the inside of the cover, using brass-headed tacks. In this pocket may be placed any surplus bedroom linen desired. Roll the chest under the bed and your bedding will be well cared for and handy when needed. Mrs. C. S., Washington.

TO FLOUR RAISINS evenly and easily, clean, dry, and place in the flour sieve. Pour a cupful of flour over them and shake out the flour. Mrs. F. S., Iowa.

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Morning, noon, or night—for a thirst-quencher, or just for a delicious healthful beverage—you will find a new pleasure in every refreshing glass.

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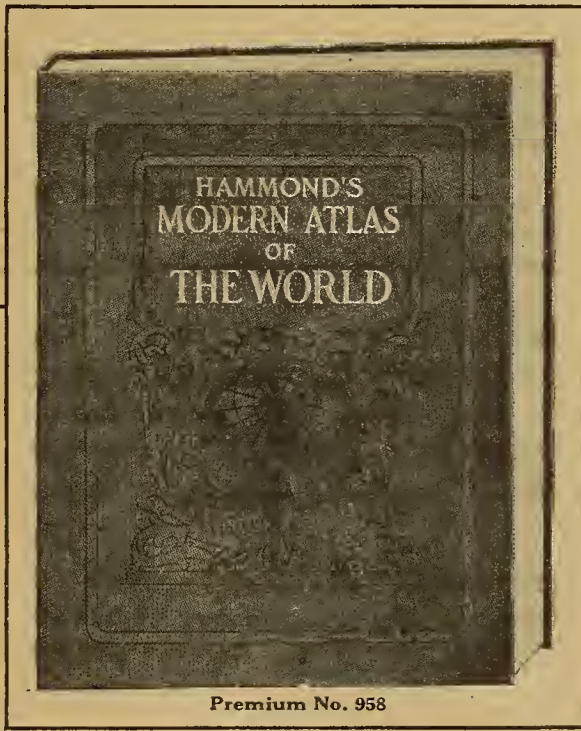
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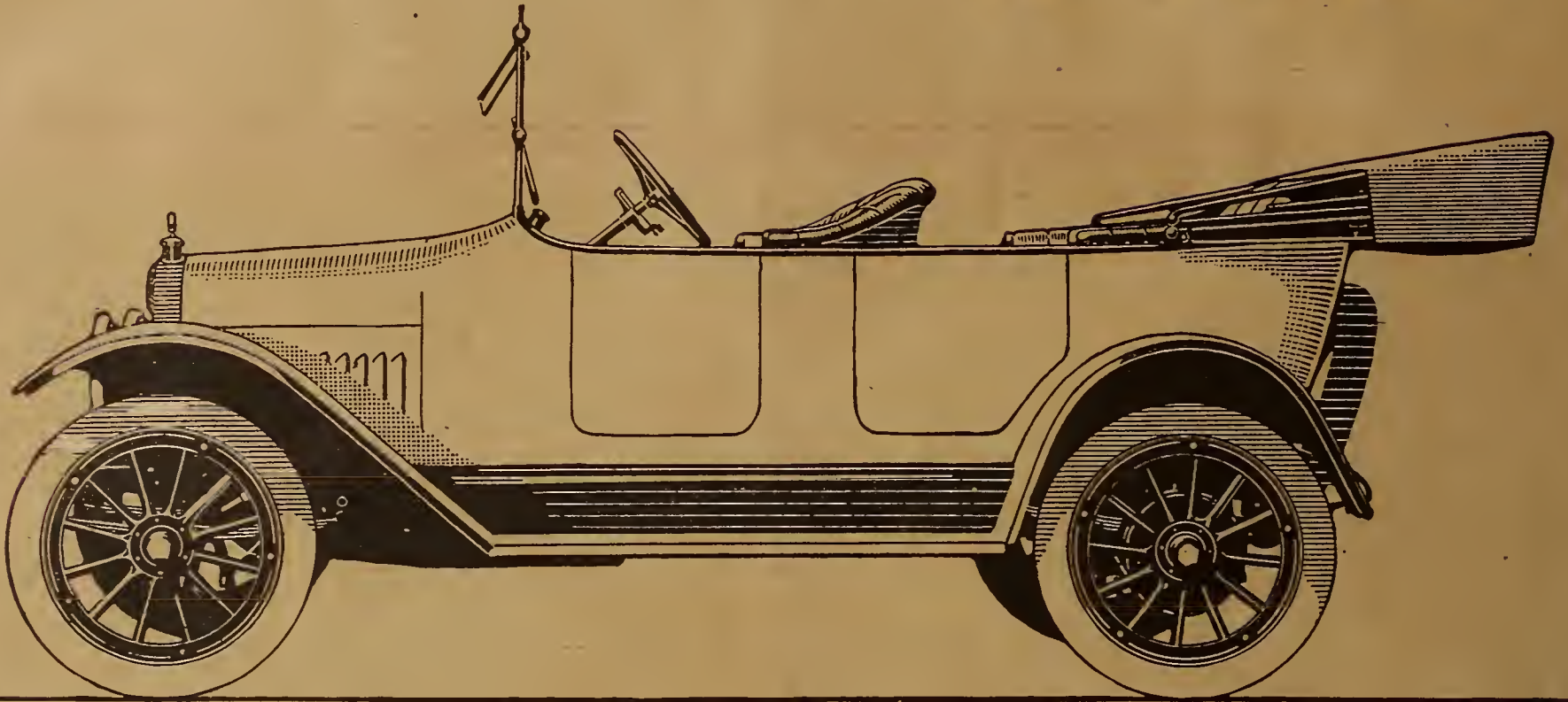
Simply clip the coupon to the right, fill in your name and address, enclose with \$1.00 cash, check or money order and we will send you a copy of the atlas all charges prepaid and also send FARM AND FIRESIDE for one year (old subscriptions extended). This offer positively expires in 30 days. Address

Farm and Fireside, Springfield, O.

USE THIS FORM TO SEND YOUR ORDER
 Farm and Fireside, Springfield, Ohio
 (Send one copy of the New Modern Atlas and also extend for one year.)
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 P. O. _____
 R. F. D. _____
 or Street _____
 State _____
 F. & F. 7-16

Maxwell \$595

NEW PRICE



INCREASED PRODUCTION AND STANDARDIZED MANUFACTURING PERMIT REMARKABLY LOW PRICE

THE prices of Maxwell Cars are again reduced—\$595 for the touring car and \$580 for the roadster—effective July 1, 1916.

Only the price is changed— not the car.

Greatly increased production reduces our manufacturing cost per car.

Standardized manufacturing—only one Maxwell chassis—makes possible further production economy.

By reducing the price we also reduce the selling expense.

Thus the Maxwell owner gets the most *actual intrinsic value* for his expenditure.

Bear in mind that the Maxwell is the World's Champion Endurance Car. Its genuine through-and-through merit has been established beyond question or doubt.

The Maxwell has lowered many records for gasoline and oil consumption. It is everywhere recognized as one of the most economical cars to maintain.

These facts, considered along with the remarkably low price now quoted, make the *Maxwell the one big automobile value of all time.*

This announcement will be read by hundreds of automobile dealers as well as prospective retail buyers. To those dealers who wish to know if there is any open territory, we will say that Maxwell sales contracts for 1916-17 are being signed now by our traveling salesmen. There will be some changes—particularly in the allotment of territory. Therefore, interested dealers, wherever located, should write us now.

WHAT THE MAXWELL PRICE INCLUDES

Long-stroke, high speed, four-cylinder motor; 20 to 25 miles to the gallon of gasoline (average).

Irreversible steering gear; automatic motor lubrication by splash and pump; 500 to 1,000 miles to gallon of oil.

Thermo-syphon cooling.

A running-in-oil clutch, so smooth as to make the driving of a novice as free from gear-clashing as that of a seasoned driver.

Tall, narrow, racing-type radiator, Maxwell-made. Maxwell-made axles—I-beam front and semi-floating rear; heat-treated alloyed steel.

Gasoline tank in cowl; short, accessible gas line to carburetor.

Maxwell-made stream-line body, well finished in every detail. Deep, comfortable upholstery.

30 x 3½ tires all around, non-skid on rear; average life from 8,000 to 10,000 miles. Demountable rims.

Tire carrier at rear, with extra rim.

Substantial, Maxwell-made crowned fenders and linoleum-covered running boards.

Electric starter, electric lights, electric horn.

High-Tension Magneto, an independent source of ignition.

One-Man top with quick-adjustable, storm proof curtains.

Rain-vision, adjustable, ventilating windshield.

High-grade speedometer.

The Maxwell Touring Car is a full five-passenger car.

Every Maxwell model seats comfortably the number of passengers which it is rated to carry.

Compare these Maxwell features with those of cars selling at higher prices.

SEND FOR NEW CATALOG—This new book is different from the ordinary automobile catalog. It not only illustrates and describes Maxwell Cars but it also tells an interesting story about the Maxwell Institution. Just write (plainly) your name and address and send this clipping to Dept. G, Maxwell Motor Company, Detroit, Mich.

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FARM *and* FIRESIDE

U. S. Department of Agriculture

The National Farm Paper - Twice a Month

ESTABLISHED 1877

5 cents a copy

Saturday, August 5, 1916

Eastern Edition



PHOTOGRAPH BY CLARENCE A. PURCHASE

Peaches!

FARM and FIRESIDE

Published Twice a Month by THE CROWELL PUBLISHING COMPANY, Springfield, Ohio

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Vol. 39

Springfield, Ohio, Saturday, August 5, 1916

No. 22

Developing the Selling End

When You Grow Two Blades and Get What They Are Worth

By B. F. W. THORPE



Seven miles to market, unload to grocers, home again 100 minutes after leaving farm

necessary transportation and distribution expense is reduced to its lowest terms.

My journey brought me in touch with growers of garden truck, potatoes, orchard fruit, poultry, hot-house lambs, veal, pork, and various lesser products. In every case I sought to find the comparative proportion of net profit left to the producer after marketing by the different methods. Experiences of producers were of course found variable, but the net profit in the great majority of cases was strongly in favor of near-by points of marketing. Most of the exceptions were cases where a special trade had been established with individuals, institutions, or firms at a distance where especially high-grade products commanded a nice premium over commercial market prices. Another fact brought out by this study of marketing was that the new and successful plan of selling to near-by consumers is quite different from the practice of selling to local consumers, even a few years ago.

Divide Products in Three Grades

NOW the central idea is to raise the grade to a high quality and separate the fancy stuff from that which is lower in quality. In fact, make two and sometimes three grades in most kinds of small fruits, garden truck, potatoes, eggs, orchard fruits, etc. Along this same line of marketing improvement is the present growing practice of taking systematic steps to find regular customers in towns and cities within easy and quick shipping distances. One of these plans is to take samples of the products that can be supplied at stated intervals regularly, interview prospective customers personally, such as high-class retail grocers, hotels, restaurants, bakeries, sanitariums, asylums, private schools, and wealthy families. The samples carried are made attractive in grading and cleanliness as well as in neatness of the wrapper or container. A strong and comprehensive guarantee is an essential part of making these contract sales.

The other plan of securing private customers is to get a list of names and addresses from prospective customers from towns and cities that can be conveniently supplied by parcel post, express, or freight. Then send small samples of goods that will be attractive in appearance and container as well. The samples should be accompanied with a convincing letter giving just the information the prospective customer will be most interested to learn about. Of these two plans the first described will be most effective in landing customers, providing the farmer or gardener has the knack of making a good impression. But the small attractive sample of high-quality produce find-



Much truck now unloads direct to huckster's wagon, only one middleman profiting

THE vexing question that has disturbed the farmer and the consumer of his products alike for a generation and more is how to lessen the extravagant cost of distribution. It was only when necessity became a spur that some progress became apparent. Now there are movements systematically under way which promise to put the marketing of farm products on a more reasonable and economic basis.

I am well convinced we should give more thought to this selling end of our farming business, whether 10 acres or 200 acres are operated. When all our energy is used in making two blades grow instead of one, and then selling the two blades at cost, how are we getting ahead? We have now come to the place where selling well is more important than piling up production.

During a recent journey through several States, with frequent stops en route, I gave as much spare time as possible to making a study of just what is being done along the lines of better marketing. I found that this matter is now getting the attention among farmers that it never before has received, and the problem is being worked from several different angles with some measure of success.

Easily the first and most important development in marketing is the growing belief in the importance of first taking fullest advantage of all home markets. It is true that there are many farming districts where local consumers can use only a small fraction of the crops produced locally. It is just as true that thousands of towns and cities are now being supplied with produce shipped from distant points, and home-grown products are being shipped to markets hundreds of miles away and sold to distributors by commission houses. This is one of the biggest economic blunders connected with farm business to-day. We may speed up our methods of production as we will, and wear nerves and anatomy to a frazzle, and still the balance is found to be on the wrong side of our ledger until this un-



Produce ready for auction selling under direction of New York State Department of Foods and Markets, New York City. This new aid to marketing bids fair to revolutionize produce-selling

ing its way into the kitchen or office will also have its strong appeal when guaranteed.

But whatever plan is used for getting customers, continued success cannot be expected unless quality, neatness, and promptness of delivery are constantly followed out according to the terms of agreement. Undoubtedly the cause of the poorest success when making use of either of these plans of marketing is failure in being able to furnish the customer produce at the regular intervals according to contract. The temptation is strong to piece out shortages of home-produced material with supplies secured from neighbors. This is sure to lead to lack of uniformity in appearance, and loss of good customers.

The experience of two poultrymen with whom I had conversation in Missouri towns bear on this phase of marketing. One poultryman secured customers to take his fancy grade of eggs from his flock of 175 layers, also broilers and roasters. His contracts were made when his egg production was greatest. When the season of less production arrived, he substituted eggs secured from neighbors, and soon lost many of his best customers. He then increased his flock of pure-bred layers, but it was slow work getting back the confidence of his former customers.

Another egg farmer with 1,000 layers worked out a plan of supplying from 100 to 200 baby chicks of his own pure-bred stock to about a dozen of his neighbors, supplying that number of chicks to each family every spring. In the contract it was agreed that no other breed of chickens should be kept on any farm where the pure-bred chickens were established, and also that no male birds should be kept on their farms. The eggs from these 1,000 or more hens in the neighborhood flocks were bought at a stipulated price and collected three times a week, and were used to help supply his special egg and poultry trade. This plan is proving more satisfactory than carrying a stock of several thousand hens on his own farm.

Another phase of home marketing now developing in [CONTINUED ON PAGE 18]

Marketing by Parcel Post

When You Let Uncle Sam Help You Sell Your Products

By MILLARD SANDERS

FRESH EGGS

Send \$1 and I will ship to you 3 dozen Strictly Fresh Eggs, post-paid. Eggs will reach you the next day after your money is received.

HENRY MYERS

HONEY

White Clover Honey

Twelve pound can for \$1.50; 5 pounds American cheese for \$1.25, postpaid.

HENRY MYERS

This copy can be set in display type or used as want ads

THE factories and houses in the outskirts of Chicago were rapidly disappearing from view. Most of us in the smoking car were reading the morning papers we had bought on the way to the train. The newspapers were filled with articles telling about the remarkable growth and great activity of the nation's industries for the first half of 1916, and the bright prospects for the rest of the year.

They sat in the double seat in front of me. I had met them on the live-stock market the day before. Two of them were past forty-five; the other two were approaching forty. All were prosperous. Stevenson had topped the market the day before with two carloads of fat steers. Ashley and Howell had shared honors in getting the top price on two cars of hogs apiece, two days before. Enns, who is a sheep feeder and made a lot of money feeding lambs last winter, had visited the market just to see what was going on.

"Listen here, men," requested Enns, "while I read you something interesting." The other three stockmen looked up from their papers while Enns read this excerpt: "More than one hundred million dollars' worth of merchandise was sold by mail by one Chicago firm last year. If they continue the pace for the rest of the year that they have made for the first half of 1916, they will exceed their 1915 sales by several million dollars."

Use Mail-Order Firms' Methods

"THERE is a big lesson for us farmers to learn from the mail-order concerns," commented Enns. "They know where to buy merchandise at a reasonable price, and, what is more important, they know how to sell it. Selling such a large amount of things by mail in 1915 and the first of 1916 wasn't an accident. These people did it by studying the needs of farmers, using order-pulling advertisements in farm papers, by filling orders promptly, and by giving good values.

"While the marketing problems of farmers differ from those of the mail-order houses," continued Enns, "the same business principles that made the mail-order firm a winner apply to our business. We farmers aren't worrying as much about production as we are about selling what we raise. We are not worrying now about marketing our sheep, or hogs, or cattle with the stuff worth around 10 and 11 cents. We are not losing any sleep over the price of corn, or wheat, or alfalfa—except those of us who will have to buy grain and hay to finish out our feeding operations next winter.

"But how about the vegetables, the eggs, the chickens, the butter, the honey, the cheese, the apples, the peaches, the grapes, and other products that are ready for the market right this minute or will be in the next thirty to sixty days?"

"All of us here have been farming for a long time," concluded Enns, "and we think we are pretty smart, and we are when it comes to handling stock, but we aren't doing a very good job of selling the things that are by-products on our farms. I have tried to convince myself that my live-stock operations were so large that I did not have time to fool with the little things. But my wife talked all of that nonsense out of my head. She says, why depend on sheep or any one feeding operation or crop for a living when we can do other things as well?"

This discussion of selling farm products by mail had attracted a lot of attention. Other farmers and

stockmen in the car as well as the traveling salesmen had dropped their papers and with me were drinking in every word.

"I used to think there wasn't as much in this mail-order selling for us," broke in Stevenson, "as farm papers have tried to make us think. I have changed my mind. What is bothering me, though, is how we are going to go about it. I have yet to read an article that really tells a person how to sell farm products by mail. They tell how to put vegetables in a basket, chickens in a pasteboard box, or eggs in a crate; and they show pictures of four pounds of butter in a carton, fourteen dressed chickens hanging head down, two dozen fresh eggs, or a basket of vegetables. Then they tell you to advertise, and the orders will come flocking in."

Ashley then told his seat-mates that he thought his hog operations were large enough, so that it wouldn't pay him to divide his interests with other products. "Too many irons in the fire is a bad thing," he said. "But I believe that the person who is raising several different products each on a more or less small scale can make a lot more money by selling the stuff by parcel post. Howell, the other hog man, disagreed with him about depending on one product for a living.

"What I want to know," interrupted Stevenson, "is how to write the advertisements to get the orders, where to place the advertisements to bring in the orders, what line of talk to use in the letters I write to prospective customers, how to get reorders, and something about the rules, regulations, and limitations of parcel post.

"One of my neighbors put an advertisement in the want ad section of one of the Chicago daily papers, telling about a bunch of milk-fed chickens he wanted to sell. He got a bunch of orders. Many of the chickens he mailed arrived at their destination in bad shape. The purchasers returned them. He immediately wrote to find out what the trouble was. The chickens had arrived in Chicago too late to be delivered the same day. As that day was Saturday they had not been delivered until Monday. He is going to try again when the weather gets cooler."

At this point I entered the conversation. I told them about a man in northeast Kansas who sells all of the crop from a 100-acre apple orchard by parcel post. He makes cider of all of the apples he can't sell for \$1 a bushel. The freshly pressed apple juice is heated to 160 degrees Fahrenheit, and put into clean, scalded barrels. The barrels are sealed to prevent ferment bacteria finding their way into the cider. When this orchardist desires to sell the cider it is drawn off from the barrels, heated to 160 degrees for half an hour, and bottled in quart bottles. Most of the cider is sold in pasteboard cartons which hold six-quart bottles. Each bottle is wrapped in paper. This prevents them from striking against one another and breaking.

Even though this Kansas apple grower has 100 acres of bearing apple orchard, he doesn't worry

about a market. He uses display advertising in his county papers and in those of adjoining counties. This advertising campaign is backed up with personal letters sent to a selected list of names. The advertisements and letters tell about the good qualities of the cider: how refreshing it is, how it is made, how healthful it is to drink, the care used in getting it pure and wholesome to the consumer, and the price.

Then a Michigan farmer, who was on his way to New York State to buy some pure-bred dairy cattle, told how one of his friends marketed his celery crop by mail. This celery grower uses want ads in the Chicago papers. Here is a sample of his ads: "Kalamazoo Celery—One dozen large, tender stalks of Golden Heart Self-bleached celery, delivered by Uncle Sam for 65 cents. Sam Stewart." This ad costs several cents a word, depending on the number of times it is run.

"Let us analyze this little ad," said Stevenson, "to see if we can satisfy our own minds why it pulled the orders."

Why Advertisements Pull Orders

SO ALL of us tore the wording of the little ad apart to see what it contained that obtained the orders. First, there was something attractive for city people, we thought, in the name of Kalamazoo Celery. Of course every farmer couldn't use Kalamazoo, but he could use a name just as attractive. Second, the ad told that there were a dozen stalks in the bundle, and that the stalks were large, tender, and self-bleached. We all decided the attractive name and mouth-watering description would create a desire for the celery. Third, the sale was made when the prospective customer was told that it would be delivered by Uncle Sam, and that the price was only 65 cents a bunch.

Then I told Stevenson and the other men that the editors of FARM AND FIRESIDE at Springfield, Ohio, would gladly answer any questions about selling farm products by parcel post, how to write the ads,

what to put in the letters, where to buy pasteboard boxes and containers to mail things in, and the rules and regulations, etc., of parcel post. They will do the same for every subscriber of FARM AND FIRESIDE.

A traveling salesman then told us about an Indiana farmer who is selling butter and eggs by mail. He said that it sometimes cost his friend 50 cents to get a customer, but that reorders soon cut down the expense of the first advertising. According to the traveling man this Indiana business farmer could afford to pay as much as \$1 apiece to get customers. In other words, he could afford to pay \$6 for an ad that only brought six orders if he could keep the trade of those six persons.

Then an Illinois farmer told this parcel-post experience: "A neighbor of mine has been selling successfully

chickens and sausages by mail for nearly a year. He believes that any person can sell products by mail successfully if he lives within 150 miles of a good-sized town. At first he used a selected list of names without success. Then he tried want ads in the city papers. He got a number of replies. His first orders cost him 40 cents apiece. He felt he was paying 40 cents apiece for permanent customers. He told in his ads how his chickens were milk-fed in wire-bottomed coops so that the chickens didn't eat or stand in filth; that the chickens weren't killed until the order was received; that they would be wrapped in waxed paper to retain all the moisture and flavor of the bird;

and that the customer would receive them the next day after the order was received. The price quoted was very reasonable. Then followed a description of the sausage made from milk-fed little pigs in clean pens, slaughtered in sanitary houses, free from dust, etc."

When I returned home I was talking with one of my neighbors about the possibilities of selling farm products by mail. He told of a friend of his who has been selling honey, cheese, and eggs in Wisconsin for some time with a great deal of success. He said it was possible for one to sell stuff the year around and have money coming in every day.

Mr. Myers had a difficult time getting started with his parcel-post business. At first he spent \$27 for circular letters which he mailed to a list of names selected from a city telephone directory. He received \$3 worth of orders. He was very much discouraged. Then he placed a want ad in a city paper. The ad ran a week. It cost him \$6. He received \$20 worth of orders. Mr. Myers says he has to run his ads three times a week at least, to keep his products moving. Because old customers move away or are attracted by some other farmer's products, it is necessary to get new customers all the time.

EW

Kalamazoo Celery

One dozen large, tender stalks of Golden Heart Self-bleached celery, delivered by Uncle Sam for . . . **65c**

SAM STEWART

CHERRIES

Late Marency; fancy; no worms; 16-quart crate delivered by parcel post for . . . **\$1.75**

TOM JONES

Here are two short and specific order-pulling advertisements

BUTTER AND EGGS

Now is the time to buy your eggs direct from the country, as eggs lying around in the stores do not keep fresh during hot weather. My prices are as follows:

3-dozen package . . . 30c a dozen
6-dozen package . . . 28c a dozen
8 to 12 dozen package 26c a dozen
30-dozen package . . 24c a dozen

Fresh creamery butter direct from churn to you, never more than 24 hours old, at 30c a pound with egg orders. All orders filled promptly. Butter and eggs guaranteed to give satisfaction.

RALPH SWALLER

This advertisement can be used very effectively in small daily papers. In large city papers it should be set as a want ad

Trucks and Trailers

Signs of the Times in Rapid Country Hauling

By D. S. BURCH

GOING to town a few days ago I passed a light automobile going the other way. It was traveling about 25 miles an hour, and behind it was a trailer carrying a new mower. "That looks like real business," my companion remarked. "There is a man who values his time. Why, he's been ten miles to town to get that mower, and he'll be home and ready to use it before the dew is off the grass."

Reaching town I mentioned the incident to an ex-blacksmith who has worked at the forge for over twenty years. "Farmers are more interested in hauling than some folks think," he said, "but they want someone else to do the experimenting. They didn't buy automobiles until they watched the city man, to see what kind of luck he had. Now farmers are the biggest buyers of motor cars."

"It's going to be the same way with the motor-truck business," he went on. "The average farmer can't see how it is going to pay him, but let me tell you that he has more use for a truck than he has for an automobile. As it is, he makes a dray out of his car, and it's only a little time till his car looks like a dray."

"The people who are using the automobile trucks and trailers now," he proceeded, "are contractors, painters, plumbers, and carpenters. They load them up with ladders, lumber, cement, and even a whole gang of men. Now, anyone who is posted on motor transportation knows that you can make one five-mile haul for less than you can make five one-mile hauls. Stopping and starting is expensive. So if a truck pays contractors who make short hauls around town, it ought to pay any farmer who lives near good roads and who has considerable hauling to do."

I couldn't see any flaw in his reasoning except perhaps that the class of men he mentioned made a bigger margin of profit than farmers. But he was ready for that point.

"It's the contractor who is still using horses for his hauling," he replied, "that is letting the business slip away from him. The fellow with the truck can underbid him and do the work quicker. The big contractors nearly all have trucks, which is proof that it pays now, and the only thing that is holding the little fellow back is lack of capital to get one."

I went around the corner to a wagon-maker to see what he had to say about it. I hadn't been in the shop for a long time. It still had the old name of "Wagon Works," but I didn't see any wagons around. The real shock came when I went inside. He was making trailers, and was enthusiastic about them.

"Why, right out here in the country a little way," he said in answer to my question about his new lines, "there's a produce man who has a route through the country. It's about 100 miles around the route, and he makes it winter and summer, gathering up eggs, chickens, and all sorts of produce. He has a motor truck with one of our trailers hitched on behind. He carries two tons on the truck and a ton and a half on the trailer."

Trucks Simplify Hauling Problems

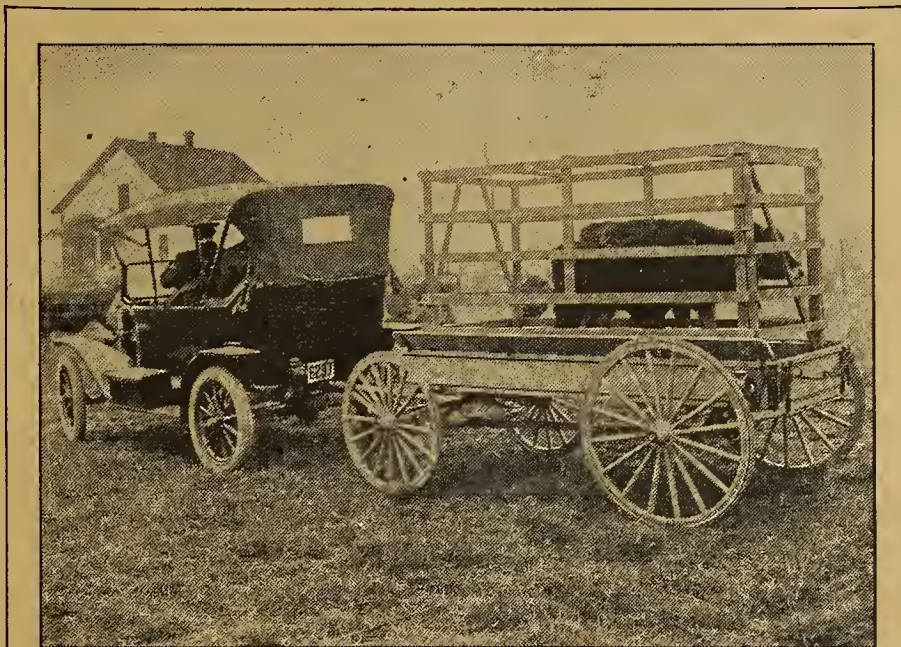
THESE men and others who are well informed on hauling problems believe that farms are just beginning to be motorized. One of the most bitter fights against motor vehicles has been made by firemen. I have known firemen to quit the force because their horses were taken away and they were given motor engines. They said that snow would stall the trucks, and predicted break-downs on the way to the fires. But time has shown them to be faster, more re-

liable, and cheaper to use than fire horses.

Trailers are more recent, of course, than trucks. Some automobile men have discouraged their use on the grounds that motor cars are designed to carry rather than to pull. But when it was found that a light automobile could easily haul a trailer loaded with five 22-foot telephone posts, that a drawbar pull of 50 pounds would easily haul half a ton on average roads, and that this figure could be reduced by using roller bearings, the manufacturers of trailers began in earnest.

The two-wheel trailer appeared first, but was quickly followed by the four-wheeled type. "We used to see about as many two-wheeled trailers as four-wheelers," one manufacturer explained, "but now the preference for farm use is about twenty-five to one in favor of the four-wheelers which we recommend. It will cling to the road better and travel safely at high speeds. We have tested our trailers under full load at 42 miles an hour on good roads."

This man was unusually optimistic, but these are his reasons: The trailers are built low down and on automobile lines. They have hub caps and special axles requiring grease only every thousand miles, and have a double-spring buffer in the drawbar to



A trailer enables you to use the automobile for light hauling and yet keep it in good condition for pleasure

prevent the jars present in starting and stopping.

The truck and trailer are logical outgrowths from the automobile. The man who is accustomed to motoring to town and back in an hour will not be satisfied with spending half a day on the same trip clucking at a team of horses. One inexpensive half-ton truck is designed with standard automobile parts. The carburetor, magneto, spark plug, tires, and other parts likely to need replacement or repairs are the same as are used in standard makes of automobiles, and can be secured at any garage.

The cost of motor hauling is a matter on which reliable figures are scarce, but up to distances of 75 miles trucks seem to be cheaper than train service. A ton truck will go from eight to twelve miles on a gallon of gasoline under average conditions.

One substantial truck has power on all four wheels, steers with all the wheels, and also has brakes on all



The market gardener who owns this truck goes to town and back in five hours. It took nine with horses

the wheels. It will travel readily over plowed ground, and through mud and snow up to the axles. Motor trucks cost from about \$750 up to several thousand dollars, and trailers are priced at sixty dollars up to several hundred, the price depending on quality and size.

In general the tendency is toward bigger capacity. A truck designer who has grown up with the business says that it is a common practice for a customer to invest in a small truck and then take it around to a wagon shop and have a bigger body put on. "We have to make allowance for about 35 per cent overload," he explained, "but folks would get better results if they would tell us frankly how much they expect to carry. They think they save money, but overloading is as bad a practice with machinery as it is with horses."

Some trailers can be used with thills as a handy farm cart or pony wagon. An automobile with trailer attached is handled just like any automobile except that more care is required in backing.

The devices for converting an automobile into a ton truck are also good things, especially if you can get a car whose body is about worn out but whose engine is still good. In such cases the total investment may run as low as six or seven hundred dollars.

Thus there are many ways of motorizing the market end of the farm and speeding up the regular work. If this account appears too rosy, it is because I have not been able to find anyone who can find any serious fault with either trucks or trailers for farm use. They look like two of the best friends a farmer can have.

EDITORIAL NOTE: For further information concerning trucks and trailers, address the Machinery Editor, FARM AND FIRESIDE, Springfield, Ohio. Questions will be answered by personal letter.

Finding Buyers

How an Ohio Man Sells Onions

By R. E. ROGERS

THE job of raising and harvesting most farm produce always requires a certain amount of planning and brains. But the job of selling is where most of us fall short, and the peculiar thing about it is that we usually know it. We pay the price the dealer asks for what we buy and take the prices the dealer offers us when we sell.

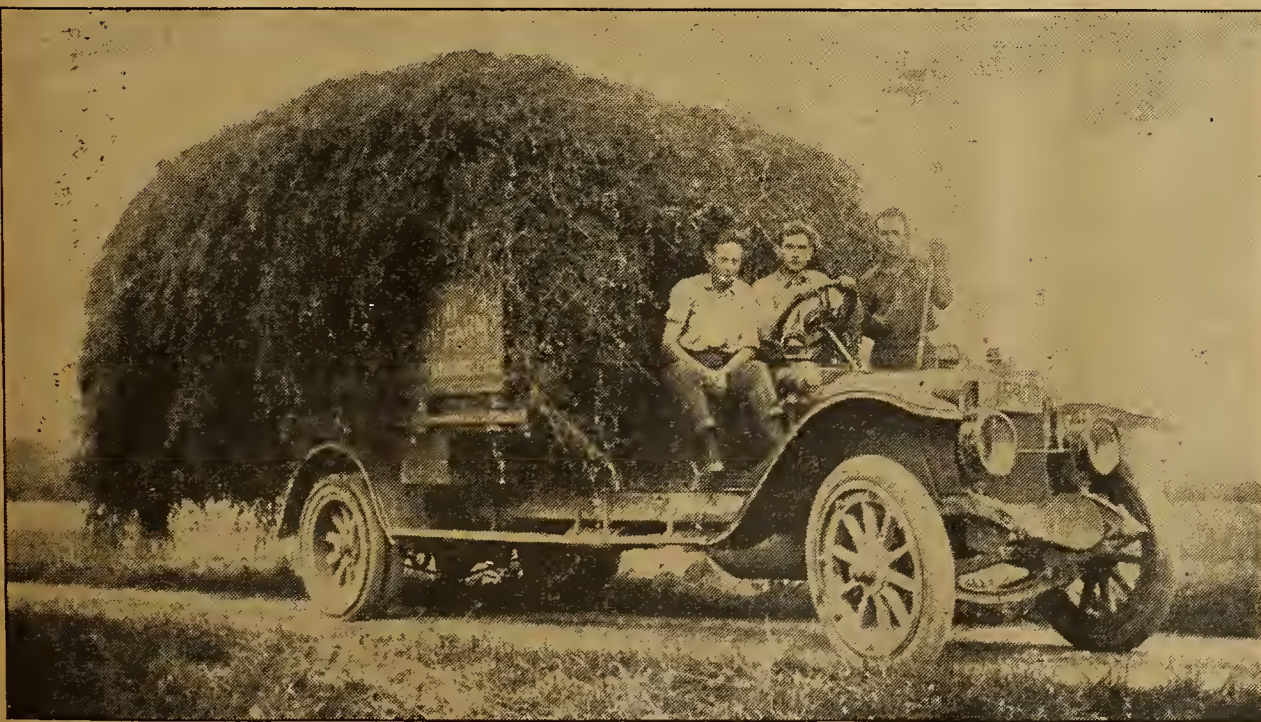
Our particular line of farming runs to vegetables and small fruits. Of the vegetables we sell more onions than any other thing. For a year or so after we started this crop we had to deal with commission men in Toledo, Cleveland, and Pittsburgh when we had a surplus. Since our local market seldom used more than 500 bushels in the year we usually had a surplus. So the plan of discovering a market for this crop and others whereby we could sell direct to the grocer or user of the produce occurred to us.

It so happened at this time that a coal miner from the southern part of Ohio moved in our neighborhood and was able to suggest names of men located in the thickly populated mining districts of Ohio who were absolutely straight in their dealing and who bought large amounts of farm products.

Correspondence was started, and 200 bushels were sold the first trip. Many satisfactory deals were made after this. Even this year this man telegraphed us for a car.

There are several advantages in such a deal. We usually ship the onions sacked. He sells to the trade, and is able to keep these empty sacks for us and return a couple hundred sacks after a few weeks at a freight expense of 25 cents. Since sacking costs us about three cents a bushel, it pays to look after this. Having a store of his own, there is no drayage to pay for at the other end. The money is ready as soon as the produce reaches him. In fact, we could draw on him at our bank with the shipping bill and contract before the goods were delivered to him.

Direct sales are the only outlet for the farmer so far as I can see. There is the same chance to buy directly, but that is another story. Look around a bit before you consign the next bunch of farm stuff to a dealer who will deduct commission, freight, and drayage. Possibly you'll save a good many dollars.



If your neighbor needs a load of hay, why not deliver it by motor truck. Farmers find more uses for trucks than the makers ever thought of



This is the way cane is hauled to the mills. The cartmen earn as high as \$10 a day, but oxen are expensive



The cane is then unloaded, and dumped on a long feeder, which starts it on its journey through the mill

NOTHING about the sugar industry, which was full of surprises, astonished me more than to discover that seven crops of cane are raised on Cuban land without sticking a plow in the soil. This is one of the several reasons why Cuba can produce sugar cheaper than any other country in the world and does the job so well.

The clearing is simple. With ox and machete the Cuban fells the trees and hacks down the underbrush. These he lets lie until dry and then sets them on fire. The stumps and the loose logs that do not burn are left undisturbed.

The land is ready to plant—no plow or harrow or disk ever comes near it. A joint of sugar cane eight or ten inches long is buried in the loose soil every five feet.

And for seven or eight years, without any cultivation whatever, that one planting produces cane. The sprouts from the stumps are cut down the first and second year. After that even a hoe is never needed in the field.

The cane grows so rank that all weeds and grass are smothered out. At cutting time the leaves, which are stripped from the stalk, cover the ground thickly and prevent any growth except the cane, which quickly sprouts from the same roots as before.

Another surprise was that cane does not ripen nor need it be cut within a few days, or even weeks. It is very accommodating. One good crop grows in twelve months. But if the farmer's relatives are visiting him, and he wants to take a few months off to show them the country, and try to induce them to go bathing where there are lots of sharks, it is perfectly all right with the cane.

Can Delay the Harvest a Year

IT JUST keeps on growing, and he can cut it next year. And instead of spoiling by a month's, a six months', or a year's delay, the two years' growth makes almost as much sugar as two crops.

However, it is much better, aside from needed ready money, to cut the cane every year. The cutting begins about the first of November and lasts until May or June. These months are driest in Cuba, and dry weather is essential for hauling. As to Cuban roads when it rains—well, they are at least as bad as ours.

The cane is usually cut and hauled by contract. The cutters this year got 90 cents a ton for cutting, which includes stripping. It is hauled to the mill in two-wheeled carts pulled by three or four yoke of oxen. Four to six tons are hauled at a load.

The cartmen are the aristocrats of the cane field. They get 60 cents a ton for hauling any distance under a mile and a half; more if it is farther. A cartman often makes, at the present scale, \$10 a day.

But oxen are high. A wagon and four yoke cost

Sugar Cane in Cuba

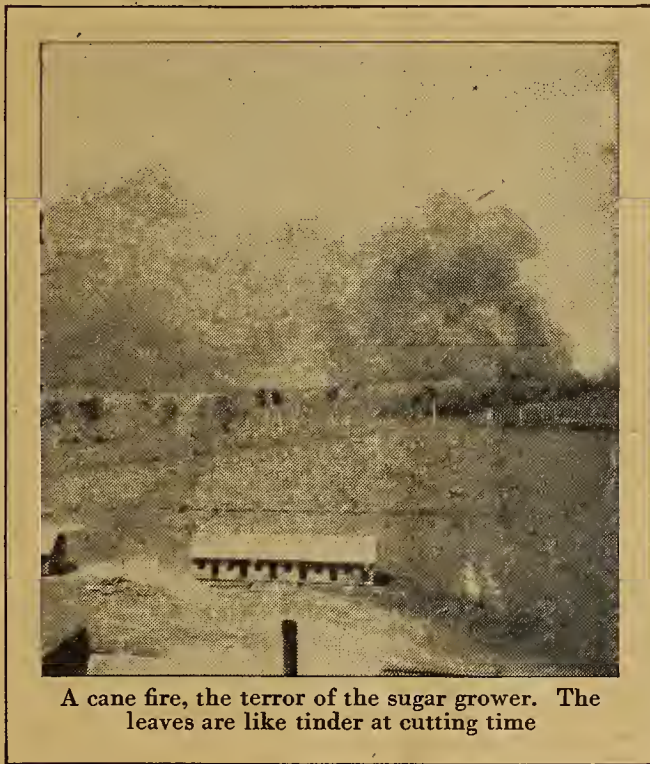
No Trouble to Grow It, But Marketing is Costly

By WILLIAM H. HAMBY

nearly a thousand dollars; so a thrifty Cuban who saves up enough to have a carting outfit is sure of not having too much competition.

The whole load of cane is lifted by one hoist of a pulley and dumped on a long feeder (like an exaggerated straw carrier on an old threshing machine) to the mill. The carts wait their turns to be unloaded.

At the end of the cutting season there is a great



A cane fire, the terror of the sugar grower. The leaves are like tinder at cutting time

fiesta. The cartmen in bringing in their last loads decorate their oxen and carts, and that night there is a dance and food and drink. But I did not see in all Cuba a Cuban drunk. One of the favorite drinks is made of pineapple.

The yield is very heavy, some cane fields cutting as high as 60 tons to the acre. A ton makes approxi-

mately 300 pounds of sugar. At the present prices of sugar the cane grower gets about \$5 a ton for his cane at the mill.

A man could get immensely rich raising cane in Cuba if there were no drawbacks. But there are. One is that you must be within three miles of a mill or the hauling ruins the profits. But the worst, the constant terror of the

cane man, is fire. And he can't get away from it.

The leaves are like tinder at cutting time: a spark from a careless cigarette—there are millions of cigarettes—a match from a discharged workman, a puff from a careless laborer's camp, or a blaze from somebody's clearing, and fire sweeps the cane field like a whirlwind. I saw two hundred thousand dollars' worth of cane go up in smoke in four hours.

The growers are organized to fight fire, and watch constantly. But even then the loss is heavy. However, after a fire all the cane that can be got to the mill in three days is saved. The stalk does not burn, but the heat cooks the syrup and it sours after three days. When there is a fire all the neighbors turn out to help the owner get as much cane to the mill as possible.

But in spite of all drawbacks, at present prices, Cuba is growing immensely rich on sugar. Last year the sugar crop yielded for every man, woman, and child in the island, \$125 in cash. And, of course, this is only one of many crops the island grows.

A Real Farm Club

By MARTHA EDMONDS

THE road leading north from Clarinda, Iowa, has long been known for business purposes, and more particularly social purposes, as "Wall Street." The farmer folk living along this road have very good dirt roads. They have a telephone system of their own, and a free mail delivery every legal business day.

A flourishing men's club, called the Wall Street Industrial Club, meets every week during the winter season at the homes of some twenty members. A royal good time is had with talks, debates, and fun, well mixed together. All the progressive men—old and young—belong.

Not all the good times are due to the men's club. For more than three years the ladies have maintained a home circle called the Jackson Home Circle. Around and around they go from one house to another, holding their meetings every two weeks, ten months of the year. They have programs of health, beautifying homes, literary and gala days. Two or three times during the winter the men's club and the ladies' circle join together and have a social evening.



Here is a field of cane that has never been plowed and yet the cutting you see yielded 60 tons to the acre. This grower is fortunate to be so near the mill. There is little profit in cane plantations more than three miles from a mill, due to the expense of hauling

Good Health Talks

By DR. DAVID E. SPAHR



THE ban has been placed upon the broom by those high in authority in medical and sanitary science. The dear old broom, that has literally worn itself out in its war to the death against dirt and uncleanness for generations, and has been

the tidy housewife's symbol of cleanliness and purity, has been indicted. The charge was "raising a dust" and filling the air with floating particles laden with germs, thus disseminating disease and spreading contagion. Proof complete and positive was presented to those high in medical science. The indictment was sustained; the broom was found guilty, and a sentence of banishment pronounced against the defenseless sweeper. Hereafter its onerous duties are to devolve upon the various vacuum cleaners, which are more sanitary.

Hives or Nettle Rash

J. H. of Idaho has described his case of urticaria, or bold hives, very perfectly. He has taken Epsom salts, has quit drinking coffee and eating meat, and is still no better.

YOU should correct faulty digestion by taking an aloin, strychnia, and belladonna tablet at night, and five drops of dilute hydrochloric acid in a half glass of water after meals.

Itch Cure Wanted

What can we take for itching of the head and body? The whole family is affected. M. R. L., North Dakota.

WASH the body thoroughly with green soap or some strong lye soap. Then apply an ointment of sulphur, 2 ounces, and lard, 4 ounces. Mix thoroughly and apply freely to the parts of the system involved, for three nights in succession.

Then the fourth night take a hot bath and put on clean clothes and burn the old ones, and the cure is usually complete.

Trembling

I am a farmer twenty-one years old, and after doing a day's work my hands tremble so I can hardly write. It also affects my arms. What is it? E. H. R., Kansas.

THE various toxins as lead, tobacco, opium, coffee, tea, cocaine, and arsenic, as well as hysteria and old age, are the etiological factors in tremor. It has been observed in families where it appeared to be hereditary.

Do you use coffee or tobacco to excess? In normal persons of a nervous temperament under excitement or alarm, it should cause no apprehension.

Write me further as to your habits, and perhaps we can unravel the difficulty. You are too young to be so affected.

Potassa-Iodide

Someone advised me to get one ounce of iodide of potassium and dissolve it in a point of water and take a teaspoonful three times daily for bronchial asthma. Is this injurious, and will it do me any harm? Mrs. C. S. P., Idaho.

THAT would be about the minimum dose. It will not do you any harm, and it may possibly do you some good, and you can easily double the dose as soon as your system becomes accustomed to it.

Quinsy

I want to know what will cure and prevent quinsy. J. S., Wisconsin.

IF THE tonsils are diseased, or if there have been repeated attacks of tonsillitis, have the tonsils removed. Then special care should be taken of the throat to prevent colds and to avoid contagions. The treatment varies in every case. Cold applications, cracked ice to swallow, antiseptic gargles, and in some cases antitoxin.

Granulated Eyelids

What shall I do for granulated eyelids? Mrs. S. G., Texas.

AFTER cleansing the eye with a boric-acid solution (ten grains to ounce) rub proto-nucleon powder into the granulating surface daily.

Ira Vail Won \$2000

Against the World's Great Racing Cars with a

Hudson Super-Six

The Only Car That Kept Going

The Hudson Super-Six is not built for a speed car. And we don't build special racing cars.

Our speed tests are made to show the endurance of our patented Super-Six motor. And here is one test which did it.

Met \$10,000 Cars

The Metropolitan Race on the speedway in New York is the great racing event of the year. The world's best racing cars are entered. Their cost will average \$10,000 each.

Ira Vail, of Brooklyn, entered that race with a Hudson Super-Six, which had been run for months. And everybody laughed. The motor was our regular Super-Six. The car, being a used car, cost him \$1,300. For such a car to meet the world's finest racers seemed like David and Goliath.

It Never Stopped

The other cars ran faster, but they had to stop. The terrible speed called for repairs and adjustments. The Super-Six ran the 150 miles without a single stop. It was the only car that did that.

So the Super-Six defeated most of those racing cars. It won third place and \$2,000. It was only five minutes behind the first car. All because this engine excelled all others in reliability.

1,819 Miles in 24 Hours

Another Super-Six ran 1,819 miles in 24 hours. That is as far as from New York to Denver. And one man drove it all the way.

That was a stock chassis, exactly the same as in the cars we sell. The A. A. officials certified to that. No other stock car has ever run more than 1,200 miles in that time.

That was due to endurance. The Super-Six kept an average speed of 75.8 miles per hour, and kept it for 24 hours.

Like 10 Years' Use

That same Super-Six has been run at top speed for 3,800 miles. And not a part or bearing in the motor shows evidence

of wear. That means more strain than ten years' average use.

That is what we are proving—how the Super-Six will last.

This motor is a Hudson invention; controlled by Hudson patents.

By eliminating vibration—the cause of friction—the power is increased 80 per cent. So the Super-Six—a small, light Six—delivers 76 horsepower.

And that same utter smoothness gives this wondrous endurance.

Hudson Now Supreme

The Super-Six motor makes the Hudson car supreme. The man who owns one feels himself the master of the road. He meets no car so powerful, so speedy or so flexible. No stock car ever built has matched it in performance.

He meets no car more beautiful, more luxurious or impressive. He meets no car so durable. He goes anywhere and everywhere with a knowledge that none ride more safely or comfortably. And yet the owner of a Super-Six pays but a modest price.

Here is a car 80 per cent more efficient than Sixes used to be. When you buy a fine car you are bound to select it. So we want you to know the facts.



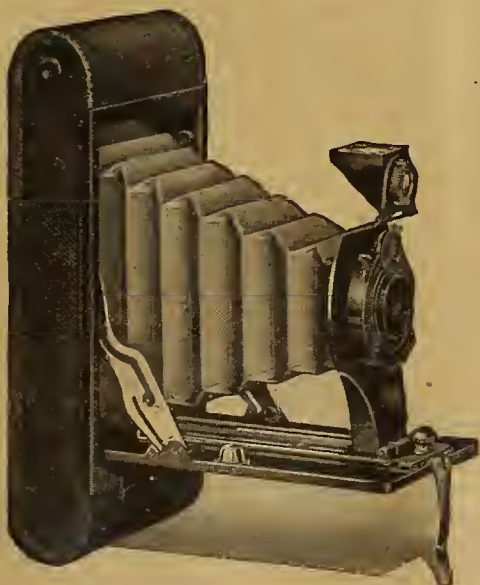
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You Can Earn Your Camera in One Afternoon

We have presented dozens of these cameras to readers of *Farm and Fireside* this year.

ADDRESS

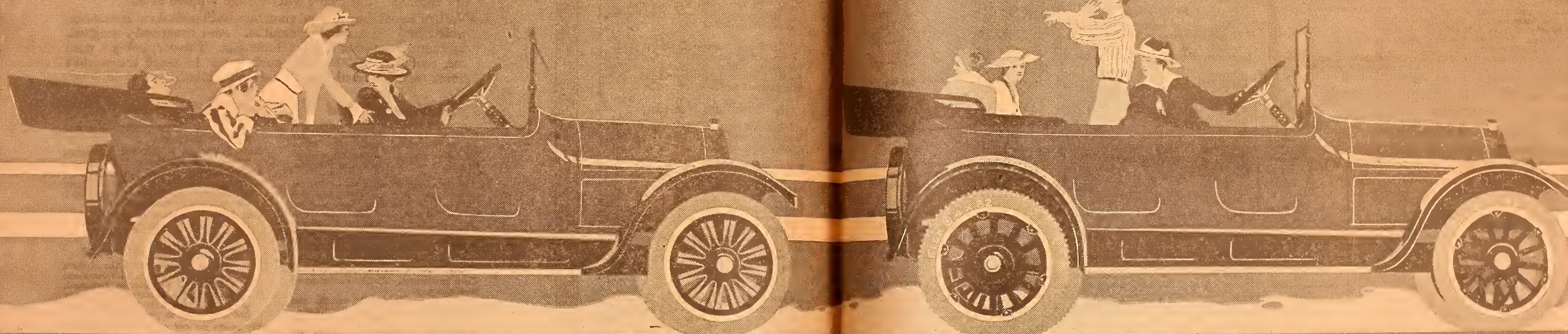
CAMERA CLUB, FARM AND FIRESIDE
Springfield, Ohio

The new
Four
Model 85-4
\$795
f.o.b. Toledo

Overland
TRADE MARK REG.

Announcement

The new
Six
Model 85-6
\$925
f.o.b. Toledo



What 1000 Cars a Day Make Possible

These two latest Overland developments again emphasize the enormous economy of enormous production.

No one has ever before made 1000 a day of cars of this size and class—nor half that many.

1,000 cars a day enable us to use materials of a much higher quality and not only permit but actually enforce an accuracy of workmanship which smaller productions of cars in the same price range *neither permit nor require*.

1,000 cars a day make possible better, larger, much more comfort-

able cars than have ever before been possible at anywhere near the price.

This newest Overland is the largest Four ever offered for so low a price.

In the first place, note the longer wheel base—112 inches.

The enbloc 35 horsepower motor which has made the Overland famous is continued.

True—it is perfected even more and now it is a fitting climax of the experience obtained from a quarter of a million of these Overland motors in daily use.

Shock absorbing cantilever type rear springs are a big improvement.

The gasoline tank placed in the rear is another improvement. The vacuum system insuring a steady even gasoline flow at all times is still another improvement.

The famous and complete Auto-Lite electric starting and lighting equipment is furnished.

All electric switches are on the steering column—right within reach.

The artistically designed streamline body with one piece cowl makes this car one of America's most attractive models.

Yet the price of this, our greatest cylinder value, is less than any of its size ever sold for before.

* * *

No less a pace maker is the newest Overland Six.

Here is the Six of Sixes! A snappy passenger long stroke 40 horsepower model—easy to handle, light, economical, mighty comfortable, bringing all the advantages of higher priced Sixes, yet it comes absolutely complete at a lower price than any other six of its size.

Its smart body design is long and low—having lines of artistic simplicity.

And the motor! This will warm the heart of every six cylinder enthusiast in the country.

You've heard all about fast get-aways—smoothness—crawling and climbing on high. This Six does all that and then some!

The wheel base is 116 inches. It has cantilever springs and even-flow vacuum system with the gas tank in rear.

The tires are four inch. It has the complete Auto-Lite electric starting and lighting equipment with all switches on the steering column.

* * *

Some Six! Yet the price is lower than any other Six of its size.

But go to the nearest Overland dealer and see these new models. Go over them—note all the very real and important improvements.

The Overland dealer is ready to make demonstrations of both models now.

The New Four

Model 85-4

35 horsepower en bloc motor
112-inch wheelbase
32 x 4-inch tires
Cantilever rear springs

Auto-Lite starting and lighting
Vacuum tank fuel feed
Gasoline tank in rear with gauge
Electric control switches on steering column

Catalog on request. Please Dept. 808

The Willys-Overland Company, Toledo, Ohio

"Made in U.S.A."

The New Six

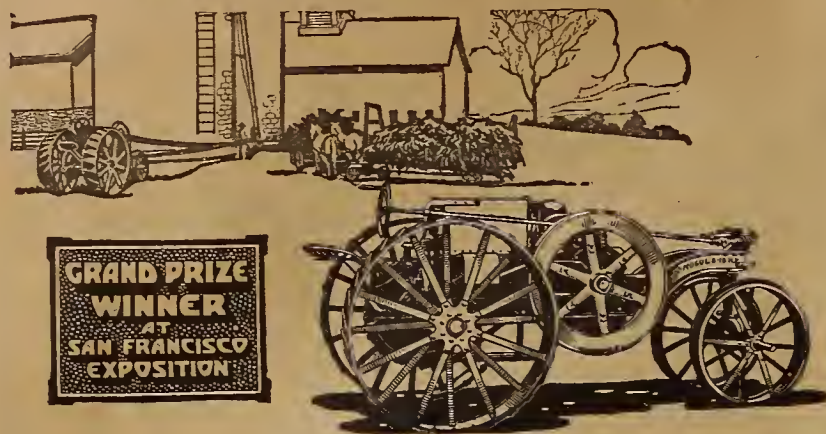
Model 85-6

35-40 horsepower en bloc motor
116-inch wheelbase
32 x 4-inch tires
Cantilever rear springs

Auto-Lite starting and lighting
Vacuum tank fuel feed
Gasoline tank in rear with gauge
Electric control switches on steering column

Mogul 8-16—A Real Kerosene Tractor

Sells for \$725 Cash f. o. b. Chicago



WHEN you buy a tractor, look beyond the price. It is not the price a man pays for a tractor which is of the most importance, but what its power costs. A Mogul 8-16 burning kerosene, in 5,000 hours of work, will save more than its original price over the cost of the same power produced by a gasoline tractor. Remember, the 8-16 is a real kerosene tractor, planned and built originally for using this cheap, plentiful fuel. Price is of minor importance compared with Mogul 8-16 saving.

It is our policy to sell the Mogul 8-16 at the lowest possible price, always maintaining Mogul quality, though nowadays some of the materials are almost unobtainable even at an advance in price of from 50 to 100 per cent over the prices of a few months ago. \$725 cash f. o. b. Chicago is the lowest price at which Mogul 8-16 can be sold.

Orders placed at once will stand the best chance of being filled without delay. See the Mogul 8-16 dealer or write us for the story of kerosene before you buy any tractor.

International Harvester Company of America

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Dairying

Sweet-Clover Bloat

By Carlton Fisher

THE belief that sweet clover will not cause bloat has been held so long and has been supported by such good testimony that it has come to be accepted as a fact. Several authentic cases of sweet-clover bloat have been observed, however, in Nevada and Iowa, and owners of cattle and sheep who have sweet-clover pastures will do well to exercise caution.

The danger is not as great as in pasturing alfalfa, since sweet clover has in it a substance known as coumarin, which offsets bloating, though in view of the latest observations it does not prevent it entirely.

Farm-Bureau Excursion

By M. C. Knight

ONE of the principal duties of a county agent is to visit farms at the invitation of the owner and make such suggestions as will be of benefit.



The members believe that the best way to learn better methods is to go and see for themselves

But in Pennsylvania the county agent does not always go alone.

The picture shows a delegation of farmers on a farm-bureau excursion. They are inspecting a herd of profitable milking Shorthorns belonging to one of the members. The purpose of such excursions is to become more familiar with the best method of farming used in the county, and also to get acquainted with each other. Seventy automobiles were needed on this trip to transport the delegation from farm to farm.

Greens for Dairy Cows

By Carl J. Menge

IN a recent issue of FARM AND FIRESIDE you called for farmers' experiences with live stock. Following is a method of feeding dairy cows that we follow very successfully on our farm here in Washington State.

In order to keep a cow in good condition and expect her to produce the maximum amount of milk and butterfat through the winter, you must provide some form of succulent feed to be given along with the hay and grain ration. If you have a large herd you can build a silo which will provide succulent silage. But if you have just a few cows and no silo, you must plan your crops ahead so as to have the desired green feed when the pasture gets short in late summer, and also all through the winter.

For feed in the late summer I use corn that has been planted in well-

fertilized ground in rows two feet apart and eight inches apart in the rows. Planted in this way the corn is not as coarse as if grown in hills, and it also produces more feed. I commence to feed as soon as the pasture gets short, giving each cow a good armful every night.

After corn I feed cow kale which has been planted in a seed bed in the spring and later transplanted to the field in rows two feet apart and a foot apart in the row. When first commencing to feed I take every other plant so as to give the remaining plants more room to spread out. Kale produces an immense amount of feed if properly cared for and it will stand a considerable amount of frost without harm. Always try to transplant from the seed bed to the field on a cloudy day or before a rain if possible.

When the kale is gone I feed mangels. I plant them with a garden drill in rows sixteen inches apart and eight inches apart in the row. Have the seeder drop three or four seeds in each hill, as a few cents' worth more of seed is better than an uneven stand. Thin them out so the strongest plant remains in each hill, and keep them free from weeds.

Protect Mangels from Frost

I dig them in the fall before freezing sets in, and store in a good dry place so I can get at them through the winter. But be sure they are well protected from the frost, as I have seen many a day's work lost and the mangels gone when a few hours' work would have made their storage place frost-proof. I have no root cutter. I wash them if they are dirty, and put them in a box made for the purpose and take a square-edged spade and chop them up. I give each cow a water-bucketful twice a day.

In the fall, after I have dug my potatoes, I gather the tops and burn them to keep any possible disease from spreading. Then I harrow the ground and seed to either winter rye or oats. This is ready to feed in the spring and makes a good green feed.

Buttermilk Too Rich

AN OHIO dairyman wishes to know where he fails in butter-making. He uses a cream separator, ripens it at a temperature of 75 degrees for two days, and churns at 58 degrees. He gets excellent butter, but a very small quantity, and the buttermilk is rich like cream.

This difficulty may be due to a number of causes, such as feeding too much cottonseed meal, which hardens the fat globules, lack of enough lactic-acid bacteria to ripen the cream sufficiently, or too warm wash water, which softens the fat and allows it to waste.

In view of these points the remedy will suggest itself. One of the simplest practical means of hastening ripening is to use buttermilk from a previous churning. The buttermilk is already rich in the lactic-acid bacteria which ripen cream, and if one part of buttermilk is used to ten of cream, the cream will ripen more thoroughly and quickly. Of course, the buttermilk should be of good quality.

