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SOUTH DAKOTA HORTICULTURIST

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SOUTH DAKOTA HORTICULTURIST

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Treasurer—H. N. Dybvig.....Colton, S. D.
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FOUR-H GARDEN CLUBS FOR BOYS AND GIRLS

H. N. Jones, State Club Leader, Brookings, S. D.

Boys and girls are interested in vegetable gardening work as shown by the fact that there are 355 already enrolled for garden club work this year. The State College Extension Service has prepared a garden record book and a series of interesting demonstrations which the club members use. This work is available to all communities in South Dakota where there are five or more boys and girls interested in gardening and a local leader to supervise the work of their club.

In addition to the cash prizes offered at county and state fairs to 4-H garden club members, there is a garden implement firm that offers a wheel hoe to the champion garden club exhibitor in each county and a combination seeder and wheel hoe to the champion garden club exhibitor at the State Fair. Garden club members may also compete for a special trip to Chicago provided by an Iowa nursery.

Vegetable gardening offers an opportunity to the ambitious boy or girl to earn some pin money during the summer months and, at the same time, learn some of the principles of gardening under the guidance of a competent local leader.

GARDEN CLUB CONTEST

One of our enthusiastic Society members offers the following prizes to the person organizing the largest garden clubs:

First Prize—One King of England, Peony.

Second Prize—One Madame Emile Galle, Peony.

The contest ends September 1, 1929. The Peonies will be sent to the winners at the proper planting time. The person organizing the Garden Club with the largest membership will win the first prize. The one organizing the Garden Club with the second largest membership will win the second prize. These peonies are rare varieties and will be a prizable prize for the winner.

CONTEST FOR BEE CLUB MEMBERS

The Editor will give the following prizes to Bee Club members:

First Prize—One complete ten frame standard hive.

Second Prize—One two-pound package of bees.

The contest closes October 1, 1929. The first prize will be given to the member sending in the best essay on Bee Club work. Choose your own subject. The thought contained in the essay will be given more weight than the composition. The second prize will be given to the member securing the largest number of pounds of honey from one colony.

Will the losers get stung? Let us hope not.

THE OKA CHERRY

Emil Pfaender, Yankton, S. D.

The Oka Cherry should probably be correctly labeled "Oka Hybrid Cherry," for it is not one of the standard or sour cherries such as the Early Richmond or Montmorency, although it far surpasses these varieties in abundance of crop, size and flavor.

It was first introduced in the late fall of 1924 by the Department of Horticulture at State College. It has grown in popularity in leaps and bounds the past few years, heading the list even over the well known Sapa, Opata and other Sand cherry hybrids which have been a household word throughout the Northwest the past ten to twenty years. Unquestionably, the Oka will lead our fruit list altogether within another year or two, at least in the varieties of plums and hybrid plums.

The Tom Thumb, Champa, Sioux and other Sand cherry hybrids introduced earlier than the Oka, are of course all very good varieties (especially Tom Thumb), but are smaller and very inferior in quality as compared to the Oka.

The Oka, incidentally, is a seedling of the Champa sand cherry, which in turn was a seedling selection, and the Oka no doubt obtains some of its characteristics from the Champa mother plant. The Champa grows into a fairly medium sized upright bush, with fruit firm, compact but small in size, and of no particular value on account of the inferior flavor.

Several years ago, when plants of some of these varieties were first available, we planted a few small trees of Oka, Tom Thumb and Champa and our surprise can be imagined a year later when we found all three varieties bearing fruit. The Oka, however, drew our individual attention on account of the large size of the fruit, the straight, upright bushy appearance of the tree and the wonderful flavor of the fruit after it became fully ripe.

The fruit of the Oka is about as large as the Sapa, but is shaped round like the tame cherries, has a medium thin skin, seems to be fairly compact and has dark red flesh. The pit is very small like that of the sour cherries and the flavor of the fruit simply cannot be described excepting that it is better, if anything, than the large black cherries imported from California. Furthermore, the fruit will not drop off when ripe like many of the other varieties of plums and sand cherry hybrids, and will dry up into a sweet, prune-like fruit which can be picked whenever convenient and cooked up into an excellent sauce.

As stated before, the trees stand erect and become very bushy and seem to be very hardy as far north as certain districts in northern North Dakota and Canada. It also appears that this variety bears fruit without fail the first year after planting, and seems to bear good crops annually thereafter. The plants grow to an average height of six to seven feet, but have a spread somewhat like the Sapa which makes picking the fruit an easy matter.

