

Efficient Farming

PREVENTING HEAT DAMAGE TO GRAIN.

Fermentation, or heating, of stored grain usually occurs because the grain carries too much moisture, with improper bin ventilation a contributing factor.

Prevention is a matter of knowing the moisture content of the grain at the time it goes into the bin and of adopting measures that will offset the effect of that moisture when its percentage is high.

The first steps must be taken at the time the grain is harvested. It must be fully ripe and dry—ready to harvest, in other words.

Small grains are not safe to store if threshed before maturity, if ripened prematurely and made tough by heavy dew or rain, or if threshed from fields, bundles or stacks while wet with recent rain, although dry before the rain came.

Corn is not safe to store if it is covered with snow at the time of shelling.

When a large bulk of any kind of grain is to be kept it is good practice to have it tested for moisture immediately after binning. The elevator man in town may be consulted if one does not know precisely how to get a sample.

The best method is to use a grain trier or probe. Borrow it from the grain dealer if possible. It is a long, hollow cylinder that may be inserted into the mass of grain to draw the samples from various depths. Surface samples are worthless because the grain on top quickly dries out.

A weed can't reach down into your soil without reaching down into your pocketbook. On many of our farms there are entire rows too many weeds. Let's get busy and root them out.

Put the sample into an air-tight container as soon as it is drawn. A fruit jar, with screw cap and rubber ring, will serve nicely. A friction-top metal can is better if the sample must be shipped.

Ask the grain man for the address of the nearest official inspection office, box the sample so it will ride safely and send it off by parcel post or express.

When the inspector's certificate is received it will show the percentage of moisture contained in the grain. Nobody can say that grain containing any of the percentages commonly met with is safe to store beyond question of doubt. Conditions alter circumstances. A good rule to follow is that grain-elevator men and millers seldom think of storing for long periods lower grades than No. 3. If your grain has too much moisture for No. 3 it should be looked upon with suspicion.

Much can be done to keep tough grain if the bin is ventilated so that the heat generated may find a way of escape.

A good ventilator can be made as follows:

Take two boards long enough to reach across the bin. Place them side by side, on edge, four inches apart. Cut some cleats six inches long and mortise them at intervals along the top edges of the two long boards, then nail a strip of screen wire the full length of the device.

Turn the boards over, nail another strip of screen wire on what was formerly the bottom, and add more cleats to hold the boards firmly apart.

Make enough of these ventilators to place one every three feet in the bin, then make similar ventilators that will reach from the bottom of the bin to a point above the top grain line.

Stand the upright ventilators on those which run horizontally, making the latter communicate with the outside air through holes cut in the bin wall and protected with screen wire. The upright ventilators, as well as the horizontal, should be three feet apart.

The moment heat begins to generate in a bin prepared in this manner it will set up a circulation of air through the ventilators. The hotter it gets the faster the air will move—and every cubic foot of air will carry moisture with it.

The United States Department of Agriculture devised this ventilating system, and in a field test some wheat containing 16 per cent. moisture when it went into the ventilated bin came out at the end of seventy-four days with only 14.3 per cent.

In other words, the wheat was Sample Grade when it was placed in storage, No. 3 when it came out—and no damage resulted.

Of course the ventilators must be placed in the bin before the grain is put in.

There is one simple way of learning whether grain is keeping satisfactorily. Merely examining the top layer is not enough—it may be cool and sweet while the deeper layers are burning up.

Drill a number of holes through the bin wall at various heights and insert iron rods of any size into the mass of grain. They must be long enough to reach well toward the opposite wall of the granary, and their number should be sufficient to give readings at several points and levels throughout the bin.

The rods should be kept in the grain at all times. Occasionally they should be pulled out and tested for temperature with the hand.

If the grain is heating the rod will be warm. If it seems to be growing warmer from day to day, or if it

appears hot, the best thing to do is to remove the grain promptly.

The percentage of heat-damaged kernels permitted in the higher grades is very small. No. 1 corn and rye are permitted none; No. 1 wheat and oats may have not more than one-tenth of 1 per cent.

Percentages are figured by weighing, but one-tenth of 1 per cent. means, roughly, one kernel in a thousand.

There is no very certain and practicable method of conditioning grain on the farm after it begins to heat. If there is enough elevating, conveying, mixing and blowing machinery available—and plenty of power—some good can be accomplished by turning the grain at frequent intervals, airing it and otherwise chasing the heat devils out.