Trucks for Show Stock

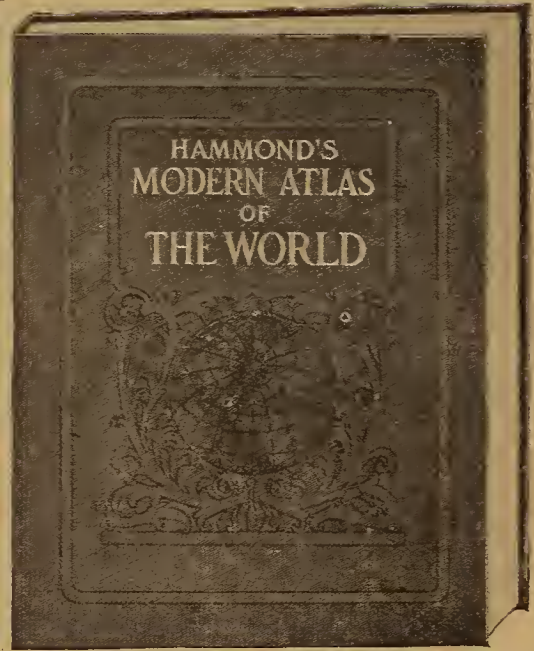
By C. O. Reeder

A BREEDER of fine Guernseys wished to exhibit sixteen of his best animals at a fair sixteen miles away. There was no direct rail route, and he disliked to drive them that far in hot weather.

By using a three-ton motor truck he moved them all safely in one day, thereby keeping them fresh and in good condition for exhibition purposes. Up to distances of seventy-five miles, motor trucks compete favorably with railroads in the economy of handling perishable freight. Long trips are usually made at night, when there is little traffic on the roads.



The fair grounds were too far away to drive the show stock, and the railroad route required changing cars. So this breeder delivered them by motor truck



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OF
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There Never Was a Time When You Needed a World Atlas as You Do Now

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Garden—Orchard

Cement vs. Wooden Hotbeds

By Walter Ramsdell

WHEN I began market gardening I constructed my hotbeds with two-inch planks for the form or frame. After a surprisingly few years this planking had become so decayed that I had to replace it.

This time I treated the planking with creosote before placing, yet in another few years they were likewise rotted out. I then decided to try making the frame of cement.

I began with but one that fall, desiring to see how it worked before making all my hotbeds of it.

That first year I began to discover my cement hotbed frame had other advantages over wood than merely its greater durability. In it I can grow plants right up to the very edge of the bed, whereas with plank walls the edges of the bed always dried out faster, causing the plants there to be backward and not as thrifty as in the rest of the bed. Furthermore, the plants not only develop more uniformly but are more robust than those grown in beds having plank frames. Then, besides retaining the moisture much better, the cement-framed beds also hold a uniform temperature much better than the wood-framed ones.

As to durability and relative cost I cannot see but that mine are just as good as when first made—eight and nine years ago. They cost in both labor and material \$3.10 each, as against an outlay of \$2.15 each for wood frames that lasted but four to six years. Present indications are that these cement frames are good for one's lifetime. The walls are from two to two and one-half inches thick.

In this section truckers generally build or fix up their hotbeds and greenhouses during the slack period in late August, and this is a particularly favorable time to make these cement frames, as the ground is then thoroughly settled and compacted and there is little likelihood of trouble in placing the cement on such a firm foundation of soil.

Speeding Up the Sprayer

By R. E. Rogers

FOR the commercial grower of potatoes and other like crops, where the acreage permits of it, there is nothing that will quite take the place of a three or four row horse-drawn power pump sprayer.

But for the smaller grower who raises only an acre or two of potatoes one year and perhaps less the next, or according to his rotation needs, there are substitutes which serve the purpose very well.

I have figured out a pretty good substitute for a sprayer at a lot less cost, and save the storing of an extra machine.

We have a regular barrel sprayer of the best make that we could find,

equipped with hose and nozzles. By using an old cart frame and attaching a tongue from a discarded bob sled I have a carrier on which to set the barrel and pump. A little figuring showed me how to use one-half inch iron pipe and elbows as the picture shows to carry the spray to each row. Three rows three feet apart are covered at a time by this plan.

Two extra nozzles were bought; the third was the one used for the regular orchard spraying. The additional cost of this outfit was for two nozzles, nine feet of pipe, and three elbows. The other things are around a lot of farms, but are seldom in use.

One man can use this outfit pretty well, but the best work is done when a boy sits on the cart and holds the three nozzles exactly on the rows. Then the driver doesn't have to watch so carefully, and can pump up a better pressure.

Chafers Have Sweet Tooth

IT HAS been found that sweetening arsenate of lead solution with molasses or glucose will encourage the rose bug or rose chafer to eat the poisoned leaves. At least five pounds of arsenate of lead paste and one gallon of cheap molasses to 50 gallons of spray material will be required to kill all of the rose bugs.

These insects will stand more poison than almost any other leaf eater. No delay should be used in spraying the rosebushes after the first bugs are noticed. Where roses are grown under clean culture there is less opportunity for these bugs to multiply.

It is not too late to set a good long row of celery for late fall and winter consumption. If you failed to plant seed, better spend a few dimes for some plants. He who cannot eat celery every day or two next fall and early winter is to be pitted.

It is good economy of time to fight the late crop of weeds in garden and truck plots to prevent the ground from being fouled with weed seed this fall, which must be fought next year. A half day now in this fight can save days of labor next summer.

THE late-planted sweet corn, beans, turnips, beets, carrots, etc., should be thinned to a lighter stand than the earlier-planted. The shorter days and cooler nights ahead will require more chance for the sun to do its work.

Too many suckers allowed to grow from the roots of the raspberry hills will take too much of the strength from the plants that are to make next year's crop. Allow one or two more canes to grow than will be needed, for fear of accident to some of them. Then break off all remaining sprouts that start, close to the ground.

PORTIONS of orchard sections of several Central States where fire blight was so wide-spread and serious last year indicate but very little or no trouble from this fungous disease the present year.

HAVE the tips of the blackcap raspberry canes been bent down to the mellow soil and fastened with a stone or crocheted stick? Better make sure of enough new plants to fill the gaps in the arid plot or to set a new one. Next spring you may have to buy several dollars' worth of plants that now can be had for a half-hour's attention given to the matter.



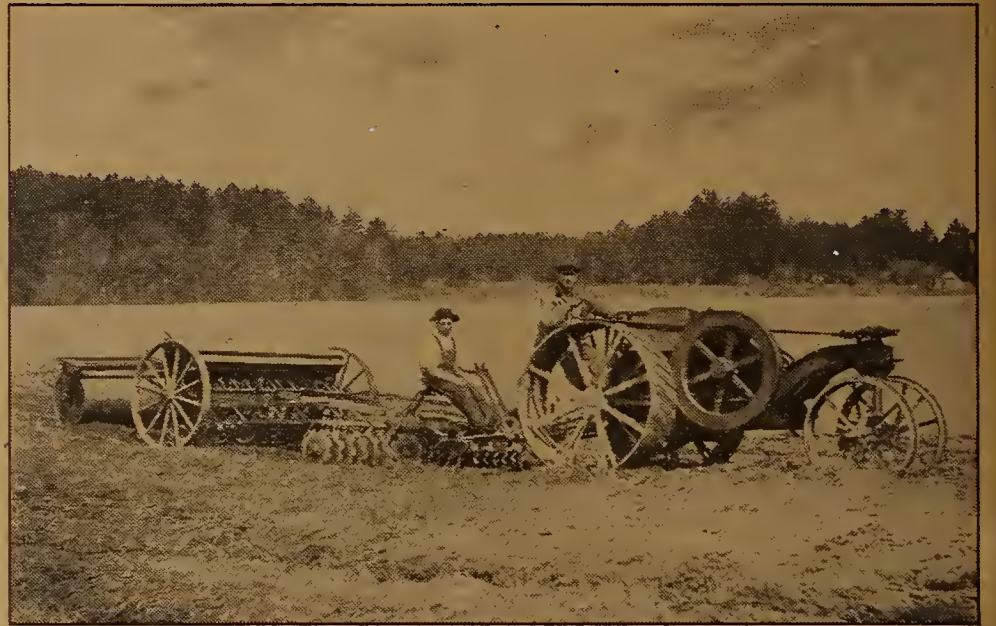
Crops and Soils

Tractor Harrow Outfit

By Raymond Olney

THE experience of those tractor owners who have been successful in their power-farming operations has been gratifying. They have found so many more applications for mechanical power than they had expected before getting their tractors.

A typical example is that of a farmer in Vermilion County, Indiana. Shortly after he began using his tractor he conceived the idea of utilizing its weight as a roller. He accordingly made a concrete roller wide enough to cover the strip between the drive wheels. In preparing the soil for seeding he hitched this concrete roller directly behind the



With a tractor you can haul a variety of implements at one time, thereby taking advantage of favorable soil conditions

tractor, and, following the roller, he hauls, in tandem arrangement, a double-disk harrow, a two-section peg-tooth harrow, and a light steel roller.

This makes a very complete and effective outfit for preparing the seed bed, especially if the ground is inclined to be dry and cloddy. The weight of the tractor and concrete roller pulverizes the soil and packs it. Then the disk harrow, smoothing harrow, and light roller following close behind works this soil into a fine, compact seed bed—in ideal condition to receive the seed.

This man says that with this arrangement of tools he has found no ground so cloddy but what it has been possible to make an excellent seed bed out of it.

The Profitable Crop

By P. C. Henry

"MEN who have been growing oats for grain have been losing money," we are told by experts who have investigated conditions in Chester County, Pennsylvania. I have found the same thing to be true in our section, so I have been cutting oats for hay rather than to harvest them for grain.

Last spring we had frequent showers which made the oats come out fast, so that much of the crop was five feet tall. Hence, the six-acre piece I had in oats turned off much hay, and fine hay it was. While I did not weigh it, I estimated it at something over 12 tons, worth \$20 a ton baled, here in our section. I kept a record of the cost per ton for the oats hay, and found it was about \$1.75 a ton. I baled and sold about half, retaining the balance for my own use. I do not believe it a good plan to sell much hay from the farm. Practically all the roughness should be fed animals on the farm, while cream, butter, or the finished product only should be sold.

I believe that each farmer should keep a cost record of every crop grown, so that he may know which crop, if any, is produced at a loss. Then as soon as he learns which crop is unprofitable, he should cut out the unprofitable one and grow something else in its place. We farmers are in the same position with the manufacturer, who must keep an exact record of cost and production. Otherwise he could not know on which article he is making a profit, or perhaps losing money on another article. It is

useless for us to continue to raise crops that our fathers have raised, if conditions have changed and we now lose money on the raising of such crops. Leaks of all kinds must be looked for on the farm.

Phosphate for Wheat

By Carlton F. Fisher

LAST year a neighbor whose wheat field is in sight of my house used a high-grade acid phosphate at the rate of 200 pounds an acre on a part of his field; the rest of the field was not fertilized. It was a favorable location for wheat, and the soil was good. On the fertilized part of this field the wheat ripened evenly, and from a week to ten days earlier than where no fertilizer was used. There was also as much difference in the filling of the wheat in favor of the fertilized part as there was in the difference in time of ripening.

For the past few years institute lecturers have advocated only an acid-phosphate fertilizer with a systematic crop rotation in which legumes are depended upon to keep up the nitrogen supply in the soil. The people have gradually come to this plan, and, on account of the high price of wheat, they have grown more wheat in the past two or three years.

Acid phosphate was the only ferti-

lizer used for wheat for the last year or two by nearly all of our farmers. In several instances the yield to the acre was 25 bushels or more. Many farmers grew from 14 to 18 bushels an acre last year. The experience of wheat growers generally in this part of the State is that it is useless to attempt to grow wheat without fertilizer.

A neighbor spread a thin coat of stable manure over his wheat some time after sowing, with good results. Manure used in connection with acid phosphate on soils deficient in humus and nitrogen gives excellent results. Wheat grown with an acid phosphate alone should always come in a regular rotation in which legumes are grown as a part of the rotation, and there should be a sod to turn at least once in four years. Otherwise the humus supply will run low and the nitrogen supply will also become exhausted. Lime used on wheat should not be expected to take the place of the fertilizer, but it is found to benefit the wheat and also to be a great help in getting a stand of clover.

Sudan Grass a Sorghum

MOST of the earlier accounts of Sudan grass failed to make clear that this new crop is nothing more or less than a fine-stemmed, non-saccharine sorghum. It has most of the characteristics of the ordinary sorghum, and its requirements as regards soil and climate are similar except that the Sudan grass differs from sorghums by maturing earlier and having such fine stems that it is readily cured into hay.

Experiments made at the Kentucky State Station in 1915 produced a crop of eight tons per acre of dry hay in two cuttings. This exceptionally high yield was made possible by unusually fertile soil and good culture. The plots were drilled about the middle of May, using 20 to 25 pounds of seed to the acre, seeded with an ordinary grain drill.

The first crop was cut when the Sudan grass was fully headed, and the second crop in time to avoid the first frost.

Where Sudan grass has been grown for two or three years it is the opinion of the growers that it will largely take the place of millet and sorghum for fodder purposes, and also be valuable as a green fodder to cut for supplementing pasture.



A good home-made potato sprayer was made from an old cart, a sled tongue, a barrel, and a spray pump with hose and nozzle

The Children's Own Page

TO ORDER PATTERNS: Enclose ten cents in stamps or coin for each pattern, with the numbers and sizes of the patterns, and send by mail to Pattern Department, FARM AND FIRESIDE, Springfield, Ohio.



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Cap lining, pattern No. 3091

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Recipes

TOMATO CATSUP—One bushel of ripe tomatoes, washed and cut up, stewed and strained. To three and one-half gallons of juice take two red peppers, one cupful of vinegar, seven tablespoonfuls of sugar, three even tablespoonfuls of salt, and two tablespoonfuls of whole allspice. In a piece of white cloth tie two tablespoonfuls of whole cloves and a little stick cinnamon. Put this in the juice, and boil. When the catsup is of the required consistency, bottle and seal.
MRS. E. M. K., Massachusetts.

TOMATO PRESERVES—Use either the small pear-shaped yellow tomatoes or medium-sized red tomatoes. Scald and peel. If red tomatoes are being used, remove as many of the seeds as is possible, but leave the tomatoes whole. It is not necessary to take the seeds from the yellow tomatoes, but also leave them whole. Weigh the tomatoes, and to each pound add one-half pound of sugar. Boil until thick enough. (They will have a "clear" appearance when they are done.) Can in glass jars, screwing the lids down tightly. Some people prefer a little sliced lemon added to the preserves. G. J. T., Tennessee.

SCALLOPED TOMATOES—Butter a baking dish, place in the bottom a layer of sliced tomatoes, sprinkle with salt and pepper; cover this layer with another layer of soft bread crumbs, and repeat alternately until the dish is about three-fourths filled. Put a thick layer of cracker crumbs on the top, season with salt and pepper, and bake in a quick oven. Serve hot. L. E. W., Missouri.

CHILI SAUCE—Thirty-six ripe tomatoes, one tablespoonful of sugar, eight green peppers, one teaspoonful of whole cloves, one teaspoonful of whole allspice, a piece of stick cinnamon, four onions, six teaspoonfuls of salt, one quart of vinegar. Peel tomatoes, take seeds out of peppers, chop fine. Add sugar, salt, and vinegar. Boil in vinegar two hours. Tie spices in cloth and boil in the chili sauce. Can in glass jars. This quantity will make about eight pints.
J. L. F., Kansas.

STUFFED EGGS—Boil the required number of eggs for ten minutes, and place in cold water to cool quickly; then shell

and cut directly in halves, removing the yolks and mashing to a paste. Season highly with salt, paprika, and a pinch of celery salt, and add any bits of cooked vegetables that you may have on hand—beans, peas, beets, or carrots being all excellent, if drained and finely chopped. Moisten with a little cream or melted butter and fill the whites. These are delightful for picnics and lunch.
L. S., Texas.

COCOANUT ICE CREAM—Put one pint of milk into a double boiler with one and one-half cupfuls of sugar. Add the grated rind of half a lemon, the pulp of three bananas, and one heaping cupful of cocoanut. Set away to cool, and when cool add one quart of cream, and freeze.
E. M. B., Utah.

A LEMONADE ECONOMY—When making lemonade, run the lemon through the food chopper and your juice will be so strong that it will make twice the usual amount and have a far better flavor.
K. W. N., Colorado.

CORN OYSTERS—Six ears of sweet corn, well filled out. Slit with a knife, and then grate. Add one egg, three tablespoonfuls of milk, one teaspoonful of baking powder, two tablespoonfuls of flour to thicken. Have plenty of lard in skillet, and drop the batter from a spoon, allowing each "oyster" to fry until brown. MRS. J. E. R., Georgia.

New Puzzles

Name the Animal

A part of me you'll find in rain,
A part in hail must be,
A part belongs to pain,
A part in bones we see,
A part in gleamy gold,
A part in common copper,
A part in peace behold,
A part in any topper,
Two parts are heard in sound,
And in our finals found.

Answers to Puzzles

Puzzles Printed Last Issue

A Barrel of Pork

It took Jack Sprat and his wife forty days to eat the barrel of pork.



Make Your Wife's Dream Come True

Wash day the old way is a nightmare—a bugaboo womenfolk dream of escaping some day. In your home make that dream come true now. Install a

Maytag Multi-Motor Washer

Swinging Reversible Wringer

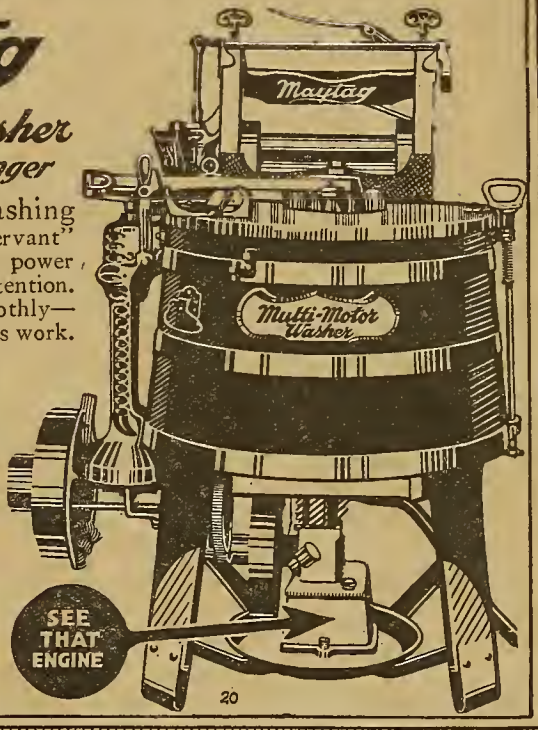
It is more than a good washing machine—it's new, superior—a "servant" that does all the housework where power should be utilized. Needs no attention. Absolutely safe. Runs quietly—smoothly—cleanly. Wonderfully thorough in its work.

Can Churn While You Wash

Its engine operates on gas—gasoline—kerosene or alcohol. It has a belt wheel that enables it to run the churn—ice cream freezer—food chopper—bone grinder—any small machine—while washing and wringing, if desired.

FREE—Send for "The Maytag Laundry Manual." It contains expert launderer's invaluable formulas on washing all fabrics.

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SEE THAT ENGINE

The Soda Fountain

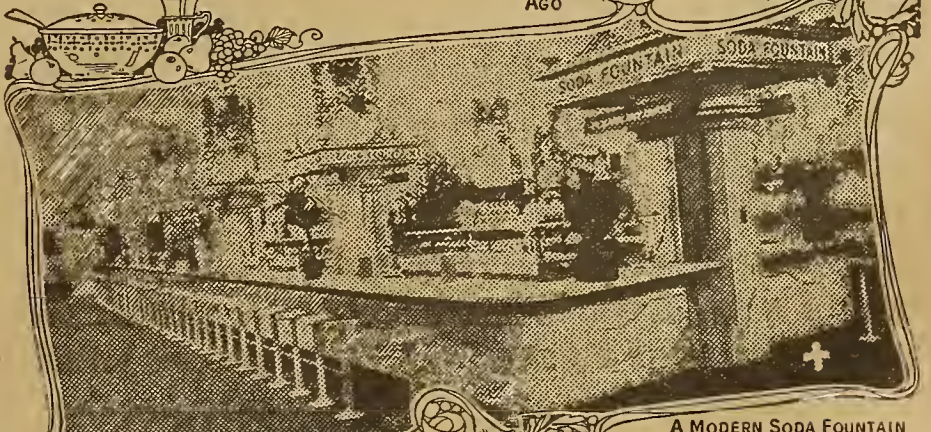
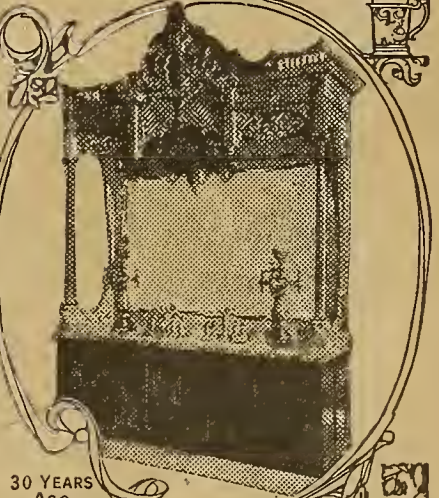
An American Institution

Did you ever stop to realize that the soda fountain is as much an American institution as the sausage is a German institution, "French Bread" is an institution in France and the Plum pudding an English institution? And the funny part of it all is that though one seldom sees a soda fountain in Europe (and then only for the sake of attracting American tourist trade) just as soon as a foreigner gets to this country he too seems to learn to love the soda fountain.

But, if you are old enough to look back a few years you will remember that only comparatively recently has the soda fountain been either so popular or so beautiful and hygienic.

You may remember what these old soda fountains looked like—what poor provision they made to supply even their scanty trade.

What has wrought this great change—what has made the soda fountain a national institution—a comfort and necessity in the daily lives of men and women—not only during the hot summer time but the whole year 'round.



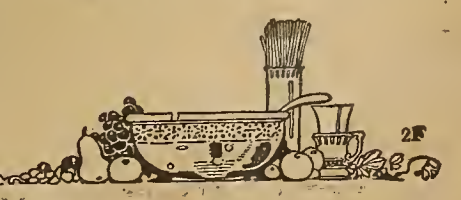
was so evident in the fountain trade. The same principles of purity, goodness and deliciousness made another astounding record of growth possible. Bottling plants have been established all over the country to take care of this branch.

Just think of it—over 90,000,000 glasses and bottles of Coca-Cola are drunk every month. So—just as much as is the soda fountain a national institution so is Coca-Cola the National Beverage.

The answer lies in that delicious beverage Coca-Cola. Soon after its introduction at the fountains people began to ask more and more for this distinctive drink.

Along with its demand came the demand for more places that would serve it. Soda fountains sprang up everywhere, improving in beauty, neatness and attractive service. It is a fact that the part the soda fountain and all its allied industries have come to play in the economic life of the nation today is due largely to the stimulus given to it by Coca-Cola.

In the same way has the call for bottled beverages grown. In 1899 Coca-Cola in bottles was first put on the market and the same quick recognition and appreciation was accorded to it in this form as





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The Goodyear Service Station Dealer starts in where the Goodyear factories leave off.

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Their interest continues until you have had maximum mileage and satisfaction from them.

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Such men, who forego extra discounts to sell you better tires, are good men for you to deal with. This chain of Goodyear Service Station Dealers is a part of the Goodyear Policy — a time and money-saving advantage to you.

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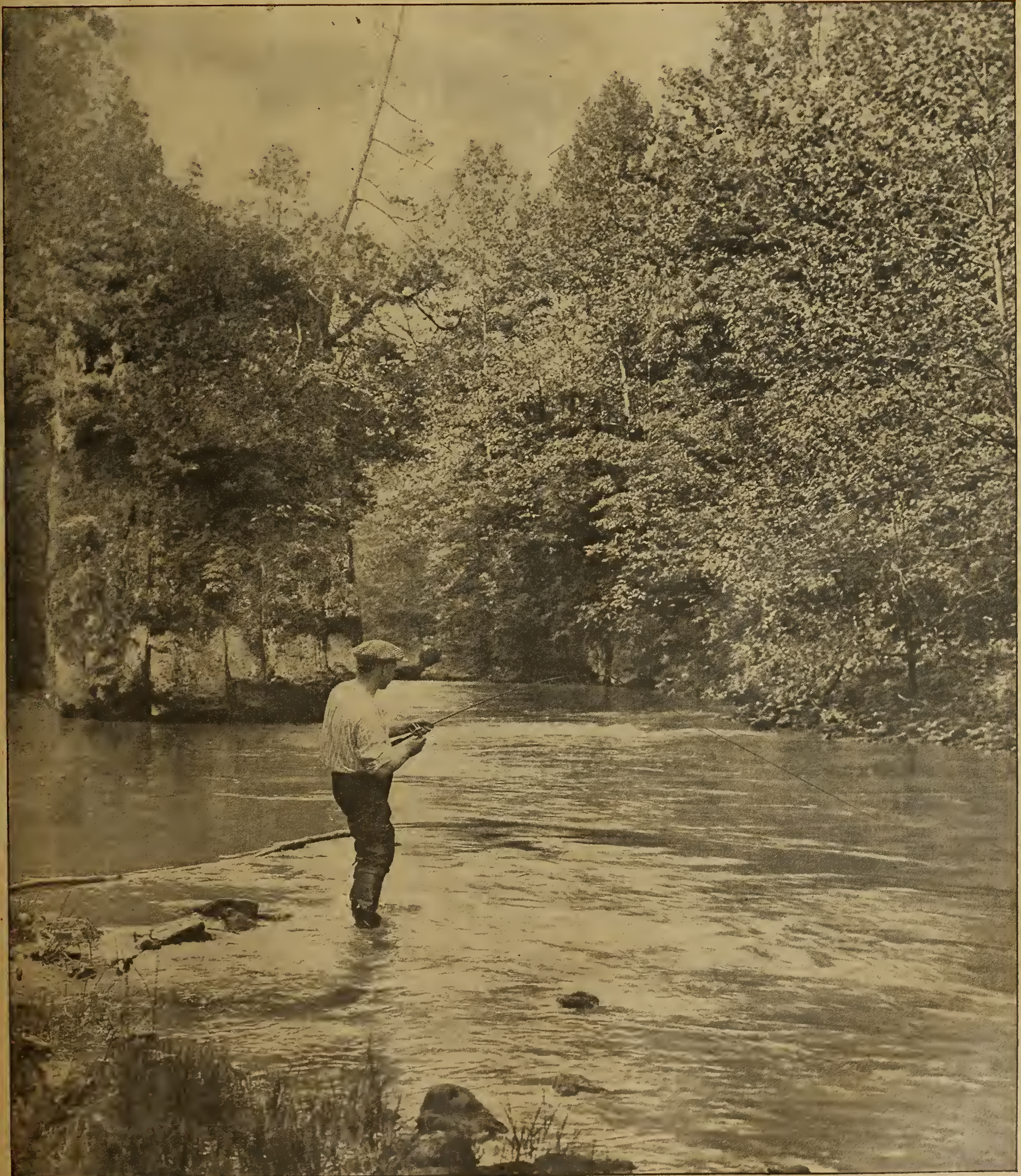
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Eastern Edition



PHOTOGRAPH BY JOHN KABEL

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A German submarine cruised from Bremen to Baltimore, an astounding feat. You can trace her route by this up-to-date atlas.

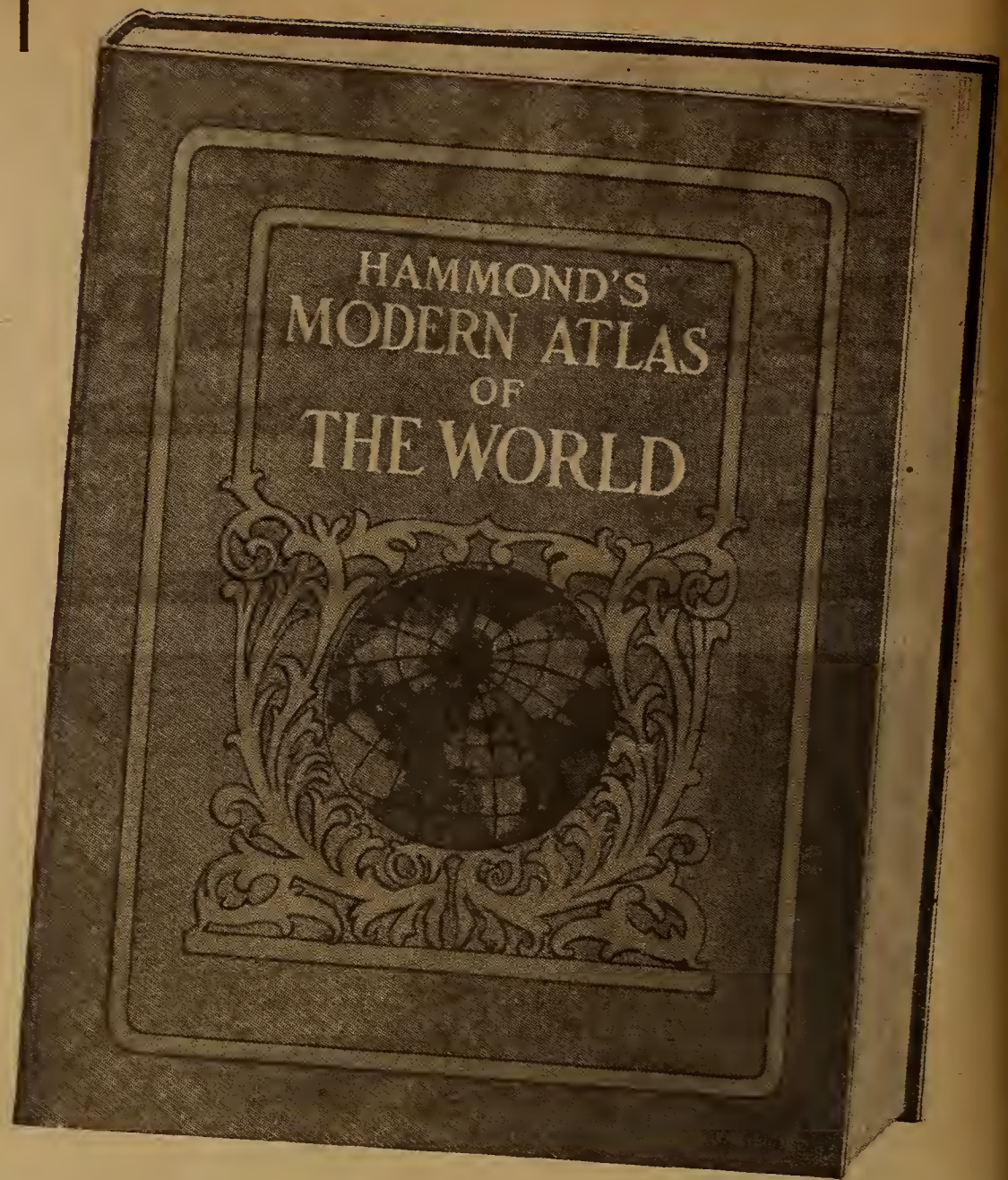
On the Atlantic Coast swimmers were attacked and some eaten by sharks for the first time, there, within the memory of man. See where by this modern atlas.

Russia is breaking through the German and Austrian lines on the East. England and France are wedging through German trenches on the West. See where by this authoritative atlas.

Shackleton, the British explorer, is now attempting to rescue some of his men lost in the Antarctic Ocean. He will establish a base on Elephant Island. Locate Elephant Island by this complete atlas.

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No. 23

Corn Machinery

Ingenious Ways in Which Inventors Get Their Ideas

By B. D. STOCKWELL

HOWEVER we may plan and figure, we have to use corn-harvesting machinery that will lighten and speed up the work or repeat last season's labor of cutting, husking, scooping, and carrying. For though King Corn is generous with us, he exacts a tremendous amount of labor.

Corn machinery is one of the most difficult classes of agricultural implements to develop. Any inventor will tell you that. Corn is the heaviest, bulkiest crop we raise; consequently, a machine to handle it must be made of good, substantial material, which is necessarily heavy and bulky. This is especially true of corn binders, pickers, and the other field implements.

But the use of roller or ball bearings, steel instead of iron, and improvements in construction have partly satisfied the demand for corn machines that are strong without being clumsy. However, it is unreasonable to expect that corn-harvesting machinery will ever be as small and compact and as low in price as machinery for handling the grains and grasses.

They must do heavy work and be able to endure severe overloads. Yet inventors are anxious to meet farmers' demands, as the following instance will show.

One inventor in the employ of a concern making ensilage cutters is big and raw-boned, and at first glance you would size him up as a roustabout or lumberjack rather than as a mechanical genius. But he is even more than this. He has the insight of a lawyer, the wits of a detective, and is one of the best experimental men the concern has. Every fall when the fair season begins he packs his grip and starts out to visit the principal fairs in the corn belt. He is wise enough to know that big gatherings of people are the best places to get new ideas.

First he warms up to the demonstrator of any piece of machinery he wants to know about and finds out all the demonstrator knows. "Some of them get wise to me after a few years," he admitted, "but most of them never suspect who I am." Raised on a farm, he is quick to appreciate the good and bad points of any piece of machinery after a careful examination. Then he talks with the farmers and learns where they have had most of their difficulties. But most of all he is guided by the preferences of a man who has used various kinds of a particular machine and who is not quite satisfied. From such a man this inventor draws out the merits that a perfect machine ought in his opinion to have.

When you consider that the wisest heads talk least at public places like fairs, you will appreciate the skill needed to secure really valuable information. Finally, after he has been around all the fairs he goes back to his drafting table and puts into his drawings and patterns the practical features asked for, provided they are consistent with the price a farmer is willing to pay.

Plank Through Cutter

IN TELLING me of his latest cutter, and also demonstrating it, this man acted as though it were a child of his flesh and blood. It was hard to realize that the cutter was just iron and steel. And however much invention may be commercialized, I am sure that the love of creating new machinery will always be a stronger force than the wages the inventor gets.

"A man must deliberately try to hurt himself," he said, "with this ensilage cutter. I've designed it so that accidents are impossible." The operator



The elevator from the corn binder delivers the bundles to the wagon. The work goes quickly and nobody sweats blood

has no occasion for being anywhere near the knives. He can feed the cutter from his load if he wishes. A carrier of special design feeds the machine practically as well as a man could, and saves the work of one man.

There were also other mechanical improvements, such as six different changes of cuts, all on the machine all the time. The knives were shaped so as to shear the bundles from both sides, thus preventing crushing. The machine operates at lower speed than previous designs, doing the same work with less power. He said that to test the strength of construction he had run a wooden plank through it, and later the incident was confirmed by others in the shop and in the main office.

From facts in this particular establishment and in other large implement factories, it is obvious that manufacturers are determined to take no more chances with weak or doubtful construction. Until

an ensilage cutter will do as good work nor as much of it as a real shredder, but simply that a man who has such a cutter can do some shredding on a fair-sized scale and at small expense.

Several cutters have as an accessory a knife grinder belted to a pulley on the main shaft so that an extra set of knives may be sharpened and changed between loads. This keeps the machine in its best working trim all the time. Another development in the ensilage-cutter business is the adoption of capacity guarantees. One concern in good standing guarantees its machines "to cut and elevate at least one ton of green corn silage per hour for each horsepower applied. There is no limit to the height of the silo."

Since a man always knows the horsepower of his engine and the size of his silo, he can select a cutter of such size as will do his work in any length of time he chooses. This particular machine will also cut up alfalfa and clover hay by means of special rolls.

The work of cutting the corn in the field has been speeded up to some extent by the use of tractors on corn binders in place of horses, also by binders with elevators which load the bundles directly on a wagon which drives alongside. Any method is advisable which harvests the corn fresh for the cutter so the stalks will not dry out, and which does away with the practice of cutting corn far in advance of silo-filling day. A modern corn binder drawn by three horses will cut down about as fast as a crew of six men cutting by hand. When drawn by a tractor the binder should operate at about the same speed, but it can be kept going more hours in the day and, consequently, will cut a bigger acreage.

Cutting corn by hand, however, still continues even on farms large enough to warrant the use of a binder. This is due to conditions which in some localities causes the corn to lodge badly, and in the South to the great size of the corn. The ordinary corn binder has difficulty in handling the stalks from 12 to 16 feet high. This has been largely overcome by an adjustment which permits the bundle to be tied in the middle, whether long or short. The band-shifting device is operated by a lever in easy reach of driver. [CONTINUED ON PAGE 101]



As ensilage cutters have become improved, fewer men are needed to run them. The one man in the picture is feeding the cutter from his load—"safety first" in the extreme

Potatoes for Market

Wisconsin Growers Improve Yields and Quality

By J. G. MILWARD

AS POTATO harvest approaches, a statement of successful methods for handling the crop becomes important; details of handling and marketing potatoes are often neglected because growers have planted too large an acreage. The methods I am about to describe are practiced on farms where potato-growing is conducted in rotation with corn, root crops, hay, grain, and where stable manure and clover become available through attention to dairying or other lines of stock-raising.

It is a significant fact in Wisconsin that a large percentage of the men who are known to raise high-quality potatoes are also successful in dairying or some other branch of the live-stock industry.

In 1914 and 1915 potato-digging operations were hampered on account of late potato blight and the rot which followed. The early frosts which killed the vines in 1915 also upset digging operations and injured the stock both as to ripeness and quality.

Potato growers aim to dig fields after vines have ripened normally, in order that the crop shall be in a clean, bright condition, free from green, soft, or badly bruised and skinned tubers.

To insure a longer growing season some Wisconsin growers are now planting late varieties early (from May 20th to June 5th). The practice of late planting to avoid the bugs is condemned because early frosts shorten the crop and interfere with normal ripening. It seems apparent also in the last two years that late potato blight has caused more serious losses on late plantings than on vines which were more nearly ripe.

The planting of seed potatoes in a strong, vigorous, sprouting condition is another recommendation of our best growers. I have in mind several growers who give special attention to this matter. An examination of their fields on July 10th of this year showed that the seed sprouted evenly, and gave an even stand of thrifty vines 8 to 10 inches high. Those fields will be in good condition to harvest, and the stock will be ripe when the harvest season comes on, from September 15th to October 10th. Advocates of late planting state that dry weather in August will damage the early planted fields and shorten the crop. But from the point of quality and maturity experience favors early planting dates for such varieties as the Rural New Yorker and the Green Mountain.

In order to be sure of strong, healthy seed stock and to hold potatoes for desirable markets, all potato growers must have suitable storage. Serviceable cellars can be made in connection with dwelling or barn basements. And special root cellars can be provided in sandy, well-drained hillsides at costs ranging from \$75 to \$400. Market stock will keep in good condition at steady temperatures ranging around 38° to 40° F.

Saving a Blighted Crop

FOR special seed storage the Wisconsin Experiment Station constructed a cellar in this manner. It was built by excavating into a sandy hillside, and when finished the roof (made of concrete seven inches thick) was covered with three feet of soil. The cellar has a dead air space all around the walls. The bins are constructed with natural sand floors. There is a concrete driveway in which rails for a small truck are imbedded.

In this cellar, stock may be kept at constant temperatures during the winter at around 35° F. and will remain dormant from October until June. By opening the cellar and providing thorough ventilation, or by removing seed stock to the sorting-room provided, active bud growth will start just previous to planting (May 10th to June 1st.)

These matters are emphasized here on account of their influence on the growth and ripening of vines, and because these precautions relative to seed storage, sprouting, and the condition of the seed stock at planting time are receiving the endorsement of the best growers in this State.

Adequate storage at proper temperatures has been largely responsible for raising standard seed successfully on the Spooner Branch of the Wisconsin Experiment Station, and the same experience is reported by growers who have constructed inexpensive cellars with the labor and material available on their farms.

As stated above, late blight rot, or field frost may upset all calculations on potato harvest. Under these conditions it is necessary to get the stock out

in a dry condition. Should blighted vines die early from frost injury, it may be possible to dig with very little damage from rot. Should frost hold off and the weather remain moist and cool, a very large amount of potatoes may rot in the hill.

In regions where potatoes can be handled and marketed for immediate consumption, growers are inclined to dig and market quickly. This has resulted disastrously to potato markets in the fall of 1914, as warehouses, cars, and distributing markets became clogged with rapidly rotting potatoes. Many warehouses, in fact, were forced to close down and clean up. The grower ultimately lost by the early disposal of inferior stock.

Many growers pit potatoes successfully on the field, covering with hay or four to six inches of soil, and hauling to markets from the field late in the fall. When prices range around 40 cents a bushel and yields run from 150 to 200 bushels to the acre, excellent returns are received from direct marketing from



Here is a potato field that yielded 210 bushels to the acre. The crop sold for 40 cents a bushel

the field. Under these conditions many growers do not pit, but haul directly to loading stations. Nearness to market, available storage, the labor situation, and of course the market determine whether potatoes shall be marketed direct from the field.

Serious losses, however, will result from pitting wet potatoes during bad blight seasons. Attention was called in 1914 to conditions where potatoes in a damp condition were pitted and covered with dead, blighted vines. In this natural, moist chamber the stock rotted rapidly. Dry, cool conditions check late blight rot. Moist, cool conditions favor its development.

Potato-digging machines are of course a necessity to the industry. They are being used successfully on small as well as large acreages. But an inspection in potato-growing sections during the harvest season very often shows that these machines are being used carelessly. Potato-growing still involves certain



This is a common type of potato digger used in the commercial growing sections of Wisconsin. It does good work and is rapid

hand labor which cannot be neglected. Green potatoes harvested and sorted carelessly, bruised badly, rot and spoil the looks of car shipments and lower the vigor of seed stock.

Potato sorters are a necessity both on the farm and at loading stations. Many dealers urge that our system of requiring that the bulk of sorting be done at loading stations is wrong, and that culled potatoes should be removed on the farm, where they at least have some feeding value. There is evidence that very decided improvement has been made in farm sorting outfits, and that their use is being extended in potato-growing sections of the State.

One Result of Certified Seed

LA TE blight rot, common scab, black scurf, green, undersized stock, coarse, knobby stock, frosted potatoes, bruised or fork-injured potatoes, mixed varieties, all of these are causes of low quality in table stock. Some of these troubles begin on the farm and are carried along through handling channels and in transportation, and finally dumped at distributing points or upon the consumer. Other of the troubles cannot be detected on the farm nor at the loading stations, but develop during transportation. Growers and dealers are now making better efforts to avoid this dead loss.

Attention to screens will adjust size factors, but most of the troubles can be removed by hand picking only, hence the importance of such farm potato sorters as permit of close inspection of potatoes during the sorting operations.

It is important to understand what defines an acceptable grade of potatoes for the average American family, and to understand the limitations which actual cultural conditions and handling operations impose upon the adoption of this grade.

For example, I recently inspected a car of Green Mountain stock. It apparently was 100 per cent pure and was uniform in general type characteristics. The stock ranged in size from about 4 to 10 ounces. Very small amounts of common scab were found. The stock was clean, firm, bright, and ripe. The amount of waste potatoes in these sacks was too small to need mention. The stock could be used for all table purposes by any American family with satisfaction.

Incidentally I learned that the seed from which this crop was grown was purchased from one of the best growers on the state certified seed list, and that the stock was grown on a fairly small acreage. The yield was about 225 bushels an acre which indicated good soil and good cultural conditions. The stock sold at eight cents above the market.

The illustration just cited, it would seem, might have its application in the possibilities of increased profits through heavy yields of quality stock. Intensive methods on small acreages give better satisfaction than careless operations on an extensive scale.

Hauls at Less Cost

By HIRAM H. SHEPARD

MANY farmers who have never used a low-down wide-tired wagon do not know how convenient it is compared with the standard high-wheeled wagon. Nothing but high-wheeled wagons had been used on our farm until a year ago. Now we have a low-down iron-wheeled, wide-tired wagon which is in daily use.

We were prejudiced against a low-down wagon until one was bought and tried. We thought such a wagon was of heavy draft. Several trials under various loads and road conditions have convinced us that the low-down wide-tired wagon is, if anything, under ordinary conditions, of lighter draft than high-wheeled narrow-tired wagons. Only when the roads or the soil of the fields are very soft and muddy does the wide-tired wagon run harder than the narrow-tired wagon. For general field hauling, during the spring, summer, and fall, and often in winter, the wide tires assist wonderfully in preventing the cutting of ruts.

Our low-down, iron-wheeled, wide-tired wagon has proved a wonderful success in many ways. One great advantage in having iron wheels is that they are not affected by the weather, hence the wagon does not need extra care, and there are never tires to be reset in dry weather.

Perhaps the greatest economical feature of the low-down wagon is its nearness to the ground, which makes it easy to load, unload, and to get in and out of.

For the farmer who has much general hauling on the farm, such as hay, manure, wood, animals to be carried to market, and implements to be carted to fields and back to the sheds, the low-down wagon is a great saver of time and lifting.

Choice Clover Seed

How to Secure Good Color and Freedom from Weeds

By HENRY FIELD

AS WITH most everything else, first-class clover seed brings a good price, and there is always a demand for it. Discolored seed may be just as good so far as germination is concerned, but it is hard to persuade a person to give as much for it as he would for a nice bright sample. He is right too, for there is more likelihood of discolored seed being off in germination than is the case with bright seed.

Seed discoloration is caused by bad weather during harvest or by old age of seed. Both of these influences have a tendency to injure the germination quality.

Clover blossoms will not fertilize themselves. Both male and female elements are in each flower, but owing to their arrangement insects are necessary to distribute the pollen to the female part of the flower. At the time the first crop of alfalfa or red clover is blooming, insects that will work on these blossoms are few. Bumble bees, the principal insect that works on clover blossoms, are scarce that early in the season, and the Italian honeybee, the one with three bands around its body, is busy elsewhere. Butterflies are also scarce.

For this reason it is bad practice to cut the first crop of red clover for seed. An experiment was once made to determine just how important the insects were in fertilizing these blossoms. One hundred clover blossoms were covered with netting to keep out bees or insects, and on those blossoms not a seed was found. From 100 unprotected heads right beside them, 2,700 clover seeds were secured.

Cut the second crop of red clover for seed, and cut when the heads are all a dark brown. Use a mower with a buncher attachment to cut this crop. Allow it to stand about two weeks before hulling.

But if it stands too long and the weather happens to be rainy, your crop will likely be damaged. The seed on the under side of the bunch may sprout. Some of this seed may also be beaten out of the heads by the rain. If you can't make arrangements to have it hulled in two or three weeks after cutting, better stack it and cover the stack with slough grass or a good stack cover.

Very often farmers find it difficult to get a huller just when they want it. For this reason several men can profitably go in together and buy a huller to take care of their crops. How can you tell whether your crop is worth threshing or not? If you have a good stand, count the seed in a single head and if you find as many as twenty seeds you can safely figure on about two bushels to the acre. Care should be taken in making this estimate, for very often there will be parts of the field with very little clover seed in the heads.

A yield of from five to twelve bushels of seed to the acre can reasonably be expected from alfalfa. For those living in the humid sections of the country it will hardly pay to attempt a crop of alfalfa seed. The best seed is grown west of the Missouri River. There is one exception to this, and that is the seed grown under irrigation. Seed grown in this way produces a nice bright sample, but is not altogether satisfactory planted where irrigation is not practiced. Kansas and Nebraska seed is safest. Good seed is also grown in the North.

A Clover Head Yields 25 Seeds, a Dock 1,000

THE first crop of alfalfa, like clover, will not produce a heavy crop of seed. The seed pods are not as well filled and there is a larger proportion of infertile seed. Another reason is that weather conditions are not as favorable at this time. Still another reason for not using the first cutting for seed is the value of this crop for hay. The second and third cuttings produce more seed and are not as valuable for hay.

Cut alfalfa for seed when the pods have turned a dark brown. You will then find the greater proportion of the seed hard but not sufficiently ripe to shell. It is usually figured that the straw from which the seed is harvested is worth about half the ordinary crop for hay. Some farmers in western Kansas and Nebraska cut the crop with a binder and shock it like grain. Ordinarily, however, cutting with a mower with a buncher attachment is best. Allow it to cure, then stack carefully. After this stack has stood about thirty days it will have gone through a sweat and is then much easier to hull. A clover huller attachment on a threshing machine is not altogether satisfactory. It does not clean the seed well, and there is also more loss. It will pay to use a huller built purposely for alfalfa threshing.

You may use every precaution in harvesting your seed and produce nice, bright stuff of good, strong germination and yet not be able to get top price on account of weed seed. Besides, you don't want the other fellow to sell you a lot of seed containing weed

seed, hence you should not harvest that kind yourself.

Go over your fields a week or so before cutting and dispose of the weeds. Do not allow the seed to ripen. There is not a doubt but what the extra work will pay well if your crop is worth cutting. One clover bloom will contain on an average 25 seeds. One head of dock will contain thousands.

There are certain sections of the country where the required conditions for successfully producing seed of various grasses and legumes are especially favorable. These favorable districts should take advantage of this opportunity for seed production. It sometimes happens that a single bumper seed crop may bring in a most welcome addition to the farm income. From \$50 to \$100 worth of legume seed per acre is occasionally realized under particularly favorable conditions in addition to securing a good crop of fodder at the first cutting.

Handle With Care

Sweet-Clover Seed Shatters Easily

By CHARLES B. WING

MOST readers may already know some of the requirements necessary to make sweet clover grow. Plenty of lime in the soil is the key to success. With an abundance of lime these plants

will grow anywhere, in gravel, cinders, clay, or black soil, even in muck that is not very well drained. But plenty of lime is an absolute necessity.

Sweet clover is grown for both hay and seed. You can take off a hay crop and a seed crop later. But if you harvest for hay first, you must either cut with mower bar elevated at least a foot high or else use some other machine as a binder or self-rake reaper that will run a foot off the ground. The idea is to get above the lowest branches. If you cut below them the plants may die.

Do not let the plants blossom much before cutting the first hay crop. It is better for the hay and better for the plants themselves. Opinions differ as to whether a maximum

seed crop will follow when the plants have had a hay crop removed. Personally I do not know.

When about ready to cut the seed crop you will find seed that is dead ripe, some that is more than half ripe, and an occasional bloom, all on the same plant. It is impossible, as far as I can find on my own fields, to cut at a time that all of the seed can be saved. Part of it is sure to be too ripe, and perhaps will fall off before I even start cutting. Part of it is equally sure to be too green. The best rule that I know is to wait until from two thirds to three fourths of the seed is mature and the pods are straw-colored. A little of it will have fallen off by that time, and some



Using inoculated soil to start legumes. Special cultures are purer and easier to use

of it will be too green, but this is the best time I have found.

Now, remember that the seed shatters with extreme ease, so cut when the plants are damp with rain or dew. A showery day is a good time. If there are no showers, cut at night. The old-fashioned harvester or self-rake satisfies me better than any other machine I have used for harvesting sweet-clover seed. I dump the plants off in medium-sized bunches, and after cutting I never touch the plants at all except at night, until it is time to thresh, and I prefer at least a good shower in that time. The day before I thresh I examine to see if the bunches are wet on the bottom. If they are, we work at night and turn them upside down.

We use either tight wagon bottoms or tight hay sleds for hauling. We handle the bunches as if they were eggs. A man loads from the ground, and does not step on the load until he reaches the clover huller. By using great care I sometimes get six or seven bushels of sweet-clover seed per acre. With rough methods one may get quarts instead of bushels.

Soy beans can be handled much more easily, when harvesting for seed, than sweet clover. There are several methods. One is harvesting when the plants are comparatively green and when practically none of the leaves have fallen, using a self-binder and shocking in small shocks until sufficiently cured for threshing. This method has been used for years throughout the South, and by it there is no trouble, in any ordinary year, from shattering.

Cut Sweet Clover for Seed Between Showers

MY OWN method is to let the plants get as ripe as possible, with nearly all of the leaves shed, before starting to harvest. With this plan, a self-rake, and not a binder, must be used, cutting while the dew is on, somewhat the same as above described for sweet clover.

When harvesting soys that are comparatively ripe, as just suggested, I let two thirds to three fourths of the pods turn straw-colored before starting the machine. I dump them off in moderate-sized bunches, let lie a couple of days, and then shock in small narrow shocks. In about two weeks' time the soys should be ready to thresh. When threshing for seed, I use a regular bean thresher, as an ordinary grain separator splits too many seeds, even when concaves are removed.

When threshing for grain to feed, however, I should use an ordinary grain separator with concaves removed and a few boards put in, partly to take their places. In this manner the work can be done easily and cheaply, and by running some of the grain through a good cleaner enough of the splits can be taken out so that you can save your own seed.

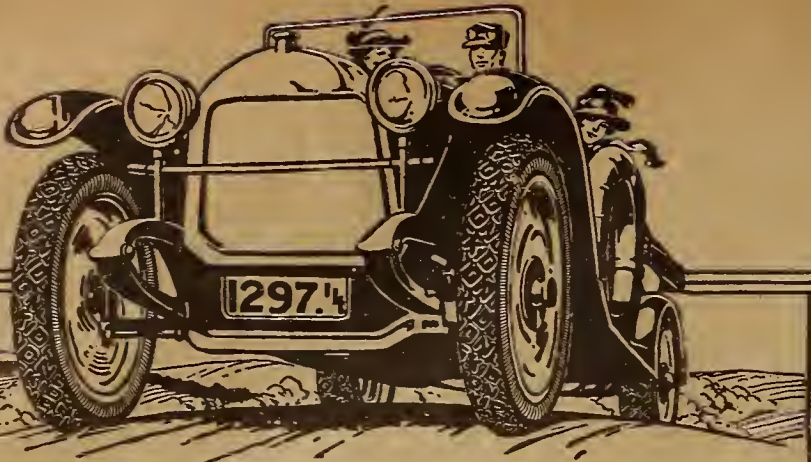
When raising sweet clover, soys, and other legumes for fodder and feed, the fact should never be forgotten that these crops are less exhausting to soil than is timothy, redtop, and cereal crops. Sweet clover in particular is a first-rate preparation for alfalfa.



Here is one style of buncher used in connection with a mower to harvest clover for seed



This man believes in keeping up the productiveness of his farm by green manuring. Considerable moral courage is required to plow under a crop, but it keeps humus in the soil



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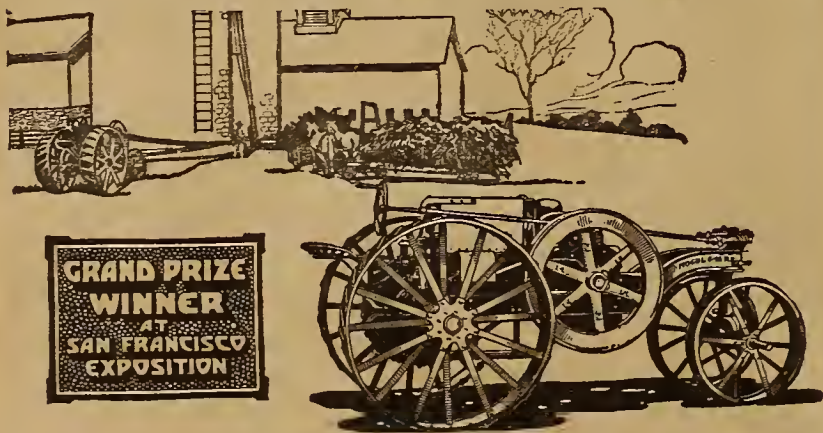
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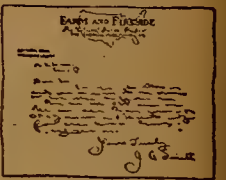
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The Editor's Letter

Plans for Farm Partnership and Rentals



I HAVE just received a letter from an Oklahoma poultrywoman who presents a good-sized turkey-raising proposition. She says she has had a lot of successful turkey-raising experience to back up her contentions. Let me know what you think of her plan:

"With proper equipment I can raise 1,000 turkeys a year ready for the holiday market by making use of 25 to 30 first-class breeding turkeys. Besides the breeding stock I should require two good incubators of about 400-egg capacity, and sufficient well-adapted roomy brood coops and large wire-enclosed runs in which to care for the poults until they may be safely turned loose, with the turkey hens. I should also need a supply of suitable feed for the poults and breeding turkeys until all can be put on range.

"I am ready to put my experience and skill in turkey-raising against the capital required to finance a turkey business such as I have mapped out. Not over \$100 capital will be required at the start in addition to the two or three dozen breeding turkeys.

"The location requirement is of great importance for such a business. A big wheat ranch where the old birds with their 1,000 to 1,200 poults can be turned into the stubble as soon as the wheat is threshed would make an ideal location. Under such favorable range conditions old and young turkeys can secure practically all their living from waste grain and insects until about six weeks before Thanksgiving, when the birds will require feeding.

"To a turkey business of this size I should expect to give my entire time and attention, herding them during the day and putting them in a suitable animal-proof enclosure every night. Conducted as I have described, a turkey business can be expected to furnish a gross income of \$2,500 a year, with an expense of not over \$500."

The foregoing breezy description of high finance in turkey culture has a captivating conclusion. Of course, to those persons who have gone through the trials and tribulations of attempting to raise two or three score poults by the chicken-hen route the plan will look impossible. But to some few turkey wizards who are raising a hundred or two young stock each season in the Western Plains country, this poultrywoman's contention will not seem so unreasonable. At least, I shall not be first to cast a stone at this unique turkey scheme. Mature turkeys are not now so much less valuable than sheep and hogs were formerly. It seems entirely logical to put the business on a basis sufficiently large, where conditions are favorable, so that a turkey shepherdess can live with her flock from sun-up to bedtime during the critical period of their existence. Even if we discount the returns from one fourth to one third, or even one half, the resulting income is attractive, and I shall not be surprised if our turkey enthusiast secures the financial aid and opportunity she wants.

THE farm-renting business cuts a much bigger figure in our national industrial situation than the average citizen realizes. Particularly is this true in the very best and most productive districts of our country. Broadly speaking, the farm owners are trying to build up the productive power of their farms, but the rank and file of renters are being compelled to deteriorate the land they are tilling. They must adopt the skinning and mining processes in order to secure recompense for their toil. Of course, there are exceptions, but the majority of farm owners who rent refuse to consider the future welfare of the land and frown on the idea of making a lease contract of more than one or two years at a time. This hand-to-mouth system of farm-leasing has built up an army of farm-renting soil robbers the dire result of whose operations we are not yet even beginning to realize.

In any of the European countries now devastated by war, Russia possibly excepted, our own soil-robbing system of renting would not be tolerated for a

single season. In England, Ireland, France, Germany, Italy, and Austria farms have been rented continuously for centuries, and have been steadily built up in productivity. Their renting system puts a premium on correct scientific farming practices. Ours discounts good farming and favors all schemes for turning tricks to get the greatest possible results from one or two years of farming operations. The foreign renting policy in England in particular has placed the most successful farm tenants on a par with the landowner in so far as community standing is concerned.

A FEW days ago I happened onto a most interesting and important farm-renting situation in Illinois. A prominent farmer of Macon County gave me a full account of the farm-renting operations that have been under way in his community for a dozen years and more. A wealthy Englishman traveling through Illinois was so taken with the splendid farms of Macon County that he sent an agent to buy him a half-dozen farms as an investment. In due time the farms were bought, aggregating about 1,500 acres. The farms were put in first-class condition as regards fences, buildings, machinery, and general equipment, and long-time leases were arranged with the very best type of young but experienced tenant farmers that could be found. The contracts were patterned closely after those in use with his tenants in England. This Englishman's intention was to make his tenants so well satisfied that they would do their very best for his interests and their own as well during the long-lease periods arranged. His conclusion was confirmed by the fact that his tenants were glad to continue on his farms so long as they wished to follow farm-renting. Most of the tenants, after eight to ten years of renting, have now bought good farms of their own, and as a result of their success while on his farms are now in position to pay for their high-priced farms without great difficulty. There is now a waiting list of progressive young farmers anxious to get a chance to rent one of the farms owned by this English landlord.

The cash-rent charge for these farms is from \$2 to \$3 less per acre than American farm owners in the same community are charging. But in the one case the farms representing English capital are steadily building up and those of American ownership are falling behind in productiveness.

My local informant told me that the sons of this Englishman feel well satisfied with their investment and believe that their renting system is altogether safer and better than the American system employed in the vicinity of their own farms.