On account of the very pleasant, sweet taste of the Oka, its yearly abundance of fruit, hardiness and the easy manner in which the fruit can be picked, together with its market possibilities for both fresh or canned fruit, we predict that the Oka will, within a very short time, be one of

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EXTRACTS FROM THE DIARY OF A TRAVELING MAN**W. A. Simmons, Sioux Falls, S. D.**

What would you think were you to take out your hose to water your garden and find the water that issued therefrom hot instead of cold, and the longer you allowed the water to run the hotter it got? You might be pardoned for thinking you were much nearer the infernal regions than its position on the map would indicate any part of the Sunshine State to be, or at least that the sunshine had been unduly concentrated at this point. Such are the conditions at Edgemont, where the source of water supply is a deep artesian well, and the water is hot instead of cold. Water applied to the garden must be run on the ground, irrigation fashion, and not sprinkled on the foliage.

In this town dwells our good friend, Lars Hansen, long a member of this society and who was very faithful in his attendance at our meetings when living at Winfred, his former home. After building up quite a creditable orchard on his homestead near Rumford, he has settled down with his young wife in Edgemont and his home betrays the presence of a horticulturist in the many trees and shrubs he has set out. Lars claims to be over seventy years of age and possibly he is, but if so he is easily good for a hundred.

A few miles northeast of Caputa we found our friend, Mr. Seth N. Hulburt, out dragging the road to his place in an endeavor to make the going a little less painful for the expected guest. It is part of my system to always arrive about dinner time, and many a dollar is saved in this way, so we were soon seated around the dinner table where home-grown milk flowed freely, a great delicacy to one accustomed to the sky-blue variety we meet in cities. But the article that caused the most enthusiasm in me was home-grown and home-canned Flemish Beauty pears of which Mr. Hulburt has several bearing trees which so far have escaped the blight. After dinner Mr. Hulburt showed me through his fine bearing orchard of several hundred trees, all headed at the ground with no trunks to sun scald. He practices clean cultivation and so makes the greatest use of what moisture may come to him, and his trees are just coming into their period of maximum bearing. All his trees appear very healthy and look good for many years of increasingly heavy crops. He gave me many fine specimens of Salome and Malinda apples, none of which I found at all difficult to take, and there was not a worm in a car load.

Mr. Hulburt is a highly cultured college man, a reformed school instructor, and his writings in the Farmer and Breeder, whose horticultural page he conducts, are a delight to their many readers. Mr. Hulburt involuntarily conducts somewhat of a game refuge in his orchard, as a large covey of grouse make his place their winter home and undoubtedly keep down an over-production of apples by eating the fruit buds. But there seems no lawful way of inducing them to go elsewhere, and when one enters one end of the orchard they depart to the other, but cannot seem to be persuaded to depart from it entirely. Of course fruit cannot be raised in that west river country. Most any old resident will tell you that and not be a bit backward about doing so either.

When some foolish newcomer attempts it, the neighbors hang crepe

all around the place and fairly deluge the deluded one with advice which chiefly consists of don'ts. But if the newcomer persists against all advice and goes ahead and sets out an orchard, the neighbors don't exactly ostracize him but treat him kindly as most people do those of manifestly unsound mind, and set back awaiting the time when starvation will bring him to his senses. But if the orchard is after all a success and they begin to find they can buy from him better fruit and for a lower price than they can obtain elsewhere, and if also the orchardist is a pretty good fellow, as is invariably the case, the neighbors begin to look for some extenuating circumstances in his particular case.

They will come to view Mr. Robertson's orchard and say, "Oh, you are right up in the mountains, ain't you? Of course you can raise fruit here." And they will say to Mr. Hulburt, "Oh, I see how you do it, you are right up on a high hill; of course you can raise fruit here." Not that there is any particular shortage of mountains in the Black Hills or scarcity of hills in Mr. Hulburt's section.

Now Mr. Hulburt is going to come down to the common level by setting out a new orchard on the lower plains, but I suppose the nearness to the original hill will still serve as an excuse to his neighbors. Of course one cannot raise fruit in the west river country or any other place in the state—if one never tries.

May 15: In driving north from Beach, N. D., through a section of the North Dakota Bad Lands, I was impressed by the way Nature provides a ground cover for every situation however unpromising. On buttes too steep for grass to cling to, the trailing juniper covered the bare slopes, providing a bright carpet of green where no other form of plant life could exist. If you have been defeated in attempts to sod over a steep slope, here is the solution of your problem. It seems to stand any extremes of heat or cold and never requires either mowing or pruning.