The first place to prevent heat damage is out on the farm, before the grain is harvested, threshed or shelled; before it goes into the bin.

Even if you think your grain is dry enough, better have it tested for moisture; better make sure your granary is well ventilated; better put the rods through the bin wall so the temperature can be watched.

Poultry Mites and Lice.

One of the greatest hot-weather problems on the poultry farm is the control of external parasites. Of all such pests that trouble poultry in Canada the red mite is by far the most troublesome. These are not red in color as the name would lead one to suppose, but grey, and it is only when they become gorged with blood that they appear red. They are not usually found on the fowl during the day but in the cracks and crevices of the poultry house where they breed rapidly.

The young repeatedly cast their skins during development, and these casts appear on the roosts and at the side of the cracks as a white powder. This is often the first indication of the presence of the mites.

At night when the birds are roosting, the pests will swarm over them piercing their skins with needle-like jaws and sucking the blood. This results in a stoppage of egg-laying or in greatly reduced production.

Do not wait until you know mites are present. At the Dominion Experimental Farms the roosts and adjacent parts are painted or soaked every week or so throughout the warm weather with a solution of one of the coal tar disinfectants or a special paint made by diluting, either one of the coal tar disinfectants or crude carbolic, one part, to four or five parts of coal oil or fuel oil.

When the mites are known to be present a thorough house cleaning is in order. Remove all droppings and old nesting material, scrape and sweep out every particle of dirt and burn it.

Sweep down the walls and with the aid of a spray pump saturate every crack in the house and the fixtures with a good strong disinfectant solution.

The control of lice is much easier, for while there are a number of different species, the same methods of control are satisfactory for all. The natural method of control is the dust bath; more effective if a little flowers of sulphur be added. However, there are always some birds in a flock that will not use the bath, so it is safest, if lice are noticed, to treat each bird individually.

At the Central Experimental Farm blue ointment is used, a little being rubbed beneath the wings and below the vent, to kill the lice and any that may hatch.

For setting hens, depend on the dust and sulphur rubbed into the plumage, as the ointment will not only kill the lice but the germs in the eggs as well.

How to Preserve Eggs. As the hatching season is over and there is no further necessity for fertile eggs, the time has arrived when the supply of eggs for winter use can be safely put away in preserving fluid.

Lime water can be depended upon to keep eggs in good condition for several months, provided however, they are absolutely fresh when put away.

A circular issued by the Dept. of Agriculture at Ottawa, describes its preparation. It is important that freshly burnt quicklime be obtained.

From two to three pounds of this, added to five gallons of water, will make a saturated solution which is necessary. The method of preservation is to slake the quicklime with a small quantity of water and then stir the milk of lime so formed into five gallons of water. After the mixture has been kept well stirred for a few hours it is allowed to settle.

The clear fluid of lime water is then drawn off and poured over the eggs previously placed in a crock or water-tight barrel. Evaporation will be prevented by covering the surface of the fluid with a small quantity of sweet oil, or, lacking this, a piece of sacking suspended so as to touch the surface, with a paste of lime spread over the top, will answer the same purpose. It is important that during the whole period of preservation the eggs be kept completely immersed.

A less troublesome system and one also recommended by the Dominion Chemist, is to use water glass instead of lime. Two pounds in 10 gallons of boiled water gives a proper strength. Water glass, known also as sodium silicate, is procured at any drug store with instructions for its use.

Fattening Turkeys.

Fattening turkeys, says a circular issued by the Dominion Experimental Farms, is a very simple operation which increases the value of the birds, as it increases their weight and improves the quality of the flesh.

Turkeys that have been well fed may be fattened at about six or seven months old, when cold weather starts in, a little before Thanksgiving Day for instance. Resist their run at first, advises the circular, so that they may get used gradually to live in a small yard or in a small house, but large enough to permit them to take a little exercise. It should never be forgotten that turkeys are of a roving nature and that close housing does not agree with them.

Fattening takes about six weeks. During the first four, it is sufficient to give a ration composed of grain or mash, not too thick nor too thin; as much of it as they like, but only enough for one meal should be prepared at a time. Oats, barley and cornmeal may enter in large proportion in the composition of this ration.

Cooked mashed potatoes, mixed with milk, will help to produce a white flesh. Turkeys may also be fattened with good grain distributed twice a day and a little grain at noon. Mix with the mash a little fine gravel and always keep fresh water before the birds. Towards the end of the fattening period, grease or scraps of cooked meat may be added to the ration.

