Soils and Crops

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CULTIVATION OF ROOT CROPS.

The object of cultivation is fourfold: (1) To destroy and prevent the growth of noxious weeds. (2) To develop various degrees of openness of texture and uniformity of soil conditions suitable to plant growth. (3) To modify the movement of soil moisture and soil air. (4) To change soil conditions so as to make it either warmer or colder.

The cultivation of the soil should begin at the first indication of weeds; in fact, it is still better to make a start before the weeds get rooted. To expose them to the hot sun in the germinating stage is the most effective way to kill weeds. If harrowing has been properly carried on cultivation may begin with a cultivator, the teeth of which are 2 to 2½ inches wide, but, if the soil is soddy or lumpy, a narrow-toothed cultivator will be necessary to do effective work. Be sure the cultivator has a sufficient number of teeth to cover the ground effectively—that is, so that the whole surface of the ground will be thoroughly stirred to a depth of from 2 to 3 inches.

The harrow-tooth cultivator is the best to start with; the teeth are narrow, they do not throw the earth over the young plants, and one can cultivate closer to the plants without covering them. Later the larger tooth is better, and as the cultivation season advances and the plants get well rooted, the cultivator should be narrowed and cultivation should be deeper in the centre of the rows. The most efficient work can be accomplished by first going one way all over the field. In a day or two cultivate again but go in the opposite direction to that of the previous cultivation. Cultivation should be continued at intervals just so long as the plants are not injured by horse or cultivator.

The reasons for thorough cultivation are briefly as follows: The soil particles are rounded in form, and when massed together without being crushed they leave a large amount of unoccupied space; this unoccupied space in the soil is needed for the movement of the soil water and air and the spreading out of the root fibres; it is also the home of micro-organisms which develop the available nitrogen used by the higher plants.

If these soil particles are too large and too loosely packed the soil permits the rain-fall to pass through it too freely and the water is soon out of reach of the plants; nor does it return rapidly enough under capillary action to meet the needs of the crop. If the particles are too small and too closely crushed together the water moves very slowly and the air is excluded from the soil; and when the water dries out, the particles are cemented together too strongly by the salts, which have become too concentrated to stay in solution. Consequently, the root fibres are unable to set the soil particles aside; the root system of the crops is prevented from proper development; the plants are cut off from sufficient food supply; and as a result the yields are reduced.

If thorough and continuous cultivation is carried on it will correct the detrimental conditions mentioned, will lesson hand hoeing, and increase the yield and profits, which is one objective to be borne in mind in all farming operations.

AFTER-HARVEST WORK AGAINST WEEDS.

The time to start fighting weeds is in the spring, and among the prerequisites to success is the early sowing of clean plump seed, of suitable varieties, in a seedbed that is well prepared as regards drainage, fertility and tilth. By starting the crop vigorously it is enabled to hold its own to the end with the minimum growth and seeding of weeds. However, in spite of the best of care there will always be weeds demanding some extra attention. In cultivated crops this can be given the season through, and especially before harvest; in grain and hay there is little opportunity until the crop is off. If not delayed then too long, many of the weeds of these crops can still be taken in hand, and some of them with the greatest of timeliness.

Some weeds like ragweed and Russian thistle push up rapidly about this time. Where grain has been seeded weed growth may have to be kept down by the use of the mower, but other stubble should be worked over by means of a disc harrow or cultivator, or plowed very lightly. Besides preventing the seeding of weeds, this also makes conditions favorable for the germination of seeds already in the surface soil, which can be destroyed in the later fall plowing. Some seeds—wild oats for example—do not germinate readily, if at all, the first season, but any farmer who has practiced after-harvest cultivation knows that considerable germination of many weeds can be induced in favorable years.

After-harvest plowing of weedy hay fields is also desirable at the first opportunity that occurs. Such persistent perennials as couch grass, Canada and sow thistles, the hawkweeds, oxeye daisy, etc., are probably at their weakest after using up their reserves in the attempt to mature seed, which timely cutting of the hay should prevent. Plowing at this season is not always the easiest done, but the dryness of the ground, if it does not prevent thorough work, is all to the good in weed destruction. Couch grass, indeed, might well be left alone unless the ground is somewhat dry. The plowing at this time need not be deep; for couch grass particularly it should be only deep enough to get beneath the matted surface rootstocks. After plowing, the object will be to drag the rootstocks into the drying sun by means of a spring tooth or other implement. Thistles and sow thistles will not be so readily dragged out, and can best be dealt with by the use of a duck-foot cultivator to keep all growth cut off as often as it appears. The amount of fallowing thus possible after the removal of a crop should go a long way toward cleaning a field, or at the least preparing for a cleaning hoed crop the following year. A rotation which allows of this procedure every three to five years will hold weeds reasonably well under control.

