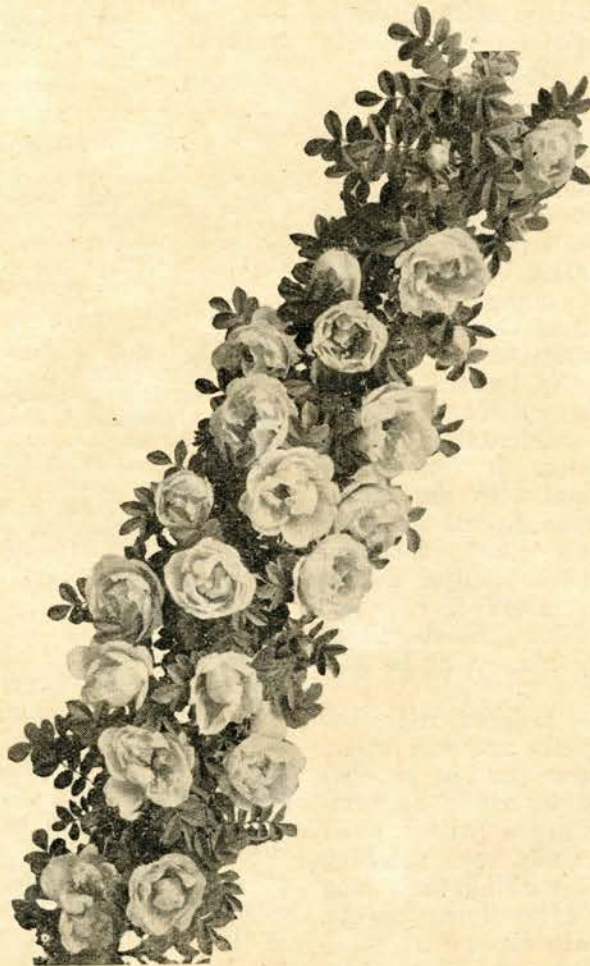


NORTH AND SOUTH DAKOTA HORTICULTURE

APRIL 1935



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SAY'S PHOEBE

O. A. Stevens

This bird was named for Thomas Say, one of the most noted of early American naturalists. He was, first of all, an entomologist, but as naturalist to the Pike's Peak expedition under Major S. H. Long in 1819-20, he discovered a number of new mammals and birds which live in the plains and western mountains. Some of these were described in the report of the expedition. This phoebe was found near Pueblo, Colorado, and was described a few years later by Charles Lucien Bonaparte, a prominent ornithologist and a nephew of the famous French warrior. Bonaparte named the bird "Muscicapa Saya," in honor of its discoverer. Many kinds of small flycatching birds were put in the genus *Muscicapa* at that time and thirty years later Mr. G. R. Gray, of the British Museum, provided a new genus for the phoebes which he called "Sayornis." Thus the bird has been twice named for the worthy scientist.

Say's Pheobe is a close relative of the familiar phoebe of the eastern states and inhabits the plains region from northern Mexico to central Alaska westward to California and Alberta. In winter it is not found farther north than central Texas to southern California. In North Dakota it is quite common over the western half or three-fourths of the State. Occasional individuals have wandered as far east as New York and Massachusetts, but a line from central North Dakota to central Texas marks its eastern limit of regular occurrence. It has not been reported in Minnesota. It would seem that this species has increased with the settlement of the country. Thomas Nuttall in 1834, reported it first seen near the Black Hills and not many from there westward. Major Coues, along the north boundary in 1874, did not observe it until he reached Fort Buford. From there westward to the Rocky Mountains he saw them but not a great many.

In appearance it is duller colored than the eastern phoebe, the wing quills and tail black, the posterior under parts brownish. The phoebes are more readily recognized by their behavior than by their colors. They are a little smaller than a kingbird, and are usually seen perching upon fences or other objects, flicking their long tails and frequently darting after flying insects. The flycatchers, of course, are classed as songless, and harsh call notes are one of its characteristics. The note of Say's Phoebe has been written "phee-eur."