Male turkeys, adds the circular, do not fatten so easily as females, nor is the meat so tender, but they become larger. Cleanliness at all stages is one great desideratum in keeping turkeys.

Culls Are a Liability.

The flock may be culled at any time and the careful poultry husbandman will always keep close watch on his flock for any outstanding boarders.

In late July and August the early moulters should be watched and marked and disposed of.

Marking the Culls.—In culling, the hens can easily be graded into three classes and marked:

(a) The good performer can be banded and left in the pen.

(b) The ones which are real culls should be crated and sold.

(c) There are, however, a number of hens which are still laying but which are of poor type and will not be desirable members to hold over. These can be marked temporarily and kept until they have ceased laying, and then sold. A good method of marking these birds is to cut off their tails. This makes them easily picked out later, and a second trial will often convict many of them, so says Prof. W. R. Graham, O. A. College.

WHEN THE BEE BANDIT

BY FRANK PELLETT.

The beekeeper who has not had a case of honest-to-goodness robbing among his bees may still look forward to some interesting experience. When a honey flow is on, the bees will work quietly enough no matter how much honey is exposed around the hives of their neighbors.

When there is nothing to be had in the fields they are inclined to become inquisitive as to the stores in near-by hives.

Though robbing is occasionally started through the inability of a weak colony to defend its stores, it is more often the result of the carelessness of the beekeeper. Once started, it is difficult to stop and in frequent cases it results disastrously.

In bad cases the robbed colonies of bees are entirely destroyed, and the angry bees make it so hot for any animals or persons that may be passing that it becomes unsafe to pass within a block of the apiary.

In every locality there comes a time some time during the summer when the flowers which have furnished the bees with their harvest stop blooming and nothing else worth while is coming on. The hives at this season are likely to be filled with a large working force of bees. With no honey to be had in the fields they begin flying about wherever a scent of anything sweet may be found.

At such times they may enter a candy shop and finding sweets exposed, return in ever-increasing numbers, until it appears that bees are swarming about the place.

The most common source of trouble is through opening the hives when the bees are idle. Almost as soon as the hive is open a few strange bees will be seen flying about and seeking for a chance to get at the exposed honey.

The experienced beekeeper can detect a robber instantly by her actions, which are different from those of the bees intent on attending to their own business. It often happens that before the novice is aware of it hundreds of robbers will be flying about and helping themselves to the honey that is exposed in the open hives.

Within a few minutes they will be returning with re-enforcements in such numbers that it becomes difficult for the colony to defend itself against them after the hive is closed.

It is very important that the beekeeper form the habit of being very careful not to leave bits of honey about where he is at work or to permit honey to drip on the grass about the hives.

The novice is often confused by the

The Milking Machine.

Officials of the Experimental Farms recommend farmers with twelve or more cows to seriously consider the installation of a milking machine.

Experience at a number of Experimental Farms and Stations goes to prove that these machines are decidedly advantageous. For a 20-cow herd a 3-cow outfit is regarded as sufficient. For smaller herds of 12 to 15 cows, a 2-cow outfit is looked upon as able to take care of the milking. Farm officials estimate that the running expenses of the larger machine divided between 30 cows is equal to about 2 cents per cow per day.

One man with a milking machine, it has been proved, can milk from 20 to 25 cows air-hour, whereas 7 cows an hour are milked by the average farm hand. Machine milking produces greater uniformity than is possible when different people are doing the milking. Several years' experience of mechanical milkers on the Central Experimental Farm at Ottawa shows that the cows do not dry off any more quickly than when milked by hand. Old cows accustomed to hand milking do not accept the machine as readily as heifers, which show no antipathy towards the machine. Efficiency in operation with a milking machine, as with other machines, is essential for good work.

The operator should know the machine and the cows, and adapt the one to suit the other, giving each their proper share of attention at the proper time.

Draining the Pump Platform. In the construction of a concrete platform for his well, a farmer thoughtfully provided for a drainage of it, to keep the platform dry in summer and prevent dangerous ice accumulations in winter.

After the cement in the forms had hardened sufficiently to retain a sharp impression, a piece of 2x4 was employed to indent angular grooves from the pump base to the outer edge of the platform. The 2x4 was sunk a trifle deeper into the cement at the outer end to slope the corrugations and insure instant drainage, but the angular strips between were level and flush with the surface of the platform. They were also made close enough together to allow the smallest pall or kettle to rest level upon them.