WHEN the season of Nature's masterpiece farm pictures rolls round, I always feel sorry for the souls who miss seeing them—the work of the Great Painter whose landscapes are valley, plain, hillside, and mountain top. He paints his background with the green of woods, orchards, cornfields, and late-growing alfalfa. His lavish midsummer colors of brown, gold and softer yellows are in the waving or harvested fields of wheat, barley, oats, rye, and millet. Here and there splashes of red and purple show where the early ripening apple, peach, and plum hang in tempting array. His high lights are reflected from lakes, streams, and mill ponds. Tree-embowered farm homes and cattle on a thousand hills enliven and beautify His pictures and furnish the human touch that every masterpiece requires.

These soul-satisfying farm pictures in midsummer represent the best in life for the needs of all the people. But sometimes those living among these pictures need to journey from home far enough to get perspective and fuller appreciation. When seen at too close range the beauty and best effects may be lost.

The Editor

Good Health Talks

By DR. DAVID E. SPAHR



TO MANY expectant mothers the period of gestation is one of extreme discomfort, amounting in some cases almost to torture and anguish. From the moment of conception she enters upon a new life, with new sensations and emotions. Certain

bodily functions are subverted and all the organs of the body enter into new relations, and take upon themselves new conditions. No longer relieved by the usual monthly flow, peculiar reflex nervous phenomena disturb her rest by day and her comfort by night. Under the nervous stimulation of a living embryo, a small organ of the body takes on new life and activity. Its blood supply is increased, its form changes, its body enlarges, and in time impinges upon surrounding tissues and organs, destroying the harmony of their action, and stimulating some to activity and others to profound torpidity.

From an obscure organ weighing but a few ounces, it increases in a few short months to an organ weighing twenty pounds or more, insinuating its presence into a cavity already comfortably filled. Now if there should happen to be any latent inflammation, or any diseased structures within this compressed space, they will evidently be subjected to great strain and much inconvenience, as well as great danger of permanent injury. Their action will surely be interfered with. The mind sympathizes with the bodily ailments, and nervous hysteria prevails in some cases.

Broken-Down Arches

Please give me a simple home treatment for broken arches. Have bunions on each foot. Are arch supporters of any value? Is permanganate of potash or borax of any value for a vaginal douch?
V. I. O., Minnesota.

FOR your bunions wear well-fitting round-toed shoes, and soften the bunion with applications of oil, soak in hot water, and wear a pledget of cotton between the toes. For your broken arches wear a perfect-fitting arch supporter.

Permanganate of potash or borax is good if used with care and not made too strong.

Two Fevers

What is the difference in the symptoms of typhoid and typhus fever?
C. M. W., Indiana.

THE suddenness of the onset, the continued high fever from the beginning, the greater frequency of the chill, the early prostration, the greater nervousness and higher mortality, distinguishes typhus fever from typhoid fever.

Watery Eyes

Can you give a remedy for watery eyes? They run a gummy-like water and are slightly inflamed.
Mrs. A. S., Missouri.

WASH them with a ten per cent boric-acid solution, and then drop a drop of a twenty per cent argyrol into each eye morning and night.

Varicose Veins

About three months ago I fell on a curb and burst some varicose veins in my limb. It was an inward hemorrhage and left a large bunch of blood clots. Eczema set in, and is making it very annoying, and it does not yield to treatment. Would it be advisable to work and walk with such a limb?
Mrs. H. G. S., Pennsylvania.

IT WOULD not be advisable to work or walk. Wear an elastic stocking, and take a Seidlitz powder every morning and be quiet, or go to bed and give the clots time to be absorbed.

Chorea

My daughter, aged fourteen, has had rheumatism, and is now bothered with her arms jerking. What can be done for her?
Mrs. N. B., Ohio.

GIVE her five drops of Fowler's solution of arsenic, three times every day after meals. Omit Sundays. Increase a drop per week until the under lid of her eye gets puffy, then stop. The treatment should relieve her in a month or more.

A Great Increase in Railroad Wages Means Higher Freight Rates and a Burden on Agricultural Prosperity

Do you think the railroads ought to increase the wages of their highly paid train employes \$100,000,000 a year?

No great increase in railroad wages can be made without directly touching your pocketbook. Out of every dollar you pay the railroads 44 cents goes to the employes.

Compare the wages of these men (who have refused to arbitrate their demands for higher wages, and are threatening to tie up the country's commerce to enforce them) with those of other American workers—with yours.

On all the railroads in 1915 three-quarters of the train employes earned these wages:

	Passenger		Freight		Yard	
	Range	Average	Range	Average	Range	Average
Engineers . . .	\$1641 3983	\$2067	\$1455 3505	\$1892	\$1005 2445	\$1526
Conductors . . .	1543 3004	\$1850	1353 2932	\$1719	1055 2045	\$1310
Firemen . . .	943 2078	\$1203	648 2059	\$1117	406 1633	\$924
Brakemen . . .	854 1736	\$1095	755 1961	\$1013	753 1821	\$1076

You have a direct interest in these wages because the money to pay them comes out of your pocket.

Low freight rates have given American farmers command of the markets of the world.

With two-thirds of the cost of operating railroads the wages paid labor, any great increase in labor cost inevitably means higher freight rates.

A \$100,000,000 increase in railroad wages is equal to a five per cent. increase on all freight rates.

The railroads have urged that the justice of these demands be determined by the Interstate Commerce Commission (the body that fixes the rates you pay the carriers), or by a national arbitration board. The employes' representatives have refused this offer and have taken a vote on a national strike.

This problem is your problem. The railroad managers, as trustees for the public, have no right to place this burden on the cost of transportation to you without a clear mandate from a public tribunal.

National Conference Committee of the Railways

- | | | |
|--|--|--|
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This Car GIVEN and the Agency for your Territory

5 Passenger—26 H. P. Electric Lights and Starter—Demountable Rims—Non Skid Tires in Rear—Fully Equipped. A wonder car and you can get one without cost. Write now for full information. Learn how you can get this car without cost and make big money in the automobile business. Don't delay—the offer is strictly limited. Write at once. A postal will do. Address me personally. Ralph Birchard, Pres.

Birch Motor College, Inc. Dept. 870, Tower Bldg., Chicago

The PERFECT CORN HARVESTER

Sold Direct \$19.50 JUST THE THING FOR SHOCK OR SILO CUTTING

Works in any kind of soil. Cuts stalks—doesn't pull like other cutters. Absolutely no danger.

Cuts Four to Seven Acres a Day with one man and one horse. Here is what one farmer says: Loudonville, Ohio, Dec. 4, 1915 Love Mfg. Co.: Dear Sirs: The "Perfect" is all right. I wouldn't want to be without it for twice what it cost me. Some of our corn was very weedy, but the harvester did the work. Respectfully, Herman Fritz.

SOLD DIRECT TO THE FARMER

Send for booklet and circulars telling all about this labor-saving machine; also containing testimonials of many users. Send for this circular matter today.

LOVE MANUFACTURING COMPANY
Dept. 40 Lincoln, Illinois

ROSS Silo Fillers for Gasoline Engine Power

Our 66th Year

Double the Capacity with Less Power and considerably Less Speed. We make Silo Fillers of extra large capacity to meet the special requirements of all silo users. These machines are specially designed to be operated by popular size Gasoline Engines—6-8-10-12 and 14 H. P.

Tell us what your power is and we will advise you what size Ross Silo Filler you require.

Write for Our Special Proposition Today and state if you intend to buy this year. Early orders will save you money.

The E. W. Ross Co., Box 119, Springfield, Ohio

Distillers' Grains

ATLAS DAIRY FEED contains three times the protein and fat contained in corn, oats, barley, bran, etc., and costs far less. Sign Coupon for FREE Sample.

Why pay \$26.00 for corn; \$26.00 for oats; \$21.00 for bran and \$27.75 for barley, when Atlas Distillers' Grains cost only \$22.00 per ton, bulk, f. o. b. Peoria?

Atlas Distillers' Grains will increase your milk and butter-fat production, and do it at a far smaller feed cost. Get the information right away.

Atlas Feed & Milling Co.
P. O. Box 54 PEORIA, ILL.

ATLAS contains from 27% to 30% protein and from 8% to 10% fat. Other feeds analyze about 10% protein and from 3% to 4% fat.

Gentlemen—Please forward a FREE sample of Atlas Distillers' Grains, also FREE circular.

Name _____
Town _____
State _____ R. F. D. _____

Nearly ALL CHAMPION Dairy Cows are fed Distillers' Grains

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Go Equipped With

WINCHESTER
Guns and Ammunition
Made for all kinds of shooting.
SOLD EVERYWHERE

ASK FOR THE **W** BRAND

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Think of it!—Only \$7.50 if satisfied after trial—then a few monthly payments—and you keep the Genuine Belgian Melotte—the separator with the wonderful, self-balancing bowl. The Melotte turns so easily it will run 30 minutes after you stop cranking unless you apply brake. Write for catalog—it explains everything. Now—read our offer.

Not a Cent in Advance Just ask for a 30-day free trial. Then we ship the Melotte. No salesman calls to bother you. Use the machine in every way. After 30 days, send it back at our expense if you wish. Or keep the great Melotte on our rock-bottom offer—\$7.50 down and balance in the same monthly payments. Write for free catalog and details.

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The high tariff, which has heretofore kept the great Melotte out of reach of the American farmer, has been cut right off. The imported Belgian Melotte now comes in free of all duty. An extra reduction now of \$15.25.

We offer you these separators at the rock bottom, before the war price—the same price charged in Belgium plus only \$1.75 water freight. Seize this opportunity. Send for free catalog.

Write today for "Profitable Dairying" written by Professors Benckendorf and Hatch, the two great, practical dairy scientists. 88 pages; no advertising. Tells how to feed and care for cattle—how to increase dairy profits.

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H. B. BABSON, U. S. Manager,
Dept. C-403, 19th & California Ave., Chicago



Save the Breeders

By V. M. Couch

THE present high prices for all kinds of live stock are very likely to continue for some time, perhaps for years. The prices for hogs and cattle have been so high for several months that many farmers could not withstand the temptation of fattening and selling off breeding stock and young stock that might have become good breeding stock. This is bound to result in a general shortage of live stock, and it will require a year or more to catch up with the demand. There are some farmers who always act on the principle that if products are high this week they will be low next. This is sometimes true, but not always. If cows, heifer calves, and brood sows are sold off as close all over the country as they are in central New York State, there cannot help but be a shortage for some time to come, with consequent high prices.



Live Stock

Fighting Botflies

By John Coleman

DURING August, horses are annoyed to a considerable extent by the presence of botflies. These flies are about the size of honeybees, and are most annoying to horses' legs.

Botflies deposit small yellow eggs, and cement them to hairs at the time they are laid. During the late fall and early winter the eggs enter the horse's mouth. Later the eggs hatch in the stomach, and develop into the larval form known as bots. They attach themselves to the lining of the stomach, where they remain and consume some of the nutriment that should nourish the horse. During late spring and early summer the bots pass out in the manure. They at once burrow into the ground, where they undergo changes in their life cycle, and soon emerge as fully developed botflies.

Bots produce no definite symptoms, neither is there any satisfactory treatment that can be applied. Prevention is easy, and practicable to a considerable extent. Every few days during the fall months all hairs should be clipped off that contain eggs of botflies. By thus reducing the number of eggs the number of bots will be reduced.

Formaldehyde Cures Bloat

By Henry Ashton

EXPERIMENTS conducted at the Kentucky Station with formaldehyde as a treatment for cattle badly affected with bloat caused by eating too much succulent clover or alfalfa has given very promising results.

One-half ounce of formalin in one quart of water makes the proper solution for treating bloated animals. After administering the remedy, a block of wood is placed in the animal's mouth to allow the better escape of the gas. In all the cases tried the cows were in normal condition twenty to twenty-five minutes after the formalin solution was given, even when the animals were badly bloated and in a dangerous condition. Formalin is a trade name for a forty per cent solution of formaldehyde, and can be procured at any drug store.

When to Sell Hogs

By Roger Irving

WHEN is the best time to sell hogs? Prices paid for swine since 1896 show that two periods of the year were distinctly favorable for securing the best market price. These are during the early part of September and the early part of April. At other times the average price ran much lower, reaching the lowest mark in November. The average September price was \$6.90 per hundred pounds, the April price \$6.65, and the November price \$5.50. It is evident that swine raisers secure the most profit when they sell their hogs near the high periods.

Corn Machinery

[CONTINUED FROM PAGE 3]

Corn harvesters of the sled style are also in common use, notwithstanding the charge that they are dangerous. There is bound to be an element of danger in any contrivance that has knives extending from the sides, but if a man knows where the danger is and keeps away from it, he is not going to get into trouble.

One of these machines which sells for about \$20 is constructed along safety lines, and there is a metal rail between the platform where the operator stands and the knives. A guide rod forces the stalks against the knives and the corn is then allowed to collect till there are about 40 hills on the sled, after which the corn is either loaded on a wagon or shocked. One man and horse will cut about four acres a day under favorable conditions.

A man who cannot stand the heavy work of cutting corn by hand all day will do very well with a sled harvester as long as he is alert and active. Another labor-saving development which has lately gained considerable ground in public favor is the mechanical cribbing of corn. The coming style of corn-crib is one that is nearly square and about as high as the other dimensions. Such construction will give greater capacity at less cost than the old-style long, narrow cribs. High cribs require less foundation, flooring, and roofing, which are the most costly parts of construction.

A built-in elevator will be bought by the money saved in having the crib more compact. You drive in with the load of corn, dump it, and the elevator does the rest. Power to elevate the corn is supplied either by horsepower or a small engine.

In addition to the time and labor saved in the mechanical cribbing of corn, here are definite financial benefits:

You can pick out moldy or bad corn as it goes up the elevator. You can select your seed corn at the same time. You are in a better position to know the exact quality of the corn.

Where a large number of cribs are to be filled, a portable elevator has advantages over the built-in kind, as one will do all the work on the average farm. The picture is an Iowa scene, and shows a portable elevator operated by a small gasoline engine. An outfit of this kind will crib a load in about five minutes, and 2½ gallons of gasoline supplied the power for elevating 4,000 bushels of oats.

Whew, It's Hot!

Let's go and get some good old

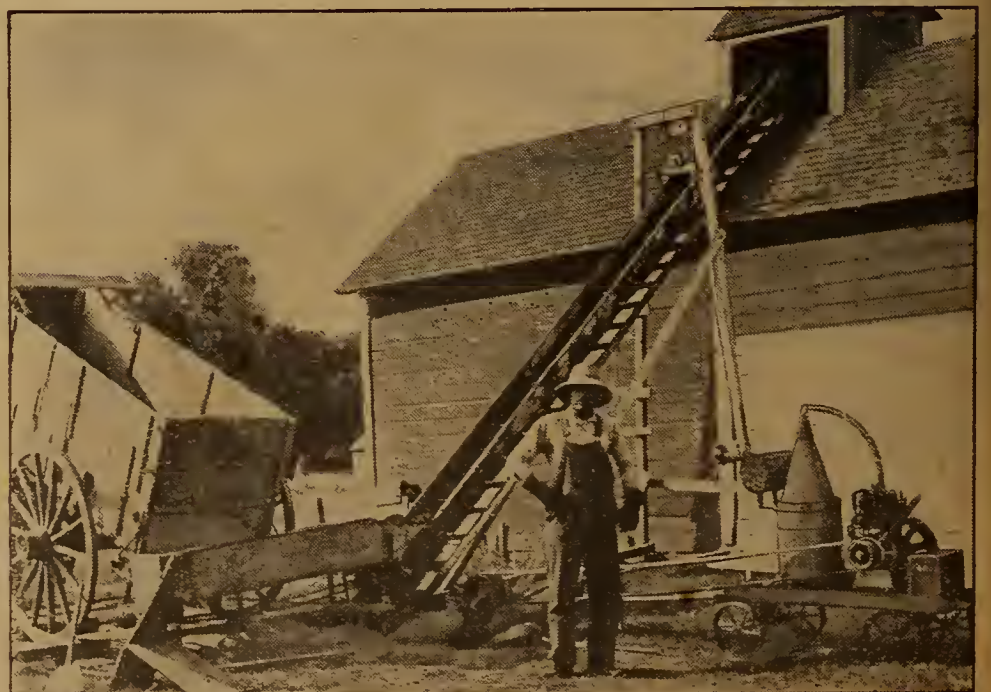
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Dairying

Farm Cheese Factory

By Otto J. Kilian

MAKING cheese from the milk of a single dairy has the disadvantage of small output in most cases, but has the advantage of complete control of all operations. Fred Beilke, a Wisconsin dairyman, has conducted a farm-size cheese factory for seven years in the following manner.

He has a herd of 15 cows which produce from 250 to 300 pounds of milk a day. His building is 20 feet wide by 30 feet long, with a partition dividing it into two rooms, each 15 by 20 feet. One room is used for cheese-making, and the other is his boiler and tool room. There is a door between them. His engine is a steam engine of upright pattern.

In the cellar below the cheese-room is his curing-room, and in one corner of this he has a force pump to draw water from a well ten feet from the building. The curing-room also has one important feature essential for making cheese of high quality—namely, a system for securing fresh cold air. This comes through clay pipes connected with the well, and he has a pump for supplying the fresh air according to the amount needed.

In the winter time the curing-room is heated to the proper temperature with steam heat. Mr. Beilke not only makes excellent cheese but he has been fortunate in having a steady market for his entire product. He never has made enough to satisfy the demand. Brick cheese is one of the varieties he has made to a large extent, and has secured as much as 14 pounds of brick cheese from 100 pounds of milk. The factory is equipped so that butter can also be made if desired.

Artesian-Well House

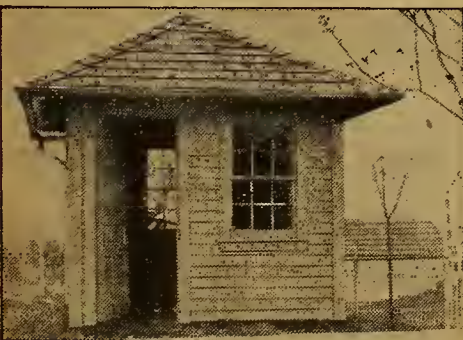
By A. L. Roat

SEVERAL seasons ago we experienced a severe drought. The wells were dry almost seven months. We have several artesian wells on the place, but it was necessary for a new one to be dug near the house.

From this new well, which yielded an enormous quantity of water, we pumped water with a gasoline engine into another well that is connected to the house and barn through a storage-tank system.

But during rainy weather and the winter months we experienced much difficulty with the battery wires on the engine. Of course, the engine was protected by a cover, but the wires nevertheless managed to get wet.

Then it was I determined to make a suitable place for the pump, and, besides, it was annoying to stand in the rain and sleet to get water. We always



Besides sheltering a pump and the engine that drives it, this well house contains a washstand and necessary toilet articles for washing up after work

prefer fresh-pumped water for the table. I covered the well with the house illustrated. It is built of wood and weather-boarded, and roofed with red cedar shingles. It has windows on three sides.

A washstand and necessary toilet articles are in one corner of the well house. Here the men wash up after work. The house has a concrete floor. The pump is at one side, and is always ready to perform its duty regardless of weather. The water is brought up also by means of a hand lever. When the door of the house is closed the room keeps at a low temperature, and poultry is conditioned there to remove the animal heat.

An Announcement of Hudson Policy

35,000 More Hudson Super-Sixes

Detroit, Mich., July 1, 1916

We have today to announce—

That more than ten thousand Hudson Super-Sixes have now been delivered to owners.

That we have in four months, by tremendous exertion, quadrupled our daily output.

That we have parts and materials, on hand and in process, for 20,000 more of the present Super-Six. Constantly increasing demand has just forced us to place contracts on materials for an additional 15,000.

Thus it is settled that at least 35,000 more of the Hudson Super-Six will be built like the present model. Our production is now 3,500 monthly.

No Change in Sight

Our opinion is that a like announcement will be made in a year from now. The Super-Six invention in one bound, increased motor efficiency by 80 per cent. From a small light Six, which delivered 42 horsepower, it created a 76-horsepower motor. And simply by ending vibration.

Stock Super-Sixes, in a hundred tests, have out-rivaled all other stock-car performance. In speed, in hill-climbing, in quick acceleration and endurance, they have done what was never done before.

No man can doubt that the Super-Six holds the pinnacle place among motors. And there is no higher place in sight.

After eight months of experience, with 10,000 cars, not one important improvement in design suggests itself to our engineering corps.

So the Super-Six will remain as it is. And, because of our patents, it will maintain its supremacy.

Watch the 10,000

Watch the 10,000 Super-Sixes now running, and judge if you want a car like them.

Each owner feels himself master of the road. He knows that in every sort of performance his car has out-matched all rivals.

He knows that he has the smoothest-running motor ever built. The most powerful of its size.

He knows that in ordinary driving he never taxes half its capacity. That means long life and economy.

He knows that his motor has shown boundless endurance—such as never before was shown. And that he can look forward to many years of its perfect present service.

Watch some of those cars. Talk to the men who own them. Then ask yourself if there is any fine car equal to it.

Now 135 Per Day

Thousands of men in the past few months have been forced to take second choice. Most of them, we think, now regret it, and will always regret that they did not wait.

Those times are over. We are now sending out 135 Super-Sixes per day.

Go ask our local dealer.



Hudson Motor Car Company

Detroit, Michigan

Overland Given

New 1917 Model FREIGHT PREPAID. If you live in the country or town under 10,000, you can become the owner of this new 1917 Overland without cost, as a reward for a few weeks' spare time work in your own community. Write today. C. F. ALDRICH, Mgr., St. Paul, Minn.



FREE MY NEW SPLIT HICKORY BUGGY. Just drop me a postal and I will send you a copy of my big, new Buggy Book, FREE and Postpaid. It shows more than a hundred stunning new styles which my big factory is turning out this season at prices as low as only \$39.25 and up. Think of getting a genuine Split Hickory guaranteed 2 years at such prices. Send today and see how to save \$20 to \$40 on your new rig. Address: H. C. PHELPS, Pres., THE OHIO CARRIAGE MFG. CO., Station 45, Columbus, Ohio.

Auto-Oiled Windmill

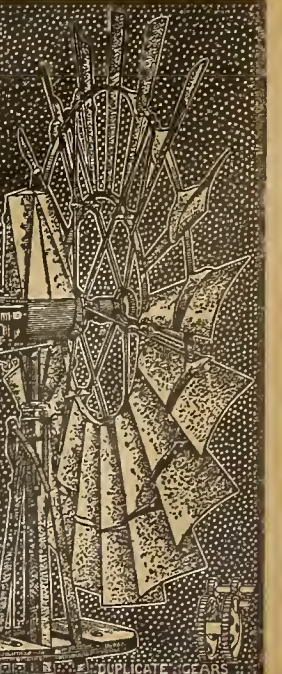
ALL WORKING PARTS INCLOSED and flooded with oil from the supply in the gear case, which needs replenishing only once a year.

Put your old Aermotor wheel and vane on this self-oiled motor and have an up-to-date outfit at small cost. This helmet keeps out rain, keeps out dust, keeps in oil. Duplicates gears running in oil. Oil annually. Every bearing flooded with oil.

Thousands of Auto-Oiled Aermotors have replaced other makes of windmills on their old towers. An Aermotor with a short stub tower can easily be put on any old tower. It is worth the price to get rid of the continual climbing.

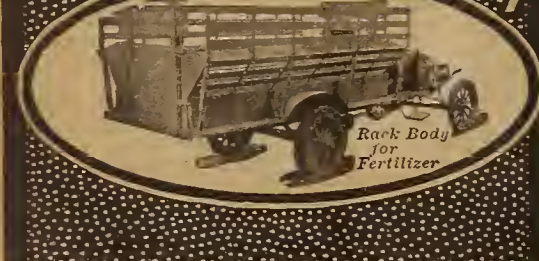
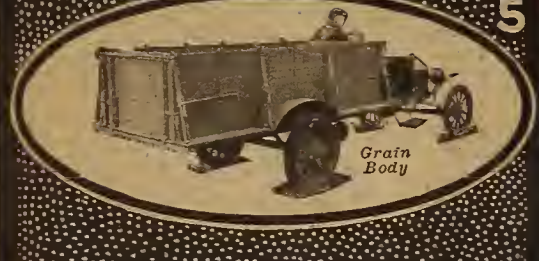
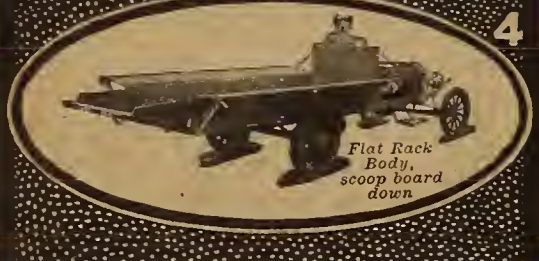
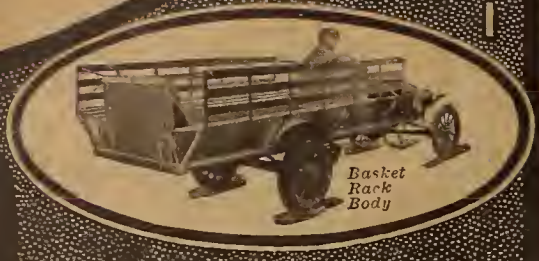
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AERMOTOR CO., 1143 S. Campbell Ave., CHICAGO





SMITH Form-a-Truck



Thousands Sold to Farmers—the Ideal Utility Truck

Over 44,000 already contracted for out of a total production of 50,000, with farm owners among biggest users.

Smith Form-a-Truck, the sales sensation of the year, is the accepted utility truck for all farm owners.

For truck and garden farmer, dairy farmer, grain farmer and stock grazer, the one truck that has demonstrated in all types of service that it will go anywhere any horse-drawn truck will go, do its work at lower cost, at greater speed and greater efficiency.

The Smith Form-a-Truck is an attachment which, at the cost of \$350, combines with any Ford Chassis to make a fully guaranteed one-ton truck.

It is sturdily built, of the best materials and according to the best mechanical design. Frame is steel, channel section 4 in. deep. Fits over the Ford chassis throughout its entire length after the rear wheels and the body have been removed.

It lengthens the wheelbase to 125". Uses the Ford rear axle as a jackshaft for double chain drive. Rear wheels are 32x3 1/2", with

Firestone, solid truck type tires. Rear springs are semi-elliptic, with auxiliary cross spring which rests on the rear axle when the truck is fully loaded.

Loading space back of the driver's seat is 9 feet long.

Any two men can install the Smith Form-a-Truck on a Ford chassis in a few hours. After it is installed, it forms a permanent truck construction of great strength and wonderful service.

12 to 15 miles an hour over roads and a much higher rate of speed under all conditions of hauling than can be maintained by horse-drawn trucks.

6,000 to 8,000 miles per set of tires—12 to 18 miles per gallon of gasoline. These are service results you get from the Smith Form-a-Truck on your farm.

Now the Eight-in-One Farm Body

Every possible use for a truck on a farm is covered in this new collapsible body — an exclusive Smith Form-a-Truck feature that cannot be had with any other make of truck. We are carrying the wonderful adaptability of the Smith Form-a-Truck for farm service to the highest possible point in our new convertible body.

Any desired combination secured without tools. Simply use levers, which are a part of this wonderful body construction. Changes made instantly from one type of body to another.

Study illustrations in panel. They show just what you can get.

And this body is furnished at only a slight additional cost over the original cost of the Smith Form-a-Truck attachment itself.

Write for complete descriptive booklet of this convertible body.

Save money, time and investment by taking advantage of this tremendous development in truck building. Horses on the farm are rapidly becoming obsolete as they are in any other line of business requiring heavy hauling.

The Smith Form-a-Truck, with the new convertible body, is the real solution of economical, satisfactory haulage that saves time, money and equipment cost and gives the highest type of service in every type of work you can ask it to do.

Wonderful Opportunity for Dealers

Without the new convertible body, the Smith Form-a-Truck has been a tremendous business builder for automobile dealers.

Now, with this convertible body, with eight distinct body types in one, combined with the wonderful adaptability of the Smith Form-a-Truck for every type of service and with the startling low price, no dealer can afford to be without Smith Form-a-Truck dealership. Write or wire for full information TODAY.

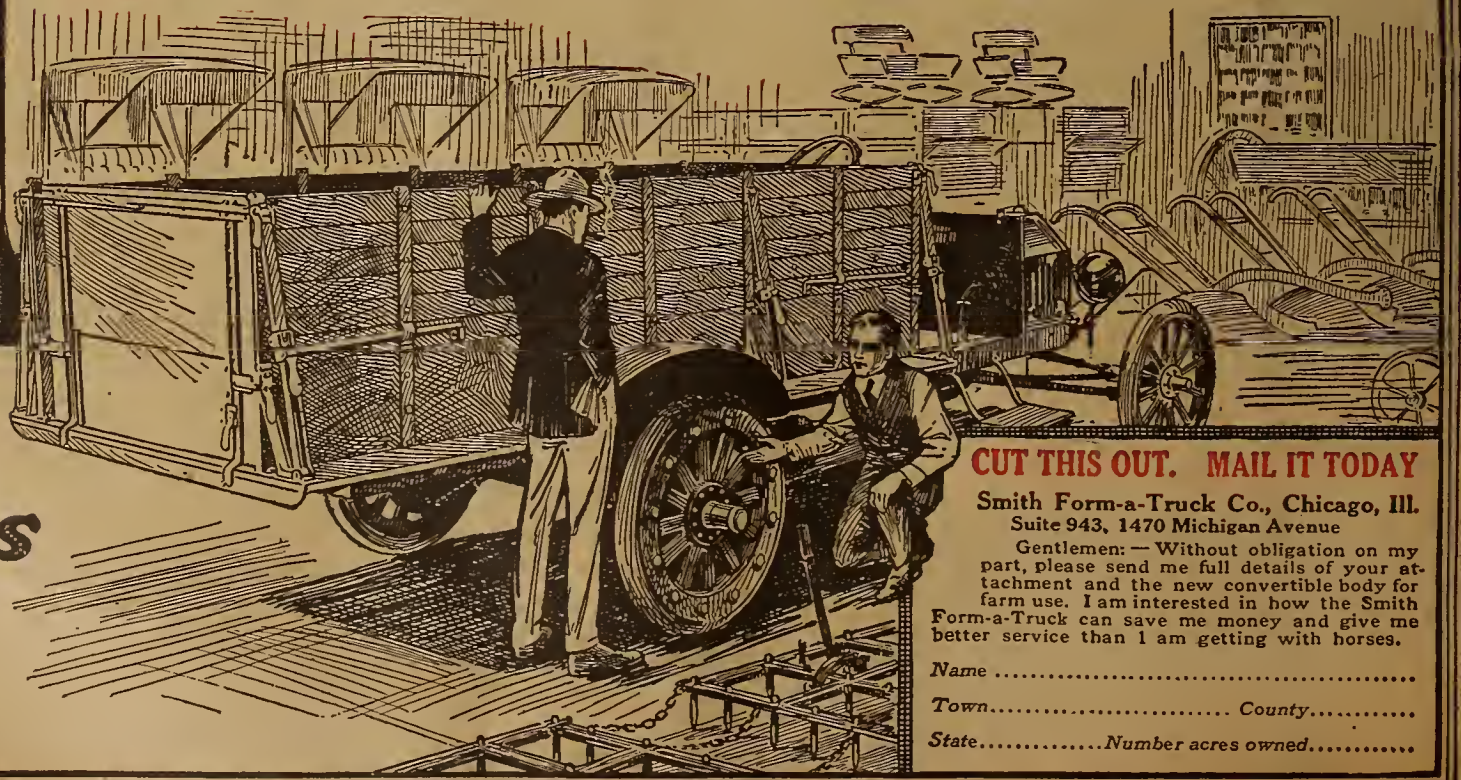


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SMITH Form-a-Truck COMPANY

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Eight Truck Bodies in One



CUT THIS OUT. MAIL IT TODAY

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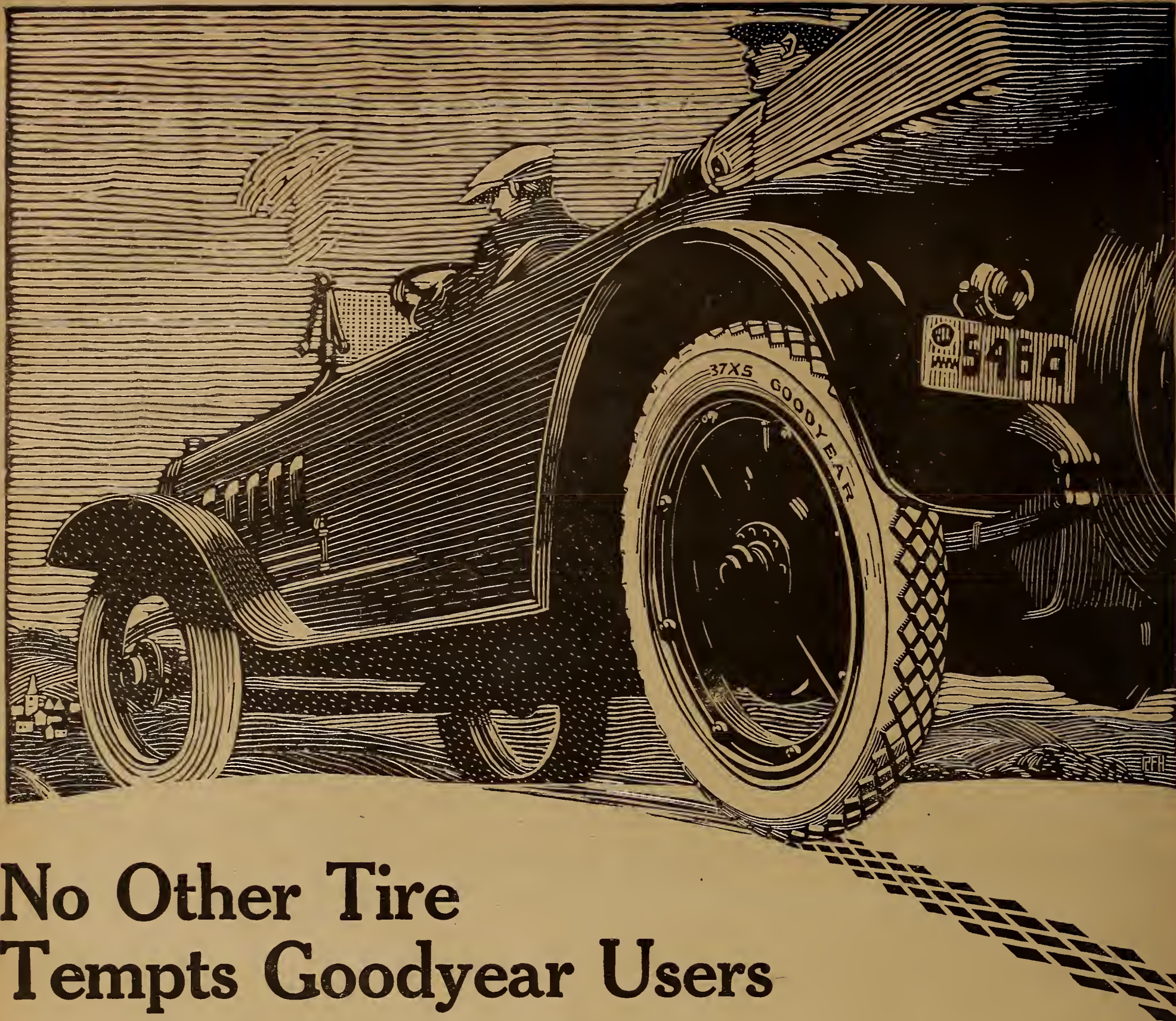
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Saturday, September 2, 1916

Eastern Edition



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THERE are still thousands who think that one tire is much like another.

But the largest single group of tire buyers in America evidently does not think so.

The proof of this is, that they continue to buy one Goodyear equipment after another, year after year.

If they did not prefer Goodyear Tires to any others, they would surely be tempted away by the lower prices on scores of others.

But they are *not* tempted away.

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Akron, Ohio

GOODYEAR TIRES

AKRON

FARM and FIRE SIDE

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No. 24

Tractor Tames New Land

Where a Man Clears Fifty Acres and Plants Them in Ten Weeks

By G. T. WYCKOFF

I CAME to Marinette County, Wisconsin, the middle of August, 1914, and began to clear my land about the first of September. It was full of oak and pine trees and thickly scattered with grub oaks, underbrush, white and Norway pine stumps. So I bought a tractor with 12 horsepower on the drawbar, and a 10,000-pound-test steel chain to pull with. I found it took one man on the engine and one to handle the chain.

We pulled up trees that were 18 inches through. The small grub oaks and underbrush were left to be plowed under, as my plow will cut off all these roots, and the harrow throws them on top of the ground to be picked up later.

When everything was pulled out of the ground we went along with a big sled and hauled off all that could be piled on. This sled is 12 feet wide and 18 feet long, and is made of very heavy material.

We plowed with a 24-inch breaking plow at the rate of six acres a day. One man can do this, as he simply throws one lever down and the plow throws itself out of the ground. It would be impossible to throw this plow out of the ground by hand, as it has a six-foot landside. It cuts roots as large as 9 inches thick and 18 inches long without any trouble.

I then rolled the ground with a corrugated roller 10 feet wide and of the largest size. Next I disked, harrowed, and rolled the land at the same time. We pulled all these machines with the tractor, and I doubt if twelve horses could have done it. The disk is 10 feet wide. The harrow, which I had made, is an old-time A shape. The wings are of 6x6-inch hardwood, 18 feet long, and the crossbar of the same material, 8 feet long, set in so as to give the harrow a 10-foot spread. The teeth are made of 1¼-inch square steel pegs, and project 8 inches below the wings.

Clearing Cost But \$4.85 an Acre

THE ground was left alone until spring, when it was double-disked and harrowed ready for the planter. We then had 50 acres of land ready for potatoes, and had completed this work in nine weeks, at a cost of \$4.85 an acre. Horses could not have done this for less than \$20 an acre, and there would be no comparison in the length of time it would take even the best team.

I first dipped my potatoes in disinfectant to kill scab, and then cut them by hand. Two men will cut 70 bushels a day. We commenced on the first of June and planted 10 bushels to the acre and 8 acres a day. The cut seed was put into bushel potato boxes, and scattered along the end of the field. This is a great time saver. By the time the crop was in we had spent ten weeks' time on the 50 acres. They were cultivated four times with a mule team and a disk cultivator, and sprayed twice for bugs and three times for blight.

I shall dig them with a combined digger and picker, pulled by my tractor, and shall haul them to town with the tractor and store them in a seed warehouse.

I am now clearing and preparing more land for my next year's crop. Where the potatoes were this year I will sow clover and let it stand two years,



Here is a portion of Mr. Wyckoff's farm in northern Wisconsin. With his tractor he does combinations of work impossible with horses

plowing under the last crop of clover. This gives me a three-year rotation and will keep the soil free from diseases.

In New England

Tractor Proves Worth on 121 Acres

By MARCEL THERIAULT

MY FARM contains 121 acres, about 90 of which are in tillage and meadow land. It is a river-bottom farm, free from stones, is level, very light land, and easy to work.

Like many others, I have been reading for some time the advertisements of the different tractor manufacturers, and being confronted with the proposition of equipping this farm, which I had just purchased, I decided on an 8-16 tractor that will

the wheels being so wide, it would press the hay into the ground so that the rake did not pick it up clean. Now we are using horses for mowing and raking, doing the hauling with the tractor.

My machine is too large and too heavy for such work as cultivating, and horses must be used in that work. Much to my surprise I found it would go in places in soft meadow land and haul out good loads where horses would get mired, and I also thought that in going over a piece of land that was thoroughly harrowed it would tamp down the land so hard that it would be a detriment to the crop. But by using the extension rims I found that it only smoothed down humps, and a man could walk behind the tractor and sink in where the wheels had passed.

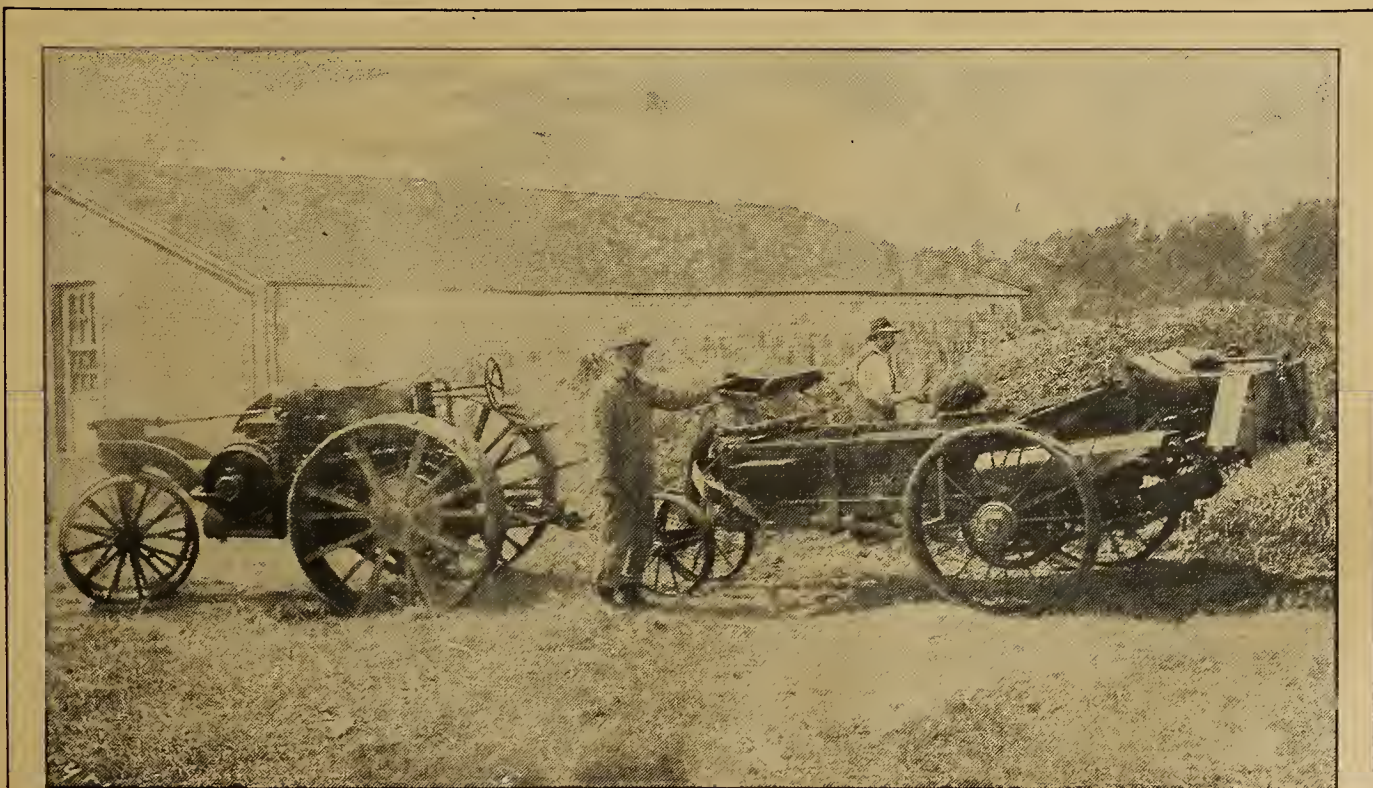
Some people believe that it takes an expert mechanic to operate this machine, but that also is a mistaken opinion. My manager on the farm is anything but a mechanic, and after watching the salesman for the company demonstrate this machine to prospective purchasers for half a day he started right in and ran it very satisfactorily all summer, never having to call on the company for assistance.

I don't mean by this that there is no difficulty to be had with a tractor, but our machine hasn't caused us as much worry as horses. It is easier to diagnose a trouble in the machine than it is to diagnose and remedy a disease in the horse.

As to the cost of operating, it costs us about \$1.40 for nine hours, paying 7½c a gallon for kerosene.

The problem which I consider to be the most material one confronting a prospective purchaser of a tractor is the question of depreciation. My tractor is not sufficiently protected against the dirt and dust which works into all the bearings, and in spite of careful lubrication there is very rapid wear.

But the company has made good in every instance, and I believe tractors will take the place of horses for all the heavy work on the farm in a short time.



Mr. Theriault's farm is in central New Hampshire. The tractor does the hard work, leaving the light tasks for horses, and doesn't eat its head off during long winters

Gas Power Under Test

Rules Which Put Farm Tractors on a Fair Basis for Comparison

By B. D. STOCKWELL

SEVEN of the eight main tractor demonstrations have now been held, but there will be many smaller ones at state and county fairs. The conclusions one carries away from such a demonstration may be correct or otherwise, according to the way it has been staged.

This year eight main demonstrations were laid out definitely several months in advance in eight different States. The purpose was to show all makes of tractors in the same field, at the same time. The policy of free attendance was also adopted, and the committee in charge was given instructions to sanction no demonstration where an entrance fee was charged.

The rules governing the demonstrations were supplied by the American Society of Agricultural Engineers and include the following regulations which provide fair play to all:

"All plows on any given gang must be set at the same depth, and kept there during the day's demonstration. This depth will be announced daily by general manager. Plows found operating otherwise will be ordered from the field for balance of the day's work.

"Each tractor shall bear a placard showing the brake horsepower of the engine, the revolutions a minute, the plowing speed in miles per hour, and the kind of fuel used.

"In all public demonstrations the motor or tractor must not run at more than 10 per cent above its catalogue plowing speed. Tractors may run on high gear with normal engine speed when disking, harrowing, seeding, etc.

"No machine will be allowed to operate with special equipment other than that designed for practical use with same. No spectacular methods will be permitted on the part of salesmen or others to attract crowds. The demonstration must speak for itself."

Altogether there are nineteen strict regulations, and the committee in charge is empowered to add such new rules as may be necessary. Tests of the resistance of the soil are made daily by means of a dynamometer so that ground to be plowed by each tractor may be fairly allotted. Last year there was considerable dissatisfaction because of the difference in the soil. Some machines were obliged to plow in heavy gumbo while others had a nice loam and made a much better showing. The dynamometer is used also for testing the maximum drawbar pull of tractors.

Thus at the main demonstrations every precaution is taken to put all tractors on an equal basis. At the smaller shows and fairs, where strict regulations like the foregoing are lacking, an accurate comparison of tractors is more difficult.

Most Work with Least Wear

ONE of the most misleading of all standards for comparing tractors is the speed. In plowing, for instance, from one third to one half the power of the tractor is used up by moving its own weight and the weight of the plows.

For that reason it is better to pull four plows at a speed of two miles an hour than two plows at four miles an hour. You can get just as much work done, and there is less wear and tear on the tractor because it travels only half as far and also only half as fast.

Another matter to consider is the convenience of hitches for different implements, both singly and in tandem. It is bad practice to drill the rear end of a tractor full of holes in order to provide drawbar pull at a certain place, and the best tractors do not require it.

The final test in buying a tractor, of course, is, "Will horses or a tractor do my work best?" Here are the chief advantages of each in the light of the best experience on both sides.

This is a list of points in favor of horses:

They have stood the test for centuries of useful service.

Their feed can be grown on the farm, and they help raise it.

They are self-producing and give about twenty years of service.

Their manure is a valuable farm by-product.

They are intelligent and in some work may be directed simply by word without need of

rein, thus saving the services and expense of one man.

They can go through water, mud, timber, and over rough and hilly places with comparative ease.

Though normally developing less than one horsepower, a horse can in an emergency, and for a short time, exert three or four horsepower.

One Man Handles More Power

HERE are some points in favor of tractors:

Tractors satisfy the demand for power to pull heavy machinery such as large gang plows, corn pickers, and road machinery. This work is too hard for horses.

Tractors can do belt work such as running ensilage cutters, grinding mills, and other high-speed machinery. This work cannot very well be done by horses.

Tractors need not be rested in hot weather, and are not "soft" in the spring when they are needed most.



The instrument with the large white dials is a dynamometer and registers the power required to pull the plows

Tractors are not affected by flies, bees, and sickness which may entirely upset and delay a season's work.

Tractors require no fenced pasture land, nor expensive barns, nor harness. They need but a simple shed for storage.

Tractors require no care, and likewise cause no expense for upkeep when idle.

Tractors enable the hay, grain, and other crops to be fed to cattle, sheep, and swine, thus increasing the profits of the farm.

Tractors cost less than \$100 per horsepower, whereas good horses average about \$150 per horsepower.

One man can easily handle more power in the form of a tractor than its equivalent in horses.

A tractor enables its owner to keep up with his work and do each operation in its proper season, thereby avoiding a common source of loss.

On paper the tractor seems to show up a little better than horses, but in actual practice even those who

own and operate tractors still keep at least one good horse or team—usually brood mares—for light work.

Here are a few jobs typical of the work that horses will probably always do better than tractors:

Mowing rough ground and roadside ditches, plowing the garden, winter work in woodlot, farming hillsides and rough land, operating hay rakes, sweep rakes, tedders, ranch duties as now done by saddle horses.

I suppose that there are at least a hundred jobs of that kind which are too big for human labor and too small for tractors to do economically.

No impartial judge can honestly say which tractor now on the market is best: they are so different.

For a farm full of ditches or where the land is sandy, you naturally want a tractor with large front wheels as well as large rear ones, or possibly the caterpillar type of driving mechanism. There are about a dozen first-class tractors now on the market suitable for the average farm, and perhaps a dozen more—in most cases made by the same companies—for special requirements.

In selecting a tractor the greatest task is to find one that is suited to the kind of work you want it to do. In most cases this will be a machine having from 8 to 12 horsepower on the drawbar and from 16 to 25 on the belt pulley. Do not hastily decide in favor of either a gasoline or kerosene tractor without fully learning the merits of both kinds of fuel.

The demand for a so-called light-weight tractor at first induced some manufacturers to make them too light. But for pulling two 14-inch plows a tractor needs to weigh about 3,000 pounds, and the average weight of tractors for such work is upwards of 4,000 pounds. Too light a tractor is likely to mean weak construction and lack of traction for hard pulling. Several so-called light-weight tractors have disappeared from the market because they didn't work out in the field as well as they did on paper, and their places have been filled by heavier machines of similar design.

So the safest course is to get a medium-sized machine of sufficient weight to give it plenty of traction but provided with a large enough tread to prevent packing. The best method of comparing tractors is to see them at the large demonstrations where they operate on a fair-sized scale, and where the regulations put all on a fair basis for comparison.

Good Lubrication

Keep Oils in Original Containers

By CARLTON FISHER

IN SELECTING a tractor consider whether the bearings are of general size. Remember that a tractor works close to its full power most of the time, and ample bearing surface will mean a minimum of wear. Roller bearings and ball bearings are now coming to be used on high speed tractors and are important means of reducing friction.

Observe tractors that have been run to see whether the crank case leaks. A slight leakage may be expected, but there is no justification in allowing a machine to waste an excessive amount of oil. Fiber gaskets will stop the leakage, but as the crank case is subject to continual vibration, a machine that shows a constant tendency to leak will be hard to keep oiled economically.

Wherever possible, keep oils in the original containers. Oil that is kept in an old molasses barrel or is poured through a dirty funnel is bound to give trouble through no fault of the oil itself.

There are now on the market special oils for tractors. One tractor concern has made exhaustive tests, and recommends any one of eight different oils for general use and a choice of four more for hot weather, when a heavier oil is better.



In selecting a tractor consider the different hitches for mowers, binders, harrows, wagons, and any other machinery you wish to use. The best tractors require no drilling of extra holes

Tractors of To-day

How the 1916 Models Perform at the Demonstrations

By D. S. BURCH

PLOWING 100 acres in 135 minutes was just one of the events to be seen at the St. Louis tractor demonstration held the first part of August. The work was done by 56 tractors pulling 224 plow bottoms.

At the Hutchinson, Kansas, demonstration six women drove tractors in the field, though later women drivers were barred because of the distracting effect they had on the rest of the exhibition.

But back of all such popular attractions stood the stanch worth of the tractors themselves. None of them broke down and, as one visitor remarked to me, "One seems to work just about as well as another." I was surprised to find that changes in external design since last year were so slight. A few makes of machines shown at the 1915 demonstrations were absent, and there were a few new ones. But for the most part the tractors shown were chiefly the same as a year ago. There were no startling surprises, no radical freaks, no whirlwind tractors at bargain prices.

This condition of the tractor business indicates that most of the machines have really become standard. Four-wheeled tractors, three-wheelers, two-wheelers, and the crawling-tread type were all in evidence, with four-wheelers in the majority.

Anyone attending a tractor demonstration hears many arguments as to the "best tractor on the grounds," and is likely to be influenced in his own decision. But back of all the differences of opinion, you always find a difference in the kind of work each man wants his machine to do. For instance, one man went to the St. Louis demonstration to pick out a tractor for roadwork. He was from Illinois. Another from Tennessee expected to use his for cultivating cotton, and still another from Missouri was in the market for twenty tractors to be used on a large estate. Others didn't have such radically different requirements, but there was a wide variance in the price they wanted to pay.

A much better understanding has arisen also as to the size and kind of farm for which tractors are suited. The nature of the soil or the crops raised seems to have little to do with the success of a tractor. The main thing is to have work enough to keep the tractor busy.

"Tractors are not intended for the man with just a horse, a cow, and a pig," said the president of one large tractor company. "He doesn't need a tractor. It is rather for the progressive man operating a real farm, and for whom the methods of the past are too slow and uncertain. The tractor is simply an answer to the demand for tireless farm power, and plenty of it."

A New Motor Construction

BEARING out this opinion is the fact that little progress has been made along the line of low-powered tractors. One machine known as a garden tractor, which has lately appeared, has 1½ horsepower on the drawbar, 4 horsepower on the belt, weighs 450 pounds, has two wheels, and somewhat resembles a huge lawn mower. It sells for \$150, and is intended for a large variety of garden work, such as seeding, mulching, cultivating, but not for plowing. There is also a new motor cultivator which sells for \$400, and has power enough for general farm tillage.

But the greatest interest at the demonstrations was in the tractors that would pull two or three plows, do the seeding, run the ensilage cutter, haul loads on the road, and do other work of about the same difficulty. For such tasks the smallest practical size is the tractor having 3 horsepower on the drawbar and 16 at the belt. This will do the work of a good four-horse team and keep it up long after the horses would be tired out. It will also do all belt work, heavy threshing excepted.

For the person desiring a machine just a trifle larger in capacity but no larger in size, there is a 9-18 tractor which an experienced manufacturer has

just put on the market. This machine has four cylinders, four wheels, a close-fitting hood over the working parts, shaft-driven fan, and is small enough to go in the average horse stall. Altogether it is a sturdy, compact machine, priced at \$800. It performs well in the field.

The 10-20 and the 12-25 sizes were also popular. In the 15-30 tractors and the sizes larger the interest was not as great as in the smaller sizes. While evidence exists that large tractors do their work somewhat more economically than small ones while they are actually working, the smaller amount of capital invested in a small tractor helps to balance things up when the machines are idle. However, the cost of operating tractors even of the same size varies considerably, and is a matter of importance when making a selection.

According to the rules governing this year's demonstrations, each tractor was required to bear a placard giving the drawbar horsepower, belt horsepower, revolutions of crankshaft per minute, plowing speed, size and number of the plows, and the kind of fuel used. About half the tractors used kerosene; the others burned gasoline. Last year the great majority used gasoline. The advantage of kerosene at present prices is the greater economy of operation. But offsetting the economy are a number of disadvantages. A kerosene engine requires gasoline for starting, generally must use water with the kerosene to prevent overheating, and does not give quite as flexible power when changing speeds.

Consequently it is a little more trouble to operate such an engine, though if you are willing to go to the extra trouble you can save some money. One man who had a tractor equipped for burning either kerosene or gasoline came to the St. Louis demonstration chiefly to learn how to burn kerosene successfully.

Another noticeable difference between the demonstrations of 1915 and 1916 was the attitude of visitors toward the construction of the tractors, especially engine construction. A good many came in automobiles, and obviously knew something about high-powered engines. Anyhow, this year there was no "Do hear tell of that!" or "Who'd have thought we'd live to see the day?" Instead I heard questions like this: "How do you get into the crank case? What's the radiation surface? What does a new bushing like this cost?"

"I'd rather sell a man who thoroughly understands machinery," one demonstrator explained, "and who really could make a success of a tractor, than someone else who thinks that a tractor is the way out of all his farm problems. We want to have our tractors succeed, and to succeed they must get into the right hands."

"There is no machine," he went on, "but what will require adjustments and repairs, and will also give some trouble. A tractor purchaser ought to look into the construction so that repairs and adjustments can be easily made at a small cost of time and money. For instance, he must occasionally take up the wear in the connecting rods. But suppose it takes three or four hours to do it. In a busy season he is likely to take a chance and will keep putting it off from day to day, and finally serious trouble may develop that will tie the tractor up for repairs. But if he can make the adjustment in a half hour or so, he'll do it right away and his tractor will always be in first-class condition."

One company had a display of

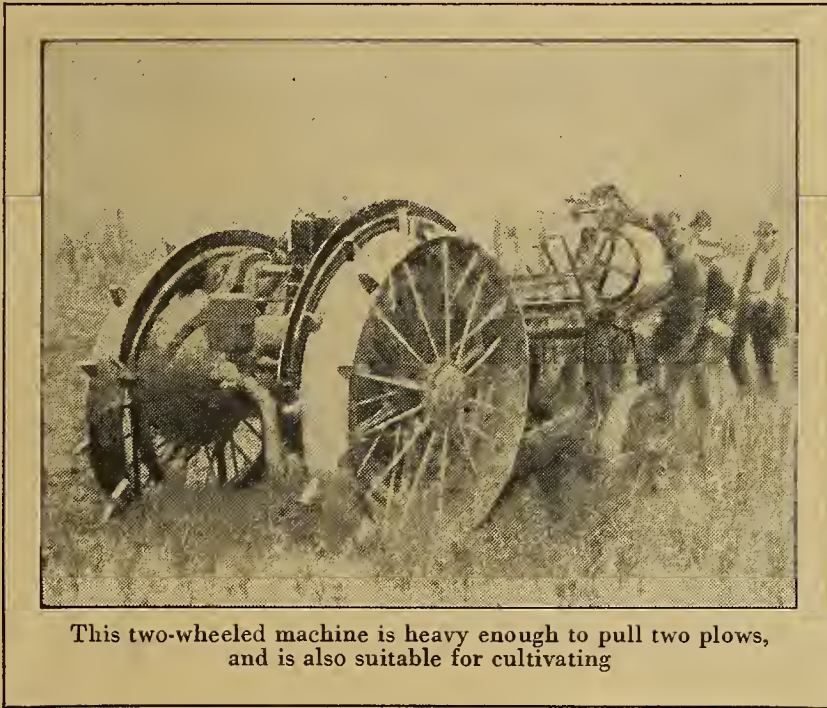
all parts likely to need replacing, together with the price of each part. These prices ranged from a few cents for a piston ring up to several dollars for connecting rods and crankshafts. An important means of lengthening the life of a tractor is an air filter which takes the dust out of the air previous to its passage through the carburetor. Especially in plowing and harrowing, the air around a tractor is filled with dust. As much as a teacupful of fine dust was collected by an air filter during eight hours' continuous run when the tractor was plowing. This particular kind of filter was of centrifugal construction.

However, it is unreasonable to infer that dust clogs up an engine. Owing to the force with which it is drawn into the cylinders and also to the action of the exhaust, most of the dust simply passes through. But the air filter is a good thing since even a small amount of grit means friction and wear. Likewise, the growing tendency of enclosing the engine with a dust-proof hood appeals to the careful judge of tractors as a means of lengthening the machine's life.

Opinions of Tractor Users

ALL machines have certain advantages and disadvantages which, like a straw vote, make them show up well or poorly on paper. But in a field test the results are altogether different. One of the incidental surprises at one demonstration was the manner in

which a 12-25 tractor hauled a string of three farm wagons. This tractor was of the ordinary round-wheel type, and was not equipped with lugs for gripping the ground. The three wagons were hitched behind the tractor tandem-fashion with a regular tractor hitch which prevented jolting and also acted as a hold-back when going down-hill and across ditches. This outfit was used to haul men from the display grounds to the demonstration fields a mile and a half away. On one trip the wagons held 54



This two-wheeled machine is heavy enough to pull two plows, and is also suitable for cultivating

men, including the weight of the wagons, made about a five-ton load.