Mrs. Bailey writes in her Handbook of Birds of the Western United States, "The Say flycatcher of the brown belly and black tail is the

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commonest of our western flycatchers, nesting not only about every cattle ranch, stage station, and mining camp, but at the Arctic Circle and on the desert of the Southwestern United States, where it builds in caves with wood rats and on cliffs with the prairie falcon." Convenient corners in barns or sheds are common nesting places. The nests are composed of weed or grass stems, wool, feathers, or other materials, often mixed with mud. The eggs are four or five in number, white, about three-fourths of an inch in length. The birds migrate quite early in the spring, appearing in our region about the middle of April.

The food of these birds consists almost entirely of insects such as grasshoppers, flies,

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NORTH DAKOTA STATE HORTICULTURAL SOCIETY NEWS LETTER



A. F. Yeager,
Secretary,
Fargo, N. D.

Rehder's **Manual of Cultivated Trees and Shrubs**, which is perhaps the best publication of its kind, may now be had from the MacMillan Book Company for \$5.00. The original publication price was \$10.50.

A friend from Maddock asks about the possibility of raising Burbank's spineless cactus for stock feed. Since this cactus is adapted to Southern California it could not be expected to thrive in North Dakota, and, for that matter, if it did it would probably not be worth raising. At least, it is not raised to any extent in the region adapted to it.

Our life members are reminded that they are entitled to premiums each year. If you are a life member, look over the premium list and make your choice. Also, do not forget that premium requests are not accepted if mailed after May first.

An inquirer from Oklahoma asks for more information about tomato Number 216-2. This is a tomato with quite good sized fruit which is smooth and does not have the green stem spot that ordinary tomatoes have. The tomato vine is of the Bison type. It is not the same as the variety Farthest North offered by Will's Seed Company this year. Farthest North is a very small fruited variety. Its principal recommendation, if it has any, is extreme earliness.

A correspondent complains about plants in the middle of a hot bed not making as good growth as those around the edges. I wonder if others have found the same thing true. Personally, I see no reason why they should unless they might require more water because of more rapid drying out.

There are two methods by which a garden society may affiliate with the State Horticultural Society. They may take out one membership in the name of the club, in which case the magazine, handbooks as issued, and a premium will be sent to the club as a whole. A second plan is for the club to take out one membership for the club as a whole, receiving material as previously mentioned, and then send 25 cents additional for each member of the club. This will give each member our magazine for a year.

One of the seedsmen recently sent in some tomato seed asking whether it was Red Bison or Golden Bison seed. He thought perhaps it was Golden Bison because of the yellow particles of peeling found among the seeds. This

indicates nothing, because Golden Bison and Red Bison both have the same colored peeling, namely orange. The flesh of one is red and of the other yellow. Incidentally, the difference between a pink tomato and a red tomato is not in flesh, but in skin color which in pink tomato is clear and colorless.

Girasol is merely another name for Jerusalem artichoke. It grows here, but has not proven valuable enough to win a permanent place in our plantings, though it might be worth growing for any one with a tendency toward diabetes as it is especially useful as a food for such people.

The plant pathologist at the North Dakota Agricultural College, Prof. W. E. Brentzel, says that dry rots in potatoes cannot be controlled by seed treatment. That so far as he is able to tell at present, it can be controlled and reduced only by special care when storing and harvesting the crop. Avoid cuts and bruises and then hold the potatoes at 60° F. for some weeks in a moist bin to heal any wounds which may be present before lowering to 38° F.

Mr. Arvid Berggren of Hampden is doing some very interesting work in clipping Chinese elms to various forms of hedges and into ornamental shapes. He says that it works quite well for this purpose.

The scions offered as premiums on our Premium List are only one year old branches cut from our trees which must be used for grafting onto other trees or roots. If you have asked for scions and expected to get small trees or to be able to propagate trees in any other way, please drop us a note so that we can send you some other plant premium.