Tonic for horses: three times a day feed a good handful of linseed oilmeal along with the corn and oats you may be using. A tonic and appetizer that can be used consists of one pound Glauber salts, one-half pound soda, two ounces powdered gentian and two ounces powdered nuxvomica. Give a teaspoonful of this on the grain feed three times a day.—H. H. H.

The Sunday School Lesson

AUGUST 1st.

The First Miracle of Jesus, John 2: 1-11. Golden Text—**Whatsoever he saith unto you, do it.—John 2: 5.**

ANALYSIS.
I. CHRIST AS GUEST, 1-5.
II. CHRIST AS GIVER OF LIFE, 6-10.
III. THE GLORY OF CHRIST, 11.

INTRODUCTION—Jesus, having gathered a body of disciples around him, presently gives them a "sign" by which they discover the meaning of the work which he has come to do.

He does not of himself devise the opportunity in question, for it comes to him unsought. At a marriage feast in Cana, to which he and his disciples are invited, he shows his divine power to transmute the ordinary things of life, and to make them the vehicle of new joy and inspiration. The wine used at the feast runs short, and Jesus, asked to help, transforms a quantity of water into excellent wine. The incident is perhaps to be understood symbolically. At least it is when we take it symbolically that we grasp the ultimate nature of the "sign" Jesus has found the religious life of his time impoverished, and centering almost exclusively round purification rites of one kind or another, but by his divine power he transforms everything, giving to common existence a new worth and meaning, raising ordinary things to a new power and use, enriching social life with a holier and diviner joy. If we take the incident this way, it becomes a parable of spiritual things, and its meaning is that when Christ comes into our life, all things are passed away; behold, all things are become new, 2 Cor. 5:17. Certainly this was the change which Jesus wrought on the life for those who, like his disciples, received him and believed on his name.

Christ as Guest, 1-5. Vs. 1-3. Cana lies some four miles northeast of Nazareth, and therefore the marriage there would be a strictly local event for the household of Jesus. If the wine gave out, it may have been through the unexpected addition to the company of the disciples of Jesus. The shortage must have disappointed and distressed the entertainers, and it is for this reason that Mary approaches her son. She feels that the hour has come for him to say something or do something which will, so to speak, save the situation. But it is of a far different "hour" that Jesus is at this moment thinking. Vs. 5, 6. The evangelist means that Jesus was thinking of the "hour" when he must give himself on the cross, not to save a situation, but to save mankind. Therefore the seeming reproach contained in his answer, "How different our thoughts are! You are thinking of the present moment as my hour, but my true hour for revealing my calling is still to come." Mary, however, is sure that he will not refuse to act in the present circumstances, and she bids the servants await her son's instructions.

Christ as Giver of Life, 6-10. Vs. 6. Every Jewish household was required to have a large quantity of water on the premises for the constant ablutions which the Law required, such as the ceremonial rinsing of dishes, etc. (See Mark 7:3-8.) The presence of these water-jars is a clear indication that Jewish religious life had come to centre almost entirely round ritual laws and purifications. It is noteworthy that it is this water which Jesus now transforms to a higher and more joyous use.

Vs. 10. The water, when drawn at Jesus' command, is found to be transformed into wine, and better wine than the company had yet tasted. This surprises the president of the feast, who does not know what instructions Jesus had given, and he cannot refrain from drawing the bridegroom's attention to the fact. At other feasts, he says, the best wine is put down first, but here, on the contrary, the best wine has been reserved for the end.

The Glory of Christ, 11. Vs. 11. Jesus thus revealed his "glory," that is, the divine self-evidence of his person and of his power, and his disciples "believed" on him, that is, they saw the proof of his Messiahship. The sign in question sealed their faith in him, proclaiming as it did the "new creation" of all things which the Messiah was to inaugurate.

Because the incident has undoubtedly a symbolical meaning, we ought to draw the following lessons from it. In Rev. 3:20 we read that Christ stands at the door of the heart and knocks, that if any one hears his voice and opens the door, Christ may enter and make life a festival of joy through his presence. We are, therefore, invited to think of Christ as our guest. What will be the effect if we so receive him?

1. When Jesus comes as our guest, he brings his own provision with him. 2. Earthly sources of joy come quickly to an end, but what Christ gives never fails to satisfy. 3. Life without Christ offers its best gifts first, that is, at the beginning. Christ reserves his choicest gifts to the close, for all life with him is a growing revelation of his sufficiency.