On the roads the pulling was easy, but in the fields the continual passage of tractors and trucks had made the dust from six to ten inches deep. With apparently no solid footing the tractor pulled the load with little difficulty and only an occasional stop to get up fly-wheel speed. Furthermore, in spite of the heavy automobile and tractor traffic, this tractor and its string of wagons made regular trips, giving its half of the road when necessary and not interfering in the least with other machines. It was an excellent informal demonstration of tractor hauling.

Plows for use with tractors are still undergoing development, even though the limit of perfection seemed to have been reached long ago. One new power-lift plow has a hind-wheel lock so that it can be backed, a spring-trip release which does away with breakpins and prevents excessive strain on the plow, quick detachable shares, and high clearance. It is also adjustable for two or three bottoms, and by a frame adjustment each bottom can be made to cut 12, 14, or 16 inches, as desired.

The question suggested by any new implement is, "Will it stand up under service?" One farmer said to me: "I've had my tractor outfit four years and it stands up as well as I could hope for. I think any standard make of tractor will stand up if you treat it right, and machines are now made better than ever before."

Another said: "If you give a tractor a tenth of the time and consideration you give a team of horses, it will give good service. We have one in our neighborhood that has been used the last six years for working the roads. We have a good mechanic to run it, and the machine itself is simple, so there isn't much to get out of order."

One of the most thoughtful opinions on tractors I have ever heard was given as follows: "A tractor will do certain jobs better than horses, others just about as well as horses, and still others not so well as horses could do them. I have found that tractors are best for the hard heavy work, especially plowing and harvesting. These are the two hardest jobs on our farm. The tractor works well on the binder because it is steady. I can give nearly my whole attention to the binder and always cut the full swath. It's a relief to be free from the lines and the whip."

"For belt work the tractor is good too. One day last week I baled 218 bales of hay with tractor power. At first automobiles were far from perfect, but they sold for cash and the buyer was financially able to make them work. If he had trouble and couldn't fix it himself, he hired someone that knew how. So he kept his automobile running, and by the service it gave he soon found he couldn't get along without it. It will never do to sell tractors on time. A tractor is for the man with enough capital to keep it in first-class working condition. For such a man it is a profitable investment, and he will never go back to the old slow method of farming with horses."

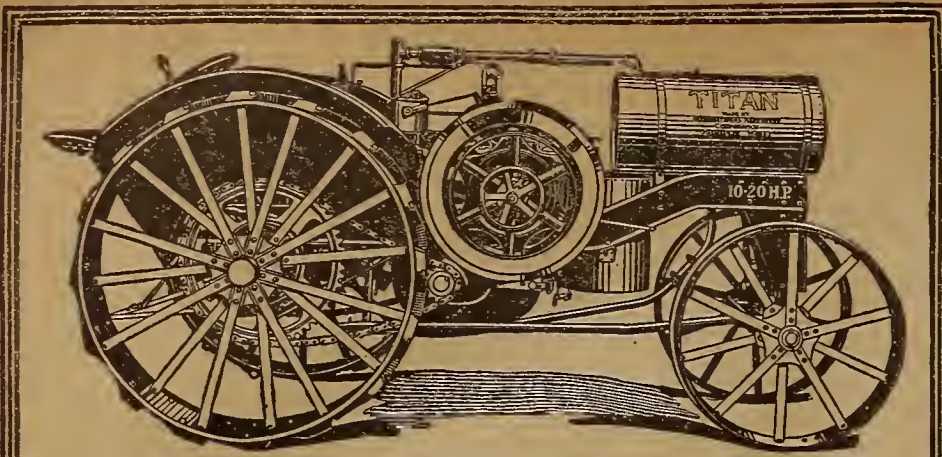
EDITOR'S NOTE: Questions and comments on tractors are invited. If you have a tractor or are thinking of getting one, or if you wish further information about any tractor mentioned in this issue, your questions will be answered promptly and free of charge. Address the Machinery Editor, FARM AND FIRESIDE, Springfield, Ohio.



Here is one of several tractors that have adopted a close-fitting hood to keep dust and grit out of the engine. Also note the low-down construction

The Editor's Letter

A Man Asks What He Shall Do with \$10,000



\$900 Cash f. o. b. Chicago Titan 10-20 \$900 Cash f. o. b. Chicago

The New International Harvester Kerosene Tractor

Latest in Design—Backed by Over Ten Years' Experience in Tractor Building

AFTER years of searching tests, the new Titan 10-20 takes its place in the regular line-up of International Harvester Kerosene Tractors.

Here are a few of the features you want to know about:

- It develops full 20 mechanical H. P. in the belt—10 at the drawbar.
 - It works on kerosene—common coal oil—a fuel saving of about \$200 on an average year's work, over gasoline at present prices.
 - It has a smooth running twin-cylinder engine, 6 1/2" bore and 8" stroke.
 - Entire crank case enclosed—no dust or grit can get to engine. Shields over drive wheels help to keep out dirt.
 - No batteries needed—start and run on magneto.
 - Automatic oiling—keep the oil tank full and the engine does the rest.
 - Two forward speeds. 1.85 and 2.50 miles per hour—and one reverse.
 - Powerful, flexible chain drive to each rear wheel. Turns in 28-foot circle. Handles like an automobile.
 - Powerful brakes on both rear wheels.
 - Length 147", width 60", height 66 3/4". Approximate shipping weight, 5,225 lbs.
- Titan 10-20 is now ready for delivery in limited quantities. Orders will be filled in turn as received. Now is the time to get posted. Write for complete information about the full line of tractors, from 8-16 to 30-60-H. P. sizes.

International Harvester Company of America

(Incorporated)

CHICAGO

USA



AN EDITOR'S mail is packed full of surprises. One of these surprises just received is a letter from a man who wants to know what he shall do with ten thousand dollars. Would I consider a farm a good investment for him, and what kind of farm and what location would probably insure his success, he also asks.

The surprise with this particular request is the fact that he has the coin ready in his hand for the purchase of a fairly good little farm. As a rule, the hundreds of similar requests ask for counsel as to how farms can be bought without capital or with a little nest egg of a few hundred or a thousand dollars or so. This ten-thousand-dollar man's letter was a distinct relief, as well as a surprise. An editor gets a bit weary sometimes, trying to figure out just how five hundred dollars, or one thousand dollars, can be made to take the place of four thousand, five thousand, or ten thousand dollars for the buying and equipping of a farm. Particularly is this the case when the candidate for the farm shows by his letter that he has but few qualifications for succeeding in a farm business, yet makes the fact plain that he has decided to have a go at the farming game whatever befalls. As a rule, persons knowing the least about actual farm work and farm management have the fullest assurance of their ability to buy a farm, largely on credit, and win out by means of exceptionally wise farm management.

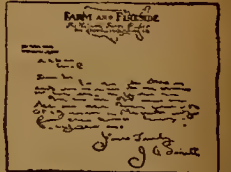
In all cases where capital is insufficient and the candidate is inexperienced, my first and strongest recommendation is always for the land-hungry man or family to get a chance to work for a successful practical farmer for one year before investing his precious savings in part payment of a farm. If I can induce such farm-hungry, inexperienced persons to try out the farming business for a year, helping to do all kinds of work under the guidance of a good farmer, my conscience is at rest in the matter. Any normal person will seldom go seriously wrong in investing his savings in a farm after he has knocked up against the angles of farm life throughout the working hours of 365 days.

My advice to this particular possessor of ten thousand dollars did not differ greatly from counsel given to other inexperienced candidates with a tenth of his capital. He needs the first-hand contact with all phases of farm life, farm work, farm planning, crop culture, crop harvesting, animal husbandry, marketing, soil improvement and plant-food conservation, just as surely as does the man with little or no capital. It is about as easy to fail with ten thousand dollars as with one thousand invested in a farm proposition if the plunge is taken with unpreparedness.

This ten-thousand-dollar candidate for a farm has had a smattering of farm experience in his boyhood, but has worked for about a dozen years at different kinds of shop work, and at the age of thirty has hardly been out of his home county in an Eastern State. I advised him to spend several hundred dollars in seeing something of the country before locating definitely. Then after getting this wider view of farm life he can give that life a trial as a farm hand in the locality which most appeals to him.

It goes without saying that this fore-hand would-be farmer does not want to become a prey to designing farmland boomers. He therefore requested that his identity should be kept from becoming public.

WHY did it take employers of labor so long to learn that an equitable division of profits or a "labor dividend" is not only justice but an excellent business policy as well? All over this big country the practice of paying a labor dividend is now coming into use or receiving very thoughtful attention. Hundreds of factories, including many manufacturers of metal, wood, leather, cement, etc., at the close of a successful business year now set aside a portion of the net profits to be used as a labor dividend. Mercantile houses are similarly falling into line.



When a good, faithful employee whose regular wage is, say, \$500 or \$1,000 a year gets a lump sum of \$50 to \$100 as

a 10 per cent labor dividend when the year's business is settled, the influence on the receiver is a tremendous incentive to make his muscles and mind count for even better work and business progress for the year following.

I have just learned that at least one specialized farm business has now adopted the labor-dividend idea—the Henry Field Seed Company declared a 10 per cent labor dividend at the end of its last business year, which affected 107 wage earners. That means 30,000 more effective days' work for this company, should all the hands work steadily for the year. What a power for betterment can be expected from efforts thus spurred on towards a better year's accomplishment!

This principle of the division of profits is merely a development of the plan of share-renting of farms. The more energy, brain force, and good management going into share-farming operations, the better labor income will the tenant receive, the larger profit will the owner make in proportion. There is also a chance for introducing the labor-dividend policy where wage farmhands are employed. Almost any farmhand can make his services worth what would be comparable to a 10 per cent dividend on the amount of his wages if he can have such a stimulus held out to him at the beginning of the year. Such an addition to his wage is "clear velvet," and a good farmhand receiving such recognition of superior service will be pretty sure to stand by the farm ship for another year, or longer.

THESE days we hear a lot about harnessing the lightning and putting this tremendous electrical force to work for man's benefit. Just the same, there is still plenty of unharnessed lightning still on the rampage making trouble and loss. Last week I was in a Chautauqua County, New York, community where an entire herd of ten valuable dairy cows owned by G. H. Weiss was destroyed in an instant by a discharge of lightning which made ground connections by way of a tree under which the animals had sought shelter from a heavy storm. The cows did not come to the stable at milking time, according to their custom. A little later the lifeless cows were found under and near the tree which had been shattered by the bolt.

The following day found me in Warren County, Pennsylvania, where Mr. J. E. Norris, the secretary of a local mutual insurance company described for my benefit how another animal casualty due to lightning occurred. In this case the dairy cows owned by Mr. Manley Frank were stabled when a lightning discharge struck the building and instantly killed five cows. A peculiar freak of this killing was that each alternate animal across the stable escaped harm. The cow nearest the stable door was killed, the one next in line escaped, thus alternating throughout the string. The officer of the insurance company told me that his company had just paid \$65 per head for the five cows destroyed.

The records of the insurance company, Mr. Norris informed me, show that out of the 700 and over losses due to lightning settled for by his company, not one building had been rodded as a protection against lightning. This overwhelming official evidence as to the protection afforded by lightning rods leads me to believe that no owner of valuable horses and cattle can afford to leave isolated trees or clumps of trees in pastures where his stock runs. Why should not companies insuring stock make a lower rate where pastures as well as stables are provided with storm and shade protective shelters for stock properly rodded, and where lightning-attracting trees are removed or enclosed to prevent stock from seeking the danger zone beneath and around them?

The Editor

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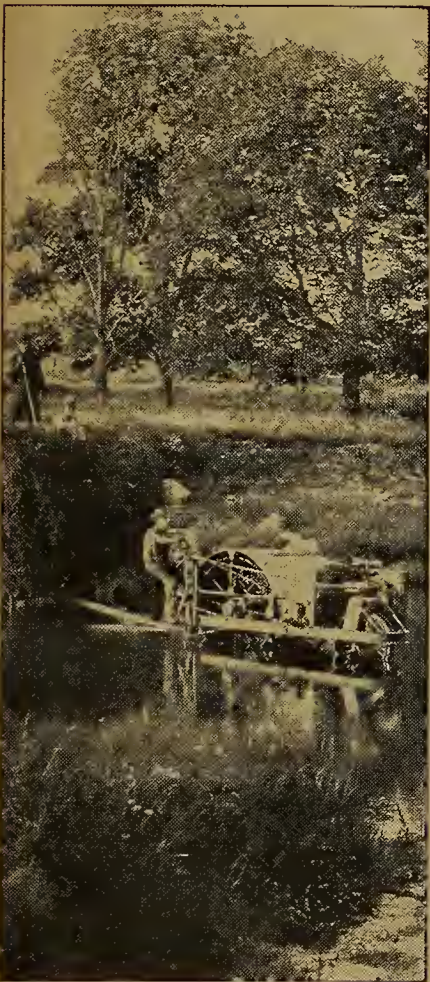
How To Treat Hoof's Wounds Sores etc.



WHREAT harvest calls for power that will work long hours in hot weather. A tractor is ideal for such work, but it must be dependable. Buying a tractor in the fall is an excellent plan. The user learns to run it during fall and winter, when work is intermittent and not so important. By spring he is thoroughly familiar with the machine and is competent to use it for large operations.

LADING hay is one farm operation where the man on the load appreciates steady power. A nervous team that pulls in jerks has caused many a fall from a load to the ground. As the draft of a hay wagon with loader attached is not particularly heavy, a tractor can generally run in high gear, thus doing as much work as a first-class team of horses, and more if the weather is hot.

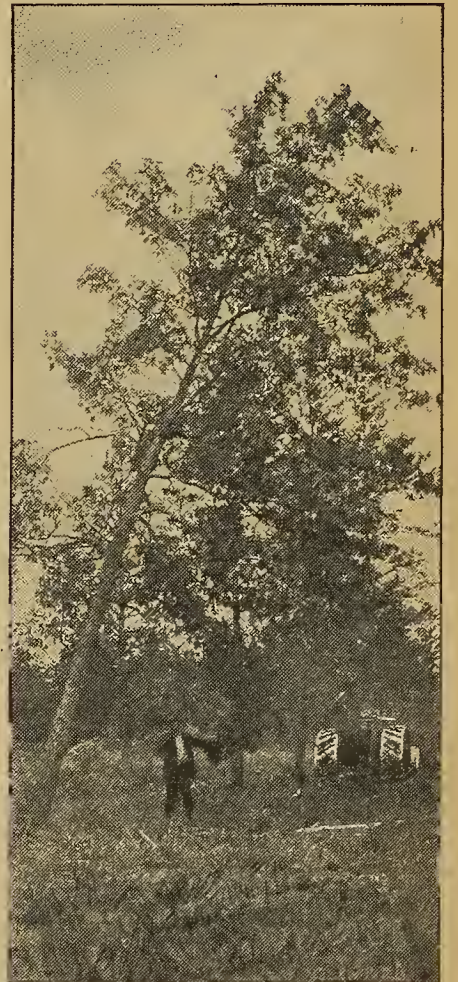
Varied Work That Tractors Will Do



PULLING a load of hay across a creek is one way of convincing skeptics that a good tractor will go about anywhere a horse will. And did you ever consider that, while the radiator needs occasional replenishment, a tractor doesn't stick its nose in the watering trough up to its eyes while you pump till the well goes dry?



THIS picture shows how easily a tractor can turn a corner in plowing without stopping. It doesn't have to rest, nor does it get sore shoulders, nor run away if an angry swarm of bees resents the intrusion of a plow. And one man can control a greater amount of horsepower in the form of a tractor than its equivalent in horses or mules.



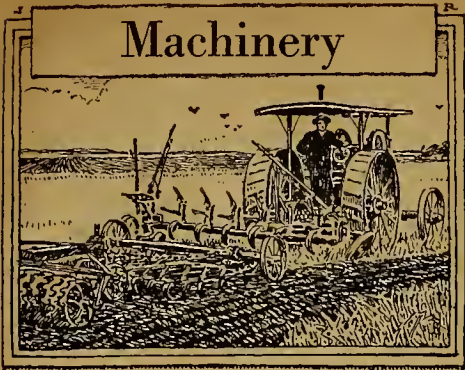
THE owner of this tractor uses it to pull down trees, to haul them to his circular saw, and later, when the trunks have been trimmed and cut to desired lengths, the tractor saws them into stove wood. This size (eight horsepower on the drawbar) can pull down a good-sized tree if the hitch is made high on the trunk.



HORSES frequently have to learn to do different kinds of work before they are steady and reliable. But a tractor is concentrated power without any notions of its own. It won't scare, it doesn't mind strange sounds behind it, and for odd jobs, like pulling a thousand-pound piece of a tree, it takes hold the moment you open the throttle. Furthermore, it pulls steadily and doesn't see-saw like a team that thinks itself overloaded.

WHILE experts differ in their preferences for different tractors, they agree in the importance of expert local service for making adjustments and repairs. During the harvest season, when delays are costly, the men in the picture have the satisfaction of knowing that a reliable company and its representatives stand back of the machine. Avoid the untried machine that may prove to be an orphan on your hands should the maker go out of business.

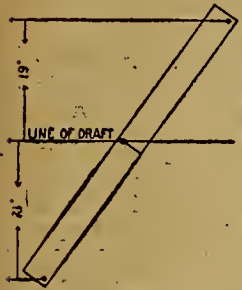




Machinery

Evener Question Again

By B. D. Stockwell



If a team pulls unevenly, does the horse ahead or the horse behind pull the greater amount of the load? This question has been raised again by several readers, and as they refer to a Minnesota news item credited to the Minnesota

Agricultural College, we here present the facts from headquarters. Prof. A. L. Ewing of that institution says:

"We demonstrate to our classes in physics that with one type of evener, a type in common use, with clevis pins on a line back of the draft pin, the horse that is ahead has the advantage.

"We use for this purpose the evener itself or, for convenience, a pattern made of a one-half inch board of the exact dimensions of an evener.

"The board is suspended from the draft-pin hole, where it balances horizontally. Equal weights are now suspended from the clevis-pin holes, when it is found to balance so long as the evener is horizontal, showing that it is an equalizer if the horses are together. It will not, however, balance in an oblique position, but requires a considerable added weight at upper end to hold it in any particular position, representing one horse ahead of the other, thus demonstrating that the horse that is behind pulls more than his half of the load.

"The principle involved is shown by the sketch, showing that the effectual lever arm of the hind horse becomes shorter than that of the head horse as he is brought near the line of draft.

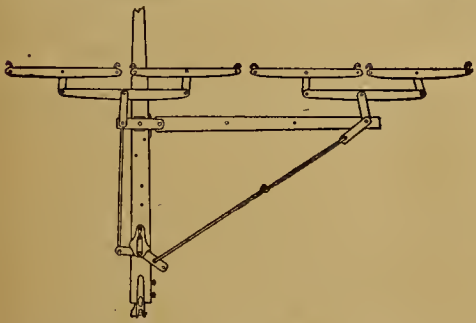
"It would, however, be a mistake to assume that the head horse always and necessarily has the advantage, as with one type of evener he actually pulls the most, and with a third type there is no difference in the draft of the two horses, even though one is ahead.

"Evensers can be so made that each horse is pulling its share of the load regardless of the position of one being ahead of the other."

Use a Tongue Truck

A MISSOURI subscriber asks for a sketch of a four-horse evener to be used on a binder so that one horse walks on one side of the tongue and the other three on the other. The evener must be constructed so there will be no side draft.

Unless a tongue truck is used it is impossible to eliminate all side draft. A tongue truck will carry the side draft and also eliminate neck weight. The sketch shows one method of constructing a four-horse evener that enables the horses to work on a binder in the manner specified. Such an evener is obviously rather complex, and is hardly to be attempted in a home-made way.



Cost of Machine Work

AMERICAN farm implements are pointed out to the world as labor-saving machinery. And various claims are made as to the cheapness of machine work compared with hand labor. The Government has lately made a special study of machinery costs on farms in western New York, and here are the principal things found out. Some machines are used more days in the year than others, so the best means of comparison is to list them according to their cost for going over an acre of ground. The figures include repairs and interest

during the lifetime of machine, and are given in round numbers, fractions of a cent being dropped:

Implement	Cost an Acre of Work
Spike-tooth harrow	3c
Spring-tooth harrow	4
Land roller	4
One-row cultivator	6
Hay rake	7
Walking plow	10
Disk harrow	10
Two-row cultivator	12
Grain drill	17
Hay tedder	18
Mower	21
Bean harvester	22
Sulky plow	29
Grain binder	40
Cabbage transplanter	49
One-row corn planter	53
Two-row corn planter	80
Corn binder	84

These figures are low enough to justify all claims as to labor-saving, and when we consider the time saved the showing is on the whole favorable. The average walking plow is used more than eighteen days a year, and lasts twelve years, making it the most serviceable of all farm implements.

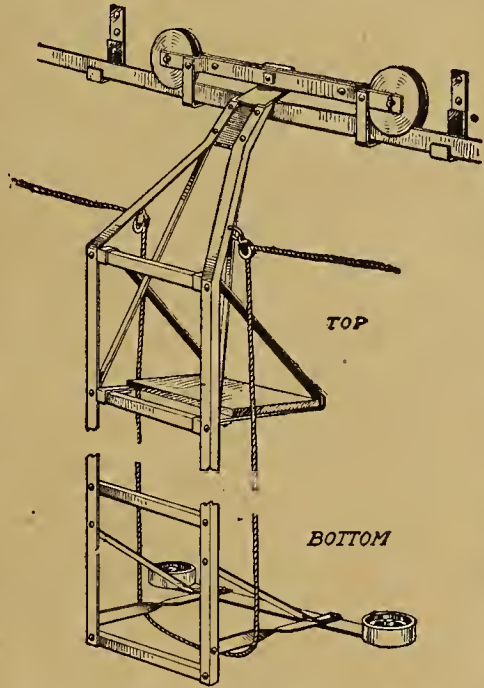
Best Engine Load

IN a test made with farm gas engines of 1½, 6, and 10 horsepower, power was developed most economically when the engines were running at two thirds their maximum load. This does not mean that the engines were overrated, since they carried their full loads without distress.

But as far as the economy of fuel was concerned a third less than the full load gave best results. That is, if you give a six-horsepower engine a four-horsepower job, it will do the work cheaper per horsepower than if run at full capacity.

Movable Ladder for Silo

A LADDER that hangs on a track encircling the silo just under the eaves is a new safety device that will be appreciated by the man who must look after his hoops every few months.



By means of this ladder you can ride around the outside of your silo simply by pulling a draw line provided for that purpose.

It is also handy for painting and general repairs. The idea seems to be an ingenious improvement over the light ladders used in shoe stores for getting stock from the top shelves, only in this case the track is circular instead of straight.

Sources of Farm Power

PHILIP F. ROSE, a Wisconsin machinery expert, proves that more power is used on the farm than in manufacturing enterprises. Counting horses, mules, windmills, tractors, and gas engines, the total power developed on farms amounts to twenty-four million horsepower. Manufacturing enterprises use about eighteen and three-quarters million horsepower. Horsepower on the farm is derived from the following sources:

Kind of Power	Number
Horses and mules	25,400,000
Windmills	750,000
Steam tractors	100,000
Gas tractors	20,000
Gas engines	1,000,000

Of the 24,000,000 total horsepower, horses and mules develop over 14,000,000, and gas engines are second with 5,000,000.

Electric motors seem to have been left out of consideration entirely. They would swell the total figure somewhat. The gas-tractor figures are doubtless much higher now than when this investigation was made, early in 1915.



BLIND MILTON DICTATING TO HIS DAUGHTER
From the original by Mum'acy, in New York Public Library



The Vision of the Blind

*"Thousands at his bidding speed,
And post o'er land and ocean without rest;
They also serve who only stand and wait."*

Was the spirit of prophecy upon John Milton when, more than two hundred and fifty years ago, he dictated those words to his daughter?

Did the "blind poet" have a vision of the millions of telephone messages speeding instantly over hundreds and thousands of miles of wire spanning the continent?

"They also serve who only

stand and wait." The Bell Telephone is your servant even while it "only stands and waits." The whole system is always prepared and ready for your instant command.

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Each one has his special part to do and, because he does it faithfully, countless messages speed throughout the length and breadth of the land, at every minute of the day and night.

AMERICAN TELEPHONE AND TELEGRAPH COMPANY
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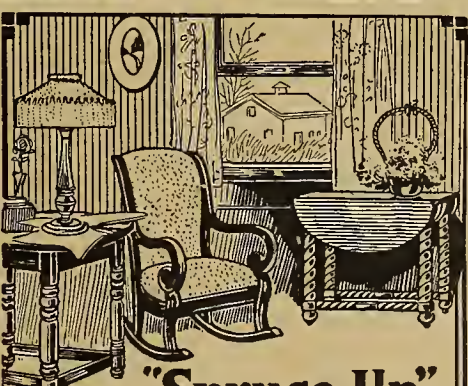
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There are 16 shades—Light Oak, Dark Oak, Mahogany, Rosewood, Walnut, etc. Use Lucas Home Helps Floor Stain Finish, Enamels, Prepared Paint. Ask your dealer for Lucas Home Helps. If he does not sell Lucas Home Helps Varnish-Stain, send us his name and 20c and we will see that you are supplied with enough to re-finish two chairs.

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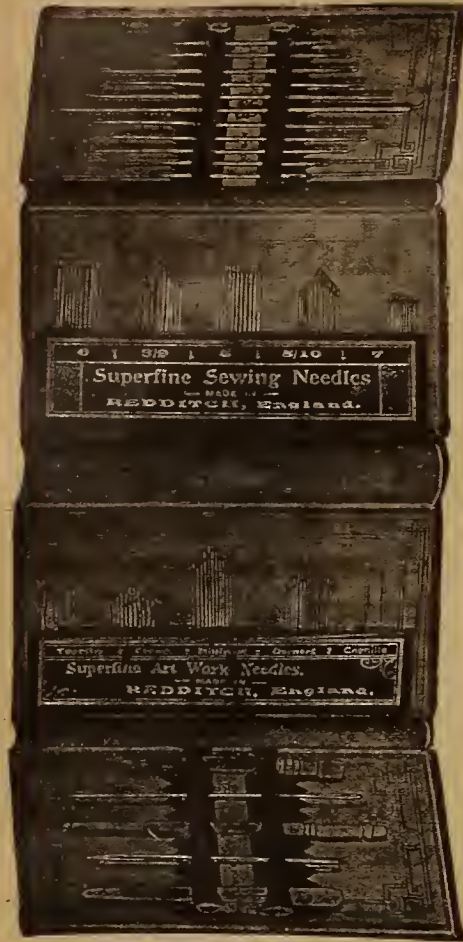
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| 2 Medium Wool Darners | 15 Crewel or Embroidery |
| 2 Fine Wool Darners | 3 Rug or Tapestry |
| 2 Medium Yarn Darners | 3 Chenille Needles |
| 2 Fine Cotton Darners | 1 Bone Stiletto |
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Automobiles

Motorcycle Question

By Carlton Fisher

IS a motorcycle with side car as satisfactory for a young couple as an inexpensive automobile?

This question must depend for its answer on the use to which either machine will be put. A motorcycle with side car will go nearly twice as far as an automobile for the same expense, including gasoline, oil, and tire wear. The riding qualities are about the same, as is also the speed. In addition, the motorcycle does not require as much storage room, and its upkeep is less.

If transportation for two people is all that is desired, the motorcycle with side car will give satisfactory service.

But for all-around use, including service in winter, ability to carry extra passengers and supplies, the automobile would be the better "buy."

Tested Accessories

By W. V. Relma

ANY man who starts to run an automobile, and is mechanically inclined, will acquire a number of extra tools and helpful mechanical devices, both for use in the garage and in the car.

A number of years' experience with automobiles has enabled me to become familiar with a number of devices and tools which will be helpful to the novice.

If the driver will carry a small tin box with a screw or clasp cover, he can keep at hand a number of little odds and ends any one of which will be very valuable when needed. Nails, screws, tacks, cotter pins, keys, valve plungers for tires, pieces of string, wire, etc., may be mentioned as desirable.

One very desirable article for the tin box is known as a compression coupling. One evening while driving I suddenly smelled a strong odor of gasoline. I put on the brakes, jumped out of the car, and discovered a leak had started in the gasoline line. I immediately took up the floor boards and shut off the gas at the tank. The next idea, of course, was the necessary method of fixing the leak. I found that a constant rubbing against the frame had caused it.

As I had a compression coupling in my tool box, I cut the gasoline line in two at the leak, and filed both edges smooth and clean. After this all that was necessary was to slip one end of the coupling over each part of the gas line and screw together. This makes a perfect gasoline-pipe connection, and is absolutely permanent if properly done. It requires no solder or tools other than a file or a wrench, and in this instance required only about half an hour. This device saved me a walk of five miles to the nearest town for help.

A grease gun is another accessory which is very nice to handle. A large quantity of grease can be loaded into

this gun at one time, and can be forced out by the turning handle in such quantities as desired, into the grease cups.

The style of tire-saving jack shown in the sketch can be adjusted to the height of the wheel hub of the car. When the driver comes in to the garage at night, he can slip one under each hub, and with one downward push of the toe it will raise the wheel off the floor. This removes the car weight from the tires, and will effect quite a saving when storing the car for long periods.

Adjustable wrenches of the style illustrated will be found of great convenience for loosening different sizes of nuts in close quarters, without a constant search for a different size of wrench. A hack saw is another handy article. This saw can be used in more ways around an automobile than one could imagine at first thought. A screw driver with a square shank allows the use of a wrench to turn it. The assistance of the wrench will force in a screw which is impossible to turn with the unaided hands.

The valve lifter illustrated is another useful accessory. Grinding valves is a very important operation which materially adds to the life and effective operation of the car. It is one duty that is continually neglected. There are thousands and thousands of cars in use that need the valves ground. Even good drivers neglect to grind their valves as often as is desirable, because they do not have the proper tools at hand to perform this work easily. Of course, this type of valve lifter will not suit every car, but it is one that is satisfactory for general use. Since I am now equipped to grind my valves easily, I really do not mind it.

A tire valve tool is a rather neglected piece of equipment till tire trouble appears, and then the valve assumes a great degree of importance. When the tire has been removed and it is time to put in a new tube, it may be discovered that either the outer or inner thread of the valve stem of the spare tube is injured. This little tool will correct these injuries to the thread, and will also enable one to remove the valve plunger.

Wind-Shield Light is Adjustable

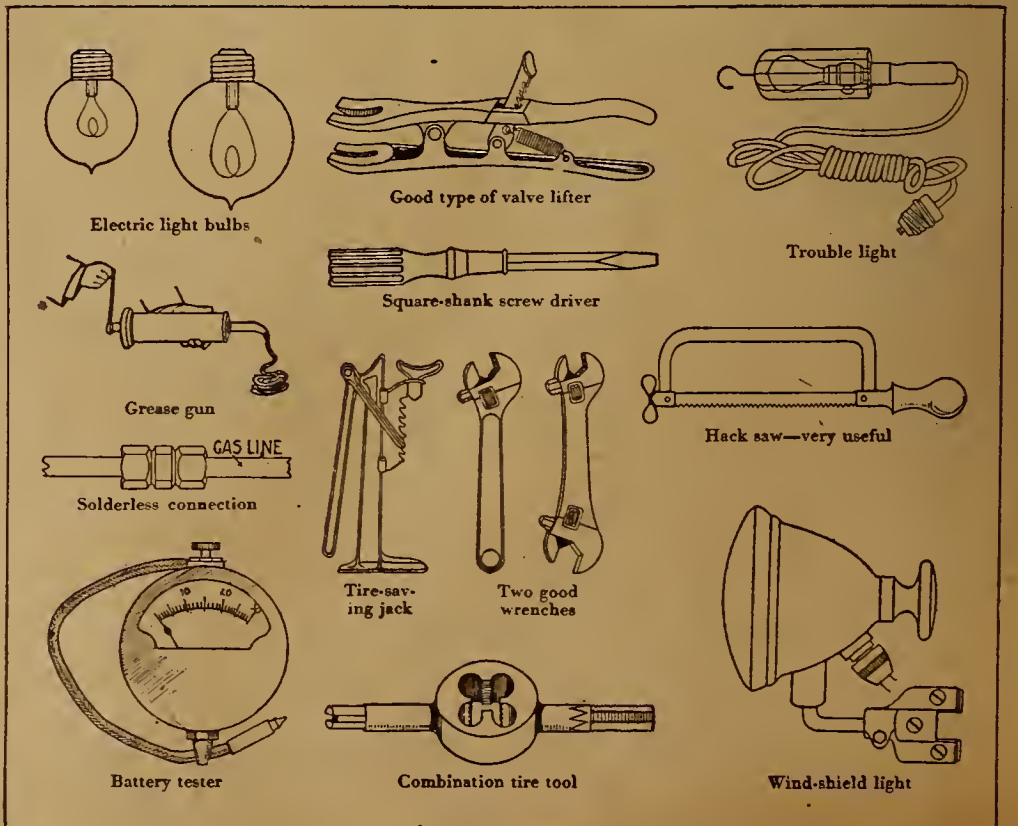
A wind-shield light is a great convenience for night driving, as the light can be turned in any direction desired, and is frequently more pleasant to drive by than the usual headlight. Being high up, it is not spattered by mud.

Frequently the mysterious action of the motor when starting on battery will be explained in a little instrument known as an ammeter, and is used for testing dry batteries. Dry batteries when new should test from 20 to 30, and will not be safe for starting purposes when they test under 10.

A trouble light as shown in the sketch can be attached to the batteries of the car or to the garage wiring, and makes a perfectly safe light to use to examine inaccessible parts of the motor or car. Matches and flame lights, when used for this same purpose, seldom end satisfactorily. The patient after removing his bandages usually regrets that he did not spend \$2 for a trouble light.

I also always carry one or two extra light bulbs in a bulb box. Boxes are specially made for this purpose, and it is useless to carry extra bulbs piled in with the tools.

A reasonable system of preparedness will make the driver unafraid to tackle long trips, and will enable him to bring the car home single-handed.



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Crops and Soils

Fertilizing Wheat

By John Coleman

LAST year a neighbor whose field is in sight of my house used a high-grade acid phosphate at the rate of 200 pounds to the acre on a part of his field; the rest of the field was not fertilized. It was a favorable location for wheat and the soil was good. On the fertilized part of this field the wheat ripened evenly and from a week to ten days earlier than where no fertilizer was used. There was also as much difference in the filling of the wheat in favor of the fertilized part as there was in the difference in time of ripening.

For the past few years institute lecturers have advocated only an acid-phosphate fertilizer with a systematic crop rotation in which legumes are depended upon to keep up the nitrogen supply in the soil.

Acid phosphate was the only fertilizer used for wheat for the last year or two by nearly all of our farmers. In several instances the yield to the acre was 25 bushels or more. Many farmers grew from 14 to 18 bushels an acre last year. The experience of wheat growers generally in many States is that it is useless to attempt to grow wheat without fertilizer.

A neighbor spread a thin coat of stable manure over his wheat some time after sowing, with good results. Manure used in connection with acid phosphate on soils deficient in humus and nitrogen gives excellent results. Wheat grown with an acid phosphate alone should always come in a regular rotation in which legumes are grown as a part of the rotation, and there should be a sod to turn at least once in four years. Otherwise the humus supply will run low and the nitrogen supply will also become exhausted. Lime used on wheat should not be expected to take the place of the fertilizer, but it is found to benefit the wheat and also to be a great help toward getting a stand of clover.

Another neighbor used fertilizer on winter wheat fields that had been planted late to avoid infestation with Hessian fly. The fertilizer helped produce a vigorous growth of the wheat before cold weather set in.

Beer Keg Saves Wheat

By John M. Worley

HEAVY rains made heavy fields in eastern Kansas last year. Binders were mired down many times in a field, and farmers had to give up the fight to save the grain before it became over-ripe and was lost to the harvest. Six horses failed to pull the machinery in most fields.

Ingenious yankees seldom give up hope. And so Milo H. Snodgrass of Cherokee County, Kansas, found a way to save his 65 acres of wheat—and at wartime prices 65 acres of wheat are worth saving. Living within 15 miles of Missouri, it was not impossible for Mr. Snodgrass to obtain an empty beer keg by paying a dollar for it. He brought it home, where a blacksmith

was set at work on it. In half a day the beer keg was a wheel on a binder—a first aid to the other wheels, wide enough to keep from being sunk into the ground by the heavy machinery.

The 20-inch spread of this keg wheel, which was bolted under the frame of the binder just to the rear of the large "bull" wheel, lightened the load to such an extent that Mr. Snodgrass took off three horses, and the remaining three kept the binder going at a brisk walk. So successful was the keg wheel that John Lundin, owner of more than a section of land near Mr. Snodgrass, built two of them and saved his grain. Other neighbors soon heard of it, and the modest inventor explained it willingly to them.

The material for the device consists of an eight-gallon beer keg; a piece of two-inch pipe 21 inches long, threaded on each end and used as the axle; two two-inch pipe elbows which are screwed onto the axle ends; two pieces of pipe, same size, threaded on one end and flattened at the other, threaded ends inserted in elbows, while flattened ends are bolted to frame in upright position; two iron braces, one for each end of axle, running forward to frame. The holes in the keg ends are reinforced by blocks nailed on, and the wooden bearings may be oiled frequently.

To Cut Down Feed Bills

"FORESTALL the big feed bills and lean cattle in the Southern States this winter by cutting all available grass plots about the farm for hay," says J. R. Ricks of the Mississippi Experiment Station. "Indications are that many concentrates will be high-priced this fall. Even a poor quality of hay has as much feeding value as cottonseed hulls, and cows will readily eat it in the winter months."

Mr. Ricks suggests that now is a good time to make loafing acres give good returns by cutting off the crab grass, water grass, or other volunteer grass crop and saving it for winter forage. Where Johnson grass grows well there is sure to be a good hay crop, and many native grasses make excellent hay, which may be saved at a minimum cost. Leaving the value of the hay out of consideration, it is worth while to cut the grass and weeds off the soil, because this leaves it in better shape for planting small grains and clovers this fall.

Made Money by Accident

By W. F. Wilcox

CLAUDE MCLAUGHLIN of Montrose County, Colorado, made \$231 from alfalfa seed from exactly two acres last year, entirely by accident. This two acres of alfalfa was in its second year's growth, but was on new and unfertile land and had been so starved for water that he thought it not worth cutting for hay. He therefore let it stand and continued without water, preferring to use his irrigation water on what he thought were more valuable crops. In the early fall he noticed the alfalfa had gone to seed, and there was a surprisingly large amount of seed. So it was cut and stacked and in March, 1916, threshed. He sold the seed and got \$231 from the two acres. His culture was the proper thing to grow alfalfa seed. Have a thin stand and irrigate just enough to keep it fresh but not to force the growth of rank stalks. Then it will make good bloom and much seed. Mr. McLaughlin also had three fifths of an acre of onions that produced 230 sacks, which he sold at \$2.50 per hundredweight. At this rate of production and price an acre of onions would bring in close to a thousand dollars.




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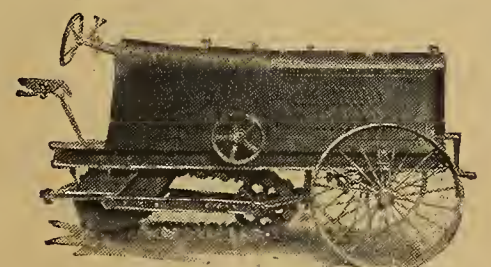
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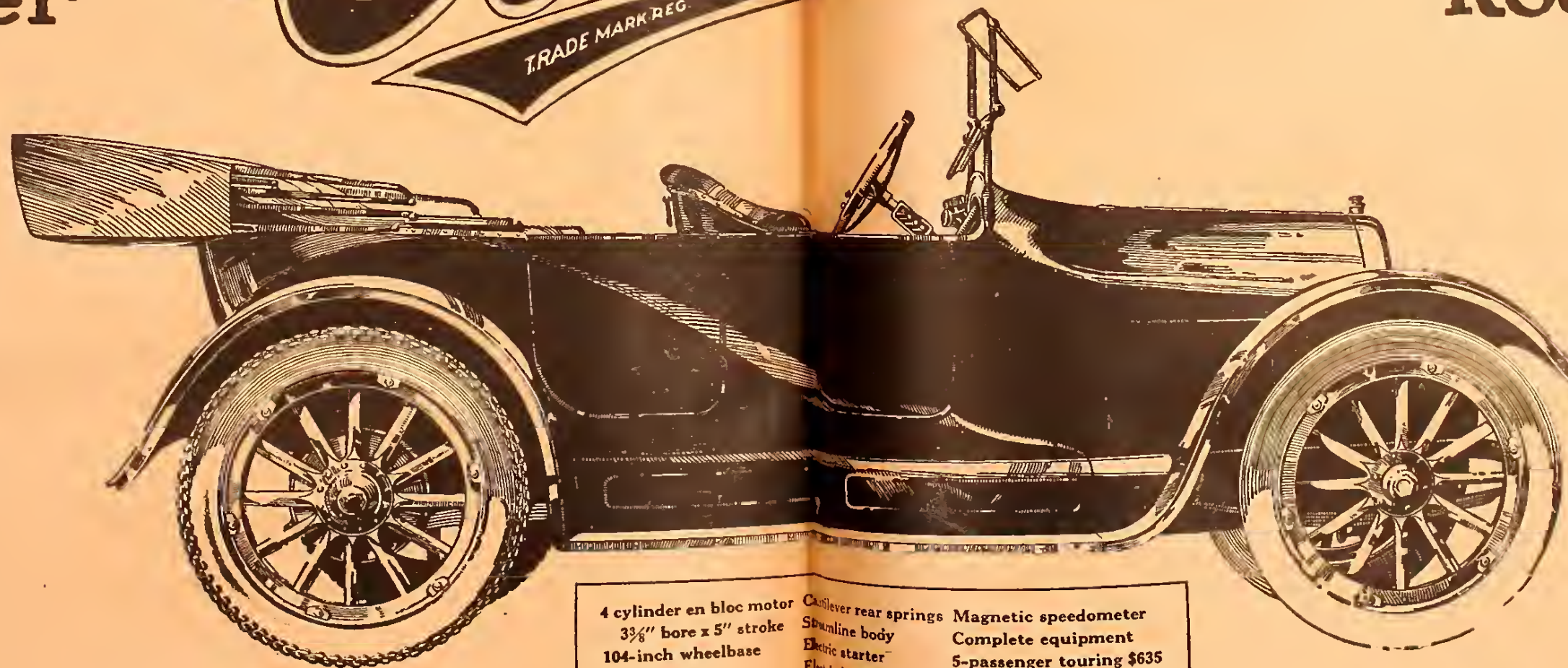
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Live Stock

A Scrub Sire Doesn't Pay

By E. A. Trowbridge

QUALITY becomes more essential to profit in live-stock farming each season. When labor, land, and feed were cheap it was possible to realize a profit on live stock of an inferior grade, but with the present high cost of these production factors and a constant discrimination on the market against the "scrub," it has become evident that the greatest profit can be expected only from live stock of good quality. It may be possible for the feeder or dealer to make a profit on inferior live stock if he is able to buy it sufficiently cheap and sell quickly, but usually someone has not realized the greatest possible profit when a scrub goes to market. If it is not the feeder, it is the man who produced the animal.

At the Missouri Experiment Station lambs sired by a \$30 mutton ram and out of Western ewes weighed 2.54 pounds more at three months of age than lambs out of the same kind of ewes by a scrub ram, weighed at four months. The well-bred lambs were ready for market a month earlier, they ate only about one half as much feed, and they sold for nearly \$3 more per hundred than did the lambs by the inferior ram.

Just recently two Utah ranchmen are reported to have sold their cattle on the same market on the same day. Both used the same amount of national forest range a head, and paid the same grazing fee. One had used good bulls to produce his cattle, the other had not. The good cattle brought \$40 a head more than the poor cattle.

Whether the live stock is cattle, hogs, sheep, or horses, the good ones are appreciated when sold, and consequently bring higher prices and normally yield greater return. The most practical means of improvement is through the use of good sires, for the male may become the parent of from 40 to 100 animals each year.

in the cellular structure of the brain. The natural manner of transmission of the disease is by means of introducing saliva into or under the skin with the bite of an infected animal. With few exceptions, the bite is from a dog. If he is not infected, the bite cannot result in the disease, nor will the bite from all infected animals develop rabies. The failure to know this fact has made many so-called "madstones" famous.

The length of time occurring between the bite of the animal and the development of the disease varies from a few weeks to several months in rare instances. Dogs bitten by another dog should be kept confined and under observation for at least two months, though most cases will develop in one half the time.

There are two forms of rabies most commonly observed in dogs. One is the "furious" and the other the "dumb," and the terms used are descriptive of the general symptoms of each. Paralysis, indicated by an inability to swallow feed or water, is present in the latter stage of each form. A positive diagnosis may be made in many cases from the symptoms alone, but in other cases a laboratory examination is necessary. This consists first of a microscopical examination of some of the brain substance, and if the bodies are found, a positive diagnosis is made. Otherwise it will be necessary to reproduce the disease in a small laboratory animal before such a diagnosis can be rendered.

Another and much preferable laboratory test is now in process of development. This consists of taking a sample of blood from a living or healthy person or animal which has been bitten by a diseased animal and submitting the sample to a test. Such a test will enable the authorities to use the Pasteur preventive treatment on only such persons or animals whose blood shows a positive reaction.

A Good Horse Feed

IN COMPARISON with any of the grain rations, oats are the best single grain ration for both mature horses and colts and for mules. There is no other grain so safe to feed and from which such satisfactory results are obtained. The stockmen of Clemson College advise, however, that it is absolutely necessary that oats be clean and entirely free from mold in order to obtain best results in feeding to colts. "Musty" oats are dangerous for colts.

A fair allowance of oats for colts after weaning is as follows:

Up to one year of age, from 2 to 3 pounds daily. From one to two years, 4 to 5 pounds daily. From two to three years, 7 to 8 pounds daily.

The best way to feed oats is in the whole grain, the expense of crushing not being justified unless colts suffer in teething, in which case it is advisable to feed steamed crushed oats, which are very nourishing and appetizing. It is always wise to feed plenty of roughage to growing colts. Feeding concentrated feeds in excess is discouraged, as it is important that the digestive tract be developed by distending it during the growing period. Ungainly, large-barreled colts may annoy the feeder, but this condition always disappears with maturity.

Proper feeding of colts should always be accompanied by plenty of outdoor exercise for the young animal. In no way can a colt be ruined so easily and surely as by liberal feeding with lack of exercise. Experience proves that close confinement and the raising of good colts do not go together.

About Rabies

THE term "hydrophobia" was employed as a name for the disease of rabies at a time when it was thought that fear of the sight of water was one of the best symptoms of the disease.

It is principally a canine disease, being seen mostly in dogs, and usually transferred from dog to dog, dog to man, or dog to other animals. Only a few animals are not susceptible to it. Other than the dog, most cases reported have been in cattle. A number have been made where hogs were affected, and several in horses and sheep.

There was an outbreak of rabies recently in a North Carolina county. Seven head out of a head of eighty cows in one pasture died, and the clinical symptoms were typical of rabies. However, the brain from one of the animals was removed and sent to a laboratory, where the "Negri Bodies" which are so characteristic of the disease were found



This five-weeks-old Shorthorn veal dressed 150 pounds and sold for \$30. The calf was fed whole milk with wheat bran and corn cob meal

INSIDE HEALTH

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Coffee is one of the enemies of fair women, for in most cases it directly affects the stomach, and the result is a sallow, muddy skin and ills in different organs of the body.

A lady speaking of how coffee affected her writes:—"I was very fond of coffee but was under the care of the doctor most of the time for liver trouble. My complexion was bad and I had a pain in my side steadily.

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THE HOUSEHOLD, 1 year	-.25		
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Starting with Hogs

By R. B. Rushing

FROM my own experience and observation I believe the new breeder should buy a developed or tried sow. She will teach him how to raise a nice litter of pigs if given half a chance. Don't buy a little half-grown gilt because she is "registered," or some old skate at a price that will enable the old breeder to buy a good one. Consult the breeder as to three or four of his best-producing sows and learn what pigs they have raised that developed or sold well.

These are important questions to the new as well as the old breeder, and if the seller knew the importance of these answers in keeping the young breeder in business he would go to some trouble in giving out such information. I have always found the advice of an old breeder in whom I have confidence of great value. Of course, you must not be dependent entirely on what others tell you. You must have a certain amount of reliance and confidence in yourself. The field men and auctioneers aim to, and are able, to give wholesome advice, usually.

Plunging Doesn't Pay

I never was an advocate of the new breeder's plunging in and buying the high rollers. The better way in my judgment for a new breeder to start is for him first to consider whether or not he likes to raise hogs. Next, how much he is able to spend, and how many sows he is able to care for properly and not starve the pigs. The most serious as well as the most tempting mistake is to overstock. Even old breeders often stumble here.

The greatest opportunity awaits the new breeder at present, and I would rather bank on making a good breeder out of a man of moderate means who has the know-how to make his pigs thrifty than the man who has money to burn and spends vast sums on idle theories, and talks about the hog as a side line and has an expert to care for them who is trying to raise pigs by starving them and keeping them in hot-houses, while the common-sense man knows that all pigs need air, sunshine, pasture, and good slop.

Any man who can raise good pork hogs can succeed in raising pure-bred ones, and should be satisfied with a reasonable start. I believe every farm, no matter how poor, should have pure-bred stock raised upon it if there is any kind raised. There are always opportunities to get them reasonable. I believe I can see the coming of the greatest era the pure-bred hog has ever seen. I have made it my business to ask the best farmers and shippers the conditions in the hog business in their several localities, and here are some of the answers:

"I can haul all the brood sows in my township in my wagon box at one load."
"No good sows here now, to speak of; cholera scare caused us to sell, and we have not replaced."

Buyers tell me that they never, in one year, shipped so many old thin sows and little half-fat pigs as they have the past twelve months.

Buy Good Individual Animals

A fatal mistake that the new breeder often makes is that of buying an inferior individual because of price. I have no respect for an animal with a long pedigree if he hasn't individual merit. To be sure, I place as much stress on pedigree as any man can, but the individual must be right with the pedigree.

It is always best to attend a sale in person, and by the help of someone of experience and success select one or two animals and buy one or more. Often it is well to buy of several breeders, say one animal of each, and in this way you get a variety of stock for your foundation, and also for a sale if you contemplate having one. If it is impossible to attend the sale, see or write to someone in whom you have confidence; tell him how much you can afford to spend and how many animals you think the amount of money ought to pay for. Usually he will get you a good bunch of stuff. Then pay cash and sell the same way, and you will then know where you are. Anything that will reproduce itself from eight to twelve times a year is bound to make a good business if business methods are used.

Get a few good pure-bred hogs this spring and keep a herd, and they will lift the mortgage or put you on Easy Street. Pork is the fuel that generates the force that propels American industry. The rank and file of this country's laborers are pork-eating people.

Nothing seems to appeal to the appetite of the laboring man like good pork, and somebody must raise this pork—and somebody will raise this pork. Are you going to raise your share?

E.W.

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Suppose your neighbor gets this car. And you, while paying as much or more, get something less efficient. How will you feel when the two cars meet?

What These Things Signify

You do not care for reckless speed. Such power is rarely needed. But the Super-Six has the capacity. You know it to be the master of the road. It will do what you want without taxing half its ability. And that means economy.

It will cover more ground than lesser cars, without going any faster. This because of its quick get-away when you slow down or stop.

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The Super-Six motor—a Hudson invention—adds 80% to motor efficiency. That is, from a small, light motor it gets 76 horsepower. The same size of motor heretofore yielded us 42 h. p.

This result comes through ending vibration, the cause of motor friction. It gives such smoothness as you never knew before. And it means a long-lived motor.

It comes in a car, evolved under Howard E. Coffin, which has long stood for the acme in fine engineering. And it comes in the handsomest, best-equipped model that Hudson has ever designed.

If your neighbor gets it, and you don't, it may mean to you years of regret. In looks and performance, in prestige and endurance, he will have the advantage of you. Your Hudson dealer can prove these things beyond any possible question. And you should know them before you buy any high-grade car.

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Garden—Orchard

Kiln-Drying Sweet Potatoes

By M. L. Weaver

TEXAS sweet potato growers are making a systematic move to get more money out of this crop. Over a score of ten-thousand-bushel drying houses will be built this year. It has been found that kiln-dried sweet potatoes sell in Texas cities at \$1 to \$1.25 per bushel when banked potatoes are selling at 60 to 65 cents. In past years nearly the entire sweet potato crop has been sold at digging time at an average price of 45 cents per bushel.

A small curing house for the farm, holding 450 bushels, can be built for about \$120. A medium-sized community plant with a capacity of 2,500 to 3,000 bushels will cost about \$400, and a ten-thousand-bushel kiln-drying plant can be built for about \$1,500. The storage cost, including insurance and all charges in the larger plants, will be about 12½ cents per bushel.

This makes it possible to hold the sweet potatoes until they will bring about double the price that can be secured at digging time, and the net increase in return to the grower will be from 30 to 40 cents a bushel after allowing a reasonable shrinkage.

Fence-Row Cherries Pay

By M. G. Kains

ONE of the best ways to make fence rows give a good account of themselves is to plant sour cherries in them. Mr. I. F. Mills of Monroe County, New York, has a hedge of Montmorency cherries all around his estate. He claims that the trees grow on ground that would ordinarily be wasted, and that they form a fairly efficient windbreak in summer and also yield enough fruit to pay well for the investment in trees, time of tending, etc. His trees have required very little time to keep them in good order.

Trees on the fence lines between farms get part of their food from the neighbor's land, and thus make an additional profit—if the neighbor doesn't pick his share of the fruit.

Know Your Commission Man

By R. E. Rogers

IF POSSIBLE I like to make sales of our farm produce direct to the man who will consume it. Unfortunately, there are times when this can't be done. An oversupply of a product that no place had been arranged for, or the decreased sales of the consignee, will leave most any farmer in the lurch once in a while.

So the commission dealer must come into use. In some ways this is unfortunate.

I have known onions to be sold to a Toledo commission firm 25 miles from here to be resold to our local merchants. This made necessary the payment of two sets of freight bills, drayage, and the 10 per cent commission charged to

us, besides the profit the middleman usually puts on top for his share.

But in making the sale to this middleman we will suppose that he is all right and reliable in every way. First it pays to write to him about what you have to sell and to get prices and the condition of the market. Then if things look favorable for your produce send it along. Send as good as you told him it was, or the next time he will not want to bother with you.

We sold three carloads of onions last fall to one man who never saw the onions until after he had bought the whole lot. He saw a sample of perhaps a half-dozen bulbs that were a representation of the lot, and from previous deals he knew that they would be what the samples were.

Then it pays to send a copy of the shipping bill to the dealer as soon as the load is billed out. He then knows about when to expect the goods and will be on the lookout for a buyer. If you just send the goods without notification, the first he knows of their arrival is when the dray delivers them. He may then have to wait some time to find a place to sell. Sometimes this might make an extra loading and unloading on the dray and consequent expenses. Besides that, there are many perishable crops that might easily spoil many dollars' worth by being kept for a later market.

Besides this, it is easy for the receiver to have goods traced if there is delay. Quick tracing often saves a good deal for the shipper.

Apple Gluts Unnecessary

By Wilbur F. Lawrence

THE chief cause of a glut of apples and, consequently, the practice of feeding apples to hogs, is lack of spraying, according to a Nebraska horticultural expert. Sound apples, the result of spraying, can be placed in cold storage because they will keep. But the apple grower who has not sprayed his apples finds them wormy and unfit for storage. So he with thousands of others throws his perishable apples on the market at the mercy of dealers and the public.

He takes what he can get because he must sell. You seldom hear of a glut of apples late in the winter, and the winter and the spring are the times when the man who raises sound apples sells them and gets his money.

An Acre of Celery

By J. B. Dixon

ONE acre of celery properly cared for represents a lot of work, extending from the time of planting the seed in the greenhouse or hotbed, transplanting the plants, setting them in the open field, watering, cultivating, spraying, harvesting, bunching, and marketing. But the returns from a bumper crop of say 40,000 heads from the acre, averaging 50 to 60 cents a dozen heads, pays well for the labor and care bestowed on this crop.

"Spraying to prevent blight and rust is of the utmost importance to insure a good yield of best quality celery." So says Mr. Samuel Beech, a Canadian truck grower. He uses Bordeaux mixture regularly whenever there is the slightest indication of blight or rust. As he cultivates the crop he watches for indications of leaf injury, and finds his horsepower spraying outfit as necessary as his cultivator. The cost of spraying materials is considerably higher since the war began, but Mr. Beech finds that the spraying cannot be omitted even were the cost of spraying materials several times as high as it is at present.



Spraying to prevent blight and rust is of the utmost importance to insure a good yield of the best quality celery

Intensive Care Won Results

By A. J. Titus

THE branch pictured is so badly overloaded that it was broken from a Wealthy apple tree by a windstorm in the fall of 1915. The tree is one of an orchard owned by Jay Crawford, Newaygo County, Michigan. This tree and the entire orchard was badly infested with San José scale in 1913, hence produced only a little, inferior fruit for several years. It was thoroughly treated by the usual spraying and pruning methods in 1914. The load of apples developed the year following the spraying is convincing evidence of the good results of the treatment.

Nevertheless, there is almost as much danger from allowing trees to overbear in the way shown by the picture as from the effects of the scale, which sucks the life juices of the trees in another way.

The branch pictured held 86 healthy-looking Wealthy apples, and the entire orchard was well loaded with apples the same year. Mr. Crawford is now a



strong champion of spraying and modern methods of orchard handling, and intends reducing overloads by thinning in the future.

To Kill Blackberry Sprouts

By A. B. Tinsley

CUT the briars when they have practically completed their growth for the season, but it is impossible to get all of the briars at the first cutting or first year. There will be some seed in the ground germinating which will start the following year. But the second cutting if properly done will finish the job. This plan I have tried and know it to be fatal to the briars, at least on my farm in West Virginia.

Beets Will Not Aid War

By W. F. Wilcox

IN COLORADO a great many cattle and sheep are fattened every year on the by-products of the sugar-beet factories. Some concern was recently felt by stock owners when the sugar factories were made offers by ammunition makers of explosives to buy up all the molasses product of the factories. From molasses is manufactured denatured alcohol, which is an ingredient of powder. The sugar companies have refused any shipments of molasses for this purpose, in spite of the fact that the price thereby would go up from \$8 to \$12 a ton. Such price would make molasses almost prohibitive for feeding purposes. The sugar companies, however, felt that the munitions market would be only temporary and that even though a harvest might be reaped from that source before the war ended it would be poor policy for the reason that a large and profitable molasses-feed market would be alienated. Cattle feeders are glad to know that the factory molasses supply will be awarded them at the usual prices.

WHEN cutting gladioli blooms be sure to cut the flowers when the lower flower is just opening. In this way the faded flowers can be cut off an inch or two each day and retain the good effects of the lower blooms for a considerable time. The gladioli and most other fall-blooming flowers should have plenty of water when the buds show well, to insure their full development.

BUILDING BONES

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A Calif. lady writes: "When my little niece was taken sick and medical aid was called, one physician pronounced it softening of the bones and gave but little hope for her recovery. For weeks she had been failing before her parents thought it anything but trouble from teething."

"She had been fed on mushes and soft foods of different kinds, and had become a weak little skeleton of humanity that could not much more than stand alone."

"The doctors changed her food several times until finally she was put on Grape-Nuts which she relished from the first and ate at almost every meal and her recovery has been wonderful. She has gained in strength and weight and is now a rosy-cheeked and healthy little girl, still clinging to her Grape-Nuts."

"It is plain the food has saved her life by giving her body the needed material to keep it well and the bone material to build with."

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Dairying

California's Best Herd

By John Coleman

AN HERD of 80 cows with an average butterfat production of 427.18 pounds is the goal which John Hanson, a California Jersey breeder, has reached after thirty years. While many individual cows exceed that figure, they are scattered among a large number of herds. But having 80 all-star producers on one farm is the remarkable thing about this performance.

To Stop Leaky Teats

By Monroe Conklin, Jr.

MANY good cows are butchered because they milk so easily that the pressure in the udder during a big milk flow causes the teats to leak.

