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Sooty Blotch on Apples

THIS disease, as the name implies, looks like small blotches of soot on the skin of the fruit. When the affected fruit is examined with a lens it is seen that these blotches are made up of a fine network of radiating threads of fungous cells, with here and there small projections made up of cells massed together. These blotches vary in size from mere dots to half an inch or more in diameter, and may coalesce so as to cover a large part of the surface of the fruit, giving it a dirty appearance that is not removed by washing.

There seems to be no record as to the origin of this disease, but it appears to be native to the southern apple-growing states. It is not definitely known how long sooty blotch has been present in Michigan, but it appears to be spreading

quite rapidly in parts of this state during the last two years. This last season it was very common on Spies, Baldwins, Greenings, Red Canadas, Pewaukees, and Mann apples from various parts of this state. It is not confined to these varieties, however, for Professor Sturgis reports it on Newtown Pippins in Connecticut, Professor Selby has found it on Peck's Pleasant and Rome Beauty apples and Vicar and Angouleme pears in Ohio and Professor Lamson noted it on Beurre d'Anjou and Lawrence pears in New Hampshire.

These boxes of apples were examined from time to time for about three months but in no case did the disease spread to the healthy fruit and as far as could be seen it did not increase on the diseased fruit.

Nature of the Fungus.

This fungus, *Leptothyrium Pomi*, is classified with the imperfect fungi because, up to the present time, no sexual spore stage has been found. In fact, most authorities claim that this is a sterile fungus, bearing no spores of any kind, but in his work on this disease, Professor Floyd found what he thought was an asexual spore stage. Another authority holds that the small projections, called sclerotia, found on the fungus thread,

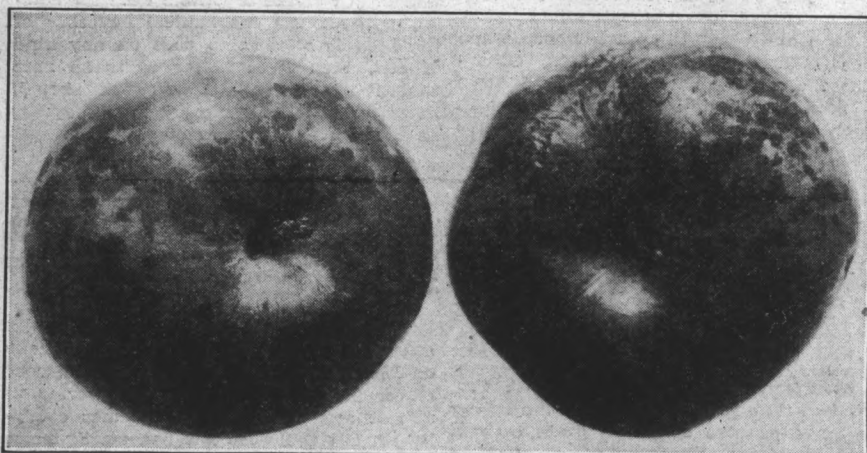
show that this fungus spreads most rapidly in warm, moist weather, and it has been stated that fruit which is somewhat shaded, is attacked to a greater extent, as shown by the larger number of blotches. But authorities do agree that sooty blotch attacks the fruit about mid-season in states farther south, but this point has not yet been determined for Michigan.

As a result of experiments in Connecticut, Professor Sturgis advises spraying every two weeks from the middle of June to the middle of August. Doctor Clinton found by experiments that the Bordeaux

spray used for apple scab also controlled the sooty blotch fungus. Professor Selby recommended spraying apples when they were about the size of hickory nuts.

The above experiments were all carried on with Bordeaux mixture, but this was probably due to the fact that lime-sulphur had not come into common use at the time the experiments were carried on. As lime-sulphur has proven quite successful in controlling apple scab it is altogether probable that the proper use of this spray for scab will also keep the sooty blotch fungus under control.

Mich. Ag. Col. J. A. McCLINTOCK.



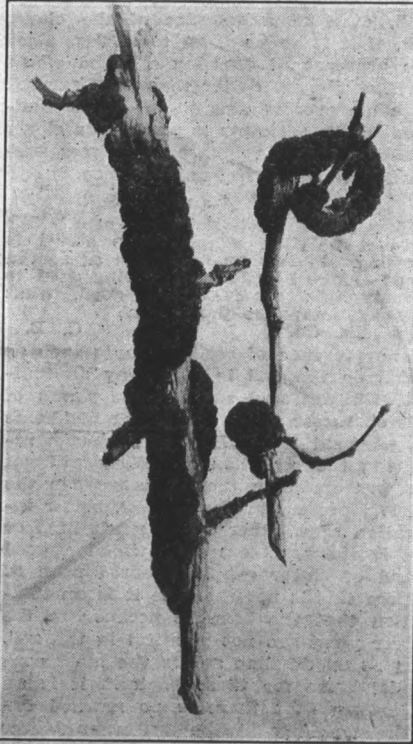
Apples Affected with the Sooty Blotch.

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Affected Fruits in Storage.

When this fungus is very abundant, it detracts considerably from the appearance of the fruit, especially the light-colored varieties, and thus decreases their market value. Doctor Clinton holds that where the fruit is abundantly spotted with this fungus it wilts badly in storage. Professor Sturgis carried on experiments to see whether this disease spread on stored fruit, and found that it did not attack healthy fruit mixed with diseased specimens nor did it increase any on the diseased fruit. He also found that the healthy fruit kept much better in storage than that which was badly diseased with sooty blotch.

To determine whether this disease spread in storage, under Michigan conditions, the writer carried on an experiment during the present season as follows: A number of healthy apples were obtained and divided into two lots of an equal number of specimens. The first lot was put into a box and placed in the cold storage as a check. The second lot was mixed with a number of badly diseased apples so that the diseased fruit was in contact with the healthy specimens on all sides. These apples were placed in two boxes one of which was left in cold storage with the check. The other box was placed in a basement



Black Knot on Small Branches.

The Black Knot of Plums.

THERE is probably no community in Michigan but has an orchard—one full of promise and set out by an owner with high hopes—which is abandoned, or is practically worthless, due to this disease of plums and cherries. There are men at nearly every horticultural meeting who voice a common feeling—that the plum is not a safe tree to plant. Nevertheless the biggest fruit grower in the vicinity of Grand Rapids finds that year in and year out the plum nets him the surest and best revenue. Plums sold in the Grand Rapids market for \$1.00 a bushel in September, and some of these plums were expressed to Lansing and sold from \$1.50 to \$1.75 a bushel. Yet in spite of this price, in spite of the evidence of successful fruit men, we find the prejudice existing. An important factor in making this prejudice is the disease black knot. Here is a disease well known for years, perhaps as sharply marked a disease as there is, and as easy to control as any other of equal seriousness, which is certainly a menace to the cultivation of plums and cherries.

Black knot of plum, after a long period of discussion which ascribed the trouble to insects, weather, sour sap, and various other causes, was in 1876 properly shown to be caused by a parasitic fungus. A parasitic fungus is a plant which obtains its food supply by robbing some other organism. The black knot lives on the plum or cherry, making no food for itself, depending entirely on the fruit trees for food supply.

Symptoms.

Black knot is well named. Its characteristic symptoms are well shown by the accompanying cut. The fungus so affects the fruit tree that the limbs swell—sometimes to five times the normal size. Breaking out all over the diseased portion we find the fruiting bodies of the fungus. Fungi are spread by means of small dispersive bodies called spores, and these bodies, millions in number, are produced in two special ways.

If a black knot is examined in June it is found to be an olive green color, and covered with a bristly pile, quite like velvet. This is the summer spore stage, and the greenish nap is made of threads, each of which bears many spores, as in the cut. Later in the summer it is found that the greenish pile disappears, and the black knot, if examined closely, is found to be covered with small round pustules. Each little pustule is filled with sacs, and these sacs contain spores—the so-called winter spores.

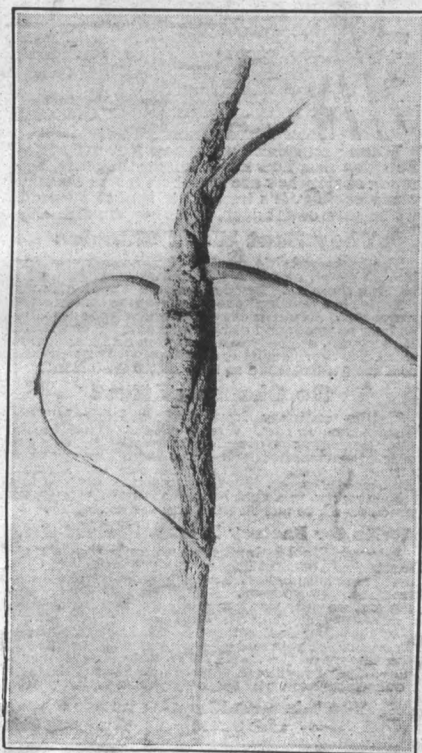
It may be asked why the horticulturist need know about the minute bodies, the spores. Yet if he will remember that these are the agents which spread the disease—that a single spore put in a favorable location will cause a knot, and that millions of them are produced in each knot—then the fruit grower will realize their importance.

The summer spores are produced in great abundance in early summer, while

winter spores are not found until the fall. Winter spores have been found by a student investigating the disease in my laboratory as early as November. It is commonly believed that the winter spores are spread in April, but this discovery points to the possibility of an earlier spread.

The Control.

To control the fungus, it is necessary to cut out and burn the knots. The usual advice is to cut out in the spring; but I believe this should be changed, and the importance of fall and winter eradication should be urged. If the spores are found fully formed in November, surely they are a source of danger in the winter months. Then a constant inspection for



Black Knot on Wild Cherry, showing Distortion of Limbs.

the disease in the growing season is necessary. Cut out and burn the knots in summer.

As will be shown in another article, it is necessary to spray plums or cherries for brown rot, another serious disease of stone fruits. This spraying seems to have a very good effect in suppressing the production of spores of both kinds, as has recently been shown by the Connecticut Experiment Station. For this spraying the Department of Horticulture of the Michigan Agricultural College advise a very dilute commercial lime and sulphur solution.

It is known that the black knot disease of wild plums and cherries is the same as that of the cultivated varieties, and hence it is important that all thickets of (Continued on page 453).

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FARM NOTES.

The Size of Ventilating Flues for Barn.

Please find enclosed a rough sketch or drawings of ventilation of a barn. I do not suppose this is the right way, or better than the King system of ventilation. Kindly advise me as to the best way to install ventilators without much expense. Is eight-inch galvanized pipe large enough (four of such for a barn 36x60 ft.)? Also advise whether inwardly tilted windows will properly take in fresh air, the windows to tilt in between two joists which are boxed with matched lumber, leaving opening in middle of alley.

Allegan Co. J. K.
The size of the main ventilating flues in the stable does not depend so much on the size of the stable as the amount of live stock which is to be housed in it. In King's work on Ventilation the principle is laid down that the aggregate area of the cross sections of both the intake and outtake flues should not be less than 30 square inches per head of horses and cows housed in the stable, when the outtake flue or flues are 30 feet high. If the outtake flues are shorter the area should be greater. For instance, a 20-foot outtake would require about 36 square inches per head; if higher, the area of a cross section of the outtake might be proportionately less. For sheep the required area of a cross section of the outtake flues should be 15 square inches, where the same is 20 feet high. If 30 feet high, 12 square inches would be sufficient, figured on the same proportion as above given for different heights of the outtake flues in the stable where horses and cattle are housed. It will thus be seen that four galvanized pipes eight inches in diameter would not measure up to this standard for the amount of stock which would be housed in a 36x40-ft. stable. It does not matter what material is used for these flues so long as they are practically air tight, but if galvanized pipe is used the units should be much larger than eight inches in diameter for efficiency as well as economic installation.

An arrangement of the windows which will tilt in with the sides boxed in as suggested in this inquiry could be used for the purpose of intakes, but would need more attention, in the writer's opinion, in order to maintain a reasonable stable temperature than would intake flues installed in some other manner. In a number of modern barns we have seen the intake flues installed in the window casings. This can be easily done where double windows are used by installing the intake flues in the casings between the two windows in the same frame. Theoretically, the admission of air by tilting the windows in within a boxed frame, as suggested in this inquiry, would be just as good, but when there is any amount of wind the sloping window would direct it upward and the inflow of air would be materially increased, thus lowering the temperature of the stable. The details of installation for a ventilating system are not essential so long as the general principles essential to good ventilation are followed, and the above formula of figuring the required area of ventilating space is the most authentic available.

The Hessian Fly.

Last fall one of my wheat fields, the first field I sowed, was infested with a lot of little light green nits. Now these same little eggs are the color of buckhorn. Does this condition indicate disaster to the coming crop? A full explanation of the Hessian fly and its workings will be greatly appreciated.

St. Joseph Co. A. F. C.
The life history of the Hessian Fly is described by Dr. Dondlinger, in "The Book of Wheat," as follows:

"The adult Hessian fly is very fragile, dark-colored and about one-eighth of an inch long. It is about half as large as the mosquito, which it resembles. Even when comparatively abundant it will escape the notice of the ordinary observer. It can be caught with a sweeping-net, but is easily confused with other insects taken at the same time. The fly seems to be two-brooded in all parts of the United States. In the north the broods follow each other in quick succession, while in the south they are widely separated. The egg of the insect is about 1-50 of an inch long. The newly hatched larva or maggot is slightly smaller than the egg. The fully developed larva is larger, and on account of its resemblance to a seed of flax it is known as the flaxseed. In fall wheat the fly passes the winter in the young plants, principally in the flaxseed stage, but also in the larval stage, not quite fully grown. The flies emerge from the flaxseed when the wheat is about two inches high. The time varies from March in Georgia to May in

Michigan. Flies from wintering larvae appear later. The eggs are deposited in the grooves on the upper surface of the wheat leaves, from 100 to 300 by each female fly. They are difficult of perception even by one who has good eyesight. In a few days the eggs hatch into a pinkish larvae that soon turn greenish, and descend to just above the roots, or, if the wheat has jointed, to the base of the particular leaves on which they were hatched. Sucking the juices from the growing wheat plant, these larvae attain the flaxseed stage in about four weeks, the time being dependent on the weather. The prolonged southern summer weather during which there is little food for the larvae, is passed in the stubble in the flaxseed stage. In Michigan the fall brood appears about the last of August, while in Georgia it appears about three months later. The eggs are now deposited on the young fall wheat, and the life cycle begins over again. In regions far north there may be only one brood, and in the south there may be supplemental broods, both in the spring and fall, this being dependent on the weather. Drought prolongs the flaxseed stage."

As is well known, the presence of this larvae in the wheat stalk weakens it to an extent which causes the infested stalk to break down and "crinkle." The immediate effect of the infestation is to stimulate the plant which exhibits a dark green color, but later the infested stalk turns to a brownish or yellowish color. The extent of the damage can not be foretold for the reason that it depends very much upon the extent to which the plants have tillered or stood out, as sometimes many of these stalks in a stool of wheat will not be infested and will form the basis of a fair crop. While this pest is never entirely absent, it has a number of natural enemies which keep it in subjection. Where wheat is so badly infested as to indicate that the crop will be ruined, the best plan is to plow it down and plant to a spring crop, when such indication is manifested. Otherwise the stubble should be plowed down as soon as possible after harvesting in order to destroy the larvae which have not yet reached the matured stage, in case the wheat is not seeded to clover. Otherwise wheat should not be seeded too early the following fall.

Amount of Rape to Sow.

How much rape per acre should I sow in rye this spring, the rape to be used for sheep pasture? Would it be all right to sow alfalfa this spring where seeding of clover is killed in spots? Soil is sand. Sowed some alfalfa in buckwheat last summer to inoculate the soil.

Washtenaw Co. F. C.
When rape is sown in oats in the spring to make pasture after the grain crop is cut, the customary amount of seed to use is about four pounds per acre. Where sown in rye, however, it should not be expected that as good results will be secured from the standpoint of summer forage as the seed bed would not be as suitable. The writer has never seen this scheme tried, but would think that not much, if any, more than four or five pounds per acre should be used.

Sowing Alfalfa where Clover is Killed.

Alfalfa might succeed if sown on the field where the seeding of clover has been partially killed, but in the writer's opinion it would be better to fit the field well, even at a sacrifice of the clover left, if it is to be sown to alfalfa, since the prospect of securing a stand would certainly be no better than that secured with a clover seeding in the same manner. While attempts to patch up a clover seeding in this way are sometimes successful, they are not uniformly so.

Indications of an Acid Soil.

How can one tell if land is sour? We have a field on which sheep sorrel is growing. Is this an indication of soured land? Have heard of lime being used to remedy this condition. If good, what kind of lime; also proportion?

Isabella Co. C. B.
The presence of certain plants such as sorrel on the soil is in a way an indication of an acid soil because plants of this character find a more congenial home in an acid soil. However, simply removing the condition of acidity will not entirely eradicate these plants when the seed is present in the soil. A better indication of whether a soil needs lime or not is the readiness with which a good stand of clover can be secured upon it. Where this is not the case it is an indication that the bacteria peculiar to the clover plant are not plentiful in the soil, and as an alkaline soil is the most congenial home for these bacteria it is an indication that there is no marked degree of acidity in the soil when clover plants thrive upon the land. Where it

does not, one may well suspect that the soil needs lime, when it may be supplied in the form which will supply the needed calcium at the smallest cost. From one-half ton to one ton of caustic lime or twice that amount of ground limestone should be applied and thoroughly incorporated with the soil.

Seeding Clover with a Drill.

In answering a query in your issue of March 8, you say if clover seed is sown with a hoe drill, a hard rain may kill the young plants before they get well started, but that this would not occur if a disc drill is used. I can not see the difference in conditions. Will you kindly explain?

Ionia Co. W. H. W.
The difference between the action of a disk drill and a hoe drill when used for sowing clover seed is that the disk drill does not open as large a furrow and the dirt falls back, leaving much less of a depression than is the case where a hoe drill is used upon the comparatively hard soil in the grain fields. Thus there is not so much danger of the small plants being covered by heavy rains washing the dirt in the furrow when they have first come up, which is sometimes the cause of the loss of a clover seeding when sown with a hoe drill, depending, of course, upon the weather conditions at the time.

The Best Time to Sow Clover.

When is the best time to do the clover and timothy seeding on fall grain? What do you think of the idea of waiting until May, then sow on the sod and drag it in for a covering?

Lapeer Co. M. A. C.
The larger number of farmers still adhere to the practice of sowing clover early in the spring when the frost is going out of the ground and the surface exhibits the peculiar honeycombed condition which is favorable for the covering of the seed without other mechanical agency. On light soil, and soil rather devoid of vegetable matter or humus, it is doubtless better to sow the seed at a later date and harrow it in or sow with a drill. Or if the favorable time for sowing without the mechanical covering of the seed is allowed to pass on any kind of soil, then it is better to make sure that it is covered. This work should, however, be done as early in the spring as the soil is in proper condition.

Seeding Sweet Clover.

I have a piece of ground sown to rye last fall which I want to seed to sweet clover. Can I seed this in the rye the same as any other kind of clover? I want to plow this under next spring for late potatoes. Will it get big enough to do any good?

Eaton Co. E. T.
The seeding of sweet clover must be considered more or less as an experiment on Michigan soils. We know that sweet clover is a very persistent grower upon almost any soil when it becomes established, but this does not necessarily mean that it would be successfully seeded in a majority of cases if sown in grain as we sow clover. We know that alfalfa is a very persistent grower once it is established, but to many growers it has proven difficult to get a stand of it. We have, however, learned more about growing alfalfa in recent years and success with this plant is more uniform than formerly. The same nitrifying bacteria is said to find a host in both plants, and unless this bacteria is present in the soil one might not have the best results in getting a stand of this plant. If it is present in the soil, however, it is the writer's opinion that it could be sown with reasonable assurance of getting a good stand. Sweet clover is a biennial, seeding the second year of its growth, hence if sown this spring it should reach a stage of growth before it would be necessary to plow it down for potatoes next year, which would insure the addition of a large amount of vegetable matter to the soil.

Winter Rye for Summer Pasture.

Will need more pasture after harvest for horses and cattle. Have one field that could be sown to something for that purpose. How would winter rye do? The soil is heavy, with clay near the surface, was in corn last year. Could not rye be pastured in the late summer months and early fall, then left for a crop next year?

Berrien Co. S. M.
Winter rye does not make a very luxurious growth when sown in the spring. It grows well at the start but as soon as the hot weather comes growth stops. With the advent of the hot dry weather it seems to remain practically dormant. The writer has never seen it left over for a grain crop the following year, and cannot say whether the rye would make a good growth in the fall after it had passed a practically dormant period during the summer or not. Peas and oats, or even millet, would make a better spring sown crop for pasture than winter rye.

FERTILIZER FOR POTATOES.

I have three acres of sandy and gravelly soil on which I plowed under a heavy growth of clover last fall for potatoes this spring, to be followed by wheat in which I will seed the ground to clover next spring. Please give me a pointer in regard to fertilizing this land.

Genesee Co. G. E. P.

Of course, a good clover sod is a good place for potatoes. Most people would think that it would not be necessary to use any kind of fertilizer on a good clover sod and yet, if you don't get over 100 or 150 bushels of potatoes it is not enough, and fertilizer will increase the yield. Now the question is, how much fertilizer can you afford to use if you increase the yield to 250 bushels per acre? If there is anything like a decent price and one could increase the yield of potatoes 100 bushels to the acre he can certainly afford to use a good liberal dressing of fertilizer on the potatoes. I suggest that you use 500 pounds of good potato fertilizer per acre, one analyzing 2-8-10 would be about right. The best way to apply this fertilizer is with the potato planter at the time of planting the potatoes. I would use 300 pounds per acre at the time of planting. The planter will distribute the fertilizer in the row with the potatoes and yet it will mix it in with the soil so that it does not come in contact with the seed. Now after the potatoes are just pricking through the ground is the best time to put on the rest of the fertilizer. You can use your potato planter here again and distribute the other 200 pounds by straddling the row with your potato planter and letting it drop on either side of the row and then covering it up with the disks on the potato planter. This will also cover up the potatoes that are coming up and will also cover up all the weeds and they will not come up again, while the potatoes will. In this way the fertilizer is all mixed with the soil, it is right where the potatoes will get a chance at it, and it usually produces very profitable results. There is little danger in over-fertilizing the potato crop. Of course, if you haven't got a potato planter with a fertilizer attachment this work can be done by hand.

COLON C. LILLIE.

THE "AVERAGE" HIRED MAN.

The "farm help problem" is not entirely solved when the help is hired and has begun work. The "problem" is likely to be present through the year, and it comes up in ways that strain one's patience and expand his language, many times, as the matter of securing help does not. There are no doubt many readers of the Michigan Farmer who work out on farms and a few suggestions, intended in all kindness, showing what the farmers are up against, may be appropriate, and perhaps appropriated. I try to obtain as good help as there is going and think that as a rule, I have men who are above the average in efficiency and intelligence; still, even among these there are things coming up—things that should seemingly be avoided without giving the matter thought—that are annoying and frequently expensive. A few instances may illustrate this matter.

Last spring a tile drain was found clogged, and as there was no time just then to hunt up the tile and clean it out, a surface drain was dug to let the water off until such time as the tile could be opened. As this open drain was through cultivated ground, and instead of working along side of it the same man who helped dig it ran the harrow right across it and filled it up. He might have thought that shoveling mud out of a ditch was a mere pastime—but the probabilities are that he set up no action at all in his think-tank, one would hardly want to credit the act to pure cussedness. Another similar instance, only worse, was in the outlet to a large drain which had become clogged, and it was found that some brush from a near-by orchard had been dumped over the mouth of the drain. The finer brush had been burned but the coarser limbs had settled down into the drain and the wash had run in, completely filling it, and a straight half-day was required to dig the mess out to find the tile so that it could be opened. There was plenty of room all around where the brush might have been dumped, but, of course, there was no other place that appealed quite so strongly to a heedless nature. Now, it is neither pleasant nor creditable to "knock," but let a man work a half-day in the mud and water digging out a mess of tangled limbs and wild grass at a time when every half-day's work costs money, and as the work

progresses the conviction increases that there are some kinds of heedlessness that well-nigh approach genuine cussedness.

If these were only exceptional instances they would not be worth mentioning, but, unfortunately, they are only samples of what one may expect who employs help. The philosophical way is to expect them—along with other disagreeable things, such as bad weather or mosquitoes—but while some things are unavoidable there are many of these heedless and irritating things that might be avoided by just a little thought. And hired men who are thus heedless would do well to remember that thoughtfulness counts as well as muscle in one's value, and every such loss or expense that one causes by heedlessness or inattention detracts just that much from his monthly worth.

I have sometimes thought that a set of rules posted where they might be readily seen might be a good thing about the place, wording them perhaps so that they might be easily observed. They would read something like this:

Rules Easy to Observe.

1. Never return a tool to its place; leave it wherever you chance to drop it. If you take a tool to the field, leave it there; it will be a good joke on the next fellow to have to hunt for it.
 2. Leave everything about the buildings in the middle of the floors, never set anything back against the wall. Things will be handiest to get if left in the doorway.
 3. Always leave the wagon boxes or racks or dump planks in the middle of the yard; never put them back to one side. Never put the tools or wagons under the sheds.
 4. Leave pieces of boards or other litter wherever you happen to drop them. Such material adds variety to the scenery.
 5. If you break any of the tools throw the pieces away; no matter about the possibility of repairs.
 6. If you break your harness take a piece off from one of the other harnesses. Let the other fellow hunt when he wants to use his harness. The spare harness is not in use just now and can be cut in pieces if you chance to want a strap. This rule applies to tools as well.
 7. Clip the horses' manes and tails as you may wish. No matter what others' tastes are in these matters.
 8. Take 20 to 30 minutes of the employer's time morning and noon before going to work. A nickel or dime of his money will never be missed.
- This list might be extended to cover a number of other depredations that are done and may be expected, and it is well to put them in this form as any, for rules will never restrain some men, and others will see the irony in this form and will more probably observe them, while putting them in this way will not give offense.
- A field of helpfulness that the new county advisers might take up, along with their other work in counties where such are employed, would be helping farmers and help to get together—a sort of employment bureau. They might at the same time add materially to the reliability of the help by finding places only for men of character, offering no opportunities for employment to drunks and toughs or to any who could not furnish satisfactory credentials as to character.

Allegan Co.

EDWARD HUTCHINS.

CORN AFTER SUGAR BEETS.

Will you tell me what your experience is in regard to planting corn after sugar beets? The soil is rather heavy clay, with some black soil; beets went 12 tons or over per acre.

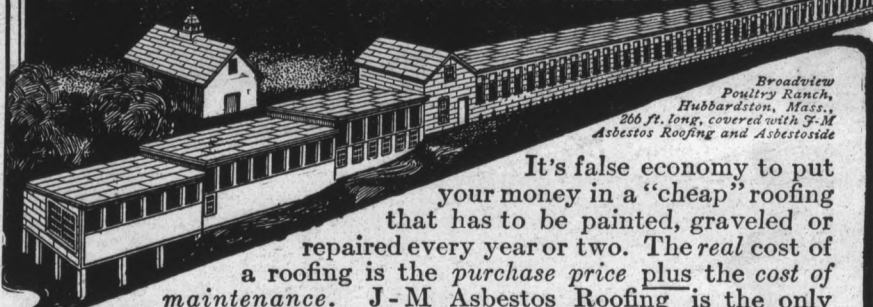
Eaton Co.

W. D. A.

It is not a good plan to plant corn after sugar beets. It doesn't do well. There is no question about this. It has been tried time and time again, and corn never does as well after sugar beets as it does after other crops. The only explanation that can be given is that the beets leave some residue in the soil which is not favorable for the growth of corn. I have tried this twice and corn did not do well. I remember distinctly one year where I had had beets on one side of the field the year before and other crops on the balance of the field. Next year I planted the whole field to corn. Now in other respects the land had been used the same, but where the corn was planted on the sugar beet land it did not do well. On the other portion of the field it did much better. It would be much better to put this field in oats than into corn. Beans do fairly well after sugar beets.

COLON C. LILLIE.

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It's false economy to put your money in a "cheap" roofing that has to be painted, graveled or repaired every year or two. The real cost of a roofing is the purchase price plus the cost of maintenance. J-M Asbestos Roofing is the only ready roofing that never requires a single cent's worth of coating, graveling or other protection. Therefore it costs less per year of service than any other roofing. This roofing never needs any protection because it is made of layers of stone (Asbestos) felt securely cemented together with Trinidad Lake Asphalt. It is mineral through and through—literally a sheet of pliable stone. There isn't a particle of perishable material in

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Is it any wonder that this stone roofing is not affected by rain, heat, cold, salt air, chemical fumes, etc., and that it affords absolute protection against fire? And is it any wonder that this roofing is still in good condition on hundreds of roofs after more than twenty-five years of service?

J-M Asbestos Roofing comes in rolls ready to lay; also furnished in built-up form. Suitable for any type of building. Easy to lay. J-M Roofing Cleats, packed in each roll, make absolutely water-tight laps and give the entire roof a handsome white appearance.

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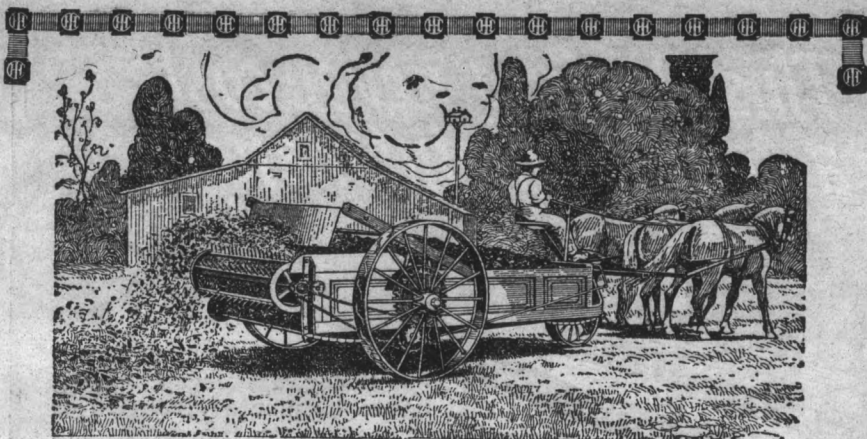
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See the two beaters! See the distributing paddles! See the simple mechanism! manure into shreds. Easy loading—and carries big load. Easy haul for double team—tracks with standard wagon. Light—but stands hard usage. Rigid construction throughout. Solid bottom—will not warp. Perfect endless conveyor cannot slip. All power direct from rear axle. Only two levers to operate. Strong metal wheels.

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Manure cannot be spread as it should be unless a machine is used. An I H C spreader covers the ground with an even coat, light or heavy as may be needed, and pulverized so that the plant food elements in the manure combine with the soil to the best advantage.

The spreader that does this work as it should be done must have many excellent mechanical features. The apron should move without jerking; the beater should meet the load at exactly the right point to pulverize the manure without too greatly increasing the draft of the machine; the speed changes of the apron should be positive whether the spreader is going up hill or down. All these features are provided for in the construction of I H C spreaders.

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The I H C local dealer carries in stock the machines best suited to your locality. See him for catalogues and full information, or write

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MAKE A GERMINATION TEST OF YOUR SEED OATS.

I wish to call your attention to the condition of the seed oats this spring. On account of the wet weather last harvest, many fields of oats were badly discolored, and molded in the shock or heated in the bin. I have made quite a few germination tests of oats sent in from different sections of the state, and find that the oats are quite generally of poor germinating quality. It would be well, I think, for you to call your readers' attention to this condition and urge that no oats be seeded this spring without germination tests, as otherwise I fear that many fields will be seeded with oats of poor germinating quality and result in a very poor stand, and failure of crop.

Mich. Ag. Col. V. M. SHOESMITH.

COWPEAS AND SOY BEANS.

There are a great many farmers who have soil that is so poor in fertility that a catch of clover is impossible. Some time ago we purchased a farm on which were about ten acres of this kind of soil. We experimented by sowing two acres to soy beans and the rest of the field to cowpeas. The soil was prepared about the same as for corn. The seed bed was made compact, thus putting the soil in a better condition to hold the moisture during the summer.

The Whippoorwill variety of cowpeas was sown with a disc drill the middle of June. About four acres were sown with the drill set for sowing oats. If set to sow about two and one-half bushels of oats the drill will sow the proper amount of either soy beans or cowpeas, which is one bushel per acre.

On another four acres in the same field the seed was sown in rows 24 inches apart and about three inches apart in the row. By sowing in this manner we were able to cultivate three or four times during the summer and the plants did not at any time suffer from the want of moisture.

About two acres were sown to soy beans, in rows 24 inches apart. This particular crop has been recommended by a great many farmers as a great soil improving and forage crop. It no doubt is a soil improver if plowed under. We found very few nodules on the roots of the plants. The soil very likely needed inoculation, in which case more nodules would have been present. The plants grew three or four feet high and looked healthy and vigorous.

For a forage crop the soy bean is not equal to the cowpea. The leaves and stems contained a fine fuzz that was rather undesirable, while the cowpeas were not so woody and dusty.

The cowpeas sown with all the drill holes open were cut with a mower for hay. The hay was relished very much by both horses and cattle. The greatest drawback to this kind of hay is the curing. Unless there is exceptionally good weather, which is usually not the case in the fall, it is rather difficult to get the hay dry enough. The stalks were large and contained a great many pods that were green and full of water. Some of these pods did not get thoroughly dry and consequently became molded.

The harvesting of cowpeas or seed seems to be a difficult problem to a great many farmers. Most of them use the ordinary mower and do not get all of the seed. The plant is usually lying flat on the ground and in mowing a great many of the pods are cut in two, thus decreasing the yield per acre quite materially. We harvested the cowpeas for seed which were planted in rows, with a bean harvester or cutter. It is a two-horse cultivator-like machine with two knives in place of the shovels, which cut the stalk off just underneath the ground. Outside of the knives in front are rolling colters to cut off the vines to prevent them dragging and clogging the machine. Just above the knives are two or more rods which throw the vines into a fair-sized windrow where they may be allowed to partially cure. One day in the windrow is usually sufficient. The peas should then be placed in shocks and allowed to thoroughly cure. If the weather is favorable three or four days of good drying weather will usually cure them sufficiently so that they can be mowed away or stacked. By this method of harvesting we eliminate the shattering caused by mowing.

We found that a stand of cowpeas is more certain than a stand of soy beans. Where the soil was heavily crusted the soy beans failed to come up well, while the cowpeas, being a more vigorous

grower, easily push their way out of heavily crusted soil.

We believe the cowpeas are better adapted for hay than the soy beans. The leaves of the soy bean seem to drop quickly as the crop approaches maturity, thus causing a loss of a large proportion of the leaves. The leaves of the cowpea do not drop but remain green and growing after many of the pods are ripe and drop. If the soy bean is allowed to become a little too mature, not only is there a loss of leaves in curing, but the stems become hard and woody and less palatable to stock. We also found that the cowpeas sown in rows were more thrifty, greener in color, had larger stalks and leaves and contained a great many more pods than those sown in drills. The yield per acre was greater and the quality of seed better than where broadcasted or drilled.

Indiana.

J. C. KLINE.

FERTILIZER FOR OAT HAY AND CLOVER.