It is possible to raise good late cabbage by sowing the seed directly in the field about the middle of May and then thinning out the plants so there is one every 18 inches. Certainly, there is no reason why one should buy late cabbage plants because field seeded ones will make a better crop.

The Banana squash is a variety ripening about the same season as Hubbard. When well matured it is of very good quality. One objection to it is its rather large size. I do not believe anyone would find it superior to Buttercup. I hesitate to mention Buttercup because everyone should be acquainted with it. Nevertheless, I find rather frequently some person who has not heard of it, or someone who has just discovered it. There is not nearly enough seed available anywhere to supply the demand. Hence, if you find it listed in your seed catalog I suggest that you order early so as to avoid disappointment.



Mr. Leonard of Sioux Falls, S. Dak., says that he saved a crop of sweet corn and tomatoes by using a sprinkler system of irrigation when the temperature was 100 degrees or more. He also says that last year he sprinkled the garden several days during the hottest part of the day and everything did fine.

Bulletin No. 308 of the Iowa Agricultural Experiment Station, Ames, Iowa, entitled **IRRIGATION FOR VEGETABLE CROPS IN IOWA**. If you want a copy write the Iowa Station and inclose ten cents for cost of publication.

The University of Illinois has been able to see molecules under a microscope. A molecule is the smallest subdivision of a chemical compound and this is the first time one has actually been seen although scientists have been able in other ways to tell exactly how they were made and constructed.

The Massachusetts Experiment Station finds that the root systems of plants in non porous containers penetrate the entire soil mass, whereas with a porous pot the roots are largely located between the soil and the pot. This is the reason why porous pots are not as good as the non porous kind for plants grown in the home where they are likely to dry out, because if neglected most of the root system may be killed.

The 1934 vote of the Wisconsin Gladiolus Society shows the following as the best varieties of gladiolus according to the opinion of its members: Picardy, Minuet, Commander Koehl, Marmora, Betty Nuthall, Pfitzer's Triumph, Dr. F. E. Bennett, Mother Machree, Maid of Orleans and Albatross.

In Pennsylvania growers who made an average of 600 bushels of potatoes per acre or above sprayed an average of over 13 times during the season. The Ohio Experiment Station reports that the small potatoes from certified fields are as good or better seed than the large potatoes from the same fields. Bushnell says that whole seed insures good stems and saves the labor of cutting. In the future this may raise the price for small potatoes above that of Number 1 grade.

CLIPPED HEDGES AND THEIR USES is the title of Bulletin 311 of Cornell University, Ithaca, N. Y.

Tukey and Brase, New York Experiment Station, report success with propagating black raspberries and purple raspberries by leaf bud cuttings.

Since the Plant Patent Act was passed by Congress patents have been granted to the following plants: 48 roses, 1 apricot, 2 junipers, 1 grapefruit, 7 carnations, 1 blackberry, 1 dewberry, 2 pecans, 7 peaches, 1 water lily, 5 plums, 4 apples, 5 freezias, 2 dahlias, 5 strawberries, 1 mushroom, 1 snapdragon, 4 cherries, 1 bram-

bleberry, 2 barberries, 2 grapes, 4 chrysanthemums, 1 gladiolus, 1 violet, 1 nectarine, 1 gardenia, and 1 avocado. Only plants which are propagated asexually may be patented. Those raised from seeds cannot be.

Plant breeders are making some progress in the development of gladiolus varieties which are sweet scented. One such variety offered this season is Sweet and Lovely.

A friend from Livingston, Montana, reports Golden Gem sweet corn being grown near there at an elevation of 6,000 feet and ripening seed where with older sweet corn varieties they had never raised roasting ears in the preceding 20 years.

Members who may be interested in the work of the Biological Survey in connection with water fowl restoration, etc., might like to get Circular 339 of the U.S.D.A., **A PROGRAM OF WATER-FOWL RESTORATION**.