Many of the worst weeds of crops are also commonly weeds of waysides, pastures and waste places and should be cut by means of mower, scythe or spud, or hand-pulled after a rain, if only to prevent their seeding. Places which can be broken up and cleaned may be later reseeded if so desired, using strong-growing grasses and clovers, which will fully occupy the ground. Besides removing a menace to crops—and often to the good-will among neighbors—a little puttering about in odd corners of the farm works wonders in making the old place more likeable. After midsummer such weeds rapidly become conspicuous, and may well claim some of the hours or half-days when wet weather has upset other plans.

THE SUNDAY SCHOOL LESSON

SEPTEMBER 9

John Mark. Acts 12: 12, 25 to 13: 13; 15: 36-40; Col. 4: 10; 2 Tim. 4: 11; 1 Peter 5: 13. Golden Text—Whatsoever thy hand findeth to do, do it with thy might.—Eccl. 9: 10.

LESSON FOREWORD—This week we study the life of John, whose Roman name was Marcus. John Mark is associated with three great figures in the New Testament story,—Barnabas, Peter and Paul. He was sister's son to Barnabas. It was to the house of his mother, Mary, that Peter came when he was released from prison, Acts 12: 12. This home was evidently a centre for the Christians in Jerusalem. Peter speaks of John Mark as his son (see 1 Pet. 4: 13), which means that the young man had come to know Jesus through the teaching of Peter. Besides being a companion and helper of Paul, he was later the companion of Peter, and the Gospel of Mark was the outcome of this companionship.

I. MARK CHOSEN, ACTS 12:12, 25 TO 13:5

Ch. 12: 13. *When he had considered the thing;* when he had comprehended or grasped the significance of his experience. Peter had just been delivered from the prison by the angel, who left him on the street a free man. Peter felt dazed by the strange experience. *He came to the house of Mary.* This home had an open door for Peter and he goes there to tell of his great experience. *Many were gathered together.* The friends of Peter had gathered there, as often before. Now they were praying for Peter in his great crisis, and their prayer had been answered, although they knew it not as yet.

V. 25. *Barnabas and Saul returned from Jerusalem.* They had brought to Jerusalem the gifts of the church of Antioch, for the relief of their brothers in Judea, in the famine foretold by Agabus. *Fulfilled their ministry;* performed the duty of conveying the money. *Took with them John.* Evidently John Mark's father was dead and Barnabas would naturally feel a great responsibility for his nephew.

Ch. 13: 1-5. *The church that was at Antioch.* Into this church the Gentiles had come in large numbers, and so it was a natural starting point for the great missionary journeys. *Simon . . called Niger;* probably because of his swarthy countenance. *Manaen . . . brought up with Herod;* foster-brother. Manaen's mother had nursed both him and Herod. Herod was ruler or tetrarch of Galilee and Perea, and the murderer of John the Baptist. *As they ministered;* waited on God, praying and fasting. God's answer was a call to appoint Barnabas and Saul to be missionaries. *Sent forth by the Holy Ghost.* Emphasis is laid on the guidance of the Holy Spirit. The persons, the task, the route are all marked out. *Seleucia;* the seaport of Antioch, at the mouth of the Orontes. *Sailed to Cyprus.* Barnabas had been born there. *Salamis;* a port at the eastern end of the island. *Had . . John to their minister;* John Mark, who was to be general assistant in all the duties of the journey. From Cyprus the missionaries had gone to Perga. Here the journey became a real adventure in unknown territory. There were dangers of mountain pass and torrent, and peril of robber and bandit all the way.

II. MARK REJECTED, ACTS 15: 36-40.

Vs. 36-38. *Some days after.* The first missionary journey had been completed and Paul and Barnabas had returned to Antioch. When on the first journey, they had come to Perga on the mainland of Asia Minor. John Mark left them and went back to Jerusalem. No reason is given for the action. *Let us go . . and visit our brethren.* Paul's love for his converts and his knowledge of their need of encouragement, prompted the thought. *Barnabas determined to take . . John;* better "wished." Even if John's departure on the first journey had been desertion, Barnabas is willing to give him another chance. *Paul thought not good.* Paul is unable to overlook Mark's first failure.