I have a field of clay loam, which has been in corn for two years. I wish to seed it into oats as hay and clover. Having no stable manure, what kind and how much of the best commercial fertilizer would be necessary per acre to insure a good stand of clover?

Lenawee Co.

A. T. S.

On rich ground or well fertilizer ground, one could expect a fairly good crop of oat hay, and then, by taking the oats off early for the hay get a cutting of clover later in the season. The crop of each of these depends largely upon the available plant food in the soil. If the ground is rich you can expect a good crop of each. On the other hand, if the ground is poor you will get a poor crop of both. Therefore I believe it will pay to use a good liberal dressing of commercial fertilizer, and I would use a complete fertilizer, getting a small amount of nitrogen to give the oats and also the clover a start. Then, as this is seeded to clover it will remain another year undoubtedly with clover and I would have the fertilizer rich in phosphoric acid and potash because the clover plant especially is a gross feeder of these mineral elements. I should think a fertilizer containing one per cent of nitrogen, eight per cent of phosphoric acid, and four or five per cent of potash would be as good a dressing as one could use in this instance, and as under the circumstances both crops are intended for hay, I would use 400 or 500 pounds per acre when I seeded the oats and the clover, and then, as stated above, I believe one could expect to get a good crop of oats for hay and, perhaps, later in the season, a cutting of clover hay.

COLON C. LILLIE.

AN IMPORTANT FACTOR IN GOOD ROADS.

It has often been said by road experts that the first essential in making a good road is to get rid of the water. In other words, that good drainage is the first essential to good roads. If this is true of roads in general it is particularly true of roads on low level lands, crossways, or in any place where the water is inclined to stand upon one side of the road and seep through the roadbed.

It is to relieve such conditions as this that culverts are installed, but how often in a season like the present when rains are frequent and there is much surface water to carry off we find these culverts are not working well or have been entirely stopped up. Or perhaps we find small wooden bridges with big bumps on each side which form a nuisance to be encountered by every passing vehicle. In places these old culverts and small bridges are being replaced by good concrete structures. Where the work is well done these are satisfactory in use, but they are too expensive in many locations where small culverts are needed. Here common tile have been used with poor satisfaction and metal culverts of various types have been tried out. These are satisfactory if of good material. That is, if the iron from which they are made is comparatively free from impurities, such as ingot iron which is manufactured by the "open hearth" process, and does not corrode as readily as iron which contains many impurities. Cast iron is a good material but more expensive.

This is a question which may well be given thought and investigation by highway officers throughout the state, and especially in the level sections, or in places where natural drainage is not afforded, to the end that this factor in the making of good roads may not be wholly neglected.

Wayne Co.

C. T. H. B.

Poultry and Bees.

NON-ABSORPTION OF THE YOLK BY CHICKS.

This trouble, next to the deadly white diarrhea, takes away more chicks than any other. I have made a good many postmortem examinations of chicks that died seemingly without cause, between the ages of two and three weeks, and in the majority of instances have found that death was due to blood poisoning caused by non-absorption of the yolk. Chicks thus affected grow well the first week or ten days, but after that they rapidly grow weaker each day. Bowel trouble sometimes makes its appearance during the later stages, yet in a good many cases no signs of bowel trouble are to be noticed at all.

A chick, just before emerging from the shell, absorbs the yolk of the egg into its abdomen. Nature provides the chick thus with maintenance for the first few days, during which time it is too weak to seek its own food. When chicks are brooded naturally and hovered by a hen, the hen does not allow them to eat much of anything the first few days. She eats it herself, if anything is placed before the chicks, and people who do not understand her think she eats so much because of her long fast while sitting. But this is not true by any means. This is one reason chicks brooded by a hen generally do better the first few days than artificially brooded chicks. I have never found a hen-brooded chick that died of non-absorption of the yolk.

Non-absorption of the yolk is caused by chilling or overheating the chick during the first few days; by too high temperature during incubation, or by too early feeding of hard, not easily digested foods.

Use the greatest precaution not to overheat eggs during incubation; a too high temperature bakes the yolk and thus makes it indigestible. Do not allow the temperature, at any time, to run above 100 degs. Especially at hatching time in warm weather great care is needed to prevent the temperature from running too high. This is one reason this trouble is more prevalent during warm weather. Sometimes, in order to keep the temperature down when chicks are coming out in warm weather, it is necessary to put out the lamp entirely, the heat from the new-born chicks being enough to keep the temperature between 104 and 105 degs.

A chilled chick is certain to have difficulty in absorbing the yolk. By this is meant that the chick must not be allowed to get cold during the first two weeks. Right here is where many of the well constructed incubators are badly at fault, especially those having deep nurseries. Before allowing any of your chicks to drop into the nursery of the incubator, if your machine has one, make certain that the temperature is correct. This can only be done by placing a thermometer in the nursery and taking its readings for an entire day. You will be surprised to find that the nurseries in some of our most reliable incubators are too cold. If the difference is too great do not allow the chicks to use the nursery at all but keep them on the egg tray; if the difference is slight, it may be remedied by not allowing the chicks to drop into the nursery until about one-half of them are hatched. The heat from that number of chicks will bring the temperature up a little. The nursery should have a temperature of at least 95 degs. or higher, up to 100 degs.

The same precautions should be employed in moving the chicks, and in determining the temperature of the brooder. The brooder should at all times be warm enough to prevent huddling; a temperature between 95 and 100 degs. is about correct for the first week; after that, 90 to 95 degs. is high enough. In moving the chicks use a warmed, covered basket, and do it as quickly as possible.

Overheating during the first few days in a brooder is almost as bad as chilling; at any rate it has about the same effect upon the chick, causing the yolk to coagulate and thus making it indigestible. If the brooder is so constructed that the chicks can get away from the heat, overheating is not very apt to occur. The brooder temperature should not be allowed to go above 100 degs. at any time.

Too early feeding after hatching is perhaps the most common cause of non-ab-

sorption of the yolk. I never feed chicks anything until they are at least 48 hours old and, if they do not appear very hungry and lively then, I wait another 12 to 24 hours. The yolk supplies the chick with all necessary nourishment for the first few days; if any nourishment is given they will use that instead, causing the unabsorbed yolk to remain, harden and finally cause blood poisoning and death. Feeding to much the first few days has the same effect as too early feeding. In this case the yolk is partly absorbed when the overfeeding causes the demand for its absorption to cease. That remaining either stays in its semi-liquid state, or hardens, causing blood poisoning and indigestion, with death following soon after. Therefore, do not feed your chicks before they are at least two days old; feed little at a time, and often, of easily digested food. Manage to have the temperature neither too low nor too high both before and after hatching.

The yolk, comprising almost the entire yellow part of the egg, after being absorbed, does not have to pass through the digestive system of the chick, it being connected with the intestines directly by a small duct. Anything which hinders its natural absorption is sure to cause trouble, either stunting the chick or killing it. A chick properly fed and cared for under natural conditions has completely absorbed this yolk by the end of ten days. If any portion of it is still evident in the chick at the age of two weeks, its absorption has surely been hindered and the chick is sure to be stunted. This yolk can easily be felt, and the practiced eye discerns evidence of it in the protruding abdomen. The size varies all the way from the full-sized yolk down to a pea. As yet no way has been found of renewing the absorption process when once it has been stopped. The only way out of the trouble here, as is the case with most chick diseases, is through the avenue of prevention.

New York. F. W. KAZMEIER.

NORTHERN MICHIGAN BEE-KEEPERS MEET.

The Northern Michigan branch of the National Bee-keepers' Association held its annual meeting at Traverse City, on March 19-20, and much interest was taken in the practical talks, the papers and discussions. The fruit growers of that section are becoming interested in bees and several instances were given where the yield of fruit had been doubled because of bees being in the neighborhood. A grower in Antrim county received \$1,600 net returns from his apples, while other growers in that section got only meager returns, the result being directly credited to the pollen-carrying bees.

There was marketed last year from Antrim, Emmet, Charlevoix, Cheboygan, Kalkaska and Grand Traverse counties over 1,000,000 lbs. of honey of which there is actual record. Since a number of beekeepers are not in the association it is certain that there are thousands of pounds of which no record has been made. Bees of northern Michigan get their honey largely from flowers of the raspberry bushes, from clover, from the bloom of the milkweed plant and from basswood.

Co-operation in marketing the product is at present receiving much attention from bee-keepers, as it is from fruit growers and others, and many of the bee men present favored sending their product to a central station, there to be graded, packed and sold. In the evening an illustrated lecture was given by R. H. Elsworth, of the Western Michigan Development Bureau, showing some of the leading fruit orchards of that section, also the apiaries of Mr. Kirkpatrick, of Kalkaska county, and Mr. Bartlett, of Charlevoix county.

There was a fine exhibit of honey and the leading prize winners were as follows: First and second on extracted honey, E. E. Coveyou, Emmet county; first on candied honey, wax and best comb honey, Ira D. Bartlett, Charlevoix county. Petoskey was chosen as the meeting place for next year and officers were elected as follows: President, C. F. Smith, Cheboygan; vice-president, E. E. Coveyou, Petoskey; secretary and treasurer, Ira D. Bartlett, East Jordan.

Kent Co.

A. GRIFFIN.

Wins in the Two BIGGEST HATCHING Contests Ever Held



140-EGG Ironclad Incubator
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Both for \$10 Freight Paid East of Rockies

140 Chick Brooder

Why take chances with untried machines when for only \$10 we guarantee to deliver safely, all freight charges paid (East of Rockies) BOTH of these big prize winning machines fully equipped, set up ready for use? Why not own an Ironclad—the only incubator that has for two years in succession (1911 and 1912) won in the greatest hatching contests ever held. In the 1912 contest conducted by Missouri Valley Farmer and Nebraska Farm Journal, 2000 machines were entered including practically every make, style and price. With 140 egg Ironclad—the same machine we offer with brooder, freight paid for only \$10. Mrs. C.F. Merrick, Lockney, Texas hatched 148 chicks from 148 eggs in 1912 contest Money Back if not Satisfied.

30 Days' Free Trial

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Feed Growing Chicks Right



They must be furnished with the right kind of material if they are to make satisfactory growth of muscle, bone and feather. Profit lies in quick growth and early maturity. Rush those cockerels to marketable size and turn them into cash before prices fall. Get the pullets completely developed and ready to fill the nests with fall and winter eggs.

Pratts Baby Chick Food
contains just the necessary ingredients to give them during the first three weeks the best possible start, at a cost of 1c per chick. In boxes and bags, 25c, 50c, \$1 up. After the third week mix

Pratts Poultry Regulator
In the ration to aid digestion and make the greatest gain for every pound of feed consumed. 25c, 50c, \$1. 25-lb. Pail, \$2.50.
"Your money back if it fails."
Our products are sold by dealers everywhere, or
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COCKERELS FOR SALE—Pure bred, farm raised Wyandottes \$1 each. Also eggs for hatching \$1 for 15, \$4 per 100. C. D. STUART, Riverside, Michigan.

CHEAPEST Place on earth to buy Stock and Eggs. 35 varieties, Geese, Ducks, Chickens. Write for free price list. David Young, R. 6, Bay City, Mich. Station A.

CHICKS—We ship thousands, different varieties, prices right. New booklet just out, free. FREEPORT HATCHERY, Box 12, Freeport, Mich.

125 Egg Incubator and Brooder Both for \$10
Why pay more than our price? If ordered together we send both machines for only \$10.00, and pay freight charges East of Rockies. Hot water, double walls, dead air space between, double glass doors, copper tanks and boilers, self-regulating. Nursery under egg tray. Incubator and Brooder shipped complete with thermometers, lamps, egg-testers—ready to use when you get them. Five year guarantee—30 days trial. Incubators finished in natural colors showing high grade California Redwood lumber used—not painted to cover inferior material. If you will compare our machines with others offered at anywhere near our price, we will feel sure of your order. Don't buy until you do this—you'll save money—it pays to investigate before you buy. Send for FREE catalog today, or send in your order and save time. Write us today. Don't delay. (12) **WISCONSIN INCUBATOR CO., Box 126, Racine, Wis.**

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CAUSE OF MOLD IN SILAGE.

In removing my silage I find places where there are chunks of some size covered with blue mold. What is the cause of this? G. A. E.

Undoubtedly the cause of mold in silage is due to the fact that there was not a sufficient amount of moisture evenly distributed when the silo was being filled. If the corn is cut up just when it is mature and contains the largest per cent of digestible nutrients, it then has a sufficient amount of its own sap so that it will pack firmly and exclude air and there will be no mold. But if from exceedingly dry weather or frost or any other cause, cutting the silage has been delayed and it gets too dry, then water must be added as without it the silage will not properly pack to exclude the air. When the corn harvest is delayed most people do not add a sufficient amount of water and it is not evenly distributed so that these dry places of mold occur.

PLAN FOR COW STABLE.

I would like to enquire through your valuable paper the best plan for a dairy barn. I want one large enough to hold 30 cows. The stables will be in the basement and the feed will be stored above. I would like to know the right length of the floor for the cows to stand on and whether concrete would be the best thing for the floor, also the best way to tie the cow. Some of the subscribers of the Farmer may have a barn of this kind, if so I would thank them for the information.

Minn. J. H. S.
In building a modern sanitary dairy barn what is the standard measurement to build cow stalls for Holstein cows? What is the measurement from stanchion to gutter? Should the stalls be made so the cows will stand in the gutter all the time? Or should the cows stand on the edge of floor? I was given to understand that the proper way to stall your cows to keep them clean is to stand them in the gutter all the time. It is against my belief from sanitary standpoint.

Isabella Co. SUBSCRIBER.
The best possible plan for a cow stable is to have the cows stand in two rows on either side of the barn facing the outside with a wide enough driveway between the two rows so that one can drive through with a manure truck or manure spreader and load the manure direct from the gutter and haul it out. This is the hardest and worst job on a dairy farm, the cleaning out of the stables, and the plan which reduces the labor of taking care of the manure to the minimum, other things being equal, is the best kind of a plan. Again, the cows stand facing the outside, and in your system of ventilation the pure air intakes are on the outside so they get the fresh air as it comes directly into the stable. They do not breathe into each other's faces, lessening the danger of contamination, or of one cow giving an infectious disease to another. Your feeding alleys, then, are on the side of the barn in front of the cows and your hay chutes above will be on the sides of the barn instead of the middle of the barn and will be out of the way. Very many other reasons could be given for this plan of a cow stable.

The floor of all cow stables should be made of cement. Some people object to cows standing and lying on cement floors and yet a great many cows do this without any injury to themselves in any way so far as I can see. If you use stanchions on a cement floor of course it is difficult to keep the bedding on the floor because it works back into the gutter. If you use the model cow stall this saves the bedding and keeps the bed three or four inches deep for the cow to lie upon so they do not lie upon the cement floor at all. There is no use in arguing about the kind of cow stall. The system of tying cows in the barn is something that very few people can agree upon. Everybody has their notion, and there is no use in disputing it. One has to look the field over and take the system that he thinks the most practical and best.

One cannot give the length of the platform the cows are to stand upon without knowing the length of the cows. I would suggest that you measure your largest cow as she stands up naturally, from her front feet to say three inches back of her hind feet. Then measure your shortest cow and have your gutter put in, not straight, but have the platform vary in length from the length of

the longest cow to the length of the shortest cow. Where you keep cows in stanchions to keep them clean they must be lined up to the gutter. It is wrong to have the cow stand in the gutter. She ought to stand on the platform above the gutter. It is a bad habit to get cows to stand in the gutter because it is filthy and they don't stand naturally, having their hind parts so much lower than their fore parts.

If I was to build any number of dairy barns for my own use I certainly would have the cows arranged in two rows facing the outside, with an alley between the rows of the cows broad enough so that one could drive through to clean the stable. That is the principal thing. The next thing is to have a cement floor and then put in cow stalls to suit your own taste.

WHAT IS THE TROUBLE WITH THE BUTTER.

Until recently I have had the name of making fine butter, and have tried in vain to find the cause of it being poor now. If you can help to solve the problem I shall be very grateful. We are milking two cows that are having their usual care and good feed, and are using a separator that does excellent work and I am very careful to keep it in good condition by using boiling water to sterilize after each washing. The same has only been in use for one year. The cream remains thin whether kept cool or warm, and does not sour, as it should in the ripening. Is often stirred, but a foam keeps rising to the top. The whole mass has a stale, unpleasant odor. When churned the butter comes quickly but does not yield as it should, and has the stale flavor more or less. The buttermilk is of the same flavor only more so.

Emmet Co. A. L. K.
Cold weather and cows that are well advanced in the period of lactation, generally bring the trouble with the butter and the churning. There is hardly a sufficient history of the cows in the case given so that one could answer it intelligently. Possibly it could not be answered successfully if one was on the spot and made a careful diagnosis of all conditions. A. L. K. does not say whether the cows are fresh or whether they are well advanced in the period of lactation. I am unable to give any idea as to the peculiar odor of the cream and the butter, except that it may be something the matter with the feed, and nothing is said about the kind of feed the cows are given. I am rather inclined to think that it is the way the cream is handled after it is skimmed, and I would recommend that as soon as the cream is skimmed it be put in a cool place. Then when you skim the next time this cream should be cooled before it is mixed with the cold cream. It always produces bad results to mix warm cream with cold cream. Then set it away again in a cool place. And every time that the milk is skimmed cool the cream before it is mixed with the cold cream. Always mix cream of the same temperature together. Now when enough cream has accumulated take it out from the cool place and put it in a tub of warm water and stir it until it is 70 degrees. Then allow it to remain at this temperature for 24 hours until it sours or ripens. Then put it into cold water and cool it down to about 60 degrees and churn it, and I don't believe you will have any trouble.

A WELL-BALANCED RATION.

I would like to have Mr. Lillie give me a balanced ration for my cows. I have no silo. I have bran, oats, corn-and-cob meal and oil meal. I wish to feed corn-stalks once a day and clover hay twice a day. Also, where can I get tables so that I can figure out my own balanced ration?

Lenawee Co. L. J. D.
Of course, the roughage is good. Good clover hay and corn fodder are all right. Feed all the clover hay and all the corn fodder the cows will eat up clean without undue waste. Then the combination of grain foods is splendid. I don't see how you could get anything better. I would mix them together in equal proportion, say 100 lbs. of bran, 100 lbs. of ground oats, 100 lbs. of corn-and-cob meal, and 100 lbs. of oil meal. Mix them all together thoroughly and then feed the cows as many pounds per day of this mixture of grain as they produce pounds of butter-fat in a week. I don't think you can get a better ration in any way.

The Chicago butter and egg board has voted to abolish the butter and egg quotations committee and to refrain in the future from establishing any official quotations. This action appears to have been taken in order to eliminate one of the chief charges in the government suit against the exchange.

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FEEDING QUESTIONS.

Has it been demonstrated by actual experiment that an excess of any feed element of a ration over and above what is normal and proper for that individual is eliminated as waste? As, if a cow's proper ration is 1:6 and I feed her feed-stuffs making a ratio of 1:8, is the excess of carbohydrates wasted? Or, if I feed an excess of protein, is that excess all wasted? Also, does the ratio vary with different stock, as horses, cows, sheep or hogs? How does the object in view vary the proper ration as, feeding a cow for butter, or a horse for work, or fattening a pig? Also, assuming that the human ration changes with age how definitely is that change known? Suppose we say, for youth, 1:8; for adults, 1:10; for old people, 1:12. Would that be a good stab at it? Is it not true that the Chinese, a people supposed to be inferior physically to no other, live largely on rice, a food quite deficient in gluten? Kent Co. W. E. T.

Actual Waste in the Unbalanced Ration.

When an animal is fed an unbalanced ration, either an excess of protein or an excess of carbohydrates, there is certainly a waste, because the science of feeding is founded on the facts that an animal requires food nutrients in a certain proportion to perform certain work, and if you do not give them in this proportion then there is certainly a waste. In the illustration given, where a cow is fed a ration containing 1 lb. of protein to 8 lbs. of carbohydrates when she should have a ration of 1 lb. of protein to 6 lbs. of carbohydrates, the excess of carbohydrates is a waste. It is worse than waste because it takes some energy of the animal to eliminate the undigested and unassimilated carbohydrates. This was all found out and demonstrated by actual analysis of the feces by Dr. Wolf when he prepared his feeding table. Those tables would not be scientific, in fact, there would be no science in feeding if this was not true.

There is one thing, however, that we should remember and that is that protein can be used in place of carbohydrates. In other words, if our ration is deficient in carbohydrates and we have an excess of protein the protein can be used to produce heat and energy in the body so that we might have an unbalanced ration and yet have no waste of protein, but it would be an extravagant ration because the protein is worth too much to be used as a source of heat and energy. On the other hand, an excess of carbohydrates cannot be used in the place of protein. Carbohydrates contain no nitrogen and we must have nitrogen to produce the nitrogenous animal product, like the case in milk, or the wool on sheep, etc.

Vary the Ration to Suit the Object Sought.

The nutritive ratio should vary according to animal conditions, or according to the work done by the animal. A young, growing animal has a larger demand for protein because the muscular tissues of the vital organs of the body must have protein to build them up. Consequently in the growing young animal the proportion of protein should be greater than in the mature animal. Now, on the other hand, when the mature animal is put to work, work is exhaustive of muscular tissue and they are torn down and destroyed more rapidly than when at rest, and therefore a working animal should have a narrower nutritive ratio than one at rest. There is very little difference in the nutritive ratio for young growing animals of any class of stock. For instance, young growing cattle or sheep or hogs or horses require about the same proportion of protein to the carbohydrates. This is the reason why a growing pig should not be fed exclusively on corn, and, in fact, neither should any of the growing animals because corn has a nutritive ratio of about 1 to 12, while growing young animals should have a nutritive ratio of from 1 to 4 or 1 to 5.

Balanced Ration for the Human Being.

I should say that W. E. T. has given a pretty good guess as to the nutritive ratio for human beings, taking into consideration their age, and yet the young growing boy or girl should probably have a narrower ration than 1 to 8 because the muscular tissues and the vital organs of the human being must be built up just as well as that of the lower animals. In the adult we do not need as much protein in proportion to the carbohydrates because there is no growth in the muscular tissues. On the other hand, if the adult works hard physically the muscles are being torn down on the same principle as when a horse or ox works hard. He must have more protein than when at rest. On the same theory the cow giving milk should have a larger per cent

of protein in the ration than one not giving milk, because she has to manufacture the nitrogenous substance, the casein in the milk. And so, speaking generally, we can say that the nutritive ratio should vary according to the age and according to the work done. It is certainly not good business to feed the work horses in the winter time when they are standing idle in the stable as narrow nutritive ratio as when they are at work on the farm. They should have practically a maintenance ration in the winter time when they are doing scarcely nothing. Then, in the summer time, when they are put to severe work the proportion of protein should be increased. Of course, nature takes care of an excess of an unbalanced ration. If it wasn't for that animal life would become extinct on this earth. The animal seems to have the power of taking an unbalanced ration and living upon it and voiding the excess without any material harm to the animal. Yet, of course, it takes some energy to void undigested foods, but the greater argument for the balanced ration is not so particularly the health of the animal as it is the economy in the feed. Food is getting so high-priced now that it pays the farmer to use his lead pencil in figuring out a ration, a ration properly suited to the work required of them or according to their age, with the food nutrients in the right proportion so that there will be economical digestion and assimilation.

I cannot see that W. E. T. proves anything by referring to the rice diet of the Chinese. Rice meal has a nutritive ratio of about 1 to 9.7, a little narrower than our corn meal and considerably wider than our wheat flour. But, because the Chinese live largely upon rice is no sign that there is nothing in this theory of the balanced ration. It simply shows that the Chinese can take an unbalanced ration and live upon it; so can all animals. Many of us do at the present time. Very little pains is taken by the human race at the present time to consume a balanced ration. In fact, this question of the science of feeding is practically a new one, and it is understood thoroughly by only a comparatively small per cent of the people. Only very few farmers at the present time can take advantage of this theory. Only a small per cent of the people pay any attention to the proportion of the protein to the carbohydrates which they consume every day. And so the Chinese could live and thrive and be muscular and healthy on an unbalanced ration, but the only question about the balanced ration is the economy. What is the use of eating a ration that is too wide or too narrow when we can so adjust the food nutrients in a ration that there will be no waste and save money. That's the theory of a balanced ration, and the theory is correct. It has been proven time and time again. Not only that, but animals do better when they have a balanced ration, and there is no reason why human beings wouldn't do better if they lived strictly according to this science. I doubt if all of us ever will, but it would be better for us.

DOES SILAGE INJURE COWS' TEETH.

I am about to start a dairy on a small scale and contemplate building a silo. Neighbors tell me not to do it, that ensilage ruins a cow's teeth in three or four years, so that they decay and fall out, making a cow worthless except for beef. Kindly give me your opinion as I intend to keep only blooded stock and could not afford to turn off a good cow in such a short time.

Allegan Co. J. E. C.
How a man could live in any neighborhood in the state of Michigan at the present time for one week and then ask a question like this is more than I can understand. This question has been answered in the Michigan Farmer several times during the last year. Silage is talked at every Farmers' Institute almost in this state, and almost every county has from three to five, and sometimes 18 Farmers' Institutes. Every agricultural paper in this country is talking about silage and how a man could ever get it into his head that people would be foolish enough to build silos and advocate them and have their cows eat silage, if it would injure or cause cows' teeth to decay, is more than I can understand. We can simply assure J. E. C. that silage will not injure the cows' teeth in any way. I have cows that have eaten corn silage all their lives, and their dams before them, and their grandams before that, and in no way has it ever affected their teeth in any way.

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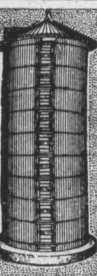
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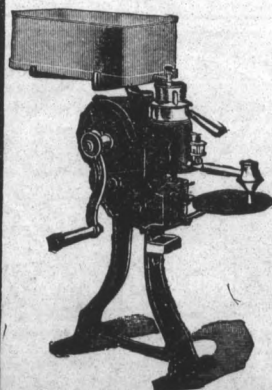
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Spring Management of Work Horses.

SUCCESSFUL farming depends in large measure upon the efficiency of the work teams during the rush of the field work in the spring. More and more is the need of skillful management coming to be appreciated in the handling of horsepower during the spring months. Years ago there was a direct correlation between the amount of work a team could do in the field and the distance a man could walk in a day, but since heavy implements, with a seat, have come into general use the efficiency of the team marks the limit of the most profitable day's work.

Work the Horses in Gradually.

Thinking men cannot avoid serious consideration of the problem of getting their horses gradually accustomed to the change from winter idleness to long days of hard work in the field. There are many odd jobs such as hauling wood, feed and manure, which can be done as well now as when field work is pressing. This preliminary work saves a vast amount of time later on and gives the horses just the right tone of physical vigor and force exacted by steady work. It is surprising how much time, risk and horseflesh can be saved by getting their bodies, shoulders and legs into the work habit before it is forced upon them.

Increase the Grain Ration Gradually.

Horses that have been idle during the winter should have their grain ration increased gradually until their digestive systems become accustomed to large feeds of concentrated corn and oats and making them into power. We would not think of starting a fire in the boiler and switching on the full current of power without giving the engine a thorough overhauling, cleaning and oiling, and yet, how many farmers make a practice of rounding up their horses that have become accustomed to transforming hay, fodder and straw into hair and heat to protect them from cold weather, overload their digestive systems with heat-producing foods and start them at full speed across the fields. Horses that have been idle should have a liberal allowance of grain to develop a full current of power, before it is suddenly switched on.

The Place of Hay in the Ration.

As a rule work horses get too much hay during the spring and early summer. The horse's stomach is not large enough and cannot hold a feed of grain and hay at the same time, therefore it is reasonable to suppose that the grain feeds will be more perfectly digested if not accompanied by a large amount of hay. I have always obtained better results by feeding my work horses about a peck of cut hay with their grain feed in the morning and at noon. In this way the horses have a comparatively small amount of freshly eaten hay to be digested while at work, and the grain feed being more easily digested and more nutritious than the hay, the horse is well nourished throughout the day.

The hay is principally digested in the intestines and the coarse fiber is largely utilized by the large intestine, so there is little gained in feeding hay during the day when the horse is working. At night we feed our horses a liberal amount of hay, for this gives it an opportunity to work along in the intestines, where it is greatly reduced in bulk before active work the next day. A hard-worked horse needs about all the nourishment that he will take, and should have all the grain that he will eat up promptly. It is the grain food that nourishes, but hay must be fed to meet the requirements of the digestive organs. The horse that is constantly stuffed with hay must either eat less grain than he should or else suffer from overtaxed digestive organs which makes him slow and sluggish. By feeding hay in liberal quantities at night and a small amount of cut hay mixed with the grain foods morning and noon, they will keep in good flesh condition and seldom be troubled with colic and other derangements.

The Importance of Grooming.

Cleanliness is essential to good health and vigor. Careful grooming and less feeding would no doubt be better for the health of many work horses. During the spring when the horse is performing hard work and eating heavy rations of grain feed there is a vast amount of waste excreted by the skin. If not removed this is likely to cause skin diseases and harness sores. It acts throughout the night and in the morning there is always a certain amount of scurf and dirt which should be removed after the horse is

watered and fed. At night a wisp of clean straw or hay should be used to remove the dirt from the outside of the coat and to dry the coat out if wet; but this does not really clean it. The brush is the only thing with which to clean the horse's skin and coat. But if the coat is wet it must be dried with loose wisps first.

Clipping is Advantageous.

Clipping in the spring has proved of great benefit to the health, comfort and vigor of work horses, thus adding to their beauty, value and usefulness. The horse that is idle during the winter seldom gets the grooming that he deserves and as a consequence his hair grows long and thick, and the pores of the skin become clogged with dust and dirt.

The change from idleness in cold weather to that of long days of hard work in a rapidly advancing temperature means a great deal of unnecessary discomfort from the heat if the horse has a thick coat. He is in about the same condition a man would be if forced to perform hard work with his heavy winter coat on.

Many city owners of horses figure that it reduces the efficiency of their horses if forced to carry the winter coat until it is shed naturally by slow degrees in the spring and early summer. Horses that are soft in the spring perspire a great deal more when put to work than would be the case if they were kept at work during the winter. Their coats are long and thick and hold moisture and accumulations of dirt and grease longer than if the horses were covered with shorter hair. Such horses cannot be given as thorough grooming as they need to have. A horse should have the dirt and perspiration brushed clean from the hair every day he works. If this is done twice a day so much the better.

The skin is the great eliminating organ of the body; pure blood depends largely upon a clean and healthy skin with open active pores. Such a condition cannot exist if the horse is covered with a thick, heavy coat of hair to hold moisture and accumulations of filth. The removal of the dirt and stimulation of the skin goes a long way toward preventing harness sores. Next to a well-fitted and properly adjusted collar and harness, a clean skin is the most important essential. Some farmers argue that clipping is not natural but such men must consider that horses, even on farms, live differently from horses in their natural state. Every effort therefore should be made to keep animals living under unnatural conditions in as healthy condition as possible. Horses that are clipped early in the spring and kept blanketed when standing outside will be able to do more work and do it with less discomfort than those that have not been clipped.

Working in the Young Horses.

Considerable patience, kindness and skill is required to gain the confidence of young horses and get them conditioned before they are pressed into service. The excitement and new order of things is enough for the first few days without putting them into hard work. By gaining their confidence and getting their bodies and shoulders toughened to resist the pressure and friction of the collar and harness, a lot of time may be saved, which would otherwise be wasted in fussing and resting when they were first put into the harness.

Fitting the Harness.

It requires judgment and skill to fit out work teams with collars and harnesses before beginning the spring campaign of work in the fields. A well-fitted harness is an important factor to consider in securing serviceability and adding to the efficiency of the teams. To properly fit a harness not only requires a knowledge of the anatomy of the horse, but a study of the disposition of the individual horses in the team. Of first importance is a properly fitted collar. A snug fitting collar is preferable. If it is too long it draws up and down, irritating the shoulders and forming callous spots on the points of the shoulder. If the horse is carrying considerable excess flesh at the time the collar is fitted it is best to get a collar large enough so that it may be drawn up accordingly. A safe guide as to the right size of the collar is to have it long enough so that your hand may be slipped in at the bottom and of sufficient width to permit the fingers to be slipped in at the sides. Soaking the face of the collar in a tub with about an inch of water for a few hours

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CORN SILAGE AND COTTONSEED FOR BEEF.

The South Carolina Experiment Station has recently published a bulletin dealing with the subject of feeding beef cattle in South Carolina. This bulletin, No. 169, by Archibald Smith, gives the result of a test to ascertain the value of different kinds of forage fed with cottonseed meal. In giving a brief review of this bulletin, many details of the experiment must be omitted, but the main findings are here mentioned and are of much value to cattle feeders not only in the south, but in practically all parts of the country. The bulletin is another proof of the great economic use of corn silage which, when properly balanced, always shows a most profitable gain. In this particular test, silage, corn stover and cottonseed hulls were compared. The corn silage gave by far the best returns, not only in economic production of beef profit in feeding, but also in the quality of the beef and the shape in which it reached the market. The silage-fed group of steers produced beef from 15 to 20 per cent cheaper than the other groups. They lost less in shipping to market, which is a test that has been disputed in the past, as some feeders have claimed that silage fed beef lost severely in the shipping process. In this test they lost the least. The silage-fed group produced gains that would warrant an earning on the silage of \$6.86 per ton. This earning was made on a very poor market as the steers only sold for \$5.50 per hundred. Had they sold on a better market, this price could easily have been increased 20 to 30 per cent. With corn silage costing but \$2 per ton, which is a fair price for its production, good corn land can be made to earn from \$60 to \$70 per acre.

The fact that corn silage is the most economic form of carbohydrates, should be known to every farmer keeping live stock. Good feeding means supplying animals with needed nourishment at the lowest possible cost. The last part of this definition calls for study and figuring. Anybody can feed an animal well, but it requires skill and application of science to feed an animal well and economically. The two great food elements are carbohydrates and protein. To learn how to supply these two in the best and cheapest forms means good feeding.

The combination of corn ensilage and cottonseed meal makes a balanced ration which has always given good returns. Silage furnishes a cheap, succulent, easily digested food, lacking only in protein which is supplied by the cottonseed meal in a condensed form, and corn silage can also be balanced by alfalfa, clover, cow peas, soy beans, peas, wheat, bran, oil-meal, gluten feed or oats, but the silage should form the bulk of the ration as it contains the principle food needed and is in a cheap, wholesome form.

To sum up the whole subject, feeding crushed instead of whole oats to horses is not to be recommended under ordinary conditions. The only cases in which it is advisable or necessary are: First, when a horse's powers of mastication are impaired or deficient so that it cannot properly chew whole oats; second, when a horse is a greedy feeder and in the habit

of bolting unchewed oats, and third, when a poor feeder has a partiality for crushed oats, preferring them to whole ones.

LIVE STOCK NEWS.