Belgian investigators are now attempting to control red spiders by introducing an insect which eats them. Here's hoping the red spider eater proves to be hardy in North Dakota, for this pest is one of our worst difficulties with red raspberries and sometimes with evergreens.

We often fail to appreciate the volume of seeds that is required to supply all our seed companies with their stocks. There is one seed company in California which has a 600 acre farm devoted to flower seed growing on which huge caterpillar tractors do the heavy work.

According to the **FARMERS GUIDE**, published by the Royal Agricultural Society of England, there are three types of sugar beet varieties: High yielders with low sugar percentage, medium yielders with medium sugar percentage, and low yielders with high sugar percentage. The first of the three is the one used under dry land conditions and the last variety used under wet weather conditions.

The Minnesota Horticultural Society recommends for their most difficult sections of the state the following apple varieties: Anoka, Transparent, Charlamoff, Erickson, Hibernial, Red Duchess, Patten, Anisim, and Haralson. It is interesting to note that Red Duchess is the only variety recommended as a commercial possibility in that section. Among the plums: Radisson, LaCrescent, Underwood, Hennepin, Wameta, Kaga, and Elliott. For the cherry-plums: Oka, Opata, and Compass.

Copper sulfate is now being used as a fertilizer for onions to give them a better skin quality and appearance.

I do not believe it ever pays to move an old apple tree. It may live, but is never likely to be much good. It is much more satisfactory to plant a new tree and leave the old one stand.

(Continued on page 44)



THE LAWN AND THE DROUTH

C. B. Waldron

Professor of Landscape Gardening and Forestry
North Dakota Agricultural College

The question of lawns is the one which is uppermost in the minds of a great many people at this time, partly because it is the time of the year when lawns must be started and also because many lawns are in bad condition on account of recent dry years. The questions most commonly asked are how to prepare the land for the lawn, when to seed it, and what kinds of grass are likely to give the best results in various situations.

The lawn of the large campus at the North Dakota Agricultural College had been deteriorating for a number of years because of hard usage, lack of water, and encroachment of weeds. This deterioration had gone so far that it was deemed wise to plow up four acres of the worst part of the lawn and keep it summerfallowed until the perennial weeds were destroyed. It was cultivated at frequent intervals and levelled off with the idea of seeding it early in September. The season remained so dry, however, that this seemed to be out of the question and the lawn will be seeded as early this spring as the ground can be prepared. We will use a mixture of red top and blue grass, about half of each, seeding 100 pounds to the acre. This is considered rather heavy seeding, but it is difficult to get a good ground cover with much less. There are several reasons why fall seeding gives better results than spring seeding, but when the lawn cannot be generously watered in the fall it may be necessary to wait until spring when there is almost sure to be more soil moisture. It is imperative to seed very early so that the grass will get a good start before the hot dry weather of midseason.

If it is impossible to get the ground in perfect shape so early in the spring it is better to keep the ground black all summer by constant cultivation, seeding in the fall or following spring as the conditions would indicate. It is an excellent plan to add about an inch of very finely rotted stable manure to the surface of the soil at the time of seeding. This makes a condition favoring germination as it prevents the extreme drying of soil surface.

The seed is ordinarily sown broadcast, going two or three times over so as to insure even distribution. On small lawns it is usually raked in and on larger lawns the ground is harrowed and then levelled with a plank leveller. Under certain conditions it has been found that a nurse crop of oats or barley helps in getting the lawn started. This is particularly true where there is danger of the soil drifting as it is likely to do in very dry times.

