Soils and Crops

Address communications to Agronomist, 73 Adelaide St. West, Toronto

THE STORAGE OF FRUIT AND VEGETABLES.

The storage of fruit and vegetables for home and market must receive greater attention than it has hitherto been accorded. The amount of waste annually is very great. As a first step towards eliminating this, every farmer or household with sufficient land to grow vegetables, and perhaps fruit trees, should understand more about storing the crop. Some crops keep best in an atmosphere that has a high moisture content, whereas others require a low percentage of humidity. So it will be seen that there cannot be a condition to suit all vegetables and fruits in the same cellar or storage building. Apples, pears, potatoes, carrots, cabbage, soon deteriorate in very dry storage; while on other hand winter squash, pumpkins, marrows and other such crops like a dry atmosphere. Moulds and rots soon destroy them.

If you know your cellar is a very dry one and you wish to keep apples, etc., in it, make provision for adding more moisture to the air by introducing wet sacks spread out or by sprinkling the floor, the idea being that a large surface must be wet and evaporation quick. The atmospheric humidity can be tested with a wet and dry bulb thermometer. Take the readings and check up on the chart which is supplied with it. A humidity ranging from 75 to 85 is satisfactory.

In case of squash and pumpkins, etc., any frost proof place which is dry is suitable—the top shelf of the pantry for instance, or shelves in the passage. Quality is often lowered by poor ventilation. Where crops are stored in large quantities ventilators should be open as much as possible to carry off gases and heat coming from a large bulk of any crop. When severe weather occurs close up the ventilators. Do not store a large volume of any crop while it is warm from the field unless you know that you can reduce the heat by proper ventilation. More attention must be paid to this when commercial storage is being done in the fall and our growers must help when asked to do so.

GREEN FEED AND ITS VALUE.

The utilization of green feed in some form is rapidly becoming recognized as the most economical method of stock feeding. Not only can more live stock be kept per acre, but it can be fed at proportionately less cost. For example, on the Experimental Farm, at Nappan, fifty head of dairy cows were carried through the summer season on twenty-five acres of pasture (twenty of which was very rough, poor posture), by the aid of green feed from four acres. There was no appreciable decrease in the milk flow, other than the natural falling-off toward the end of lactation period; further, the cows were in good healthy condition in the fall.

Oats, peas and vetch, when sown together, make an excellent mixture for green feed for dairy cows, because it is rich in protein and carbohydrates.

Green feed will do much to reduce the cost of rearing calves. Ten pounds of good oats, peas and vetch have approximately the equivalent in feeding value of three pounds of ground oats. In other words, if oats are worth $37.60 per ton for feed, green feed from oats, peas and vetch would have a feeding value of $11 per ton.

When green feed in the form of clover, rape and oats, peas and vetch is provided for our brood sows we are able to reduce the meal ration from six pounds per head per day to three pounds, which is a saving in mill feeds of three pounds per day, or 5 cents per sow per day. The following method is adopted for supplying green feed, for pigs:—A small area near the piggery is sown with common red clover and alsike, with a cover crop of oats. As the oats reach the milk stage they are cut and fed to pigs in pens. The clover will come on early in the following spring and be fit to pasture off by the middle of June. Two more small paddocks are sown with rape as early in May as the soil is fit to work. This is usually ready for pasturing from the first to the middle of July. A third paddock is sown to oats, peas and vetch. This is cut and fed to pigs in pen, being ready about the last of July. In this way there is provided a continuous supply of green feed for the brood sows and growing pigs throughout the greater part of the season. Oats, peas and vetch are mixed as follows: Banner oats, 1¾ bushels; Gold Vine peas, ¾ bushel; vetch, ½ bushel; and sown at the rate of 3 bushels per acre. Rape is seeded at the rate of 8 pounds per acre, broadcast. Common red clover is seeded at the rate of 10 to 12 pounds and alsike at the rate of 2 to 3 pounds per acre. It is not a good plan to turn the pigs in on the oats, peas and vetch, as there is too much waste from tramping. In feeding the rape, allow the pigs two or three hours per day at first; later they may be allowed full range of paddock. If the practice of growing green feed for stock is once established, its value as an economical stock feed will soon become apparent.

The Farm Water Supply.