Vs. 39, 40. *Contention so sharp . . they departed asunder.* Both were determined, but while they part they both continue working for Christ, and we have two missionary companies instead of one. *Paul chose Silas;* called also Silvanus. He was one of the leaders in the church at Jerusalem and came down to Antioch with Paul and Barnabas on a special mission, Acts 15: 22-32. *Confirming the churches;* giving them new hope and courage. Nothing is recorded about the journey of Barnabas and Mark. But doubtless Mark would be encouraged by the faith that Barnabas had in him. It was more than the partiality of blood relationship which made Barnabas cleave to Mark.

III. MARK COMMENDED, 2 TIM. 4: 11.

V. 11. *Only Luke is with me.* Luke is the beloved physician referred to by Paul in Col. 4: 14. He was the friend and companion of Paul, joining him in his second missionary journey at Troas, and with him in his third journey. He was also with Paul in his imprisonment at Caesarea and Rome. The third Gospel and the story of the Acts belong to him. When writing this second letter to Timothy, Paul is a prisoner at Rome. Demas has forsaken Paul and his other companions have gone on missions. Paul is lonely. *Take Mark, and bring him with thee.* After many years, Paul, who had refused to take Mark on the second journey, now asks that he be brought to him. The parting roads have met again. This means that Mark had lived down his failure, under the encouragement of Barnabas. He has "come back," as the saying is, and has vindicated himself in the sight of Paul. *For he is profitable to me.* Moffat translates, "Pick up Mark and bring him along with you, for he is of great use in helping me." In Philemon 24, Paul refers to Mark as one of his fellow laborers, and in Col. 4: 10, Paul, writing to the Colossians, says that if Mark comes to them he is to be welcomed. In 1 Peter 5: 13, we get a glimpse of Mark with Peter in Babylon, where Peter refers to him in terms of affection.

APPLICATION.

The Home of John Mark. "What sort of home did he come from?" This was the question an old minister invariably asked in the church court when they were considering whether they would receive a young man as a candidate for the ministry. He knew that the ideals and spirit of that home would most likely reveal themselves in his character and his work. Not always perhaps, but usually.

We do not know much about the character of Mary, the mother of Mark, but we do know that she opened her home to the followers of Christ, in a time of danger and persecution, and that is an indication of conviction and devotion. There are those who think that not only did Christ's disciples meet there after his ascension, but that it was in the upper room of this house that our Lord had the Last Supper, and gave the great teachings that John has preserved for us.

Great Fellowships. Many of the great leaders of our churches, the outstanding preachers, have begun their ministry as the colleagues of older men.

John Mark was peculiarly favored in the privilege of fellowships, for we know that he was the nephew of Barnabas, and his companion in travel and work; and was associated with Paul in his first missionary journey, and again later; and the tradition of the early Church concerning the origin of his Gospel connects him intimately with Peter.

A Sad Failure, and its Evil Consequences. The highest privileges do not always ensure the greatest achievements, or save from shameful failure. Mark lost his courage, and turned back at Perga in Pamphylia, apparently fearing the dangers and privations that he knew the missionary missionary party was facing. It strikes us as rather severe when Chrysostom applied to Mark a Greek word that would be equivalent to "slacker" to-day. But there is at least no doubt that Paul strongly disapproved of him and his course. One of the sad things in life is that our mistakes and defaults embroil other people. Mark's occasioned dissension between Paul and Barnabas.

The Gospel of the Second Chance. "This wise world will scarce believe a man repents, and this wise world is mainly right." Is it, however? The distinctive note of Christianity is God's power to redeem and restore.

A new sensation and a new life are in store for the farmer who has not yet had the pleasure of pressing the button and seeing his home, his barns and out buildings, and the yards, all springing from darkness into the light of day.

COWS AND CRAB APPLES

Perhaps many have noticed that wild crabapple trees are much more plentiful in pastured woodlands than they are in places where there are no cattle. The correlation between cows and crab apples seems to be very close, for it is in the favorite loafing places of cattle—near the pasture gate, for example—that the thickets of little trees are found to be most abundant.

The reason for this peculiar situation lies in the apparent necessity for the intervention of cattle in the planting of the trees. A little observation of the seedlings will show that almost without exception they bear traces of cattle droppings about their roots, and one will frequently find patches of relatively fresh droppings with a score or more of newly sprouted seedlings sticking out of it, like pins in a pincushion. Very rarely indeed does one find a crabapple that has not arisen, like the scriptural poor, from the dunghill.