May 27: If you are interested in house plants, better send ten cents to the North Dakota Agricultural College, Fargo, N. D., for a copy of Professor A. F. Yeager's bulletin on that subject. It contains some forty pages, is printed on high class book paper and is profusely illustrated. Not only does it contain a mass of useful information founded entirely on experience, but it is charmingly written in the talented author's best style, and it is a bulletin one wants to keep at hand for frequent reference. To prove that I am not the only one that appreciates it, a large eastern seed house bought five thousand copies for distribution among their patrons, and the author has received some very flattering offers from prominent magazines for articles to be published in their columns. Those who have received pleasure and profit from reading Professor Yeager's fine new-letters which are sent monthly to all members of the N. D. Horticultural Society will welcome anything additional that may come from this gifted writer.

THE OKA CHERRY

(Continued from page 3)

South Dakota's leading fruits and will be found on the markets alongside our imported cherries and plums. For either home consumption or commercial growing, we believe the Oka will take first place just as soon as our fast growing country discovers the value of this particular variety.

A HARDY FLOWER GARDEN

Mrs. M. W. Sheafe, Watertown, S. D.

"The value of things is the labor it requires to produce or to obtain them."

"The Hardy Flower Garden" I am going to present to you in the form of a panorama for, as you know, a garden is ever changing, each flower or group of flowers have their time of blooming and then drop into the background. If you will accompany me in an imaginary stroll about the small inclosure where several months each year, in company with the birds, bees, butterflies and squirrels, I spend many happy, profitable and entertaining hours, we will see what may be done.

I will not attempt to give you cultural directions, or the reason why one plant should be in a sunny place, another in the shade, one where it is moist, another where it is dry, as these are subjects for individual handling and would take too much time. It is now early April and our panorama opens. Peeping up through the brown leaves old Mother Nature has so deftly tucked about her children, we see many dear little blue, bulbous flowers with a very long name, *Chinodoxa*, or *Glory of the Snow*. The first to greet us, such an entrancing blue we almost wonder if they dropped from the sky. Quite near we find carpeting the ground closely, lest the belated March wind blow them away, another small bulbous flower, a delicate pink with finely cut foliage, also bearing a long name, *Dicentra cucullaria*, *Dutchman's Breeches*, or *Squirrel Corn*, the latter from the resemblance of the bulb or tuber to a kernel of popcorn. With numberless white and yellow violets complete our first grouping.

Everything in the plant world is now rushing forth.

The color scheme changes in our next picture to ribbons of scarlet, yellow, white, and manycolored tulips bordering the green stalks of future flowering plants. The tulips are now in their glory, gorgeously beautiful from the early to the late varieties, covering a long blooming season. For our second grouping we will see in the background graceful *Persian Lilacs* that grow so well here, and intermingled with them a *Jap Double Flowering plum*, *Prunus triloba*, with its dainty garlands of pink double roses. At intervals in the foreground we will group *Darwin tulips*, *Clara Butt* for pink; *Pride of Haarlem*, a wonderful carmine with a blue base; *Moonlight*, a very delicate yellow; *Euterpe*, soft lavender and *Picotee*, white with hair line of pink on the edge; with these we will add *Phlox divaricata*, a soft lilac, very early, *Alyssum*, *Basket of Gold*, and *Trollius*, a giant double buttercup completing a picture of color one does not soon forget.

The *Columbines* (*Aquilegia*) are now attracting our attention, long spurred, short spurred, without spurs, double and single, all shades and colors, and all combinations of colors, against a background of *Clematis*, wild smilax and *Adlumia*, or *Allegheny vine*, with groups of graceful bleeding hearts, *Delytra*; and clumps of dainty *Baby's breath*, *Gypsophila*, spreading its candelabra like branches covered with minute white flowers that add grace and airiness to any combination, complete our third picture of a group that is desirable in every way.

The *Iris*, *Rainbow Flower of the Greeks*, is our next consideration. There is a peculiar charm about the *Iris*. The rare ethereal beauty of its soft iridescent coloring and its frail orchid like formation is likely to pass

unnoticed by the careless observer. The passing of the Iris through the spring and summer months is like a grand procession, beginning with the early Pumilas, then the Intermediates, followed by the innumerable varieties, colors and combinations of color of the Germanicus section, which later in the season is followed by the beautiful blue and white Siberian, completes a picture so different from any other.