In locating the farm home the first essential is a sufficient supply of pure water easily accessible. The origin of fresh water in the earth is usually traceable to the rainfall upon the surface. The earth's crust consists of many layers of varying thickness. These, when considered in connection with water supply, are divided into two classes: porous, or those that will allow water to percolate or flow; and impervious, or those that prevent the movement of water.

When a porous stratum overlies an impervious one there is the collection of the local rainfall from the immediate surrounding drainage basin. When a porous stratum underlies an impervious formation the water will be collected at the outcrop of the former, which may be at a great distance from the well. Should that point be at a higher elevation than the location of well, artesian or flowing water would be secured. This overflow might have sufficient head to elevate the water into homes and barns. In the course of time underground streamlets and streams have formed, and fortunate is the person that locates one of these when digging for water. These streams usually flow along the surface of an impervious earth layer and frequently terminate in a spring on a hillside.

The source of our farm water supply is usually a well that penetrates the ordinary ground-water level or that taps an underground stream. Some are fortunate in locating near a spring, and others get their supply from a stream that flows through the farm. These sources are all good, provided that they are free from contamination. There are three types of wells in common use: the dug well for shallow depths; the driven well for earth formation; and the drilled well where the water bearing stratum is overlaid by rock or hardpan.

These wells should be protected from polluted surface water. For this reason the well should be located on rising ground, so that the surface water will flow away from it. Dug wells should be walled with water-tight material. If stone or brick is used, cement mortar should be used to seal the interspaces. Concrete makes a good, tight wall. Wells driven through clay are usually safe. Drilled wells should be lined with wrought-iron casing extending to the rock and driven into it to form a water-tight joint.

There are three methods in common use in conveying the water from the source of supply to the farm buildings. First, by gravity, when the source is higher than the buildings; second, by the use of an hydraulic ram, when there is an abundant supply of running water to operate it; third, by the use of a pump. In installing these last mentioned, galvanized iron pipe of sufficient size to meet the farm requirements should be used.

There are many types of pump on the market. For shallow wells the cistern pump with cylinder in the barrel may be used. For deeper wells the suction pump may be used if the cylinder is placed within 25 feet of the low water mark in the well. The single and double action pumps, with or without power, can be used to elevate water to the desired height.

When water has to be elevated the wind-mill is a cheap source of power. A gasoline engine will do the work at a very low cost, and pumping can be done while the engine is at other work.

Water from limestone formations is hard, and not satisfactory for washing. Rainwater, which is always soft, can be collected from the roofs and stored in cisterns for washing purposes.

The home and barns on every farm need water on tap wherever required, much more than does the city home; because the farm requires more water per capita and the people on the farm have less time to carry water. It is estimated that the average farm family of 5, with 4 horses, 33 head of cattle, 50 sheep and 10 pigs, requires over 600 gallons of water per day.

In conclusion, then, the farm water supply should be adequate to meet the maximum requirements every day; it should be reasonable in cost, simple in construction, durable and easy to operate; it should be fresh, pure and cold at the taps, and it should be available for fire protection.

Control of the Rose Chafer.

In certain sections of South-Western Ontario the rose chafer has proved to be an extremely troublesome and obstructive pest of grapes, other fruits, flowering plants, etc., in fact is regarded as almost omnivorous, eating holes in apples, peaches, and other fruits, defoliating sweet cherry and peach trees, and playing havoc with roses, peonies, and other ornamentals. The recommendations for its control made by Messrs. W. A. Ross and J. A. Hall, of the Dominion Entomological laboratory at Vineland, might, therefore, be advantageously borne in mind by growers. These are that in affected districts an organized effort should be made to reduce waste sandy land to a minimum; that as much of the land should be worked and, if possible, fields should not be left in grass for longer than one season; that as much as possible of the land surrounding the vineyards should be kept in cultivated crops, such as corn and potatoes; that old neglected fence rows should be broken up; that all breeding places should be plowed and cultivated frequently at the time the chafers are in the pupal stage, that is from May 20 to June 10, and that, if too late for such precautions, grape vines, sweet cherry trees, and one-year-old strawberry patches should be sprayed, as soon as the beetles attack them, with arsenate of lead powder, four pounds, cheap molasses, one gallon, water, forty gallons. Especially in the case of graperies, one, two or more extra applications may be necessary, the number of sprays of course depending on the severity of the infestation and also on the weather conditions, in view of the fact that heavy rains wash the material off. The authors say that they have no information relative to the value of this spray as a means of protecting apples.