The greatly reduced feeding operations carried on by sheepmen nearly everywhere this season is the cause of the extraordinarily high prices that are being paid for fat stock, whether it consists of lambs, yearlings, wethers or ewes. The popular demand for mutton was never in past years so large as it is now, but consumption is being affected unfavorably in some quarters on account of its increased cost, and it has happened frequently that after prime lambs advanced to extreme figures buyers switched over largely to fat yearlings and sheep, thereby considerably lessening the spread in prices between these and lambs of a similar grade. Of late Colorado-fed flocks of lambs have comprised the principal offerings received in the Chicago and Missouri river markets, and that region stands alone as feeding the usual numbers this season. In fact feeding more than a year ago. The Colorado big firms that are in the habit of feeding lambs for the market are not easily alarmed over market conditions, and in this respect they are greatly different from the average sheepman of the middle western and eastern sections of the country, most of the latter having taken fright last autumn on account of the unusual dearth of feeder lambs and sheep, many of the latter never stopping to think that small numbers of lambs in feeding districts pointed to correspondingly higher prices for matured flocks when ready for the market. The way the Colorados have been marketed of late would seem to indicate that by the first of April not many will be left. Some shorn lambs have been marketed recently, and they failed to sell quite satisfactorily, as the packers prefer woolled flocks so long as the weather remains cold, but after it turns warm they always prefer shorn stock. Feeders are in as good request as ever and bring high prices, there being not one-quarter enough offered to meet the large requirements of country buyers.

Thus far not much contracting of the coming wool clip has taken place in western regions, and as a rule intending purchasers are pursuing a waiting policy, merely testing prices and seeing how low figures owners are prepared to accept. In Arizona clipping has been delayed, and no sales have been effected according to late reports. In a speculative way a few fleeces have been contracted for at 15c per pound in Oregon, and not long ago cold weather caused a suspension of shearing. Very little contracting has been done so far in Utah, with buyers and sellers differing as to prices. In Montana there are offers of 18½c for clips, this being the price paid be no danger of any change that would bring about a slump in prices. Of course, everybody expects reactions from time to time in values, especially after sudden sharp advances, for no market can go on rising forever, but it is not thought that the market has yet seen its highest prices. Meanwhile owners of healthy, thrifty, growing young hogs should use their best efforts to make their stock as choice in quality as possible, and it seems a good thing to make them weigh at least as much as 250 lbs. Good brood sows should be retained on the farms for breeding purposes, for the pig crops of recent years have been far too small for trade requirements. The average weight of the hogs marketed in Chicago thus far is well below 250 lbs., although it has been increasing steadily for many weeks and is much heavier than last year. The eastern hogs were mostly marketed some time ago, and now eastern packers are drawing heavily on the Chicago market for supplies, for the east years ago ceased raising anywhere near enough pork for its home requirements. General conditions affecting the hog market are such that owners of provisions are disinclined to take a bearish stand, and pork, lard and ribs are getting in an extremely firm position, with unusually small holdings everywhere and a large consumption.

Good accounts are given by Nebraska farmer-stockmen of the great benefits derived from silos, which are springing up everywhere, the silo having made cheaper production of beef possible. One farmer, living in Stanton, says he is feeding 150 tons of silage this season put up from 25 acres of corn, and every head of stock on his farm is in fine condition. His feed bill is only a fraction of what it was before he put up his silo, and he figures that there is no chance of loss because of possible low markets. He adds that after this system of feeding becomes more wide-spread, he would not be surprised to see a big percentage of farmers take to breeding, raising and fattening their own stock for market, and at good profit margins, regardless of land values. As soon as farmers are convinced that the profit on home-grown beef will amount to more than a reasonable profit on the money invested in land, the public may expect a larger farm production of beef.

The combined receipts of hogs in the ten leading markets of the country for February fell off 404,471 head from a year ago, and the receipts for the first two months of the present year fell off close to 840,000 head. Sheep and lamb receipts for February fell off 114,738 head, and the falling off for January and February amounted to 338,603 head.

With warm weather approaching, the demand will run even more strongly on the lighter weights of cattle than now. In warm weather heavy cuts of beef are especially unpopular. Therefore, owners of weighty beefs should not defer marketing their cattle that are reaching heavy weight.



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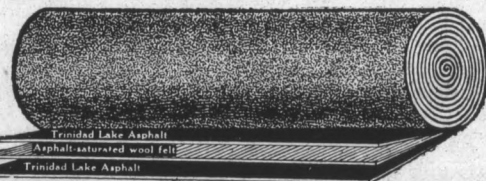
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DETROIT, APRIL 5, 1913.

CURRENT COMMENT.

Proposed Constitutional Amendments.

As noted in the Legislative Notes published last week, nearly all of the proposed constitutional amendments recently mentioned in these columns are to be submitted to the electors of the state at the coming spring election. Of those which have been mentioned only one, that providing for the so-called short ballot, failed to receive the required approval of both houses of the Legislature, for submission at the forthcoming election. Five proposed amendments will be submitted, the sections of the present constitution affected and the purport of the proposed amendments, as officially announced by the Secretary of State, being as follows:

Section 1, of Article III, the effect of which, if adopted, is to extend the right to vote to every woman, a citizen of the United States and of the State of Michigan, above the age of 21 years.

Section 2, of Article XVII, relative to the initiative on Constitutional amendments. This amendment, if adopted, will give the qualified voters of this state the right to propose amendments to the Constitution by filing a petition with the Secretary of State, signed by not less than ten per cent of the legal voters of this state.

Sections 1 and 19 of Article V. This amendment, if adopted, will give the qualified voters of this state the right to propose to the Legislature for enactment into law legislative measures, resolutions and laws, by filing a petition with the Secretary of State, signed by at least eight per cent of the legal voters; and any such proposed law rejected by the Legislature shall be submitted to the people by the Secretary of State for approval or rejection at the next general election. This amendment also provides for the referring of any act, section, or part of any act of the Legislature to the people for approval or rejection at the next general election by filing a petition with the Secretary of State, signed by five per cent of the qualified electors of the state.

Section 14 of Article X. This amendment, if adopted, will empower the Legislature to provide for the relief, insuring or pensioning of members of fire departments.

Section 8 of Article III. The effect of the proposed amendment will be to require the Legislature to enact into law a provision for the recall of all elective officers, except judges of courts of record and courts of like jurisdiction upon petition of 25 per cent of the lawful voters of the state.

The first and most important of the amendments above noted has been so long before the people of the state and is so well understood by every Michigan Farmer reader as to make comment superfluous, other than to urge every voter to give the proposition the attention it merits on election day.

The second proposed amendment in the order above given provides, in effect, for a reduction of the number of petitioners required for the submission of proposed constitutional amendments. The present constitution of Michigan, as framed by the recent constitutional convention and

adopted by the people of the state, provides for the initiative in constitutional amendments by petition of 20 per cent of the qualified voters of the state. This proposed amendment would decrease the number of petitioners required to 10 per cent of the legal voters of the state.

The third of the proposed amendments as above given is explained at sufficient length in the announcement to give the reader a clear idea of its purpose and in a general way the proposition has been given considerable publicity through its adoption in some of the western states. It is an important proposal and merits the most careful consideration of every voter.

The fourth on the above list of proposed amendments would make possible the enactment of laws empowering local fire departments to deduct a sum from the wages of firemen for the purpose of creating a fund to provide insurance or pensions for injured or disabled fellow employees.

The last of the proposed amendments in the above list is clearly explained in the official announcement.

It should be considered a duty by every voter in the state to make a careful study of these several propositions and voice his opinion on them by voting the ballots provided for the purpose. They are even more important than the general and local ballots at the same election, since these are for officers elected for brief terms, while those proposed amendments will or will not be written into the fundamental law of the state to the weal or woe of the commonwealth.

The Township Meeting.

Practically every farmer has sufficient interest in the local election to get out to the annual township meeting. A very large number, however, do not attach the importance which they should to the business meeting which is ordinarily conducted just after the noon recess. At this meeting the required appropriations for the ensuing year are made and the policy of the township for the ensuing fiscal year is shaped in many important ways. Perhaps the most important feature of the business which is transacted at this time is the appropriations for highway purposes and the election of overseers of highways. Also other matters of importance are decided at this time, such as the payment of bounties for the destruction of predatory birds and animals within the township. Often other propositions of minor importance come before this business meeting of the electors of the township. These are certainly worthy of the careful attention of every voter, but unfortunately it is often the case that a very few more or less disinterested persons, who live near the polling place, or who have a personal object in attending this session are left to discharge these important duties.

Take, for example, the dissatisfaction which has developed in many quarters with the present highway law, and many times it can be traced to the fact that insufficient appropriations have been made or there has not been sufficient discussion of the policy which should be pursued for the maintenance and permanent improvement of the highways within the township to suitably guide the township officials in the discharge of their duties in this connection in a manner which will give the best of satisfaction. Without the appropriation of sufficient money no system can work out satisfactorily to all concerned, hence the importance of giving the attention to this matter which it merits.

As an example of what might be accomplished toward shaping the future policy of the township in the important matter of road improvement and maintenance a small appropriation could be made for the purchase and use of one or more road drags or light scrapers of the "King" type in order that the advantages of the use of such an implement might be demonstrated on different soils in the township.

Likewise the various other propositions which properly come before this meeting are of sufficient importance to merit the attention of the taxpayers and voters within the township. The business session of every township meeting should be better attended and Michigan Farmer readers can do their township no better service than to bring about that desired result at the coming township meeting.

The disastrous floods in our sister states to the south have contributed something to the public knowledge with regard to Ohio's canal

systems, which were a factor in the agricultural and commercial development of that state. Probably, however, few Michigan Farmer readers were aware of the existence of these canals, one of which connects Lake Erie with the Miami river, thus affording an avenue of transportation between the north and south during the period of development of the country thus traversed and before the railways were developed to an extent which afforded adequate transportation facilities. Long disused, the very existence of these canals has been practically forgotten by the public outside of the immediate territory which they traverse. Their decadence is doubtless due principally to economic reasons, such as the facility for long distance transportation without the transfer of freight from one vehicle to another.

Yet it is perhaps well that public attention is called to this matter, since the development of waterways has become an important question in the problem of modern transportation. It is true that deeper waterways are required under modern conditions, but in some cases, at least, it has been considered profitable to improve and deepen the old canals rather than abandon them or allow them to fall into disuse. New York, for instance, has expended millions of dollars in deepening the old Erie Canal within recent years, an experiment which should go far toward demonstrating the feasibility of maintaining the inland waterways of the country in condition to meet modern requirements for transportation.

The proposition of a deep waterway from Lake Michigan to the Mississippi has been repeatedly brought to the attention of the public in recent years, and although it is unfortunate that attention to the already existing water route from the lakes to tributaries of the Mississippi should be called to public attention by such a catastrophe as the recent floods, yet the existence of such a waterway and its relation to the solution of future transportation problems is a matter of interest to Michigan as well as Ohio people and the future action of the latter state with regard to this system and the reservoirs which are its feeders and which are in some reports said to have been a contributing cause to the catastrophe, will be watched with much interest. In this connection, however, reports conflict, some apparently authoritative statements being to the effect that these large reservoirs did not break and thus contribute to the severity of the floods.

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In view of the fact that another publisher has attacked the Michigan Farmer for accepting stock advertising matter for a medicated stock salt, on the ground that it is 95 per cent common salt, we desire to call the readers' attention to the fact that the manufacturer of this article, which is advertised in this issue, sells it on a 60 days' trial offer, the purchaser to pay for it if satisfied as to its beneficial effect on his stock after using it for 60 days, and not otherwise. When the purchaser is given this opportunity to be his own judge of the merits an advertised article before paying for same, he is certainly fully protected. He is doubly protected under the Michigan Farmer guarantee of fair dealing on the part of its advertisers, to say nothing of the recommendations of reputable and well known stock breeders and feeders, who are satisfied users of the preparation.

HAPPENINGS OF THE WEEK.

During the past two weeks there has been great loss of life and property and much suffering from floods in Ohio, Indiana, West Virginia and Kentucky. An unusually heavy fall of rain March 23 and 24 was the direct cause of the terrible catastrophe. The loss of life cannot be closely estimated, due to incomplete knowledge and a demoralized system of communication. It is possible that when the fatalities are all numbered the total life loss may reach the thousand mark. The belief is general that the estimates given through the press have been too high. As to the loss of property the opposite seems true, that writers have guessed under the actual damage, rather than over, as property damage now aggregates many millions of dollars and with the rising of the Ohio and Mississippi rivers and the consequent destruction of things in their path, the total detriment to public and private possessions will be incalculable. Dayton, Columbus, Springfield, Indianapolis, Pittsburg, Wheeling, Parkersburg, Marietta, Covington, Cincinnati, are among the cities badly affected by the floods. Dayton, Ohio, perhaps suffered more than any other city, the breaking of a levee along the Miami river adding to the horror at that place. The center of the flood will move down the Ohio and along the Mississippi rivers this week. Preparation is

being made by the war department to handle the situation. To indicate the problem confronting the engineers and troops one needs but note the report from Parkersburg, W. Va., which states that the water in the Ohio river at that point Sunday was 58.9 feet high, or six feet higher than the record mark of 1884. Fear of disease epidemic in the path of the floods is exciting the anxiety of authorities.

J. Pierpont Morgan, the great financier, died in Rome, Italy, Monday. Mr. Morgan had been ill for some time, his death being due, however, to his inability to take food and assimilate it. He literally starved. Mr. Morgan was born at Hartford, Conn., his father being a banker. He was educated in Boston and at the University of Goettingen. He went from the university to a London banking house and thence to New York, where after nine years he became a competitor of J. Gould and Fisk, and finally succeeded in controlling the Albany & Susquehanna Railroad. After this he became interested with the Vanderbilts, from which time his position in American finances seemed established. His wealth is estimated at anywhere from \$250,000,000 to \$750,000,000. His interests had been given over to associates and he had practically retired from business some time before his death.

Three lives were lost at Ann Arbor, March 30, when a canoe containing four persons capsized, drowning three.

Carpenters, painters and decorators of Detroit are preparing to submit a proposal of an advance in wages. It is understood that the contractors' association will probably not entertain the proposal and will demand that the open shop policy be maintained.

The McBride bill authorizing the state labor department to investigate vice conditions in Michigan has been reported out by the committee, with recommendations that it be passed.

This week the Michigan legislative committee conducting the probe into the business methods and conditions of the Pere Marquette Railroad is taking testimony from President Zimmerman, of the Cincinnati, Hamilton & Dayton Road.

On Monday the Interstate Commerce Commission confirmed 400 changes in transcontinental railroad rates on commodities. While some of the advances passed by the railroad were allowed, many others were cancelled.

Last Monday the Michigan House of Representatives, in committee of the whole, agreed to report Follette's bill providing for the licensing of commission merchants handling farm produce.

The grand jury investigating the police graft scandal of New York city, is now attempting to trace the source of an alleged bribe fund of \$25,000 raised to keep a patrolman, recently convicted of perjury, from making confession involving superior officers.

Five persons were injured last Sunday night at Bagley, a place 20 miles north of Menominee, when a limited train was derailed, sending the engine, baggage and mail coaches into the ditch. The wreck was caused by a defective rail.

The Michigan Supreme Court has upheld the constitutionality of the 15 per cent clause of the primary law.

It is believed that the robbers who took \$300,000 in cash and gems from a New York city pawnshop a week ago have been captured in Milwaukee.

The simplified spelling board, in session in New York city, has issued its fourth list of words to appear in their new orthography. More than 1,000 words are shortened or changed in spelling in this new list.

HORTICULTURAL SOCIETY FAVORS A DIVISION OF MARKETS.

At their recent meeting the members of the Michigan State Horticultural Society put themselves on record as favoring a division of markets in the department of agriculture, by the adoption of the following resolution:

Inasmuch as all farming classes realize the need of a practical plan for marketing and distributing their products and the consumers also are protesting against the present expensive methods that have increased the cost of living, and

Inasmuch as an improvement of marketing methods will only come as the result of a careful and exhaustive study of the best methods now in use in this and foreign countries, which investigation can best be done by our national government,

Be it Resolved, That this society urge our congressional representatives to sustain by voice and vote, the proposed organization in the United States Department of Agriculture, of a division of markets.

ANOTHER IDEA ON THE DOG LAW.

As there has been some discussion of late on the dog tax laws, as a subscriber to The Farmer I will make a few remarks on that line. As the dog is a domesticated animal, the same as other farm animals, I think he should be included and assessed along with other farm chattels, and the tax collector should be given authority to withhold tax receipt until the tax is paid. In this way the tax would be paid and would relieve the sheriff of the unpleasant task of killing dogs. It would also stop the practice of hiding the dog until the assessor leaves the neighborhood.

The money received for dog taxes should not be confined to paying for sheep alone but should be extended to all farm animals killed or injured by dogs, and a portion should be sent to some Pasteur institute within the state to help out those unfortunates that have to take treatment by being bitten by mad dogs. Midland Co. J. W.

Magazine Section

LITERATURE
POETRY
HISTORY and
INFORMATION

MICHIGAN FARMER
AND *LIVE STOCK* JOURNAL
PUBLISHED WEEKLY. ESTABLISHED 1843.

The FARM BOY
and GIRL
SCIENTIFIC and
MECHANICAL

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

ONE of the oddities of nature is that some of the wildest birds show little judgment in nest building, while the gentlest birds, staying much of the time around houses, exhibit exceedingly good judgment in this respect. The wild turkey is the wildest of American game birds, but its nest is simply a shallow hole in the ground, lined with a few leaves or with grass, very often with but few bushes or other growth screening it from view. The partridge, which shows exceeding skill in hiding in the grass and leaves from the sight of man or boy, is most careless in the choosing of its nesting place and in the building of its nest. The blue jay and the redbird are wild compared with some others, and use good judgment in keeping out of harm's way themselves, but build their nests and rear their young with apparently no regard for the safety of the nestlings. And while doves are not as wild as partridges they cannot be

Careless Nest Builders.

By ISAAC MOTES.

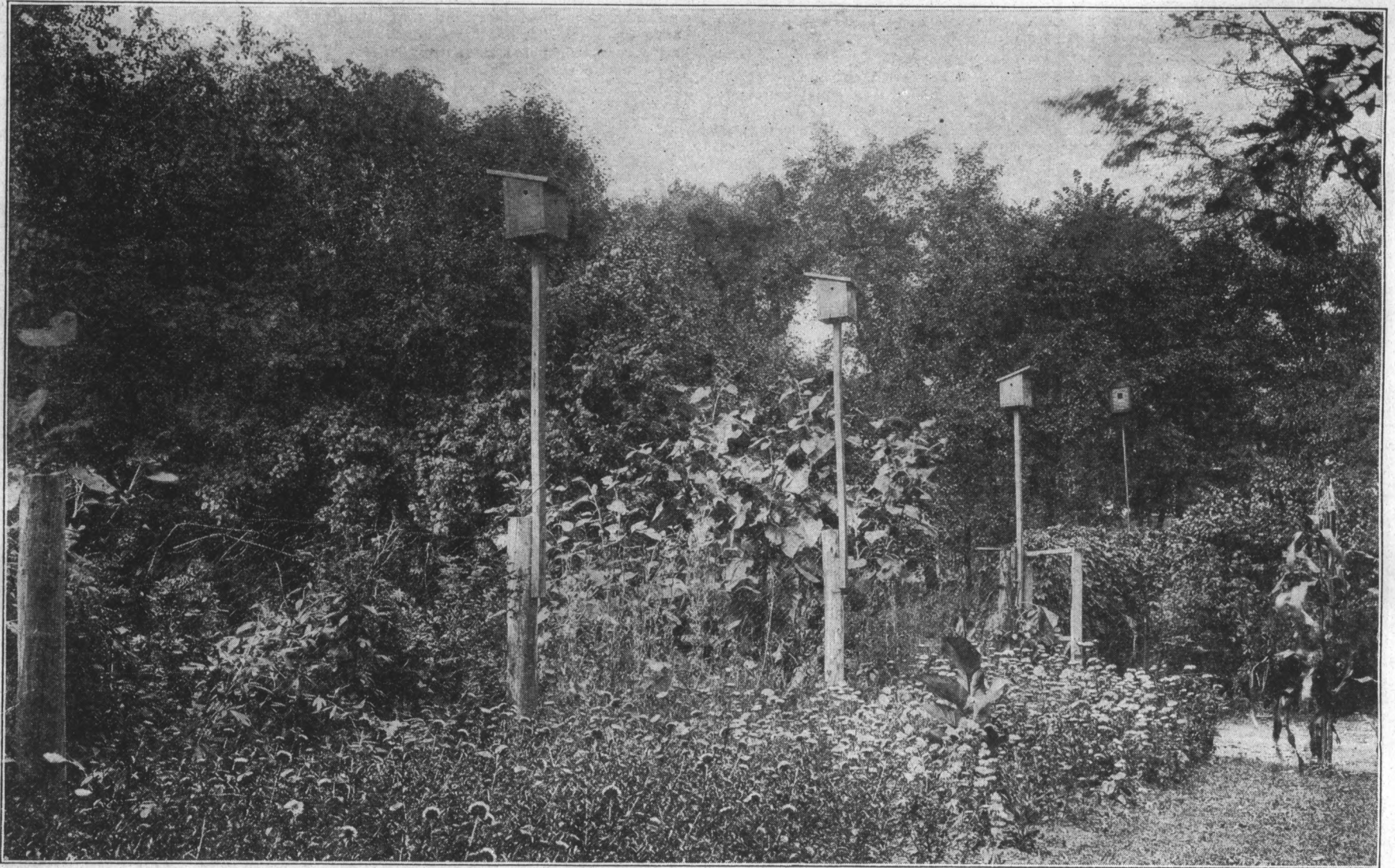
song birds and game birds in the adjacent forests came to our orchard to feast. Our orchard was the only one of any size in the whole country, so our mulberry and plum trees drew hundreds of these birds from the surrounding woods. They made their homes permanently in our locality, and many built nests in the mulberry trees.

Every spring we saw dozens of birds of different kinds gathering sticks, feathers, moss and cotton with which to build their nests, for the mulberry trees began bearing early—by the time some of these birds commenced nesting. At night and morning we were treated to sere-

nest is always in some inaccessible place—in a small knothole in a tree or sapling, or a fence rail, or in the crack between two fence rails where they come together at the corner, or in a deep, dark knothole in a log in the wall of an old-fashioned farmhouse. The bluebird, another very small and tame bird, builds its nest pretty much like the wren, only higher from the ground and usually not so near the house—at least not in a hole in a log which forms a part of the dwelling.

One would naturally expect to find the innocent, melancholy dove, with its meek, inoffensive nature, very careful in the

the limb and fastening the ends to the nest on either side. This nest is always a very crude, shallow affair—so shallow that the eggs could almost roll out—and built of a few rough, coarse sticks, with little lining. One would naturally expect the dove to build its nest in a tree with more care than on the ground, and especially deeper, but I saw no more evidence of care in the construction of nests in mulberry trees than in those on top of the corn rows. The nests were so flat that I am satisfied the eggs were sometimes shaken out by strong winds, and I know the young birds sometimes fell out, for I have gathered them up many times and put them back in the nest. If a dove built a nest low down on a limb, and children or men got to coming near it regularly, it would abandon the nest after the young birds were hatched, letting them starve. I have also found doves' nests on top of flat rails on rail fences, in the hot sun, the nests made out of



A few Bird Houses in the Orchard or Garden are not only Appreciated by many of our Feathered Friends but Greatly assist in the Propagation and Preservation of those Species which Frequently Suffer because of a Seeming Inherent Tendency to Carelessness in Nest Building.

classed with house wrens or house martins, yet the dove is also quite careless in providing a safe place for the rearing of its young.

It was my good fortune as a boy and young man to live in environments specially favorable for the study of birds. We bought land and opened up a farm in the virgin forest where very little of the surrounding country was in cultivation, and with no neighbors within less than two miles of us. We had been accustomed to plenty of fruit in the east, so one of the first things we did after coming west and getting sufficient land cleared was to set out young orchards of peach, apple, plum and mulberry trees surrounding our house. Immediately about the house was a yard of some three acres, and this was set out with mulberry trees—several hundred of them—and when the trees began to bear the

nades by the little feathered songsters that were a delight to hear. It was the last thing we heard in the evening, and we awoke to the music of it in the morning. There were Virginia cardinals, finches and warblers of various kinds, sparrows, thrushes, doves, partridges, blue jays, redbirds, wrens, bluebirds, house martins, woodpeckers, blackbirds, and in fact almost every bird common to our southwestern woods, including many which I never saw—only hearing their song or whistle—and including many migratory birds which stopped with us a few days on their way north. So I had a good opportunity to study the nesting habits of many birds, the carelessness of some and the painstaking care of others.

As a rule, a large bird is more careless about how and where it builds its nest than a smaller one. The wren is one of our smallest and tamest birds, yet its

selection of a place in which to rear its young, and very careful about building a snug nest, yet it is a careless bird in these respects. The dove's nest is often built on the bare ground in corn fields or cotton fields, more often in the former, on top of the corn rows. The nest is made of small rough sticks and scantily lined with others but a shade smaller, or perhaps with a few tufts of grass. Or it may be merely a shallow hole wallowed out in the dry, hard-baked ground. The nest is very shallow, and has absolutely nothing to protect it from snakes and other enemies.

But I would often find doves' nests in the mulberry trees, built on the lowest limbs, so low that I could reach up and take the eggs if I were so minded. The nest would generally be at the fork of a horizontal limb, anchored to the limb by passing small crooked sticks under

not more than a dozen coarse, rough sticks.

The blue jay is another bird using poor judgment in the building of its nest. Its nest is only a degree less crude than that of the dove. The jay always builds in a tree. In woods where the trees are tall its nest is generally pretty high up, but it often built in our mulberry trees, which were wide-spreading rather than tall. Here the jays made their nests higher up than the doves, in the forks of the trees, not on low horizontal limbs as did the doves. The nest of the blue jay is a little deeper than the dove's nest, but with this exception, there is little to choose between them. I had seen blue jays' nests in the tall trees when smaller, before our mulberry orchard got to bearing, and it seemed to me that they were made with a little more care in the oak and hickory trees in the woods than in

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and well protected from the elements if they are covered with our well known high grade

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The wood frame work is well protected by the metal sheets, and lightning seldom damages such buildings, since the metal will conduct the charge quickly to the ground. These products also safeguard you against fire. Insurance rates are low on this class of buildings.

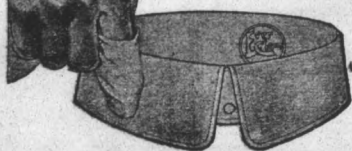
APOLLO Roofing and Siding Products are strong, rigid, easy to apply, vermin proof, neat, reasonable in cost, and absolutely weatherproof. APOLLO is always first quality, full weight and is SOLD BY WEIGHT. In buying always look for the trade-mark on the top sheet of every bundle. Sold by leading jobbers and dealers everywhere.

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CIGARS

the more exposed positions in the mulberry trees.

I cannot help thinking that the birds got careless in their nest-building habits after living in or near the orchard so long. Perhaps they grew lazy and shiftless, for the berries were so plentiful that it was easy to get enough to eat without exertion. They had nothing to do but sit around and eat these berries, which were of the "ever-bearing" variety, ripening from May to September, while in the natural forest they had to exert themselves more. I cannot help thinking, too, that the song birds which visited our orchard did not sing as much in mid-summer as in early spring, before the berries began to ripen, and that they sang sweeter about the time the young trees began to get large enough to bear than in later years when they had gorged themselves on the berries summer after summer. I know some people are thus affected when they never have to do any work, and why not the birds? In the same way it is said that honey bees, when taken to regions of perpetual summer, cease to lay up honey for the winters which never come. Anyway, I know the blue jays built their nests nearer the ground in the mulberry trees than I ever saw them do in the trees of the forest.

The redbird is also a careless builder, though quite a wild bird. Its nest is generally found in small bushes or saplings, or along rail or brush fences. In all my life I don't think I have seen more than a half dozen redbirds' nests in tall trees. The redbirds often visited the mulberry trees, but generally they built their nests in a strip of woods near the orchard, in bushes or small saplings, sometimes in bushes so low that a cat could have jumped to them from the ground. While the nest was in such an exposed position, its construction was considerably more artistic than doves' nests, and somewhat more so than blue jays' nests, though not equal to many of the smaller, tamer birds in this respect. The redbird's nest is deeper than the jay's, and lined with grass or feathers.

But the most careless bird in the matter of nest building is the partridge. On the north side of the mulberry orchard was a strip of woods coming up to the rail fence, and the partridges would come out of these woods and eat mulberries off the ground. We did not cultivate the ground, only keeping the grass and the weeds down, and there was nothing to obstruct the view under the trees, so we could see the partridges from the house. There were no woods near us except on the north side, and the partridges entered from this side, so they were plentiful in this strip of timber. Here I found their nests at different times, and while there were plenty of good places for them to have built in fallen tree tops, or in tall grass and straw, or among bushes, briars and grape vines, I more often found the nest in some exposed place.

The partridge nest is generally a shallow hole in the dry ground under some bush which half conceals it, and there is not likely to be any grass or leaves or small sticks in the nest at all, simply a shallow hole in the bare ground. Perhaps one reason for this is that the young birds stay in the nest but a very short time after hatching, for they are lively little rascals and as soon as hatched they get out and follow the old birds into the brush. The eggs run from about ten to eighteen in number if only one bird lays in a nest. They are like a guinea's egg in shape, one end somewhat pointed, the other more blunt. They are white, but with a faint cream tint.

Our house and poultry yard were near the north side of the mulberry orchard, and mother's hens often made their nests in the bushes out in these woods. The partridges sometimes laid in the same nests with the chickens, thus showing how little they care for their nests, but the small eggs generally got broken among the larger eggs of the hens.

Partridges will also make their nests together sometimes. I suppose one partridge hatches out the eggs and takes care of the whole brood. Perhaps the partridges found life so easy in the spring and summer near our mulberry orchard that they, too, became little gormands and grew careless in their nesting habits. Certainly they didn't exhibit the cunning in nest building which they showed in hiding from the farmer boy with his shotgun and dog.

The most exposed partridge nest I ever saw was in this strip of woods north of the house. There was a little cow trail along the woods some 20 feet from the fence, a trail which I often followed. At one place a large burnt log lay at right

angles to the path, the end towards the path being about 15 feet away. The bark had been burned off at some time when the woods were on fire and, being dry and somewhat rotten, this end had been burned black. The under side had been more rotten than the top side, so it had burned more on the under side, and the upper part extended out farther towards the path. The black under side slanted downward to the ground, leaving the upper part overhanging perhaps 18 inches.

Underneath this black sloping end the ground was level, bare of leaves and grass, and of a grayish color. Here the old partridge had made its nest in plain view of anyone passing along the trail. The ground being hard and dry, the old bird had not made the hole deep. When I found it there were 22 eggs in the nest. Two partridges must have been laying in the nest, for the eggs were heaped up above the surface of the ground, glistening white under the black, slanting end of the log, making such a contrast that a blind man could almost have seen them.

RECORD APPETITES OF HISTORY.

How the Good Things of Life Appealed to Monarchs of Old.

BY FRANK HEYWOOD.

When one goes so far as to claim that great men are great eaters, it may be said that a careful scrutiny of the dietary habits of men of eminence do not confirm this assertion.

But that some great men in the past, and the "near great," have been stupendous lovers of the joys of the festive board, and inordinate lovers of the products of the most ingenious culinary art, cannot be denied. We have the best authority for the statement that the chefs of these "potentates and lords" had carte blanche for supplying the tables of their masters, and where money is not to be considered it is simply a question of the talent, ingenuity and skill of the chef himself.

Perhaps one of the most noted bon vivants of history was Charles V. There is no gainsaying the assertions that he was an enormous eater. It is written of him that he breakfasted at 5 o'clock on a fowl seethed in milk and dressed with sugar and spices. After this light repast he went to sleep again. At noon he dined, partaking of something like twenty different dishes of meat. He supped twice, first soon after vespers and again at midnight or later, which latter meal was the most important one of the day, consisting of many courses of meats and savory compounded dishes, during which his potations of ale and wines as an irrigation feature were something to think over as to the possibilities to happen later on. This monarch was a crank on sweetmeats and pastry, and the various creations of his kitchen and the achievements at the table in this line were incredible.

His stomach, which must have been a wonderful one, naturally could not stand the continued assaults upon it forever, and so after a forty-year campaign it finally yielded to the inevitable and went out of business altogether. Charles was only 58 years of age when this happened, and it is a melancholy reflection that he had just begun to live—as we reckon lives today.

The love of pastry appears to have run in this family of Hapsburgs. Phillip the II, the historians tell us, "looked habitually on the ground when he conversed, was very morose and embarrassed in manner as though suffering." All the trouble with Phil was he had chronic dyspepsia. Anyone who has been similarly afflicted will sympathize with him, and not only not wonder that he kept his eyes on the ground when he conversed, but that he made things very uncomfortable around the house. And all because of pastry. Of course, there was no mince pie in Phillip's day, but a man who will order gooseberry tarts after an eight-course dinner, lasting four hours—why, we have our opinion of him, and no sympathy for him, whatever.

Frederick the Great was another chap with a full-grown appetite. Though he could and did dine on a cup of chocolate in war time, he was a star at the festive board and could easily out-distance any of the practiced royal circles of that day. Mirabeau seems to have known something about this soldier's habits, for he says: "The King eats every day, of twelve or fifteen dishes at dinner, not mincingly either, all highly seasoned and followed by pastries and sweetmeats, and accompanied by five different kinds of wine. At breakfast and supper, too, a great number of cooked dishes were pro-

THE SUN DIAL.

BY L. M. THORNTON.

"I record none but hours of sunshine." I think sometimes, in life, I'd like to be A sun-dial, standing straight and firm and true Half way between the tumult of the sea And the far heaven, arching soft and blue. And all the while, in all my curves and towers, I'd only record keep of sunny hours.

I like to think that storms would beat about My head, and tempests lash me in the dark, Yet when at last they passed me, put to rout, There should be left no slightest sign or mark. Since what availed their most malignant powers— I'd only record keep of sunny hours.

I like to think that enmity should fail To touch me, or the cruelty of friends; I like to think no sorrow could avail Or leave despondency, since sorrow ends. No memories sad, for grief that o'er me lowers, I'd only record keep of sunny hours.

vided, including one of which he was very fond, salted tongue and red peppers."

No wonder Mirabeau exclaimed: "We are at the last scene."

The diet of some of those idiotic cranks in the consumption of stuff was enough to paralyze the best stomachs of the twentieth century. Frederick's illness was, at the close, dropsy, indigestion, and heart trouble. He died on the 17th of August, 1786, after eating inordinately of eel pies, peppered to excess, of which he seemed to have difficulty in getting enough. But he did.

William II was another of those monarchs who ate and drank too much for their own good. He was reluctant to leave the well supplied table, but sat for hours, endeavoring to do justice to the delicacies spread before him, and what he didn't drink during this meal was not on the menu at all.

We might have supposed that Napoleon would have known better, but he did not. He was just as voracious an eater as any of them. It is charged up to him that he lost the battle of Leipsic on account of a shoulder of mutton stuffed with onions, a favorite dish of the emperor, with which he literally gorged himself, to the extent that he miserably failed to handle his army at the crucial hour. Napoleon ate very rapidly and to this he owed much of the misery of his after hours. His state dinners are said to have ended in half an hour, to the great discomfort of his more leisurely guests.

But Napoleon did not meddle with wine, himself, though his cellars were filled with the best vintages selected by experts. In that melancholy voyage to St. Helena he offended the English officers by rising from the table before drinking had fairly begun. One of these prigs had the bad taste to comment, in Napoleon's hearing: "The General has evidently not studied manners in the school of Lord Chesterfield." Their idea of good breeding was, according to Chesterfield, to drink until one or all dropped under the table.