Where it is impossible to keep the lawn watered, a different mixture than the red top and blue grass might be necessary. This applies particularly to school grounds and to farmsteads. In such situations the brome grass, while not strictly a lawn grass, is about the only one that can be depended upon. The crested wheat grass is not a lawn grass since it does not make a turf, but it is possible that mixed with brome grass it would give a better ground cover than would either one alone. There are lawns of brome grass in North Dakota that were seeded 25 years ago that are still in good condition in spite of the drouth of the last few years. By keeping them fertilized with a top dressing of well rotted stable manure each year and cutting them three or four times during the season the results are more satisfactory than could possibly be obtained with blue grass and red top which can hardly be depended upon to keep green throughout the season unless the soil is good clay loam and the soil receives frequent watering.

The one grass that has held its own against drouth, weeds and all other hardships to which lawns are heir to is the quack grass. This has the habit of encroaching upon flower beds and it is not wise to attempt to grow it except in confined areas where it cannot make its escape and where it will be mowed often enough to keep it from going to seed. In spite of the bad name that it has acquired during the years, it is possible that we may conclude that its useful qualities more than offset its disadvantages, always keeping in mind, of course, the fact that it must be grown in places where it cannot escape.

The best commercial fertilizer for lawns seems to be ammonium sulfate which may be applied at this time of the year at the rate of about one pound to each square rod, or a little more on poor soil, with a later application of something less than that. This can be applied each season and besides insuring a vigorous growth of the grass it tends to discourage the dandelion. It should not be used unless the soil can be kept moderately moist.

SAY'S PHOEBE

(Continued from page 38)

moths, and beetles. Living around farm buildings as they do, and in localities where birds are not abundant, they are very useful to man. Major Bendire says that the young are fed mostly on small butterflies. He mentions one nest in Idaho which was built on an old robin's nest in a bush. His opinion was that Say's Phoebe is more jerky in its actions (if possible) than the eastern phoebe.



CONTROL METHODS FOR FRUIT PESTS

John Robertson

This is the time of year to consider the spraying of fruit trees, and this article is being written with intentions of giving some helpful suggestions.

There will be insects troubling this coming season, same as in past years, with maybe some new ones added by way of variety and to make things more interesting; so the thing is to get ready, by way of having a sprayer of right capacity, also the spray materials most likely to be needed, on hand ahead of time. When insects appear, they do not wait for a person to get ready, but promptly begin work of destruction, according to the various species.

There are mainly two divisions of insects—one that chew their food by eating the leaves or fruit, and the one that suck their food from the juices of leaves or fruit. Various poisons, including arsenate of lead and Paris green will get any of the chewing insects, while nicotine sulphate, commonly known as Black leaf 40, is the thing to use for the sucking kind. Aphis, or plant lice, are one of the most common pests that get on the under side of leaves and suck juices therefrom. Some of the most common and worst pests that trouble the apple and plum, are codling moth, curculio, and gouger. These are best controlled by the use of arsenate of lead.

In our own practice spraying an orchard of some 20 acres of mixed fruits, mainly apple, with some pear plum and cherry, we use a mixture of arsenate of lead, lime-sulphur, and casein. The casein is used as a spreader and to help make the spray stick better through subsequent rains. This is not particularly needed when there is only a few trees to spray; but I advise that it is very much worthwhile to use lime-sulphur in connection with most any spraying of arsenate of lead. The lime-sulphur is mainly used as a fungicide, helping control scab in apples, brown rot in plums, etc. Where growing apple varieties that are much subject to scab, such as the McIntosh, and especially in wet seasons, it will pay to give a first spray with lime-sulphur about the time that cluster buds are separating but before any blossoms have opened. Plum trees may also be sprayed before blossoms open, with a mixture of lime-sulphur and arsenate of lead. One principal thing to keep in mind, is never to spray a fruit tree when it is in blossom. There are many who have not learned that this is the wrong time, so usually do more harm than good with their spraying.

The most important time for spraying both apple and plum trees is directly after nearly the last blossom has fallen. Apples may wait three

or four days, but plums should be attended to right away. The little plum comes out behind the blossom, and is enclosed by a husk for a day or two after bloom has dropped. This is the time to spray; because, if left till the plums break through the husk it is soon stung by the curculio and gouger. It is the same way with cherries. The curculio stings results in worms in plums and cherries, while the gouger stings result in an egg being deposited in the center of plums, the grown bug afterwards eating its way outside along in the fall.