Before a seed of these wild apples will sprout, it has to take a trip through the digestive tract of an animal. Experiments with seeds cut out of sound crab apples have shown that of hundreds planted only a few germinate at all, even when given ideal seed beds. It is probable that the seed coat is tough and more or less impervious to water, as it lies in the newfallen apple, and will therefore either prevent the little plant within it from getting water from the soil or else imprison it so securely that the poor thing never gets a chance to break through. But if a cow eats the apple, the tough seed coat is subjected to the action of the digestive fluids, and so softened and weakened that when the seed is finally discharged from the animal's body it is in good condition for germination.

However, old Brindle's interest in crabapple trees does not cease with the planting. As they grow she prunes them as well. The trees in a pasture will always be found in a series of fantastic forms—the smaller ones cropped down into round little mounds, the larger ones in conical pyramids and finally in hour-glass shapes. It will be found in every instance that the curve of any of these figures will have a radius equal to the length of the average cow's reach with neck, head and tongue. The leaves and twigs, and even the thorns while they are still young and green, seem to have an especial attraction for the bovine palate, and as soon as ever an inch of green growth comes within grabbing distance it is pulled off. In well-pastured meadows this cow landscaping keeps the trees as close-cropped and as dense-twigged as the best efforts of English or Dutch topiarists.

Treatment of the Raspberry Patch After Harvest.

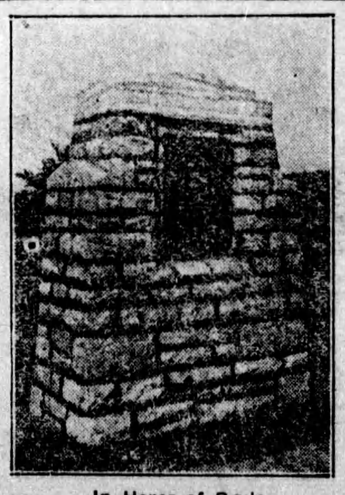
One or two cultivations are required by the raspberry plantation after the fruit is off. This serves to loosen the ground and conserves much moisture. With the suckering varieties, if the young shoots that will grow between the rows are desired for next year's planting, one cultivation may do. Whether or not these young plants can be allowed to grow without injuring the fruiting patch more than the revenue derived from them would warrant is questionable. However, many good growers follow this practice and sell these young plants for spring planting. In no case, however, should cultivation be so poor as to allow growth between the rows before harvest.

The old, or season's fruiting wood, is cut out of the rows immediately after harvest or in the late fall. It should be removed and burned in any case before growth starts in the spring, to help control insects and diseases which live in the old canes. For localities with a very heavy snowfall, or high winds, the old canes might be left until the following spring to act as a support for the young growth.

The new canes of red raspberries are cut back to the height desired, from 3 to 5 feet in the spring. Fall or summer topping or pinching is not recommended because of excessive winter injury to the laterals which are forced out and often the fruit on these is small and poor in quality. When patches are heavily fertilized resulting in long canes, it is worth while for the grower to consider whether or not it would pay to trellis the rows rather than cut the canes back one-half or more, as would be necessary to make them self-supporting. The new growth is thinned out at the time of topping, removing weak canes, leaving a row about a foot wide with shoots not closer than six inches.

The young canes of blackcap raspberries are cut back each season when they reach a height of two and one-half feet. The laterals formed are cut back to about a foot the following spring.

The raspberry patch may be either plowed to the rows in the fall or spring plowed. Where manure is to be applied it is a good plan to put this on in the fall and plow it in the following spring. Plowing away from the plants may be done in the spring, thus burying a good deal of rubbish which collects along the rows.



In Honor of Brule.

The first monument erected to the memory of Etienne Brule, the discoverer of Lake Superior and the first explorer who penetrated the lake regions with a view to trade. The memorial was erected during Discovery Week at Sault Ste. Marie.

DAIRY

Chapped or cracked teats in the cows are more common than usual this summer, probably due to the dry season, although this condition may be brought about by many causes, such as walking in wet grass or through mud holes and streams; also from wading in manure or lying in wet bedding; it may be caused from the nursing of the calf or from milking with wet hands; or again, from cold air.

The extent of the trouble will vary, depending upon the sensitiveness of the skin, the manner of treatment that the condition has had, the length of time the animal has been affected, etc. At first the teat is very dry and red, tender to the touch as shown by the restlessness of the cow during milking. If this is allowed to exist for any length of time, without treatment, deep cracks will form in the teat.