Peony, the Queen of Flowers, for this part of the world as well as in China, is now in possession of the stage. Beginning with *Tenuifolia* simplex, single, followed a few days later by the double of the same variety, a beautiful dark red in color, are the very first to bloom. Following a few days later, *Anomala*, a skeleton leaved single, also red, holds the attention for some time. *Officinalis rubra*, the "piney" of our grandmothers' day, comes in to the limelight with brilliant double blooms, that occupy our attention until the mammoth *Chinensis* varieties are ready to display their wondrous beauty. The *Chinensis* variety, *Edulis Superba*, introduced in 1824 by a French hybridist, Lemon, is still (though over 100 years old) one of the choice early blooming rose pink varieties. If you will scan the list of prize winners at the National Peony Show you will invariably see *Edulis Superba*. There are now over five hundred registered named varieties to choose from, so all tastes may be satisfied. All varieties are now in the zenith of their glory. The display of color so wonderful, heightened by the white of the *Spireas*, completes a picture I have not sufficient adjectives to describe.

Our sixth picture in our panorama is a woodland scene. Under the spreading branches of a large snowball bush, white with blossoms, we find the tall ferns have unfolded their fiddle head curls and with fronds four feet long are protecting several smaller varieties down to the dainty little wood fern, that at one time grew in abundance on the hillside at Stony Point, Lake Kampeska, but, like the prairie chicken, is almost a thing of the past. Snuggling beside these ferns we find the yellow Moccasin flower, the Cranesbill, and, last but not least, Jack in the Pulpit, Jack beautifully groomed standing in his highly varnished brown and green pulpit in true ministerial style. We wonder if in the flower world he is preaching and scolding the few faithful ones for the shortcomings of the many. To bring color to this scene we will add on one side a clump of Persian daisies, *Pyrethrum* hybrids, ranging in color from dark rose to white. The tall Foxgloves also enjoy this retreat. On the other side we group the blue Forget-Me-Nots and innumerable Clove Pinks, back of which we find a bed of Lilies of the Valley, tinkling their white bells and sending forth dainty perfume to the delight of all flower lovers. *Valeriana* or Garden Heliotrope and the Mock Orange in full bloom adding their fragrance, we will close our picture.

We have now reached the patriotic season and the color scheme changes completely. Now we see the tall cathedral spires of the *Delphiniums* (Larkspur) towering above our heads, dark blue, sky blue, and white, the latter the creation of our old flower friend, Mr. W. A. Toole of Baraboo, Wis., now deceased. With them to make the scene complete we have the low growing Chinese varieties in the same colors. With the gorgeous Oriental poppies blazing flame color and the Achilles for white against a solid green background we have a very striking picture. Blooming at the

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THE APPLE MAGGOT (*Rhagoletis pomonella* Walsh)

Entomology Department, South Dakota State College

While the apple maggot is widely distributed over South Dakota, the total number of orchards in which it is a serious pest is small. In those orchards where it does cause considerable financial loss, it oftentimes is the most harmful insect with which the grower has to contend and in some years it may be responsible for the loss of his entire apple crop. And yet it is a notable fact that the apple maggot is either negligible or absent from orchards that are properly sprayed.

Life History and Habits: This pest of apples passes through four different stages in completing its life cycle, namely, the egg, the maggot or larva, the pupa and the adult or fly (Fig. 6). The winter is passed in the pupal stage. Most of the pupae are found buried in the soil at an average depth of one to two inches, but some may be found above or beneath this level. When the ground is so hard that the maggots cannot penetrate the surface crust, the insects may pupate among the stems and leaves of plants above ground. Not infrequently some of the maggots pupate in the rotted fruit itself.

In the following spring most of the pupae that passed the winter successfully give rise to flies, but some of them may not transform to adults until a year later. The flies do not all emerge at the same time during any one year nor do they begin to make their appearance at the same time in successive years. Ordinarily the period of emergence begins with a few specimens of flies early in July, but from July 10 to August 10 the bulk of the flies emerge.

The eggs of the apple maggot fly are deposited in the fruit of apple trees. Each female fly has a sharp needle-like instrument, the ovipositor, at the back end of the body and with this she punctures the skins of the fruit and makes a hole in the pulp beneath. An egg is then passed through the ovipositor and is deposited in the pulp (Fig. 6, D).

Each fly is capable of laying 300 to 400 eggs, but this is not maintained as an average number. Further, all of the eggs are not laid at one time, but the ovipositing periods may extend through the greater part of the life of the fly.

When the maggots are small they slowly eat burrows through the pulp of the apples, but these burrows, especially in green fruit, may later heal or be replaced by brown corky tissue. When the apples have ripened, however, the maggots grow rapidly and probably because of enzymatic action cause the pulp of the fruit to collapse and turn to a brown spongy mass. When only one worm is working in an apple, only a comparatively small amount of pulp is destroyed. Because of its burrowing habits, this pest has sometimes been called the railroad worm instead of the apple maggot.