Peter the Great was one who stood in the front rank of heavy eaters and drinkers. Macauley tells us that in 1698, when Peter visited England, he astonished the best of the great and famous diners; the quantities of beef and other meats that he devoured, the innumerable quarts of brandy that he swallowed, (which, by the way, was liquor that had been distilled on his own grounds and brought along with him), were popular topics of conversation for weeks.

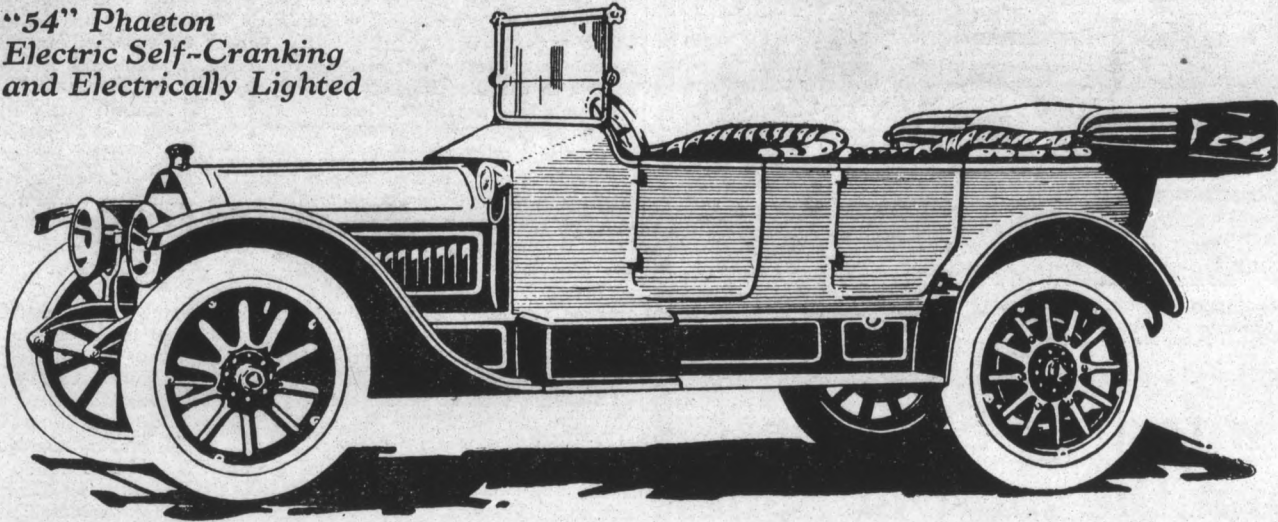
Great, however, as was Peter, he found a foeman worthy of his steel (and carving knife) in the Roman Emperor, Maximilian, who occupied the public eye for the three or four years about A. D. 235. This gentleman has the record for roast beef, of which he is credited with 40 to 50 lbs. in one day, at the same time washing it down with six gallons of wine.

Of course, documentary proof is lacking in these events, and the time at which they occurred is somewhat remote to undertake any research, so we do not know whether the historians lied or not. One thing, however, we may feel sure of, that the Roman emperors numbered in their ranks many a noble glutton. Elagabalus is said to have favored peacocks' tongues, as a straight diet; also nightingales' tongues were much thought of. It might be said, in extenuation of these expensive leanings, that he did not neglect the animals but had his lions and

(Continued on page 441).

The World's Largest Builders of Six-Cylinder Automobiles.

"54" Phaeton
Electric Self-Cranking
and Electrically Lighted



These Only Are the Cars You Should Buy

While there are approximately 250 different makes of automobiles on the American market, it is not so difficult to choose a car that will prove satisfactory. Your neighbors tell you of their experiences. The dealers speak in highest terms of the cars they sell. You are appealed to from practically every angle to consider the advisability of this car and that car.

In all this there is apt to be much confusion as to what car can really be trusted. Just bear these facts in mind in considering each car. It will save you much worry.

Consider the Importance of the Dealer

The choice of *which* car is, of course, important. What it has done, who builds it, the manufacturer's position in the industry and the character of the car itself is not difficult to ascertain.

You probably have a pretty definite idea now as to *which* car.

Have you considered just how the dealer is to be figured in the transaction?

He is the point of contact between you and the maker, your relation with him is bound to be more or less personal.

The finest product of the best builders can not be as satisfactory a car for you to own, if its dealer does not display the spirit of interest after you have bought, as it would were the dealer all that he should be. From those who have had dealings with him you can get a pretty accurate line on the dealer.

All who buy HUDSON cars of us have our interest so long as they own a HUDSON. We are more interested in the performance of the car after it is sold, than in the sale itself.

That policy is established by the Hudson Motor Car Co.

And Why a "54" HUDSON

Motorists who know see in it the qualities which only Howard E. Coffin and his associates—48 all told—were able to build into it.

They have not produced a Six by merely adding two cylinders to a good Four. A good Six can't be built that way.

These 48 specialists, experienced in all the details of motor car building, trained in 97 European and American factories, started out to build a Six without being hampered by old manufacturing equipment and old ideals.

Their reputation is staked on a "54" HUDSON.

That is a sufficient guarantee for most buyers.

HUDSONS don't disappoint.

The "54" HUDSON has electric lights. It is electrically self-cranked. The famous Delco system, patented, is used. Every motor car luxury is included, speedometer, clock, top, curtains, rain-vision windshield, demountable rims, twelve-inch upholstery, etc. Equipped with a five-passenger Phaeton body or a two-passenger Roadster the price is \$2450.

At \$1875 you can obtain the HUDSON "37."

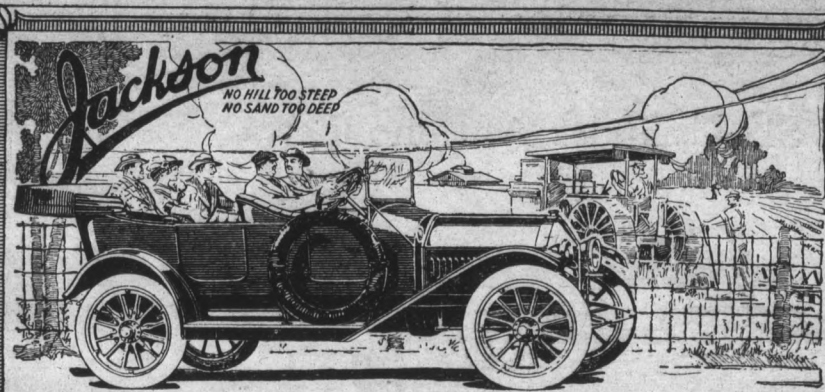
It, too, was designed by the same engineers that built the "54." Experts point to it as being the "Four-cylinder masterpiece."

Send for catalog, or go to the Hudson dealer, and he will prove their value in a hundred different ways.

See the Triangle on the Radiator.

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"Majestic" (illustrated)—\$1975
46 H. P. four-cylinder touring car, completely equipped and fitted with electric starter and lights.

"Olympic"—\$1500
35 H. P. four-cylinder touring car, completely equipped. Electric starter and lights are optional, at an extra cost of \$225.

"Sultanic"—\$2650
55 H. P. six-cylinder touring car, seven-passenger, completely equipped and fitted with electric starter and lights. Five-passenger, \$2500.

Not Comfort or Sturdiness alone, but the most of both

Soundness and strength you must have in your car, if it is to prove a real investment.

Comfort you must have, if the family is to get the greatest possible pleasure out of the car.

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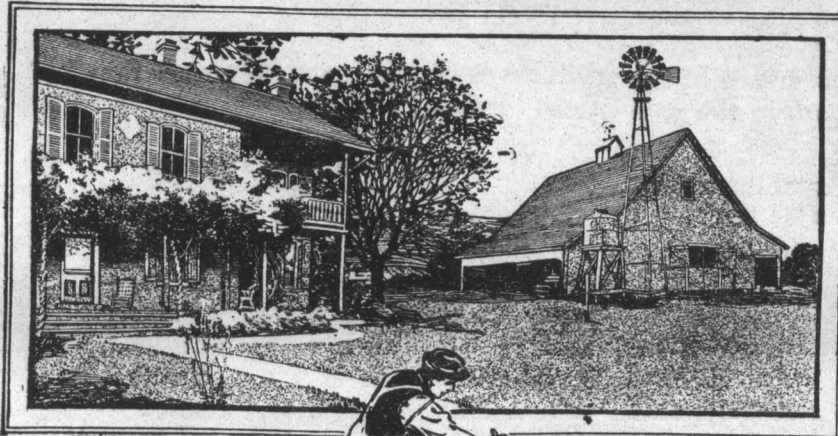
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The White King Timitan.

By WM. A. COREY.

A hundred canoes, each containing its full complement of armed natives, tossed out of rifle range they circled far to the south and well out into the bay. Suddenly half-moon bay; while other hundreds of Emerson saw, near the canoes and battle-eager savages, yelling like fiends, brandishing spears and sending flights of arrows in the direction of the ship, raced up and down the sandy beach.

"Looks squally, Emerson, eh?" commented the Captain.

"Well, it's not exactly like meeting us with bands and carriages," dryly remarked the trader, a square-jawed, athletic young man, without taking down his binoculars.

"What's to be done?" the Captain wanted to know. "You're the whole thing now, and A. Crawford & Company, you know, like Lord Nelson said of England, expects every man to do his duty."

"Nothing's to be done," said Emerson, resting his binoculars on a stanchion and turning to the Captain. "A fight is the one thing to be avoided. There are two kinds of natives you can't get any coconuts out of—dead ones and enemies. Some way we've got to show these people—" and the trading company's representative waved his arm toward the shore—"that we're here as friends and on the square. It looks like a waiting game."

"I wish," said the Captain, "that we had that rascally Frenchman here that stirred up all this rumpus by robbing the King's tomato can and making love to his favorite wife. We'd hang him here on deck as a peace offering, and take chances on getting called to book for it later on."

"Yes," grimly returned the trader, "and if wishes were horses—holy snakes! They're getting ready to charge us. Give 'em a blank shell, Captain, just as a lesson in good manners."

The little three-pound muzzle loader, the only armament the ship boasted, was quickly trained on the approaching canoes and its spiteful bark and tongue of flame shot out over the lazy waters, stopping the hostile advance and sending the canoes scurrying back toward the shore.

It was indeed, as Emerson had said, a waiting game. The islanders, while ordinarily friendly, had been bilked so often by unscrupulous whites that it had become almost impossible for an honest dealer to do business with them, the recent episode above referred to having driven them to the point of frenzy.

But young Emerson was not a quitter. He could not afford to give up, even if so inclined. With the trading schooner, "Golden West," laden with a cargo of miscellaneous merchandise, he had been commissioned and sent out by A. Crawford & Company, merchants of San Francisco, to establish a permanent trading post on the Island of Apamama, the largest of one of the numerous island groups lying along the equator in the mid-Pacific. It was the policy of the company to be absolutely honest and square with the natives; giving them full equivalent in American goods for their coconuts, bananas and other island products. Obviously, on no other basis could there be hope of a permanent business. To this end their representative had been given explicit instructions.

Hence the situation said representative faced. He was young for so responsible a mission; the venture was an expensive one for the company; and to force a landing with rifles, or to tamely turn about and return to San Francisco, would in either case spell heavy loss for the company and practical ruin for himself.

But the outlook was discouraging. In vain the white men tried to convince the irate natives of their peaceful designs. All to no purpose. They held up empty hands, folded their arms, and exhibited gaily colored blankets and calicos.

There was, at least, plenty of time, and time itself might solve the problem. So the Golden West dropped her anchors, banked her fires and waited. The native humor might change, or something unforeseen might happen.

The days and nights passed with little change—days of furnace heat and nights of fragrant land breezes and vast silence under the star-lit, tropic sky as civilized and savage watched each other from ship and shore.

On the fourth day the unforeseen happened. The deadlock was broken by a whale. It was about mid-day when Emerson, from the bridge of the Golden West, was watching a number of canoes apparently trying to approach the ship

by a flank movement. Carefully keeping full complement of armed natives, tossed out of rifle range they circled far to the south and well out into the bay. Suddenly Emerson saw, near the canoes and battle-eager savages, yelling like fiends, brandishing spears and sending flights of arrows in the direction of the ship, raced up and down the sandy beach.

Instantly the attention of the native seamen was diverted from the ship to the whale. In the same moment several canoes were upset by the great waves from the whale's heaving sides and lashing tail and their crews thrown into the water.

Quick as a flash the trader saw his opportunity. Could he save the lives of some of the natives and thereby gain the friendship of all? Orders were quickly given; a launch was lowered and very soon a crew of picked men, with the trader at their head, was speeding toward the imperiled natives. It was a dangerous undertaking, for the whale was liable to do to the launch what it had already done to the canoes.

But the game was worth the effort and the white men were soon in the midst of the swirling mass of waves, struggling natives and canoes. And they were none too soon, for the native boatmen, expert swimmers though they were, would have been drowned but for the timely aid. As it was, a number of them were lost, and one Emerson took to be their leader was sinking for the last time when he was grasped by the hair of the head and finally dragged into the boat.

Like an intuition it came to Emerson that this leader, just rescued, was not a subordinate but the island king himself, which intuition was confirmed by the other natives, who by signs gave him so to understand. This was surely good fortune, though they were not yet out of danger and the nearly drowned king was yet to be gotten to the ship and revived. The effect of this drama upon the natives on shore was instantaneous. They had seen their king threatened by the whale and then rescued from that danger only, as they supposed, to go to his death on the deck of the white man's ship. They redoubled their warlike demonstrations, leaping up and down, yelling and throwing spears and shooting arrows, while those in the boats came so near the ship that again the cannon had to be trained on them while the half-drowned king was being worked over and brought back to life.

But a change soon came over the face of things when the king, after being revived and convinced that he was not to be murdered, himself signaled to his people to lay down their arms.

The magic kindness had worked a miracle with these simple, impulsive natives, and peace at once opened the way for business. The canoes surrounded the ship and the native oarsmen clambered up the sides and swarmed on deck where they and their king, whose name was Timbanouk, humbled themselves before the white men and expressed in every possible way their gratitude.

The Yankee trader was quick to seize upon the psychological moment to spring the purpose of his visit. "I come," he said, "to make trade with you," indicating the goods in the ship's hold. And he made it as plain as signs and the little English they understood admitted, that they could best show their gratitude by appointing a day for trade.

This was readily agreed to and the second day following was duly appointed as market day.

It was a day of days. King Timbanouk, decked out in his kingly regalia of bead and shell ornaments, was early on the scene, his canoe of state being rowed by six of his wives, and bringing with him as a present to the white trader a sleeping mattress of beautifully woven coconut fiber.

The aged king, as was proper, set the pace by buying whatever of the ship's stock that took his fancy, the common herd keeping as near to it as their individual stocks of coconuts would permit. They bought everything from hewgaws and trinkets to self-heating flatirons and sewing machines. The idea of utility was farthest from their simple minds.

The market day passed off satisfactorily and the next day, having received the king's permission to establish a permanent trading post on shore, Emerson superintended the erection of a rude structure of lumber carried on the ship for that purpose.

Then came the stocking of the little

store from the cargo, after which the she ship made a short cruise, touching at two or three other islands while Emerson remained at the main post.

The main object of the enterprise having been established, the Golden West, well laden with bananas and cocoanuts, turned her prow once more toward San Francisco to re-stock, leaving the young drummer behind to promote trade and await the second cargo.

Friendly as were the natives, young Emerson fully realized the seriousness of his position as the ship steamed out of the island harbor and slipped over the horizon. He was the only white man in hundreds of miles of island-dotted sea and surrounded by thousands of natives who, while friendly enough for the time, might change their whim at any moment. It was a situation calling not only for personal courage but for patience and tact of the highest order.

Emerson's strong hold upon the situation was his "stand in" with King Timbanouk. He had saved the aged king's life. And that the latter's gratitude was real and not feigned was perfectly evident. Timbanouk seemed to take his ingenuity to devise ways of showing the white trader consideration. Emerson was thanked so effusively and repeatedly that it became a nuisance and he secretly wished the king would "forget it." He was shown hospitality so lavish that it was embarrassing. He was wine and dined in the king's bamboo baliwick and, figuratively, given the keys to the whole island realm. He was waited upon by the king's own chef and body servants and urged, by signs and lame English, that if he saw anything he wanted to take it.

Of all this royal favor the shrewd Yankee trader was quick to take advantage. The practical side appealed to him rather than the sentimental or humorous. It brought him trade. While basking in the court favor he was dealing out American goods and storing cocoanuts against the ship's return.

But the ultimate act of gratitude, the one which finally led the trade into troubled waters, came the second week after the Golden West's departure. Emerson was sent for one morning and astonished with the information that he was to be crowned king, or rather, joint king, of the Apamamans. "Me getting too old to rule," explained Timbanouk. "Me getting too fat to get around and see after things. Also me sick man. White man rule for Timbanouk. Native people call white man Timitan, the White King. Is it so?"

Emerson demurred. This was the proverbial too much of a good thing. Besides, he scented danger. These simple island children were, after all, human and he hardly liked the idea of risking his neck and his company's interests by mixing up in their island affairs. He had no hankering for the fierce lights which beat upon that particular throne. So he declined, though he tried to do so tactfully.

He explained to Timbanouk that he appreciated the great honor, etc., etc., but that he couldn't think of accepting. He was modest. He was a simple trading man and he had no training for kingly duties. He would serve the king in any way possible but he preferred to do so unofficially.

But the old king was obdurate and Emerson soon saw that the line of least resistance was to accept the Prime Ministership and trust to tact and good fortune to carry him through whatever complications might arise. So a council of state was called and, to the accompaniment of barbaric music and ceremony, the American drummer was crowned with the kingly crown—an elaborate affair of wild boar's teeth and woven beads and shells.

The power which Timbanouk had thus put into the hands of his deputy were really large. The white king, as the real king's chief adviser and active agent, could do practically as he pleased. And that he used this power, dangerous though it was, to advance his company's interests, goes without saying.

An excellent opportunity to use this power came soon after his "coronation." A rival trading ship, a German, entered the harbor one day, dropped anchor and signalled the natives for a conference. They, like the American, had come to "make trade."

It was quickly put up to the white king whether they should fight the newcomer or trade with him. "Trade by all means," said the new king, who was not looking for trouble, especially as he felt confident he could manipulate matters so as to keep the bulk of the business in

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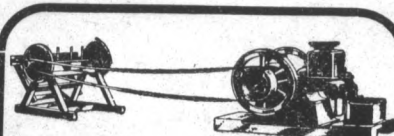
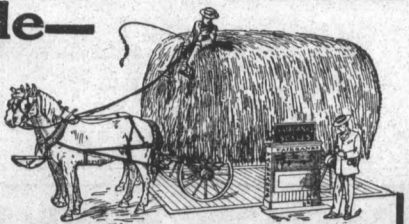
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his own hands. So the new arrivals were received and a market day appointed.

To the surprise and disgust of the German, the American trader was present at the bargaining, ostensibly as a disinterested spectator. On the latter's shrewd advice a new method was adopted at this fair. While as many of Timbanouk's subjects as cared to were allowed to be present on the deck of the German ship to see and hear—and require watching—they, individually, were to buy nothing. King Timbanouk was himself to do all the buying—or bartering—for the island. Also it was understood between Timtan and Timbanouk that the latter should only buy on the advice of the former. They also agreed upon a secret sign code to be used. It was a very simple one. When a given sample was brought before Timbanouk, it was to be put up to the chief adviser whether to buy or refuse. If the royal deputy looked directly at the article there was to be "nothing doing." If he turned his back and looked the other way, "all right, buy if you like." It was all to be very secret. Emerson had no desire to be thrown over the side of the German ship for interfering with their business.

These carefully laid plans were skillfully carried out. Old Timbanouk, after being rowed to the ship by a crew of his wives, was hoisted, wheezing and panting, to the deck. Here, seated in a deck chair, with such dignity as he could muster, the king solemnly examined such articles as were brought before him but all the time keeping his first assistant within range of the corner of his eye.

Quite naturally the king's handy man shaped his code signals to accord with his mental inventory of the stock in trade in the trading post on shore. If an article of which there was none in stock on shore was brought out the signal was, "Buy." If the article displayed was already in stock on shore the tip was, "No buy." Likewise if firearms or liquor were brought out the dope sheet read, "No buy;" while if limburger cheese was shown, the Yankee trader was looking intently at something else—"Buy if you like"—he carried none of it in his own stock.

The sale passed off smoothly. The Germans got rid of considerable stuff and, as they suspected no collusion, and as the American had lost nothing by competition, all was well.

The tactful young trader had met and mastered one difficult situation and if old Timbanouk had lived on indefinitely, or at least until the next visit of the Golden West, he perhaps would have had no other to meet. But, as ill luck would have it, the very next week the old king sent for his prime minister and announced himself as very ill. He had, in fact, a premonition of death and, sitting in the sun in front of his bamboo palace, Timbanouk put his bejeweled old hand on Emerson's arm and said: "When Timbanouk die, Timtan be king."

Emerson involuntarily glanced seaward, longing for sight of the Golden West, though he knew she could not arrive under two or three weeks. He liked fame and preferment, but the present pace was a trifle too rapid. He had his premonitions also—premonitions of disaster. He knew that human nature is much the same, whether in Apamama or in San Francisco. And he well knew that to attempt to rule the little island kingdom as their real king would be very different from simply acting under the patronage, or on the authority of, the senile old Timbanouk.

So Emerson thanked the old man effusively but, with assumed modesty, declined the honor, at the same time trying to reassure Timbanouk as to his health. But all his diplomatic sidestepping availed nothing and, to avoid offending the old monarch, he consented to the "slate," though fondly wishing the old man many lengthening years.

But the voice that had whispered in the old king's ear had not deceived him, for the very next week he died, telling his people, from his dying couch, that he had appointed Timtan to succeed him as king. And there was nothing left for Emerson to do but, promptly and without show of hesitancy, to accept the unwelcome responsibility.

This he did. But Timbanouk had hardly been buried, with barbaric pomp and ceremony, when, as his white successor feared, there were mutterings of disloyalty. It became at once plain that the island inhabitants were not going to peacefully submit to a foreign ruler. They believed in Apamama for the Apamamans. It was but natural and Emerson could hardly blame them. But what was he to do? He had been the favored pro-

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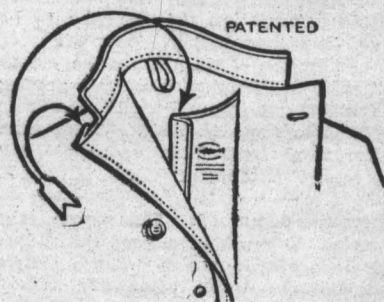
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tege of an old man in his dotage. But now he had the whole, raw island population to deal with. What was he to do?

There were two courses open. One was to abdicate in favor of anyone whom the islanders might want. The other was to hold on to his boar's-teeth crown and fight. As to the first course, Emerson would have gladly stepped down and out, but he well knew that abdication would be attributed to cowardice and that his company's business in the island, and possibly his own life, would pay the penalty. So, since he would play against desperate odds in either case, he decided to hold, if possible, what he had, crown and all.

The expected storm soon burst. One morning Emerson, looking out through a window of his trading post, which constituted his kingly palace, saw an array of several hundred natives, armed with their island weapons, approaching with evident hostile intent.

The white king, revolver in hand, stepped boldly outside his door and, as the mob came up, spoke to them. Combining sheer audacity with a clever play upon their ignorance and superstition, he told them he was king by authority of Timbanouk and that he proposed to carry out their former king's wish. He told them that he had power of which they did not dream; that he could make the dead speak; and that if they doubted it he would prove what he could do by making Timbanouk speak to them.

Suiting action to word, Emerson went inside the post and unlimbered a phonograph which he had in stock and placed upon the cylinder a record which, foreseeing some such emergency, he had induced the old king to make some days before his death. It was a speech by the former king, addressed to his people and commanding them to obey the orders and decrees of the white king, Timitan, to whom he left his authority.

Emerson adjusted the machine, wound it up and stepped outside the door. "Listen," he said, "and you will hear Timbanouk's voice speaking to you, though you saw him buried a week ago."

The effect upon the simple-minded natives can be imagined. This man, this marvelous white man who came from the strange country over the seas, was a miracle worker, a god. He had made their dead king speak. They might overcome a man, be his skin of any color. But who might oppose a god? And, besides, could there now be any doubt as to their former revered king's wishes in the matter?

And so, with the voice from the grave in their ears, the malcontents became awe-struck, humble idolators, and the man of trade, of courage and of tact—a king indeed—had won.

RECORD APPETITES OF HISTORY.

(Continued from page 436).

tigers fed on pheasants and parrots. His majesty was also something of a joker, and adopted numerous ingenious methods of adding to the attractions of the table at the dinner hour. For instance he would at different times assemble, as guests, men who were awfully fat, or horribly lean; at others, those who were abnormally tall or amusingly short; others who were entirely bald or painfully gouty, which afforded the monarch and his favorites rare fun during occasional dull periods in business.

Of the first Caesar, the true Caesar, who has been named as the greatest character in history, it was said by Cato, a very good authority, too, by the way, that "of all those who had helped to overthrow the republic, Caesar was the only sober man." Still it is none the less true that he enjoyed the more rational pleasures of the table, and was an affable and genial host. As a guest, he probably gave the finest example of genuine high breeding that was ever known, and its influence upon contemporaneous society was to elevate and refine it, to a considerable extent; with this notable example of the possibilities of even the monarchs of old, it is fitting to close the imperfect record.

"You are evidently very fond of books, sir," said an old gentleman to a young man in a car. "May I ask whom you consider the best novelist of the day?"

"Jenkins, undoubtedly," said the young man. "There's nobody can write like Jenkins. Why, sir, the circulating libraries can't supply his novels fast enough."

At this moment another man entered the car and addressed the young man:

"Hello, Jenkins!" he said. "How are you today?"



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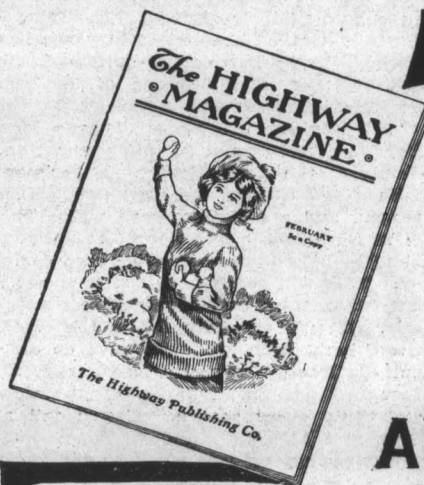
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Woman and Her Needs At Home and Elsewhere

The June Graduation Frocks

Household Editor:—After reading the article in The Farmer of March 8 about spring styles in fabrics, I wondered if you could not help me with a problem that has been troubling me. My daughter graduates from the high school in June. Besides the commencement day program there are the class day exercises and the baccalaureate sermon to be provided for. I am rusty on fashions, and do not know just what would be suitable. I thought perhaps you might help me, and that your suggestions would help some other mother in the same position. Thanking you in advance.—Mrs. E. L.

The dress for the commencement exercises proper should be white. For while there are always one or two girls who wear a colored frock on this auspicious day, there is nothing daintier or more girlish than white, nor nothing more suitable for wear on the day when she really commences life's duties.

What the material shall be must be left entirely to the pocketbook. There are many beautiful embroidered fabrics, in fact, practically everything white has a touch of embroidery except the heavier cloths, and even some of the piques are embroidered in eyelets. The commencement frock should be sheer, however, and there are beautiful embroidered crepes selling at \$1.25 a yard which would be most appropriate. They would need little trimming except buttons, as they are sufficiently trimmed with the work already on them. For a girl who takes a 16-year-size, four yards of this crepe should be enough for a dress, it is 40 inches wide. This would mean \$5.00 for the cloth, and another dollar should cover incidentals.

If this is too much to pay you might buy enough all-over embroidery for a skirt and match the muslin in plain cloth for waist, trimming it with insets of embroidery in the form of medallions or insertion. If your daughter is handy with her needle she would have time to embroider her own dress before commencement, if she chose a sprawly pattern with little solid work and few eyelets. In that case you could buy plain white for 25 cents a yard, and materially cut down the expense. However, a growing girl just nearing graduation should not be spending her spare time embroidering, so I would not advise this course.

The style of making will depend on your daughter's figure. If she is slender, have one of the draped skirts. If she is short and rolypoly avoid the drapery unless you want her to look like a figure out of a Dutch painting when she walks upon the stage. The draped skirts are not becoming to a plump girl or woman. The waist must have low neck and elbow sleeves, with the new sloping shoulders. If you do not want the neck and throat bare she can wear a thin lace yoke with the frock.

To wear with this dress she will need long, white gloves, white stockings and white slippers. If you can not afford silk hose, get fine white lisle, which are much better taste than the cheap stockings with silk half-way up and cotton tops.

The same dress may do for the baccalaureate sermon and class day exercises. Personally, I should have this white, too, but if you do not want two white dresses you would make no mistake in buying a ratine. Ratine will be very much worn, and comes in plain colors, all shades of blue, brown and tan, Melrose, green and beautiful bordered effects. A bordered ratine would be pretty made up in one of the Bulgarian blouse effects, using the border for the bottom of the skirt, peplum of the blouse, sleeve bands, etc.

The Bulgarian blouses are best described by saying that they look like a middy blouse with the bottom gathered into a peplum which fits tightly around the hips. They come in cloth suits and wash dresses, and while they are ungainly looking things in heavy cloth, they are pretty in wash goods.

If you choose white for this second frock it could be made the same way. You may make it of galates, linen, pique, cotton serge or any heavy white goods. The linen will sell for 25 cents to \$1.25

a yard, the pique for 25 cents and galatea for 16 cents. If you do not wish to make this dress, you can buy them for from \$1.25 up to \$8.00, depending upon the cloth. The blouses have sailor collar, sleeve bands and ties of a color or of white.

A pattern for a misses dress will ap-

pear in another part of this department. If I were you I should send for a good pattern, they can be bought for 10 and 15 cents, rather than trust to the home dressmaker to cut out something satisfactory. You might write to city stores to send you samples of dress goods, and prices of ready-to-wear frocks. It is oftener more satisfactory to select something ready made, than to buy the material and have a dress made, since you can be satisfied before purchasing.

Home Canning for the Market.

I WONDER how many farmers' wives are aware of the additional revenue that can be raised by the canning of their surplus vegetables, and selling them to the nearby towns and cities.

With a little forethought at the time of planting, a sufficient quantity of vegetables may be raised not only to supply the family table during the entire winter, but enough may be sold to increase materially the housewife's bank account.

A great deal of misapprehension exists as to the difficulty of canning successfully for market. But any farmer's wife may run a miniature canning factory in her own kitchen with a minimum amount of labor, considering results.

In this article is given the experience of a lady, who has been very successful in canning and marketing her products.

Mrs. J. M. O. Denmark lives just outside the city limits of the thriving town of Quitman, Brooks county, Georgia. Their farm is a small one, and her garden spot consists of only a quarter of an acre, but her success will illustrate what may be accomplished by those who have more land at their disposal. The following is a detailed account of how she has worked, using her copper-bottomed, tin clothes-boiler, and also one of the best portable home-canners.

"My advice to beginners," says Mrs. Denmark, "is, do not go into canning too deeply at the first attempt. Experiment with a few cans in the early part of the season, and see if they keep well. This is merely for the experience, to get your hand in before your vegetable crop comes on. This will teach you that it is not a difficult matter to can vegetables properly. If you carefully follow the directions, here given, you will have no difficulty whatever. I never lose a can, although I put up all kinds of vegetables and fruit every season. If you fail at first, rest assured you have done something wrong, or left something undone.

Equipment.

"The quantity of canning to be done determines very largely, the extent and character of the equipment that will prove efficient, and at the same time economical. For a long time I used my tin clothes-boiler. This is as good as any high-priced canner, unless you have a large quantity of vegetables and fruit to put up, and a very short time to do it in. Last year my beans, tomatoes, and other vegetables were so prolific that I used a portable canner that belonged to a neighbor. This held 60 No. 3 cans. I found it very satisfactory, and recommend canners to those who care to go to the extra expense, and have a sufficient amount of canning to warrant the outlay.

"I did not always have enough vegetables to fill this large canner, but found no difficulty in securing vegetables from some of my acquaintances, who wanted good home-canned goods, and did not want to go to the trouble to undertake the work. For one lady who sent her vegetables to me, and paid market price for the cans I used, I put up 165 cans of vegetables, charging 75 cents a dozen for my work.

"This portable canner was placed under a shed in the back yard, but I prepared my vegetables in my screened kitchen where I could avoid the flies and dust.

"When I first began canning for market I bought from the same house from which I purchase cans, a tipping copper for sealing, tongs for handling cans when hot, solder, sealing fluid.

"I use the No. 3 and No. 2, solder-hemmed cap cans which I buy at wholesale. The price varies from year to year but they are never less than two cents for No. 3, and one and one-half cents for No. 2 cans. With the solder-hemmed caps it isn't necessary to apply solder in the usual way in sealing the cans. The cans to be used should be sterilized—that is, immersed in boiling water a few minutes. Then they are ready to receive the vegetables.

Preparing the Vegetables for the Cans.

"The first step in successful canning is the selection and preparation of the vegetables or fruit. Many people think that any kind of vegetables will do to can; but more and more we are coming to realize that there is a difference in the quality of canned goods, and that a superior canned product is possible only when the raw material is first-class.

"As a rule young vegetables are superior in flavor and texture to the more mature ones, and vegetables are better if gathered in the morning while the dew is still on them. If it is impossible to can them immediately, put them in cold water, or in a cold damp place, and keep them crisp until you are ready for them. I will give directions here for canning the more common vegetables. The principle of sterilization is the same for all fruit and vegetables."

Tomatoes.

"Pick tomatoes slightly underripe. Wash them in cold water and remove the skins with a sharp knife. The work of peeling is much easier if the tomatoes are immersed for an instant in hot water, but they must be taken out quickly, as otherwise the water softens them and causes them to lose their shape.

"The prepared vegetable should be put into cans immediately. This should be done with considerable care so that the contents of the can will be fairly solid, and to insure uniform content as to quantity in each can. Fill cans within half an inch of top. Don't add water to tomatoes, for they are of better flavor when canned in their own juice.

"After the cans are filled they are ready to be capped. The tops are brushed to free them from particles of fruit, and water, then the caps are put in place. The fluid is brushed over the solder part, and the tipping-copper is used, rotating back and forth to spread the solder uniformly about the edge of the cap.

"After this some people do what is called 'exhausting,' that is, heating to exclude the air before the small hole in center of can is closed, but my experience has taught me that this is wholly unnecessary. Fill, seal, and tip the cans before putting them on for the 'processing.'

Tipping.

"By tipping is meant that the small hole, or vent in the cap, is closed by use of the tipping-copper and a small bit of solder.

Processing.

"Now the cans are ready for processing, or cooking. This consists in completely submerging the cans in boiling water, in an uncovered vessel, until the vegetable is cooked, and all germs which might otherwise destroy the fruit is killed.

"For No. 3 cans put up by this process tomatoes require 30 minutes, steady boiling. If for any reason the water drops below the boiling point when a crate of cans is put into the boiler, the duration (Continued on page 444).

Paying the Price.