Application. 1. The Life of the Party. In today's study Jesus appears in a new role. He is invited to a wedding. His time of great festivity. Jesus was not only among those present, but he entered so heartily into the mirth and gladness of his friends that at a later time, when enemies were searching his record to find something against him, they try to make capital of his sociability, and call him "a gluttonous man and a wine-bibber." This was not true, but he was social and genial. His presence did not take the joy out of life. Play is a part of the program of Jesus, and much piety is

discounted because some good people have never learned when and how to have good fun.

2. Play is Not Enough. Some people do not play enough. Others play too much, and find sooner or later that they can not live or grow on play. There comes an hour when the wine fails. Then we seek, not for happiness, but help. It is then that Jesus is needed, it is then that he steps forward into the place of leadership and authority. It is good for us, when the earthly wine fails, for it marks the hour wherein is shown the resources of the divine, "God having provided some better thing for us." Mary took it for granted, knowing Jesus well, that if anybody was in trouble he would help her out. Nor was she disappointed, though the help came in his own time and way.

3. Obedience. Mary and the servants obeyed what looked like an absurd command. "Whatsoever" is a sweeping word, but a grand motto for the "bond servants" of Jesus. Christianity is different from other faiths in that it centres supremely around the life of a person. Christianity is Christ, not merely good example, or wise teaching, but a living Master, whose followers are his men, and whose servants shall serve him.

3. How Jesus Adds to Joy. The giving of wine from water is not only a miracle, but parable as well. That which we trust to his keeping is never lost, but transmuted. Baseball does not lose, but rather gains in value as a game, when it is played clean and hard and fair, with the fine fellows of a Sunday School team. The love of the violin is not less, but more, when its sweet melody leads in sacred music, for music with a motive that is noble has greatly enhanced powers of pleasure. If you want a motor trip that will be really and truly a joy ride, then take some shut-in crippled child out into the sunshine with you. Selfish pleasure passes the time, but does not satisfy the heart.

Sheep Dipping.

After the ewes are shorn, many of the sheep ticks transfer to the lambs, which give them better protection and, perhaps more acceptable diet. This, it will be readily understood, is hard on the lambs, but a relief to their mothers. Neither ewes nor lambs in well managed flocks are suffering from ticks at this season of the year because they will have been dipped and therefore almost if not entirely rid of these pests.

Sheep dipping, like many other jobs about the farm, should become a habit, as it is no less important than many other jobs that are done with regularity. And it is just as profitable, because lambs pestered with ticks cannot thrive as they should do, and this results in loss when selling time arrives.

A dipping vat in which the sheep are plunged is a great convenience, more particularly when a large flock is kept, but for small flocks of thirty or forty head or less, the tank can be dispensed with and the dipping accomplished without trouble. Even a wide-mouthed barrel can be used for the lambs by taking hold of the four legs in one hand and the head in the other and plunging the lambs in the dip. The ewes can be treated while the wool is short with a sponge. The Department of Agriculture at Ottawa issues pamphlets on the importance and method of dipping sheep, with instructions for the preparation of the various dips that are found on the market.

Canning Vegetables. Bacteria are the micro-organisms that we have to contend with mostly in the canning of vegetables. It is these which cause putrefaction and decay of green vegetables that are not properly preserved. They are always present on the surface of the vegetables until they are destroyed by heat or some other agent. Yeasts and moulds are also liable to be present, but they are much more easily destroyed than the bacteria.

The spores of bacteria are much more difficult to kill than are yeast or mould spores. Boiling them for one or two hours does not always kill them. Hence it is that more difficulty is experienced in the canning of vegetables than in the canning of fruits. All species of bacteria do not form spores, but there are usually, if not always, some of the spore-bearing species of bacteria on the surface of vegetables.

The vegetables commonly preserved by canning are green peas, beans, corn, asparagus and tomatoes. These should be fresh, sound, clean and not over-ripe.

The cold pack method of putting up gives best results with vegetables, except possibly with tomatoes. Have jars, rubbers and tops all thoroughly clean and well rinsed, so says the Dept. of Bacteriology, O.A.C., Consult Bulletin 265.

Most signs fail, but the teeth and horns are good indicators of a cow's age. Count the "annual rings" on the horns and add two. One pair of permanent teeth, upper and lower, indicates eighteen months of age; two pairs, twenty-seven months; three pairs, thirty-six months; four pairs, forty-five months. Each pair of permanent teeth comes nine months after the other.