A second type of injury that is caused to the fruit of apple trees by this pest is due either to the egg punctures of the flies or to the egg punctures plus the early work of the maggots. In either case, the tissue just beneath the skin of the fruit is killed, with the consequence that the fruit becomes distorted.

Ordinarily, before the maggots have attained their full growth, the infested fruit has dropped to the ground. In such fruit the worms become

full grown. Each maggot then makes a hole through the skin of the fruit and through this hole it leaves the apple and seeks a place in which to pupate.

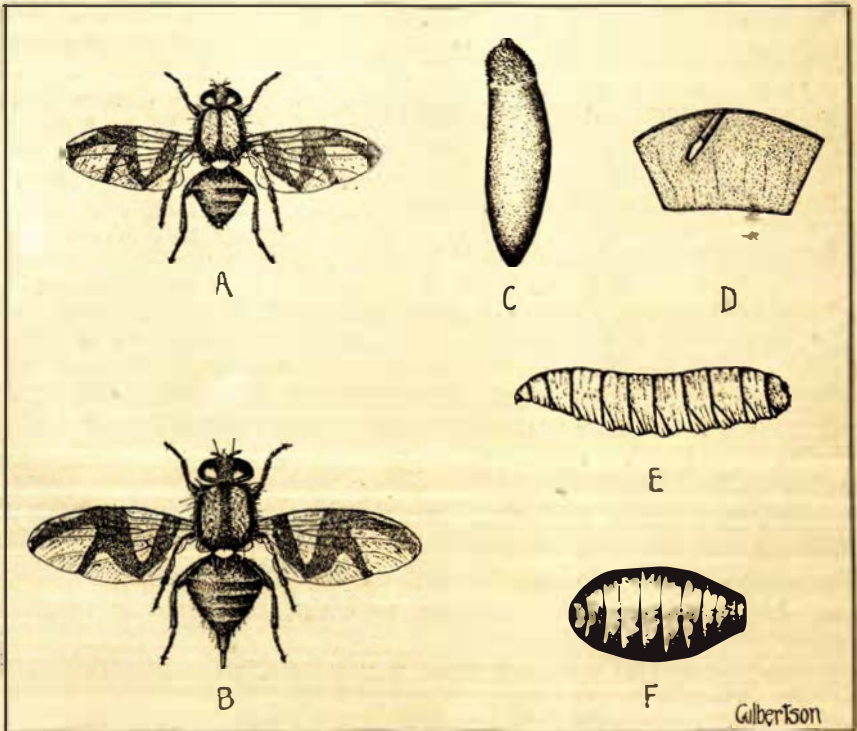


Fig. 6.—Life cycle of apple maggot; A, male fly; B, female fly; C, egg much enlarged; D, egg in pulp of apple; E, maggot; F, pupa.

Most of the insects that pupate do not transform to flies until the following spring. A small per cent of them, however, give rise to another generation of flies during the same year while another small per cent will not transform to flies until the second spring.

Control: The most satisfactory method of controlling the apple maggot is to spray all apple trees with lead arsenate. The poison should be used at the rate of 1 pound of the powder or 2 pounds of the paste to 50 gallons of water. Since the flies begin to emerge early in July during ordinary years, a thorough application of the spray should be made on or about July first. During years when spring is ushered in exceptionally early and the weather continues to be warm, the spray should be applied at the beginning of the fourth week in June. Every apple tree in the orchard should be sprayed and, in addition, the apple trees in neighboring orchards or yards should be likewise sprayed. Such apple trees and hawthorns as are worthless should be cut down and burned, or if this is not done, then they too should be sprayed.

A second application of the spray should be made as soon as the first

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REQUEENING COLONIES AND WHY

A. H. W. Birch, Apiarist Central Exp. Farm, Ottawa, Ont.

A most important operation in the beeyard is the giving of a new queen to a colony, or the requeening of a colony. Its importance lies in the fact that the queen is the greatest factor in the production of the honey crop; that is, she produces all the bees of the colony, which in turn produce the crop, usually considered as being proportional in size to the number of honeygatherers present.

The queen, therefore, must be vigorous. To secure this quality of vigor, some beekeepers make a practice of requeening their colonies each year, while others who think that a queen is at her best in her second year, requeen every second year.

Whichever of these methods is used, the practice in most common use in Canada is to requeen the colonies towards the latter part of the main flow, during the last week in July or first week in August. This gives a young queen ample time to increase the strength of the colony in young bees before the winter sets in, and does not affect the honey crop.