WHILE I have never been much of a believer in that old adage that any American boy can be president if he tries, I have always held to the theory that any person of average human intelligence and sufficient tenacity of purpose can get anything he wants—if he is willing to pay the price. To the multitudes of people who have struggled for years to get some one thing and have not succeeded, that may sound like a wild statement. But please note the qualifying clause, if he is willing to pay the price.

It is just that little thing which keeps so many of us from reaching our goal or that makes the thing seem worthless after we have arrived. All too often the price we have had to pay is out of all proportion to the thing secured, and after we get it we think we must have been crazy to think we wanted it.

So many of us are paying a price all too great in our effort to secure our heart's desire. A girl wants an education above all things and she sets her book knowledge as of higher value than health, friends or pleasure. She works far beyond her physical strength, forsakes her flesh and blood friends for her book ones, drops all social intercourse and devotes all her time and energy to acquiring a mass of knowledge from books. She gets her so-called education, and is good for nothing the rest of her life because health is gone. She has neglected exercise for studying, denied herself proper food to buy books, lost nights of sleep and perhaps neglected little illnesses which should have been cared for. As a result, when school days are over she is a physical wreck. Added to that she has lost all her old friends while she was hard at work studying, and finds she hasn't energy enough to make new ones.

She has paid her price and got what she wanted, but is it worth the effort? Of what value is it to her to know all about the Peloponnesian war, if she knows nothing about the war that is going on around her to secure justice for the oppressed, social cleanliness and a square deal for all? What shall it profit her to know that the Romans dined on peacocks' brains, if she knows not how to make an Irish stew? And what will it all count her if she has not health to work and enjoy life?

I wonder, too, if the price paid by some women for a spotless house is worth the result attained. No one likes cleanliness and order more than I, but if I can only get them by working so hard I haven't the strength left to be civil to my family, I prefer to write my name in the dust on the table, and pick my way over toys as I cross the floor. How many homes are there where husband and children never get anything but a cross word from the poor overburdened mother who has worn herself out trying to keep her home neat and clean. She feels, poor thing, that they should be glad they have so tidy a home and resents their lack of sympathy. Husband and children feel that they would rather see the house dusty and have mother smile, and I must agree with them. The average person prefers a little disorder with good nature to much order and scowls therewith. It is only the woman whose soul eyes are out of focus that thinks a dusty room a greater sin against the family than a scolding mother. I want my home neat if it can be made so and kept so without unpleasantness. If not, I consider the price of ill-health and nagging too heavy a one to pay.

Most of us would like to become rich. But do we not all know someone who has reached that happy condition by paying a price we would not care to assume? It is easy to make money, if you are willing to do it at the expense of the other fellow. A tax title on your neighbor's property, when you have learned that he is in a hole; foreclosing a mortgage when you know that six months would put the other fellow on his feet; buying the stock today you heard your neighbor say he was going after tomorrow, and then forcing him to pay you a cent or so more per pound if he wants the cattle, these are favorite roads to riches with some men. But would you pay this price? Is not your honor more to you than dollars and cents?

You often wonder, too, how some girls have so many young men calling, while you are looking on forlorn. In 99 cases out of 100 the young men come because the blushing damsel has called them up and urged them to come, or written them a note inviting them over. Is not that

a high price to pay for popularity? You would like to be president of your club or class, perhaps. But while you simply cherish the thought someone else elbows in and captures the office. You wonder how she could push herself ahead so. That was simply the price she paid for the office. To you modesty was worth more than office; to the other woman the office was worth more than the delicacy of feeling which waits for preferment rather than seeks it.

Whatever that thing is on which your heart is set you can probably get it if you are willing to pay for it. But before you set out after it stop and think if it is worth the price.

DEBORAH.

HOME QUERIES.

Household Editor:—Can you tell me how to cook tapioca? I am a constant reader of the household department, and get a great deal of help from it.—New Cook.

My favorite way of cooking tapioca is apple tapioca. Soak a cup of pearl tapioca in enough cold water to cover, for two hours, then pour on one quart of boiling water and cook on the stove in the double boiler until the tapioca is clear, one hour is enough with gas, but it may take longer on a coal or wood stove. Add a teaspoon of salt and a half cup of sugar and pour over six apples which have been peeled and cored and arranged in a baking dish. You may slice the apples if you wish. Bake in a medium hot oven until the apples are done and serve with cream and sugar. Instead of pouring over apples you may stir the peaches from a quart can of fruit in the tapioca while it is still in the double boiler and cook until the peaches are heated through. Serve with the peach juice for sauce or with cream and sugar. Almost any canned fruit may be added, or sliced bananas. Cream tapioca is made by cooking the tapioca in one quart of scalding milk after it has been soaked. When clear stir in the beaten yolks of two eggs and a half cup of sugar. Leave over the fire until the yolks are cooked, then remove and fold in the stiffly beaten whites of two eggs and flavor with vanilla. A cold tapioca pudding is made by adding to the tapioca which has been cooked in water one glass of jelly and the juice of half a lemon. Pour into a mold, chill and serve.

Household Editor:—How young can I begin to feed my baby?—Young Mother.

The salivary glands are not supposed to become active enough to digest starchy foods until baby is seven months old, so until he reaches that age he should be fed exclusively on milk. After seven months you may begin giving crackers and bits of toast. Nibbling on these helps the teeth through. Avoid potatoes for several months longer, especially through the summer.

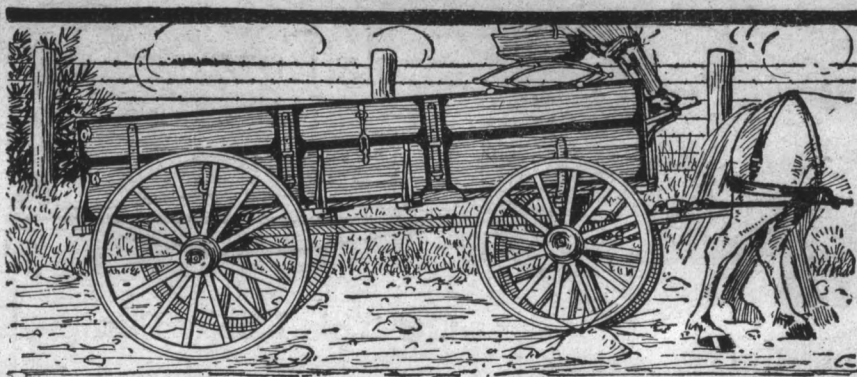
SYSTEM OF CLEANING.

BY MRS. M. E. UNDERWOOD.

There are dozens of different ways of dusting and sweeping, and some of them are good and some are very bad. Sweeping and dusting are a large part of our housework, and in some homes are a heavy tax on time and strength.

Here is my method for the weekly cleaning. Take a room at a time, begin by opening as many windows as the weather will permit. Next dust all chairs, stools and small furniture and set them out in an entry or in the next room. Then remove all books and small ornaments, dusting them as you do so, and put them on some light stand, which has been carried out. I shake the table covers and take them away, shake the curtain folds and pin them up, and with a feather duster brush loose dirt from mantels and heavy furniture. Next I look after cobwebs, and with a short hand broom brush out the dust from the corners and edges of the carpet.

If there is large furniture, as bed, bureau, dresser, piano or sofa, which must be left in the room, I cover these pieces with covers kept for the purpose, or with sheets. I pick up all large scraps of paper or cloth, all straws, broom wisps or long threads, for one may sweep a carpet half to pieces trying to get these up with a broom. After this I sweep from the sides toward the center of the room; if one sweeps toward a door or the side of the room there are cracks and angles and seams in which the dust lodges. After the dust is all swept together I use the hand broom to collect it upon the dust pan. Before sweeping I dip the broom in a thin warm suds and then beat out all the water. This is good to



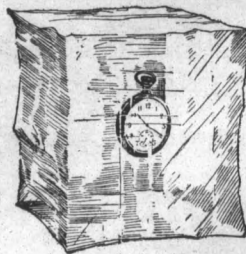
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"SOCIETY" shoes are now worn and approved by discriminating women everywhere. The pump here shown is one of the finest models our designers have produced—Ask for style 5338.

It is made of the finest quality gun metal leather over the new "Vogue" last. The heels are one inch high, which is a happy medium between extreme high and low. The same style is also made in tan leather.

The "Society" is made in many styles at \$3.50 to \$4.00, according to style and leather. Shoes of the same quality produced by a small manufacturer are sold for about a dollar more.

Our 23 big "Star Brand" factories employ over 10,000 expert shoemakers and produce over 15,000,000 pairs a year. The more we make, the less it costs to make them. You get the benefit of the saving.

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Always insist upon having the "Society" shoe with our name on the sole and our "Star" on the heel.

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\$1.25 QUALITY PAINT
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Save 50c on Every Gallon of High Grade Paint
To introduce it to readers of The Michigan Farmer we will send you our regular \$1.75 grade of

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SHADE
ROLLERS
Original and unequalled. Wood or tin rollers. Improved requires no tacks. Inventor's signature on genuine.
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will be tanned right if sent to The Blissfield Robe & Tanning Co. Horse, cow and small furs made soft and pliable. Wind and Waterproof. We manufacture them the right way into men's and women's Fur Coats, Robes, Mittens, Rugs and Vests. Deer skins tanned for Buckskin. Our Catalogue and Souvenir Account Book sent free.
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A \$50 MACHINE FOR ONLY \$19

New Model with Ball Bearing Head and Stand—Automatic Tension Release—Automatic Lift Drop Head—High Arm—Oak or Walnut Table.

**We Pay the Freight
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Our new model, improved Michigan Farmer sewing machine has cam thread take up, giving better control of the thread and making a better stitch than any other arrangement. Running it backwards will not break the thread. It has highest arm, disc tension, automatic bobbin winder with loose band wheel, high lift for heavy work.

Guaranteed for 20 Years.

and money refunded if not satisfactory after 90 days' trial. Complete attachments, accessories and instruction book free. We guarantee this machine to be first-class in every particular, handsome in appearance and equal to any machine made. Same machine without the automatic Lift for only \$18.

Good Machines as Low as \$12.

For \$7 extra we will send the \$19 machine with automatic lift in a handsome cabinet frame.

We prepay freight to any freight station east of the Mississippi River, or south to Tennessee. You cannot afford to buy a machine until you have sent for our handsome illustrated free catalog, printed in colors.

THE MICHIGAN FARMER, Detroit, Michigan.

keep the broom from wearing, good to keep the dust from rising and good to brighten the carpet. If a carpet is very dusty, so that the broom becomes dirty during the sweeping, it is well to wash it out when the room is half done, but a room properly cleansed every week does not become so dirty. When the sweeping is all finished I dust all the woodwork with a feather brush or wing. Then I wipe the window sills and around the door handles with a sponge squeezed out of ammonia water, dust all the pictures with a feather brush, rub the windows with a newspaper, dampening it with ammonia water, and shake out the curtains. I remove the covers from the standing furniture and dust it. Sometimes I take a very light broom tied into a cotton bag and with it wipe the wallpaper lightly. Last of all I bring back the furniture and ornaments that were carried out.

With such a cleaning once a week a room needs only a little setting in order each morning to keep it nice, and the curtains, carpets and furniture last and look well for a long time. If furniture is left in the room uncovered while sweeping is going on it gets loaded with dust, and in wiping this off much is rubbed into the furniture, giving it a dull, grimy look, so that it soon fades.

My method may sound hard, but it is not any more trouble to clean things and set them into an adjacent room than it is to keep moving them out of your way and in the bargain having a thick coat of dust to wipe off. If your carpets get stained or spotted wash the spots carefully with a flannel and ammonia water. You can make a carpet look very bright by sweeping it with coarse salt, which is also good to destroy insects. But the best cleaner and freshener is a pail of ammonia water, wiping the carpet well with this and a flannel and leaving the windows open to air and dry it for an hour. Rugs and mats, too, are much rejuvenated by such a rubbing.

HOME CANNING FOR THE MARKET.

(Continued from page 442).

should be measured from the time the boiling point is again reached. No. 10 cans require considerably longer, while No. 2 less."

String Beans.

"The stringless kind is best. Wash in cold water and break into short lengths. Pack firmly in the can within half an inch of top. Cover with cold water and add a teaspoon of salt to each quart. Cap and tip them while cold, as has been described, immerse in boiling water for one and one-half hours."

English Peas.

"When prepared and canned in the proper way, peas are easily kept and never lose their delicate flavor. Shell the young peas, wash in cold water, pack in cans as directed, cover with cold water, add teaspoon of salt to quart seal and sterilize or cook as described, for one hour."

Field Peas. N

and boil cans one and one-half hours."

"Sterilize as directed for English peas."

Butter Beans.

"Sterilize as directed for English peas."

Lima Beans.

"Lima beans lose their flavor quickly after being shelled, therefore it is necessary to can them as soon as possible after gathering. Proceed as you would with English peas."

Okra or Gumbo.

"This vegetable is extensively grown in the south. It is easily kept and makes a delicious vegetable for the winter. Wash the young pods, cut them in short lengths, pack them in cans, cover with water, seal and sterilize as for tomatoes. With a little experience any vegetable or fruit is as easily canned as those described above."

The Profit in Canning.

"Last year from my own garden of a quarter of an acre, I gathered and put up for sale, 600 cans of vegetables. Besides this I put up 20 dozen cans for others who supplied all material, receiving 75 cents per dozen for my work."

"I sold the 600 cans at 15 cents apiece, gross net, \$90. Deducting the \$12 paid for cans, I had \$78 left for my vegetables and pay for my work. As most of the work of making them was done by myself and husband, and as we had all the vegetables we wished for our own use, and as I kept sufficient for our winter use (there being only the two of us), I consider I made a neat profit off my garden."

Marketing.

"I have found no difficulty in finding a market for my goods, and I sell direct

to the consumer. A wisely placed advertisement in a local paper is a great help. Putting your own labels on your products is another help. I use my telephone to great advantage, also.

"My experience has taught me that if I want to do preserving, jelly making, putting up peaches, berries, etc., for sale, it is well to go among my customers each season before I begin. I get many special orders this way."

"There is no work, judging from my own experience, in which a farmer's wife can engage, which will bring in as large returns as canning for market. Get a portable canner, if you go into it on a large scale, but otherwise your clothes-boiler will answer every purpose."

AMONG THE FLOWERS.

Double Zinnias are native in Mexico and were long cultivated as single flowers. Later came the double zinnia which was introduced by Messrs. Volmorin, of Paris, who had succeeded in getting the double from the Mexican specie. This flower is easy of cultivation, the seed germinating in five days and the little plants growing rapidly. When danger of frost is past the plants should be set in the garden giving them plenty of room, at least two feet apart. They show a great range of color, and branch and bloom freely.

Tuberous Begonias may be started from seed as well as from bulbs and cuttings in the summer. They should have plenty of water and never be allowed to get too dry as the root growth is comparatively small. They do the best in pots but may be bedded out if desired.

There are a number of bulbs that should be planted in the spring or summer because of being tender. Among the list may be found the gladiolus, the tuberose, the calla, the canna, the dahlia, the arum and the amaryllis. They may be started indoors for early bloom.

FASHIONS BY MAY MANTON.

Our large Fashion Book—containing 92 pages illustrating over 700 of the season's latest styles, and devoting several pages to embroidery designs, will be sent to any address on receipt of 10 cents.



No. 7472—A blouse with Robespierre collar, 34 1/2 bust; 2 1/2 yds. of material 36 in. wide, with 3/4 yd. 27 in. wide for collar, 1/2 yd. of lace 6 in. wide for frill, 1 yd. of narrower lace for wrist frills, 2 yds. of lace for frills at wrist and sleeve openings as shown in back view, are needed for medium size.

No. 7663—Fancy blouse, 34 to 40 bust; 2 1/2 yds. of material 36 in. wide, with 5/8 yd. 21 in. wide for trimming portions, 3/4 yard 27 in. wide for girdle, 3/4 yd. 18 in. wide for yoke and collar, 3/4 yd. lace for undersleeves are needed for medium size.

No. 7657—Semi-princess Norfolk dress for misses and small women, 14, 16 and 18 years; 4 1/4 yds. 36 in. wide with 3/4 yd. 27 in. wide for collar and shield are needed for 16-year size.

No. 7649—Girl's dress, 10 to 14 years. With or without trimming in front and chemisette. To be worn over any guimpe or made with chemisette and undersleeves; 3 1/4 yds. 36 in. wide with 1/2 yd. 27 in. wide for trimming, 3/4 yd. 18 in. wide for chemisette, 3/4 yd. are needed for chemisette and undersleeve.

No. 7664—Three-piece skirt, 22 to 30 waist. With or without panel, with high or natural waist line; 3 3/4 yds. 36 in. wide 3/4 yd. 12 in. wide for panel, 2 yds. of braid are needed. Width of skirt at lower edge 1 1/2 yds.



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Dreams of more comforts, more luxuries!
Dreams of more of those things that make life worth living!
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We have on our list a number of men wishing to obtain employment on farms. Many of them are without experience, but they are able-bodied and willing to work. If you can make use of such help write for an order blank. We are a philanthropic organization whose object is to assist and encourage the Jews to become farmers. We charge no commission to employer or employee. Address:

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When you drive to town, count the buildings covered with Ready Roofing

The men who purchase roofing for railroad depots, large factories and warehouses are shrewd buyers—they investigate and know. You, too, will make no mistake if you cover your home and farm buildings with

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Its durability is guaranteed for 15 years—it comes in red, green and slate gray shingles as well as rolls. Look for the **Certain-teed** quality label. Costs less—get prices from your dealer.

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You will find many valuable suggestions in our new book, "Modern Building Ideas and Plans"—it tells you what to do—and what not to do—it suggests economies and conveniences that will save you money.

A book of this kind would ordinarily sell for \$1—but as it shows the use of our **Certain-teed** Roofing on all kinds of model homes and farm buildings, we offer it to you at 25 cents. We prefer to have you go to your lumber, hardware or building material dealer, who will gladly get you a copy free.

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General Roofing Mfg. Co.

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Farm Commerce.

FEDERAL GOVERNMENT IS INTERESTED IN MARKETING.

President Wilson had a long conference recently with Secretary of Agriculture Houston and statistical experts of the department, on plans for expending the \$50,000 appropriated at the last session of Congress for the division of markets. The importance of rural credit systems and other farmers' benefit organizations, which are to be investigated by the Agricultural Commission appointed by the President, also was taken up at this conference. The President is intensely interested in plans for a division of markets in the Department of Agriculture, through which it is hoped to benefit both the farmer and the consumer by eliminating the middleman as far as possible.

Arguments that more than 50 per cent of the market price of the annual crops of the country is spent handling the crop after it leaves the hands of the farmer have been brought to the President's attention. It has been estimated that the crop of 1912 will yield \$6,000,000,000 to the producer, while the same crop by the time it reaches the consumer, will have increased in cost to \$13,000,000,000.

The appropriation made by the last Congress is to be used in investigating marketing methods, co-operative and otherwise, in this country and in Europe, the demands for farm products at the various food centers, and in devising plans for marketing so as to make possible the handling of farm products at a reduced cost.

TRYING TO REGULATE THE COMMISSION BUSINESS IN NEW YORK STATE.

In a previous issue of The Farmer, attention was directed to bills before the New York State Assembly for the regulation of the commission business of that state. One of the bills in particular introduced into the Upper House by Senator Roosevelt contains provisions that seemed to the commission men so radical that they declared their business would be endangered if the bill became a law. The publicity given the measure brought it to the attention of practically all parties concerned in the improvement of the commission business, who have volunteered information that has furnished the foundation for another measure, known as the Cole bill, which will likely be substituted for the other.

This new bill has many features that seem commendable. It provides, in the first place, that a man must have a license and give a fidelity bond for \$3,000 before he can do a commission business in the state of New York. The license fee amounts to \$10. It also provides that the commissioner of agriculture may, upon proper information, take away the license of any commission man. The latter may, however, appeal from the decision of the commissioner to the courts. In case a farmer becomes dissatisfied with a sale made by a commission merchant, the farmer must first serve notice on the merchant stating his dissatisfaction. The merchant then has ten days in which to satisfy the farmer, but in case this is not done the latter can file a verified complaint with the commissioner of agriculture, who, after giving the commission merchant notice, is authorized to investigate the account of the complainant in the office of the commission merchant, upon which information he may act according to the facts appear to him. The bill also provides that the commission merchant must send an account of the sale and check to the shipper within 48 hours after the goods are sold, unless otherwise agreed upon by the parties.

The measure has another feature that will undoubtedly be of much benefit to the distribution of farm products in general, and that is the provision making it obligatory upon the shipper to pack his goods honestly. The bill reads: "Any person handling, shipping or selling farm products who shall make false statement as to grade, condition, markings, quality or quantity of goods shipped or packed with intent to deceive shall be guilty of a misdemeanor."

The bill specifies the grounds upon which the commissioner of agriculture may revoke the license of a commission man. They are (1) where a judgment

has been entered against a commission man and the execution is returned unsatisfactory; (2) where false charges for handling or for services have been rendered; (3) where the merchant has failed to account promptly and properly for goods received, or has failed to make settlement with intent to defraud; (4) where a false statement has been made as to the condition, quality or quantity of goods received, or held for sale when the facts might be known on reasonable inspection; (5) where marketing conditions have been misrepresented with the intention of deceiving the shipper; (6) when the merchant has entered into a combination with others to fix prices, and (7) when a merchant has directly or indirectly purchased goods for his own account without authority from the shipper or without notifying the consignor.

It appears that with this control over the business by the commissioner of agriculture that much improvement should be made and more satisfaction secured to both producer and consumer.

A NEW IDEA IN MARKETING.

In this day, when so many are giving attention to the manner of distributing farm products and looking for ways and means of accomplishing that end, it is not surprising that we should occasionally run across a person that has a new idea along these lines, and so far as most of us are concerned, the idea given by Mr. Farrand, of Eaton county, before the Michigan State Horticultural Society at Jackson recently, is different.

The Scheme.

The plan consists in combining the financial interests of the producer and the seller. A commission concern that had been handling Mr. Farrand's fruit, was approached with the proposition that if they would join capital with his in renting of orchards, caring for the trees and the crops and making them ready for shipping, that when the crops were sold they would divide the proceeds. The idea was suggested by a little incident which enabled Mr. Farrand to see some of the apples which he produced with much care and expense and sold for \$3 per barrel, re-sold by this commission firm the following March for \$6 and \$8 per barrel. He wondered why he, who had worked so hard to grow the fruit, could not share in the wide margin obtained by the commission men. After listening to the scheme the commission men accepted it and made themselves responsible for their share of the expense of producing the apples. It was arranged that Mr. Farrand was to give all of his time to the production of the fruit and that the commission concern with its organized selling equipment and force was to take the fruit and sell it.

An Important Principle.

While he is in no position to say yet whether the plan is going to prove successful, he is relying upon one principle to help him secure larger returns than he would get were he to send the fruit to a concern to sell on commission. Having a financial interest in the apples it is to the benefit of the sellers to secure as much for the fruit as they can, a matter that usually does not concern the firm selling on commission for the increase in commissions from a little increase in price are so insignificant that they will not ordinarily spend much time looking for higher values; but here every dollar additional that they receive for the apples they are enriched half that amount, which makes a strong incentive to work for good prices. Just how the plan will work out in actual practice will not be known till later. However, we hope to learn from Mr. Farrand the final results and publish them, should he consent, that others who are similarly situated may have the benefit of his experience to aid and guide them in organizing a selling agency.

Uncommon Conditions.

The conditions under which Mr. Farrand operates are unlike those of the average person who has fruit to sell. The larger portion of the apples which he produces are grown in orchards scattered over a considerable area, and most of them are rented. His capital, instead of being in land, trees, materials and equipment, is largely tied up in rents, equipment, materials and labor. The facts, therefore, that his investment is

not necessarily permanent, and that he can readily expand his operations to new fields where promising orchards and sufficient capital are available, undoubtedly proved strong contributing factors in making his scheme possible.

Regarding the plan, Mr. Farrand says: "During the past year I was able to give my entire attention to the production of my crop of 5,195 barrels of apples and I did not have to worry about marketing them at all. As soon as they were harvested, graded, packed and shipped, my part of the job was done. I was entirely relieved of the difficult task of marketing them and that is a big responsibility to have off one's shoulders. The commission firm of Indianapolis, who market our apples, are financially interested in the business of producing the crop as well as marketing it, and this double interest causes them to make a much greater effort to secure better prices for the fruit."

Mr. Farrand believed that the cities of 10,000 to 15,000 people of the middle west and northwest, and there are a lot of them, could be developed into greater apple consuming markets and declared that they offered an especially attractive inducement to co-operative organizations. Traveling salesmen could undoubtedly be employed profitably by them to sell great quantities of apples there.

Discussion of Marketing Problems.

Mr. Bassett discussed a few important points in co-operative organizations for marketing apples. He emphasized the advisability of a few—a dozen or two—growers of a community getting together and organizing instead of waiting to get all the growers for many of them probably would soon become dissatisfied and want to drop out. He recommended the adoption of strict rules and regulations which cannot be evaded or violated with great loss to the individual violator. At the start strict and definite rules of grading must be adopted and the grading overseen by inspectors who are responsible to the organization only. They must get all their instructions and orders from the manager. In no case should the grower have a word to say as to how "his fruit" is to be graded. Even the most reliable growers cannot be allowed to do their own grading. An organization must have such rules if it is to amount to anything at all.

PUBLIC MARKETS IN CITIES.

Many of the Michigan cities are agitating the question of a public market, with a view to having a place where the producer and consumer may meet and do business to their mutual advantage. The idea is to eliminate the middlemen and lessen the cost of living. Do public markets in cities accomplish this end?

Last summer an attempt was made to cater to the retail trade and to the ultimate consumer in Grand Rapids, by running street cars to the market and by opening stalls to the farmers and gardeners free of charge in the retail quarter. But the plan, for some unexplained reason, failed to get the patronage it merited. Ultimate consumers would not come to buy and farmers were not inclined to sell at retail. The producers prefer to follow the old custom of selling their stuff by the load and getting home early, rather than the bother of retailing by the bushel and consuming a lot of valuable time. City people do not fall in with the market-buying idea, because they are not used to it. Indeed, it is not strange that the present method of calling up the grocer by telephone and getting as much stuff as one wants, or as little, and at any old time, is more attractive than the new plan of getting up at five o'clock in the morning to go to the market and bring home a basketful of stuff.

Southern people are more accustomed to going to the public market house, with baskets slung over their arms, and the writer spent part of a day recently in going back and forth through the long aisles bordered by booths at the Lexington market, at Baltimore. Rich and poor, white and black, mingle here together and fill their household needs in the way of meats, fish, fruits and vegetables. Two things were especially noticeable to me, there were no producers in sight, the sellers were middlemen and were getting snug prices for their stuff. I went from booth to booth in quest of a bargain, and found none. Finally I took a dozen oranges of a tradesman for half a dollar, out of sympathy, for he had tried hard to make the sale. Meats, especially, seemed prohibitive in comparison with prices in the north.

The problem of bringing producer and

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It is made for the hardest kind of work, yet so easy in action a youngster can operate it. A slight foot pressure moves the shovels and wheels instantly to right or left, and the width between the gangs is instantly adjusted while the machine is in motion. The horses furnish the power, all the driver needs to do is to steer.

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Simplest in construction—least number of parts—nothing to get out of order. Steel frame. All castings malleable iron. Every part accessible. Built for wear and work. Light draft and perfect balance. Made in high and low wheel and Kraus Pivot Gang. Also Clipper Hammock Seat. If your dealer does not handle KRAUS write us for our free descriptive catalogue.

AKRON CULTIVATOR CO.
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ALWAYS mention the MICHIGAN FARMER when you are writing to advertisers.

consumer nearer together in the public markets of cities will doubtless be solved some day. Chamber of Commerce secretaries, who include some of the brightest men in the country, are working on the problem. Farmers are not getting what they should for their produce and the middlemen, who are taking the toll, will have to get out of the way some time and join the ranks of producers. But as everyone is aware, the problem is a big one and will need the united support of those who grow and those who consume to effect a satisfactory solution.

Kent Co.

A. GRIFFIN.

WHICH PLAN OF SELLING SHALL WE CHOOSE?

Observing that you have given space in the Farm Commerce columns of the Michigan Farmer to direct selling by the individual and also co-operative selling, I am anxious to ascertain your position on the relative importance of these two plans.

Gratiot Co.

R. B.

Our position is that no single method or system of selling goods can be applied in all cases and that every person should use the best method available. There are so many factors involved in the conditions surrounding every individual that it becomes unsafe to recommend any particular plan of disposing of farm products without knowing the identical circumstances and problems to be solved. The direct selling plan by the individual may give the best results under one set of circumstances, while the co-operative method may offer additional advantages under another set of circumstances, and there are situations when perhaps the commission method would best serve the interests of the producer. The question asked by the inquirer is akin to those seeking to determine which is the best dairy breed of cattle, or the most profitable crop to grow, etc.

Experience as well as reason indicate, however, a few general principles that may be set down, which ought to help anyone desiring to select a plan of distributing his farm products. We might here mention some of these principles:

In the first place, an important consideration is whether the party is growing crops that are produced abundantly in his community or whether he is an isolated producer. If there are a large number of producers of some particular crop or crops, then it is undoubtedly to their advantage to form a co-operative selling agency. On the other hand, if the growers are widely separated and do not have easy communication, one with the other, then under most circumstances there may be some question as to the advisability of instituting a co-operative organization, and probably the direct selling method by the individual would serve best.

A second consideration would be the distance from market. If products are produced near the consumer, there is usually little difficulty in making delivery direct to the persons who use the products. As the distance increases between the initial and the final parties the difficulty of distribution increases, making a co-operative agency of greater utility and of more economic importance.

A third consideration would be the transportation facilities. It frequently happens that a party living near a large city lacks transportation conveniences that others have who live much farther away, although the opposite condition is more likely to prevail. However, many living a considerable distance from their market center and along lines of transportation can frequently make use of a different plan of selling than those who lack such conveniences, and while the former may sell direct to advantage, it may become necessary for the latter to organize in order to secure the highest returns from their products.

The last condition that we wish to mention is that the nature of the products themselves become more or less important in considering how we shall market. Marketing a car load of live stock or beans may require a different method than disposing of one's output of eggs. Perishable products may require to be handled in a different manner to those products which may be disposed of at any time. Where one is required to market in small lots it frequently becomes expensive to sell his goods alone to a city consumer, or even to retailers, whereas, if he can dispose of a considerable bulk then such a course is feasible. Where, however, the value of the goods is of such moment as to make it possible to send shipments direct to the consumer, as is the case with butter, eggs and like

products, then it is possible to sell one's output alone, even though the production is distributed more or less throughout the whole year.

These are among some of the important conditions that ought to be weighed when choosing a plan for marketing one's products. There are others that should be taken notice of, such as the help problem, road conditions, the person's own idiosyncracies, etc.; all of which go to prove that no one plan can be universally applied, but that, like most other matters of business, we must study the separate plans as well as our conditions and then select the one that offers us the greatest efficiency.

MICHIGAN CROP REPORT.

Wheat.—In answer to the question, "Has wheat during February suffered injury from any cause?" 328 correspondents in the state answer "yes" and 238 "no;" in the southern counties 210 answer "yes" and 91 "no;" in the central counties 87 answer "yes" and 46 "no;" in the northern counties 30 answer "yes" and 82 "no" and in the Upper Peninsula one answers "yes" and 19 "no."

Snow protected wheat in the state and central counties 13 days; in the southern counties 8; in the northern counties 24 and in the Upper Peninsula 28 days.

The average depth of snow on February 15 in the state was 2.55 inches; in the southern counties 0.48 of an inch; in the central counties 1.25; in the northern counties 6.35 and in the Upper Peninsula 12.81 inches. On the 28th the average depth of snow in the state was 5.88 inches; in the southern counties 4.13; in the central counties 3.66; in the northern counties 10.30, and in the Upper Peninsula 18.46 inches.

The total number of bushels of wheat marketed by farmers in February at 85 flouring mills is 69,656 and at 70 elevators and to grain dealers 49,564, or a total of 119,220. Of this amount 77,921 bushels were marketed in the southern four tiers of counties, 28,465 in the central counties and 12,834 in the northern counties and Upper Peninsula.

The estimated total number of bushels of wheat marketed in the seven months, August-February is 3,500,000. One hundred and twenty-three mills, elevators and grain dealers report no wheat purchased in February.

The average condition of live stock in the state is reported as follows, comparison being made with stock in good, healthy and thrifty condition: Horses, sheep and swine 96, cattle 95.

CROP AND MARKET NOTES.

Mecosta Co., March 27.—March has been quite stormy, except for a day or two at a time throughout the month. Yet, taking the winter as a whole, it has been a mild one. There hasn't been a month during the winter that a farmer could not pasture cattle a day or two some time during the month. The recent rain and wind has damaged us but slightly. All kinds of farm stock selling at high figures. Horses going better than \$400 per team for good ones; cows from \$40 to \$65 each and yearling cattle from \$12 to \$20 each. Hay from \$10 to \$12 per ton. Potatoes are at a standstill, and some of the farmers are letting go at 30c while others think they see better prices ahead. Good hens are selling for as much as 85c each, at sales.

Sanilac Co., March 28.—Spring weather has not been very constant yet. The past week has been one of long remembrance, the 21st was the terrible blow that did much damage in Sanilac, several barns being blown completely down, and hay and straw stacks scattered across the fields. Since then we have had all kinds of weather; yesterday, (March 27), was considerable like a good old blizzard and with the ice still on the trees that came the day before in the form of rain, breaking down some of the tree branches. Not very much maple sugar made yet, in fact, there are not many "sugar bushes" left in the country. Real estate agents have a lot of farms listed for sale but prices seem too high, considering the congested condition of some of the staple products. Sugar beets will not have as great an acreage this season. Market prices are: Wheat, 96¢@98¢; oats, 28¢; barley, 90¢ per cwt; beans, \$1.50; hogs, 7c, live weight; veal calves, 35¢@7 per cwt; butter-fat, 33c; eggs, 15c.

Northern Isabella and Southern Clare Co.'s March 25.—Many farmers are holding their beans and hay on account of low prices. Beans only \$1.50 per bu; hay, \$9@10 per ton; wheat, being scarce, is about \$1.06 per bu; potatoes, 25¢@35¢; apples, 50¢ per bu; eggs, 15c; butter, 25c; butter-fat, 33c per lb. Heavy rains make the land in bad shape for spring crops.

TOO LATE TO CLASSIFY.

S. C. White Leghorns—Year around layers. Eggs \$1 per 15; \$2.50 per 30; \$5 per 100. BRUCE W. BROWN, R. F. D. No. 3, Mayville, Mich.

Indian Runner Duck Eggs—From prize winning stock; white egg strain, 22 eggs \$2.33; eggs \$2.75, 44 eggs \$3.50. Satisfaction guaranteed. HENRY HORNING, Elkhart, Indiana.

DOGS.

HOUNDS FOR HUNTING Fox, Coon, Skunk and Rabbits. Send 2c stamp. W. E. LECKY, Holmesville, Ohio.

FOX AND WOLF HOUNDS of the best English strains in America; 40 years experience in breeding these fine hounds for my own sport. I now offer them for sale.

Send stamp for Catalogue. I. B. HUBBARD, Sibby, Jackson Co., Mo.

BREEDERS' DIRECTORY.

CATTLE.