Grape Leaf Hopper Control.

Relative to the grape leaf hopper, which causes considerable injury to grape vines wherever they are cultivated in the northern section of this continent, Messrs. W. A. Ross and W. Robinson, of the Dominion Entomological laboratory at Vineland, say that the most important lessons learnt from last year's experience were that thoroughness in spraying is more than half the battle in control; that in order to do thorough work it is essential to use angle nozzles, good pressure and liberal quantities of the spray mixture, that is sufficient to wet practically all the under surface of the foliage, the exact amount required probably varying from 120 to 250 gallons per acre, depending on the density of the foliage, and that early spraying, before any nymphs have transformed to adults, will give the most clean-cut results. In the Niagara district a large percentage of grape growers, when the leaf-hopper makes itself apparent, spray their vines with bordeaux mixture and nicotine sulphate, or lime and nicotine sulphate. Spraying is usually commenced in the early part of July, this is in normal seasons.

In the Province of Nova Scotia and the other eastern provinces almost half of the cost of educational and demonstrational work in agriculture has been provided out of the Federal grant.

Small Fruits, Roses and Iris

It is a great mistake to neglect the small fruits once they have finished bearing for the season.

If the strawberry bed is to remain the litter which was put down as a mulch and to keep the berries clean should be raked away from the plants into the alleys, and all runners cut off. Then both can be removed and burned. It is well also to cut off the old leaves, for in this way any diseased or insect-infested growth may be got rid of. Where there is no danger in doing so, the mulch, leaves and runners may be burned between the rows of plants. The plants may look a little sick following the scorching, but after the first good rain they will send forth new leaves most vigorously, and the ashes left between the rows will serve as manure.

When all rubbish has been cleared away or burned, the beds must be hoed to kill weed growth and loosen the soil. Weeds growing close to and among the plants must be pulled by hand. Hoeing should be continued throughout the season, so that the beds and plants will be free from weeds when frost puts a stop to garden activities for the season.

As a strawberry bed is past its prime when it has stood for three years, it is a good plan to make a fresh planting every year—or at least each alternate year—and in this way you will always have a bed in its prime.

CUTTING OUT RASPBERRY CANES.

As raspberry canes that have fruited die off naturally in the fall, it is better to cut them out now, and thus give the new canes a better chance. Cutting makes the new canes more clearly evident, and if there are more than five to each plant the weakest should be removed. If small they can be pulled up and will grow if transplanted in moist soil. The best young canes for forming new plantations are those that spring up between the rows some distance from the parent plants.

After removing the old and surplus canes the ground should be hoed and kept clean during the remainder of the season.

Blackberries are cared for in much the same manner as raspberries, and currants—red and white— also gooseberries, are all the better for summer pruning, as they usually bear on spurs of the old wood. All side shoots, with the exception of any required to form new branches, are best cut back within about five inches from the base; but do not touch the leaders. In winter or early spring all that has to be done is to cut the laterals to about one inch of the base, and shorten the leaders about one-half, according to their strength.

It is of the utmost importance that the bush-fruit plantation be kept quite clean during the season. Regular hoeing and the removal of weeds will encourage growth that is so essential for next season's crop.

Roses, especially those of the free-growing rambling varieties, greatly appreciate pruning after flowering. They are of the simplest possible culture and invariably thrive in any fairly good soil. All shoots of the previous year's growth are cut out, retaining only those of the current year, as it is on these shoots that the finest flowers are borne.

SOME OF THE FINEST CLIMBERS.

During the past twenty years or so innumerable varieties, hybrids and sports of the type have been raised and introduced, the most notable being Dorothy Perkins. In addition to its being one of the most prolific bloomers of all climbing roses, Dorothy Perkins is most accommodating as to soil and position, thriving and flowering freely where others would fail.

Among other popular and really worth-while varieties of this type, the following have qualities and beauty that place them in the front rank of valuable climbers: Crimson Rambler, rich rosy crimson; Flowering Fairfield, vivid scarlet, splendid for arches or pillars, very vigorous plant, blooms periodically during the summer; White Dorothy and Source of Gold.

Do you purpose increasing your stock of iris? If so, this is now the best season for dividing and replanting the clumps.

The flag or bearded iris—*Iris germanica*—has many forms, which make noble groups during spring, succeeding almost everywhere. Even when not in bloom there is charm in the silvery-toned leaves.