Treatment should be given early, and then it should cause very little or no inconvenience. Teats that are sore and tender should be treated after each milking with an ointment made of vaseline, ten parts, and oxide of zinc, one part. If the condition becomes pretty serious before treatment has been started, it may be well then to use an antiseptic solution and bathe the teat in this; for this, bichloride of mercury can be used, one part to one thousand parts of water; a two per cent. solution of cresol or creolin may be used, but the mercury is as good as any. Fill a cup with the solution and place it against the udder, with the teat suspended in the liquid for several minutes; this should be used after each milking. Then paint the teat with the following: One part of tincture of iodine in four parts of glycerine; paint this on with a camel-hair brush.

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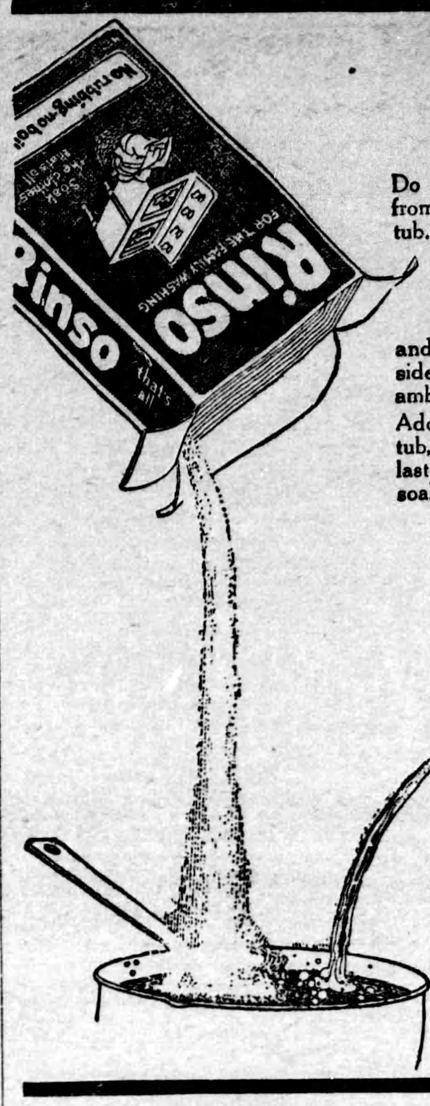

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Home Education

"The Child's First School is the Family"—Froebel."

The Golden Years—By Edith Lochridge Reid

A young mother stood on the porch and watched her little son trudge off to school for the first time alone. Her face was pensive and the yearning of the mother heart was almost translated into tears as she turned to a neighbor and said, "I feel almost as if I'd lost him, five years seem a short time to have him to myself."

The neighbor, older in wisdom and experience, smiled encouragingly, and replied, "A short time, perhaps, but a golden time, full of loving training, rich in home influence, every day of which was a preparation for this little journey on which he has just started."

"Well, I hope I've succeeded in giving him the right things to take with him," observed the young mother seriously, "but it's a big responsibility to take a child through those golden years, isn't it?"

"The biggest responsibility, my dear," agreed the neighborly advisor, and then added, "but I'll whisper a secret,—the rewards of this duty well-done are the sweetest and most satisfying in the world."

Yes, the Golden Years are the sweetest and fullest of opportunity, so let's enjoy them, and live happy, normal, everyday lives WITH our children. We can never tell them how to act, that is a flitting method of training, but we can show them how we meet difficulties and problems and disappointments with fortitude and a smile, and then, most important of all, allow them to meet their own trials alone in their own way. Not to protect from the world, but to prepare for life in the world is our duty as mothers during the Golden Years.

Some mothers out of their tender love, err in giving too much supervision in early childhood. If we see an aggressive playmate taking more than his share of toys in the yard, our first impulse is to help our child to maintain his rights, but unless the encounter threatens to grow beyond his strength, it is much wiser to let tiny son fight his own battles. He must do it some time, and the older he is the harder it will be to start.

Self-reliance is an absolutely necessary asset to success in life, and the child that goes out equipped to make his own decisions and look after his own personal interests without too much assistance, will have fewer griefs and hard knocks.

In those first five years, our child gets his ideals for life's conduct. He may never have heard the Ten Commandments or the Golden Rule, but he has seen them acted, if he is in the right kind of a home. He isn't on the fence in regard to right and wrong. He has learned by seeing mother handle situations, that a thing is either right or wrong, but that there is no neutral ground.

So while we all may have ideals of conduct for our children in after years, the possibilities for attainment during early childhood are manifest and measured by their response to temptations in the home environment.

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