For Sale—Horses, cattle, sheep, swine and poultry, nearly all breeds. Sires exchanged. South West Michigan Pedigreed Stock Ass'n., David Woodman, Sec'y.-Treas., Paw Paw, Mich.

Aberdeen-Angus.

Herd, consisting of Trojan Erics, Blackbirds and Prides, only, is headed by Egerton W. the GRAND CHAMPION bull at the State, West Michigan and Bay City Fairs of 1912 and the sire of winners at these Fairs and at THE INTERNATIONAL, Chicago, of 1912. WOODCOTE STOCK FARM, Ionia, Mich.

AYRSHIRES—One of foremost dairy breeds; young bulls and bull calves for sale. Berkshires swine. All pure bred. Michigan School for Deaf, Flint, Mich.

GUERNSEY BULL CALVES, YORKSHIRE PIGS. Good Stock. HICKS GUERNSEY FARM, Saginaw, W. S. Mich.

10 Reg. Guernsey Bulls, ready for service. Large Yorkshire hogs, the best yet. Come or write. JOHN EBELS, R. 10, Holland, Mich.

HEREFORD BULLS FOR SALE Also Poland China Hogs. ALLEN BROS., Paw Paw, Michigan.

HATCH HERD HOLSTEINS—Choice sires from onable prices. HATCH HERD, Ypsilanti, Michigan.

CHOICE Bull Calves from A. R. O. dams. Sired by our herd sire whose dam and sire's dam each made over 30 lbs. in 7 days. E. R. CORNELL, Howell, Mich.

A FEW CHOICE Holstein Friesian Bull Calves for Sale. A. R. O. Stock. GREGORY & BORDEN, Howell, Michigan.

FOR SALE—HOLSTEIN BULL CALF Born June 5, 1912, sire a son of the King of the Pontiacs from a daughter of Hengerveld De Kol. Dam of calf, an A. R. O. daughter of Sadie Vale Concordia's Paul Dekol, her dam a 20 lb. imported cow.

ED. S. LEWIS, Marshall, Mich.

Purebred Registered HOLSTEIN CATTLE The Greatest Dairy Breed Send for FREE Illustrated Booklets Holstein-Friesian, Assn., Box 164, Brattleboro, Vt.

"Top-Notch" Holsteins. Yearling bulls all sold. Choice bull calves from 1 to 5 mo. old, of fashionable breeding and from dams with official milk and butter records for sale at reasonable prices.

McPHERSON FARMS CO., Howell, Michigan.

Service Bulls and Bull Calves Sired by Johanna Concordia Champion,

whose sire's dam and dam's dam average 34.06 lbs. butter in 7 days, average fat 4.67%. Also cows and heifers bred to him. I can offer you bulls at bargain prices. Try me and see, and do it quick.

L. E. CONNELL, Fayette, Ohio.

Bigelow's Holstein Farms Breedsville, Mich.

Have for sale several fine young bulls out of cows with high official butter and milk records.

Send for circular.

THIS HOLSTEIN BULL Was sired by best son of PONTIAC BUTTER BOY. His dam gave 80 pounds milk a day, over 600 pounds in 7 days and has official record of 24 pounds butter in 7 days. PRICE \$100.

C. D. WOODBURY, Lansing, Michigan.

FAIR LAWN FARM Offers the following young

Holstein Friesian Bull Prince Sarcastic—Fine in form and breeding. Beautifully marked. Sure to please you.

REED & KNOWLES, Howell, Mich.

LONG BEACH FARMS, HOLSTEIN BULL CALVES

WORLD RECORD STOCK, from \$75 to \$250 Augusta, (Kalamazoo Co.) Mich., F. S. Kenfield, Prop.

BULL CALVES Offered by YPSILANT FARMS, Ypsilanti, Mich. Home of Milk and Butter State Champions.

Holstein Friesian Cattle—young bulls out of A. R. O. dams and sired by a bull with a 31 lb. dam. W. B. JONES, Oak Grove, Michigan.

REGISTERED HOLSTEIN COWS 3 and 6 years old. R. mother and daughter; dark markings, extra fine pair, recently fresh, one served, \$425 delivered. Write for pedigrees. HOBART W. FAY, Mason, Michigan.

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

Butter Profits You ought to get more butter profits. Jersey Cattle mean more butter profits, because they yield more butter fat at less net cost of keep than any other breed.

THE JERSEY excels in beauty of dairy type. She is a persistent milker. Jerseys are easily acclimated. They live long and keep healthy. They mean steady butter profits. Write now for Jersey facts. Free for the asking. AMERICAN JERSEY CATTLE CLUB 324 W. 23d St., New York

FOR SALE, CHEAP—Choice Jersey Bull Calf born Oct. 5th, 1912. A nice, growthy fellow from a dam producing over 500 lbs. butter in 9 months. C. S. BASSETT, Kalamazoo, Mich.

For Sale—Registered Jersey Cattle, tuberculin tested; bull and bull calves; heifer and heifer calves; cows with Register of Merit and Cow Testing Association records. IRVIN FOX, Allegan, Mich.

Lillie Farmstead Jerseys (Tuberculin tested. Guaranteed free from Tuberculosis.) Several good bulls and bull calves out of good dairy cows for sale. No females for sale at present. Satisfaction guaranteed.

COLON C. LILLIE, Coopersville, Mich.

Jerseys—Bulls ready for service, bred for production. Also cows and heifers Brookwater Farm, R. F. D. No. 7, Ann Arbor, Mich.

Dairy Bred Shorthorns—No stock at present. J. B. HUMMEL, Mason, Michigan.

Dairy Shorthorns—Large Cattle—Heavy Milkers. No stock for sale at present. W. W. KNAPP, R. No. 4, Watervliet, Mich.

Scotch Shorthorn Bulls and Heifers for Sale. W. W. KNAPP, Howell, Michigan.

FOR SALE—7 Reg. S. H. Bulls from 8 to 14 months by Victor Robin sired by International Winner. JOHN SCHMIDT, Reed City, Michigan.

SHEEP.

"BREED UP YOUR SHEEP" Article sent free to any address. PARSONS, "The Sheep Man of the East," R. No. 1, Grand Lodge, Mich.

Reg. Rambouillet Sheep, Pure Bred Poland China HOGS and PERCHERON HORSES. 2 1/2 miles E. Morrice, on G. T. R. R. and M. U. R. J. Q. A. COOK.

SHROPSHIRE & DUROCS KOPE-KON FARM, Kinderhook, Michigan

HOGS.

Durocs & Victorias—A Desirable Bunch of Sows of Either Breed due April and May. M. T. Story, R. R. 45 Lowell, Mich. City Phone 56.

BERKSHIRES Choice spring bears and gilts. Stock to move quick. Farmers stock. ELMHURST STOCK FARM, Almont, Mich.

Quick Maturing Berkshires—Best breeding; best type. Satisfaction guaranteed or money refunded. C. S. BARTLETT, Pontiac, Mich.

BERKSHIRES—Yearling Sows bred for April & May farrowing. Also a few open gilts. A. A. PATTULLO, Deckerville, Michigan.

THIS O.I.C. SOW WEIGHED 932 LBS. AT 23 MONTHS OLD IONIA GIRL

I have started more breeders on the road to success than any man living. I have the largest and finest herd in the U. S. Every one an early developer, ready for the market at six months old. I want to place one hog in each community to advertise my herd. Write for my plan, "How to Make Money from Hogs." C. S. BENJAMIN, R. No. 10 Portland, Mich.

O. I. C. SWINE Write me for price on Spring Pigs, pairs and trios, not akin. Have a number of service males of good type. Write me describing of your wants. A. J. GORDEN, R. No. 2 Dor, Mich.

O. I. C. Extra choice bred gilts, service boars and spring pigs, not akin from State Fair winners. Avondale Stock Farm, Wayne, Mich.

O. I. C's—all sold. Orders booked for April and May pigs of the choicest breeding. C. J. THOMPSON, Rockford, Michigan

O.I.C's—Eight young sows to farrow in June—spring pigs pairs and trios not akin. FRED NICKEL R. 1, Monroe, Michigan.

O. I. C's.—All sold, will book orders for March pigs. ALBERT NEWMAN, Marlette, Michigan.

O. I. C.—Boars all sold. A few gilts of extra quality, bred or open. GEO. P. ANDREWS, Danville, Ingham Co., Mich.

O. I. C's—All ages, growthy and large. Males ready, 100 to select from. Attractive prices on young stock. H. H. JUMP, Muskegon, Mich.

O. I. C.—Extra quality last March gilt. Wt. 395 lbs. due to farrow April 14th, price \$125. Bred to Scott No. 1 Grand Champion. If interested write, Otto B. Schulze, 5 mile west of depot, Nashville, Mich.

DUROC-JERSEYS—Fall and Spring boars from prize-winning strains. Sows all ages. SPECIAL BARGAIN in summer pigs. Brookwater Farm, R. F. D. No. 7, Ann Arbor, Mich.

MALES ALL SOLD BUT ONE JOHN MCNICOLL, Station A, Bay City, Mich., Route 4, Box 81.

Duroc Jerseys For sale—A few first class fall pigs of both sexes, weight 150 lbs. to 200 lbs., price \$25 each. M. A. BRAY, Okemos, Michigan.

DUROCS BRED SOWS all sold. Service Boars \$40 to \$50. January pigs \$12 to \$15, either sex. Satisfaction guaranteed. F. B. COOK, Route 2, Stanwood, Mich.

DUROC JERSEYS—BRED GILTS FOR SALE. CAREY U. EDMONDS, Hastings, Michigan.

Duroc Jersey SWINE. Spring and summer pigs for sale, both sexes. I pay express, 25 years experience. J. H. BANGHART, Lansing, Mich.

POLAND CHINAS—Both Western and Home Bred. Either sex, all ages. Prices right. W. J. HAGELSHAW, Augusta, Mich.

Large Type P. C.—Largest in Michigan. Bred gilts and Oct. pigs that have size, bone and quality. Write your wants or come and see. Expenses paid if not as represented. Free delivery. W. E. LIVINGSTON, Parma, Mich.

A BIG TYPE POLAND CHINA BOAR—Cheap or will exchange for sow. A few light weight gilts left. ROBERT NEVE, Pierson, Michigan.

POLAND CHINAS—Either sex, all ages. Some-thing good at a low price. P. D. LONG, R. No. 8, Grand Rapids, Michigan.

P. C. BOARS AND SOWS—large type, sired by Expansion. A. A. WOOD & SON, Salline, Michigan.

P. C. BROOD SOWS—bred for April and May farrow. Big bone, Prolific. Also boars ready for use. Maplewood Stock Farm, Allegan, Mich.

LARGE YORKSHIRES—Choice breeding stock, all ages, not akin. From State Fair prize-winners. Pedigrees furnished. W. C. COOK, R. 42, Box 22, Ada, Mich.

Stop Raising Short Bodied Pigs—long ones weigh more. Yorkshire boars produce them. For sale. WATERMAN & WATERMAN, Ann Arbor, Mich., Meadowland Farm.

Yorkshire Swine—Aug. farrowed gilts for sale. Weanling pigs ready May 1st, akin to Champion York and 2nd best carcass at I. L. S. Breeders' Show at E. Lansing, Jan., 1913.

GEO. McMULLEN, Grand Lodge, Michigan.

Lillie Farmstead YORKSHIRES Spring bred gilts all sold. Gilts bred for next August farrow. September pigs either sex, pairs and trios not akin. Order booked for spring pigs.

COLON C. LILLIE, Coopersville, Mich.

Markets.

GRAINS AND SEEDS.

April 2, 1913.

Wheat.—In spite of the fact that most of the crop reports show the growing grain to be in splendid condition, the market this past week has gone up. The strength was largely from abroad. In Liverpool especially, values advanced on Monday, due in part, it is thought, to a squeeze in closing up the March deal there. European war news also aided the bulls and helped to support a strong market in the face of a liberal world's supply and larger stores in some of the European countries than a year ago. In this country the crop is doing well, except in Ohio, Indiana and other states visited by the flood, where local damage has been done by excessive moisture. Primary receipts Monday were larger than for the corresponding day a year ago. There is no improvement in the demand for cash grain. The price for No. 2 red wheat one year ago was 99½¢ per bu. on the local market. Detroit quotations for the past week are:

	No. 2	No. 1	Red.	White.	May.	July.
Thursday	1.07	1.06	1.07½	92½		
Friday	1.07½	1.06½	1.08½	92½		
Saturday	1.07½	1.06½	1.08½	92½		
Monday	1.08½	1.07½	1.08½	93		
Tuesday	1.08½	1.07½	1.08½	93½		
Wednesday	1.08½	1.07½	1.09½	93½		

Chicago, (March 31).—No. 2 red, \$1.01 @1.07; May, 90½¢; Sept., 89½¢ per bu. New York, (March 31).—Spot, No. 2 red, f. o. b. afloat, \$1.12 per bu; May, 98¢; July, 96½¢.

Corn.—A substantial improvement was made in this deal the past week, prices ruling a full cent higher on the local market. There is a good demand for the cereal and receipts are not coming as fast as they were, due to the opening up of spring work upon the farms in the corn belt keeping the farmers from delivering. The eastern states were not heavy buyers this week, but the demand from the central states has been healthy. One year ago the price for No. 3 corn was 73½¢ per bu. Local quotations are as follows:

	No. 3	No. 3
	Corn.	Yellow.
Thursday	52½	53½
Friday	52½	53½
Saturday	52½	53½
Monday	53	54
Tuesday	53½	54½
Wednesday	53½	54½

Chicago, (March 31).—No. 2 yellow, 54¢; No. 3, 51¢@53¢; May, 53½¢; July, 54½¢.

Oats.—This deal shares in the advance noted in the other two major grains with the price ruling a fraction higher than a week ago. While there is not a large volume of business being done there is a fair demand, with the receipts coming in small lots. The local market is inactive. One year ago the price for standard oats on the Detroit board of trade was 58¢ per bu. Local quotations for the past week are:

	Standard.	No. 3
		White.
Thursday	35½	34½
Friday	36	35
Saturday	36	35
Monday	36	35
Tuesday	36½	35½
Wednesday	36½	35½

Chicago, (March 31).—No. 2 white, 35 @35½¢; standard, 34½@34½¢; May, 34½¢; July, 33½¢.

Beans.—The improvement in the bean trade noted in last week's issue has continued, and while the advance in prices is limited to cash offerings there is a better demand for the legumes than for any time during the present year. A large part of the poor beans were fed to stock this past winter thus leaving a smaller amount of last year's crop to go into the usual avenues of trade, and now that the holdings are safer to handle it is expected that better market conditions will prevail. Quotations are: Prompt and immediate shipment, \$1.90 per bu; May, \$1.95.

Chicago, (March 31).—On this market the bean deal holds about steady with a week ago. Prices are unchanged. They are: Pea beans, hand-picked, fancy, \$2.20@2.25; do., choice, \$2.05@2.10; prime, \$1.80@1.85; red kidneys, \$1.75@2.25; white kidneys, \$2.50@2.75 per bu.

Clover Seed.—Although clover seed values went higher during the past week, on Monday they were back to the figures reported in the last issue. Alsike also advanced and lost, but the decline was small so the present price is above that of last week. Cash seed is now quoted at \$12 per bu., and prime alsike at \$12.50.

Toledo, (March 31).—Common seed shows a decline for the past week while alsike is a little higher. Quotations: Cash and March, \$11.95; April, \$11.40; alsike, prime, cash and March, \$12.65.

Timothy Seed.—While this trade shows activity prices remain the same as a week ago, prime spot being quoted at \$1.70.

Toledo, (March 31).—Cash and April, \$1.72½ per bu.

Rye.—This cereal is down and no business is being done. The nominal quotation is 60¢ per bu.

Chicago, (March 31).—Higher. No. 2, 60½@61¢.

Barley.—Chicago. Trade about steady. Prices rule from 46@65¢ per bu., according to grade.

FLOUR AND FEEDS.

Flour.—Jobbing lots in ½ paper sacks are selling on the Detroit market per 196

lbs. as follows: Best patent, \$5.60; second, \$5.20; straight, \$4.90; spring patent, \$5.10; rye flour, \$4.60 per bbl.

Feed.—Detroit jobbing prices in 100-lb. sacks are as follows: Bran, \$23; coarse middlings, \$23; fine middlings, \$27; cracked corn, \$25; coarse corn meal, \$22.50; corn and oat chop, \$22 per ton.

Hay.—While quotations remain unchanged, the market is not so badly over-supplied because of poor roads. Carlots on track at Detroit, No. 1 timothy, \$13.50@14; No. 2, \$11@12; light mixed, \$12.50@13; No. 1 mixed, \$11@12 per ton.

Chicago.—Market higher, largely due to cutting off of deliveries. Choice timothy \$17.50@18.50 per ton; No. 1, \$15@16; No. 2 and No. 1 mixed, \$13@14; No. 3 and No. 2 mixed, \$10@11; clover, \$5.50@10.50; alfalfa, choice, \$17@18; do. No. 1, \$15@16 per ton.

Straw.—Steady. Carlot prices on wheat and oat straw on Detroit market are \$8.50 per ton; rye straw, \$8@10 per ton.

Chicago.—Higher. Rye, \$7.50@8; wheat straw, \$5.50@6; oat straw, \$6@6.50 per ton.

DAIRY AND POULTRY PRODUCTS.

Butter.—Prices have advanced in all markets during the week, Elgin showing a 1c gain, due to an excellent consumption demand and little or no improvement in production. It is still a hand-to-mouth affair, however, with dealers keeping stocks closely cleaned up. Locally all kinds are 1@2c higher. Detroit jobbing prices rule as follows: Fancy creamery, 36¢ per lb; firsts, 34½¢; dairy, 24¢; packing stock, 22¢.

Elgin.—Market firm at 35¢.

Chicago.—This market may be described as a strained and nervous one for, while it participated in the general advance, dealers are plainly anticipating a break. Quotations are: Extra creamery, 36½¢; extra firsts, 35½@36¢; firsts, 34@35¢; seconds, 32@33¢; dairy extras, 33¢; firsts, 28@29¢; seconds, 26¢; packing stock, 12@25¢ as to quality.

New York.—Barely steady; creameries quoted lower while dairies hold their own. Quotations are: Creamery extras, 35¢; firsts, 34@34½¢; seconds, 33@33½¢; state dairy, good to prime, 31@33¢; common to fair, 26@30¢; packing, 20@24¢ as to quality.

Eggs.—Eggs have held their own well in all markets the past week, the excellent demand taking care of the heavy offerings in good shape, even bringing fractional gains at some points. The local market is very steady at last week's figures. At Detroit current offerings, candled, and cases included, are quoted at 17½¢ per dozen.

Chicago.—This market is steady with all grades showing a fractional gain over last week. Miscellaneous receipts, cases included, are quoted at 16½@17½¢; do., cases returned, 16½@16½¢; ordinary firsts, 16½@16½¢; firsts, 17@17½¢.

New York.—An advance of more than a cent during the week has rendered this market unsteady and a decline is promised. Fresh gathered extras, 20@21¢; firsts, 19@19½¢; seconds and lower grades 18½@18½¢ per dozen.

Poultry.—Poultry markets generally are inactive, due to the high range of values and mediocre quality of much of the stock offered. Locally the demand the past week has been sufficient to force a still further advance on fowls and so-called spring chickens. Quotations are: Live.—Spring chickens, 17½@18¢; hens, 17½@18¢; No. 2 hens, 15¢; old roosters, 12¢; turkeys, 19@20¢; geese, 15@15½¢; ducks, 18@20¢ per lb.

Chicago.—Chickens quoted higher although market generally is quiet. The quotations on live are: Turkeys, good weight, 15¢; others, 10¢; fowls, good, 18¢; spring chickens, 18¢; ducks, large, fat, 18¢; do., thin, ordinary, 15@16¢; geese, full feathered, 12¢; do., plucked, 8@10¢ per lb; guinea hens, \$4 per dozen.

New York.—Dressed stock steady, fowls being quoted higher. Frozen killed western fowls, 16½@18¢; frozen turkeys, 15 @24½¢ per lb.

Cheese.—All kinds lower. Wholesale lots, Michigan flats, new, 13½@14¢; old, 16½@17¢; New York flats, new, 16@16½¢; old, 18@18½¢; brick cream, 14@14½¢; Limburger, 18@19¢.

Veal.—Detroit.—Unsettled and fractionally lower. Fancy, 15@15½¢; common, 12@14¢.

Chicago.—Quiet and lower. Fair to choice, 80@110 lbs., 12½@13½¢; extra fancy stock, 14¢; fair to good chunky, 11½@12½¢.

FRUITS AND VEGETABLES.

Apples.—Market about steady at last week's values. Detroit quotations now are: Fancy, per bbl., \$2.50@3.50; ordinary, 75¢@1.50 per bbl.

Chicago.—Fancy grades are steady while lower kinds are sold at buyers' prices. Standard winter varieties, \$2@4.50 per bbl.

Potatoes.—No improvement is shown and prices are unchanged. Michigan stock in car lots, 43@45¢ per bu.

Chicago.—Ample receipts keep values down to former levels. Fancy Michigan stock, 45@47¢ per bu; best Wisconsin, 40@48¢; Minnesota, 43@47¢.

New York.—Plentiful and easy. Western stock, \$1.70@1.75 per 180-lb. bag.

WOOL.

Boston.—There is a feeling that values have softened a little recently, this applying more particularly to western offerings than to fleeces. It is difficult, however, to make comparisons as the amount of exchanges are small, due to the short supplies in the hands of brokers. Little interest has been taken thus far in the new clip as compared with other years, and where the farmers of the western states have been approached they have asked good prices for the new wool. Quotations: Michigan, unwashed delaine, 24½@25¢; fine, 20@21¢; ½-blood

combing, 28@29¢; ¾-blood do., 29@30¢; ¼-blood do., 29@30¢ per lb.

DETROIT RETAIL PRICES.

Eastern Market.—There was a larger and better market last Tuesday than the previous week. The increase in the bulk of the offerings was due to the larger number of truck gardeners present, since bad roads almost prohibit farmers from delivering goods on the market where it is necessary to pass over any distance of dirt roads. There was, as a consequence, a falling off in the amount of potatoes and apples shown, and the prices for these commodities were higher. Potatoes were selling around 60¢ for a good quality and the better grades of apples reached the dollar mark, although a large part of the offerings of this fruit were of low grade that found buyers at from 50 to 75¢ per bu. Because of the many wagons carrying cabbage that product sold lower than the recent low values, going down in some instances to 15¢, the bulk selling at 20¢. Other prices: Onions, 50¢; parsnips, 25@30¢; red cabbage, 60¢; carrots, 30¢; eggs, 25¢; loose hay, \$16@18 per ton.

Grand Rapids.

The potato market has improved a trifle, Greenville dealers quoting at 35¢. Roads are still bad for delivery of produce of any kind. In meats, veal is scarce and dressed hogs firm at 11½@12¢. Live hens are firm at 13@14¢. The mills are paying as follows for grain: Wheat, \$1.02; rye, 45¢; oats, 35¢; corn, 54¢; beans, \$1.50; red kidney beans, \$1.70. Hay is unchanged at \$10@13.

THE LIVE STOCK MARKETS.

Buffalo.

(Special Report of Dunning & Stevens, New York Central Stock Yards, East Buffalo, New York).

March 30, 1913.

Receipts of stock here today as follows: Cattle, 145 cars; hogs, 80 double decks; sheep and lambs, 35 double decks; calves, 500 head.

With 145 cars of cattle on our market here today, and 20,000 reported in Chicago, we quote our market from 10@15¢ per cwt. lower than last week, owing to the lack of buyers who were unable to get in here from the flood districts of Pennsylvania and New York. About everything was sold at the close, and the market closed about steady.

We quote: Best 1350 to 1500-lb. steers, \$8.65@8.95; good prime 1200 to 1300-lb. do., \$8.50@8.60; good, to prime 1100 to 1200-lb. do., \$8@8.25; coarse, plainish 1100 to 1200-lb. do., \$7.25@7.75; medium butcher steers, 1000 to 1100, \$7.25@7.75; butcher steers, 950 to 1000, \$7@7.50; light butcher steers, \$6.50@7.25; best fat cows \$6.50@7; butcher cows, \$5@6; light butcher cows, \$4.25@4.75; cutters, \$4@4.65; trimmers, \$3.50@3.75; best fat heifers, \$7.75@8.25; medium butcher heifers, \$6.50 @7; light butcher heifers, \$6@6.25; stock heifers, \$5.25@6; best feeding steers, dehorned, \$7@7.25; light common stockers, \$6@6.25; prime export bulls, \$7@7.25; best butcher bulls, \$6.50@7; bologna bulls, \$5.75@6.25; stock bulls, \$5@5.50; best milkers and springers, \$65@80; common to fair kind do., \$40@50.

Our receipts of hogs were fairly liberal today; in fact, too many to hold prices steady with the close of last week, and a readjustment of prices was necessary to get in line with other points. The market opened very slow, with a few selected light hogs selling at \$10. After these urgent orders were filled, sellers had to depend on the packers, and when hogs run around 200 lbs. average, with a little top on them, it was impossible to sell at over \$9.75, with an occasional load at \$8.80@9.85, but where sales were made at these figures, the load usually contained a good number of pigs. Market closed about steady, but enough going over unsold to hold tomorrow's trade about level with today's close. Roughs sold from \$8.50@8.75, and stags \$7@8.

The sheep and lamb market was fairly active today on the handy kind, but slow on heavy; prices about 15¢ lower than the close of last week. Most of the choice lambs selling from \$8.90@9. Heavy lambs were slow sale; lambs weighing over 90 lbs. very little demand. Look for about steady prices the balance of the week.

We quote: Choice lambs, \$8.90@9; cull to fair do., \$7@8.75; yearling wethers, \$8@8.25; yearling ewes, \$7@7.50; wethers, \$7@7.25; handy ewes, \$6.50@6.75; heavy ewes, \$6@6.50; cull sheep, \$3.50@5.50; bucks, \$4@5.25; veals, choice to extra, \$11.50@12; fair to good, \$8.50@11; heavy calves, \$4.50@6.

Chicago.

March 31, 1913.

Cattle. Hogs. Sheep.
Receipts today20,000 54,000 19,000
Same day last year..18,270 33,528 27,629
Receipts last week...38,580 121,059 75,237
Same week last year.48,588 141,006 110,616

This week starts off with railroad and telegraph service still impaired, and there is a small attendance of outside buyers in the market, while Buffalo reports large sheep and lamb receipts, which checks the shipping demand here. For fat sheep there is a demand at steady prices, but at a late hour lambs were neglected and buyers trying to get them at reduced values, while sellers were refusing to shade prices. The cattle trade was slow also, and despite the moderate run, buyers acted independently, but it looked like a steady market. Hogs of the better class of light weights made still another high record by bringing \$9.50 and later \$9.60, averaging a dime higher, with the top 15¢ higher, but heavy packing hogs were weak to a nickel lower. Hogs sold all the way down to \$8.90@9. Hogs marketed last week averaged 242 lbs.,

compared with 238 lbs. a week earlier, 232 lbs. a month earlier, 219 lbs. a year ago, 240 lbs. two years ago and 220 lbs. three years ago.

Cattle were in greatly curtailed general demand most of last week, especially for shipment east, the floods and washouts preventing the shipment east of stock quite generally, and the feeder trade suffered as well as the beef cattle traffic. Even extremely limited offerings proved to be more than the market could take care, of without lowering prices, and breaks of 15@25¢ occurred in the general run of steers, female cattle and bulls. The receipts were checked through the same cause as the shipments out of Chicago, and as the week wore on there was a disposition upon the part of stockmen to hold back supplies, even where the railroads were prepared to accept consignments. Many stock trains sent out of Chicago were delayed many hours on the way, and many trains were unloaded long before they reached their destination. Of course, these conditions were temporary, and early recovery of former normal operations was expected. Beef steers sold largely at \$7.90@8.75, with the common class of short-fed, light-weight steers going at \$7@8, while the better class of long-fed heavy beefs sold at \$8.50@9.10, good to prime yearlings bringing \$8.35@8.75. To a greater extent than ever buyers discriminated against the better class of heavy steers, showing a marked preference for the medium-priced offerings. Butcher cows and heifers had a fair outlet at \$5.10@8.55, while cutters brought \$4.50@5, canners \$3.25@4.45 and bulls \$5@7.50, but to a large extent the higher prices for all kinds of cattle were paid during the first half of the week. There was a moderate movement in stockers and feeders, the former selling at \$6.10@7.85 and the latter at \$7.50@8.25 for good weights, and an Indiana man paid \$8.25 for 21 head of prime Angus steer calves. There was a complete collapse in prices for veal and other calves, sales being much slower at \$5@9.35, whereas a week earlier prime light vealers brought \$10.50@11. Milksters and springers sold sparingly on the basis of \$50@85 each.

Hogs make new high records for the year every week as a regular matter, and last week was no exception to the established rule, the moderate receipts going off briskly, although after Monday's good purchases by eastern shippers the outside demand fell off materially. Prime light-weight hogs adapted for the fresh meat trade continued to top the market, with medium-weights coming next and good heavy swine sold to better advantage than of late. The market promises to go still higher, as all the indications are that a considerable period will elapse before supplies become anywhere near the liberal requirements of the trade. As has been the rule for a long time, so many hogs are used for the fresh pork necessities of the country that extremely little can be done in bringing up the stocks of lard and cured meats in western warehouses, and these command high prices, sympathizing with the raw material. Saturday saw the highest prices yet reached, sales ranging at \$8.85@9.45, the top comparing with \$9.20 a week earlier. Pigs went at \$7@9.15, stags at \$9.40 @9.65, boars at \$3.75@4.75 and throwout packing sows at \$3.35@8.65.

Sheep and lambs shared in depression suffered in the cattle trade last week, and prices were materially lower all along the line, although the receipts were much smaller in number than a year ago. At times trade was almost at a standstill, and even on Monday, when the run was only 19,557 head, a decline in prices took place. Some light-weight feeding lambs sold at steady prices early, but later in the week Wyoming woolled hay-fed lambs were hard to dispose of, even at reduced prices, because of the lack of transportation facilities. Demoralized dressed mutton markets in the east helped along the weakness, and packers supplied their wants on much easier rates, even choice handy-weight woolled lambs going off sharply. Lambs continued to comprise the great bulk of the receipts, Colorado furnishing the greater part by far. The close of the week saw prices 25@40¢ lower than a week ago, woolled lots going as follows: Lambs, \$6.50@8.65; yearlings, \$7@7.75; wethers, \$6@6.75; ewes, \$4.50@6.50; bucks, \$4.50@5.75; feeder lambs were salable at \$7.25@8.

Horses were in much poorer demand than usual last week, and there were quite a number of instances where sales looked from \$5@10 per head lower, following the greatly improved trade of the preceding fortnight. The trouble was the lack of transportation due to the floods. The demand centered on farm horses, mares preferred, with prices ruling on a basis of \$140@250, but sales above \$220 comprised but a small number. The poorer class of horses sold slowly around \$90 @125, with better ones chiefly wanted and desirable drafters fetching \$175@225, while better ones were scarce and salable at \$250@300 or even higher.

LIVE STOCK NOTES.

Five car loads of hogs that averaged in weight 305 lbs., were marketed in Chicago recently by an Illinois stockman for \$6,-874.38 gross, an average of \$1,374.87 a load. Not a stag nor a piggy sow was among them, the entire lot being perfect in grading.

American ranch owners, cowboys and citizens along the Mexican border in Texas are arming and organizing to cross over into Mexico to pursue Mexican bandits and recover stolen property. L. D. Leuthian, ranch owner of Presidio, near Rio Grande, says: "Ranch owners are preparing to take matters into their own hands, come what may. Mexican bandits seem to think the United States is afraid and they are now extending their thieving operations 100 miles into Texas."

THIS IS THE FIRST EDITION.

In the first edition the Detroit Live stock markets are reports of last week; all other markets are right up to date. Thursday's Detroit Live Stock markets are given in the last edition. The first edition is mailed Thursday, the last edition Friday morning. The first edition is mailed to those who care more to get the paper early than they do for Thursday's Detroit Live Stock market report. You may have any edition desired. Subscribers may change from one edition to another by dropping us a card to that effect.

DETROIT LIVE STOCK MARKETS.

Thursday's Market.

March 27, 1913.

Receipts this week, 848. Market steady at last week's prices; run very light.

We quote: Best steers, \$8@8.15; steers and heifers, 1000 to 1200, \$7.50@8; do. 800 to 1000, \$7@7.50; do. that are fat, 500 to 700, \$6@7; choice fat cows, \$6@6.75; good do., \$5@6; common cows, \$4.50@4.75; canners, \$3.75@4.25; choice heavy bulls, \$6.50@7; fair to good bolognas, bulls, \$5.75@6.25; stock bulls, \$5@5.50; choice feeding steers, 800 to 1000, \$7@7.50; fair do., 800 to 1000, \$6@6.75; choice stockers, 500 to 700, \$6.50@7; fair do., 500 to 700, \$5.50@6; stock heifers, \$5@5.50; milkers, large, young, medium age, \$5@6.50; common milkers, \$3.50@4.50.

Roe Com. Co. sold Thompson Bros. 8 canners av 862 at \$4.25; to Sullivan P. Co. 3 steers av 850 at \$7, 3 heifers av 777 at \$6; to Breitenbeck 5 cows av 976 at \$5; to Bresnahan 3 butchers av 750 at \$6.50; to Goose 2 bulls av 1400 at \$7; to Thompson Bros. 9 cows av 985 at \$6, 3 do av 1040 at \$4.50; to Kamman B. Co. 4 steers av 970 at \$7.40, 10 do av 922 at \$7.65; to Nagle P. Co. 2 cows av 1380 at \$6.50; to Wyness 2 bulls av 965 at \$6.25; to Hammond, S. & Co. 15 steers av 1105 at \$8.

Bennett & S. sold Youngs 15 steers av 1200 at \$8.15.

Same sold Kamman B. Co. 2 cows av 945 at \$5.50.

Haley & M. sold Sullivan P. Co. 2 cows av 1175 at \$6.25, 7 steers av 730 at \$7.25, 1 cow weighing 860 at \$4.50, 1 do weighing 920 at \$5.50, 6 steers av 845 at \$7, 1 bull weighing 320 at \$6.50, 1 cow weighing 890 at \$5.50, 1 heifer weighing 550 at \$6, 2 cows av 965 at \$5, 1 do weighing 1240 at \$6.25; to Kull 10 steers av 810 at \$7.50, 2 do av 760 at \$7, 8 do av 490 at \$5.90, 7 butchers av 680 at \$6.40, 4 do av 990 at \$5.40, 2 cows av 850 at \$4.25, 5 do av 880 at \$4.60, 1 do weighing 720 at \$4; to Breitenbeck 6 do av 991 at \$5.40; to Rattkowsky 3 do av 1043 at \$5.25; to Grant 4 oxen av 1445 at \$6; to Thompson Bros. 5 cows and bulls av 1062 at \$6.35, 10 butchers av 568 at \$6.20; to Breitenbeck 15 do av 862 at \$7.55; to Sullivan P. Co. 2 do av 500 at \$6, 7 do av 671 at \$7.25; to Applebaum 6 cows av 900 at \$5.15; to Rattkowsky 1 do weighing 1300 at \$7.