Besides this wholesale method of requeening, there are times throughout the season when necessity demands the giving of a new queen immediately. In the spring one sometimes finds a colony queenless or headed by a drone layer. At such a time, the beekeeper who has wintered a few spare queens for such an emergency, can immediately requeen his colony, while others, less provident, must send to the south for a queen.

During the summer, also, losses frequently occur. Much time is saved here, too, by the beekeeper who rears his own queens and who has spare queens in his mating-boxes on which he can draw to replace these losses.

For methods of requeening, see Bulletin No. 33, issued by the Bee Division, Central Experiment Farm, Ottawa, Ont.

THE BEE AND HONEY SITUATION

The winter loss of bees in the Black Hills was not as heavy as the loss in the eastern part of the state. Some colonies were not as strong as they usually were, but they have built up wonderfully in the past few weeks. The early cool, rainy weather was some inducement toward swarming but the clover blossoms and fair weather has reduced this tendency. For a while the beekeepers were wondering why some one had not written a book on "Why Bees Leave Home."

The present indications are that there will be a large honey crop. A heavy yield does not mean a hundred to one hundred and fifty pounds per colony as it did in days gone by. Some yards average over two hundred pounds per colony and it takes a yield of considerable over six hundred pounds for a single colony to be record breaking.

The use of better equipment and more practical methods of handling are responsible for some of the increased yield. Another thing people are learning that they cannot keep bees infected with American Foul Brood and get a crop of honey. The yellow and white sweet clover furnish the nectar for the main honey flow. The dandelion blossoms are fine for building up the colonies. Bees in the Hills are practically all wintered out of doors.

BARBERRIES, GOOD AND BAD

John L. Richardson, U. S. Department of Agriculture

"I cannot think of letting you destroy my pretty barberry bushes! Why, those bushes have been growing on this property for more than twenty-five years. My mother set them out when I was a little girl. They have grown and developed into the prettiest shrubs in our lawn; now you come along and say they must be destroyed. There is nothing wrong with them! Why should they be killed?"



That is the statement which a South Dakota lady made when the field agents of the United States Department of Agriculture told her that the clump of common barberry bushes growing in her lawn would have to be eradicated. Similar statements have been made thousands of times since the federal department of agriculture and cooperating agencies started the gigantic barberry eradication campaign in the north central states back in 1918.

I have been deeply moved at times by the pleadings of women who had labored long hours with their barberry bushes, had spent much time and money in getting the young bushes started, had become attached to the bushes, and then had their shrubs condemned and destroyed by federal authorities. Scores of times during the several seasons in which I served as a barberry inspector for "Uncle Sam" I was at my wit's end to know how to explain to the housewife that her barberry bushes must be destroyed without causing her to call down the wrath of Heavenly Powers upon me.

More than once I have seen the tears appear in the eyes of ladies as I pronounced the death penalty on the shrubs which they had worked with and which they cherished so dearly. On many an occasion I would much rather have been some place else, but, having been employed for the express purpose of helping find and eradicate every common barberry, there was no turning back—I had to tell them the truth about the harmful barberry and proceed to see that it was properly destroyed.

Thousands of citizens in South Dakota have had to give up valuable plantings of common barberry. Plantings ranging from single bushes to scores and even hundreds of barberries have been destroyed in city and country alike. Beautiful hedges, plantings in formal gardens, single bushes among other shrubs, and plantings of all descriptions, regardless of size or location, have had to be exterminated.

This may sound brutal and unjust, but there is a very good reason for such procedure. Common barberry bushes are beautiful, but they are likewise responsible for an economic loss which far overshadows their use-

fulness as shrubs. Common barberry bushes spread the devastating black stem rust to wheat, oats, barley and rye, and this rust disease causes the loss of millions upon millions of bushels of grain every year. In order to reduce the excessive loss from stem rust it is necessary to eradicate all common barberry bushes. Grain for use as flour and food products is much more important than the common barberry bushes.

When these facts are explained to the housewife she does not usually resist longer in parting with the barberry planting, even though she, as well as the inspector, regrets the unhappy circumstance.

Not all barberry species and varieties are harmful. The common barberry, sometimes called the European or high-bush barberry, is the commonest offender. Its scientific name is *Berberis Vulgaris*. The purple-leaved barberry is only a variety of the common barberry and rusts just as badly as the green-leaved form. The Japanese barberry, also called the dwarf or low barberry (*Berberis thunbergii*), on the other hand, does not rust and should not be destroyed, because it not only is harmless but is also a very beautiful shrub. This kind of barberry is widely used at the present time and is highly recommended as an ornamental shrub to replace common barberry bushes when they are destroyed. Various species of Mahonia, a plant closely related to the barberry, also rust, but these bushes are not so commonly planted and are not so important in the development of rust as the barberry bushes.