Leaking teats can usually be identified by the concave depression at the milk opening. Hard milkers have a convex surface around the orifice. To stop a cow's teat from leaking, the best method I have found is to file a 40-penny spike round off the point, heat the end hot enough to sear, and press it gently into the milk orifice.

Hold in place till the cow informs you that you have done enough. It is better to repeat the operation than to do too much at the first trial. The burn will nearly always cure readily as the result of the soothing influence of the milk, but if it is slow in healing, grease with salve. When the scar forms around the milk orifice, it contracts the opening and prevents the milk from leaking.

Concrete Barnyard

By A. L. Roat

MY BARNYARD, like the average yard on the farm, was always a mudhole after heavy rains. To overcome that annoying feature I determined to concrete the entire yard.

Certainly, there are several things to consider well before undertaking to build a barnyard floor. It must be a permanent fixture; it must withstand the changes in temperature, and not expand or contract beyond proportions calculated in the beginning, because if it does the floor will not remain intact.

I am entirely satisfied with my yard. It is always clean in all kinds of weather. The storms wash it and a broom soon removes any dirt that might accumulate from any cause whatever.

Remember, please, that a concrete yard must shed water and it must be perfectly underdrained. It must be laid properly and it must afford satisfactory footing for the farm animals. A rough-coated floor is best. Then, too, it is advisable to do all drainage work before the concrete is laid. Next, be sure to get the proper slope so that water will run away from the buildings.

When all drainage is taken care of, remove the surface soil at least eight inches, deeper if the ground is heavy. Then tamp the soil well and fill in all holes and hollows.

Perfect underdrainage is very important because if water collects under the concrete floor and freezes, the concrete

will crack and bulge. Large surfaces must be divided into sections. Make joints every 20 feet, at least, in an outside floor. Place four pieces of tar paper between the joints of those 20-foot sections to overcome expansion and contraction.

Mix the concrete for the foundation, and use larger stone for the entire floor than for ordinary walks. Tamp the foundation mixture thoroughly and finish the work before you begin the top covering. When the top cover is laid it must not be smoothed, but should be brushed over with a stiff broom before it sets. Also divide the top surface into two-foot blocks with a marker.

This rough-coated surface assures footing for the farm animals, especially horses if they must start a heavy load. I have never had the least annoyance from a slippery concrete barnyard.

The cost of a concreted barnyard depends upon the size of the surface and the cost of material in different localities. Ordinary stone and sand can be used if one will take the trouble to wash it thoroughly. That can easily be done by putting the sand or stone into a trough having a strong screen bottom and washing with a hose or under a pump.

Calculate the required quantities of material necessary for the complete construction of the piece. To do that mul-



A barnyard paved with concrete keeps the cows cleaner and enables the regular work to go on even in wet weather

tiply the thickness, by breadth and length to get the cubic contents. There is .058 barrel of cement in one cubic foot of complete concrete; there is .016 cubic yard of sand in one cubic foot of concrete, and .0326 cubic yard of stone in one cubic foot of concrete. To get the quantity of each material necessary multiply the decimal proportion by the number of cubic parts in the entire piece. For example:

Suppose the entire yard to be concreted were 100 cubic feet of space. 100 x .058 is 5.8 barrels of cement. 100 x .0163 is 1.63 cubic yards of sand. 100 x .0326 is 3.26 cubic yards of stone. The cost is calculated by multiplying the cost of each article by the quantity required and adding those amounts.

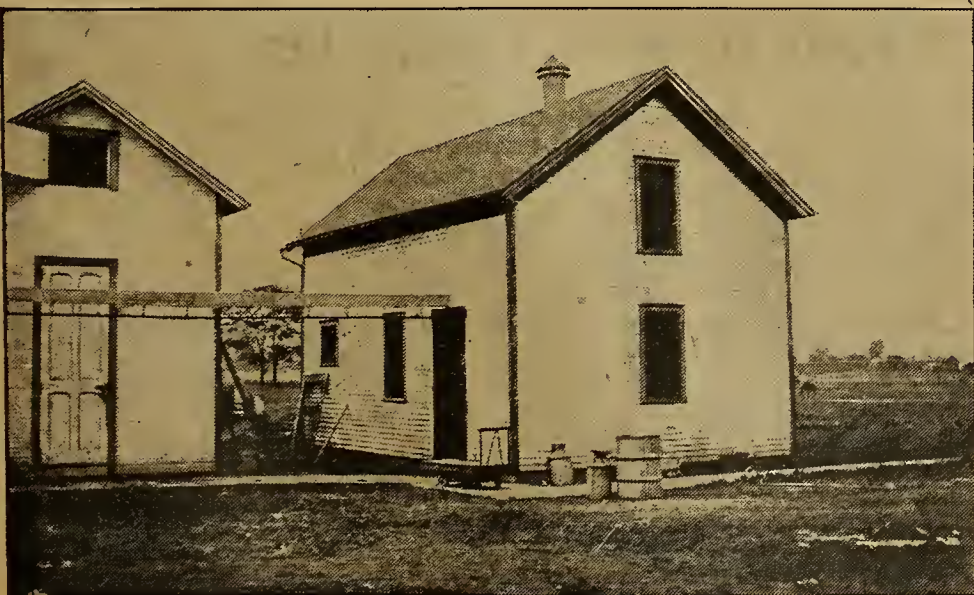
I used the 1-2-4 mixture for the barnyard—that is, one part cement, two parts of sand and four of stone. The material required for a section 6x10 feet is five bags of cement, one-half cubic yard of sand, and one cubic yard of stone.

Plan to Save Steps

By E. M. Rodebaugh

THE arrangement of buildings on a dairy farm will simplify the work or make it difficult, according to the amount of forethought used. The picture shown below was taken on a practical dairy farm which has a creamery building and an ice house.

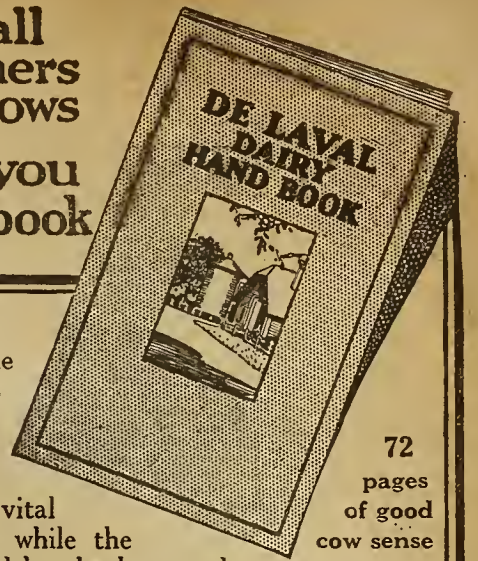
An overhead track connects all buildings so that supplies as well as the milk and cream may be easily handled. The ice house is between the creamery and the barn, which makes ice-handling logical and time-saving.



When planning buildings for the dairy farm, consider every unnecessary step. Arrange especially for the easy handling of milk, feed, manure, and ice

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"How to Judge a Dairy Cow"—shows by illustrations what points to look for in a dairy producer—explains the essential qualifications of a good dairy cow.

"Building Up a Dairy Herd"—a practical breeder gives some sound advice on this important subject.

"The Farm That Won't Wear Out"—shows that the farm where cows are kept, and the fertility returned to the soil, improves instead of deteriorates.

"The Care of Cream on the Farm"—quality is as important as quantity. It costs little and brings big returns.

"Silos and Silage"—one of the best chapters in the book. Full of silage facts that every farmer ought to know.

Then there are splendid articles on "Alfalfa," "Ventilation of Dairy Barns," "Breeds of Dairy Cattle," "Improving the Herd with a Good Bull," "Care of Freshening Cows," "How to Test Cows," etc. Numerous dairy rations, suitable for various sections of the country, are given, and various milk and dairy tables as well as tables of weights and measures, silo capacities, etc., that every farmer has occasion, at some time or other, to refer to.

Thousands of dollars have been spent in the preparation of this book, and if you keep cows you certainly ought to write for a copy and read it from cover to cover. The book is absolutely free. Just fill out the coupon or send the information requested on a post card, mentioning this paper.

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Let this painting bring the great American Drama into your home. See this pageant of Patriots step out of the past and enact before your eyes their sacrificial pledge.

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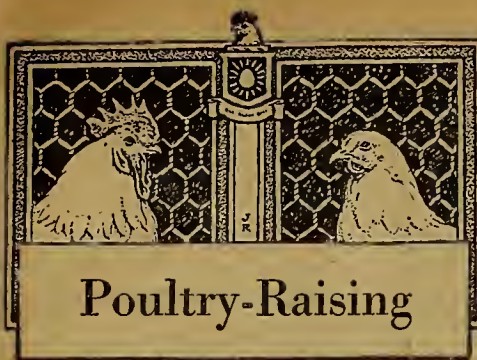
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Poultry as Mortgage Lifters

By Edgar L. Vincent

IN THE course of a little journey the other day I fell in with a man who is getting ahead with poultry. He is a farmer, and not very strong physically, but he loves poultry and is making some money out of his birds. He told me about it simply, but with a pleasant look on his face. He also told me of a neighbor who is paying for a little farm out of hens and hen products. He had tried to pay a farm mortgage for a good many years with cows, but now that he has made something of a specialty of poultry he is getting out of debt.

But I did not need to go very far from home to find examples of good success with farm poultry. A number of my neighbors are enlarging their poultry-keeping operations with quite marked success. One of our neighbors brought us a fine incubatorful setting of eggs this last spring for hatching, as he had no machine of his own yet, and we had. They gave him pretty good returns, though quite a few had to be tested out as infertile. He is gradually building up a better and bigger flock, and next year will have an incubator of his own.

A few years ago all we had in the way of poultry on our farm was 25 commonplace hens. Now we have more than ten times as many, and this spring's hatch of chicks numbers nearly 400. These are all pure-breds of good stock.

Go where one may in this part of the country and one finds more hens and more and better poultry houses on many farms.

Of course, it is not true that every farmer who tries to push the poultry business makes a go of it. Not all of us are by nature poultrymen, and I do believe that it is with this as with many other things—one needs to have a natural taste for poultry and patience to learn many things that go with the business. There are drawbacks, but there are also many things to encourage the man who is willing to work and to think for himself.

Profit From Farm Hens

By A. D. Spencer

A NICE little example of pluck and youthful good business judgment came to my attention lately in the experience of a fifteen-year-old Michigan boy, Niles Hagelshaw. Something over a year ago he began with 185 hens and five roosters, representing an investment of \$120. The first year he realized a net profit of \$97.72, in addition to having on hand a stock of young poultry fully equal in value to his original capital.

Young Hagelshaw chose White Leghorns, and in setting eggs picked the eggs of whitest shell and of uniform shape. He set 781 eggs in two incubators and under hens, but after experiencing some trouble with hens and also with one incubator, he succeeded in hatching 420 chicks.

For brooding the chicks, he used hens, as they saved him some trouble in tak-

ing care of the young chicks on range. In the fall he sold 46 roosters for \$65.43, and up to January 1st he had sold 927 dozen eggs, in addition to a home consumption of 127 dozen eggs. The eggs brought him in a total of \$169. His total receipts, including \$16 worth of old stock sold later, were \$250.96.

The cost of feed for the year was \$103.33, eggs for setting \$13, rent of hen houses \$10, one incubator purchased \$7.57, labor estimated at \$12, and miscellaneous expenses \$7.34, making a total of \$153.24, which left him the profit of \$97.72.

Young Hagelshaw took entire charge of these chickens in addition to his school work and other chores. His year's work with this flock won him the state championship for poultry-raising in the boys' and girls' club work. He is into the same game this year on a larger scale, but he is not yet ready to give out the results of his 1916 experience.

Side-Line Poultry Work

HERE is a hatching record made by Mrs. R. L. Collins, an Ohio poultry-woman, combining the use of a 60-egg size incubator and sitting hens. The incubator was first put into action February 27, 1916, and yielded 27 lusty chicks from the 59 eggs set. During the season, 413 eggs were set, 300 of which were in the incubator, the remainder under hens. From these, 232 strong chicks hatched, or 56 per cent of the eggs set. The Rhode Island Red breeding stock from which the eggs were secured are closely confined the year round.

Besides setting the 413 eggs, Mrs. Collins sold 44 settings of hatching eggs, and supplied fresh eggs for her family of five from her little flock of 32 hens.

Poultry Harvest Buckwheat

By A. J. Legg

ONE advantage the farmer has over the specialist in the poultry business is that the farm flock can have more or less free range and can thus utilize feed that would otherwise be wasted. I find it often pays to plant crops especially for the chickens to harvest as they want it. They thus get both food and exercise with an opportunity to select food according to their own tastes. For this purpose I find buckwheat an excellent crop. If sown in June it will ripen late in August. If sown in July or early August it will ripen before frost in my section (West Virginia) and will furnish a rich feeding-ground for the poultry throughout the fall.

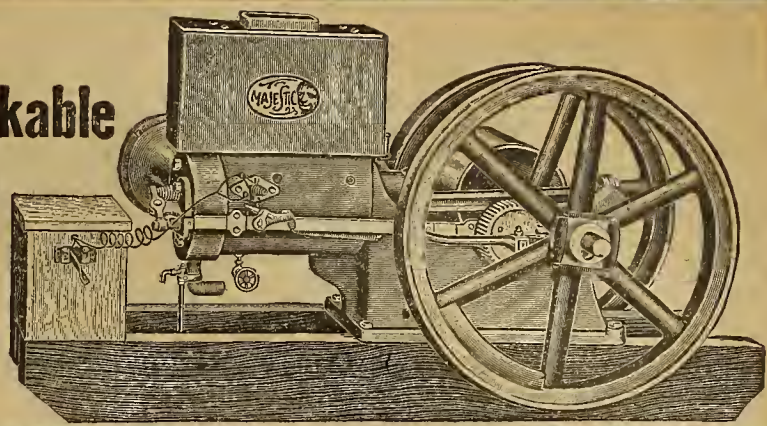
Last year we sowed nearly three acres of buckwheat on a wheat stubble, turned after harvest, where it was handy for the poultry. We had a flock of nearly 100 hens and pullets besides about twenty guineas. They ranged over the buckwheat, and were in excellent condition when winter set in. The hens continued to lay until late in the fall; then commenced laying again in January. We harvested about one third of the crop and let the chickens do the remainder. Clover and timothy were sown with the buckwheat and the chickens got green clover at any time during the winter when the ground was bare.

Many of our pullets hatched rather late, and of course did not commence laying until spring opened. We wintered 90 hens and pullets. Here is our egg yield for three months after the pullets got to laying: February, 626 eggs; March, 1,090; April, 1,278.

The indications are that they will produce as many eggs in May as they did in April, and on free range and only very moderate feeding.

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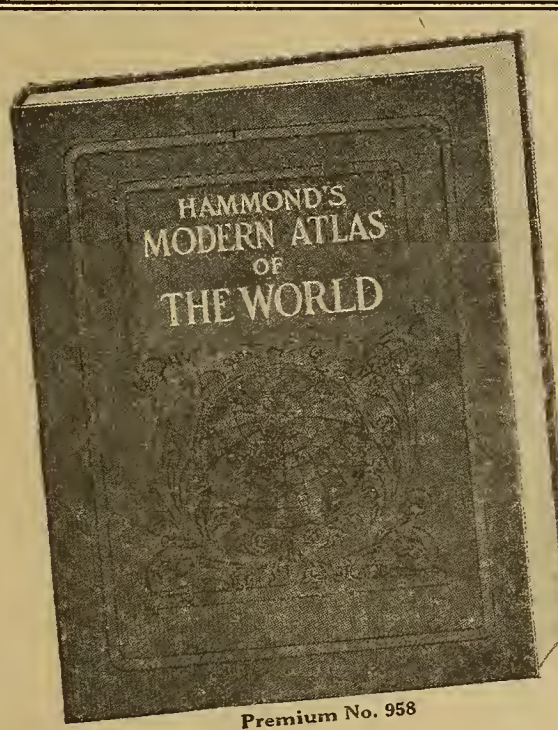
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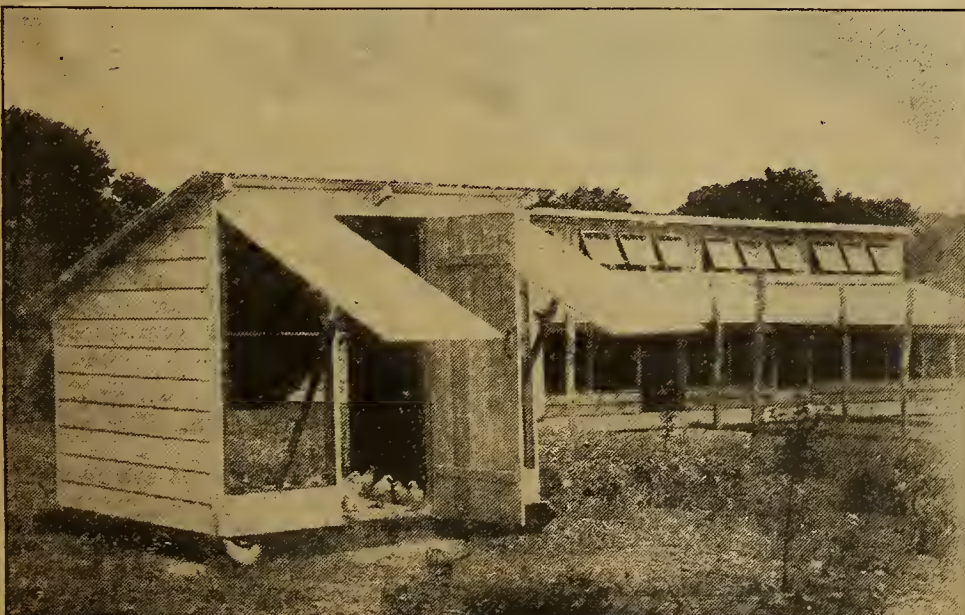
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Read this story of love and neighborly kindness and an accident on the desert. There's a smile or a throb in every line of it

The Bossets Visit

They Empty the Pantry, but Their Hearts are Right

By MELCENA BURNS DENNY

Illustrated by DeAlton Valentine

SYLVIA sat up softly, so she would not wake her sister. This was the day her husband was to come, and the creak of a wagon had startled her from sleep. With a selfishness of joy she had told nobody but Hester and baby Dean—the Pancake neighbors were inquisitive as children. On the night stage John would come! He had been away six weeks.

"Good morning," said her sister's sleepy voice. Sylvia Barry lay down and closed her eyes. "Don't wake up. It isn't five." But her sister was filled with curiosity, for it was the first morning of her visit. Sylvia watched her furtively. The sun poured through the flowered curtains, and outside lay the desert. As a wife, Sylvia was proud of its ugliness, proud of its dead, hard face, for in another year John, with his reservoirs and splendid water ditches, would make it green as a garden. Hester lifted the curtain and peeped out, and Sylvia's heart bounded at her exclamation.

"What desolation!"
"Yes. It's the Pancake."
"I see; because it's flat, and brown, and baked through. And to think that John spent his boyhood here! That those queer things I heard talk last night were neighbors!"

"Yes. Everyone calls him John here. They can't understand how big his undertaking is, and how it will profit them. They think he wants to raise vegetables on the old place." Sylvia's eyes were twinkling.

Hester fell to laughing. A soft, gurgling laugh joined hers, and four-year-old Dean rose in his crib. "Papa's coming!" he announced.

"No, not till to-night, Dean," said Sylvia.
"I hear him now!"
"No, you hear neighbors going to town. See." She pointed along the bleached thread of road to an object half folded in ashy clouds. It crept, with a creak of axles. "It must be the Bosset wagon."
"Papa will come faster."

"Of course he will. Think of how we'll hug him. Think of the things we are saving for him to eat."
The child was solemn with joy. Then he sat up with a braggart smile. "I had one cooky!" he announced.

SYLVIA buried her face in the little boaster's fleecy curls. "My precious starveling! But when Papa comes we'll eat the rest. You have no idea, Hester, what a pan of cookies stands for here. I've saved and planned for a week. When John has finished his ditches and brought in water from the mountains, everybody can have cookies. That's the thought that has kept me up. Then there'll be green feed, and domesticated cows, and butter, and cream, and the hens will lay. Another secret is bursting Dean's heart—there is a big cream pie bearing the cookies company."

"Glorious!" exclaimed Hester with enthusiasm. "Now if we can only keep our fingers out of that cupboard till ten to-night—"

A loud call from outside cut into her speech. For a minute the little group did not move, for the expression on Sylvia's face warned the others to be silent. Then she cautiously leaned over and applied her eye to the knot hole.

"It is Mr. Bosset, Mrs. Bosset, and seven children!" she whispered in dismay. "Oh, Hester, now you'll know what neighborliness is!"

"What do they want?"
"They want to visit me!"

The hunted look in Sylvia's eyes convinced Hester that her speech was not meant for a joke. Hester sought and found a crack, and quakingly met the assault of eighteen sharp and knowing eyes, even the babe in arms seeming to join its elders in intelligent scrutiny.

"Maybe if we don't breathe they'll think we're dead, and go away," Sylvia seemed to say with her troubled eyes. But a boy descended and scampered around the house.

"What now?"
"A skirmish to see if there's smoke."

Hester stifled a titter. The sisters drew back and giggled like schoolgirls, until a heavy step made the porch creak. Mrs. Bosset herself!

"She can knock till doomsday," muttered Sylvia with a flaming face. "I won't go down!" But the Bossets were unhitching. The knock sounded louder.

"I'm not dressed, Mrs. Bosset!" cried Sylvia hysterically mirthful. Her laugh was answered generously.

"Jest take yer time, Mis' Barry. I was most sure we'd ketch ye."

The sisters had forgotten Dean. As the young mother flew into her garments she saw that his eyes were big and foreboding. "Mama, is they going to eat Papa's cream pie all up, every teeny weeny bit?"

"Why, no, darling. Listen! We won't speak of cream pies to-day. It wouldn't be polite." An ironical smile flickered a moment and dropped back again into depths of anxiousness. "Promise, Dean! Not a word of pies!"

"I promise," he piped. But he still hugged his knees. "Will they eat up *all* the cookies?"
Sylvia cast a shamed look at her sister, but thrust in her hairpins with jerky decision. "No; we'll save them, for they are Papa's, too. I wrote to him I might make some if the hens laid. So we won't mention cookies either."

"I PROMISE," pledged Dean again. Then his eyes popped out, his head wagged. "I had one cooky!" he bragged with swelling pride.

"Are they through unhitching, Hester?"
"We are seven," quoth Hester sententiously, and took up Dean to dress him. Sylvia ran down-stairs. Mrs. Bosset's fat face beamed as she marshaled in her tribe.

"I told Bosset we'd ketch ye. But Bosset was goin' to Bemis to-day, an' we set up last night an' see that your sister was on the stage, so we came along to have a good day visitin'. You don't say she ain't up, either?"

"She's dressing. Do sit down." Sylvia hunted chairs, and in the meantime Mrs. Bosset kept up an elated monologue.

"I always git 'em up at four in summer, an' when I go avisitin' I jest let the beds and dishes set. I always think to-morrow's comin', an' if it ain't, what's the use worryin', anyhow? I can't git my consent to start out visitin' unless I can start out easy. If I was like you I wouldn't be a mite better'n you be—not a mite. I'd lay abed till seven too. It ain't so shiftless if there ain't a whole fam'ly to lay abed too. Poor little stick-in-the-mud! This baby's hungry. If you'd jest het up some milk—"

Sylvia saw her empty pans, remembered the cream pie, and seized a pail.

"If you'll excuse me just a few minutes I'll milk the cow."

"Now, don't bother to go an' milk. Last night's'll do as well, provided it's het. My babies is all bottle babies, but I ain't like some women. I never give 'em milk unless it's het. I guess that's yer sister comin' now, or is she yer half-sister? Somebody says yer ma was married twict."

"My half-sister, really, but— Oh, Hester, this is

my neighbor, Mrs. Bosset, and these are her children. Will you excuse me now?"

She flew on her errand for the wailing baby. When she returned the young Bossets were still sitting, watchful, silent, motionless, the mother was still talking. Sylvia glanced over the young, bold faces with a pang, and quick on the pang came the thought of breakfast.

"How famished you must be if you got up at four," she cried. "Hester, do you think you and Dean could set the table? He knows where things are."

"Of course. Has Mr. Bosset gone? That leaves eleven, counting the baby."

"I never count the baby till it's shortened," commented Mrs. Bosset calmly. "We had a snack before we started, but that ham does smell good on an empty stomach. Ham an' pancakes is a favorite with my children. Pshaw, you ain't mixin' 'em jest because I said the word, are ye? Well, we do jest naturally like 'em, an' no mistake."

Sylvia was sure of it before she was permitted to push back the smoking griddle. Twice the grease caught fire, and once she splattered batter all over her dress. Hester, coming with a cloth, held off and laughed.

"Sylvia, there's a working model frying on your face. Do let me turn it over. I'm sure it is browned." The scarlet hostess seized the cloth and a Bosset snickered.

"Billy an' Jim, where is yer table manners?" demanded Mrs. Bosset. "Quit gawkin' at Mis' Barry an' go on eatin'."

"I'm full," said Billy resentfully.
"So'm I," echoed Jim with a combative look.

"What, all done?" cried Sylvia. "Then, Dean, find your football. You can have a splendid game."

WITH the children outside, Sylvia's color gradually retreated. Mrs. Bosset finished her own breakfast with calm enjoyment. By ten the house was in order, and the sisters were cutting carpet rags with their visitor. Sylvia worked with secret elation, saying no word of her husband's coming. By eleven the children began to come to the kitchen door and look in.

If Sylvia glanced at them they fled. Occasionally one scampered through with swift looks to right and left. These incursions reminded Sylvia of the swoopings of hungry hawks, and she suddenly saw the purpose and began getting dinner. When she called

them to sit down she found them tamed enough to talk, and the change was alarming. Their abrupt, snatching ways imperiled her china, and her silver was used to point with. "Pass the butter!" "Gimme piece o' bread!" "Gimme s'more jelly cake!" kept the air vocal. Butter, bread, meat, potatoes, peaches, and jelly cake melted away before them like forms of mist. Mrs. Bosset had let it drop that Mr. Bosset would not return from the store until late. Would they linger for yet further orgies? Sylvia looked upon her depleted larder. The situation was turning from farcical to tragic. She worked at the dishes in deep thought. But John was coming! John was on his way!

The afternoon heat simmered in the air, blurring the road to Bemis as would a pane of defective glass. Sylvia sat where she could watch the chalk-like line, while carpet rags lengthened under her anxious hands. The cries of the Bosset children sounded far off in the sagebrush, but as the sun began to cast longer shadows they drew nearer in their play. Presently they started making trips through the kitchen again. They always went through, or seemed to, at a gallop, and never stopped until the sagebrush hid them. Sylvia grew curious, then nervous and disturbed. At last she ventured a question.

"Oh, they has their games," explained Mrs. Bosset easily. "As long as they're from underfoot I don't worry none. Land sakes, how this baby drools! I'll jest take him in an' lay him on the sofy, 'stead of danglin' him over my arm."

"The little imps are reminding me they're hungry again," said Sylvia hurriedly. "Hand me the field glass. Isn't Mr. Bosset anywhere in sight?" The landscape was empty. She turned and swept the road that John would come. After all, what did it matter? A few hours, and then, what joy!



"Land sakes, he ain't so bad hurt, honey. Horse accidents ain't often what you'd call bad"



Children's Corner

Who Called Mary?

By Anna C. Chamberlain

LITTLE Mary set her pail down beside the row of peas and looked about her, her round face drawn into cross lines which made her look as sour as a little pickle.

"An' I didn't want to pick peas to-day; so there!" she grumbled to herself, adding another pucker to the wrinkles on her little forehead.

It was very bright and sunny in the garden and the birds sang in the orchard trees while the crickets chirped encouragingly in the grass beneath, but little Mary was not thinking of these. She saw only that the row of peas seemed most a mile long, and the tin pail she had brought to fill with peas looked to her unwilling eyes almost as deep as a cistern.

"I don't want to pick peas," whined Mary again to herself, looking down at this great pail which, by the way, was only Robert's school-lunch pail. "I want to do something dif'rent. I believe I'll pick some flowers for Mama instead."

"Mama said if I wanted to help her I should pick some peas," said Mary, excusing herself for leaving her work. "Maybe she'll be just as pleased with the clovers." But she knew quite well that her papa could not eat clovers for dinner, and she had to hurry very fast down the long row of peas and through the gate into the orchard to keep from hearing the small voice within which told her it was wrong to run away from her work.

"Mama will be so pleased with the flowers!" she kept saying to herself to hush this little voice as she walked



"Mary, Mary, come here! Come here!" someone called shrilly

quickly along between the trees looking for the place where the clover blooms were biggest and reddest.

And then a very curious thing happened. Just as she reached a place in the thick clover where the heavy heads nodded drowsily to the sound of the droning bees someone called shrilly:

"Mary, Mary, come here! Come here!" "Yes'm," said Mary, dropping the blossoms she had just gathered and running toward the road, for the voice was very loud and insistent.

"Mary, Mary," cried the voice again, still from the direction of the highway; but though the little girl looked through the fence both up and down the road no one was in sight.

"Come here! Come here! Quick, quick!" This time the voice came from up toward the garden.

"Yes'm," said Mary again, timidly, for the voice was strange and unlike any she had ever heard before. "I'm Mary. Did you want me?" But no one was in sight, though she was now by the garden gate whence the last call had come.

"Mary, Mary, come here! Come here!" It came right from the row of peas this time, and the bewildered little girl hurried over to where she had set down her pail a short time before. Could it be a fairy calling her back to the work from which she had run away?

No little green-clad man or woman stood there, but a bird, hopping up and down among the vines. Over his back

EW

and head he wore a black coat and hood and along his sides and breast were trimmings of chestnut-brown.

"Quick, Mary, come here! Come here!" said the bird, turning his head from side to side as he peered among the leaves and then—Mary could hardly believe her eyes—he picked one of the pods she had been sent to gather.

"Yes'm, I was just coming," said Mary meekly, ashamed to see that a little bird was trying to do her neglected work.

"Mary, Mary," said the bird again, hopping a little farther along, and this time it seemed to the little girl that his voice was not so shrill as before. Perhaps this was because she had come back to her work, for she was picking busily now and the bird did not say any more for a while except to utter a gentle, "Quick, quick!" now and then.

It was no longer lonely in the garden, and the tin pail filled rapidly as Mary worked, the bird sometimes gathering



"Don't you like my new hat, Mr. Bug?" "Yes, my dear; but why hide your light under a bushel?"

one as if to help; but it must be told of him that he kept all those he picked for himself.

At last the pail was quite full and heaped up, and then the little girl started to carry them in to be shelled for dinner.

"Mary, Mary, come here! Come here!" called the bird suddenly as she went out through the little gate.

"I will, to-morrow," said Mary as she hurried toward the house eager to tell her mother of the wonderful bird who had called her back to her work.

"He said 'Mary, Mary, come here! Come here!' just as plain," said Mary, her eyes shining with excitement.

"It was an orchard oriole," said Mama, smiling down at her little girl, "and 'Mary, Mary, come here! Come here!' is one of his little songs."

After dinner Mama showed her a picture of the pretty black and brown bird with his little yellow mate and of the basket-like nest which he builds for his bird babies up in the orchard trees.

New Puzzles

A Rhyming Rebus

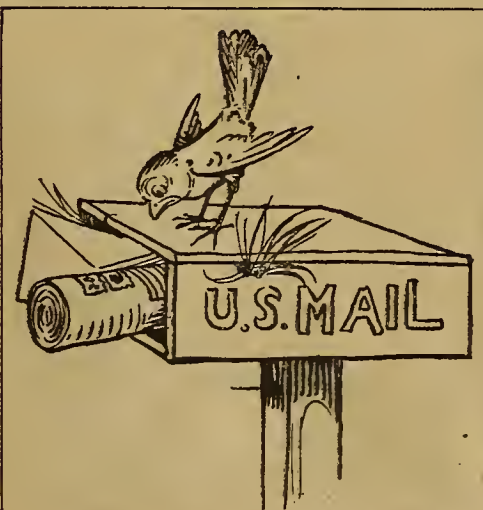
At first I'm advanced for interest or pelf;
Behold, and you'll find I've a place on the shelf;
But behold me again, and perform it with care,
If you handle me now, you have need to beware.

Answers to Puzzles

Puzzles Printed Last Issue

Concealed Geography

The cities are Deal, Troy, Witham, Esk, Perth, Baden, and Arden.



"Somebody has nerve putting his waste paper right in my front door!"



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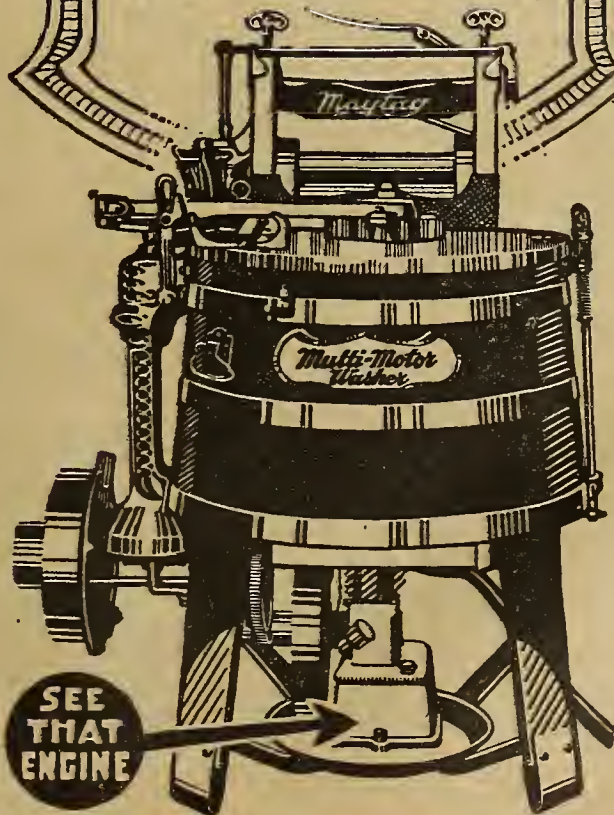
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Making Housework Easier

When School Districts Hold Cooking and Sewing Courses

By C. M. LONG



They studied new methods of canning fruits and vegetables on Thursdays

A COUNTY agent walked into the office of the dean of agriculture of the University of Missouri at Columbia three years ago. He asked the dean if two teachers of home economics could be sent to Johnson County to conduct cooking and sewing schools in the county schools for six weeks.

The request was granted. The University of Missouri paid the expenses of the girls the first year, so the persons of the county would not have to bear the expense of an experiment.

The plan outlined by the county agent called for a school of one week's duration in twelve school districts. Sessions of the schools were held in the schoolhouses during the afternoons. The time of the two teachers was spent in the homes of the districts in the mornings and in the evenings.

The schools were planned for the girls of the districts, but the teachers were instructed to make the school work so practical that the grown women could not stay away. Did they succeed? They did, and to such an extent that the girls were nearly crowded out. These busy farm wives had to do all their own work, but the attendance daily averaged from 25 to 50 women. One woman walked two miles and a half every day to learn the new methods. Several women and girls drove five miles in the dust and heat to attend the sessions of the schools. Some came after the thresher hands had been given their dinner.

Three Generations Attend

A WOMAN more than eighty years old and her sixteen children and grandchildren were among the students of one of the Missouri cooking and sewing schools. One woman had refused to take the teacher for an evening. Her husband was opposed to the farm bureau anyway. At the close of the session the first afternoon she went to the chairman and tried to get an evening with the teacher, saying, "Why, she is just like the rest of us." While in the homes these teachers, both of whom were young women just out of college, surprised these practical folks by the many practical things they could do. In one place the hostess had some unexpected company and the teacher made the cake for her. One man said, "Any girl that can make hot rolls like that girl, can have a home at our house as long as she wants it."

These were strenuous days for the instructors. The sessions at the schoolhouses were to continue from 2 to 4 P. M., but the teachers seldom finished the work at the schoolhouses before 6 P. M. Then there were so many things that the hostess wanted instruction in. The mornings were often spent with the girls in candy-making or something of special interest to them.

Here is an outline of the courses given:

Monday, bread-making; Tuesday, pastry; Wednesday, cooking of meats and vegetables; Thursday, fruit and vegetables, home canning; Friday, sewing; Saturday, review on any points asked.

Johnson County had eleven such schools last year, at an average cost of \$27.50. Every community paid for its own school. Forty-five such schools were held in Missouri in eight counties, and were attended by a total of 3,034 women and girls.

The program of the Johnson County home economics schools was slightly changed last year. Two night sessions, to which the whole family was invited, were held. At the midweek session the instructor talked on home sanitation, and a local physician discussed "Cause, Prevention and Cure of Infectious and Contagious Diseases."

The evening of the last day was often conducted as a social, where ice cream, cake, and other things the young folks had learned to make were sold to defray expenses. Sometimes it did that and left money in the treasury for next year. In some places local organizations financed the schools. Sometimes those in attendance merely assessed themselves enough to pay the cost. In one case the school board voted to pay the expense out of the incidental funds.

The work has proved so popular that the State of Missouri has offered to pay \$12.50 toward every school held in Missouri.

"The school of home economics has been a great blessing and inspiration to us," said one of the women who attended the 1913 and 1914 county cooking and sewing schools when asked what she thought of them. "It has helped and encouraged us in our efforts to make the daily work in the home of fascinating interest instead of monotonous labor, and to make housekeeping an inspiring profession instead of deadening drudgery. It has helped us to think of cooking as a science and home-making as an art."

"In three cases three generations were in attendance, and the grandmothers enjoyed the lessons with the grandchildren, only regretting that they could not have attended such schools when they were young," said another.

"The school has helped our community in many ways," asserts a third woman who attended the sessions. It has instilled a desire to have this as a part of our regular school work and to make an annual affair of the school for the older folks. Also a desire for a building to accommodate these community meetings."

A woman from one of the schools writes: "It would be difficult indeed for just one person to give an estimate of the good accomplished by the school of home economics just held here. We know from the large number in attendance each day, and the great interest manifested by each and every one who attended, and by the excellent co-operation of many who attended in the work we attempted to do, that much interest has been aroused in this community. Many have learned the 'why' of so many things we do in home-making from a different viewpoint from that which they have in the past, and feel that home-making is a pleasure and a profession."

One of the best results which has come from the teaching of home economics in country communities is the introduction of improved equipment in the home. Many women who had used primitive tools and utensils for years because they did not realize the saving in labor and time that up-to-date equipment would mean, have lessened their work by a third since their kitchens were furnished with a few of the new devices.

A fireless cooker or an oil stove, which some of the women have regarded as impractical or involving new processes that would be hard to learn, proves its practicality in an hour's demonstration, and the hard-working housewife goes home with the determination to possess one. Many a ten-cent device, too,—lemon squeezer, potato ricer, flour sifter, or cherry pitter—that makes play of irksome small tasks has come into country kitchens through the cooking schools.

The Stutterer

How to Cure Impediment of Speech

By JOHN T. TIMMONS

AT VARIOUS times in the history of civilization some supposed wizard or magician has performed some remarkable feats in the apparent curing of some terrible stutterers who could scarcely make themselves understood by other folks, and the people marveled at the wonders of those able to cast out whatever was supposed to cause the affliction.

The fact is the very disagreeable difficulty of speech known as stuttering can be remedied in a very simple manner, with no pain, no expense or trip to a hospital for expert treatment, or without anyone's knowing that you who have the affliction are even trying to correct the trouble.

The secret of the difficulty lies in the inability to control the vocal organs. The nerves and vocal cords will not act in accordance with the mind, and the will power cannot hold them in check.

What is needed is control. Control can be gained perfectly after a little practice, simply by holding a marble in the mouth, sometimes under the tongue, and sometimes at one side of the mouth, and at others directly over the tongue.

If a stuttering person holds the marble in the mouth the attention is so close that the words are formed and uttered so carefully and methodically that the result is there is little or no hesitation and stuttering, and in time the party is so corrected that it is not necessary to hold the marble in the mouth at all.

Candy marbles which are pure sugar, and which are so hard they melt slowly, are the best to use, so if the marble should be accidentally swallowed no harm to the internal organs would result.



The new methods made cooking a fascinating science and home-making an art

Game-Bird Regulation

By JUDSON C. WELLIVER

SOME new bird regulations took effect August 15th, and hunters ought to know all about them. In detail, they are too extensive to be printed here, but the U. S. Department of Agriculture will forward them on request.

Under these rules a closed season is declared for two years on a number of varieties of game birds, all over the country. Shore birds and water fowl in general are to be protected more rigorously than ever before, and hunters who get mixed up with the rules will be in real trouble, for the federal authorities are getting ready to do some real business under this law. There is no doubt of the importance of saving the bird life of the country—some kinds, at least. Saving a crop is worth a lot more than the bird's little carcass.

E-W



Grown women came in such numbers that the girls were nearly crowded out. Several women and their daughters drove miles to attend the meetings

How to Dress the Children

Keep Their Clothes Up-to-Date, but Simple

By GRACE MARGARET GOULD



No. 3101



No. 3101



No. 2934



No. 3071—Boy's Shirt with Detachable Collar. 12 to 16 years. Pattern, ten cents



No. 3056



No. 3102



No. 3056



No. 2999



The new pattern catalogue which is sent free with every pattern order during September and October

No. 2960—Long Coat with Shoulder Capes. 4 to 10 years. Quantity of material required for 6 years, one and three-fourths yards of fifty-four-inch. The price of this pattern is ten cents

No. 2934—Double-Breasted Coat with Belted Back. 2 to 3 years. Quantity of material required for 6 years, two and three-eighths yards of thirty-six-inch. The price of this double-breasted coat pattern is ten cents

THE children to-day are surely following in the fashion footsteps of their elders. Whatever is the trend of the new modes for grown-ups, it is easily to be traced in clothes for little folks.

In fitting out the children for fall and winter, I believe very strongly in making their clothes up-to-date, using materials and employing colors that are in style to-day, and introducing any new smart trimming touches.

On the other hand, don't make one new frock for your little daughter, or one suit for your small boy, that has a suggestion of fussiness about it. If the lines are right, the plainer children's clothes are the better they are.

Among the materials that are favored for children's dresses are the old standbys of serge and gabardine, as well as a new alpaca called St. Nicholas cloth. This is a very supple fabric that comes in many charming colors and stripes, and has enough warmth to make it desirable for winter wear. Velour and broadcloth, corduroy and velvet, will be used for best dresses, and many soft woolsens in stripes and plaids.

Braid, buttons, and machine-stitching, as well as gay ribbons, are used for trimmings.

Taffetas in Roman stripes, checks, and plaids are used in combination with plain materials, and plush and imitation fur fabrics are particularly in demand, not only for entire coats but as a trimming for coats as well as dresses.

In colors, tête-de-nègre brown, any of the shades of blue, dark green, and Burgundy are favored. The majority of the new dresses for little girls introduce a flare in the skirt. Both long-waisted and short-waisted styles are favored, and many of the dresses show a combination of fabrics.

It is the little detail that counts for so much in these dresses. For instance, in the coat for a small girl shown in pattern No. 2960, illustrated on this page, it is the rows of machine-stitching in a bright color that gives the coat a little different look. Collars for coats are in many shapes, the sailor, draped, cape, and military all being considered good style this season. This particular little garment shows a double collar in cape form. Each collar is finished in a smart tailored style by rows of machine-stitching in a bright color. Machine-stitching is also used as a finish for the cuffs, and designates the waistline, taking the place of a belt. The coat itself is dark brown gabardine. The buttons are brown bone, though green bone buttons may be used if preferred.

Very gay satin and silk linings are used for coats this year. Some show Roman stripes, others bright plaids, and still others a plain background scattered with flowers or butterflies.

The patterns shown on this page may be ordered from the Pattern Department, FARM AND FIRESIDE, Springfield, Ohio.

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SPECIAL

Would You Accept This 30 Day Offer?

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17 Jewel



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Now, during this Special Sale, is the time to save a third to a half on this high-grade Elgin. Thoroughly factory tested, guaranteed 25 years, engraved or plain polished case, with your own monogram, and our advertising offer is to send you this fine 17-Jewel Elgin at this ridiculously low price, free of charge for your inspection and approval and if you want to keep it, you pay the small, easy terms of

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MR. HARRIS wants to send you his three latest BOOKS, FREE — one, "FACTS vs BUNC," or all about the watch business, both at home and abroad; the other, the story of "THE DIAMOND," its discovery, when and how mined, cut and marketed; also our Big Free Illustrated WATCH AND DIAMOND BOOK. Write today—Do it now!

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Little Flossie Meredith, Jasper Co., Iowa, sent in her name and we gave her a beautiful pony named "Pat." Now she has fun all the time.



George Edwin Adams lives in Cayuga County, New York. He sent in his name and I sent him "Dolly." George says "Dolly" is a very fast little horse and he has been offered \$150 for her.



Ponies Given Away

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No Matter Where You Live

You stand an equal chance! I have given Ponies to children in almost every State in the country from New Hampshire to California and from Minnesota to Alabama. I have given away almost 400 Ponies and every year I give away from 30 to 40 more.

I am the Pony King of America, and I have given away more than 375 Ponies to boys and girls. Now I am going to give away several more Ponies, and I want every family that reads this paper to stand an equal chance to get one.

If you are a Boy or Girl, send in your name. If you are the Father or Mother of a boy or girl, send in your child's name. No charges of any kind, and nothing to buy. Just send in your name and address.

Children Don't put off this chance. Don't wait. Write your name and address in the corner below, cut it out and send it to me. I will then send you the beautiful *Free Pony Picture Book* and you will have an equal chance to receive one of the real live Ponies that I am going to give away soon. You stand just the same chance as any other child, and it doesn't cost you a cent. Get a pencil and write your name now.

Parents Please show this offer to your child, and send in the Coupon. You will be interested in the free Pony Book I send, and your child will enjoy it immensely and profit by it. I receive many letters from children telling me how they enjoyed reading the book. Besides, *your child may win* one of the Shetland Ponies I am *actually giving away* this season. Your child stands the same equal chance as any other child.



Send Your Name For Free Pony Book

This Free Pony Book

Just Sign Your Name

Here is a wonderful Pony Picture and Story Book. It tells the stories of hundreds of children and the Ponies I gave them. It is full of pictures of these children, playing with their Pony Pets. It tells how the children won them, how the Ponies were shipped to them, and the good times they are having with them. It tells all about the tricks they do and what they are fed and how they are cared for. I will send a copy of this wonderful Pony Book free to every boy or girl who really wants a Pony and who sends in his or her name. Write your name in the corner on the left and mail it to me right away. I want to hear from every boy and girl who doesn't own a Pony

591 Webb Bldg. THE PONY KING St. Paul, Minn.

Pony Coupon

THE PONY KING, 591 Webb Bldg., St. Paul, Minn. Send me the Free Pony Picture Book, containing pictures and names of children to whom you have given Ponies. Also send me pictures of the Ponies you are going to give away soon, and Certificate of Membership, so I can join your Pony Club and get a Pony.

My Name is
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The National Farm Paper - Twice a Month

ESTABLISHED 1877

5 cents a copy

Saturday, September 16, 1916

Eastern Edition



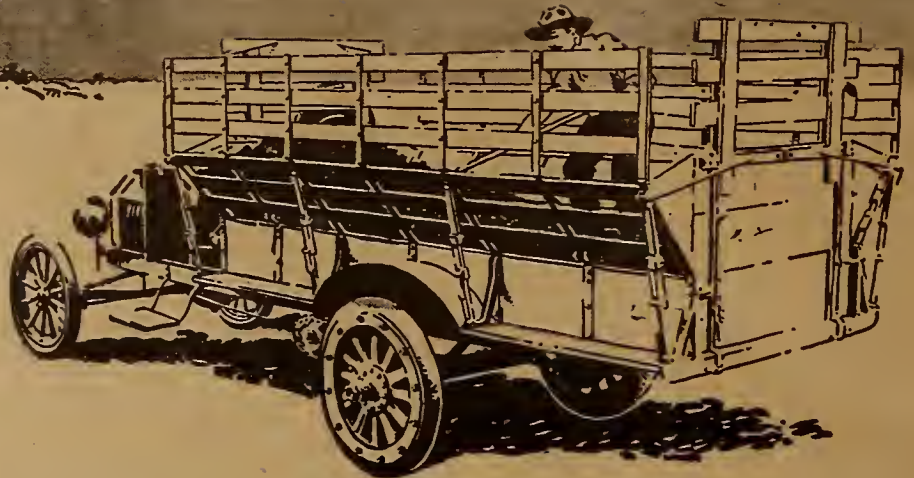
PHOTOGRAPH BY JOHN KABEL

When the Fodder's in the Shock

It Solves the Hauling Problem on Your Farm



SMITH Form-a-Truck

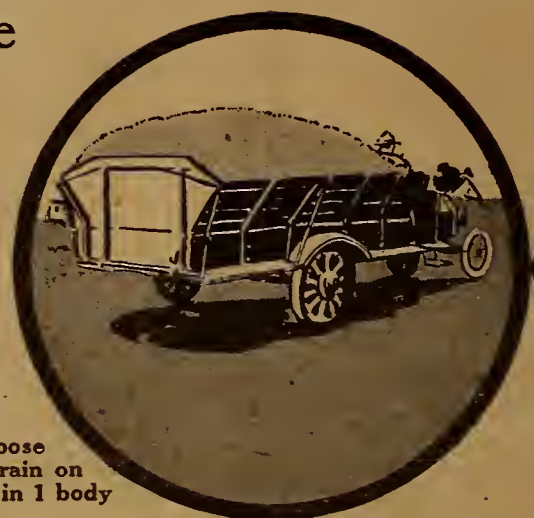


Will go anywhere you can go with horses—do its work in one-quarter of the time and at much lower cost.



8 in 1 body for Hay Hauling

Smith Form-a-Truck combines with any Ford or Maxwell chassis to make a fully guaranteed one-ton truck. 44,000 contracted for—thousands to farmers who are replacing horses in their farm hauling and using the modern time-saving and money saving truck.



Loose Grain on 8 in 1 body

\$350

An 8 in 1 convertible body for farm use is furnished with Smith Form-a-Truck at slight additional cost. The body, by the simple manipulation of levers gives 8 distinct body types meeting every requirement of farm hauling.

These 8 bodies obtained without removing the original body from the chassis, really gives you 8 complete farm wagons in one—each instantly available for service without any delay.

For the Smith Form-a-Truck added to the price of any Ford, old or new, or any 1916 Maxwell, and your one-ton truck is complete.

Smith Form-a-Truck places farm hauling upon the basis of machine efficiency, hauling loads to the nearest town, doing work in the field, and accomplishing every other form of hauling that you are now doing with horses, at a great saving of time and at a tremendous money saving.

Smith Form-a-Truck gives a hauling cost of 5 cents a ton mile—this is about one-quarter to one-fifth what it costs to do the same work with horses. And when you use Smith Form-a-Truck you save three-quarters of the time wasted on the road by slow horse drawn hauling.

Time costs real money. Figuring \$2.50 a day as the average wage, the three hours out of every four that Smith Form-a-Truck saves you in comparison with hauling by horses, represents a daily saving in regular service of \$1.50 or \$450.00 each year.



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In place of starting away at 3 or 4 o'clock in the morning in order to be in the city markets early, farmers using Smith Form-a-Truck now start at 6 o'clock and still arrive in ample time. In place of dragging along over the road late at night, they come back doing from 12 to 15 miles an hour and are home early, with plenty of time to spare.

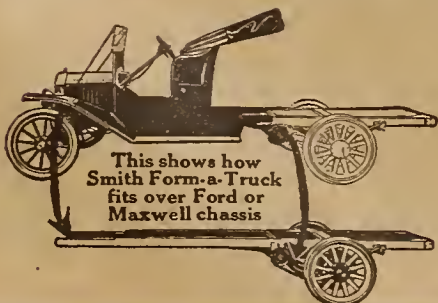
Working in the field, hauling grain, hay, fertilizer, vegetables, Smith Form-a-Truck takes an hour or two, where horses take from half to three-quarters of a day.

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Town..... County.....
State..... No. acres owned.....

FARM and FIRE SIDE

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No. 25

Raising Baby Beef

A New and Formidable Rival Now Confronts the Big Steer

By JOSEPH A. RICKART

HERE is an interesting and very readable article that tells how you can feed fat cattle at a profit and hold them until the market suits you.

THE EDITORS.

IN THE demand for beef cattle there is apparently a drift in the direction of finished yearlings. Baby beef has been coming more into favor for a number of years, first attracting popular attention about the time beef-steer values began to climb above five or, possibly, six cents a pound. The higher price a pound meant a smaller package for many consumers, and the big steer is now confronted with a formidable rival.

In considering the point as to whether or not it is more desirable to produce baby beef than the heavier animals, at least three points of view must be considered. There is the viewpoint of the producer and that of the consumer, and also a view of the question which concerns both producer and consumer—the possibility that producing baby beef reduces the total productive power of the live-stock industry.

A large Texas breeder, who has specialized for the last twelve years in furnishing calves and yearlings to corn-belt feeders, was asked by the writer to state some of the advantages to the finisher in fattening calves or yearlings, instead of two- or three-year-old steers.

"I hesitate to express an opinion on this subject because, although my position is well known as favoring the finishing of cattle in the yearling stage, there are a lot of mighty good men in the range country who sell their steers at two and three years."

"But you have some good reasons to give the men who buy your calves and yearlings why it is more profitable to finish them as baby beeves than to handle older cattle?"

"Well, yes; I think I give them good reasons," he said. "I just give them my own reasons for the faith that is in me. In the first place, young cattle make quick and cheap gains. Then they put their owner in an independent position with reference to playing on the market. If the general cattle market takes a bad turn, a man who is feeding calves or yearlings can keep on feeding while waiting for an upturn, without making any sacrifice. He can feed his calves or yearlings for a whole year if he has to wait that long for a favorable turn, and they will be ready to market any day during that time. The man who is feeding big steers cannot juggle the market that way, for big cattle soon reach a point where they can be fed no longer at a profit."

Mr. J. W. Heskett, the owner of the baby beeves shown in the picture, while a little disappointed in the gain in weight the calves made during the winter, has been finishing calves or yearlings for the last few years, and believes they pay better than older cattle.

"My conclusion," he said, "based on experiments of my own in the last few years, is that there is more money and surer profits in feeding young cattle, either calves or yearlings, than there is in feeding older cattle, as they will 'grow' a profit of about \$10 a head. I prefer them because of their growth in size and fattening, both at the same time. Also, if market conditions are not right, one can feed right along at a little profit until the market is right, and the gains will a little more than pay for the feed."

"How did you handle the drove shown in the picture?"

"These calves were bought in Wichita about No-

vember 1, 1915, and were put on a light ration of shelled corn and alfalfa for thirty days, and have been on full feed since the first of December till they were sold, April 25, 1916. These calves cost about \$7.50 a hundred pounds, and weighed 500 pounds each, when bought November 1st. They made less gain than I had expected, although they did very well considering the bad weather. They gained a little less than 300 pounds a head, and consumed a little more than one peck of corn a day a head. They weighed 792 pounds a head when sold, and brought \$9.35 a hundred pounds."

Prefers to Feed Young Cattle

DURING the second week in May this year a northern Kansas stockman marketed a carload of Angus calves at Kansas City, a little less than a year old, which brought \$9.50 a hundred pounds, and weighed 726 pounds each. He has been feeding

Kansas, brought a shipment of stock to market in which were two calves, twins, dropped in July, 1915, one of which weighed 610 pounds and sold at \$8.50 a hundred pounds; the other 540 pounds, and sold at \$8.65 a hundred pounds; total cash received for the two calves, \$98.56. This feeder said that he bought the mother of these twin calves at a sale in June last year for \$70, less two per cent for cash, and that the next month she dropped these two calves.

"I just let the cow devote her whole attention to raising these two calves," he said. "Last fall I put the cow and the two calves into the feed lot with some steers I fed during the winter, and have just sold them to-day. The cow weighed 1,370 pounds, and brought \$7.50 a hundred pounds, or \$102.75. You have the figures on the two calves. I call that a good deal of beef for one cow to produce within a year."

A. J. Crawler, Bartley, Nebraska, fed some Hereford steers last winter, and let four head of calves run in the feed lot with the steers. He sold his cattle at St. Joseph, May 8th, this year, and the four head of calves, which were then seven months old, averaged 722 pounds in weight, and brought \$9.50 a hundred pounds, or \$68.58 each.

"That is some returns from calves seven months old," said Mr. Crawler, who was agreeably surprised because he had paid no special attention to these calves in the feed lot.

While it is clear that a beef animal will put on more weight during its first year than in any subsequent year—and this means that if a given plant is kept going constantly it can produce more pounds of beef a year by finishing cattle as yearlings—there are other considerations which take some of the bloom off this conclusion. Obviously, if more yearlings are finished every year, breeding herds will have to be larger. Twice as many cows will have to be kept to produce a given number of yearlings every year as would be necessary to produce the same number of two-year-old steers every two years.

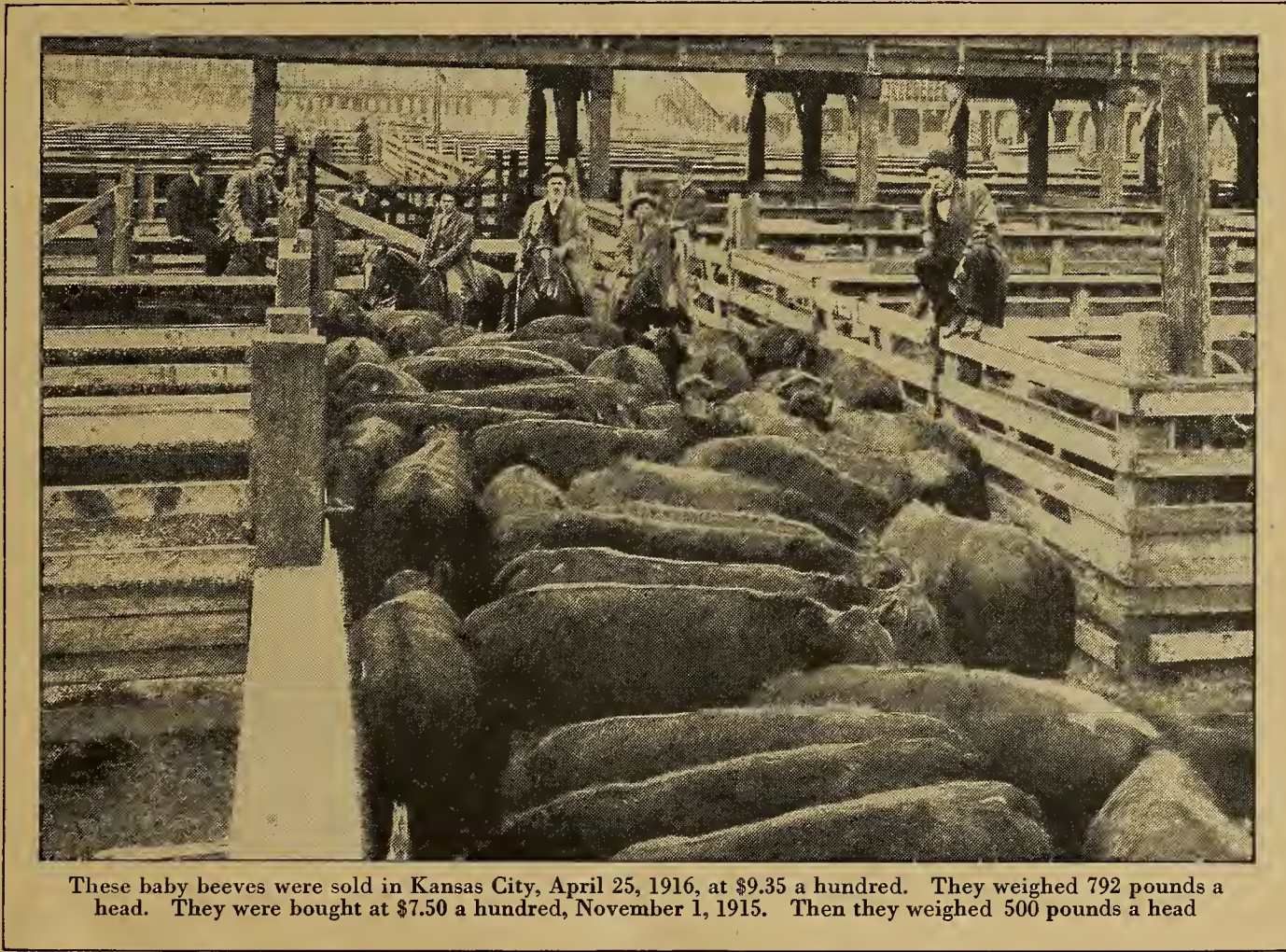
This may not work out in exactly that proportion, but cattle that are sold as yearlings do not have to be kept through their second year, and their place in that event during the second year can be taken by other cows.