Spicer & R. sold Sullivan P. Co. 2 cows av 1080 at \$5.65, 1 steer weighing 880 at \$7, 5 cows and bulls av 900 at \$6.25, 1 canner weighing 1070 at \$4, 23 steers av 770 at \$7, 16 do av 964 at \$7.25, 1 cow weighing 900 at \$5; to Kamman B. Co. 4 cows av 1085 at \$6.50; to Mich. B. Co. 2 butchers av 690 at \$5, 4 cows av 845 at \$5, 1 steer weighing 920 at \$7.50, 2 bulls av 1300 at \$6.50, 2 do av 830 at \$6.50, 4 steers av 770 at \$7, 7 butchers av 791 at \$6.15; to Rattkowsky 4 steers av 982 at \$7.65; to Marx 5 do av 902 at \$7.40; to Mich. B. Co. 17 butchers av 914 at \$6.75, 1 steer weighing 1020 at \$6, 4 canners av 842 at \$4; to Sullivan P. Co. 3 bulls av 1333 at \$6.55; to Thompson Bros. 2 cows av 1230 at \$6.50, 3 do av 847 at \$6.25; to Kamman B. Co. 4 steers av 882 at \$7.60; to Hammond, S. & Co. 15 do av 1113 at \$8.25, 1 cow weighing 1000 at \$5.75.

Bishop, B. & H. sold Hammond, S. & Co. 9 butchers av 780 at \$6.35, 14 steers av 850 at \$7.25, 11 do av 926 at \$7.45, 2 canners av 970 at \$4.25; to Rattkowsky 6 cows av 966 at \$5.75; to Sullivan P. Co. 14 butchers av 780 at \$5.70, 17 do av 1037 at \$7.40, 9 cows and bulls av 800 at \$6.25, 1 cow weighing 790 at \$5.25, 4 do av 1220 at \$6.25, 1 do weighing 650 at \$5.25, 2 do av 900 at \$6.25, 2 do av 870 at \$5, 5 do av 986 at \$5.75, 6 butchers av 836 at \$7.45, 10 do av 750 at \$5; to Nagle P. Co. 5 steers av 1320 at \$8; to Kurk 2 cows av 825 at \$4.50; to Hammond, S. & Co. 2 do av 370 at \$4.25, 1 do weighing 1000 at \$4.50, 2 do av 1115 at \$5.50, 8 steers av 912 at \$7.50, 1 cow weighing 1000 at \$4; to Bresnahan 5 butchers av 522 at \$5.50; to Rattkowsky 1 cow weighing 1100 at \$5.50; to Sutton 3 cows av 843 at \$5, 3 steers av 843 at \$6.75; to Mich. B. Co. 7 cows av 1031 at \$6, 2 do av 845 at \$4; to Newton B. Co. 1 do weighing 920 at \$4.25, 18 steers av 777 at \$7.25, 7 cows av 950 at \$5.50; to Thompson Bros. 3 cows av 900 at \$4.75, 8 steers av 750 at \$7; to Parker, W. & Co. 12 do av 888 at \$7.75, 8 do av 1070 at \$7.85; to Hammond, S. & Co. 12 do av 1000 at \$7.85; to Nagle P. Co. 2 cows av 1360 at \$6.65; to Goose 1 bull weighing 1740 at \$7.

Veal Calves.

Receipts, 408. Good grades 25@50c higher than the close last week; common steady. Best, \$10@11.50; others, \$6@9.50; milch cows and springers steady.

Bishop, B. & H. sold Hammond, S. & Co. 4 av 130 at \$10.50, 6 av 135 at \$10.50, 4 av 133 at \$8.50; to Rattkowsky 4 av 250 at \$6.75; to Parker, W. & Co. 4 av 145 at \$11, 2 av 135 at \$11, 10 av 130 at \$10.50, 1 weighing 180 at \$11, 5 av 125 at \$10.50, 1 weighing 110 at \$6, 1 weighing 180 at \$5, 2 av 145 at \$10, 6 av 110 at \$10.40, 7 av 130 at \$9, 6 av 140 at \$10.50, 4 av 135 at \$10.50, 20 av 125 at \$10.50, 3 av 130 at \$10.50, 6 av 115 at \$10.50, 16 av 150 at \$11.25, 5 av 150 at \$10.50, 6 av 140 at \$10.50; to Hammond, S. & Co. 4 av 140 at \$10.50, 1 weighing 150 at \$11.50, 9 av 140 at \$11.

Spicer & R. sold Costello 3 av 150 at

\$9, 1 weighing 120 at \$9; to Rattkowsky 7 av 130 at \$9; to Sullivan P. Co. 7 av 135 at \$8, 24 av 140 at \$10.65, 4 av 115 at \$8, 6 av 140 at \$10.50.

Haley & M. sold Goose 5 av 120 at \$10, 3 av 250 at \$5.50, 7 av 140 at \$10.50, 2 av 160 at \$10, 2 av 100 at \$9, 9 av 150 at \$10.50, 2 av 145 at \$10.50, 1 weighing 130 at \$10.50; to Mich. B. Co. 10 av 131 at \$10.50, 16 av 135 at \$10.50; to Sullivan P. Co. 2 av 145 at \$11, 8 av 130 at \$10.50; to Burnstine 3 av 130 at \$10, 3 av 130 at \$10.50.

Sandall sold Mich. B. Co. 3 av 140 at \$10, 18 av 125 at \$10.50.

Dancer & K. sold Burnstine 3 av 100 at \$8, 7 av 135 at \$11.

Sheep and Lambs.

Receipts, 2281. Market steady at last week's prices. Best lambs, \$8.75; fair to good do., \$8@8.50; light to common do., \$6@7.50; yearlings, \$7.75@8; fair to good sheep, \$5.50@6.50; culls and common, \$4@5.

Bishop, B. & H. sold Costello 24 lambs av 70 at \$8.50, 23 do av 70 at \$8.25, 29 do av 50 at \$7.75; to Swift & Co. 215 do av 85 at \$8.75, 215 do av 86 at \$8.75, 33 do av 85 at \$8.75, 230 do av 80 at \$8.75, 114 do av 88 at \$8.75, 207 do av 75 at \$8.75, 75 do av 80 at \$8.75, 121 do av 80 at \$8.50, 20 sheep av 90 at \$6.75, 76 do av 95 at \$6.75; to Sullivan P. Co. 18 lambs av 75 at \$8.25, 12 do av 60 at \$7.50, 13 do av 65 at \$7.50; to Thompson Bros. 47 yearlings av 87 at \$7.85; to Sullivan P. Co. 100 yearlings av 84 at \$7.85, 26 sheep av 120 at \$6, 7 lambs av 78 at \$8.75.

Spicer & R. sold Costello 11 sheep av 75 at \$6.25, 13 lambs av 55 at \$7, 8 do av 75 at \$7.50; to Rattkowsky 1 buck weighing 200 at \$5.50; to Mich. B. Co. 23 lambs av 67 at \$8.

Hogs.

Receipts, 2369. Nothing doing up to noon; no activity at outside markets; looks steady with Wednesday, or 30@35c higher than last week.

Range of prices: Light to good butchers, \$9.50; pigs, \$9.60; light Yorkers, \$9.40 @9.50; stags one-third off.

Bishop, B. & H. sold Sullivan P. Co. 106 av 123 at \$9.50.

Roe Com. Co. sold same 225 av 190 at \$9.50.

Spicer & R. sold Parker, W. & Co. 200 av 210 at \$9.45.

Friday's Market.

March 28, 1913.

Receipts this week, 1229; last week, 1522. Market steady at Thursday's prices; run very light. We quote: Best steers and heifers, \$8@8.25; steers and heifers, 1000 to 1200, \$7.50@8; do. 800 to 1000, \$7@7.50; do. that are fat, 500 to 700, \$6@7; choice fat cows, \$6@6.75; good do., \$5@6; common cows, \$4.50@4.75; canners \$4@4.25; choice heavy bulls, \$6.50@7; fair to good bolognas, bulls, \$5.75@6.25; stock bulls, \$5@5.50; choice feeding steers, 800 to 1000, \$7@7.50; fair do., 800 to 1000, \$6@6.75; choice stockers, 500 to 700, \$6.50 @7; fair do, 500 to 700; \$5.50@6; stock heifers, \$5@5.50; milkers, large, young, medium age, \$5@6.50; common milkers, \$3.50@4.50.

Veal Calves.

Receipts this week, 574; last week, 780. Market steady at Thursday's prices. Best, \$10@11.50; others, \$6@9.50; milch cows and springers steady.

Sheep and Lambs.

Receipts this week, 2718; last week, 4079. Market steady at Thursday's prices. Best lambs, \$8.75; fair to good do., \$8@8.50; light to common do., \$6@7; yearlings, \$7.75@8; fair to good sheep, \$5.50@6.50; culls and common, \$3.75@4.25.

Hogs.

Receipts this week, 3779; last week, 4292. Market 5c lower than on Thursday. Range of prices: Light to good butchers, \$9.45; pigs, \$9.50; mixed, \$9.45; stags one-third off.

The ruling prices for beef cattle, as well as for cattle of the stocker and feeder classes, are still extremely high and promise to remain so for some time, but whether it is safe for farmers to purchase the better class of cattle for fattening at the prices asked by owners is extremely doubtful, to say the least. Ever since the remarkable boom in the choicest class of long-fed, heavy beefs that took place during the latter part of last year there has been a great reluctance among slaughterers to pay extreme prices, and as a general rule these have been the slowest to advance and the first to sell off, notwithstanding their scarcity. Comparison with a year ago will show that while the advance in prime beef cattle has been comparatively moderate, the commoner grades have had an extremely large advance. Recently sales in the Chicago stock yards have ranged from \$7@8 per 100 lbs. for the poorer light-weight steers that have been warmed up by stockmen, while the choicest cattle have been bringing \$8.75@9.15. Meanwhile stockers and feeders have been fetching \$7.75@8.25 for the better class, and not long ago a venturesome Indiana stockman had the courage to pay \$8.30 for a car load of heavy feeders. Beef steers a year ago brought \$5.10@8.85.

J. A. Delfelder, former president of the American Wool Growers' Association, was in Chicago a short time ago arranging for the reception of a band of 10,000 Wyoming lambs which he has been feeding on hay and Nebraska-grown corn in the Riverton Valley, and which he will shear and finish at one of the big feeding stations near Chicago. He said there are very few sheep or lambs feeding in Wyoming for the market. "It is estimated," continued Mr. Delfelder, "that two million ewes were bred in Wyoming this season. The winter has been mild and open, the bucks have done their work well and sheep on the open range never wintered better. If spring weather conditions are propitious, the Wyoming lamb crop will make a large percentage. It must be remembered, however, that Wyoming now has 50 per cent fewer sheep than three years ago."

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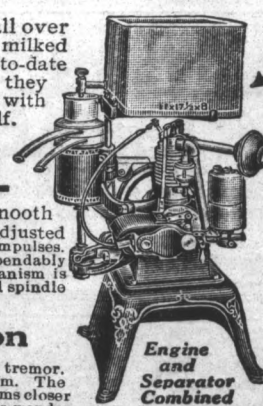
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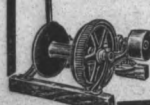


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Veterinary.

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Advice through this department is free
to our subscribers. Each communication
should state history and symptoms of the
case in full; also name and address of
writer. Initials only will be published.
Many queries are answered that apply to
the same ailments. If this column is
watched carefully you will probably find
the desired information in a reply that
has been made to someone else. When
reply by mail is requested, it becomes
private practice, and a fee of \$1.00 must
accompany the letter.

Stifle Weakness.—Occasionally my 3-
year-old filly drags hind foot a step or
two when first taken out of stall, but
shows no lameness nor swelling of stifle
joint. G. D., Nottowa, Mich.—Apply al-
cohol to stifle joint twice a day.

Indigestion—Bloat.—I have a 12-year-
old horse that is inclined to have colic
and more or less bloating after eating
grain. He also has a bunch on side of
throat about the size of a goose egg. C.
M., Grand Ledge, Mich.—Give your horse
a teaspoonful of salicylic acid at a dose
in feed three times a day. He should be
fed no clover or musty, dusty, badly-
cured fodder; furthermore, he should be
watered before feeding him grain. Apply
one part iodine and ten parts lard to
bunch in throat twice a week.

Goitre—Udder Hemorrhage.—I have a
herd of grade Holstein cows and one-
half of their calves are born with large
necks and live only a few hours, then die.
I also have a heifer that recently came
fresh and instead of giving milk, blood
came and the udder rapidly lessened in
size. J. R. S., Owosso, Mich.—Nothing
can be done for such young animals that
have abnormal thyroids and it is per-
haps the result of feeding cows certain
kinds of food. Your other heifer no doubt
met with an injury, causing her to give
blood instead of milk.

Worms—Lice.—I have a two-year-old
colt which is not thriving, it is fed oats
and hay and I am inclined to believe
this a case of worms. My other colts
usually get lousy about this time of the
year and I would like to know what to
use in the shape of a louse-killing pow-
der. H. C. W., Montague, Mich.—Give
your colt ½ oz. fluid extract gentian, and
30 grs. of salol at a dose in feed three
times a day. You should increase colt's
food supply, adding some roots. Apply
Persian insect powder or any of the lice-
killing powders that are so regularly ad-
vertised in this paper.

Stricture of Teat Canal.—I am having
trouble with stricture among our cows
and am unable to cope with it. I wish
you would give causes and treatment for
it. J. B. McC., Durand, Mich.—Stricture
of teat canal very often follows bacteri-
al infection of udder; it also follows in-
jury to teat and in order to relieve this
stricture condition the opening should be
made larger and this is best done by us-
ing a "concealed bistoury," which is ar-
ranged so that you can make the opening
in teat any size you please. After the
operation treat wound with a few drops
of peroxide hydrogen, which will form
gas and dilate teat canal.

Indigestion—Impaction.—I would like to
know what is wrong with my sheep; five
of the 42 have been sick and one of
them died. The first symptom is dull-
ness, kicking the abdomen, stretching and
shifting position. I gave them salts and
this seemed to cure four, but the other
one died. C. A. M., Waldron, Mich.—
Your sheep suffer from indigestion and
impaction of the bowels. Giving them
either epsom salts or castor oil and olive
oil to empty their bowels is good prac-
tice. If you suspect any of your sheep
of not thriving and if their bowels are
very costive you had better give them
either one of these cathartics.

Insane Ewe.—A few days ago one of
my Shropshire ewes dropped twin lambs
and before they were an hour old she
had bitten off their tails. They bled so
much that I took them away from her
and when returned, she was inclined to
bite them and would have perhaps killed
them both. What ailed her? W. W.,
Sunfield, Mich.—On account of her hav-
ing a high temperature she became de-
lirious and, of course, did not know what
she was doing. If you have another case
give her 15 drops of tincture aconite, 15
grs. of bromide of potash at a dose ev-
ery three hours and apply cold wet cloths
to upper portion of head; also give her
enough epsom salts or castor oil to open
bowels.

Sow Eats Pigs.—I have a sow that has
had three different litters of pigs and
she has eaten two of these litters, and I
would like to know if there is a preventa-
tive? A. Y., Kalamazoo, Mich.—Feeding
meat to sows of this kind is claimed to
assist in preventing sows from eating
any or all of their litter; however, I am
inclined to believe that there is no rem-
edy for a vice of this kind. Feeding sows
a mixed ration before farrowing is per-
haps the best preventative.

Chronic Fistula of Face.—I have a
horse that has had fistula of face for a
long time and I applied a remedy taken
from the Michigan Farmer, which sloughed
out pipes and now I would like to
know what should be applied to heal
sore. W. T. T., Newberry, Mich.—You
had better apply one part iodoform and
15 or 20 parts boric acid twice a day.
Before applying this powder, use hydro-
gen peroxide to clean out pus.

Foot Lameness.—I recently purchased
a small pony that has contracted fore
feet and I find that the frogs are ex-
tremely hard and I have applied cow man-
ure to soften them, but it fails to re-
lieve soreness. D. P., Ithaca, Mich.—

Apply lanolin to hoofs once or twice a
day, stand him in wet clay not less than
two hours a day. If this treatment fails
to relieve him, clip hair off coronet and
apply one part powdered cantharides and
six part fresh lard once a week. These
blisters will stimulate a healthy growth
of horn.

Indigestion—Rheumatism.—First of all
I want to say that the remedies I have
used taken from veterinary department
of the Michigan Farmer, have saved me
considerable money. I have a mare that
has not done well since last summer and
I was obliged to wean her colt when
three months old. She seems to crave
salt and would eat a handful a day, but
our local Vet. advised me not to give her
much. I am feeding her clover hay,
ground gentian, carrots, beets, also po-
tatoes, but she does not improve much.
I am anxious to put some flesh on her.
I also have a boar that acts dumpyish,
has a poor appetite and is not thriving.
C. J. M., Blissfield, Mich.—First thing
you do, examine the mare's teeth; they
may need floating. Give her ½ oz. of
Fowler's solution, ½ oz. fluid extract of
gentian and 1 dr. fluid extract nux vom-
ica at a dose in feed three times a day.
Her appetite for salt should be satisfied;
however, it should be fed to her in feed
three times daily. Give your hog 10
drops fluid extract nux vomica and a
dessertspoonful of fluid extract gentian
at a dose in feed three times a day. Also
give him a t aspoonful bicarbonate soda
at a dose in feed night and morning.

**Horse Becomes Cast in Stall—Infectious
Abortion.**—I receive much valuable
information through the veterinary depart-
ment of the Michigan Farmer, but have
failed to notice a remedy for preventing
a horse getting cast in open stall. I also
wish to know if it will do any good to
give cows carbolic acid as a preventative
of contagious abortion and if you regard
it as a remedy; what should the dose be?
L. G. D., Clayton, Mich.—A horse that
itches is inclined to roll on his back,
therefore, if you will groom your horse
well and wet him with a lotion composed
of one part bichloride mercury and 1,000
parts water twice a day, it will make
him more comfortable and less inclined
to roll. He should be kept in a box stall
not less than 12 feet square, and the low-
er three feet of wall should be taped in at
least 18 inches. This will prevent him
getting in corner. Another plan is to
use a blanket with large pad on each side
which will, of course, make it impossible
for him to roll over. Now, regarding the
effectiveness of carbolic acid as a cura-
tive remedy and preventing miscarriage
in cattle, I have my doubts. But, when
it is given it is usually prescribed in 30
gr. doses, highly diluted and mixed with
feed every day. The time to get rid of
contagious abortion in your herd is when
your cow calves and following her up
with treatment for two or three weeks
after she freshens. My candid opinion
is that carbolic acid given to cows
will not either prevent or cure abortion,
but it does assist in controlling it.

Bruised Leg.—I have a young mare
that for three weeks has been troubled
with a swollen hock the result of getting
leg through a stall partition. G. C., Mar-
lette, Mich.—Dissolve ¼ lb. acetate of
lead, 3 ozs. sulphate of zinc and 2 ozs.
carbolic acid in a gallon of water and
apply to hock three times a day. Give
her a dessertspoonful powdered nitrate of
potash at a dose in feed twice a day.

Chronic Stifle Lameness—Weakness.—
I would like to know how to treat my
two-year-old filly. She is troubled with
stifle lameness and I am inclined to be-
lieve she is not well for she tires out
quickly. J. T., Selkirk, Mich.—Apply one
part iodine and 10 parts fresh lard to
stifle every two or three days and give
her ½ dr. of ground nux vomica, 2 drs.
ground gentian and 4 drs. ground ginger
at a dose in feed three times a day.

Unthrifty Cows.—I have a cow that
thrives well when on grass, but in the
winter, while eating dry feed, she gradu-
ally loses appetite until she eats only
about enough to keep her alive. She is
now eight years old and has been in this
condition for three years. Her calves
appear to do well when young, but change
when on dry feed. A. L., Hillman, Mich.
Your cow would do a whole lot better in
winter months if she was fed plenty of
roots. Also give 1 oz. cooking soda, 1
oz. ground gentian and 1 oz. powdered
charcoal at a dose in feed three times a
day. Change method of feeding calves
and they will do all right.

Light Milker.—I have a three-year-old
cow that came fresh last September. In
December she fell off in her milk and
although on a full feed of cob meal, lin-
seed and cottonseed meal, I fail to in-
crease her milk flow. W. S., Delton,
Mich.—As your cow appears to be in
perfect health, I do not believe it good
judgment to give her drugs, but would
advise giving her more bran, middlings,
roots and clover hay.

Warbles.—My cows have grubs in their
backs; how can I get rid of them and
what harm will they do if nothing is
done? V. J. C., Jonesville, Mich.—Grubs
in the back of cattle cause some irrita-
tion and uneasiness, also perforate the
hide, making it worth less when sold. Use
a sharp penknife to make opening large
enough to squeeze out grubs and, of
course, be sure and kill them. Also ap-
ply boric acid to wound twice a day
until it heals. Paint the smaller ones
with tincture iodine once a day.

Inflammation of Stomach and Intestines.
—Have lost about 30 of my hens lately;
they first act dumpyish for a day or two
then die. Bowels loose and has a bad
odor. These chickens have a wide range
and a variety of food. Have buried dead
ones right away and given the whole flock
iron and pepper in drinking water. J.
W. F., Milan, Mich.—Your chickens die
from a parasitic disease affecting and
causing inflammation of the stomach and
intestines. Or you may have caused it
by feeding too much cayenne pepper and
overloading the stomach. Give ½ gr. of
salol in a teaspoonful of olive oil at a



Warranted
to give satisfaction.

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A safe, speedy and
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dose two or three times a day and change their feed. You had better put some oatmeal in their drinking water and it would help them to give 1 gr. of bicarbonate soda and 2 grs. of sub-nitrate bismuth three times a day.

Loss of Appetite.—My brood sow that was bred three weeks ago lost her appetite two days ago; she arches her back and acts as though she had the rheumatism. H. B. L., White Cloud, Mich.—Give sow 1 oz. castor oil, 2 ozs. of olive oil to clean out stomach and bowels; then give 4 grs. quinine and 1 dr. ground gentian, either in feed or as a drench three times a day. Feed her some apples, carrots, cabbage, or potatoes, and instead of feeding her corn, feed oats. Apply one part turpentine, one part aqua ammonia and six parts olive oil to back once a day.

Turkeys have Tuberculosis.—I am anxious to know what ails my turkeys. They have swollen knees and bunches on their wings; they are very lame and move about with difficulty. I have kept them in basement of barn all winter and fed them mostly corn and oats. J. H. Y., Levering, Mich.—I am inclined to believe that your turkeys suffer from tuberculosis, which is not an uncommon disease in turkeys; however, it is possible keeping them in basement may have produced rheumatism, affecting the joints. Give 1 gr. sodium salicylate at a dose two or three times a day and paint knees and bunch on wing with iodine three times a week.

Roarer.—I have a mare 12 years old that has enlarged throat glands and when traveling fast breathes like a wind-broken horse, but soon after stopping her she breathes quietly. E. O. W., St. John's, Mich.—Apply one part iodine and ten parts fresh lard to enlarged glands three times a week.

Sluggish Kidneys.—My mare seems to have some difficulty in passing urine, but appears to be in good health. E. H., Dowagiac, Mich.—Mix together equal parts powdered buchu leaves, powdered nitrate of potash and resin and give her a tablespoonful at a dose three times a day.

Acute Lymphangitis.—My 18-year-old horse swelled badly in one hind leg, also under the belly, but I succeeded in reducing quite a portion of swelling. Now I would like to know if I can remove the remaining swelling? E. B. T., Belleville, Mich.—Give 2 drs. potassium iodide and apply extract of witch hazel to leg with cotton and bandage over it, twice or three times a day. It is doubtful about your removing all the swelling. He should be exercised every day and never fed much grain when idle.

Contagious Abortion.—Rolls in Stall—Impaction.—I have a mare that lost her colt some three years ago; colt came six months too early, at which time she stocked under belly. I would also like to know how to prevent her from rolling in stable and if rolling might not cause a miscarriage. I would also like to know if I had better continue feeding my mare that had impaction, some molasses. She has thrived since you prescribed for her. J. I. W., North Branch, Mich.—Your mare may have produced miscarriage twice by rolling and getting cast in stall, but I am inclined to believe she suffers from contagious abortion. Dissolve 1 dr. permanganate potash in one gallon of tepid water and inject her with this lotion three times a week. Why don't you keep the mare in a large box stall? Feed your mare some roots and plenty of well salted bran mash to keep her bowels open.

Indigestion.—I have a cow that came fresh November 1; have been feeding her clover hay, oil meal, and ground grain. She eats well, looks fine, but very suddenly lessened to a pint of milk at a milking and I am not sure that the supply is of normal quality. H. D., Durand, Mich.—Give her 1 lb. sulphate magnesia and 30 grs. of calomel at one dose to open bowels. Also give her 1 oz. ground ginger, 1 oz. bicarbonate soda, and 2 drs. salicylic acid in feed three times a day. A change of feed will greatly benefit her.

Navel Infection.—The last two cows I have had freshen lost their calves about four to seven days after they were born. These cows were apparently in good health, udders free from cake or other disease of bag. I feed the cows clover hay and ground oats for grain ration. H. B., Palmyra, Mich.—Your calves died, not from any diseased condition of their mother, but from becoming infected through navel. The cord of every young animal should be tied with a sterilized string and a good home healing remedy should be applied to navel twice until it heals.

Knuckling.—I have a nine-month-old colt that is knuckling on both hind fetlock joints and I would like to know what can be done for it? J. V. O., Conklin, Mich.—Apply one part turpentine, one part aqua ammonia and five parts soap liniment to fetlock joints two or three times a week.

Partial Paralysis.—I have a cow that commenced showing lameness in one hind leg about two months before she freshened and gradually got worse and finally could not get up for three weeks before she calved and her calf is now four weeks old, but she has not been able to get up without assistance for the seven weeks. We put a sling under her and helped her up, but I do not believe it helped her very much. C. S. D., Vermontville, Mich.—Give her 1½ drs. ground nux vomica and 2 drs. potassium iodide at a dose in feed three times a day. Apply equal parts turpentine, aqua ammonia and raw linseed oil to back every day or two. Also give her a tablespoonful powdered saltpeter once or twice a day, if her kidneys do not act free enough.

Hard Milker.—I have a cow that milks extremely hard and I have thought that a good deal of the trouble was in end of teat. G. A. L., Vermontville, Mich.—By dilating the teat canal with a tapering highly polished, dull-pointed steel probe once a day, you will help her.

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In his laboratory work of a lifetime and selling his various scientific products Dr. Hess (M.D., D.V.S.) has always taken our farmers into his fullest confidence. He believes that the farmer should know exactly what he buys. It is his belief that the more people that know what Dr. Hess Stock Tonic is made of the better. Then there is no mystery, no exaggeration—all claims that Dr. Hess Stock Tonic will increase growth and milk and relieve stock ailments can be verified by referring to the medical writings or the U. S. Dispensatory. The formula for

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Dr. Hess Stock Tonic contains:
Nux Vomica, Digestive and Nerve Tonic.
Quassia, Digestive Tonic and Worm Expeller.
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Sulphate of Soda, Laxative and Liver Tonic.
Common Salt, Appetizer, Cleanser.
Epsom Salts, Laxative.
Nitrate of Potash, Stimulates kidneys.
Charcoal, Prevents Noxious Gases.
Peppermint, Tonic and Aromatic.
The above is carefully compounded by Dr. Hess (M.D., D.V.S.), with just enough cereal meal to make a perfect mixture.

is printed in the left-hand panel here with extracts from the U. S. Dispensatory. Dr. Hess even goes further and makes this proposition: **Our Proposition:**—Feed Dr. Hess Stock Tonic to your horses, your cattle, your hogs and your sheep; especially when you are preparing for market. If you are not convinced beyond the shadow of a doubt that it has proven a paying investment by increasing digestion, improving the general condition and appearance, keeping your animals free from disease and free from worms, go to your dealer and he is under contract with us to refund your money.

Dr. Hess Stock Tonic in 25-lb. pails costs you \$1.00; 100-lb. sacks \$5.00. Only costs 8 cts. per month for the average hog.

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The ingredients of this poultry tonic are also printed on the package. Your druggist will tell you what beneficial effects poultry must derive from these ingredients. We guarantee it to make your hens lay more eggs, help chicks to robust maturity, shorten the moulting period and keep your flock hardy and well. Your money back if it doesn't. If your dealer cannot supply you, we will.

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Worse Than Tuberculosis in Cows

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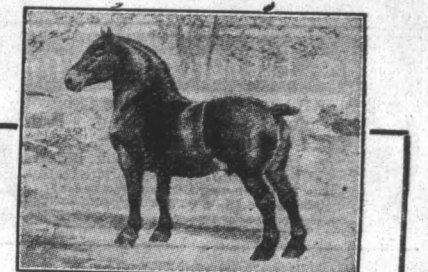
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NEW THOUGHTS IN ORCHARDING.

The discussion of this general theme by W. W. Farnsworth, of Ohio, in his lucid and practical way, before the winter session of the State Horticultural Society at Jackson last week, proved a most profitable number of the excellent program given on that occasion.

Thorough Orchard Drainage.

If not provided naturally the grower of fruit must see to it that his ground is well drained should he seek the most economical results from his labors. On wet soils it frequently happens that spraying is delayed because it is impossible to get the team and the spray rig on the ground. The damage resulting from such delays in some seasons will often amount to a considerable part of the cost of tilling the land. Again, fruit growers are cognizant of the advantage of starting cultivation of the land early to liberate plant food and conserve moisture for later use, and this is made possible through careful drainage. Still another advantage comes in planting trees and bushes and vines, in that they can be gotten into the soil at a much earlier period, thus aiding them to get a far better start the first season of growth in the orchard. Other reasons exist why the fruit grower should give this matter special attention but these are important ones and of peculiar interest to the man producing fruit.

Have Plenty of Equipment.

Although there is a tendency for most growers to be provided with just enough equipment to do the work under pressure, it was the declaration of Mr. Farnsworth after many years of experience and study that a fruit grower ought to have a reserve of equipment. In his own case two spray rigs would handle his work tolerably well, but he has invested in three rigs so that if the occasion demands, work can be rushed or, should one of the rigs in use fail for any reason, the third spraying outfit is available to carry on the work as it should be. He believes that the insurance gained by having this larger equipment exceeds the interest on the investment and helps to make his fruit production more certain. In other lines of equipment the same argument holds, more particularly, however, for that equipment used for work that must be accomplished at some definite time.

The Use of the Disk.

In orchard cultivation, Mr. Farnsworth believes that the future will see a greater use of the disk harrow than is made of it at the present time. He mentioned two particular advantages that this implement has over the ordinary plow: The disk leaves the land in smoother condition—doing away with the dead furrows—and prevents the breaking of the tree roots. The large amount of team and hand work done in the orchard makes it desirable to have the ground as level as it can be kept consistent with efficient cultivating operations. Again, there has been a tendency in recent years to feed the trees more, that larger annual crops may be produced, and if we each spring break off a large number of feeding roots by cutting them with the plow, we naturally reduce the feeding capacity of the root system of the trees. Inasmuch as the disk leaves practically all of these feeding roots intact its use is to be favored over that of the plow. Now that the gasoline tractor is being employed in our larger orchards, the use of the double disks of larger size is certain to find a more extensive place in the future cultivation of big orchards, at least.

Early Culture.

We do not seem to appreciate the necessity of breaking the orchard soil early in the season. Nevertheless distinct advantages accrue to the practice as experiments of Mr. Farnsworth and others show. The reason, perhaps, why early cultivation is not better attended to is due to the fact that our trees live on for several years. With an annual crop we note the results from late sowing that same year and are usually able to trace the cause of a poor crop to its source, but the influence on trees may extend over a number of years and thereby be partially lost from view, although the greater influence of cultural methods is likely to be seen the same year the work is performed. This early culture traps the moisture for the use of the trees later in the season when needed to develop the crop, and also warms up the soil, gives freer access to air, and improves conditions generally for the activity of bacterial life.

The Use of Fillers.

With the appreciation in land values there comes a strong incentive for own-

ers to better occupy the land while an orchard is developing. Mr. Farnsworth gave it as his opinion that, because of the fact that different kinds of fruit require different cultural methods and soil conditions, the best plan to follow is to use the same kind of fruit for fillers as are used for permanent planting. For instance, he would use apples as fillers in an apple orchard, selecting the early varieties for this purpose. Then, just before the trees begin crowding the alternate ones can be removed.

Fertilizing the Orchard.

While a New York bulletin raised the question a couple of years ago as to the advisability of fertilizing orchards growing on strong soils, Mr. Farnsworth is a firm believer in the practice of feeding hard-working trees. He is confident that in his own experience the reasonable use of stable manure and commercial fertilizers is not only beneficial but highly profitable in the production of fruit.

Cover Crops.

Mr. Farnsworth employs a variety of cover crops. There are conditions which make certain ones more desirable than others, and he aims always to select the crops to suit the need. He has used sand vetch, mammoth clover, cowhorn turnips, sow beans and millet to mulch, enrich the soil, regulate moisture and perform the other functions of these crops.

The Curculio.

Mr. Farnsworth has abandoned the old method of fighting the curculio, which method consisted of running a canvas hopper underneath the tree, jarring the branches and causing the insects to fall into the hopper. His present method is to spray with arsenate of lead for this insect. By doing this work carefully for a series of years he finds that now there are very few of the curculios remaining. The same may also be said of plum rot, which is controlled by a fungicide.

Spraying Large Orchards.

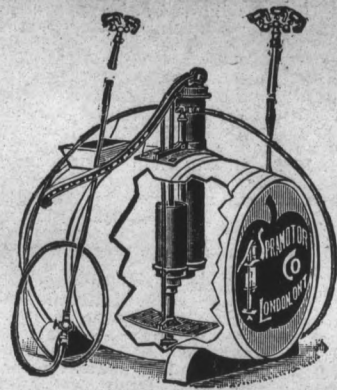
The question of how the large orchards now being planted can be properly sprayed was raised in a previous discussion, and Mr. Farnsworth took occasion to state that he believed to a certain degree this difficulty could have been overcome had they planted a diversity of fruits, using such kinds as will enable the grower and his men to treat the different kinds at different times. This arrangement also makes possible a more economic method of handling fruit, since labor can be employed better than it can were a limited number of varieties of a single kind is planted.

Thinning Fruits.

One of the most profitable practices in the fruit orchard is that of thinning. Mr. Farnsworth not only thins his peaches and plums, but apples, pears and other fruits. The greatest good is secured when the work is done as soon after the June drop as possible. The size of the specimens are often increased from 25 to 50 per cent where proper thinning has been done. A number of incidents has caused him to conclude that the succeeding year's crop is superior on trees that are thinned than on those not so treated. Usually thinning is not done properly, especially by men new at the work who will not remove a sufficient amount of fruit to be effective. He finds that ordinarily a man has to be called back to his first tree three or four times before he learns how to take off a proper number of specimens.

The Advantage of Keeping the Orchard Sanitary.

There is an advantage in persistent spraying. For a long term of years Mr. Farnsworth has practiced careful spraying and he has learned from that experience that his orchards have become freer from insect pests and fungus diseases than are those plantations lacking this attention. At the present time he finds that the purpose of spraying is almost completely accomplished by going over his trees twice. What he means by a single application, however, is not merely sprinkling the trees upon one side, but at least from two sides, and if the trees are large, applications from three and four sides constitute a single spraying. He took the precaution, however, to advise others that they should not depend upon giving but two applications of spray for the reason that his orchards are peculiarly located, there being but few other growers in his immediate community, and from the fact above mentioned that he has followed a careful program of spraying for many years. Since Mr. Farnsworth grows a very superior quality of fruit this condition testifies to the advantage of constant spraying and to the good that would result if every person having trees would practice that same method.