There are many species of barberry, both harmful and harmless, but it can be stated that, as a general rule, those which resemble the common barberry carry rust, and those which resemble the Japanese form do not. The two forms sometimes hybridize and the hybrids may rust, even when they look almost exactly like the Japanese variety.

The two types of barberry can be distinguished from each other very easily. While it is easiest to tell them apart when the leaves are on the bushes, the presence of leaves is not at all necessary. They can be distinguished by their different habits of growth, the color of the bark, the number of the spines, and the grouping of the berries.

(Continued in August Issue)

THE APPLE MAGGOT

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begins to disappear. This, under ordinary circumstances, will be in 2 to 3 weeks, but during rainy weather it may be sooner.

In those orchards where spraying for the codling moth has been practiced regularly, the apple maggot is usually negligible. If the orchard has not been regularly sprayed for the codling moth and if the codling moth and apple maggot are both present, then it will be necessary to spray for the codling moth each year in addition to spraying for the apple maggot during the first two years.

Considerable may also be done to hold the apple maggot in check by systematically gathering up and destroying the fallen fruit. The drops of summer varieties of apples should be gathered up at least twice a week, while those of the autumn and winter varieties need be gathered up only once per week. Such fruit should be fed to the hogs from a cement feeding floor, or the apples should be burned or cooked. They should not be buried in the soil without receiving the heat treatment.

INSTALLMENT PRUNING

Claude A. Barr, Smithwick, S. D.

More and more as I strive to master the science and art of better starting and growing of trees I favor a practice that has come to be used regularly in my orchard and grove, a system which may be called installment pruning.

Simply stated, it is the removing at first cutting of a part only of a branch which is at last to be taken off entirely. In this way a tree just planted, or at any later stage, is given the necessary heading back, or direction, or shape, without butchering.

The method has been worked out in the effort to avoid injury and set-back in a region where annual growth is often so slight as not to heal over even a small wound in a season's time. It will be found useful, I believe, in all dry regions or dry locations, or when rapid healing is not expected to begin immediately after pruning.

The old rule, to prune when the knife is sharp, is safe advice in the dry regions only if you have the judgment to keep the knife dull except in the early half of the growing season. With some varieties, of course, you may get by with almost any kind of pruning, but I am speaking of those that require careful cutting, and this same care will work to the best development and welfare of all sorts.

Let me show you something of dry climate effect that perhaps would not occur in a moister atmosphere. Out here in my orchard are some three and four year old apple trees, quite small yet, not like the big ones they get where there is plenty of water, that were headed back and pruned in late March. One has to experiment a little, perhaps "pull a bone" occasionally, to know one's limits. Some of us do.

You won't need any argument to see that these twig ends dried back beyond the first bud, that only lower buds are growing and so we have a stub which cannot scar over. I don't know any way to prevent that but by not heading back unless growth is in process.

But down here where this little fiveeighths inch limb has been pruned smoothly at the shoulder, as it should be in the proper season, the bark has dried back on all sides from the wound, thus reducing the width of live bark that connects the top with the trunk. Besides the large wound to be healed, the flow of sap is lessened and growth is set back by so much.

The shock this little tree is subjected to is of the same sort that in a large tree heavily top-worked often means the irreparable set-back or death of the tree; butchering, in short. This would not have occurred with May pruning; it might not have occurred if the wound and a little of the surrounding bark had been covered with grafting wax; it certainly would not occur if a stub two to four inches long were left. A stub? Exactly. To be removed later, in a final installment. The small growth of the stub will keep it alive, the tree will suffer a minimum of shock, and in a year or two when the tree is larger removing this stub will leave a relatively smaller wound which will heal quickly.

It has been the custom with little trees just from the nursery, besides topping back, usually to remove several branches entirely, each leaving a wound extending a third or more over the circumference of the trunk at

that point. Hardly ever with that treatment has a first year tree grown more than a very few inches for me. I should, perhaps, explain that I grow with success many kinds of fruit and shade trees on heavy gumbo, with shale close to the surface, on a high prairie divide, and with no irrigation of any sort. Formerly I was satisfied, perforce, if a new tree merely lived the first year. To live it had to make a little growth, of course.

Consider the installment method of removing limbs on newly set trees. The same root balance may be had as with complete trimming, there is less shock, no interference with the flow of sap, no wounds in vital parts. A good growth results, while with the old method set-back resulted in stunting, and recovery, I am certain, often took more than an extra year.