If adding to your list of varieties, by all means procure the roots as early as possible, as summer or early fall planting will result in flowers the first season.

Many prairie farmers this year are trying plots of corn for the first time, and much interest is being shown in this crop.

A GERMAN TRAGEDY.
Not enough money to pay for an apple.
—London Daily Express.

THE SUNDAY SCHOOL LESSON

AUGUST 19.

Stephen the Martyr, Acts 6: 1 to 8: 3; 22: 20. Golden Text — Who shall separate us from the love of Christ? shall tribulation, or distress, or persecution, or famine, or nakedness, or peril, or sword?—Rom. 8: 35.

LESSON SETTING—In the fourth chapter of Acts we read, "Neither said any of them that aught of the things which be possessed was his own; but they had all things common." The distribution of this common fund was supervised by the apostles, but complaints arose about the distribution, and the apostles, seeing that the preaching of the Word was their pressing first duty, asked for the appointment of seven men of honest report and full of the Holy Spirit and wisdom. Of the seven men chosen, the first mentioned is Stephen, and he is described as a man "full of faith and of the Holy Spirit." No nobler character ever wore the martyr's crown.

I. STEPHEN'S SHINING FACE, ACTS 6: 8-15.

Vs. 8, 9. *Stephen, full of faith and power.* The task to which Stephen was appointed did not prevent him from taking a conspicuous part in the preaching of the Gospel. *Did great wonders.* He seems to have been as largely used by the Spirit as the apostles themselves. *Certain of the synagogue . . of the Libertines . . disputing.* The number of synagogues in Jerusalem was very large, somewhere between three and four hundred. The Libertines were most likely the children of Jews who had been carried to Rome as captives by Pompey. Being made freedmen (libertini) they had returned to Jerusalem and formed a synagogue among themselves. Cyrene was a city in Africa. Alexandria was in Egypt. Cilicia and Asia were provinces in Asia Minor. In all these places there were many Jews and in Jerusalem there were many who had rturned from these places and had their synagogue in Rome. *Disputing with Stephen;* regarding the truth of the gospel which he preached, and chiefly the Messiahship of Jesus, which was the crucial truth.

Vs. 10, 11. *Were not able to resist.* Stephen's natural abilities were reinforced by the gift of the Spirit. His utter sincerity puts to shame the quibbling opponents. *They suborned men.* When they cannot overthrow Stephen in argument, they begin to plot against him by procuring false witnesses against him. They follow the same policy as was used against Jesus. *We have heard him speak blasphemous words.* His enemies were cunning enough to make a charge that had some semblance of truth in it. Stephen doubtless made the teachings of Jesus supreme above the law of Moses, but taught that the law had been fulfilled, not destroyed, by his Master. So also, as we shall see, the charge stated later, that he had spoken against the Temple, only meant that Stephen had taught that God's dwelling place was not confined to the Temple.

Vs. 12-15. *They stirred up the people.* The common people gloried in the temple. They would be greatly moved by any word said against it and would not stop to examine into the truth of the charge. *Brought him to the council;* the Sanhedrin, composed of seventy-one members, which dealt with matters of Jewish religion. All looked at him steadfastly, waiting for him to speak his words of defence. *Face of an angel.* Instead of beholding a man with anxiety and fear upon his face, courage, grace, faith, beauty of character all shone upon his countenance. Amid the scowling faces there was one radiant one.

II. STEPHEN'S FORGIVING HEART, ACTS 7: 54-60.

Vs. 54, 55. *When they heard these things.* The central argument of Stephen is based wholly on scripture. *Cut to the heartL. . gnashed . . with their teeth.* The strength of Stephen's argument and the truth of his accusation only stirred them to rage that they could not conceal. Stephen is not allowed to finish his speech. *But he . . looked . . into heaven;* again the strange contrast between the accusers and the accused. He is blind to their anger. He sees not only the glory of God, but Jesus himself in the place of honor and the attitude of power. It was a mighty confirmation of all that he had been saying.

Vs. 56-60. *They cried . . ran . . stoned him.* Stoning was the common form of death-penalty for blasphemy. The law required that the sentence must be carried out beyond the city walls. *The witnesses laid down their clothes;* laid aside their outer garments for action. The law required that the witnesses against the accused must cast the first stones. In this way the chief responsibility rested on them. *Whose name was Saul.* In this abrupt and dramatic way we get our first glimpse of the great apostle of the Gentiles, as a persecutor. The description "young men" is applicable to any one about the age of forty. *Receive my spirit.* In this great hour, Jesus is his strength. *Lay not this sin to their charge.* Like his Master, he shows his spirit of utter forgiveness.