Again, yearlings do not dress out as high a percentage at the packing house as heavier steers by two or three per cent. There is less bulk in the fore and hind quarters, in proportion to the total weight, in the young animals. This, of course, cuts down the advantage gained by being able to produce more pounds on the hoof by finishing cattle as yearlings, but it by no means destroys that advantage in favor of the yearlings.

The smaller killing percentage yielded by yearling cattle concerns the consumer, for it raises the cost of the beef to the killer, also to the retailer, and then to the consumer. Nevertheless, there is a demand on killers for baby beef sufficiently urgent to cause them to pay higher prices for choice finished yearlings than they pay for heavier steers of equal finish.

"What is the reason you pay \$9.75 for yearling steers and heifers to-day and only \$9.45 for prime heavy steers weighing 1,500 pounds?" I asked a buyer for one of the large packing houses one day in May this year.

"Because we have orders for baby beef, the other houses have similar orders, and the resulting competition runs the price up. Of course we also have orders for the big beeves, but the supply of big cattle more nearly meets the demand, [CONTINUED ON PAGE 11].



These baby beeves were sold in Kansas City, April 25, 1916, at \$9.35 a hundred. They weighed 792 pounds a head. They were bought at \$7.50 a hundred, November 1, 1915. Then they weighed 500 pounds a head

calves each season for a number of years, with few exceptions, and when asked why he preferred them to aged steers, he said:

"I believe it is well understood that if you feed a steer long enough he will eat his head off. Well, I aim to quit feeding at the point where the feeding operation begins to show a decline in the daily profit, and sell my cattle right then."

"Past experience enables you to tell when to sell?"

Waits a Year for Good Market

"**Y**ES," he said; "we test the thing occasionally. Two years ago we held our yearlings over, and fed them another year. They weighed 1,100 pounds when we sold them, and brought about the same price a pound that prime yearlings were bringing; possibly a little less. But, as you see, in two years we had produced 1,100 pounds of beef to the animal, while in a year we get 700 pounds in a yearling, and in two years, by selling the yearlings each year, we get 1,400 pounds of beef."

This last remark might be a partial answer to the question of whether baby-beef production is apt to decrease the total output in pounds of beef of the entire cattle-raising fraternity, but it is not complete, for there remains the fact that larger breeding herds would have to be kept to operate strictly in yearlings.

An extreme case of baby-beef production in pounds, and also in profit to the feeder, came under my observation in April this year. A feeder in Morris County,

When a steer steps on your foot, do you use the business end of a pitchfork on him? This is about a man who doesn't

Beef on High-Priced Land

Where Practical Methods Produce Steaks at a Fair Profit

By W. R. SCHOOLER

IT HAS been my experience that it pays for the man who does diversified farming to feed cattle. Whether he feeds a large or small number, he has his own grain and roughness to start with, and to dispose of farm products on hoof means a ready market for them, with nearly always a fair increase in profits. Then there is the fertilizer from the cattle lot, which can be utilized to build up the land, thus making a greater yield of crops.

There are many different ways of feeding cattle for good results, but my endeavor in this article will be to show the methods that I have found the most practical in my section of the country. In the first place, my lot is small, not exceeding more than two acres for four or five carloads of stock. The feeding sheds, which are under cover, are open to the south, and also to the north when the weather permits, so that there is good ventilation. They are large enough to shelter all the cattle and to hold the grain and roughness for feeding. Corn that is going to be fed should be kept dry, for when it is wet, cattle will eat more of it in proportion than of the roughness, and to do well they must be kept on a regular diet. The watering tank is not more than fifty yards from the feeding troughs. Everything is arranged as conveniently for the cattle as possible, and nothing is allowed to disturb them from the outside of the lot, nor is there any unnecessary confusion permitted on the inside.

A steer may accidentally step on my foot or soil my clothes, but I don't use the business end of the pitchfork on him; neither do I make him get up if he happens to be lying down in my path; I go around him. If steers are treated gently, even the wildest ones will learn to have confidence in the person handling them; and gentle, contented, lazy cattle are necessary to make the money they should make.

For feeders I usually buy two- and three-year-old steers already bunched by someone in my own neighborhood, or I go to a big live stock market to buy them. January and February are the months that they can be bought at the best prices considering the kind of flesh they are carrying. They cost a little more at that time, but they have lost their grass fill, which makes up the difference. I feed no particular breeds, but select those cattle that are low to the ground, have good mouths, well-arched ribs, are wide across the hips, with broad straight backs—characteristics showing the ability to put on flesh as well as excellent digestive organs.

These cattle are kept through the spring in fairly good condition, and, as soon as possible, put on grass. By the next fall they have made a gain of something like 250 pounds with very little cost, especially if a man has his own pasture land and roughness.

In December and January I like to begin feeding. Then the cattle are ready to ship in May and June, at the time when the market is cleared of winter beeves and before the grass-fed stuff comes on.

Self-feeders are used to feed from. There are two long troughs, one for shelled corn and one for ear corn, and these must be kept clean and dry. Cattle will not eat wet, stale feed. I do not use a salt box, but salt or brine the feed at the rate of one handful for each steer a week. If salt is kept by cattle they are apt to eat too much, especially in wet weather. I feed them regularly night and morning, and always at the same time. To make a success of cattle feeding, system is absolutely necessary, and it is a business which cannot be trusted to too many hands.

Now, I have tried pretty nearly everything, and the feed that I have found the most satisfactory to use with corn down in my section of the country, after more than forty years of experimenting, is flax. Some time ago I bought flax tow from my neighbors for roughness, and I liked it better than anything I could get excepting clover hay. Also I found the poorer the job of threshing the better the cattle did. So I concluded that if a little flax was good for them, perhaps more would be better. I commenced sowing my own flax, and when it was ready to harvest I cut it with a binder and shocked it like wheat. Afterwards I either stacked it or put it up in mows, but it keeps all right in the stack. I never thresh it. Before feeding I shake it well so that it tangles, and when put in the rack the cattle pull it

out by bits instead of bunches. Around the rack is a trough extending out far enough to prevent the bolls or bits that drop when the cattle are eating from falling to the ground and being wasted. It is wise to observe all such small economies, which amount up to a great deal in a few months' time.

A steer will eat eight pounds a day of flax in the sheaf, which means that he gets two pounds of flax seed. This he grinds well in chewing the straw. The seed is pretty nearly all digested, but what isn't the hogs get, and it is good for them.

Steers Gain Three Pounds a Day

SINCE I have been feeding flax in this way, I have never lost a steer out of the 1,200 fed, nor have I had any foundered. They average a gain of something like three pounds a day on a 120-day feed. This is the usual length of time spent in getting them ready for the market if they weigh around 1,000 pounds when they go in the lot. A man won't realize much of a profit on cattle that only make a gain of one and one half or two pounds a day.

To make a quick feed, cattle must have an appetizer, and flax is a good one. One winter I bought 2,000 bushels of flax and ground it, and I also ground my corn, cob and all. Then I mixed the two, feeding up to four and five pounds a day. This made a good feed, but no better than I have described above, and it cost more to handle it. It is better to let cattle do what they will for themselves. I don't even break my corn, for I think they can get at it better without breaking, and there is no use for additional labor unless it benefits the steer.

Flax in the sheaf cannot be bought on the market, so if it is to be fed it will have to be bought either



To dispose of farm products on the hoof means a ready market for them. But to be a successful cattle feeder a man must use a lot of good common sense in the business, and stick to it

from neighbors or grown on the feeder's farm. When flax seed is selling for \$1.25 a bushel, flax in the sheaf ought to be bought for \$15 a ton.

To be a successful cattle feeder a man must use a lot of good common sense in his business, and stick to it. Of course there are some years when it would be better to stay out and let the other fellow feed, but no one is shrewd enough to guess those years. We have just come through three or four pretty good years, and have realized a fair average profit. It is the man who dips in and feeds a few cattle because his neighbor made money feeding the year before, or for some similar reason, that low markets hurt, and not the regular feeder.

Lighting the Farm

By MRS. JAMES LAMPMAN

PROPER light for the house, the barns, and the other buildings has been one of the farm problems. But it is solved now. A person can take his choice of gas or electricity. The endless washing and cleaning of many lamps and lanterns is over.

Aside from the work, the light was often inadequate. The growing boys and girls usually have to study or want to read during the evenings, and a brilliant light is a blessing.

Some time ago we installed an acetylene-gas lighting plant on our farm. We are highly pleased with the results. We have a light in every room. The gaslight is odorless, smokeless, and gives a clear white light. It enables us to read easily anywhere in the living-room, which is 16x22 feet.

Now that electric lighting plants for farms have been perfected, many people who prefer electricity to gas are installing electric plants at small cost.

We bought our gas plant from a bankrupt firm for \$25. We have used it for six years and have never paid out a penny for repairs on it.

It is a ten-light machine and always gives us plenty of light. Our bill for carbide is about \$8 a year. We buy it direct from the manufacturer. Any man who is handy with tools can install the plant. My husband purchased the needed tools for cutting pipe and other work for \$7. We placed the plant in the cellar. The gas was piped directly to the garret. From the garret the gas was piped down, below. The pipe used for the living-room came down between partitions on the second floor. This enabled us to have a side light in each room up-stairs, and a chandelier in the living-room. We also have a chandelier in the dining-room. All other rooms have side lights. And last, but not least, is the gas sadiron that attaches on the kitchen light, making ironing a pleasure.

One family who heartily admires the gaslight upon being asked why they did not install a plant replied, "We could not afford it."

Suppose each member put his shoulder to the burden and each one boosted for that plant. There are some vegetables in the garden that go to waste—find a market for them; canned by the process way, city housewives are very glad to get them. Then there are apples, too, that are not used. Plan to utilize every one. Apple butter sells readily and cider vinegar finds a ready market. Pop corn, too, is easily raised and will go to help swell the light fund until almost before you know it the light will be yours.

Winter Preparedness

By CLIFFORD E. DAVIS

MANY persons never begin to prepare for winter until the first snow comes, and then they are compelled to husk corn with benumbed fingers and haul soddy firewood just at the time when myriad chores need attention. Like the little boys who missed the train, the fault is not in their speed but because they did not start soon enough.

Knowing what the stock and household need, it is a good plan to be preparing for fall and winter storms early. The hogs, cattle, sheep, and horses need warm bedding. If straw is scarce there is no better substitute than leaves. They are a good basis for compost, and when mixed with the stable manure they make a rich fertilizer as well as a soft, warm bed.

During the last days of October or the first week in November there are generally warm days when the leaves are dry. Then they can be raked in piles and pressed tightly into bags with foot pressure, tied, and stored in a dry place. Every year I generally gather 40 or 50 bags.

When the husk on the corn ear is dry, it shows that the corn should be cut however green the blades may be. To wait until the blades are dry or blighted makes less

valuable fodder. If a person has a distinct schedule of his work he can go from one job to another without delay, and the amount of labor accomplished is amazing.

It is usually a bad job getting winter fuel when the weather sets in bad, so the coal should be hauled while the roads are solid and dry, and the wood piled high at the chip-yard in time.

If the farm does not produce enough hay, corn, etc., the supply should be secured early and a full supply of all groceries, flour, mill feed, clothing, etc., secured in time. While "the frost upon the pumpkin" is a beautiful poetic figure, it spoils the keeping qualities of this succulent pie timber, and pumpkins should be stored in a cool, dry place before the frost is quite due. The turnips should be topped and buried or put in the cellar in time.

October is the rush month with the farmer, what with fall seeding, fruit-picking, and potato-garnering, and it takes a cool, wise head to see that there is no "lost motion."

On the rightly conducted farm the first snowfall should see all the farm work done and plenty of food and all things needed for stock and family. This can only be done by "here a little, there a little" until the full amount is gathered. Then, while the blizzards roar, the farmer can sit by the fire in peace.

"Heap on more wood, the wind is chill,
But let it whistle as it will,
We'll keep our Merry Christmas still."



Selecting seed potatoes at harvest is a practice that is growing more popular every year. To many persons, however, a potato is still a potato, and any kind of scrubby, scabby potato is used for seed. The public taste of the Northern States demands a white-skinned potato, while the Southern States desire a red-skinned variety

Next Year's Potato Crop

Harvest Time Proves to be the Best Time to Select Seed

By JAY LAWRENCE

POTATO-HARVEST time is a good time to select the seed that will be planted to produce the 1917 crop. To many persons a potato is a potato. Any kind of scrubby, scabby potato is used for seed. When potatoes are being grown for market the public taste must be considered. In

most of the Northern States the public demands a white-skinned potato, while in the Southern States the red-skinned varieties sell as well and often better than the white ones, but this is more noticeable in early marketing. When a person is growing potatoes for his own use, and not to put on the market, it might be well for him to make a trial of a number of varieties in small quantity and select two or three that are best adapted to his particular soil and climate. The sorts for one soil or farm will often be disappointing when grown on near-by farms. Some varieties as the Early Ohio, Early Harvest, Bovee, and Early Michigan require a rich soil to do their best, while the Carmen and Early Rose are not so particular about the soil on which they are grown. Some kinds do best on sandy soil; others reach the highest state of perfection on clay loams.

In the past five years we have tested about seventy-five different kinds of potatoes, or nearly every kind catalogued by seedsmen. A number of these were dropped after the first year's test, but for the last three years we have grown about forty of the leading potato varieties side by side. At the start we were rather unfamiliar with the characteristics of the different types, and planted a number of duplicates that were sold under some new name by an unscrupulous or uninformed seedsmen. Some varieties are deliberately or unintentionally sold for something else. Also mixtures of varieties similar in appearance are often sold as one. We have found the Rurals are often sold as Irish Cobblers, and to the ordinary purchaser the difference is not noticeable. This substitution would not make any great difference as far as the eating quality is concerned, but for seed purposes it makes a vast difference. Some of the so-called new varieties listed by unreliable seedsmen as new are nothing but old standard varieties with a new name. I therefore advise buyers to be sure they are dealing with firms who have a reputation to lose.

Tests Many Important Varieties

SOME of the more important varieties we have tried are Irish Cobbler, Carmen No. 3, Bliss Triumph, Early Ohio, Six Weeks, Banner, Russet, Bovee, Beauty of Hebron, Maggie Murphy, Spaulding No. 4, Early Rose, American Giant, Burbank, Peachblow, Blue Victor, Blue Mechanic, White Ohio, Seneca Beauty, Livingston, Rural New Yorker, Sir Walter Raleigh, Green Mountain, and Vermont Gold Coin.

A variety that does well one year may not do so well the next year. In 1914 the Red Seneca was one of our very best yielders, while in 1915 it was almost a total failure. This failing of the Seneca was not local, because the same story came from every county in Ohio last year. This failure was attributed to the fact that, as this variety forms tubers rather later than most varieties, it happened that they were forming at the time of the severe drought in August. The two or three weeks of very hot weather in August which followed the wet spell almost killed the Seneca Beauty. We have found this variety to be one of the

very best yielders as well as a very fine potato to cook with "jackets on."

We have decided that the Carmen is the best all-around late potato for our use, although there is scarcely any difference in quality between it and the Rural New Yorker or the Sir Walter Raleigh. This variety is almost a certain cropper, and produces as a rule a uniform lot of potatoes in every hill. The Carmen is quite resistant to the early and late blight, and is also a strong, sturdy grower. The Green Mountain is a fine potato, and is less susceptible to scab than the Carmen. These two varieties are of the same type, but the Green Mountain is more blunt at the ends and has more of a russeted skin. The Minnesota Russet is a good yielder, but has not proved satisfactory with us for cooking. The Spaulding No. 4 and Maggie Murphy have pink or reddish-brown skins, but otherwise they are very similar to the Carmen in shape, eating and yielding qualities, and manner of growth. The red or pink skinned varieties have white blooms, and we have found them less able to resist disease than the white-skinned varieties. We have found this especially true among the early varieties.

In our tests the Bliss Triumph has proved to be the best yielder among the early varieties, and we consider it by far the best for cooking, particularly for chips and frying. This variety is a very early one, and we have often dug new potatoes in six and seven weeks from planting. In many localities this variety is called the Six Weeks potato, but this is incorrect, as the Six Weeks is almost identical with the Early Ohio, and is not nearly so early as the Triumph. Six Weeks and Early Ohio have pink skins and the tubers are rather egg-shaped, while the Triumph tubers are short and thick, some of them being almost globular.

Among the other early varieties we find the Early Michigan, Early Rose, and Irish Cobbler to be extra good ones, and in some cases might be preferable to the Triumph. If a farmer is growing early potatoes for market he will be better satisfied with the Irish Cobbler, as the public demands a white potato. In marketing our crop we find that customers who have at one time lived on a farm and raised potatoes will take Early Ohio, Early Rose, or Triumph in preference to Irish Cobbler. We find that Early Rose as well as other varieties that naturally grow long tubers have a greater ten-

dency to grow pointed and run out. These varieties are hardly vigorous enough for the main crop in the corn belt, and their place is taken by the flattish varieties, such as the Carmen, Green Mountain, Rural, Spaulding, and Maggie Murphy.

Potato experts are often asked to recommend a variety of potatoes that will have a tuber of a certain favorite shape. The public has the conception that tuber shape is a definite thing, but such is not the case. While varieties have tendencies to typical shape, conditions and seasons modify tuber shape greatly. Varieties tend to resemble each other in their best and their worst shapes. The most typical shapes are found in the medium sizes. Under unfavorable conditions, such as poor soil, insufficient amount of moisture, improper depth of planting, etc., there will be found the characteristic poor shapes and unnatural colors.

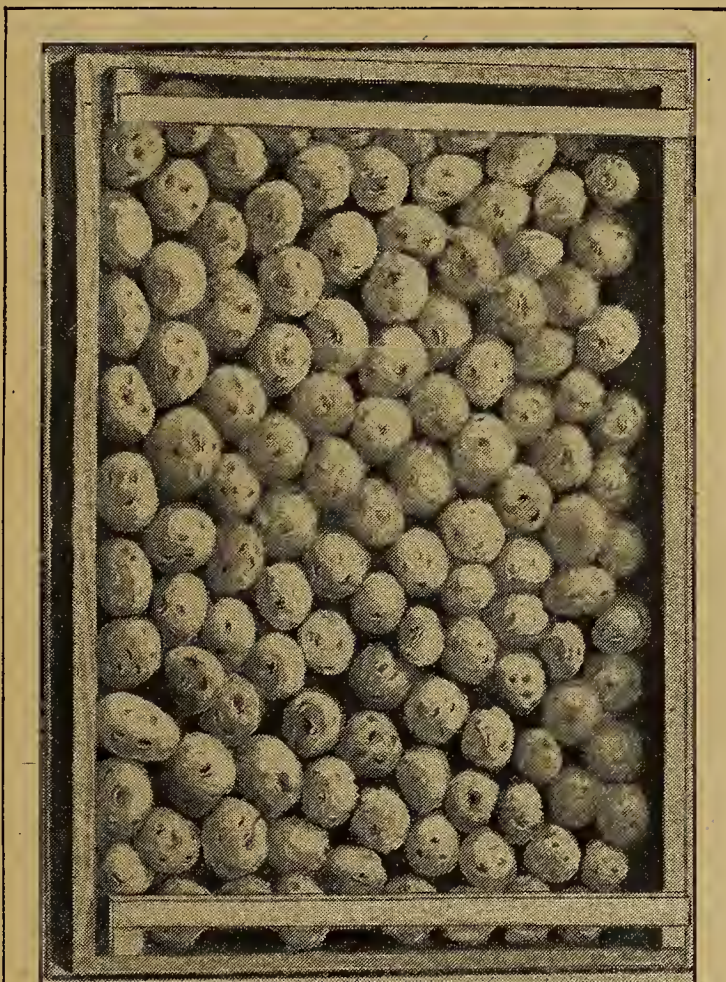
Potatoes that have a russeted skin, as the Russet Green Mountain, etc., hardly ever scab. A few varieties are more or less immune to blight. Bliss Triumph is considered one of the most susceptible to blight, but we have always been able to combat successfully both early and late blight by spraying with Bordeaux mixture. The Bordeaux mixture is made by dissolving five pounds of copper sulphate (blue vitriol) and five pounds of quicklime (not slaked) in fifty gallons of water. The sulphate is the fungicide, and the lime prevents injury of the plant.

Spray Kills Bugs and Blight

THE lime also gives the mixture the sticking quality, so that rains do not wash it off the foliage. By adding one-half pound to one pound (according to strength) of Paris green or three pounds of arsenate of lead to fifty gallons of Bordeaux, the potato bugs and flea beetles can be destroyed at one operation. This spray solution kills all kinds of leaf-eating insects, and protects the plants from blights also. Spraying with Bordeaux mixture causes the leaves to grow thicker and stronger, and the sulphate coating prevents the growth of disease spores. We have actually increased the yield of tubers sufficiently to pay for the spraying, even when there were no bugs or blight to combat, by spraying with Bordeaux.

Too many wait before spraying until bugs or blight appear, and lose out in the game at the start. The grower must watch his crop, the season, and conditions, and must know exactly for what purpose he is spraying. He can then do the work intelligently as well as thoroughly. It is now too late to argue that spraying potatoes is not worth while, in the face of all the evidence piled up showing the profit following proper spraying for blight. Excepting blight, scab is the most common fungous disease affecting potatoes, and it is one of the easiest to control. There is no absolute preventive if the land on which the seed is planted is infected with scab. The best preventive I have found is to soak the seed in formalin solution for two hours. One pound of formalin to thirty gallons of water. The potatoes must not be left in the solution much over two hours or the vitality of the seed will be greatly injured. If the tubers are exposed to the sunlight for about two weeks before planting, the percentage of scab will be reduced and growth will be hastened.

Many potato growers have the mistaken idea that if potatoes are allowed to be in the sunlight they will sprout worse than if they are kept in the dark, but the reverse is true. We store our seed in racks, as is shown in the illustration, and aim to plant just as soon as the ground can be got ready in the spring, as in most cases the early-planted crop gives the best yield under our conditions.



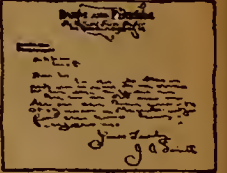
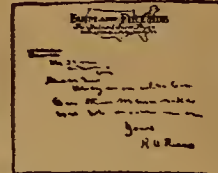
Storing selected seed potatoes of different varieties in racks, one tier deep, is an excellent method



The 184 seeding potatoes were produced in one hill from potato-ball seeds at the Montana Experiment Station. The tubers may furnish new varieties

The Editor's Letter

All Work and No Play Makes Jack a Dull Boy



THE city has gone to the country. Will the country go to the city?

Some twenty years ago the city man began to ponder in his heart the truth of the old saying that "all work and no play makes Jack a dull boy," and straightway he cast his eye around for some pleasant and healthful recreation for the Wednesday or the Saturday half-holidays he was learning to allow himself and quite naturally, inasmuch as he was working in his factory or in his office *in the city*, his imagination turned toward *the country* as the place for his recreation.

If you older ones will recall, it was in the nineties that the great movement of forming "country clubs" began its march from the Atlantic to the Pacific, until to-day certainly not a single city of 25,000 people but has a country club, and dozens and hundreds of towns from 10,000 up as well.

And to the country club it was that the city people began to look for their pleasure. Aimless traveling over the country, which was a pretty popular way of spending vacations twenty years ago, declined in favor, for there was now a definite place to go right near home with a change of outlook and an opportunity for recreation and exercise on the tennis courts or the golf courses of the country club.

And what is the underlying reason for the popularity of the country club among city people? Why, there is only one answer—change of outlook for both body and mind. People whose eyes have grown tired of the glare of brick, whose nostrils have sickened of the smell of hot asphalt, whose ears are weary of the noises of the city, have turned their courses to the country and in the freedom of the open have found their needed stimulation and their desired rest.

Well, this country club movement has been a great thing for city people, and I have been wondering if there isn't a real lesson in it for us country folks. Let's turn the tables and see. From April to November we farmers spend an average of ten or twelve hours daily in the open air. We have the quiet, the peace, the physical exercise that the city man longs for. But we in turn miss the good things that the city offers, which, if we were only energetic enough, we might enjoy with our city cousins.

I should like to form in every county in this land a city club. Its membership would be composed of those people who enjoy seeing good plays, who like good music, who appreciate a good lecture, who are anxious to meet and to know people in other lines of work. The city has just as many wholesome and beneficial opportunities of recreation to offer country people as the country has for city people.

AND to-day there are comparatively a few of us who are entirely shut off from such possibilities. The city man takes his country pleasures in the summer, when, as a rule, his work is slack. The country man should take his city pleasures in the winter, when his work is slack.

Many winter days you might just as well as not go to town in the morning, plan to take dinner with some of your business friends, go to the library, see the New York, Chicago, London, and San Francisco papers. Spend an hour at the best "movie" theater, or make it in the evening for a good show, a good lecture, a concert, or a political meeting.

The longer I live the more convinced I am that play is the great rejuvenator. Recreation is re-creation, and we farmers as a class have not yet learned or accustomed ourselves to the habit of taking holidays. Twenty-five years ago the lawyer or doctor or merchant who would deliberately plan to take two afternoons a week off for recreation all summer would have been considered light-minded, to say the least. To-day city people rather look down on the man who has not arranged his work so that he can take a proper amount of recreation, and such men are getting scarcer every day.

And what is true of city men and

their needs is true for the farmer. The city man needs the country for his recreation; the farmer needs the city.

Good roads, trolley lines, automobiles, have all made this interchange possible and easy. The city man spied the good in our territory first, but that is no reason why we shouldn't follow suit and get the good that is waiting for us in the proper use of city opportunities.

THERE are now plenty of cautious alfalfa growers who are ready to show us that they are receiving ten dollars worth of Heaven-sent or Heaven-lent fertility (nitrates) an acre, annually, for the five-year period this crop is grown. If their field of alfalfa contains ten acres, the Heaven-given certified check deposited in or distributed through their soil bank is good for five hundred dollars to be drawn out gradually in their rotations.

These alfalfa growers are neither guessing nor gambling. They get their annual dividends from several crops of hay that is the equal in feeding value, pound for pound, of threshed oats, and sometimes a seed crop is thrown in.

When the five-year period ends, then comes the ten-dollar bonus an acre. Nor are these dividends and the bonus the only credit items in their alfalfa deal. These growers know that this deep-rooting crop pumps up potash, phosphoric acid, and lime from deep-lying subsoil deposits which shallower rooting crops never tap. The candid alfalfa grower will not contend that his favorite crop is the only valuable legume, but the case he makes for it leaves little luster to illuminate the other members of the legume family.

IT SEEMS to me that the most important word in our language is "enthusiasm." Nothing of importance is ever accomplished by anyone unless he has the quality for which this word stands. So long as we keep enthusiasm big within us, we are young and optimistic; hence, we have a stimulus to do things worth while. When enthusiasm dwindles or lags, we are old and prosaic.

The other evening I looked in on a gathering of young people numbering about one thousand, ranging from sixteen to twenty-one years and thereabouts. These youngsters were state delegates representing a young people's organization from several allied church denominations. It was the first night of their convention and the affair was mostly an informal get-together gala occasion. It was easy to understand how this first night was arranged as a premeditated safety valve to afford opportunity for such a surging, effervescent pressure of enthusiasm to escape.

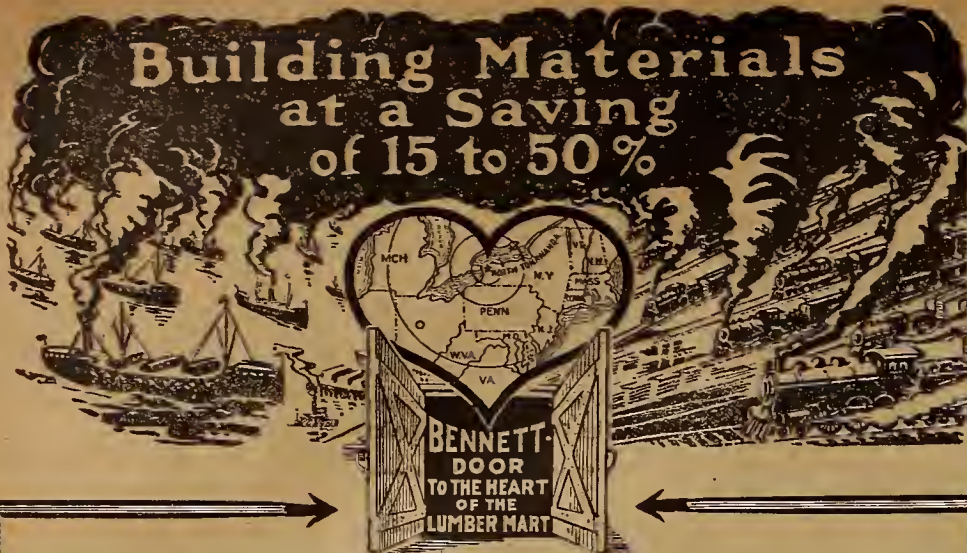
The galleries of the great Memorial Hall were crowded with adults quite spellbound at first with the exhibition. The groups of young people massed on the main floor of the hall were nothing less than a dramatic human tornado of movement and crescendo of noise. The youthful delegates with their rather startling parti-colored costumes, banners, and regalia marched and countermarched and evolved for an hour or more. Each of a dozen divisions represented a city, town, or rural community, all keen to win a place for their local organization in the eyes and ears of the Committee on Location for the next year's convention.

The nerve-splitting combination of college and high-school yells, megaphone slogans, Indian war-whoops, horns, bands, songs, and whistles beggars description. It was pandemonium with the lid off. But the enthusiasm was contagious.

To get and keep this wonderful thing—enthusiasm—we must strive for it as we would for a mine of diamonds. The young have it always in some degree. It should be their great aim to conserve it and employ it to help to secure the best things in life. Those older can woo and win back this quality, and by its help can transform their whole life's outlook.

The Editor

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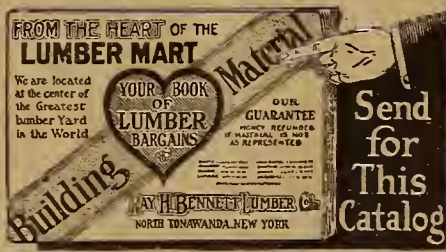
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A view of one of the farms that pay regular and certain dividends shows that there is nothing mysterious about it. The farm might be one of many in almost any State. Here is the answer: Building up the fertility, tiling if necessary, knowing the crops the land will grow best, and marketing the products properly

If you think you can make more money, be happier and live longer in town than on the farm—read this article

The Business of Farming

When Fertile Acres Pay Regular and Certain Dividends

By HARRY M. ZIEGLER

HE OWNS farms as investments. These farms pay him regular and certain dividends. He doesn't own the land primarily for the increase in valuation, but for what he can make from the crops. He builds good, substantial, practical, and serviceable buildings for the people who live on the places, and for their live stock and poultry, their machinery, and their products.

This man doesn't toy with farms as rich men's playthings. He has been owning and farming his land with renters for years, as his father did before him. He doesn't live on a farm because he has a big business in the city that takes much of his time.

Any thought I might have had about him as a city farmer was soon dispelled when we talked about humus, nitrogen, potash, and phosphoric acid, and what it cost him to raise a bushel of corn, what a man could afford to invest in farm buildings and equipment, the place live stock deserve on a grain farm, how much lime to use on sour soil, what rotation to use in the corn belt, whether it paid to store grain, and when was the best time to sell corn, wheat, oats, and hay, or if it were best to feed everything to stock and market the grain on four legs. These and other questions were soon a part of our conversation.

"What do you think of farming as a life-work?" I asked him. "What are the rewards? Why should I, a young man, take up farming as a means of making a living? Couldn't I do better in the city? Wouldn't I have a better time there?"

How to Increase Farm Revenues

"**F**ARMING offers a clean, honorable, independent, healthful life, and a good living to a great many persons," began John A. Cavanagh of Des Moines, Iowa, owner of many farms and vice-president of the Des Moines National Bank, "but to be really successful in a money-making way a farm has to be conducted as a factory or any other big manufacturing business is conducted.

"Whether the occupation is a healthful one is one of the first things to be considered by a young man in determining what his life-work is to be. Few young men give this much thought until later in life, when many times it is too late to make a change except at a great sacrifice. Outdoor life such as one gets on a farm is more healthful than being shut up in a store, a factory, or an office."

The kind of land, the horses needed to farm it, the machinery required, the kind of crops, the distance to market, and the marketing methods are the principal things to be considered after health, Mr. Cavanagh believes.

A young man should choose a section of the country where there is sufficient rainfall to produce the crops he wants to raise, and he should be familiar with the farm practices of that part of the country.

Many young men, thinking they knew more about what sort of farming paid best in a farming community, have lost all their money while they were learning that their neighbors were not as "old foggy" as they had thought.

"How can a young man learn the farm prac-

tics of the country he wants to settle in, and how can he get the money to buy a farm there?" I asked Mr. Cavanagh.

"By getting a job with a successful farmer in the community," he replied. "He will learn how successful farmers meet difficult crop situations."

When working as a hired hand for a successful farmer a young man will learn about the soil, and how it has to be cropped to give the best results. If a farm is a stock or a grain farm, or both, the young man will learn how much and the kind of machinery needed; he will learn about the horses and tractors, and how crops and stock are marketed.

"Farming is a business of percentages," said Mr. Cavanagh. "The ten-year averages don't vary very much. If some parts of the growing season are unfavorable for good crops, other parts are more favorable and make up the difference. Possibly the next year the same crops will do better, and thus make up the losses of the year previous."

"A 100 per cent crop has never been raised. Even the so-called bumper crops are not 100 per cent crops. But 100 per cent crops are not necessary for successful crop production."

Although the price of land is soaring, farm wages are on the up-grade, so that during a young man's

apprenticeship as a hired hand on the places of successful farmers he will be able to save more money than he could have saved before this.

Many young men in the country have been led to believe the place for them is in the city. Uncongenial surroundings have caused other young men to become dissatisfied with life in the country.

A man can have as many conveniences in the country as he can afford to have in town. Certainly if he could own a motor car in town he could keep one in the country. More often the farmer gets a car before his city brother. Sixty per cent of the motor cars sold in 1915 were bought by farmers. Electric or gas lights, hot and cold water, a bathroom and its conveniences, can be installed at no great cost.

Now the farmers enjoy better rural schools, improved roads, and a happier community life than they ever had before this. With a motor car the things the city or town has to offer in the way of entertainment are possible of enjoyment by the young farmer.

"Farmers that keep books on their production,

what it costs to produce a crop, and what it sold for can tell within 10 per cent what their profits will be for a five or a ten year period," continued Mr. Cavanagh. "The difference isn't nearly as much as one would think who doesn't keep accurate account of the production and selling price of products from year to year.

"There is a lot in knowing how to make a farm produce, just as there is a lot in knowing how to get a lot of work out of a team. I can buy an average farm in the corn belt and in five years have it as productive as any farm in that county. Anyone can do the same thing. There is nothing mysterious about it."

In building up the fertility of a farm, Mr. Cavanagh first cleans up the fields. He gets rid of all of the trash, stones, and stumps. He levels off the fields and fills the ditches. The fields are drained if necessary. Then the buildings are repaired. A comfortable house pays big returns in health and enjoyment. Convenient and substantial barns save steps and lower the amount of feed needed for the live stock. Well-made, rat-proof corncribs and grain bins prevent waste of farm products.

If the young man has acquired enough experience from the men he has worked for, he can feed his grain to stock and market the grain in the form of meat. But if he has not had much experience in fattening hogs and cattle he should go slow. The profits of several years can be lost easily in one year.

Even though the young man has learned the crop rotation and the plan of keeping the farm fertile, he should be studying farm papers, books, and bulletins all the time to keep up with the new ideas that have been tried and found practical. Let the experiment stations do the experimenting for you. Your State has appropriated money for that purpose. You have paid your share of this in taxes, so why risk more money on something untried.

"I should say that the same young men who have a liking for the country as much as they have for the city," concluded Mr. Cavanagh, "will be as great a success on the farm as they will be in town. And in ten or fifteen years will be worth just as much money at least, and possibly more, than if they were in town."



This is the house on his smallest farm. It is comfortable, and pays big returns in health and enjoyment



He builds good, substantial, practical, and serviceable buildings for the people who live on his farms, and for their live stock and poultry, their machinery, and their farm products

FARM and FIRESIDE

THE NATIONAL FARM PAPER

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September 16, 1916

The Best-Looking Farm

NOTHING is better worth while than a good "front." Put up some pillars and perhaps a couple of rods of stone or brick wall at the entrance to the farm. If you are in the country where privet will grow well, a privet hedge, provided it is trimmed often enough, will be a good investment, even if it extends along a very considerable frontage and requires real work to care for it. Don't have a hedge of the frowsy sort; don't permit the fences, especially the front ones, to be harbors for weeds.

Manicure the place a bit. The storekeeper in town puts the best and most attractive he has in the show windows. The farmer can mighty well afford to do the same.

And if you're putting up an entrance setting, don't simply hire a journeyman mason to build it. Have it designed by somebody competent to do it, and make it comport with your general situation. The artistic note is a good one to play.

Make the motorists exclaim, as they pass, that "that place is one of the handsomest along this road." Even if you haven't the remotest idea of selling, it'll pay dividends in your pride and self-respect.

Where the Gold Comes From

SOMEbody recently asked: "Whence comes all the gold that is being shipped to this country? How does Europe scratch it up?" The answer came promptly. This country has added about \$500,000,000 of gold to its stock in the last two years, but in that same time the world has produced twice that amount in new gold. Just about a billion dollars' worth of gold is added to the world's stock every two years.

It seems like a big store, and it is. Yet the wheat crop of this country is worth this year more than the world's gold production in the last two years—a good deal more. This country's cotton crop is worth nearly twice as much per annum as the whole world's gold crop. Our corn is worth pretty nearly four times as much as the whole world's gold; sometimes more, sometimes less.

They say that because the countries on the allies' side in the war control about all the world's new gold production they are certain to win. Perhaps that is so; but a better reason is that they have free access to the production of the American farms, which is sufficient to account for their increased activity in every direction.

Land Values Soar

DOUBTLESS there are sections where farm-land prices are now too high, but compared to the whole country they are pretty restricted. Recent authoritative estimates show that the average value of farm lands for the whole country is \$45.55 an acre.

For farms actually in use this is certainly not high. The fancy prices that lands command in favored sections represent not only land but improvements that in many cases stand for a large part of the value. In truth, improvements of the best class get altogether

too little recognition in making up the price of farm property. To call a 200-acre farm "worth \$200 an acre" doesn't convey any real idea. If that farm has an \$8,000 house and \$8,000 worth of other buildings, fences, etc., on it, there is left only \$120 an acre to stand for the value of the bare land. In most cases the buyer appraises the improvements rather under their real value.

The advance in farm values has been almost beyond belief, in recent years. In 1900 the census found the average value for the whole country \$15.57. Ten years later it was \$32.40. In 1912 it was given as \$36.25; in 1913, as \$38.10; in 1914, as \$40.10; in 1915, as \$40.85; and in 1916, as \$45.55.

It is explained that the unprecedented increase in the last year—more than \$5 an acre—has been caused in part by a reaction in the South, following a temporary depression at the beginning of the war, and in part by the stimulus given by war prices for the exportable surplus.

Keep Out Pink Bollworm

HOW the scientists protect agriculture is illustrated by the steps taken by the National Government to keep the pink bollworm from being brought here from Egypt. In 1904 Egypt prohibited imports of American

"Hearts and Hazards"

A FINE young fellow wanted to live on a farm, but he was in love with a spirited city girl. Enter a man from Chicago with polished manners, a smooth tongue, and not too much conscience. Edwin Baird tells the story of the conflict that resulted in "Hearts and Hazards"—a new six-part serial which Farm and Fireside will publish this winter. The old proverb proved right once more and the course of true love was stormy. There were accidents and misunderstandings and in the end—But we must let Mr. Baird tell it his own way.

The author is already known to Farm and Fireside readers as the author of several interesting and sympathetic stories of farm men and women. The artist who illustrated "Hearts and Hazards" is new to our readers, but he has caught the spirit of the actors and sketched them admirably. The first installment will appear in the October 7th issue of Farm and Fireside.

The World's Wheat Crop

THE world was just garnering a record-breaking crop when the war broke out two years ago. The succeeding year it got feverishly busy and did it again. This year there is a distinct retrocession. The wheat crop this year is estimated at 280,000,000 bushels less than last year's, or about 12 per cent. This is enough to account for the sharp rise in prices.

Most of the world's wheat loss is accounted for right here in the United States, which has about 250,000,000 bushels less than in 1915.

Nevertheless, the world's crop is larger than the average for the five years preceding the war. The fact seems to be that the withdrawal of vast numbers of people from ordinary industry, to fight, learn to fight, make munitions and supplies, is now telling on supplies.

There are likely to be two years more of war, according to the authorities, though some think a year may finish it. It will require a long time after peace to redistribute the workers to the most efficient resumption of normal activities. So it may reasonably be assumed that there will be two years more of war demand and prices, and after that a year, two years, or more, of high prices.



"But I tell you I don't like farm life, Mr. Abbott"

Our Letter Box

Getting a Farm of His Own

DEAR EDITOR: I agree with you in advising the young men from the corn belt to first aim at 80 acres of good land, or even 40, in his own neighborhood or county where he is well acquainted with the best methods of farming; then, as circumstances warrant it, secure more acres as the years pass by. This advice is far better than to advise either of the young men to go to a section of cut-over land, far away from relatives and friends, where a complete change of farming is required.

Let me narrate just two examples that prove the above advice correct. The farming population of our county is growing fast and many young men desire farms of their own. Land values also are rising rapidly. Good land that could be bought for ten dollars in 1900 can scarcely be secured now for \$65 or \$70 the acre. Under the circumstances many young men were advised to go to the Far West and secure cutover lands at a low figure, or to the Canadian Northwest. Possibly fourscore young men have gone to those places from our county with the result that most of them have returned either because they did not like or could not stand the severe climate, or did not like the situations and conditions. They returned—but minus much of their savings of many years. Now they have taken the advice mentioned—they have looked about carefully and found a small farm at a price that seemed fair and without burdening themselves with such a heavy debt. For the worry over a very heavy debt will cause more heartaches and even more ill health than many a young man is willing to grant.

The second example is this: Certain families have moved into our county, but they are not making the proper headway in farming they had a right to count on, judging from what they

accomplished in Wisconsin, their former home, and as a result they feel very discouraged at the result of their labor. But as we analyze their meager results, we find a reason. They wish to farm in the same way as they did in the North instead of adopting the best methods of the most successful farmers in their new home. He who thinks he has nothing more to learn in farming is greatly mistaken. This is no grass country and one cannot farm in the same way as one formerly did in the extreme North.

I hold that the proper thing to do for a farmer moving into a strange section of country is to study closely and watch the best methods of the most successful farmers in that section and raise the crops they do, and at the same time try on a limited scale any new crops recommended by the experiment stations in that section of the country.

My advice would be the same that the Editor gave: Let the young men in question look about carefully in their own county for a forty or an eighty, adopt the very best in up-to-date farming, and then add more acres as circumstances warrant.

P. C. HAYNES, North Carolina.

Lamp Dangers in Brief

DEAR EDITOR: Among the most dangerous common practices that cause lamp explosions are blowing down the chimney, filling a lighted lamp, turning it down too low before blowing it out, and using misfit wicks. Blowing down the chimney may drive the flame down into the kerosene and cause an explosion. It may also crack the chimney. Filling a lamp while it is lighted releases the gas in the bowl, and it may ignite.

Turning the lamp down very low before blowing it out introduces some of the hot wick into the kerosene chamber, and when the lamp is blown out an explosion may occur. The proper way to blow out a kerosene lamp is to turn it down about halfway and then blow across the top of the chimney.

A misfit wick, especially one that is too small, allows gases in the bowl to rise, and when the lamp is lighted an explosion is likely to take place. Flaming oil is then thrown over everyone that is near. Another lamp trouble is failure to keep the wick turned down when the lamp is not in use. When the wick is above the burner, oil is drawn up by capillary action and will run down over the outside of the lamp, making it oily and greasy.

B. D. STOCKWELL, Ohio.

Green Corn for Seed

DEAR EDITOR: Just how green corn may be and yet make seed is a matter on which opinions differ. A. N. Hume of South Dakota, one of the best informed corn experts in the country, says: "After corn is really well in the dough stage, so it will not spurt under pressure, it will make seed. In picking it, take the ripest ears first and store them where air will circulate all around. The ears should touch nothing at any point. A good way is to put them on wire hangers out of doors in the sunshine while the days and nights remain warm, and remove them to warm shelter if frost is threatened."

RALPH HOWARD, South Dakota.

A Money-Making Present

DEAR EDITOR: I had always lived in Chicago, where the German women of my acquaintance gave a dinner and presents when one of their number had a birthday anniversary. However, five years ago my husband homesteaded in Michigan, twenty-two miles from town and four miles to our nearest neighbor, and to my regret the birthday-party custom was out of the question. I had asked my husband several times what he was going to buy me, knowing full well that it would be very hard for him to spare the money to buy even a handkerchief. When the morning came he brought me, before I was out of bed, the nicest one of the litter of nine registered Hampshire pigs, a little sow just four weeks old. I was surprised and pleased.

I packed shingles in the mill and did other work to pay for the feed I could not raise. At the fair, when my pig was six months old and weighed 238 pounds, I got first prize. The next spring she had twelve little pigs. I sold six of them at three months old for \$10 each. I bought feed with all of the money.

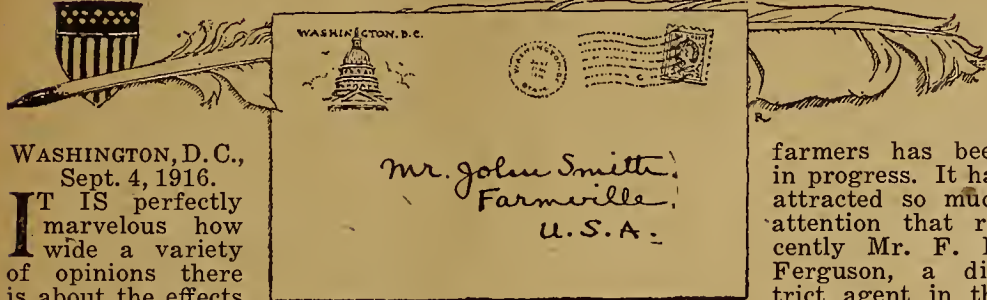
That summer I raised an acre of carrots. As my sow had ten pigs more I had plenty of feed to winter them on, and they are nearly ready for market. My first sow and the other six of her last year's daughters are keeping me guessing what I am going to do with all the little ones.

MRS. L. H. CLIFF, Michigan.

No Land Boom

Credit Law Not Likely to Inflate Prices

By JUDSON C. WELLIVER



WASHINGTON, D. C.,
Sept. 4, 1916.

IT IS perfectly marvelous how wide a variety of opinions there is about the effects of the rural credit legislation Congress has passed. Very general satisfaction has been expressed regarding the personnel of the Farm Land Bank Board as named by the President. It is expected that these men will run the establishment with the very strict purpose of making it pay its own way, giving service to the farming community, and providing capital for agriculture on terms at least as favorable as those on which industry and city property get it.

But there are more than a few people who, in the face of demonstrations abroad and here, insist that when you make money cheaper for the farmer you inevitably start a boom in land values, which will counteract the effects of cheaper capital. I have seen some most alarming letters from people right in the States that are going to benefit most from this law. They say that land is already held at such high prices, and that if interest rates on farm security are reduced, it will go still higher, with the result that it will be harder than ever for the farmer to earn returns on his investment.

Of course, this is exactly parallel to the reasoning of people who shook their heads gravely when the self-binder, the steam thrasher, and all the rest of the modern farm implements were brought on the market. They feared that these things would make it so easy and cheap to farm that there would be a rush for the country, overproduction of all the country's products, and a collapse. They could see nothing short of blue ruin ahead for the whole farming business.

It turned out exactly the other way; but there has always been an element which was sure that improved methods would make competition dangerously active. The steam railroad was bitterly opposed by folks who saw in it the germs of destruction to values in horses and toll roads.

It would be hard to make the agricultural population of Ireland believe that cheap money, available to the greatest possible number of farmers, was ruinous. Cheap money has brought prosperity back to Ireland. In this country agricultural prosperity has been distributed just about as the opportunity for getting cheap money has been.

The Central West is not much excited about the new legislation; a good many people there believe it will even do harm, by inflating land prices. But the truth is that the people managing the scheme don't expect to overturn existing conditions where existing conditions are so satisfactory.

ONE thing that is likely to be accomplished under the new plan is an approximation to uniformity in interest rates on farm loans. There will never be literal uniformity among the widely scattered sections of so big a country. That would be unthinkable. But the ultimate security offered to investors under this farm loan plan is a bond that comes pretty near to being backed by the Government. It has the security of expert government supervision.

The law says not over 50 per cent shall be loaned on land values; and that will be mighty strictly enforced. So the bond, whether it is based on mortgages on \$200-an-acre or \$10-an-acre land, will represent ample security in every case, and the rate at which the bonds will sell in the general investment market will tend to gravitate to the same level.

There are regions in the South, according to the testimony taken by the people who devised this plan, where farmers in buying land pay 10 per cent interest and commissions that aggregate as much as 25 per cent. It seems incredible, but it is a fact. That sort of thing is going to be discouraged, because the new law is going to be operated especially with the view to benefiting the sections that most need its help.

At Snyder, Oklahoma, for several years a practical demonstration of the possibilities of co-operation among the

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farmers has been in progress. It has attracted so much attention that recently Mr. F. F. Ferguson, a district agent in the government co-operative demonstration work, made a detailed report on it.

The farmers' ginning company was formed in 1906, and two years later owned two gins, but owed \$14,000. Reorganization was necessary. The two gins were sold and the debts paid, leaving the concern with a warehouse and some lots worth \$2,150.

Then the shareholders subscribed \$2,000 new capital, paid in cash, and borrowed \$2,500 at a bank. They bought a complete ginning outfit, bringing the total property value—machinery, warehouse, and land—up to \$10,959.60. The capital stock remained at \$4,150, so the concern owed \$6,809.60.

From this reorganization the concern was profitable. Practically the whole debt has been paid, and in the last ginning season receipts were \$13,160.20, on total expenses of \$7,665. The net earnings were \$5,485.20 in that single year. Incidentally, of course, the operation of such a farmers' plant in the community was the best possible guarantee against excessive charges by private enterprises.

Co-operation in ginning, milling, buying grain, elevators, threshing outfits, ownership of road machinery, heavy trucks for hauling, tractors, and a constantly increasing share of the operations of agriculture is on the increase to a much greater degree than is generally appreciated. The next general study of this subject is likely to be made in connection with preparation of the census of 1920; there is a movement to have it included in that work. It is going to show a rapid increase of interest and also of actual experience.

WITH a good deal of confidence the authorities at the Department of Agriculture declare that the country has passed the crisis of the hog-cholera scourge. The present is a "good year" for cholera; losses are smaller and the disease is being more successfully dealt with than ever before.

Cholera has come and gone in waves for decades past. It came to this country from Europe, where experience with it has been much longer, but where the same conclusion is reached concerning it. Probably it was brought here with importations of either hogs or feed that came with thoroughbred stock.

At any rate, it has had a period of eight, nine, or ten years, which would mark the interval between high loss ratios. Two or three years ago the losses were tremendous, and at that time the States, the Federal Government, and; more important than anything else, the better farming methods among the great multitude of farmers brought to bear a vast amount of general experience and scientific knowledge, in an effort to devise means to suppress it.

The results are now showing. There is no doubt that there will come times when losses will be very serious, and the crest of the wave will be pretty high. But the expectation is that every successive loss wave from this time forth is going to be less destructive, and that the periods between the extreme seasons of great losses will be longer.

The ancient superstition that regarded cholera as a visitation in punishment of sins, or as a reminder that we are a meek and lowly humanity after all, is played out. People don't regard cholera as inevitable, like eclipses or elections.

They don't lose their nerve when they see it coming. Rather, they get out and fight it. They have learned how it is disseminated, and greater sanitary precautions both in raising and in marketing hogs have served an important part.

Then, too, the States have established a control over the manufacture and sale of serum, and are co-operating with the federal authorities in this regard to such extent that it is no longer a mystery or an impossible extravagance to have a herd of hogs treated. Uniform prices for the serum are being widely established, and they are closely related to the prices that the States and the national stations fix in producing it.

More important, [CONTINUED ON PAGE 11]

Performance Too Phenomenal To Be Believed

Hupmobile is 99 Per Cent Efficient, Say 11,000 Owners

HUPMOBILE history—day by day—all over America, bristles with astonishing incidents. With dealer and owner alike, the unusual is usual.

Thus, in Rochester the other day, the Hupmobile dealer was actually suspected of putting picric acid, or ether, or some other "stimulant," in the gasoline.

*He Saw It Done—
Yet Didn't Believe*

The engineer of a public service corporation recorded his opinion that the high gear performance of the Hupmobile was "impossible," even after he had seen it. So he demanded a second test.

"This time," says C. E. Hartson, the dealer, "he even watched us fill the tanks with gasoline, oil and water. We went out and beat our first demonstration. He wanted a third test, driving the car himself. We gleefully consented.

"He gave his order, and," says Mr. Hartson, "you ought to hear him talk Hupmobile against sixes, eights and twelves now."


*The Good Samaritan
of the Sand Patch*

Near Sherman, Mississippi, are two of the most unique road signs in America. They were erected by a farmer whose home faces the worst mile and a half of sand in the state.

The signs tell passing motorists that the farmer will gladly pull them through the sand stretch with his Hupmobile.

He erected them in a burst of enthusiasm after he bought a

The Mark of Superior Motor Car Service



Hupmobile Points to Remember

PERFORMANCE—A high-gear performer in the usual low-gear situations.

COUPON SERVICE—Regularly each month for eight months free labor, inspections and adjustments, at more than 5000 authorized Hupmobile service stations in the United States and Canada.

ECONOMY—In line with the well-known Hupmobile repair cost record of 1/4 cent per mile. This is real economy—maintenance economy. Car is easy on tires, fuel and lubricant.

5-Pass. Touring Car \$1185
Roadster \$1185
7-Pass. Touring Car \$1340
Prices f. o. b. Detroit

Hupmobile which negotiated the mile and a half with ease on high gear.

*On Kansas Hills
and Nebraska Roads*

Nebraskans don't boast much of their roads. But the Hupmobile finds no difficulty in covering 139 miles of them in 3 hours. Nor 389 miles of such roads as Iowa has in December, in less than 10 hours.

Eleven thousand Hupmobile owners have rated the Hupmobile 99% efficient.

Of these 50 8-10% buy one Hupmobile after another.

In other words, more than half of all Hupmobile owners keep on buying, year after year. They change the model, but not the make.

And while these have remained true to their choice—another 24 2-10% of Hupmobile ownership has come from those who have owned cars of higher price.

Isn't this evidence clinching, convincing and conclusive?

The nearest Hupmobile dealer will gladly demonstrate Hupmobile performance for you.

Hupp Motor Car Corporation
1334 Milwaukee Ave.
Detroit, Michigan



Red Side Wall and Black Tread

The Trade Mark of

Firestone TIRES

This exclusive color combination is the result of long experiment to develop a tread of extra thickness without extra weight. This reduces strain on the body of the tire and means longest life to the fabric.

Increased toughness is another advantage which results in further added mileage.

In addition to these practical values, Firestone equipment gives elegant appearance and harmonizes with any car.

FREE OFFER—For your dealer's name and make of your tires we will send you, free, a Firestone Cementless Tube Patch. Also Free Book, "Mileage Talks," No. 45.

Firestone Tire and Rubber Co.
"America's Largest Exclusive Tire and Rim Makers"
Akron, O.—Branches and Dealers Everywhere



Automobiles

Lubricating Oils

By B. D. Stockwell

I HAD heard the admonition "The best is the cheapest in the end" as often as anyone. But experience had taught me that a good average grade of most articles was the most economical "buy." So shortly after I bought my car, gasoline being high, I decided to keep down my operating expenses by getting a medium grade of oil.

Accordingly, when I found oils to vary in price from 30 to 80 cents a gallon I decided to try a 45-cent oil, and bought five gallons of it. Nor did I rely entirely on my own judgment. I was informed by my dealer that he sold lots of it for my make of car and had never had any complaint. The car ran nicely, but I noticed that for every ten gallons of gasoline the car consumed I used over half a gallon of oil.

But my dealer said that was about the average experience, and so I dismissed the matter from my mind. Several months elapsed and I was getting good satisfaction from my car, except the occasional fouling of a spark plug when I made a longer trip than I had expected and found my oil was getting low. I accordingly stopped at the first garage which from its appearance appeared first-class and got half a gallon of oil, paying 30 cents for it. This oil was added to the old oil in the crank case and I started on my way.

Imagine my surprise when my car started off with a spirit I had never noticed before. On the return trip it took the hills like a bird, and with the throttle set back a notch it made my usual running speed on level ground. On one particular hill that is the terror of the touring public I made a better showing than I had ever been able to get from the car.

Cuts Oil Consumption in Half

The next morning, on consulting my oil gauge, I found the car had used but half its usual consumption of oil, and the truth began to dawn. The small amount of good oil that had cost at the rate of 60 cents a gallon had been responsible for the good results observed the day before, and the oil wasn't "burning up" so fast.

A few days later I mentioned the incident to a local automobile dealer. "We pay a dollar a gallon wholesale for the oil we use in our demonstrating cars," he remarked, "and we get some wonderful performances. But it doesn't do any good to tell the average automobile owner to use high-grade oil. He'll pay good money for a nice-looking automobile and get the best tires because they add to the looks of the car, but you'd be surprised to know how stingy he is about lubricating oil.

"There are lots of cars running around that are using oil that doesn't cost over 25 cents a gallon. Those are the cars that are always fouling their

spark plugs and filling up with carbon. When all oils look about the same, it's hard to convince a man that there's much difference in the lubricating qualities or lasting qualities. Personally I prefer a 65-cent oil" (he mentioned the trade name) "and a five-gallon can lasts me about six months."

Here is another incident: A hardware dealer had purchased a nice seven-passenger touring car and had learned to run it. So one beautiful day he invited his friends to take a ride. The oil in the car had been nearly used up during his lessons, so he poured in some ordinary gas-engine oil that he had at the store. He started out proudly, but had gone less than a quarter of a mile when the engine stopped. It failed to respond to priming and the usual methods of starting.

Finally he phoned for a service car, which towed him to the garage. The spark plugs were found to be loaded with soot, but when the crank case was drained and cleaned and new oil put in he was soon on his way.

What Good Oil Does

A good automobile oil must answer the following requirements: Must not evaporate through the greater orifices. Must be thick enough to prevent pistons from "seizing," and thin enough to give the rated horsepower. Must leave behind the least amount of carbon. Must remain liquid in freezing weather. Must be durable and reduce friction to the lowest possible amount.

Some motors, especially of the splash type of lubrication, require the same oil to do its work at temperatures ranging from 1,000 degrees at the piston head down to 150 degrees in the crank bearings. Thus a good oil must be the result of many tests and experiments.

Most motor-car users buy oil in five or ten gallon lots, but if you have not been getting perfect satisfaction or have been using an excessive amount of oil, it is a good plan to try a gallon each of different kinds until you find a good one.

Low-grade oils turn black quickly, and show a heavy sediment. Some of those which show low resistance to heat contain sulphur compounds which are decomposed by the heat into a number of chemical substances one of which is sulphuric acid. It is so dilute that its effect on bearings may be considered negligible, but the pitting of exhaust valves and their seats is due largely to the hot sulphuric-acid fumes.

Carbon deposits on the cylinder walls and piston heads may be reduced to a large extent by taking care not to keep the oil level in the crank case any higher than is needed to secure good lubrication, also by using an oil of suitable body, not too light nor too heavy. Either one is objectionable. Carbon trouble and a dark exhaust when observed together indicate too light an oil. You are also likely to have loss of power due to too thin a seal around the piston rings.