Now let us observe its application to older trees. Many kinds left to grow at will have the habit of putting out a branch for each leaf on the previous year's whip, and not all kinds have the ability to do natural or self pruning. Poplars are especially apt to offend, and I suspect some apples, even, would willingly commit a like indiscretion. After a few seasons the diameter of the branches has increased while the space between them has remained the same, so that all the main branches seem to come from about the same level on the trunk. When my grove was started I did not know or foresee what would result. But the evidence is still here. Tree after tree will show that the central part above the many branches was starved out, by the lower branches taking all available nourishment, and killed. In a few instances one of the branches had enough of upward tilt to develop into a misshapen trunk. More often the tree was permanently spoiled for one after another of the competing branches followed the center, and no possible cut could be made that would heal over.

That is not, necessarily, all the result of early neglect. One cannot always foresee the future form of a tree. For whatever cause, it often becomes necessary to take off large branches. In some cases it may be done without injury while in others the installment method is far better. To revert to the case of the poplars: You, no doubt, can suggest a way of avoiding this condition. Surely. But when the tree is small a low head of not too loose construction is desirable. The little branches are not too close together; it is later that they become so.

You may have occasion to prune such a tree. What happens if all those lower branches are sawed off at once? To raise the head of the tree and before the center has been fatally damaged, I mean. Why, simply, the tree is girdled.

The alternative is to cut one or two limbs entirely back and give the others an installment to prevent their continuing to make major growth. Then one after another they may be taken off entirely when better connection has been established between the upper and lower trunk over the first wounds. Incidentally, I find it profitable to paint over small wounds in my dry land tree growing even on a poplar.

With the Sand cherry hybrid plums we want all the fruit available in the early years. But if the lower limbs are not continually cut back so as to force growth into the upper secondary branches they are soon trailing a considerable proportion of the crop on the ground, and it spoils if a wet spell comes at ripening time. These lower branches are removed entirely when a sufficient head is formed away from the ground. The method is particularly essential with the Sapa.

Pinching back, whether mere tips with the fingers, or more radical work with the pruning shears, is a form of installment pruning that alone should be used after midseason in the dry country. No permanent disfigurement will then result from unhealed cuts, yet late growth in young stock may be effectively directed.

A HARDY FLOWER GARDEN

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same time we see Canterbury Bells, Jap Bellflowers, red Lilies (Davuricums), Regal Lilies, and Shasta Daisies from "Cottage Place" all so worth while.

We have now reached our eighth picture and we are getting along to the end of the season. Phloxes are, next to the peonies and iris, the most useful plants we have for late summer and autumn blooming. Miss Lingard, a white with lavender markings, is growing a little nervous, so she rushes on in advance of the other varieties to display her fine clothes. Varieties in shades of red, pink, wonderful white, lavender into the deep purples come later and make a grand showing. To combine with them we have the branching heads of Statice in a dainty lilac, and Galium, a delicate white flower quite like Gypsophila before mentioned. Growing at the same time we find Gaillardias, Coreopsis, Hemerocallis or Day Lily, and Tiger lilies. We must hurry on as the air is growing chilly and the autumn flowers are beckoning to us. The Michaelmas daisies in pink, rose and purple, with Boltonia in rose and white, and Artemesia Lactiflora so fragrant and graceful to which we will add the Giant white daisies and close the last picture of our panorama.

We have rushed from one beautiful flower to another until we are quite bewildered with all the wonderful colorings and must stop for a moment to take a little thought of what we have seen and to make a note also of what we resolve to choose for our planting next year. In our haste to see every plant, we have failed to realize the number; a hasty survey shows nearly fifty named plants, with still many left we cannot take time to mention. The fifty flowering plants, shrubs, vines, as well as several ornamental trees, may all be seen growing in their proper season in the enclosure I have tried to describe, and I trust will be an inspiration for others to go and plant likewise.

FRUIT WITHSTANDS LATE FREEZE

The late freeze did some damage to fruit in certain localities. At Spearfish some varieties of apples were practically all killed, while some of the later blossoming varieties set a light to fair crop. In the South Hills, Mr. Robertson tells us that the set in apples and plums is heavy. Small fruit appears very promising. Most pear sorts promise a fair crop, though there has been more than usual drop in some sorts. Probably due to severe freezes about the time of blossoming.

The northeast part of the state received some heavy freezes that completely killed the tender leaves of the lilacs but the fruit was not killed. The set of apples and plums is heavy in the central part of the state. In some cases the thermometer dropped to ten degrees below freezing. This low temperature apparently did little damage for a heavy crop of fruit set.

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