APPLICATION.

Stephen had surely won the admiration and love of the early Church when the historian of those first days could say such things of him as we find in this sixth chapter of Acts. He was "full of grace and power;" in speech he manifested "wisdom and the Spirit;" and among the company of the first deacons he is the one man singled out and characterized as "a man full of faith and power." Dr. Denny has truly said, "When we open the New Testament we find ourselves in the presence of a glowing religious life. There is nothing in the world which offers any real parallel either to this life, or to the collection of books which attests it. The soul, which in contemporary literature is bound in shallows and in miseries, is here raised as on a great tidal wave of spiritual blessing.....This religious life is determined by Christ.....If we sum it up in the one word "faith," it is faith in God through him—a faith which owes to him all that is characteristic in it, all that distinguishes it from what is elsewhere known among men by that name." These brief tributes that Luke pays to Stephen suggest that "glowing religious life"—faith in God through Christ, the conscious fellowship of the Holy Spirit, giving wisdom and power, a beautiful spirit, and "the assurance of victory." That glowing religious life revealed itself in many ways, in his zeal and courage and powerful speech and wonderful forgiving spirit, but it also showed itself in his very countenance. "All that sat in the council, looking steadfastly on him, saw his face as it had been the face of an angel." There is a Christian type of face. The beauty of the Lord is upon them that are possessed by him. "He will beautify the meek with salvation."

The Worst Enemy of the Woodlot.

Fire is one of the worst enemies of the forest and the smaller woodlot, and every precaution should be taken to keep it out. It is especially dangerous at this time of the year when everything is so dry and there is little rain for weeks on end. In a few minutes through carelessness or the lack of a single precaution, the work of several years may be entirely wiped out.

Fire in the woodlot destroys the young growth up to ten and fifteen years of age. It burns up the humus and accumulated food of many years and robs the trees of moisture. It destroys the seed bed for new growth and, consequently, minimizes reproduction. On older trees it kills large areas of the cambium and opens the door for fungus and insect attack and necessitates the cutting of a high stump.

Where a small piece of woodland stands alone, there is little chance of fire. But where the danger from fire is imminent, either by proximity to larger forested areas, by the presence of grassy roadways or fields, or a railway right-of-way, some precautions should be taken.

Fire lines may be laid out consisting of a few feet of cultivated soil or a strip from which the brush and forest litter has been cleaned away. These should separate the woodlot from the source of danger and in case of fire will be a means of prevention or control.

Brush which has been allowed to accumulate during several cuttings is the owner's worst enemy in case of fire. This should be piled as cut and burned when snow is on the ground.

Cattle or stock of any kind in the woodlot are injurious to its best development. The damage inflicted is much the same in result as that caused by fire. The young growth is eaten down or destroyed, the ground is packed hard by their hoofs, roots are uncovered and injured and bark on larger trees is rubbed, and gnawed off. In the summer's heat at this time of the year, the dairyman or farmer with a woodlot is sorely tempted to give the cattle freedom therein if only for the cool of the trees. However, if it is found necessary to run cattle in the woodlot it would be preferable to fence off a section for this purpose. This would mean that a part of the area would be able to reproduce naturally and enjoy a period of protection, after which the fenced and open parts might be exchanged for grazing.

The worst enemy of the woodlot, however, is often the man who owns it. By lack of good judgment he may have at the end of a few years a woodlot filled with old, crooked and misshapen trees. No thought of a future crop is given; the best trees are cut for fuel; the border is opened up; the trees are thrown by the wind; cattle are allowed to browse during the summer and fire is permitted to ravage the area with the result that in a few years a piece of woodland, which was capable of supplying the farm with fuel and occasional pieces of timber, as well perhaps, maple syrup, becomes a tangle of upturned stumps and scrubby growth.

Short courses in agriculture for men and in domestic science for women have been an important feature of extension work assisted by the Agricultural Instruction grant. Held either under local auspices or offered by the schools and colleges of agriculture, their aim has been to give instruction on improved methods and practices. Every branch of farming has been dealt with, from stock-judging to motor mechanics for men and from general housekeeping to the domestic arts for women, often accompanied by demonstration.