Some oil companies publish lists of the different makes of automobiles and the oils suitable for each, both winter and summer. But cars even of the same make differ somewhat in their oil requirements, and the best method is to try a gallon or two of the kinds recommended as most suitable. To do this, first drain off the old oil in the crank case. Flush out with kerosene, running the engine half a minute under its own power, put in the fresh oil, and watch the result on the hills, in speed and in gasoline consumption.

EDITORIAL NOTE: Questions relative to lubrication or other automobile problems will be gladly answered by the Automobile Editor, FARM AND FIRESIDE, Springfield, Ohio.

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Raising Baby Beef

[CONTINUED FROM PAGE 3]

and competition is less keen for them, hence the price is not as high."

"But sometimes heavy steers sell highest?"

"Only when there is a shortage of them." Retail butchers want small quarters of beef, except in some of the big shops. They can get rid of the small quarter more quickly, and can handle it more cheaply and with less waste, especially in hot weather."

To the consumer, baby beef does not run into money as fast as big beeves. Even at first-class hotels and restaurants, and on dining cars, it is easier to sell a steak at 75 cents than one at \$1.25. Of course these places want the big roasts, but the provider of a moderate-sized family is a willing buyer of a small roast of choice flavor where he would hesitate to buy either a big roast of equal grade from a large animal or a smaller roast of inferior quality.

There is one point about producing baby beef that should not be overlooked, and market papers mention it frequently, lest it be overlooked, and that is that poorly finished baby beef is less wanted than half-fat heavy steers. While prime finished yearlings sell at a premium over prime heavy steers as a rule, poorly finished yearlings sell at a discount in comparison with heavy steers of equal finish.

No Land Boom

[CONTINUED FROM PAGE 9]

perhaps, even than this, is the tendency among veterinarians to establish regular and moderate prices for treating hogs. In at least one important hog-raising State there is now a general arrangement that fixes 10 cents as the veterinarian's rate for treating a hog.

There isn't a township in this country now that is under quarantine for the foot-and-mouth disease. On the other hand, reports come from Europe that are not encouraging as to conditions there. The war has imposed some very difficult conditions, and the live-stock industry in this country will benefit for years to come from the misfortunes of Europe.

Just about the same time that the foot-and-mouth trouble broke out here, there was an outbreak in Denmark of unusual violence. In general, European live-stock countries are never free from the disease. Their cattle are so tremendously important to the farmers that it would never do to adopt the American plan of deliberately exterminating every infected herd. Germany has had a particularly hard experience since the war started.

There had been a most disastrous epidemic in Germany which was just being brought under control when the German armies swept into Poland and the Russian Baltic provinces, over a year ago. From that conquest they sent back into Germany hundreds of thousands of head of stock, which Germany greatly needed. But the military authorities were not as wise as they should have been.

Foot-and-mouth disease was almost universal, especially in Poland, and in a pretty virulent form. The bringing in of these cattle spread the disease all over Prussia, and to a considerable extent into other parts of Germany. Besides, it was carried into sections that had not particularly suffered from it.

Between the ravages of this disease and the tremendous pressure for milk and meat supplies, Germany has fearfully reduced its live-stock capital; nobody yet knows to what extent, but it is considered very certain that when the war ends, every stock-raising country in Europe will be in the market for the right kind of animals for breeding purposes, and this will include horses as well as hogs, sheep, and cattle.

The demand for meat products of all kinds will also be enormous, because already measures are being inaugurated to conserve the home supplies of stock fit for breeding, in order to restore the normal numbers of stock of all kinds. So it may be expected that there will be a big expansion of foreign demand for both meat and live animals.

Lost People

FRED FIELDS, formerly of Wellsville, Kansas, was last heard from thirty years ago, when working for the railroad in southeastern Kansas or southwestern Missouri. He was either telegraph operator or station agent. Address A. D. Davidson, Stevenson, Washington.

GEORGE PRINCE, missing for twenty-three years from his home in Tennessee, and thought to be in Alabama, was advertised for in the January 1st issue. On January 5th FARM AND FIRESIDE received three letters, one from George Prince himself at Hot Springs, California, and two others from Western States, telling where he is.

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What Speed is Wanted?

The Super-Six speed records—quoted below—have never been matched by a stock car. You perhaps don't want such speed. We made those records to prove the motor's supremacy. Also to prove its endurance.

But they mean that in ordinary driving you will run the Super-Six at half load. And that means a long-lived motor.

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Nobody knows how long a high-grade modern car will last. All we can do is to compare the endurance by extreme and prodigious tests.

A Super-Six stock chassis was driven 1819 miles in 24 hours, at an average speed of 75.8 miles per hour. The same car previously had been driven 2000 miles

at average speed exceeding 80 miles an hour. No other car ever has matched that endurance test. It would take five years of pretty hard driving to equal those top-pace strains.

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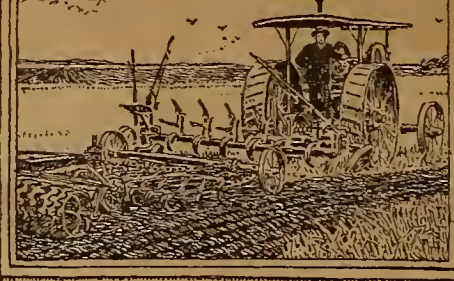
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Machinery



Sulky-Plow Experience

By Daniel Prowant

IT IS remarkable how new inventions in farm machinery are looked at with disfavor at first and come into general use a few years later. I remember some ten years ago when I saw a sulky plow in use for the first time. I called it a "lazy man's plow." I remarked that I wanted nothing to do with such a machine.

To-day I am using one myself, and other farmers who did not at first take to sulky and gang plows are now using them also. Gang plows are not as popular here as the sulky, as it takes too much horsepower to pull them, but they are used to some extent with tractors.

To a man accustomed to an ordinary walking plow, the sulky plow will seem rather awkward for a day or two, but after he learns to operate it properly it handles very well.

There are, I find, a good many advantages in a sulky plow not found in an ordinary breaker. In the first place it saves the man. He can walk or ride as he chooses. I prefer to walk in cold weather.

More land can also be turned in a day with a sulky plow, and a more uniform job can be done, as the plow locks in the ground and cannot be thrown out or pushed aside by every small root or stone. It plows the ground to a uniform depth, something that is not easy to do with a walking plow.

To Plow a Straight Furrow

In starting a land with a sulky plow I run it pretty deep. If one wants straight furrows special care must be used to get the land started straight, as after a crook is formed it is very hard to straighten it out and do a good job of plowing with a sulky plow. I start the land and plow off the ends with the sulky plow, but do not plow the land entirely off. It can be done, but not very satisfactorily. A better job can be done by leaving about three or four furrows, and plowing these off with a walking plow.

We use a foot-lift plow, which is, I think, a little more convenient than a lever-lift plow. When walking it is not necessary to get on the seat at each end of the furrow to raise or lower the plow, as might be supposed. I trip the plow with my foot to raise it, and to set it I trip again, and then lift up on the foot lever.

The plow runs into the ground to the proper depth as soon as the team is in motion. All working parts must be kept well oiled when in use. When the plow is not in use I put it under shelter the same as any other farm implement. Nowadays nearly all sulky and gang plows are equipped with the rolling or disk style cutter. The cutter should be set to cut about one-half inch outside the plow to insure a clean-cut furrow free from crumbs. It also lightens the draft.

Roomy Wheelbarrow

By R. E. Rogers

WE HAVE found an improvement over either the old side-board wheelbarrow or the half-barrel-shaped. The wheelbarrow illustrated was originally one of the half-barrel kind.

When the old body wore out I just sawed the projecting standards off and put this box in its place. It is 28 inches long, 34 inches wide, and 7 inches deep. The rear end is hinged at the bottom and fastens at the top so it stays either up or down—not halfway.

You will notice that the axle bolts are close to the bottom of the end of the handles. That prevents splitting the handles from a heavy load. The box was made from part of a dry-goods box that cost a quarter. It is made solid by small corner posts and a perpendicular piece in the middle of the front.

The box was made wide enough to go easily through any of the hand gates on



This home-made box built at small expense made the worn-out wheelbarrow more useful than before

the farm, and also in the hen house when we load barrow with droppings.

We can push two or three crates of berries, onions, or potatoes in this barrow without having them all slide to one end or side.

Popular Implements

CENSUS figures between 1909 and 1914 show a marked increase in certain farm implements. Corn huskers and shredders and corn and bean harvesters show the greatest amount of increased popularity.

Other implements showing a gain in public favor are grain drills, spring-tooth harrows, and grain harvesters.

Tougher Than Mules

By Raymond Olney

A FARMER operating a large farm in Illinois tells how a newly purchased tractor helped him solve a problem which he had been unable to handle satisfactorily with animal power.

He had sowed cowpeas on an 80-acre tract, and expected to put on a carload of phosphate and plow the whole thing under for the wheat crop to be sowed in the fall. On account of the season being very wet, a rank growth of weeds and peas, about five feet high, covered the entire eighty.

His troubles began when he attempted to spread the phosphate by hitching a four-mule team to the spreader. The peavines and weeds scratched the mules' legs so that they were soon swollen to twice their natural size. He then tried four other mules with the same result.

About this time his new 8-16 horsepower tractor was delivered. He hitched it to the lime spreader and sowed the phosphate without further trouble.



I walk or ride as I choose. Either way a sulky plow works at a uniform depth, an advantage not found in walking plows

The Horse's Shoulder

By Dr. William P. Shuler

WHEN the farmer values his horses by their capacity for work, nothing should go unnoticed that will in any manner reduce their efficiency. The care of the shoulder, therefore, is of great importance and must not be neglected. As the dry season arrives, dust and dirt accumulate under the collar or pad and, mixing with the perspiration, form crusts in the hair, which irritate the skin by continual friction, and gall the shoulder from the withers to the lowest point of collar pressure.

This material also accumulates on the mane, and is literally ground into the flesh by the end of the day. The mane should be kept from under the collar.

When your animals are resting at the end of the field, inspect their shoulders and readjust the collar, at the same time wiping it dry with a cloth.

Galled areas may be treated by washing with the following preparation diluted with an equal volume of water and applied directly to the afflicted parts: Lead acetate, one ounce; zinc sulphate, six drams; water to make sixteen ounces.

Mix and shake well before using. Collar boils and so-called "sit fasts" or callouses are the direct result of neglect to recognize and care for the primary galled area, and must be treated surgically and the animal turned to pasture until recovery is complete.

Making Rapid Hog Gains

IN EXPERIMENTS recently conducted at the Missouri Experiment Station and published in Bulletin 136 it was found that more rapid gains were made by hogs fed tankage in addition to wheat or corn or both than if the tankage was omitted. Whether the gains were more economical depended on the quality of the tankage and the price it was necessary to pay for it. If part or all of the grain ration was wheat, the gains were both more rapid and more economical than if corn was the only grain fed.

For the 120-day feeding period the wheat-fed hogs made an average daily gain of one pound and a quarter a head a day as compared with one pound for the corn-fed hogs. It required 582 pounds of corn for every 100 pounds gained, but only 483 pounds of wheat. Apparently the more exclusively the ration was made up of wheat the more efficient it was, for a mixture of equal parts of wheat and corn proved more efficient than corn alone, both for low cost of gains and for rate of gain, but the mixture was less efficient than wheat.

Tankage added to the feed increased the rate of gain and reduced the amount of grain required to produce 100 pounds of gain. This increase in gain was much more pronounced, however, during the first 78 days of the 120-day feed than during the last 42 days. Results indicate that it would be profitable to supply tankage to fattening hogs for the entire feeding period when corn was used, but only for the first 78-day period when wheat was fed. While the addition of tankage to the wheat ration increased the rate of gain during the last 42 days of the 120-day feeding period, this increase was hardly enough to warrant the increase made in the price of the ration due to the addition of the tankage.

While dipping is the most thorough method of killing certain animal parasites on hogs, there are other ways that have merit. Concrete hog wallows do well for summer, but for fall and winter hog oilers and sprayers can be used to advantage. The oilers and sprayers are inexpensive.



Live Stock

Selecting Feeding Cattle

By W. L. Blizzard

MUCH of the success in feeding purchased stock depends upon the selection of the animals. Even the most skillful management and best of feed and care cannot make profit out of badly selected steers. When one has raised his own steers from good breeding stock, he knows how to treat them for best advantage and what to expect, but a keen eye and good judgment are necessary to enable one to select strange stock that will make profit in the fattening.

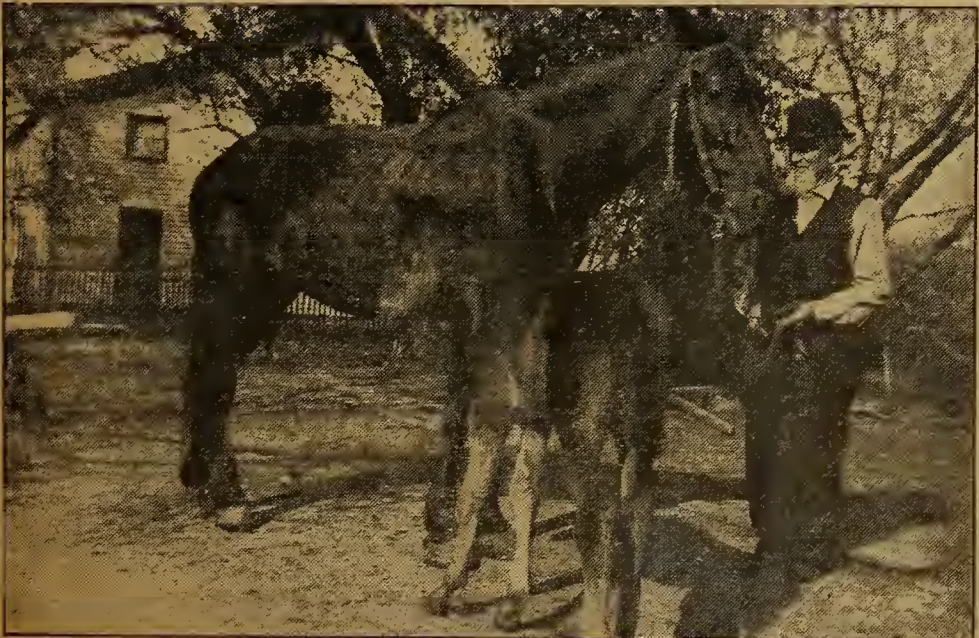
For long feeding, thin steers are usually preferred, as they are more cheaply purchased and one has more opportunity to control their progress. It is advantageous that they be as nearly uniform in color as possible, as they then present the best appearance when fat. A wise feeder remarked, "One sells his cattle when he buys them." The good ones are always in demand. Poor ones, sometimes known as "tail-enders," are invariably a disappointment and a loss to all who handle them.

The block is the supreme and final test of the beef animal. The butcher desires an animal that will deliver the highest percentage of good cuts and show refinement in the parts that are not edible, in order to reduce waste.

In general form the select feeder is low-set, deep, broad, and compact. Their top and under lines should be straight and nearly parallel. One should look for as much smoothness as is consistent with thinness. Too great prominence of shoulder, hips, and tail head should be avoided, as should rough, coarse heads set with small, dull eyes. A good feeder possesses a short, broad head and short, thick neck and short legs. A large, prominent, and bright but mild eye is very desirable, as it indicates vigor as well as quietness of disposition, and these are both essential to well-doing. A good, strong, heavily muscled jaw with muzzle, lips, and mouth large without coarseness, together with symmetry of outline or balancing of parts, are very important points in selecting steers. By symmetry is meant a general uniformity throughout, with no part out of proportion with any other part. Depth of chest should be balanced by depth of twist and width of shoulder should be accompanied by width throughout.

It is important that a feeder possesses that characteristic difficult to describe known as quality. This is of two kinds—general and handling. The former is closely allied to breeding, and is quickly noticed by the trained eye. Good handling quality indicates thrift, which is dependent upon good health and vigor.

It shows itself in a mellow but moderately thick and loose skin, a thick and soft coat of hair of medium fineness. A steer that possesses the qualifications already described will almost assuredly have a vigorous constitution. It is well, however, to see to it that he has a wide, deep chest, fullness in heart girth, and good spring of rib. Such feeders as have been described are not the most plentifully offered, but in buying, one should secure the best available at the best price.



This sixteen-year-old mare, owned by an Indiana horseman, has foaled twelve colts. Her twelfth offspring, shown in the picture, is one month old

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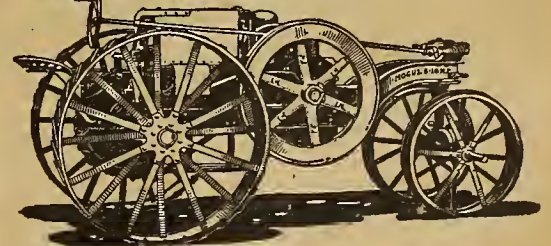
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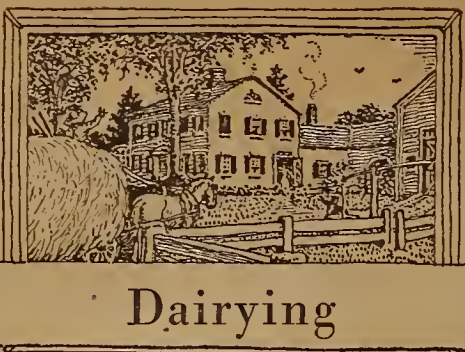
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Dairying

Grades Make Good Showing

By Carlton Fisher

AN INTERESTING cow-testing report giving the performance of grade cows compared with registered stock is sent us by L. P. Dissly, tester for the Cortland (Ohio) Cow-Testing Association. The figures are for May, 1916. Altogether 263 cows were tested, of which 82 produced over 35 pounds of butterfat during the month, and 13 produced over 50 pounds. Here are the records of the latter arranged in order of butterfat productions:

Breed	Pounds Milk	Butterfat
Registered Holstein ...	2131	71.40
Grade Holstein ...	1676	70.40
Registered Holstein ...	2238	70.05
Registered Holstein ...	1850	60.32
Registered Holstein ...	1829	54.87
Registered Jersey ...	1021	60.06
Cross (Holstein and Durham) ...	1356	56.95
Grade Holstein ...	1305	55.48
Registered Holstein ...	1177	52.96
Registered Holstein ...	1350	56.70
Grade Jersey ...	1008	56.45
Cross (Holstein and Guernsey) ...	1221	54.94
Grade Holstein ...	1378	52.37

While these figures cover too short a time and are too limited to form a basis for definite conclusions, they support the contention of successful dairymen that many well-bred grade cows make excellent producers.

Grades cannot be expected to outyield registered stock, but they do in some individual cases. The logical steps in dairy progress are first from scrubs to grades, and then from grades to pure-breeds. All you need to start with are good vigorous cows of any breed and a pure-bred bull of your chosen breed.

Willing to Cater

By Mrs. Alta B. Dunn

A NEIGHBOR of mine, living on a farm five miles from a town of 1,200 people, claims that she makes more in a year from her produce, sold directly to the consumer, than her husband does from his farming operations. Most of this produce she raises herself, and, except in bad weather, she markets it, making delivery to her customers in town every Saturday. She sells butter, eggs, garden truck, dressed turkeys, chickens and geese, honey and lard.

There is nothing spectacular about her methods. Her prices are moderate, but what is sold is uniformly of good quality. Butter is molded in one-pound bricks, wrapped in parchment paper, but not enclosed in paper cartons. Vegetables are crisp and fresh, poultry well conditioned and neatly dressed, eggs fresh and everything clean.

At Thanksgiving time I happened to be visiting in a home where one of her dressed turkeys was delivered. It was in prime condition, plump, fat, and with no sign of pin feathers. The bird was drawn and perfectly clean, and the removal of head and feet left it ready for the pan.



This picture, a banquet table in a dairy barn, was taken in Washington State, where interest in pure milk and clean barns is steadily increasing

Most housewives of my acquaintance, when preparing a "company" dinner, so cordially detest the job of dressing a fowl, or of cleaning it after it has been roughly plucked, that they are glad to pay extra to get a fowl that is ready to cook. I mention this as an advantage of knowing one's market. This turkey weighed 10 pounds after picking, and brought 20 cents a pound—a fair price to both producer and consumer.

Though living in a community where many farmers are unable to sell their produce profitably, this woman often has more orders than she can fill. This year her poultry was entirely sold out by the first of January.

Her success may be attributed to the fact that she knows her market thoroughly and is willing to cater to it. She knows that there is greater demand for turkeys than for geese, more calls for chickens than for turkeys, and raises her poultry in accord with this demand. She also understands that in this town, where incomes are not large, the people cannot afford to pay fancy prices for their foodstuffs, so she wisely eliminates the frills of wrapping and packing which please the eye and add to the cost of an article, but do not enhance its food value.

Not only does she understand the general needs of the market she aims to supply, but she is equally familiar with the individual preferences of her customers, and never loses sight of their likes and dislikes. In this way she holds her customers from year to year.

The following list of produce sold in 1915 will serve to show the quantity of produce one woman raises and markets—practically alone.

Butter	\$383.55	Geese	\$24.00
Eggs	139.80	Honey	10.00
Chickens	117.65	Lard	3.00
Turkeys	62.00		
Vegetables ..	56.00	Total	\$796.00

Briefly, then, this woman disposes of her truck advantageously because she makes it a point to find out what people want, and then "delivers the goods."

Cheese Oddities

CHEESE is thought to have been accidentally discovered. Shepherds, according to the story, left some sour curd in a cave, and when found later it had turned to cheese.

Cheese is not indigestible when eaten with crackers, bread, pastry, or cereal foods. But as it resembles meat in composition it should be eaten lightly at a meal where much meat is served.

Exports of cheese from the United States last year were over 63,000,000 pounds, or about twenty times as much as usual. The armies are consuming cheese at the rate of about a fifth of a pound a day per man.

Cows at Banquet

BANQUETS held in dairy barns have been of frequent occurrence in New York, Wisconsin, Illinois, and other prominent dairy States. This particular picture, however, was taken in Washington State, near Spokane. Covers were laid for seventy guests, and the festive occasion incidentally has considerable advertising value since each guest carried away a favorable impression of the sanitary conditions under which milk is produced in this dairy.

The dairy industry in the Far West has been stimulated both by the rapid growth of the cities and the progressive interest in pure milk. High-class dairy cows—in this case Jerseys—are also rapidly taking the place of range cattle for milking purposes.

Foreign Cattle Prices

By B. D. Stockwell

DAIRY cattle in Europe will command excessive prices at the close of the war, judging from a report of the Swiss Cattle Breeders' Association. Since the beginning of the war, prices have risen from 25 to 30 per cent, and further increases are expected. At present the price of good Swiss dairy cows ranges from \$150 to \$300, and pure-breeds may bring twice as much.

Jerseys, North and South

TWO remarkable dairy records have been announced by the secretary of the Jersey Cattle Club. One was made by a registered Jersey cow in Alberta, Canada, at 52° north latitude, where the thermometer gets down to fifty below zero in the winter-time. In four years this cow produced 51,872 pounds



This Jersey cow at 52° north latitude averaged about 36 pounds of milk a day for four years

of milk and 2,673 pounds of butterfat, or over two pounds of butter a day. The other cow is also a registered Jersey, owned by a breeder in New Zea-



Here is the southern Jersey cow which, beginning as a two-year-old, produced nearly a ton of butterfat before she was five years old

land, at 46° south latitude. In three years she produced 29,909 pounds of milk and 1,863 pounds of butterfat, a record similar to the other.

While dairying is not commonly carried on in cold climates, apparently the reason must lie elsewhere than in any fault of the dairy cow.

Questions for Dairymen

A VIRGINIA reader has a heifer which he says is inclined to be brought to milk. "If I milk her," he asks, "before breeding her, will she have a calf?"

Have any readers had experience in such a case?

Curious Post Mortem

"**I HAVE** been a reader of FARM AND FIRESIDE for a good many years," a Colorado dairyman writes, "and have read a good many answers to your readers' questions. Now I would like to have you mention one or two for me. We had a valuable cow that died, and I am anxious to know the cause of her death.

"The cow took sick at calving time, and didn't seem to care for the calf at all. She gave a rather scant flow of milk. After a week she refused to eat anything, and one morning we found her down, throwing her head from side to side and rolling her eyes. We took her temperature and found it 104. She lived a month after the calf was born.

"After her death we opened her and found her liver was brown and soft, and her lungs looked like dark raw beef with yellow spots on them. We gave her oil, bathed her with mustard, and gave her bran water to drink. What medicine should we have used?"

This cow was incurable, and the cause of death was probably tuberculosis, as indicated by the condition of the liver and lungs. Calving and milk fever hastened the progress of the disease. She apparently recovered from the milk fever, but was in such a weak condition as to be a ready victim for tuberculosis that, though unsuspected, had been developing for some time past.



Crops and Soils

Boy's Bumper Corn Crop

By Floyd W. Bergy

SOME of FARM AND FIRESIDE'S boy readers may be interested in my corn-growing work. I grew a measured acre in 1914 and the same area in 1915. I did all the work in 1914 except plowing and harrowing. In 1915 I had no help for any part of the work.

For the 1914 crop I spread in March 12 loads of stable manure on the acre with a manure spreader. The soil was sandy loam and the corn was planted in May. The acre was harrowed three times before planting and five times after planting. Six cultivations were given this corn. The variety grown was Pickett Dent, and the yield was 100.3 bushels of shelled corn from the acre. The cost of growing the corn was \$37.62. The net profit from the acre was \$48.54.

My 1915 crop from an acre was only 93 bushels of shelled corn, although the care given it was just as good. The unfavorable season caused the reduction in yield. I cultivated the 1915 crop ten times to help overcome the effects of the unfavorable weather.

Alfalfa on Mesa Soils

By J. T. Barlow

THERE are thousands of acres of mesa or bench-land soils in New Mexico that might be made to produce profitable crops, provided water could be secured at a reasonable price. This was one of the facts that influenced the New Mexico Experiment Station to start a series of experiments in 1907 on the mesa soil. The tract of land used for this work is situated on the first mesa just above the valley. Various crops were tried up to the year 1913, with varied results. Since that time this land, which is divided into 48 small plots one-eighteenth acre in size, has been growing alfalfa. This crop was chosen because of its great importance in New Mexico. Now all of the plots are supporting an excellent crop of alfalfa and are yielding five cuttings a year.

Since the soil was somewhat uniform, the plots were divided into series, depending upon the depth of soil over gravel. This was considered necessary in order to make the results comparable and more uniform. The alfalfa was sown in rows on some of the plots, while on others it was drilled in the usual manner. A few of the plots were left fallow. Different depths of water, varying from two to five inches, are applied to the different plots at each irrigation. The plots are irrigated every ten days whenever the average total moisture content of the top six feet of soil falls below 7 per cent. To determine this moisture content, samples of soil of each plot to a depth of six feet are taken with a soil tube every ten days. These samples are then removed to the laboratory, weighed, dried in an oven, and the loss of moisture calculated. Seven per cent

was chosen as the minimum moisture content that the plants could stand without being detrimental to their growth. Results, however, tend to show that this point is too low and the plants sometimes wilt badly before they are irrigated.

Some of the studies that are being made in connection with this project are: the best depth of water to apply for the most economical production of hay, the duty of water, comparison of yields of row and drilled plots, evaporation and transpiration studies under field conditions, depth of penetration of roots under different amounts of water, and depth of penetration of irrigation water when different depths are applied. Many valuable data already have been secured in connection with this experiment, and published in bulletins numbers 86 and 93 of this station. Some of the results secured during the season of 1915, showing the possibilities of alfalfa on our mesa soils, are as follows:

AVERAGES OF ALL PLOTS

Method of planting	Inches at each irrigation	Total water applied during 1915, inches	Rainfall during growing season, inches	Yield an acre, pounds
Drilled ..	2	29.6	5.80	11569
Drilled ..	3	39.5	5.80	12902
Drilled ..	4	42.6	5.80	13964
Drilled ..	5	49.2	5.80	14077
Rows	3	36.5	5.80	11387
Rows	4	43.2	5.80	12704

The cost of maintaining so large a number of small plots is so much greater than the ordinary expenses of growing alfalfa that no cost data are available. However, the data given in the above table show possibilities, provided water can be applied at an economical price.

Threshing Sweet Clover

By W. H. Arnold

THERE are many anxious moments when sweet clover is ready to cut for seed. Four fifths of the seed is ripe at that time. If you wait till they are all ripe there is no economical way of saving the crop, because no machinery can prevent a loss of the seed by shattering. When cut at the right time the loss is very small. The most successful method I have found is to use a mower set to cut as high as it can. Then have as many men as are necessary to tie the sweet clover to follow the mower.

Of course the mower must not run over it after it is cut. The sweet clover is tied with its own straw in bundles which are shocked and capped like wheat and then put under shelter or in a stack as soon as it is dry enough to keep without molding. The most serious shattering is caused by getting wet repeatedly. If it doesn't get wet at all the seeds will cling very well.

I would neither house nor stack the crop if I could be sure of a threshing machine when I wanted it. Any ordinary grain thresher will thresh it as easily as wheat or oats.

Makes Money with Beans

LYMAN CRANE, St. Lawrence County, New York, believes that growers should give beans as good a chance as corn, and points to his own results as indicative of the profits in growing the crop by the best methods. Last year he harvested 16 bushels of beans from two rows in which two quarts of beans were planted. With beans bringing \$4 a bushel the prospects for the season are bright.

Write FARM AND FIRESIDE about your bean-growing experience. We shall be glad to know about it.

How Drainage Saves

By Howard Templin

CROPS can be seeded from one to four weeks earlier on well-drained land than on land where tiling has not been done. This is the experience of the Maine Experiment Station.

Tile drainage does not deprive the plants that are growing in the soil of the moisture they need. Rather it makes it possible for them to receive more moisture. This is accomplished by the fact that the condition of the soil is kept in very sponge-like condition when the heavy downpours of rain are quickly carried off. A spongy soil will retain for the use of the plants much moisture. Without the drains the root systems of the plants would be checked in their development by the standing of the water on the soil, and the result would be a much-decreased crop yield.

The soil is also made warmer when drained than when not. The water goes off through the drainage system. Very little is allowed to evaporate from the surface of the soil. When evaporation is checked the soil is kept warmer, and the result of this condition is that greater crops are produced.

All through the season the beneficial effects of drainage can be seen. Land can be plowed earlier in the spring, can be cultivated soon after a rain, in fact is at the control of the farmer to a much greater degree than when tiling has not been practiced.

The money returns from tiling are therefore not to be found alone in the increased crops produced but can be shown on the account books in the saving of time and labor by the ease with which the fields are worked.

Proper drainage of the soil will many times pay for the cost of the installation of the tile in one or two years. This is because of the labor saved in working the field, and of the increased crop yields.

After-Value of Fertilizer

By Clyde A. Waugh

AGOOD many farmers when considering buying fertilizer figure all the cost against the first crop, and do not take into consideration the after effects of the fertilizer. There is no question but that the crops following the crop that was fertilized reap a big benefit from the fertilizer that is still left in the soil, especially when the season in which the fertilizer was applied was a dry one. The following instances illustrate this point.

Last year we had two acres of onions in a field next to a potato field. The potatoes had a small application of a complete fertilizer while the onions had about 1,000 pounds of a high-grade onion fertilizer. The onion crop was not up to standard because of a wet season.

The next year the entire field was in corn. The two acres of onion ground produced nearly a ton more of corn to the acre than the rest of the field. But besides this the corn was fully matured from the onion space, while the other was soft and had to be handled pretty carefully to prevent it from spoiling before the time for selling came around.

Because of this the matured corn could be handled quicker, it was sold quicker, and it didn't undergo the amount of shrink that the other did.

As a second instance: Another field of two acres the same year under about the same conditions was put to sugar beets the following year. While yields last year in general were rather poor around here, this field made close to 20 tons to the acre. At first it did not look as though there would be anything extraordinary about the crop. But when harvesting time came around there was evidence enough even before the beets were taken to the scales.

Controlling Hessian Fly

By L. T. Baker

METHODS for controlling the Hessian fly, the worst pest of the wheat field, in the fall-wheat-growing sections may be summarized as follows: Sow the best of seed in thoroughly prepared, fertile soil after the major portion of the fall brood has made its appearance and passed out of existence, and, if possible, sow on ground not devoted to wheat the preceding year.

While it may seem far fetched to bring forward as a preventive measure the enrichment of the soil, a fertile soil will produce plants that will withstand with slight injury attacks that will prove disastrous to plants growing on an impoverished or thin soil. This is because a fertile soil will enable an infested plant to tiller freely, and these tillers will have sufficient vitality to withstand the winter and send up head-producing stems in the spring. Some farmers use fertilizer to insure a vigorous growth.

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Poultry-Raising

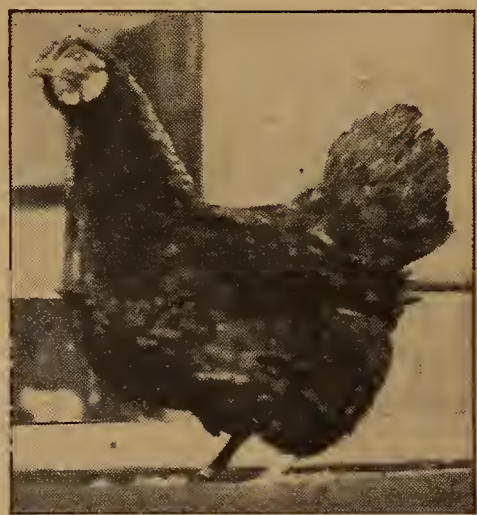
Beware of Overstimulation

By B. F. W. Thorpe

I HAVE just called off a feeding experiment made with a pen of bred-to-day Barred Rocks which turned out exactly as I expected it would. This pen of hens had been laying steadily since early winter at the rate of between 60 and 75 per cent throughout the winter and spring. They also laid just under 60 per cent through June and July. The first of August, when the weather was excessively hot, the manager of a boarding house offered to furnish me with the scraps from his tables. These were delivered to me fresh daily, and consisted of a heavy proportion of rich meat, gravy, potatoes, beans, bread, and pastry, together with the seeds and shells of cantaloupes, watermelons, also peelings of peaches and other fruits.

As above stated, I felt certain that this rich, succulent food would not be productive of good results when fed to laying hens, even in moderate quantities. The hens had previously been fed a fairly well-balanced ration of dry mash, including scraps, mixed grain, and fresh lawn clippings for green food. About half of the mash was replaced with the table scraps, and for a few days the egg production increased up to about 80 per cent. Then trouble began in the way of soft-shelled eggs and eggs without shells. Soon half of the egg production was found on the dropping boards without shells, or with shells so thin that the eggs were broken when dropping only six or eight inches.

This little experiment, conducted for about two weeks, proved conclusively to me again that overstimulation with food that is too rich in animal protein and containing too much succulence is causing great loss in many flocks, particularly where only a few hens are kept. In the experiment described I made sure that all of the scraps fed were in a sweet and unspoiled condition. Where such scraps are allowed to sour and mold, they are almost as dangerous to feed to poultry as a full dose of absolute poison.



THIS star laying Rhode Island hen was trap-nested as No. 8 in the flock of E. B. Shaw last year. She laid 234 eggs in a year, and 316 eggs in 483 consecutive days. Had all this hen's eggs for the year been sold at the market prices, her credit account would have stood \$4.65.

Inexpensive Poultry House

By J. T. Raymond

POSSESSING limited capital and wishing to invest as large a share as possible in laying stock, the beginner in poultry-keeping in New England finds many ways to keep the cost of his house down. The best way is to find second-hand houses. The writer does not know of a town in which there are not unused poultry houses the owners of which generally will sell for half or a quarter of the original cost. The beginner can ascertain first what his town or district offers in this respect. Not infrequently a house accommodating 25 or 30 birds can be bought, moved, and set up for less than \$15. It will not be especially attractive, but so long as it has the open front, is free from drafts, and is dry and comfortable, appearances may be overlooked.

If he cannot find a suitable second-hand house and perforce must build, the

beginner still has an opportunity to effect economies. He must remember that labor is the costliest item, especially for an inexperienced employer. The job may not look so nice, but usually the results will be twice as good if he does the carpenter work himself. The saving effected will be much more than appears.

The cost of materials may be reduced 30 to 50 per cent. In cities second-hand lumber can always be obtained without much trouble. There are now building-wrecking concerns which make a specialty of the poultry trade. They sell sufficient material for a house 12x6x7 feet, including a door and two sash, for \$5 to \$8, and offer proportionate prices on material for larger houses.

Lumber from sawmill clean-ups is cheap in some country districts. There is always some second-hand lumber to be found. Sometimes large packing boxes are bought for 20 or 25 cents apiece of factories or dry-goods stores.

The low-cost house usually is not so permanent as others, and is less attractive, but it has ample justification in a poultry keeper's desire to do the largest possible business on a certain capital. It has been demonstrated over and over again in New England that a house can readily be cheap and yet efficient. Some of the greatest profits have been made in houses costing from 25 to 75 cents per hen.

Runner Ducks Make Money

By A. L. Roat

FOR our special trade of supplying farm produce direct to customers we find the Runner ducks a profitable side line. We keep them during the winter season, when not on range, in roomy, well-littered pens, cut fodder and cut refuse hay or straw being used for a litter to keep the pens dry and comfortable. When given a good chance our Runners lay nearly the whole year around, and the eggs bring a better price than hen's eggs. A rich mash, containing a well-balanced proportion of animal protein, is fed in a moist, crumbly condition in box troughs covered so that the ducks eat through the slatted side. Our ducks always have before them a good dry mash, plenty of grit, oyster shell, charcoal, and fresh water always within reach. In order to keep the ducks from splashing their drinking water, I dig out the soil and fill in with stones and ashes two feet deep and set the drinking bucket on this prepared spot. We find that our ducks will make use of a dust bath of sifted coal ashes and road dust just the same as will the hens. During the summer season plenty of shade from the hot sun is a necessity and an occasional run to a pond or a creek for a swim will keep them in better condition. However, the ducks will do fairly well without any water except a plentiful supply kept always before them in a bucket or container into which they can thrust their entire heads. Several times a year the duck yard, when the birds are confined, is plowed and limed to prevent the soil from becoming sour and ill-smelling.

Highway to Good Laying

By Vincent Lee

THERE are a good many bugs and things running around loose for the hens these days, yet I do not feel it best to take away all meat scraps. Not so many are needed as in cold weather; still, if we try our flocks we will find that the hens will take a bit more such food that they are able to pick up. The same way about grit. Keep the box well supplied.

The road to good egg yield lies hard by a good, clean drinking fountain. Milk helps too. We can afford to pay five cents a gallon for buttermilk as a summer feed. But I want it buttermilk, and not half water.

A little more wheat bran and oats and wheat, and less corn and barley, in hot weather, keeps 'em healthy.

If you hold a post-mortem over the hen that drops off the perch and dies, you will no doubt find that she has an enlarged liver and heart. Too heavy feed did it. You have been drawing on the corn bin too hard. Lighten the ration up a little bit. Oats, bran, middlings—these are hearty enough for midsummer.

Get the cockerels out of the flock now. The pullets have enough to contend with without being pestered by these little rascals.

It isn't a waste of time to keep the water dishes clean. It takes some nerve to stop the plow or get off the mower to make sure everything is right, but it pays better than having a lot of sick hens.

We need to watch pretty close for the stolen eggs these days. It doesn't take long for eggs left lying round loose under old board piles and such things to have something happen to them.

Laying Contests Multiply

By Jason Waters

ARRANGEMENTS are now being made by eight experiment stations to conduct egg-laying contests in 1917. In addition to these there will be several county or community laying contests, and at least one poultry correspondence school will put on a laying contest of a year's duration.

The poultry department of the New Jersey State Experiment Station has its plan completed for a laying contest to continue three years, accompanied with breeding experiments worked out by means of the progeny of hens which prove themselves to be high-record egg producers during the first year of the contest.

An 1,100-Egg Hen

By Frank W. Orr

A HEN that keeps her egg machinery working steadily up to and during the sixth year has earned the right to have her progeny scattered broadcast over the land. The stunt of laying 1,100 eggs by the middle of her sixth year is the best of testimony that breeding for



heavy and continued laying is one of the most important objects now before the poultry world. The Leghorn hen, Oregon, A-27, has the following lay to her credit:

Table with 2 columns: Year, Eggs. First year 240, Second year 222, Third year 202, Fourth year 155, Fifth year 168. Total 987 eggs.

in 60 consecutive months of laying. Up to midsummer in her sixth year she has laid over 100 eggs, or enough to bring her grand total up to 1,100 eggs. Best of all, she is in good condition, and still laying steadily.

This remarkable hen belongs to the experimental stock of the Oregon Agricultural Experiment Station.

WERE I asked to name the greatest hindrance that is preventing good growth among poultry in midsummer and early fall, I would at once say lack of fresh water always within reach of the birds. Thousands of chicks and other poultry are making little or no growth to repay for the feed they are eating simply because they lack plenty of fresh water always within reach when they need it most.

SOME Canadian poultrymen are now making use of geese to turn into their fruit orchards for the purpose of cleaning-up all fallen fruit, and thus prevent the propagation of insect pests the following year. A dozen geese to the acre of orchard will take care of the dropping fruit, in many cases, up to harvest time.

MOLDY, sour, and decaying food kills and injures more young and old stock than almost any other cause. It is poor economy to save a few cents' worth of spoiled food and lose several dollars' worth of chickens from the poisonous effects of the food.

WHEN hitched onto the plow or cultivator, try sowing some oats on the ground where hens or chickens are yarded. Then turn a few furrows over the oats. The birds will work on this freshly turned ground after the oats and insects for days at a time. If this plan is followed regularly through the summer season, hens will do nearly as well as though they are on range.

MUCH good grain feed is often about as good as wasted by feeding it unground to ducks and geese. It has been found that finely cracked or ground grains are worth about double as much for feeding water fowls as whole grains.

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Garden—Orchard

Sudsing the Aphis

By Mrs. R. B. Beckeo

HERE is the way I saved my sauerkraut prospects from cabbage aphis, after having failed with dusting lime and ashes over the plants. I took the soapsuds from the weekly wash and sprinkled this over the cabbage plants, taking care that plenty of the suds wet all of the leaves of the cabbage plant on both sides. Where one drenching was not sufficient I repeated the next week. I found the suds destroyed all kinds of plant lice fully as well as some of the more expensive spray mixtures. Any remedy must be used as often as the aphis are found to be at work, as they are often carried to the plant by ants a few days after they have been destroyed by applying remedies. Where strong washing powders are used, I think there would be danger in injuring the plants by using such for spray materials.

Crown Gall and Cane Fruits

By J. H. Windsor

THERE has come to be considerable danger in using raspberries as fillers among fruit trees. The crown-gall disease now frequently attacks the different varieties of raspberries and will be communicated from raspberries to the fruit trees growing in their vicinity. It is therefore now considered the safer plan to use blackberries for fillers among fruit trees rather than raspberries. Thus far the native blackberries have not shown any tendency to contract the crown-gall disease except a few plants of Lawton, where only a few nodules of the crown-gall disease were in evidence.

BY TYING the cauliflower leaves over the head, more attractive, white, clean-looking heads will result, which will bring a better price in the market.

The Parker Fruit Grader

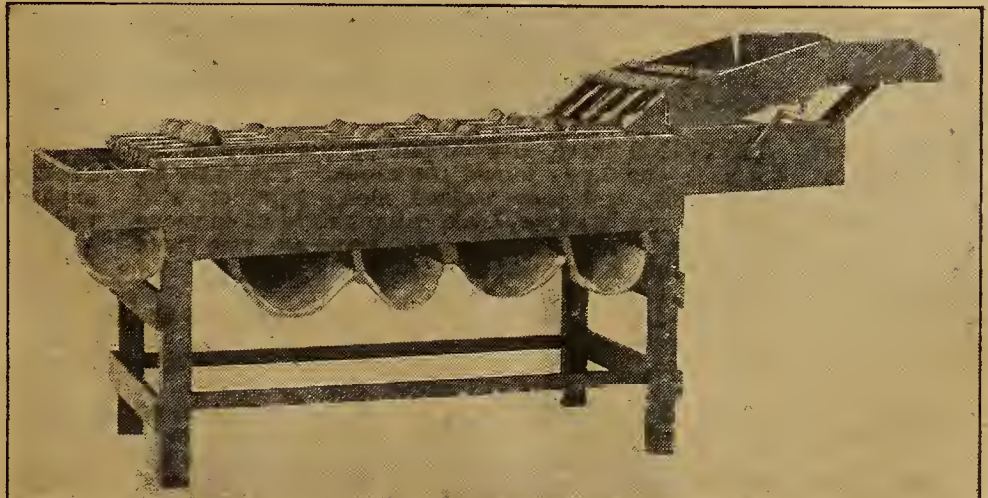
By Waldo Clement

ONE day a southern New Hampshire fruit grower, Walter Parker, got tired of hand sorting and grading his apples, so he took his saw and hammer and Yankee ingenuity and went to his shop and locked himself in. When he came out he had a working model of an apple grader which promises to benefit the apple industry greatly.

This machine, which is built almost entirely of wood, is about 7 1/2 feet long by 2 1/2 feet wide and weighs 150 pounds. Larger sizes can be made that are just as effective. The apples are fed into the chute, and are mechanically moved along the four channels, turning all the time, thus enabling the operator to observe and remove imperfect fruit. All parts are heavily padded to prevent bruising, and 25 to 40 barrels an hour can be graded, the quantity varying with size of fruit and capacity of machine.

The grader can be operated by one man or more. When not in use the hinged legs fold under the table, and it may be packed away in a comparatively small space, and also lessens shipping charges.

The New Hampshire Agricultural College thinks sufficiently well of this grader to help make its advantages known.



From 25 to 40 barrels of apples an hour can be sorted with this home-made grader. All parts are padded heavily to prevent bruising.

Carnation Hints

By S. A. Wardlow

IN STARTING carnations from slips there will be much more surety of success if the slips are taken close to the ground and the end of the slips are crushed for at least two inches. If they are then planted in sandy soil that is not kept too wet, roots are almost sure to form quickly.

When they throw up blossom stalks, all buds should be picked off except the terminal. This will insure large blossoms. If it is desired to raise prize flowers, at most not more than two blossom stalks should be left on each strong plant. If these with the full strength of the plant concentrated in them should threaten to burst the side of the calyx, a flat rubber band such as is used in offices may be carefully fastened about them. This must be neither too tight nor too loose so that it may not fail of its purpose or deform the flower.

Want Big Spuds

By W. F. Wilcox

IT WASN'T but three or four years ago when the buyers didn't want big spuds. Overgrown potatoes were a drug on the market and commanded a lesser price. Not so to-day. Styles in spuds have also changed. There is a ready demand for spuds, with no limit as to the maximum size.

Last fall buyers came into the potato-growing sections of Colorado offering bonuses for big potatoes. One buyer wanted none weighing less than 12 ounces, and paid 10 to 15 cents above the market price, according to the per cent of large potatoes contained.

It has always been the custom here for growers to run potatoes over a screen sorter in the field, taking out everything less than 1 3/4 to 2 inches in diameter. But now there is a demand springing up which puts an attractive premium on all the well-shaped spuds which formerly were screened out as unsalable. Time was when we were told the market desired only a medium-sized, uniform, smooth potato for table use. Now there are stewards and chefs of high-class hotels, restaurants, and dining-cars bidding for big potatoes. One buyer last fall bought 30 to 40 cars of smooth, sound potatoes weighing 12 ounces and over, for his special trade he has awakened. Other markets bid for medium-sized potatoes and give preference to just those potatoes this buyer cannot use.

Grading stations are being established in various places which have a reputation for growing large spuds. At Montrose, Colorado, a potato-buying company has decided to locate a sorting plant where this special class of potatoes will be sacked and marketed. The growers will haul their potatoes to the factory where a nominal fee will be charged for grading, and a high price paid for the extra large potatoes of high quality.

Montrose County growers are now advertising seed in this way: "Seed potatoes grown by Jones, Bostwick Park, averaged 281 sacks to the acre. Sixty per cent of this stock went over a 3-inch screen and was shipped to Chicago as 'fancy bakers.' It is the 1 1/2 to 3 inch potatoes from this same stock that we are offering for seed."

They used to say that a medium-sized potato was all that one person could eat and they did not want potatoes so large as to necessitate cutting them to serve. With the new demand for big potatoes, does it imply that the average person's spud capacity has increased?

CLUB ROOT in cabbage will be retarded by a heavy coat of lime applied in the fall. But the only sure prevention is the use of sound seedling plants and a rotation of crops, and the destruction of all refuse from infected fields. Soil or manure that has been infected by the germs of the club-root disease should not be carried to uninfected fields.

Brightens One Up

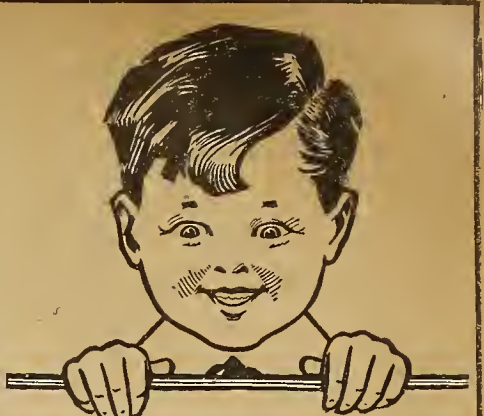
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May too much of a sense of duty blind a man to some of the fine things in life? Read this story and judge for yourself

The Eye-Opener

An Engaged Couple See Each Other in a New Light

By TOM MASSON

HORACE TRUMBELL'S horse, although a nervous animal, usually stood without hitching. So he just put the lines around the whip and walked up the path to the Newton cottage. The Newtons were known as the "new folks." They had lived in the village only two years—long enough, however, for Horace to fall in love with Lyda, and to have arrived at an understanding with her. Horace had to wait for some time after he raised the brass knocker of the cottage door. Finally Lyda opened it. Her hair was disarranged. Her dress bore evidence of having been hastily put on. Her hands were of the kind known as parboiled.

She blushed slightly. "Excuse me for keeping you waiting," she said. "That's all right," said Horace. "I took a chance. But I thought I'd like to drive over to the fair at Amsbury's to-day and maybe you'd go along. It's a nice day," he added, looking up at the sky. "We can drive over in an hour, and that'll give us a couple of hours there, and we can be back by seven o'clock."

Lyda hesitated. "I'd like to go," she said, "but—come in and sit down a minute." He followed her into the parlor, and she turned to him apologetically.

"We're cleaning house," she said. "Of course—" began Horace. He came from generations of well-to-do farmers to whom house-cleaning was sacred. A stern sense of duty compelled him to be merciless, even to himself, where the work of the house was concerned.

"You wait," interrupted Lyda, hurrying out. "Mother," she called. "Horace is here, and wants me to drive over to the fair."

MRS. NEWTON came running in, her hands dripping, wiping them on her apron as she came. Her face fell. "I s'pose you'll have to go," she said dubiously. "It's kinder too bad, right in the midst of things. Still—"

Horace stepped out from the parlor. "Excuse me," said Mrs. Newton. "You see, we're kinder upset to-day. But you go on," she exclaimed to Lyda. "I can finish up."

"Perhaps you'd better not," said Horace. "I—"

"I'll stay if you say so," said Lyda to her mother.

"No; I wouldn't have you do such a thing for the world. You go with Horace. It's only right you should. Run up-stairs."

Lyda's face beamed. With the enthusiasm of youth, she had already cast aside the atmosphere of work, and was taking on rapidly the hue of pleasure. "I guess I will," she exclaimed.

"That's right," said Mrs. Newton, who did not let her disappointment over the interruption in their task cloud her daughter's departure. "You run right up-stairs and change your clothes, and don't keep Horace waiting."

"Perhaps—" began Horace. But at this moment he heard the horn of a big motor car in the distance and, second nature as it was for him to look out for his horse, he opened the door and rushed out to guard him while the machine was passing. Lyda ran up-stairs to change her clothes.

She was exceedingly deft, and this process was completed almost by the time Horace was back. "I'm ready," she said with a smile, tying on her hat. "Good-by, Mother."

"Good-by," said Mrs. Newton, standing in the doorway. "And have a real good time."

Horace started up the horse and they drove off. Lyda, free from the restraint of home duties and alive to the beauty of the world, began to chatter. Horace, however, was unusually silent.

"What's the matter?" she asked at last. "You don't seem right."

"I was thinking perhaps you ought not to have come."

"Nonsense. Mother didn't mind. Besides—"

She looked at him curiously. Lyda away from home, free from responsibility, was different from Lyda at home, full of duty.

"Don't let's think of anything disagreeable," she said. "It's fine to be out a day like this."

With a coquettish movement she leaned close to Horace. But for some reason he was not responsive.

"If I had known you was going to be this way," she said with a slight touch of resentment, "I don't know as I'd have come. Can't you have a good time? Can't you forget work?"

"No," said Horace gloomily, "I can't. I can't help thinking that perhaps you ought not to have come. It seemed too bad to leave your mother."

"Well, you needn't worry about that. What did you ask me for, anyway?"

"I didn't suppose you was house-cleaning."

"Well, what of it? I can go if I want to. Besides,"—she was becoming angry—"you have no right to talk to me like this. I don't want to go now. You can take me back."

Horace, however, had different views. Now that they had set out on their journey he was determined to see it through. His rigid masculine sense of duty made it impossible, however, for him to throw off the feeling that Lyda had not done right. Unconsciously, imperatively, he was asking himself the question whether, after all, this girl who was ready at the slightest call to leave her mother alone "in the lurch," as it were, would make the right kind of wife. There never had been a moment from earliest boyhood when he had ever indulged in any pleasure by sacrificing his home responsibilities. It was in the blood. Nay, more, it was in the county. He slapped the reins on the horse's back.

"No," he said, "we'll go on."

Stung by the injustice of the sudden attitude of

in the stock exhibits. At six o'clock he came up to her.

"Are you ready to go home?" he asked. "Yes, if it is time," she returned. "I've had a splendid time," she said. His denseness—for men are peculiarly dense about some things—prevented him from detecting that slightly raised note in a woman's voice which indicates unmistakably that she is playing a part.

He made no reply, but in another moment drove out in the buggy. She got in, and they silently proceeded on their home journey. Neither spoke. It was dark when they reached her cottage. He got out first, and stood silently as she jumped to the ground without assistance.

"Will you come in?" she said politely. "No; it's late."

"I'm much obliged for the ride. Good-night." She turned up the path.

"Lyda!" His voice cut the darkness.

"Well?" "You're not the kind of girl I thought you were."

"I'm glad of it. I wouldn't be the kind of girl you thought I was—for anything! You want a girl who is ready to stick home and make a slave of herself all the time. Well, you're right I'm not that kind."

"No, I don't," he said slowly. "I like a good time as well as anyone, but I wouldn't let my mother stay home and work. And you flirted—you know you did."

SHE drew from her finger a small diamond ring and handed it back to him. "Here," she said, "Horace Trumbell, you take back your ring. I guess we didn't understand each other, and it's a mighty good thing we found out in time. I wouldn't marry you—no! not for the world. And now you're free!"

He stared at her almost blindly in the half-darkness. Without a word he turned, clicked the gate behind him, got into his buggy, and drove off down the road to his home.

Arriving there he put up his horse and went in. His mother was waiting for him.

"Have a good time, Horace?" "Yes."

She looked at him keenly. Something had happened.

"Why, what's the matter?"

He sat down wearily. "Lyda and I have cut loose."

"Why Horace! What's the meaning of that?" "She's not the kind of girl I thought. She wouldn't do—for me."

He bitterly recounted the tale of the afternoon and his mother raised her hands.

"Oh, Horace," she said, "why didn't you wait? Didn't you know that Mrs. Newton was at the fair all day yesterday?"

"No. What of it?" "Why, Lyda insisted on her going. She told me so last night at the church rehearsal. She went and had a good time, and she said then there never was such a girl as Lyda to do her share. And so to-day, when you called, it was only right that Lyda should have gone. Of course, you didn't wait to have it explained. You said something she didn't like. Oh, I know you! I see it all. Of course she flirted. I'd have done the same thing. It's too bad. I—"

Horace started up. The chill red color came into his tanned face. A sudden, tremendous revolution was taking place within him.

"Yes," he said slowly, "I see—now. Oh, Mother, I've made a mistake! I must go right back."

A little later he knocked at the Newton cottage. Lyda opened the door herself. The moon made everything so light that they could see each other distinctly. The girl did not ask him in. Instead, she nearly closed the door and stood outside, her hands behind her holding the knob.

"Lyda, I've come back."

"For what?" "I was wrong. I did not understand. I thought you had neglected your work—for pleasure, and it made me angry. I didn't treat you right, Lyda. I know now you had a perfect right to go."

The girl looked away from him, through the honeysuckle-wreathed pergola out across the moon-lighted expanse of meadow. She said nothing in reply. He waited. At last he spoke.

"Won't you take me back?"

"No." There was no bitterness in her voice.

"I've talked it over with Mother," she said quietly, "and I guess I'd better not. I'm sorry, but—" she opened the door and drew back into it—"you didn't trust me."

"Lyda, I'd never do it again."

But the girl shook her head slowly, in that unmistakable way which conveyed to him there was no hope.

"Yes you would," she said. "You couldn't help doing it, because you're that kind."

Was she right?



"Lyda, I'd never do it again"

one to whom up to the present moment there had never been anything but the most ardent adoration, and in whom she had never even suspected such a large vein of sullenness, obstinacy, obtuseness—call it by whatever name one chooses—Lyda's eyes blazed. But with a feminine restraint she held herself together. Here was a chance to test this lover, so suddenly revealed in a new light. She smiled, as she said slowly, as if measuring her words:

"I'd stop work at any time if I could have some fun. Why shouldn't I? I can tell you I'm not going to be a drudge all my life."

Horace drove on silently. "If you think I'm going to be tied down to a house all the time, you're mistaken. I'm not that kind."

No reply from Horace, and neither spoke again during the journey to the fair grounds.

ARRIVING there, Horace put up his horse in the shed and Lyda joined the crowd. Presently he came back, and they walked along together, still silent. Soon, however, Lyda caught sight of someone she knew, a young man named Stenhall, who lived over the line in the next county.

"Hello, George!" she cried. "Hello, Lyda! Hello, Horace! Come over to the dancing pavilion."

"I'm not interested in dancing," said Horace sullenly.

"Well, I am," said Lyda. "And you can come or not," she whispered. "I'm going to have a good time." Thereafter Horace caught glimpses of her in the distance having her "good time" with other friends, for Lyda, being a pretty and vivacious girl, was a general favorite, while he took a sedentary interest

It Always Pays to be Observant
It May Mean \$1,000 for You in This Instance

The Farm Implements Puzzle Game

Fun for Everybody in a Fascinating Pastime

By the FARM IMPLEMENTS PUZZLE GAME EDITOR

HERE, folks, is something to help you spend your long winter evenings in an interesting and profitable manner. A Game which will sharpen your wits and develop your powers of observation. Observation, as you know, is what is responsible for more development than any other one human characteristic.

If Ben Franklin and Edison hadn't been of observing natures, in all probability we would all be burning tallow wicks. If farmers of past years hadn't been of the same inquiring frame of mind, we would still be scratching the ground with a wooden stick or harrowing with the top of a tree.

Much depends upon a man's use of his powers of observation. In the large degree the more he tries to develop his observative powers, the greater his chances to score a big success. We hear reference to "modern methods," "scientific systems," etc. Reduced to one word, these are invariably the result of observation.

We hope to have space in succeeding issues to sketch, briefly, such fascinating histories as the story of the plow, harrow and other commonly used implements. But here we barely have space enough to announce a brand-new Game for our readers—old and young—to furnish a means of practicing their observation and of sharpening their wits.

We can explain our new plan quickly and easily. It is to be known as the FARM IMPLEMENTS GAME and it will consist of fifty clearly drawn pictures, each representing some farm implement, implement part or mechanical term. These pictures will have no titles given them in advance. Readers will be invited to study the pictures and make title suggestions. When all fifty pictures have appeared, readers will file their sets of title suggestions and a committee of prominent and disinterested men will pass upon them and select titles which, in their judgment, are most fitting or applicable to the pictures. Awards, totaling \$3,500, as explained further on, will then be given those whose title suggestions are deemed best by the judges. A sample picture and five regular pictures (Nos. 1 to 5, inclusive) appear on this page so you can start playing the Game at once.