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REGENERATED Swedish Select Recleaned Oats at 75c bu. Fine yellow dent seed corn \$2 bu. Bags Free. JOHN LOHMAN, Sr., Hamilton, Michigan.

SEED CORN—Early white cap dent, fire dried, yield over 100 bu. to acre, \$1 per bu. on ear, order early. DR. C. S. LAYTON, Ypsilanti, Michigan.

SPRAYING GRAPES.

Spraying is one of the most important factors in grape growing, as it will invariably be a failure if spraying is not done. Persistent fungus diseases and insects are obstacles for the grape grower to overcome in his endeavor to produce good bunches of grapes.

The black rot and the mildew are two of the worst troubles of a fungous nature. By thorough spraying they can, however, be easily controlled.

Some of the insect enemies are harder to control and in some cases it is sometimes almost impossible to do anything to control them. The rose chafer or rose bug, is undoubtedly the worst. Spraying has apparently no effect on them even if five to six pounds of arsenate of lead is used to 50 gallons of water. This amount of poison, with a gallon of molasses added to the mixture to sweeten it, has given the best results but it has not yet proven to be of any very great value. The rose bug comes quickly and in such large numbers that poison has very little effect on them. They also disappear as quickly as they came. Hand-picking is the only reliable means we have for controlling them.

Dilute lime-sulphur, which has proven so valuable on most of our other fruits, is of little value on the grape. It does not keep the fungous troubles in check and seems to have a detrimental effect on the foliage.

Bordeaux mixture, which was discovered in the attempt to get something to control the fungus diseases of the grape, is still its best fungicide. It readily controls the fungi and seems to have a tonic effect on the foliage.

Scale rarely attacks the grape and therefore it does not need the dormant season spray. The first spraying should be made when the new shoots are about eight inches long; Bordeaux mixture and arsenate of lead should be used. Two pounds of arsenate of lead to 50 gallons of spray is enough. The Bordeaux mixture should be made with four pounds of copper sulphate and six pounds of lime to 50 gallons of water.

To make good Bordeaux care must be taken to have both the lime and the copper sulphate diluted before pouring them together. If they are put together in concentrated form the mixture will be thick and curdy, and will not stay up in suspension well.

The second application should be made when the blossoms are falling. Ten days or two weeks later this should be repeated. Bordeaux mixture and arsenate of lead should be used in all of the sprayings.

These three sprayings will generally control the fungus troubles and all of the insects except the rose bug and the leaf hopper which is sometimes incorrectly called the thrip. Kerosene emulsion, applied about the time of the usual first spraying, will keep the leaf hopper in check. The commercial tobacco extracts are also very good and, although they cost much more than the kerosene emulsion, there is not the danger of burning the foliage as there is with the kerosene spray.

When there is anything which injures the foliage of the grape and so cuts down the natural amount of leaf surface to any extent, the fruit does not ripen properly. It fails to soften up or get its natural color and the hard red grapes will be the result. The unusual amount of mildew during the past season made the hard red grape almost more common than the properly ripened ones. Those who sprayed thoroughly had as good fruit as usual.

Van Buren Co. FRANK A. WILKEN.

RECOMMENDED VARIETIES OF SMALL FRUITS.

The following are some of the varieties of small fruits recommended by Mr. Wilken, of the South Haven Experiment Station, recently.

Gooseberries.

Downing, originating in New York state has a round, medium large-sized berry of good quality, maturing in mid-season and popular for both kitchen and market purposes.

Houghton, a native of Massachusetts, has a small greenish red berry of large size and very good quality maturing about the same time as the Downing. Favored as a dessert and kitchen kind.

Mr. Wilken mentioned the Portage as a promising new kind.

Currants.

London Market, imported from England, has a round, medium-sized, red berry

of good quality and used as a kitchen and market kind. It matures in mid-season.

Victoria, another importation from England, also has a round, medium-sized red berry of good quality but is recommended for market purposes only.

Blackberries.

Eldorado, of Ohio birth, has an oblong very large black berry of superior quality and is popular everywhere. Ripens early.

Early King is another kind meeting good favor in this state.

Black Raspberries.

Eureka, another variety from Ohio, has a round, medium large black berry of good quality, grown for both kitchen and market and of medium early maturing habit.

Gregg, a kind from Indiana, produces a roundish, oblong, large-sized black berry of good quality but is grown almost entirely for market. Ripens in mid-season.

Cumberland, from Pennsylvania, grows a roundish oblong, very large black berry of the very best quality and finds demand for both market and dessert purposes. Matures early.

Red Raspberries.

Cuthbert, a product of New York state yielding a roundish, conical, medium-sized red berry of very good quality and popular for dessert and kitchen purposes. This is the one great red raspberry.

King, of unknown origin, bears round, medium-sized, crimson red fruit of good quality and is grown for dessert and market needs. Is preferred for heavy soils.

THE BLACK KNOT OF PLUMS.

(Continued from first page.)

these wild fruits near the orchards be destroyed.

This disease is very destructive, and it is common. Frequently a locality will become very much alarmed and do almost everything except call out the militia. Such a scare is not necessary—nothing but careful control measures, as suggested above, is required. Wholesale condemning of young trees and the discouraging of plum orchards are certainly not necessary.

The Michigan Agricultural College in the past has contributed to the knowledge of this disease. A. A. Crozier, more than 20 years ago, brought out the fact that spores mature before spring. B. O. Longyear, formerly of the Department of Botany, by his careful account in a bulletin on fruit diseases, did much to enlighten the state. He made the illustration which accompanies this article, and J. B. Dandeno, B. O. Longyear's successor, made the first successful inoculation experiments with this fungus. The department of botany is willing to undertake a co-operative experiment, one in a county, to demonstrate the feasibility of fighting this disease.

Mich. Ag. Col. G. H. COONS.

OAKLAND COUNTY HORTICULTURAL SOCIETY.

At the annual meeting of the Oakland County Horticultural Society which was held in Pontiac on Thursday, March 20, the following officers were elected for the coming year: President, Chas. A. Bingham, Birmingham; first vice-president, W. D. Flint, Novi; secretary, Sarah E. Sly, Birmingham; treasurer, Charles B. Pettibone, Farmington; prompter R. J. Coryell, Birmingham.

The executive committee appointed by the president is as follows: A. L. Ross, Rochester, chairman; H. J. Broughton, Harry McCracken, James W. Cobb.

The next meeting of the Oakland County Horticultural Society will be held at the Family Theatre, Birmingham, Saturday afternoon, April 5. Business meeting at 12:30. At 2 p. m. Prof. H. J. Eustace, of the M. A. C., will give a stereopticon lecture on "Orchard Management." This lecture will be of great interest to everyone, especially those engaged in horticulture, and they are urged to attend.

CATALOG NOTICE.

"Spraying a Profitable Investment," is the title of a booklet published by the Sherwin-Williams Co., of Cleveland, O. In this booklet are given, in simple language, many facts of value to farmers and fruit growers. In it instructions are given for the spraying of all kinds of fruit and all kinds of farm and garden crops that are benefited by spraying, either to prevent the ravages of injurious insects or fungous diseases. In addition to the many valuable articles and illustrations contained in this 120-page booklet, there is a spraying calendar and space for the keeping of a record of spraying operations upon the farm. This booklet will do more to convince any farmer or fruit grower that spraying is a profitable investment and gives comprehensive instructions on its accomplishment. Mention the Michigan Farmer when writing for a copy.



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Practical Science.

CHEMICAL LEAVENING MATERIALS. (Continued).

BY FLOYD W. ROBISON.
The Baking Powder Corner.

Shortly after the introduction of baking powder on a commercial scale, an attempt was made by certain individuals in America to gain control of the market in raw materials used in the manufacture of baking powder. This attempt culminated in the practically complete domination of the cream of tartar market, as it was commonly supposed that about the only kind of baking powder that could be manufactured would be derived, in part, of cream of tartar.

The Time of Saleratus.

Before the advent of commercial baking powder, cream of tartar was almost as well known a commodity to the housewife as the ordinary baking powder is now. At the same time, soda, or as it is more popularly known, saleratus, was used in really enormous quantities in the baking of biscuit, cake, and articles which it was desired to prepare for food in a short time, and these two ingredients, soda and cream of tartar, were mixed in teaspoonful lots by the housewife at the time of baking. It is by no means a simple matter to accurately mix soda and cream of tartar in the home, where in nearly every instance there is left of the combination, an excess either of soda on one hand, which would tend to make the biscuit soapy and bitter, or of cream of tartar on the other hand, which would have the effect of leaving an acid taste in the product.

Baking Powder was Welcome.

The manufactured baking powder, therefore, found a welcome market, and when well manufactured, it is indeed an article of merit. Baking powder is one of the almost "necessities" of the present time, and the road is not easy for one who advocates the abolition of baking powder. We do not take issue with such persons, for we concede and have conceded that breads and other pastry made by the use of baking powder cannot be as wholesome, other things being equal, as bread made with yeast.

We have given preference to pure cream of tartar baking powder as we believe that less objections can be found to the use of cream of tartar baking powder than to the other two classes of powders. We have been, however, not out of sympathy with the efforts made from certain other sources to prepare baking powder from other materials, in so far as such efforts may have worked toward preventing the monopoly of the baking powder market, and its usually accompanying condition known as excessively high prices.

Food Officials have Taken Sides in the Controversy.

We believe that many times the food officials have been unwittingly drawn into the baking powder controversy and have at times lent the influence of their position to further the interests of this or that party in this controversy. We do not believe that in a single instance this was done with the idea of taking sides in the controversy, but fully from a standpoint of what he believed to be the injuriousness of one, at least, particular baking powder.

In plain language, alum baking powder has been considered from many sources to be distinctly injurious to health, and this attitude has been maintained by many food commissioners, and at times by officials of the government. We personally believe that the alum powders are more injurious than other powders, and by experiments we have been able to bring to bear on this point, have confirmed this statement. However, we desire the reader to appreciate that it is our opinion that all baking powders are more or less injurious, and that so far as alum is concerned in comparison with the others, it is merely a question of degree. We believe the principal objection to alum has arisen, not from direct experimental evidence against alum used in baking powders, but because of well established, and without doubt, well founded belief that alum itself, employed in food products, and in accessories to food products, was certainly undesirable.

Was Alum Used in Bread?

Many years ago it was reported that alum was used as a constituent of bread

in England, and while we believe that alum has never been used to any great extent in bread, yet, like the case of the half-bushel of clover seed sown in the early history of the M. A. C., nearly every person who has written, no matter how small a degree with reference to bread, has made mention of the fact that alum was, at one time, an adulterant of bread.

Jago, one of the foremost authorities on the science of bread making, even in his modern book on the subject, devotes considerable space to alum in bread, and practically every text book that gives methods of analyzing flour and bread indicates a method for detecting alum in bread. We will say that we have never yet found a sample of bread to contain alum and we do not believe that it is used in bread making in this country.

Alum is Used in Pickles.

Alum is used, however, to a considerable degree in the preparation of cucumber pickles and many manufacturers defend the addition of alum to pickles with decided emphasis. So commonly has the addition of alum to pickles been practiced that we have known many housewives who used alum in preparing pickles in the home. We have never taken a very decided position regarding the use of alum in baking powder except as we have herein stated that we considered alum baking powders to have the least desirable place of any of the powders. But we are very emphatic in our objections to alum in pickles and other foods.

When alum is an ingredient of baking powder, during the process of baking the dough or cake, the alum composition is broken up and hence decomposed so the residual product is no longer alum. It is supposed that the alum becomes changed to hydroxide of alumina, which undoubtedly is not so objectionable as is the original alum. In pickles, however, the alum undergoes no change whatsoever and consequently enters the system as alum. Manufacturers claim a decided advantage in the use of alum. The alum makes the pickles brittle and harder, which are, of course, desirable features of the marketable pickle. However, other manufacturers and many housewives have shown clearly that pickles can be prepared firm and hard and brittle without resorting to any such chemical agent as alum.

Some States Prohibit Alum in Foods.

One of the state laws prohibits the employment of alum in food or food accessories. In the state of Michigan, in pickles and foods whereby its identity is not changed before the product is placed upon the table for consumption, the employment of alum has not been encouraged. Some manufacturers, however, have used alum and have gotten around the legal phase of the matter by printing on the label the fact that alum is used.

How Cream of Tartar is Adulterated.

Cream of tartar baking powders were for a time subject to adulteration in a variety of ways, one of the principal of which is that an unpurified cream of tartar is frequently employed. Very frequently, likewise, in the preparation of wine, in which preparation cream of tartar is obtained as a by-product, gypsum is employed for clarification, consequently a cream of tartar prepared from such a product would likely contain, as an impurity, lime.

Leach states, among other things, calcium phosphate, starch and alum are also at times employed as adulterants of cream of tartar.

Besides cream of tartar and soda, which are used as ingredients in the manufacture of pure cream of tartar baking powder, a varying quantity of starch is likewise employed. This would hardly be considered adulteration of baking powder unless present in very large quantities. Pure cream of tartar and pure soda, when absolutely dry, may be mixed together, but with the presence of the slightest quantity of water, chemical reaction takes place between the two, and this condition makes it necessary that some other material be mixed with them to prevent the absorption of moisture. Starch is the ingredient usually employed and an amount must be used which will prevent the powder from caking, which will occur because of the absorption of moisture

(Continued on page 455).

Would a Sure and Steady Income Interest You?

Would you be willing to work hard for a few years to have it?

You have read of the splendid apple crops of the Pecos Valley of New Mexico and Texas. You have seen reports of the large profits. You know the results that can be secured by intelligent effort. You know these things, but have you ever sat down to analyze the advantages offered by the Pecos Valley?

Do you realize that most of the apples used in Texas come from this valley? Do you know that there are 4,000,000 people in Texas, all apple-hungry and willing to pay well for good fruit? Do you know that the Pecos has the nearest apple orchards?

Do you know that the Pecos Valley has a particularly favorable climate and soil for apple-growing? It is the nearest apple-growing country, and other apple sections are practically shut out of Texas by the long hauls and expense of transportation.

Do you know that the Pecos Valley has numerous irrigation projects, also artesian wells and abundant underground water, easily available by pumps?

The rich soil of the Pecos Valley responds generously and quickly to irrigation. The splendid climate and abundant sunshine put color and flavor into all crops.

You are not dependent on apples, alone; sweet potatoes, cantaloupes, pears and peaches are good money-makers, and truck farming pays well, too, but next after apples comes alfalfa. The bright, pea-green alfalfa of the Pecos Valley is in special demand and is an easy and profitable crop to grow while the orchard is developing.

Do you know that splendid land, ready for the plow, with water developed, can be bought for \$75 an acre and up, on long time, with low interest?

Are you willing to let this opportunity slip by you? Is there any good reason for

not using the little foresight, energy and hard work that will ultimately make you the possessor of an irrigated apple orchard in the Pecos Valley and all the prosperity that means?

You will find there now—good schools, good roads and many thriving little cities more enterprising and better consumers than larger communities in older sections. You'll get a hearty welcome and won't be lonesome, because orchard homes make close neighbors and the resulting social activity due to common interests.

Write for Pecos Valley folder—it's free—and get the whole story.

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Cost only one-third as much as ordinary iron, wire or gas pipe gates, but last twice as long. Neat in appearance—best and strongest gate made—light, easy to handle, opens both ways. Boards are double bolted between eight angle steel uprights and double truss braces, guaranteed never to sag.

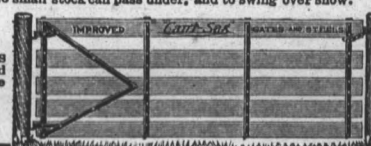
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Farmers' Clubs

Address all communications relative to the organization of new Clubs to Mrs. C. P. Johnson, Metamora, Mich.

CLUB DISCUSSIONS.

Club Ladies Favor Equal Suffrage.—Mr. and Mrs. Wm. Thiemkey most royally entertained the Hadley and Elba Farmers' Club, of Lapeer county, at their new home, "Pleasant View," March 20. After the bountiful dinner, President B. L. Snook called the meeting to order. Music by the quartette, prayer by Rev. Barnum, and minutes of the last meeting were approved as read. It was moved and supported that the Club endorse the request of M. A. C. for a liberal appropriation. The motion was carried, and petitions to that effect were circulated during the meeting. The question, "Will it better conditions if women vote?" was rather one-sided as the affirmative leader was not present. Mrs. Bartenfelder, the negative leader, showed careful study and rare skill in handling the subject. C. P. Johnson outdid himself in preaching what he did not believe and trying to create a rumpus. C. A. Bullock, Edwin Stewart, Mrs. Mott, and others scored some excellent points for the affirmative and a rising vote of the would-be voters showed they knew what they want. Charles Riley gave a short talk on co-operative buying and selling. After a closing musical selection the Club adjourned to meet with Mr. and Mrs. Robert Pierson, April 17.—Mrs. C. P. Johnson, Sec.

Adopt Resolution Favoring Equal Suffrage.—One of the most enjoyable sessions in the history of the Indianfields Farmers' Club, occurred at the home of Mr. and Mrs. James Paul, February 20. About 50 members and invited guests were present. After a bountiful dinner served by Mrs. Sarah Auger, President Eldridge called the meeting to order. Following the opening exercises a resolution on woman's suffrage passed by the State Association of Farmers' Clubs, was read, and a similar resolution urging every Club member to do his part toward the passage of the constitutional amendment this spring was adopted. After the business meeting, the program of the day was carried out, and was especially good. One feature was an agricultural address by M. H. Oakley, Martha Purdy read a paper on "Beautifying the farm door yard." The question box tended to stimulate with its timely topics. Question for debate, "Resolved, that the sugar beet crop is the most important crop for Tuscola county." Leaders, Grant Ross and David Vanburen. Nearly all present took an active part in the discussion, which was decided in the affirmative. Club closed by singing.—Miss Margaret Arnold, Secretary.

Discuss Local Option.—The Odessa Farmers' Club, of Ionia county, met with Mr. and Mrs. Eugene Hunt, Saturday, March 8, with about 60 members and friends present. Following a good literary program and dinner, Mr. Foght gave a fine talk on the subject of "Smokeless Powder." Justice could not be done to his remarks in the short space allotted to us at this time. Suffice it to say the smokeless powder is "Human Energy." Mr. Foght believes in world-wide peace and that it is possible. There was a fine discussion of the subject after Mr. Foght. Some time was devoted to talks on the local option question by the Rev.'s Prestidge and Latty, several others following. This was instructive and as outlined ought to prove effective. The Club members are ready to do their part in the good cause. After the roll call Club adjourned to meet with Mr. and Mrs. Chas. Begerow in April. This will be an afternoon meeting.—Reporter.

Have Annual Oyster Dinner.—On March 1 the Hartland Farmers' Club, of Livingston county, held their meeting at the home of Mr. and Mrs. Melvin Hibner. The day was beautiful and the oyster dinner was enjoyed by 100 in attendance. The meeting was called to order by President H. W. Clark, the Club sang "America," and while standing repeated the Lord's Prayer. After the secretary's report was read the roll was called and a few responded by a current event, or a quotation. Following a good program the Club adjourned to hold their next meeting in the Town Hall at Hartland, April 5.—Mary Openo, Cor. Sec.

CHEMICAL LEAVENING MATERIALS.

(Continued from page 454).

when too small an amount of starch is present.

The method we have used to determine the effects of the different baking powders on the action of the digestive juices is a method we have followed from Vaughn's experiment. He made use of the Mets tubes, which are really small, capillary glass tubes, the same as are used in making thermometers, with a very small hole through the entire length of the tubes. These tubes are then filled with the white of an egg, which may be easily done by placing one end of a long tube in a dish containing fresh egg albumen, and drawing it up by suction; then capping the end with a rubber cap to prevent the egg from running out again. If this tube is now placed in hot water, a coagulated white column will form the entire length of the tube. The

tube is then cut with a file into small lengths, and these tubes are then placed in artificial gastric juice containing varying amounts of the baking powder in question which has been allowed to react. Then the tubes are placed in an incubator for some time, and the one on which the artificial gastric juice acts most accurately is the one which exhibits the least retarding effect from the baking powder. Our experience has always shown that we get the least retarding effect when cream of tartar powders are used, and the next in order of excellence are the phosphate powders, and last, the alum powders. Over against this physiological and experimental evidence, we have the practical condition that the alum powders are usually the cheapest of the three, and thus, these two conditions present themselves to purchasers.

Grange.

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

AMONG THE LIVE GRANGES.

House-to-house Meetings have been held by Ithaca Grange, of Gratiot county, during the winter months, resulting in the development of renewed interest in the organization and its purposes. The last meeting was held Wednesday, March 19, with Brother and Sister R. C. Lake, the sisters serving an oyster dinner, with all the good things that go with it. The lecturer being absent, Sister Retta Lee acted, and timely questions were discussed. "Resolved, That Woman's Duties are more Arduous than Man's," was debated by Sisters Redman, Coleman and Lewis on affirmative, and Brothers VanDeventer, M. C. Lake and Lewis on negative. It was decided in favor of the affirmative. About 45 were present, including visitors.

Present-Day Needs in Rural Life.—Discussing the multitude of needs in rural life at the seventh annual rural life conference held at Kalamazoo last month, President Butterfield, of Massachusetts Agricultural College, said: "The more prosperity the more needs arise. Many feel that better credit is one of the most important needs at the present time; others that the farmer should have an opportunity to borrow on good terms, because his needs are great and the more capital he has the better work he can do; others a better distribution of farm products, the difference in price which the farmer receives and the consumer pays being too great; others that we need better roads, better schools, better churches, and so on. But there are three things I regard as the greatest needs of rural life today, namely: "Co-operation, Organization and Leadership. First, that the people of each rural community must make up their minds that they will make that community the best possible; that the church, school and Grange will be more helpful and interested in the people, rather than in building up a membership only. Second, I would say, organizing those communities on a national scale. I do not mean to one great organization, but co-operation to secure the thousand agencies for rural betterment. Each organization and institution must do its particular work with the end in view to make the American rural community the best in the world. The third need as I see it, is that of leadership. We can do nothing without trained, inspiring leaders, great and little."

St. Clair Pomona Discusses Up-to-date Topics.

One of the best Pomona meetings ever held in St. Clair county was that occurring March 19, in Brockway Maccabee Hall. On account of the very bad condition of the roads many were late in arriving but the dinner hour did not find many absent. Our deputy, Bro. Burr Lincoln, was with us and helped much in making the program a success.

A paper on "Woman Suffrage and the Home" was read by Mrs. C. Mason in which she said: "To parents have been committed the management of the home—not to the mothers only, but to the fathers and mothers of this country. Neither the one nor the other can evade responsibility without doing incalculable injury to society at large, and any father or mother should deem it one of the highest honors to be elected to a position which demands of him the full exercise of all the god-like faculties with which he is endowed."

"The Good Roads Question" was the topic assigned to Mr. J. G. Brown and it found ample scope for discussion. Mr. Lincoln called the attention of voters to the necessity of deep ditches and proper drainage where any good roads system is adopted, as no kind of road, however well built, will stand without proper drainage.

Mr. J. Cook discussed the merits of the concrete silo, placing it ahead of all other silos in use.

"Co-operation and How it would Benefit the Farmer," was led by Mr. Albert Tosch. All agreed that farmers must co-operate to find proper prices for their produce, which is as much a necessity as the growing of crops.—Mrs. C. Mason, Lect.

COMING EVENTS.

Charlevoix Co., with Peninsula Grange, Thursday, April 17.

Two Big Bargains

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"ECLIPSE" Clean Cutting Horse Clipping Machine.

A Simple, Durable Horse Clipping Machine—Easy To Operate and Built To Last.

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"Hathaway" Single Buggy Harness
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Two articles of exceptional merit backed by the strong Sears, Roebuck and Co. guarantee and priced at astonishingly low figures.

This is just the time of year to overhaul your harness in preparation for the heavy spring work and to clip your horses. Send in your order today for either or both of these items and we will ship the goods promptly allowing you full privilege to return them and get your money back if not satisfied in every particular.

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This machine is equipped with the improved Eclipse clean cutting head and hose covered flexible steel shaft with flexible chain.

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The Canadian Pacific Railway offers you choice virgin lands throughout Alberta and Saskatchewan. Prices \$11 to \$20 per acre. \$2000 loaned by company for improvements, also \$1000 loaned for live stock. Settlers have 20 years to pay. A splendid opportunity to start in profitable farming. Special cheap excursions weekly from Detroit and Chicago. You must see and be satisfied before buying from us. Write for particulars. C. P. R. Land Dept., Hammond Bldg., Detroit.

Spring Farm Catalogue

Just Out

Big New Farm Catalog No. 36, just out; profusely illustrated, filled with latest reliable information of soils, crops, markets, climate, schools, hard-surface roads, etc., with traveling instructions to see a choice assortment of money-making farms throughout the Eastern states; stock and tools thrown in with several to settle affairs quickly; you can move right in and make money from the start; our home cash market of 34,000,000 people in these wealthy Eastern states is making our farmers prosperous. Farm products of New York State alone total \$245,000,000 yearly. More for your money here today in improved farms at \$10 to \$50 an acre, than the same money will buy anywhere else on earth. Get the facts. Write today for your free copy of this remarkable book. E. A. STROUT FARM AGENCY, Station 101, Union Bank Bldg., Pittsburg, Pa.

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BUY NEW YORK FARMS NOW.

Best Lands. Best Crops. Best Homes. Biggest barns. Finest schools, churches, roads and transportation. For list of New York farms address: McBURNEY & CO., Fisher Building, Chicago, Ill.

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Farm For Sale—containing 150 acres, 1 1/2 miles from R. R. Station, good soil, large house and barn, new granary, and hen house, 1 mile from Oak Grove, Livingston Co., Mich. Inquire of I. W. Hart, R. 3, Howell, Mich.

FARMS WANTED—We have direct buyers. Don't pay commissions. Write describing property, naming lowest price. We help buyers locate desirable property FREE. American Investment Association, 5 Palace Bldg., Minneapolis, Minn.

We Sell Oceana Farms—Greatest Fruit county. Also Potato, Corn, Alfalfa, Stock. List free. HANSON & SON, Hart, Mich.

For Sale—Three Good Farms, ranging from 40 to 170 Acres. All have good buildings and fertile soil. Box 39, Central Lake, Mich.

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Successors to A. J. Stevens & Co. Established 1883. Farm, Fruit and Stock Lands. We own 20,000 acres of choice unimproved lands in Gladwin and Clare counties. Sold on easy payments. Interest 6 percent. Write for information. Gladwin, Mich.

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The canal, drainage and road construction completed, these lands are now being sold in small subdivisions. The soil, a deep alluvial silt loam, the best in the valley.

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Check off on this list what you are particularly interested in:

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FRANK B. HILL, Utica, Mich.

"Am paying for the 'Sal-Vet' which you sent me on trial, as I am satisfied that it is worth the money."

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"'Sal-Vet' has worked wonders with our stock, and saved a lot of grain; our

horses are now the best in the country."

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"I am well pleased with 'Sal-Vet.' Since feeding it my sheep look so well that they are the talk of the township."

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"I am sending remittance for the 'Sal-Vet' you sent me on trial. Am perfectly willing to pay for it, and want to say that I prefer to use 'Sal-Vet' for my

stock in preference to any other preparation for the same purpose."

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"Am paying for the 500 pounds of 'Sal-Vet' which you shipped 60 days ago; it has given such good satisfaction that I have since bought 600 pounds of your dealer at Perry."

GEORGE BOUTELL, Perry, Mich.

"I find 'Sal-Vet' a great worm destroy-

er. It eradicated worms from two colts which were quite badly infested. They now have good appetites and look very much better."

JOSIAH HULL,

Bellevue, Mich.

"The first dose of 'Sal-Vet' I gave my horse started to expel the worms, and I could see the difference in him in a very short time."

E. F. MCNELLY,

Rt. 2, Farwell, (Clare Co.), Mich.

Overwhelming PROOF!

That Sal-Vet Is Unequaled

HON. A. J. LOVEJOY

Secretary Berkshire Swine Breeders' Ass'n, Roscoe, Ill., says: "Please send us two barrels of Sal-Vet at once. This is the best thing we have ever used. We use it for sheep, horses and over 100 hogs, and find it all you claim. We can heartily recommend same to all sheep breeders as well as swine breeders."

Hogs Doubled Their Weight in 50 Days

I used your Sal-Vet regularly while feeding a bunch of fattening hogs, and can say it is surely a fine article—a great conditioner and reliable worm destroyer. My hogs doubled their weight in fifty days.—Wm. Lotz, Lanark, Ill.

Sal-Vet Saved His Hogs

I have been greatly benefited by feeding your Sal-Vet. My hogs went through the entire winter without a single case of cholera, but my neighbors all lost their entire herds.

Thad. McCormick, 113 E. Douglas Ave., Wichita, Kansas.

Sal-Vet Stopped Lamb Losses

Before feeding Sal-Vet I had lost one hundred and fifty lambs within three months; since feeding it, I have lost just one lamb. The balance of the flock are looking fine, and I shall never do business without Sal-Vet as long as I keep stock.—Andrew Thomas, Olive, Texas.

Cholera Rages on All Sides

I fed a carload of hogs on which I made a thorough test of Sal-Vet for seventy days. Cholera or some disease like it was killing off hogs all around me, but I never had a single one sick; they remained in fine condition during the entire time.—W. C. Grove, Box 235, Hominy, Oklahoma.

Will Not Be Without Sal-Vet

Sal-Vet freed my hogs from worms by the wholesale. I'll not be without it.—Henry Iverson, Wagner, S. D.

DR. C. D. SMEAD

The Eminent Authority on Live Stock Diseases, says:

"As a stock tonic and worm remedy, I do not hesitate to say that Sal-Vet is unsurpassed by any compound I have ever given a trial—and, as you well know, my business as veterinary editor of the National Stockman and Farmer and the Tribune-Farmer of N. Y., requires me to test many tonics and remedies for animal ailments."

Read How Sal-Vet Saves Sheep

I have not lost a single sheep since I began feeding Sal-Vet. Last winter, without its use, I lost 25% of my flock.—Chas. E. Wyman, Pekin, Ind.

ROSCOE M. WOOD

Secretary of The Standard Delaine Merino Record, Saline, Mich., says:

"We have found a worm preventive in Sal-Vet when proper conditions of pasture are maintained and it is kept constantly before the flock so they can eat all they want and have no other salt. We have found this preparation economical to use under all conditions."

Are Worms Robbing You Like This?

My hogs were not doing well. It seemed impossible to get any flesh on them until I commenced feeding Sal-Vet. Now they are doing fine.—P. C. Hathaway, Wilcox, Neb.

L. H. COOCH

Editor Practical Farmer, Philadelphia, says:

"In order to have reliable data before expressing my opinion about Sal-Vet, I gave it to twenty-one cows in their feed for a month. Eight others were given no Sal-Vet at this time. At the end of thirty days' test, the 21 cows that had been given Sal-Vet showed a tone and condition of health that was really remarkable. In my experience feeding this tonic to horses also, I can only speak of it in the words of highest praise. I am satisfied that Sal-Vet is a wonderful vermifuge and tonic for horses."

Lost No Hogs, While Neighbors Lost All They Had

My hogs certainly did fine while fattening, and I did not lose a single one, while some of my neighbors lost their entire herds. I must, and do give Sal-Vet credit for these results.—J. Wales Munroe, Rt. No. 6, Plainfield, Ill.

Sal-Vet Is by Far the Best and Cheapest

I like to feed Sal-Vet to hogs of all ages, as it completely cleans them of worms without starving the hogs before feeding it. I consider Sal-Vet by far the best and least expensive worm destroyer and conditioner I have ever fed.—Jens Ingwersen, Rt. No. 1, Avoca, Iowa.

Sal-Vet Worth More Than Four Times Its Cost

I enclose check in payment for the Sal-Vet sent recently. Four times this sum would not begin to pay for the benefit I derived from feeding Sal-Vet.—W. H. Wallace, Franktown, Va.

Sows Fed Sal-Vet Raise Bigger Litters

I have been feeding Sal-Vet to a bunch of little pigs. They have developed great appetites and have grown rapidly. I have two sows. I fed one of them Sal-Vet and she raised eleven fine pigs. The other to which I did not feed Sal-Vet lost six out of nine in the litter.—Mrs. Ada C. Parmelee, Rt. No. 16, Newtown, Conn.

SIDNEY R. FEIL, President

Registered Pharmacist Graduate National Institute of Pharmacy



The Great Worm Destroyer and Conditioner

I'll Prove It To You—I'll Feed Your Stock 60 Days Before You Pay

I'll Show

You How

to Rid Them of Worms—How to Make Them Grow Faster, Thrive Better, Look Sleeker and Put On Flesh With No More Feed

I'll drive out the pests that steal your profits. I'll make every animal on your place worm-free, thrifty—put them in condition to get the full benefit of their feed—make them bring you the most profits. I'll prove these things right on your own farm, right in your own barnyard, **BEFORE YOU PAY ME A PENNY.** I am doing it for thousands of farmers every day. All I ask is the privilege of sending you enough **SAL-VET** to last all your stock 60 days—so you can see the results on your own animals. I want you to see, with your own eyes, the wonderful benefit it produces—**BEFORE YOU PAY ME A SINGLE PENNY.**

Worms can't live where Sal-Vet is used. Why take chances? Why let these pests continue to sap the strength and vitality of your farm animals, leaving them easy victims to plagues, cholera and other contagious diseases? Just send me the coupon below—you take no risk whatever. Get my 60 days' trial supply of Sal-Vet right away. See how it will work wonders on your stock—how it will stop your losses. Sal-Vet is a medicated salt—easy to feed. Stock relish it—let them run to it freely and **THEY WILL DOCTOR THEMSELVES.** No starving—no mixing—no drenching—no dosing—no trouble at all. Sal-Vet kills and expels the deadly stomach and free intestinal worms and then tones the blood, stimulates the appetite and puts the animals in the "pink of condition."

Send No Money—Just the Coupon!

Fill out the coupon—tell me how many head of stock you have—mail it to me today. You pay the freight charges when it arrives and when the 60 days are up report results. If Sal-Vet fails to do what I claim, I'll cancel the charge—you won't owe me a penny. Address

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Ship me enough Sal-Vet to last my stock 60 days. I will pay the freight charges when it arrives, report results in 60 days and will then pay for it if it does what you claim. If it does not, you are to cancel the charge.

Name.....
P.O.....
Shipping Sta..... State.....
Number of Sheep..... Hogs..... Cattle..... Horses.....

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THE S. R. FEIL CO., Man'g Chemists
Dept. MF
CLEVELAND, OHIO

PRICES: 40 lbs., \$2.25; 100 lbs., \$5.00; 200 lbs., \$9.00; 300 lbs., \$13.00; 600 lbs., \$21.12. No orders filled for less than 40 lbs. Never sold in bulk; only in Trade-Marked Sal-Vet packages. Shipments for 60 days' trial are based on 1 lb. of Sal-Vet for each sheep or hog, 4 lbs. for each larger animal, as near as we can come without breaking regular size packages.