We want to point out that this Game is one in which everybody can take part. We want the women folks to try their ingenuity, too. And even the young folks, who are always good at puzzles, will find this more fascinating than the usual picture puzzles without much call for real ingenuity and little or no rewards for solving them. The young folks should be encouraged to play the Game.

To make the Game one which anyone can play intelligently and with benefit, and to meet the natural argument, "But I know little or nothing about farm implements or machinery," we have prepared an alphabetical list of about three thousand implements, parts and mechanical terms, all of which will be found in the average farm's equipment. With such a list for guidance of all, the person who knows absolutely nothing about machinery has every bit as good an opportunity to play and win as an expert. From this list, ideas for the pictures were obtained, and in this list the answers surely will be found.

With pictures and the list before you, the Game becomes both simple and easy. You study the pictures and then run through the alphabetical list to see if the ideas which occur to you can be used and also to get new ideas. The sample picture and accompanying matter explain this thoroughly. We call the list The Official Key Book because, containing as it does titles which will be selected for the pictures, it is truly the key to correct solution of each picture and, in this way,

the key to success. The rules of the Game do not require that you refer to the list but we cannot conceive of anyone playing the Game with the idea of submitting a carefully prepared set to win an award, yet not taking advantage of the assistance the Official Key Book offers.

Those who desire a personal and private copy for ready reference at all times can obtain a copy free and prepaid, as a reward for sending us \$1.00 for a three-year subscription to FARM AND FIRESIDE, new or renewal. Full subscription credit will be given and the Official Key Book, along with all data and instructions (Rules, etc.), will be sent without a cent's additional charge. If you are already a regular subscriber to FARM AND FIRESIDE, your subscription will be extended for three years from your present expiration date and if you are a new subscriber, three years' credit will be given you from date of first issue mailed you. By taking advantage of this offer you will receive each issue of FARM AND FIRESIDE which will contain additional pictures and further announcements about the Farm Implements Game. You will also have the Key Book and full details so

you can play the Game intelligently from the outset.

It is not a requirement that you be a subscriber for FARM AND FIRESIDE, because anyone may play the Farm Implements Game and try to earn an award. We will however, be pleased to send a copy of the Official Key Book and much helpful information free and postpaid to every reader who sends a three-year subscription to FARM AND FIRESIDE. This subscription may be your own new or renewal subscription or it may be a subscription of some neighbor. You will find the Official Key Book of value in finding fitting titles to the fifty pictures which will appear in FARM AND FIRESIDE.

Whether you take advantage of this offer or not, write for complete information concerning the Game. A post card will do. After carefully reading the folder which we will send you, you can decide intelligently, but if you do not take advantage of our offer to send complete details free you will be unfair to yourself.

It may surprise you to learn we intend to divide the substantial sum of \$3,500 among four hundred readers who submit the best sets of title suggestions. And wouldn't it be fine if your set of answers were considered the best and you were so fortunate as to receive the biggest award?

We offer for the best set of title suggestions as defined by the rules \$1,000.00
For the next or second best set we will award 500.00
For the third best set. 250.00
For the fourth best set 125.00

For the fifth best set \$100.00; for the sixth best set \$75.00; for the seventh best set \$50.00; for the eighth best set \$50.00; for the ninth best set \$25.00; for the tenth best set \$25.00; for the eleventh to fiftieth best sets \$10.00; for the fifty-first to one hundred and fiftieth best sets, \$5.00; for the one hundred and fifty-first to three hundredth, \$2.00; for the three hundredth to four hundredth best sets \$1.00, making a total of four hundred awards amounting to \$3,500.

The \$1,000, which is the first award—just think of it, \$1,000 for fitting titles to pictures, pictures of farm implements which you see about you every day—and three hundred and ninety-nine smaller amounts will go to someone. Why not you? I hear you say you have "never tried" your skill in this way. You are able to accomplish almost anything you really determine to do, why not decide to play the Farm Implements Game so well that you will be among the winners?

You will find this game a mighty fine mental recreation and relaxation. Play it! Get those around you to play it! You have our assurance that every participant, whether a subscriber or not, will receive honest treatment. The judges will be reputable men of standing, whose names we will announce later, and whose decision will be fair and impartial.

As editor of the Farm Implements Game it is not my intention to just publish the pictures in FARM AND FIRESIDE and then let you flounder around in the hope that you may be clever enough to get all the answers right. No indeed, I'm

going to help you. But there are certain fundamentals and a knowledge of the way to proceed will be very helpful. I'm going to give you every help I can. I intend to print some suggestions in every issue. Watch for them.

Right now, send me your name and address so I can send you the folder with all details, or better still, send one dollar for three-year subscription and free Key Book and all details. Watch for my announcement in the next issue, and in the meantime send a postal for the Farm Implements Puzzle Game Folder, which is free. You do not obligate yourself in any way if you send for information.

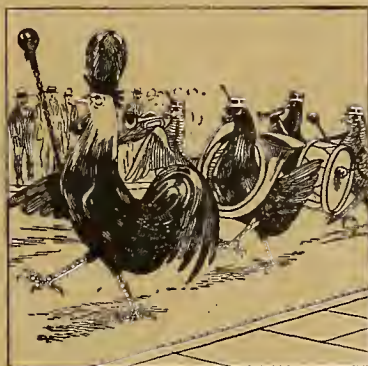
HERE IS A SAMPLE PICTURE

(See the First Five Numbered Pictures at Lower Center of Page)

The picture opposite is a sample picture to show you how pictures are drawn to represent farm implements, parts or items having to do with farm machinery and so show you just how you play the Game.

Look at the sample picture. What does it immediately suggest to you? Let's take a few titles from the Official Key Book.

- | | |
|------------------------|--------------|
| Alfalfa Cultivator | Leg Band |
| Asparagus Buncher Band | Poultry Band |
| Barb Wire | Perch |
| Cattle Fence | Scalding Vat |
| Double Trees | Sweep Rake |



There is nothing in the picture which suggests "Alfalfa" or "Asparagus" is there? "Band"—that sounds promising. It is surely a Band, but is that the best possible suggestion? Let's look further and carefully, "Barb Wire"—no, nor "Cattle Fence." What's this, "Leg Band?" No, that's not as good as Band, but Band is surely—here it is! "Poultry Band." Certainly, what else could it be? And there comes the Poultry Band, every little chick-musician playing away for dear life with the proud rooster drum major in the lead! Easy, isn't it? Fun, too?

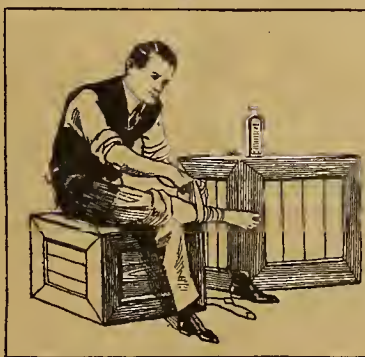
Of course not all pictures will be as easy as this to name. The fun will be all the greater because of this, and don't overlook the size of the award to four hundred successful contestants. AND REMEMBER, THE TITLE TO EVERY PICTURE IS IN THE OFFICIAL KEY BOOK, because only those listed there will be considered. Surely, then, you can study the pictures and list with splendid results for yourself!

Regular or Official Pictures Nos. 1 to 5, inclusive, also appear on this page. There will be fifty in all and all fifty will appear between now and the January 20th issue. Until February 20th there will be a filing period, during which time you may submit your complete sets of title suggestions. No sets must be filed before January 20th, and all sets must be filed before midnight of February 20th. Examination of sets will then begin immediately.

Here are the first five pictures. Each represents some farm implement or implement part or mechanical term. What titles do they suggest to you?



What Farm Implement, Machine Part or Mechanical Term Does This Picture Represent?



What Farm Implement, Machine Part or Mechanical Term Does This Picture Represent?



What Farm Implement, Machine Part or Mechanical Term Does This Picture Represent?



What Farm Implement, Machine Part or Mechanical Term Does This Picture Represent?



What Farm Implement, Machine Part or Mechanical Term Does This Picture Represent?

Letters From a June Bride

Betty Discusses a Sewing Problem



For Novel Trimming

By Lillian Grace Copp

IN PLACE of braid to trim your early fall gowns, make your trimming by crocheting with buttonhole twist of fancy shades a narrow edge, made from copying the design in insertion, not more than one-half inch wide. Another novel touch may be given by making a crocheted cord of buttonhole twist. This is accomplished by making a long chain, then covering the chain with single crochet.

Still another effective touch may be secured by making a loose chain of heavy embroidery silk, then with silk of another shade, one that contrasts prettily, run a stitch through the chain, putting over and under each loop, so the running stitch will come precisely through the center of your chain stitch. You can get no idea of the real beauty of these little individual touches without working them out.

Mending Underwear

By Mildred G. King

THE greatest difficulty in mending knit underwear is that running stitches, either hand or machine work, will break, however loosely they are put in. To put patches on knit underwear that will last as long as the original garment can easily be accomplished. The whole secret is revealed in the following directions:

Put on the garment to be mended, and take either the legs of old white cotton stockings or of a discarded union suit, cutting your patches as large as desired. Pin them over the rent while you still have the garment on. This stretches both garment and patch, and no undue strain can come on the stitches.

Remove the garment, and with coarse double thread pulled very loosely cross-stitch your patch on both the right and the wrong side of the garment that is being mended. This finishes both edges firmly. I have had garments mended in this way that the patches were still intact after the original union suit was beyond wear.

Some Good Cakes

By Alice M. Wharton

ACAKE in the pantry is worth ten in the cookbook, and there is nothing that will give the emergency dinner an atmosphere of calm preparation like a plentiful supply of tempting slices of cake. Here are some good recipes:

SPICE CAKE—One cupful of brown sugar, two eggs, two big tablespoonfuls of lard, two and one-half cupfuls of flour, two teaspoonfuls of baking powder, one teaspoonful of baking soda, one teaspoonful of ground cinnamon, one-half teaspoonful of ground cloves, one-half teaspoonful of ground allspice, and a little ginger. One-half teaspoon-

ful of vanilla, one-half cupful of cold coffee, a little less than one cupful of sour milk, one cupful of raisins, well floured. Mix the sugar and lard together, next adding the eggs. In another pan sift the following ingredients together: flour, baking powder, baking soda, cinnamon, cloves, allspice, and ginger. Then to the first mixture add the cold coffee and sour milk, stirring continually, then gradually add the dry ingredients which have been mixed together, then the vanilla, and last the raisins. This batter should be rather stiff, and should bake in a slow oven for about one hour.

SILVER CAKE—One cupful of sugar, one-half cupful of butter, whites of three eggs, one-half cupful of milk, two teaspoonfuls of baking powder, one teaspoonful of vanilla, flour enough to make a thick batter. Cream sugar and butter, add milk and a little flour. Then beat whites to froth, add them and flour until thick enough, baking powder and vanilla. Bake about one-half hour.

HICKORY-NUT CAKE—Beat one small cupful of butter and one and one-half cupfuls of sugar to a cream. Flavor and add yolks of three eggs. Work through a sieve one teaspoonful of baking powder and three cupfuls of flour. Mix with other ingredients. Add slowly one cupful of milk and one cupful of walnuts, chopped fine, then the beaten whites of three eggs. Bake about three quarters of an hour in pans lined with greased paper.

GOLD CAKE—One cupful of sugar, one-half cupful of butter, yolks of three eggs, one-half cupful of milk, two teaspoonfuls of baking powder, one teaspoonful of vanilla, and flour enough to make a stiff batter. Cream the butter and sugar, add the well-beaten yolks of eggs and milk; then the flour, baking powder, and vanilla. Bake about one-half hour.

POOR MAN'S CAKE—One cupful of cooking molasses, one-half cupful of lard, one and one-half cupfuls of brown sugar, two teaspoonfuls of soda dissolved in sour milk, one pound of raisins, one cupful of English walnuts, three cupfuls of flour. Mix together, and bake in a large pan for an hour, slowly.

Household Hints

TO AVOID APPLE STAINS—After peeling apples, immediately wash your hands in clear cold water, omitting the use of soap. You will never again be troubled with apple stains.
H. G. W., Louisiana.

TO LAUNDRY WHITE SILK—If a tablespoonful of peroxide is added to water in which white silk is washed, as well as to the last water in which it is rinsed, your silk will never turn yellow.
J. E. R., Alabama.

RAISING THE WORK TABLE—If your back aches from bending over a table that is too low for you, get four blocks of wood of equal size and cut a hole in each. Then set the table upon the blocks.
C. M., Illinois.

IMPROVED TONGUE FOR BUCKLE—Nearly everyone is familiar with the cardboard buckles made at home for covering with silk, etc., but not many know a tongue can as easily be made for the buckle by sewing a celluloid collar supporter to the back.
A. C. C., Kansas.



DEAREST SISTER:

The morning chores are over and the last of our old roosters has already been popped into the fireless cooker, so, unless something unexpected should happen, I shall have an uninterrupted hour for writing. This last week has been just as full as usual, though nothing of special importance has happened. I am enjoying my new coal-oil stove more and more every day. It's perfectly wonderful how much cooler the house is, without the extra heat of that great kitchen range. I am keeping accurate account of the amount of coal oil I have used, and so far the average has not been over 45 cents a week, which includes all the cooking except baking once a week, which will have to be done on the big stove until I have saved up enough egg money to buy the two-burner oven.

Yesterday morning I was in the midst of the monthly accounts, trying desperately to make both sides of my trial balance look alike, and was just beginning to wonder why we had ever undertaken such a complex system of bookkeeping, when Carrie Jones telephoned and said if I didn't mind she was coming over to spend the day with me. You can imagine how delighted I was to put those books away! I spread the matting rugs on the front porch, put some fresh flowerers on the table to look inviting, hung up the hammock, and made everything as attractive as possible, so we could just sit and rock and be thoroughly comfortable and lazy.

All my nicely laid plans were frustrated, however, when Carrie arrived, laden with a bundle of sewing and full of explanations about how her sewing machine had gone out of commission just as she was ready to put the finishing touches on the last of the four house dresses over which she had been slaving for the past two weeks, and how she knew I'd be only too glad to let her do the final stitchings on mine. I confess I couldn't help feeling a bit disappointed at the turn things had taken. Not that I wasn't only too delighted to let Carrie use the machine. The poor old thing has been getting stiff in the joints for want of exercise anyway. But the fact is that Carrie, who can be so funny and interesting as a front veranda guest, is quite a different person when she is playing the rôle of seamstress. She looked pale and hollow-eyed to begin with, but by the time the day was over she confessed she was ready to scream with nervousness. And so was I.

As I had expected, there was a great deal to be done besides the "finishing touches," or else Carrie considers everything finishing touches after the pattern is cut out. In the first place, there was the hanging of the skirt, to accomplish which Carrie stood, for at least an hour, in front of the mirror and revolved around very slowly while I, on my hands and knees, made frantic endeavors to ascertain whether there was a quarter of an inch dip over the right hip, or whether, after all, it was the back gore that was too long. When this had been settled to the satisfaction of us both, there was the collar to attend to. For some unexplainable reason it refused to "set" right, and we couldn't come to an agreement as to the best way to remedy it. Carrie tried her way first, which was a rather long and tedious process. When that didn't make any improvement we tried my way with no more satisfactory results. In spite of all we could do, there was an ugly pucker at the back of the neck where the picture showed a soft, graceful fold.

Finally, in desperation, I suggested telephoning to Mrs. Green. I never in my life knew anyone like her. She seems to understand sewing by instinct. You hear of people being born with a silver spoon in their mouths, and I certainly think Mrs. Green was born with a needle in her hand. In a moment she had explained away all our difficulties. It seems Carrie had cut the neck out too much in the back, and it needed building up a little before the collar could be properly adjusted.

"Doesn't it seem too perfectly ridiculous?" I said when the pucker had disappeared and we had returned to something like calmness. "Here are we, two grown women, who like to call our-



selves intelligent, struggling to do something that is not only irksome to us but for which we have no more talent or natural inclination than that chicken out there

has for landscape painting. Why is it we call Mrs. Green competent? It's because she goes ahead and does the things she can do well and doesn't attempt a lot of things outside her realm. Perhaps she can make her clothes at home cheaper than she can buy them, but is that any reason why we should go blundering on, spending a useless amount of time and energy making things that never look quite right when they are finished—all because we cannot get away from that old worn-out idea that the woman of the house should do her own sewing? There's no more reason why we should do our own sewing nowadays when ready-made things are so cheap and satisfactory than there is for us to make our husbands' suits and weave our own cloth, and all the other things that our great-grandmothers used to take as a matter of course."

Carrie's only reply to all this heresy was that she knew I was altogether wrong. Did I suppose for one minute that she would be worrying herself sick over sewing if it wasn't a great saving in money, etc., etc., and to prove her point she told me all the cost items for the dress she had just finished. I took them down just as she gave them to me, and this is what it showed.

6 7/8 yards percale at 10c.....	68 3/4¢
3/4 yard chambray at 9c.....	6 3/4¢
9 pearl buttons at 12c.....	9
Thread	5
Pattern	10
Total	99 1/2¢

This was the actual money cost without taking into account the nerve-racking hours spent in making it, hours which might have been devoted to something that would have added much more to the family efficiency. Nor did it take into account the fact that, neat and substantial though the dress was, there was an unmistakable "amateurishness" about it, as well as a complete lack of that indefinable thing called style.

Then I got out a number of catalogues which had been sent to me from various large city stores, and we found any number of most attractive house dresses, priced some of them as low as 98 cents, though the average price was either \$1.25 or \$1.50. Carrie was surprised, and said she had never realized that ready-made dresses of such good style and quality could be bought so cheap.

Perhaps, as Carrie insists, these ready-made things won't "hold together" as long as the ones made at home, but even so I can't see that that is any special disadvantage anyhow in this day of ever-changing styles.

Billy was perfectly delighted when I told him I was going to send away for one of these dresses, and said he knew I'd come to it sooner or later. We selected one for \$1.25, which sounded, from the description, as much like Carrie's dress as any two could be: "Very becoming house dress of checkedingham, combined with plain chambray. The waist is made in bolero effect and has three-quarters length set-in sleeves. The skirt is plain and has two patch pockets of blue chambray."

If it turns out to be as satisfactory as it sounds I shall buy everything I need this fall ready-made, and shall bend my energies to making money instead of trying, in such an inefficient way, to save a few pennies. Perhaps I shall be able, after all, to fill Mrs. Perrin's order for marmalade and make a little extra Christmas money. Wouldn't that be fine?

LATER: I was interrupted before I could finish my letter the other day. In the meantime my dress has come and is even nicer than I had expected. Billy says it is the prettiest house dress I've had, and I believe he is right. It will need to be shortened a little, but otherwise 36 fits me perfectly. The quality of material is quite equal to Carrie's dress.

Betty

E-W

Half-Wheel Lace



ONE of the most adaptable designs which Farm and Fireside has offered is presented here. It will serve to finish table covers, pillow slips, or doilies, and may easily be used as a corset-cover yoke. For four cents in stamps the Fancy-Work Editor of Farm and Fireside, Springfield, Ohio, will send complete directions for making.

Good Health Talks

By DR. DAVID E. SPAHR



EVERYTHING possible should be done by the expectant mother to keep herself in the best possible physical and mental tone. For the first, she will need to attend with especial fidelity to the requirements of hygiene, and for the second, to make her environment as happy and her mind as care-free as she can.

Nothing which will improve her health or save her pain or distress should be neglected.

She should have an abundance of pure air in her home and plenty of outdoor exercise. Gardening, walking, or other outdoor pursuits not too strenuous will help to keep her in good physical trim and will give variety and interest to her life.

Her clothing should be loose and comfortable, and as light in weight as consistent with proper warmth. Her diet should be simple, easily digestible, and not too great in quantity, but should be of considerable variety. Tea and coffee should be used sparingly. Fruits, brown bread, whole wheat bread, and laxative fruit syrups should be included.

As a wise preventive measure, she should have her teeth examined and treated, if necessary, by a competent dentist.

A cheerful, agreeable home atmosphere and loving attention from the other members of her family will do much by banishing worry and depression from her life.

Pain and Soreness of Left Side

My husband has suffered for eighteen months with a soreness and pain in his left side under his ribs. The soreness extends under the ribs and around to the back. It is accompanied by a stinging, burning pain. He has consulted three doctors; one said it was a strain, and the others owned up that they did not know just what it was.

Mrs. M. P., Kansas.

I THINK your husband's trouble will likely be found in the large bowel—the colon—possibly impaction or inflammation. Nothing short of a physical examination would reveal the real trouble. In the meantime take one tablespoonful of paraffin oil three times daily.

More Climate.

My husband is subject to catarrh, colds, and la grippe, and wants a better climate. We lived in the Black Hills for five years, and he was free from all of these things. Have planned to make our future home in Wisconsin or Minnesota, but want advice. We are farmers.

Mrs. C. F. V. D., South Dakota.

WHY not return to the Black Hills? Do not think either of the States would be an improvement. Perhaps Colorado, Kansas, Oklahoma, or Texas would be better.

Injury to Nails

My finger nails get sore and come off, or I injure them so they come off, and then they are slow about growing on again. After I have dropped something on them they hurt for a while, then apparently get well, but soon begin to leak matter from under the nail, then finally come off, and never are fully restored again. Only come out about halfway and then stop growing.

E. W. K., Washington.

WHEN a nail is severely injured and the nail comes off, it is never completely or perfectly reformed, as the matrix has become inflamed. You should not expect such a result.

Otitis

I have a son five years old whose ear runs continually. I have used an ear syringe for two years. His ear does not pain him.

Mrs. W. B. P., Kentucky.

USE the following wash: Boric acid, 10 grains; aqua and alcohol, of each 4 drams. Mix and inject into the ear from five to ten drops night and morn-

Headache

What causes sharp pains in the head and left side? Could it be from eating too much sweets between meals?

W. S. S., Virginia.

Yes, and I would advise you to cut it out.

E



The world's greatest artists entertain you on the Victrola

No matter where you live, you can hear in your own home the best music of all the world. The Victrola brings to you the superb art of the most famous singers, musicians and entertainers who are the delight of thousands in the great musical centers. And on the Victrola you hear them absolutely true to life—just as though they were actually standing before you.

Any Victor dealer will gladly show you the complete line of Victors and Victrolas —\$10 to \$400—and play the music you know and like best. Write to us for catalogs.

Victor Talking Machine Co., Camden, N. J., U. S. A.

Important warning. Victor Records can be safely and satisfactorily played only with Victor Needles or Tungsten Stylus on Victors or Victrolas. Victor Records cannot be safely played on machines with jeweled or other reproducing points.

Victrola

To insure Victor quality, always look for the famous trademark, "His Master's Voice." It is on every Victrola and every Victor Record. It is the only way to identify genuine Victrolas and Victor Records.



Ask the Advertisers

Manufacturers who advertise in FARM AND FIRESIDE are anxious to tell you more about their goods than is contained in the advertisements. Write for their catalogues. You are in no way obligated to buy when you ask for more information. Advertisers seek to give you all possible information as to what they have to sell, even if you do not buy at once.

They want you to know about the goods they have to offer, because they value your help in telling your friends and neighbors about them. If you know the good points of their wares you can do this.

So do not hesitate to ask them questions—advertisers in FARM AND FIRESIDE are all reliable. We have investigated every one of them and guarantee their reliability.

TWO BIG BARGAINS

Our Housewife Club

BY SPECIAL arrangement with the publishers of the Housewife, you can get this splendid paper for one year in connection with FARM AND FIRESIDE at a special reduced price.

The Housewife is a bright, entertaining monthly magazine containing many wholesome serials and short stories and articles of unquestioned merit. It is a magazine that a woman looks forward to receiving each month. It is well illustrated with the work of the best known artists. Housewife is edited by Lillian Dynevor Rice.

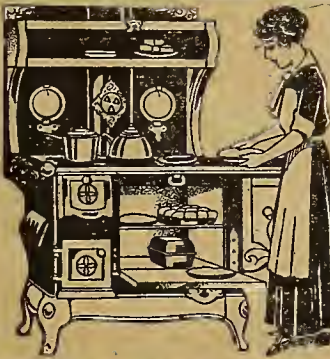
Farm and Fireside, 1 year, regular price 50c } Both for
The Housewife, 1 year, regular price 50c } 60 Cents

McCall Club

MCCALL'S MAGAZINE needs no endorsement. It is easily worth \$1.00 a year. A single copy will often contain more than one hundred pages, and it is handsomely illustrated. It is a dependable fashion guide, and each issue contains from 50 to 60 of the latest designs, some of which are illustrated in colors, of the celebrated McCall patterns. The leading fashion experts of the world contribute to this magazine.

Farm and Fireside, 1 year, regular price 50c } Both for
McCall's Magazine, 1 year, regular price 50c } 70 Cents

FARM AND FIRESIDE, SPRINGFIELD, OHIO

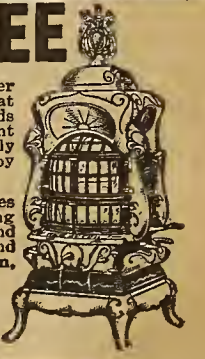


HOOSIER Stoves Ranges FREE Heaters

To try in your own home 30 days free, no matter where you live. Show your friends. Send it back at our expense if you do not want to keep it. Hundreds of thousands in daily use. Perfect bakers, efficient heaters, made of high grade material, beautifully finished, smooth design, guaranteed for years by our Two Million Dollar Bond.

Ask your dealer to show you "HOOSIER" Stoves and Ranges. Write for our big free book showing photographs describing large assortment of sizes and designs of cast and steel ranges, cast cooks, soft and hard coal heaters and base burners to select from, explaining our free trial offer. Send postal today. Write name and address plainly. No obligations.

HOOSIER STOVE COMPANY
126 State St. MARION, INDIANA



Distillers' Grains

ATLAS DAIRY FEED contains three times the protein and fat contained in corn, oats, barley, bran, etc., and costs far less. Sign Coupon for FREE Sample.

Why pay \$26.00 for corn; \$26.00 for oats; \$21.00 for bran and \$27.75 for barley, when Atlas Distillers' Grains cost only \$22.00 per ton, bulk, f. o. b. Peoria?

ATLAS contains from 27% to 30% protein and from 8% to 10% fat. Other feeds analyze about 10% protein and from 3% to 4% fat.

Atlas Distillers' Grains will increase your milk and butter-fat production, and do it at a far smaller feed cost. Get the information right away.

Atlas Feed & Milling Co.
P. O. Box 54 PEORIA, ILL.

Free

Gentlemen—Please forward a FREE sample of Atlas Distillers' Grains, also FREE circular.



Nearly ALL CHAMPION Dairy Cows are fed Distillers' Grains.

Name _____

Town _____

State _____ R. F. D. _____



Children's Corner

Farmer Jones's Flowers

By Anna C. Chamberlain

THE birds sang in the hedges, the bees boomed in the clovers, and the breezes hummed cheerily through all the swaying branches.

Truly, Grandpa's home in the country was a delightful place. The twins, Tom and Billy, who had not been here for two years, when they were tiny tots of four, had quite forgotten how pleasant it was to run about under the trees and listen to all the lovely sounds. They were quite delighted when Grandma asked them to go down the hill and across the meadow, over to a small piece



"I don't really raise thistles"

of plowland where Grandpa was working, and carry him a drink of cool water.

"It may be a little easier going back by the road," said Grandpa when he had taken a long drink from the bright tin pail and hidden it in a shady place to keep cool till next time.

That is how Tom and Billy happened to come home beside the border of Farmer Jones's farm, and saw just beyond his fence such a fine patch of beautiful red flowers.

"Just like the park," said Billy, peering through the fence.

"Or the greenhouse," added Tommy, his head close by Billy's as they looked and longed.

Then they saw, right next to where they stood, a small gap in the fence quite large enough for a small boy to crawl through, and almost before they knew they were inside among the flowers which they so admired.

"Wouldn't it be nice to carry some of these to Grandma?" they said to each other eagerly, and then they began to pick.

It was not easy to gather these tall handsome flowers, for they were very prickly, much more so than a rose, and before they had pulled more than three apiece their little hands were quite sore.

As they stopped to suck their tingling fingers they saw far off at the other edge of the pasture, but coming right toward them, a tall man followed by a large dog.

"The man who owned the flowers, maybe," thought the little boys in round-eyed dismay. For some reason they fancied the man looked like a very cross person and the dog which trotted along in such a businesslike fashion they feared might be a very savage fellow.

Perhaps the man wanted the flowers for himself! Perhaps he would be very angry!

By this time the little boys had crept out through the same little gap by which they had come in and were scuttling down the road as quickly as their short six-year-old legs would carry them.

When they had run a little way and no loud angry voice called after them, they stopped a little to take breath, and then they looked at each other again and the same thought came into each round curly head.

They had been stealing? They who went to Sunday school every Sunday and could always say the Golden Text—unless it was very, very long—had been taking things without leave.

Perhaps it was because they were twins that they always thought the same things at the same time, but they did.

"We've got to take them right back," said Billy, and Tommy gave a great gulp, for he knew that this was true.

It was not so easy going back, some-

how. There were stubby places in the road which they had not noticed before, and stones along the pathway that hurt their feet. But what was that to a pair of brave lads who were going to do right? And they walked steadily on until they came close up beside the tall man who was now at work on the very fence through which they had peered so longingly.

"These are yours," began Billy quickly, before his voice should have time to tremble.

"And we're sorry we stole," added Tommy, determined that Billy should not bear all the blame. And then they held up their beautiful bouquets—three large thistles in each—toward the tall man, who was none other than Farmer Jones himself.

"Hey? Hey?" said Farmer Jones in a most surprised way, and he set his lips together and swallowed hard. If he had not been such a very tall man with so many whiskers the little boys might have thought he was going to laugh. But he did not look at all cross now, nor did the big dog, who came up quite close and wagged his tail reassuringly.

"We took them without leave, you know," went on Billy, for the farmer looked very much puzzled.

"Cause they were so pretty," added Tommy, helping out.

"Oh, I see!" said Farmer Jones, "and now you've brought them back. Now, that was exactly right, but you may just as well have them as not. Of course it's best to ask leave, and I'm real glad you've been taught right. But you're welcome to the flowers. You see, I don't really raise thistles, not as a regular crop, and I don't prize them one bit. You're entirely welcome to help yourselves at any time."

"Thank you," answered Billy. "We will."

"Thank you," said Tommy in his turn, and then they started to go home.

"Don't mention it," returned the farmer pleasantly. "Come and see us whenever you can find time."

"Thank you," replied Billy politely.

"We will," added Tommy, and as he and Billy hurried home to Grandma with the flowers the road seemed once more delightfully smooth and pleasant to walk upon.

Names and Romance

By C. I. Junkin

THERE'S no romance
In hog or swine;
And pig and pork
Do not sound fine;
But any man
Would quickly waken
To write a poem
On "Breakfast Bacon."

The Pride of Competition

By Wellington Brink

"I SEE from the papers that you have entered some chickens in the show," commented Mrs. Heighton's sister from the country. "I was rather surprised because you hadn't said anything about it in our many telephone conversations."

Mrs. Heighton brightened visibly. "Yes," she said, "James and I decided we owned the equal of any pen of White

'clean' dust and lice powder in the bottom and laid the pail on its side. This done, he spent half an hour catching Silver King, who must have been aware that a broken or pulled tail feather might disqualify.

"Inside the can went the King; on went the cover. As the can began to turn, Silver King began ruffling his feathers beautifully, in an effort to maintain his balance, which was in accordance with the plan to shake the vermin killer up next to the bird's skin.

"It was a strong, stifling dust. By the time Silver King had been rolled the length of the yard, he was—well, just blue in the face. James got red. I went a ghastly white. So between James, me, and the cock we were thoroughly patriotic. Only after an appalling illness of fifteen or twenty minutes did our Silver King, our prospective prize-winner, whom we thought we'd surely killed, recover. The rest of the flock we rolled for more moderate distances.

"The birds' next big preparation for the show was a manicure and bath. James brought the exhibition coop right into the kitchen. We worked at night, so the neighbors wouldn't know what we were up to. At that, Silver King nearly blew the lid from secrecy with one of his most raucous greetings to the return of light. A blanket thrown over the coop quieted him. James and I knew from investigation in poultry journals just the best ways of scrubbing the birds' shanks and toes and of washing and drying the feathers without disarrangement.

"Then was when we faced a nearly fatal second Waterloo. I got too much bluing in the tub. When those Wyandottes came out of the water they were a dirty pale blue. I nearly sat down and cried, I was so discouraged. Well, we rinsed and we rinsed and we rinsed. Luck was with us. Next morning I could swear I'd never seen fowls of a purer, fluffier white.

"And now—oh, I'm so happy! James and I just know we'll win first prize. Why—"

"By the way," put in her sister, "what, may I ask, is the prize?"

Mrs. Heighton stiffened. "The prize? Why—oh—er I believe the management offers one of the Racket's crimson kerosene lamps. Of course," she apologized hastily, "it really would be fine were it not for the fact that we don't need it. I'm glad we entered the pen, anyway. It's so much fun—competing, you know.

"Dear, dear," she sighed heavily, "I wonder how we can use the prize! Possibly Aunt Jenny—"

Which, thought her sister; was counting her chickens before they were hatched.

THE man who sows wild oats always pays too much for the seed.

IF YOU live grandly and happily when the days are sunny, the hours which are rainy will have no dread for you.

New Puzzles

A Square Word Puzzle

The following descriptions should form a square word, the same from top down or from left to right:

1. A recess.
2. A lazy fellow.
3. A girl's name.
4. Flocks.
5. To rub out.

Omitted Words

The words to be supplied in the following sentences will make a well-known saying:

- How long will you — there?
Are you — it is correct?
— will always be welcome.
John and Kate — going there to-night.
It is — to do good.
Let us — be up and doing.
Will you — with me to-morrow?
Go —; never falter.

Answers to Puzzles

Puzzles Printed Last Issue

A Rhyming Rebus

Pledge.

EW



Another advantage of the present-style skirt

A Review of the Season's Fashions

By GRACE MARGARET GOULD



No. 3136—One-Piece Dress, Box-Plaited Effect. 34 to 42 bust. Width of skirt, three yards. Price of pattern for complete costume, fifteen cents



No. 3136



No. 3021



No. 3142



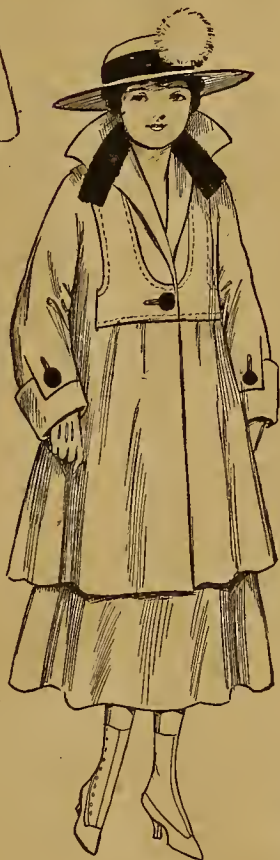
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No. 3123



No. 3142



No. 3121



No. 3021



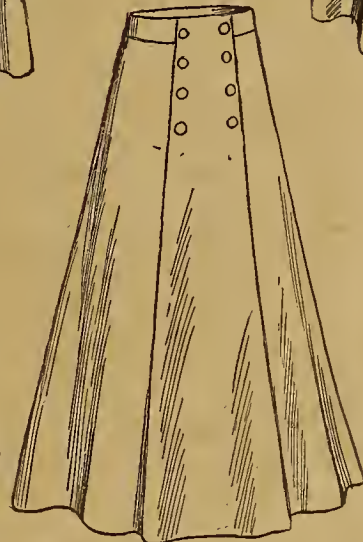
No. 2992



No. 3122
No. 3123



No. 2992



No. 2992

No. 3021—Long-Shouldered Waist, Surplice Style. 34 to 40 bust. The price of this pattern is ten cents

No. 3121—Top Coat with Novelty Belt. 14 to 20 years. Price of pattern is ten cents

No. 2992—Four-Piece Skirt, Panel Front. 26 to 32 waist. Width, three yards. The price of this pattern is ten cents

YOU can see a genuine pageant of style over on Fifth Avenue these days. The summer girl has returned to New York and is reveling in all the new clothes Madame Fashion has prepared for her.

Variety is the keynote of the pageant, and let me assure you it is a most fascinating variety too.

The Fifth Avenue Girl herself is a delight to see. She knows she is just right, and this consciousness helps her to look and act her best. What she wears, speaking of her collectively, is what all the best-dressed girls throughout the country will also want to wear this autumn and winter. Let us study the pageant and see what there is in the clothes display that will appeal most to us.

The very new change that we are sure to spy first is what the fashion designers call the Moyen Age effect. It is really just the long-waisted effect, and it is seen in many types of dress.

Coming down the Avenue on a morning shopping tour is the Fifth Avenue Girl in an everyday dress of dark blue velour de laine. The dress is one-piece and shows a pronounced drop waistline. It is trimmed with gay wool embroidery.

Then there is the coat suit which the Fifth Avenue Girl wears with so much distinction. This, too, shows the long waistline effect, indicated either by a belt or a band of fur.

There are two other types of costume seen very much just now on the Avenue. One is the Russian blouse suit of velvet trimmed with fur, the fur being used in a band at the bottom of the straight full skirt, for the collar, the cuffs, and also to trim the bottom of the Russian blouse coat. The other type is the coat dress worn with the redingote. One-piece satin dresses are very fashionable this autumn made with sleeveless redingotes of serge or velour.

A study of the fashions on Fifth Avenue brings out prominently the fact that the very short flaring skirt is out of style, at least for street wear; that skirts hang straighter, though they are still full and are much longer than they were this spring; that coats are longer too, and that hats are either very high and narrow (many in draped effect), or they are very broad of brim. There is a new sailor shape where the brim is broad and drooping that is much liked. This type of sailor is along Quaker lines, and is generally shown in a combination of felt and velvet—the brim, felt; the crown, velvet; the trimming, worsted embroidery flowers and perhaps a band of metal ribbon.

The colors that are leaders this fall are bottle-green, a new dark shade of red called "bivouac," blues that look almost black, and other blues which have a decided greenish tinge. Terra-cotta and paprika-red are introduced in combination with dark tones. Nigger-head brown and taupe and artillery gray are very fashionable.

In the way of trimming, fur leads everything else. It is used in bands—narrow and wide ones—and it is used in motifs in combination with cloth, braid, and beads. Georgette crêpe waists have their deep collars trimmed with fur and

the deep cuffs edged with fur, and fur buttons on waists of this sort are quite the vogue.

Neckpieces and muffs are extremely good style made of a combination of duvetyne or fine velour and fur. With a set of this sort the muff is round, the collar cape shaped with a high-standing collar as well, and to complete the set there is often a high-draped turban which is a combination of the fur and cloth.

Other trimmings that are fashionable are wool embroidery flowers, bead tassels, and bead motifs and brocaded ribbons. Many dresses have an effective touch given them by the application of a single design cut from a piece of brocaded ribbon.

It is to be a special season of combinations. For the very best dress, velvet and chiffon or velvet and Georgette crêpe will be combined. Velvet will also be used for the body of a dress, with broadcloth for collar and cuffs. Many dresses for semi-formal occasions will show quaint velvet basques buttoned straight down the front and worn with taffeta or brocaded silk skirts.

A tunic of tulle edged with a broad band of satin, or plaited tulle tunic, can be used with good effect to freshen up a satin evening dress. Filmy tunics are decidedly the style and, by the way, the dancing gowns this season are still to be fluffy and full, though there is less bouffancy arranged at the hips.

The fact that so many one-piece dresses are to be worn brings the separate coat into greater popularity than ever. These coats are remarkably good-looking. Their collars are big, many of them in cape effect. Frequently a soft worsted coat, say in a dull green tone, will have a cape collar of the self-fabric and over this a fur collar of imitation leopard's skin or Belgian hare. Such a coat as this has very big pockets, and it hangs straight, but with much fullness at the bottom.

Then there is another type of separate coat extremely fashionable which has the upper portion fitted and the lower part made with a decided flare. Many of these coats will be seen this winter developed in the imitation fur fabrics which are so much the vogue. There is an imitation of baby lamb, an imitation of sealskin and of astrakhan, all extremely good-looking.

Plush is another material high in favor this year, not only for winter coats but for trimming purposes. For instance, a suit coat or a long separate coat may be trimmed with plush, using it for the collar, the cuffs, and perhaps the loose belt.

Dyed moleskin is a very fashionable trimming. For instance, a one-piece dress of broadcloth which has crêpe-de-chine revers and flat collar will have an edging of dyed moleskin. The same fur in a rather narrow band will outline the two pockets of the slightly gathered skirt, and in a wider band will trim the bottom of the skirt. A greenish-gray is the most fashionable color in which the mole fur is dyed.

Our Fashion Catalog is FREE

Ask for No. 74FF



Sent Free on Request

If you are interested in the new Styles and would like to see what well dressed New York women will wear during the coming Fall and Winter, you should sit right down and write us a Post-card asking us for our new Fall and Winter Catalog, No. 74FF.

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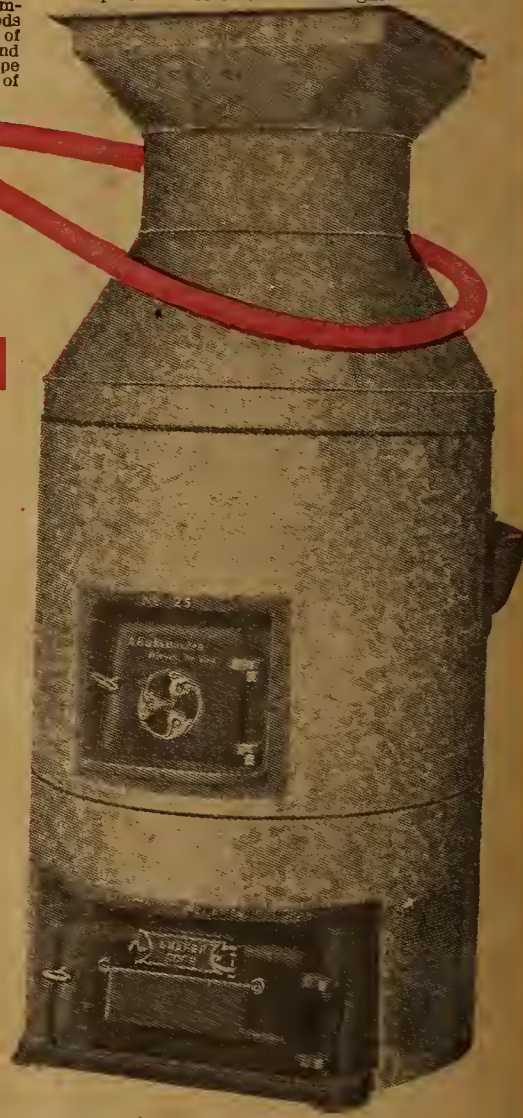
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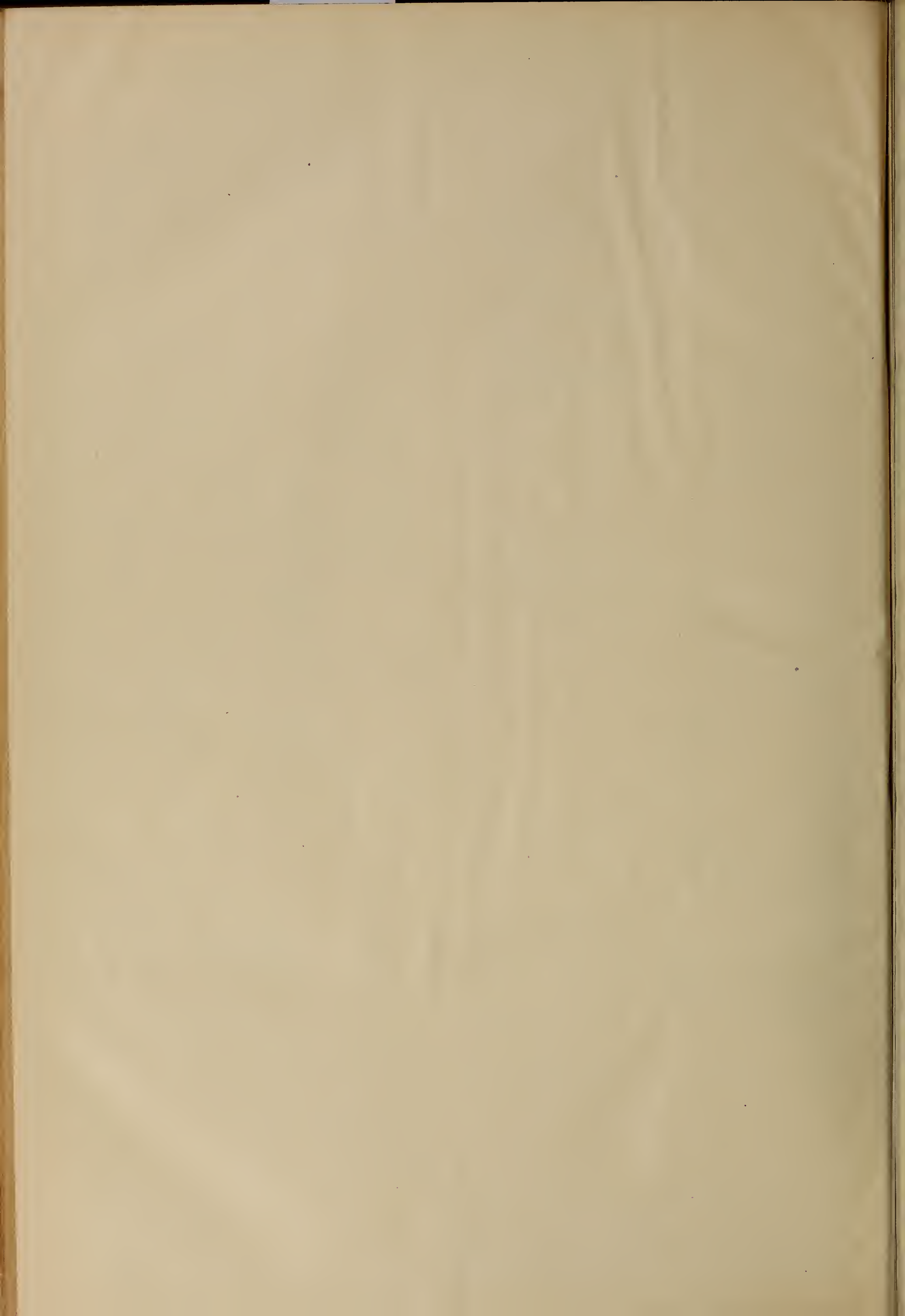
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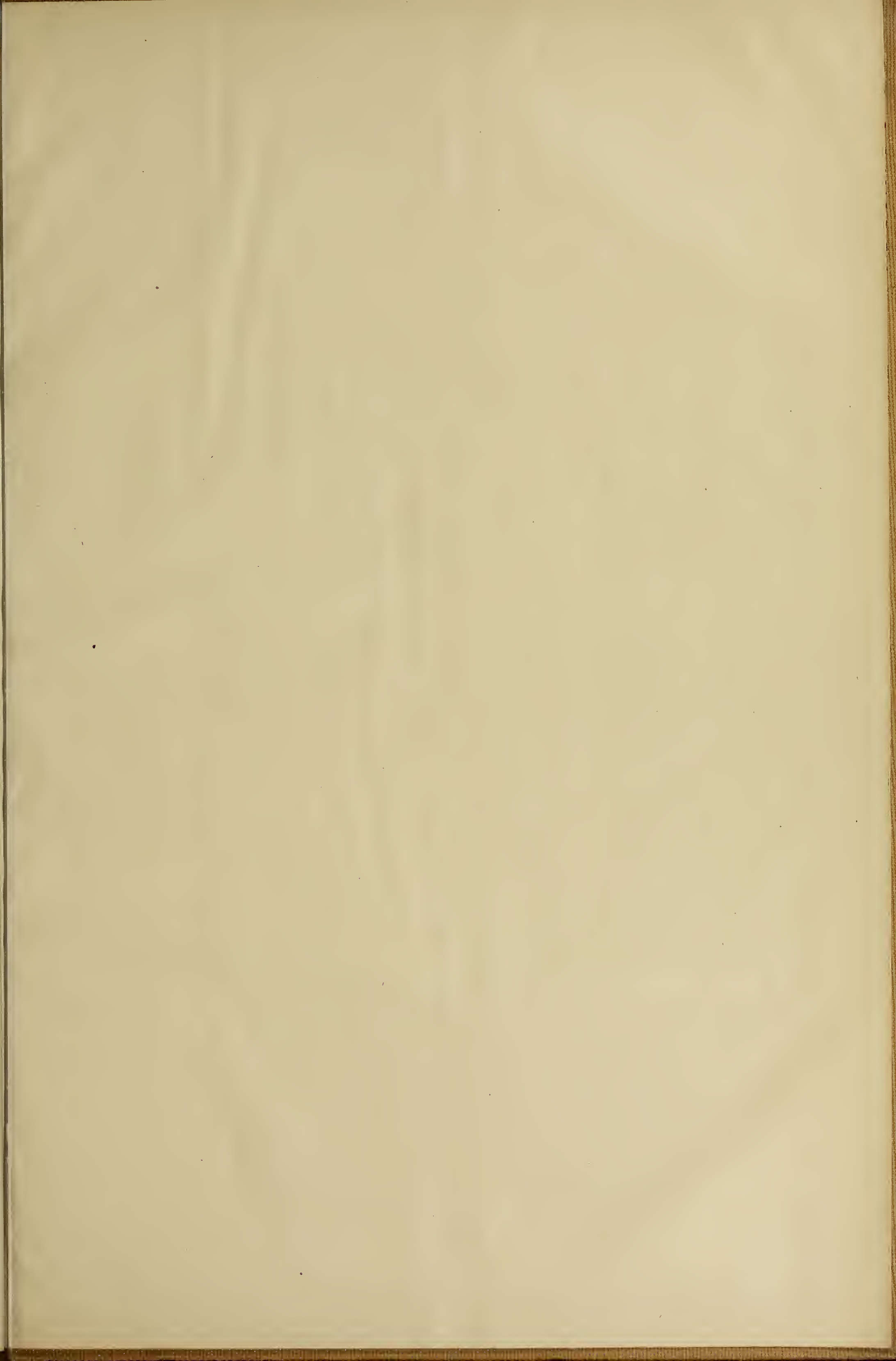


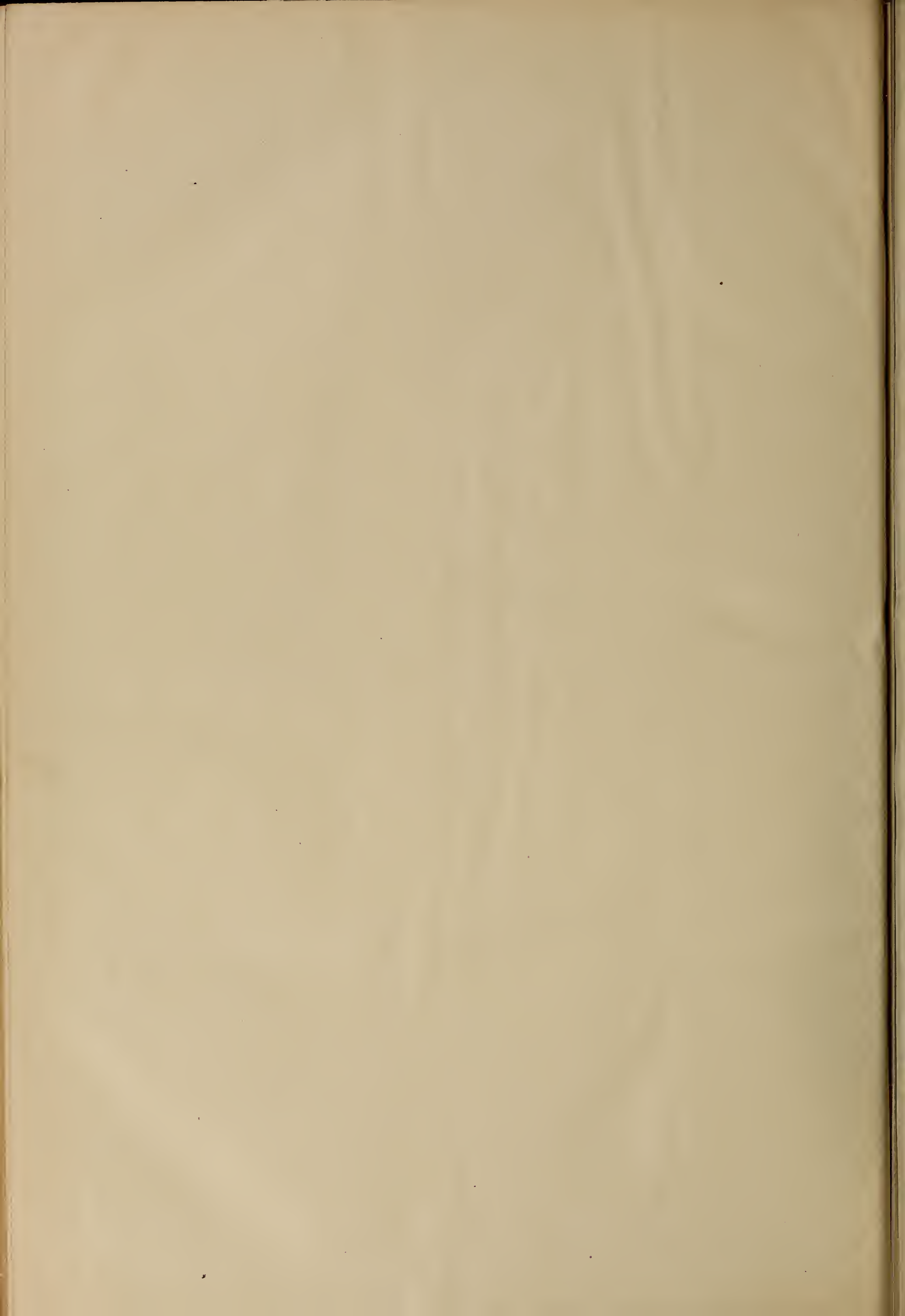
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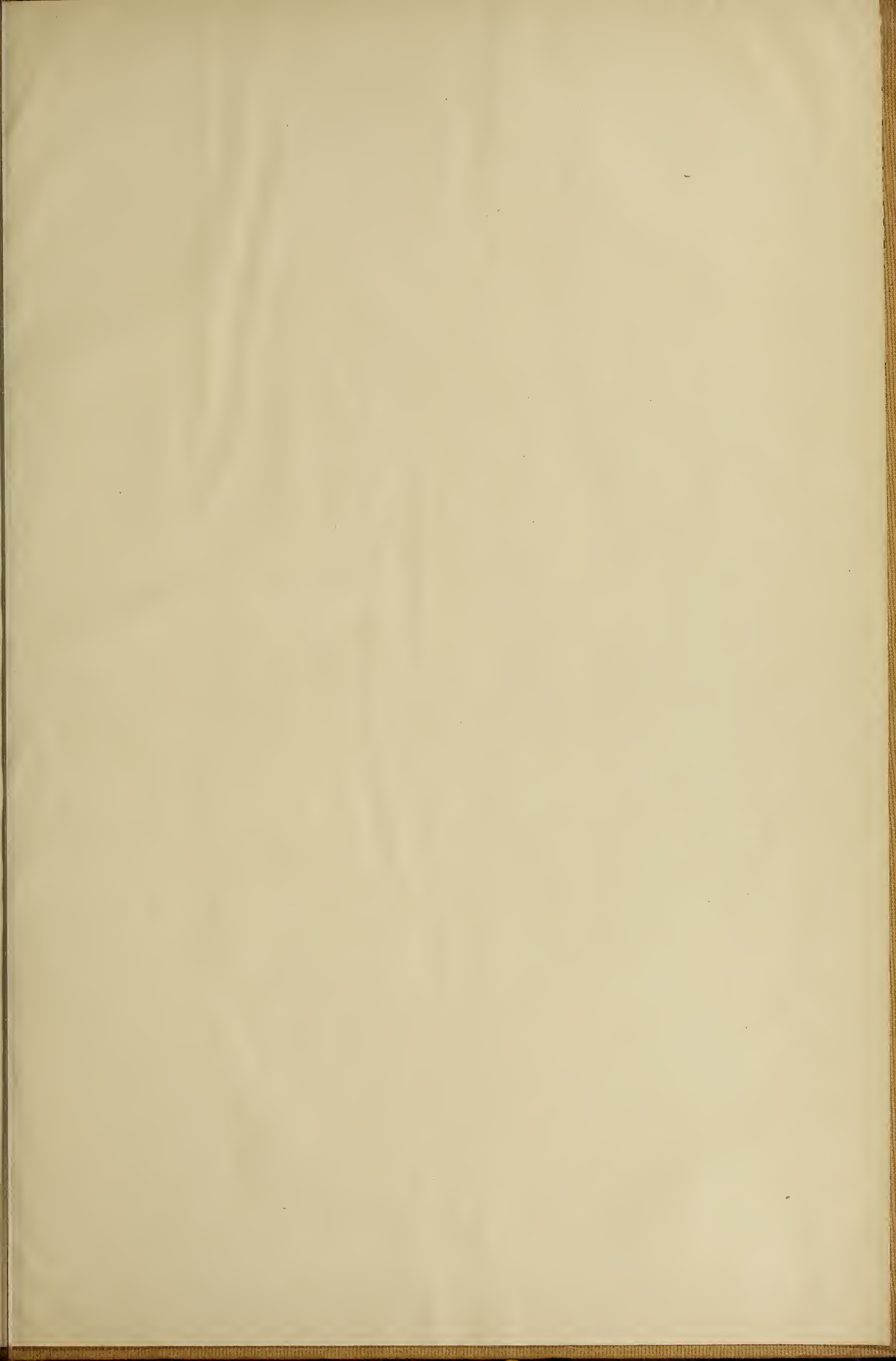
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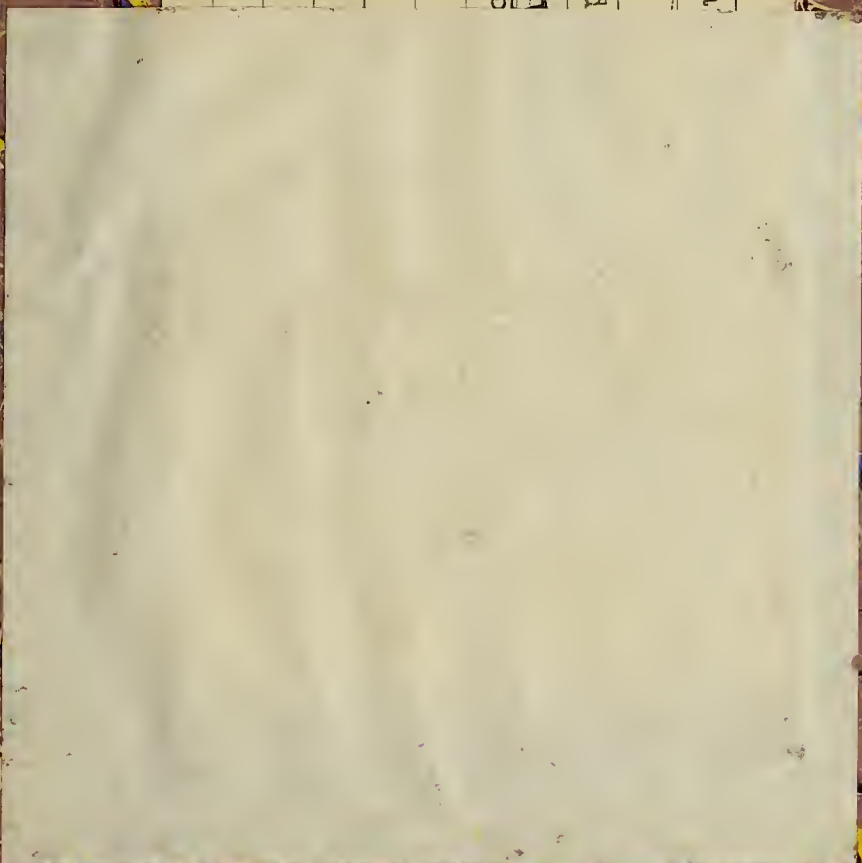








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