In ordinary years we usually get very good results with both apple and plum by simply giving the one thorough spraying directly after the blossoms drop. However, this depends much as to the kind of year we have, whether it is hot and dry, or wet and cold. Most any year there is a second brood of codling moth that get into the later varieties of apples. A second spraying early in August helps some. In the extremely hot and dry years, such as the past two have been, the second brood of codling moths come on early enough to get into some of the earlier apples, such as Wealthy. They seldom get into anything earlier, such as Duchess and Yellow Transparent. This does not mean that the earlier varieties of apples are not on the trees and open for attack of the second brood every year; but it does seem that the codling moth knows something about varieties and when they ripen, so chooses its kinds for the second brood according to stage of maturity for that particular year.

I might say too, that there are some insects that are handled cheaper by ordinary hand work than by spraying. Some of such are the tent caterpillar, fall webworm, and web-spinning saw fly. The tent caterpillar is one that starts very early in spring, on such as currant, gooseberry, and chokecherry. Take an oil can with a mixture of half lard and half kerosene, and give each nest a few drops on first appearance, and the job is done. The fall webworm and web-spinning saw fly may be handled by cutting the affected parts out soon after first start, and burning these parts of tree. Unless these are very numerous, this way is cheaper and fully as effective as going to the trouble of assembling the sprayer and materials. I might say here too, that spraying a tree with poisons does not help it to do better; so do not spray unless there is good reason.

The work of spraying, with its connections in the way of materials, sprayers, insects, diseases, etc., is one that much may be said about. We have only tried to express a few ideas in this that may be helpful. Many different forms of poisons and insecticides are advertised as being

(Continued on page 47)

was produced that possessed the fine outstanding qualities from both parent groups.

Thousands of seedlings have been developed and the few best have been chosen. These are separated roughly into two groups. The first, aptly named Eskimo Beauties, carries a higher percentage of Rugosa blood. Their foliage is heavy and shines with a deep green luster. The flowers are either double or semi-double and all are exceedingly fragrant. The roses of the second group display more the appearance of the old garden favorites. They are a trifle more refined and not quite so hardy. They are indeed wonderful doorway roses with choice double blooms, striking foliage and many supply the quality that we desire in a rose.

In the first Eskimo Beauty class are such roses as Hansa, Belle Poitevine, Blanc de Coubert, Grootendorst and the new Agnes. In the second group appear such favorites as Amelie Graveureaux, Sir Thomas Lipton and Sarah Van Fleet.

Hansa is a dark red rose with a suggestion of violet. The bush is strong and vigorous, with shiny, leathery foliage. If kept well trimmed it will cover itself with large double blooms from June until freezing time. Hansa serves equally well in border, hedge, or specimen.

Belle Poitevine (Pwat-veen) pleases me the best in the extra-hardy pink class. It starts the spring gayly with an abundance of full, double, rose-pink blossoms. If given some trimming it will pour out a mass of these roses throughout the summer months. Conrad F. Meyer also has pink blooms of a little better quality, but it is shy blooming.

Blanc Double de Coubert (Blahn-doo-b-la day koo-behr) is an excellent white in this iron-clad group. Perhaps no rose hybrid carries such attractive foliage. Its leaves are almost as shining as holly. It grows compactly and even liberally throughout the growing year. I know of no member of the rose family so well suited to satisfy the desire for a rose hedge.

F. J. Grootendorst has sprung into great popularity. It is the result of a Rugosa crossed with a Baby Rambler parent. No garden is complete without it.

Agnes has recently joined the group of hardy rose hybrids. It comes to us from the plant laboratories of the Dominion Government at Ottawa, Canada. Its parentage differs from most of the popular Rugosas. Instead of a tender Tea Rose, its maternal parent is the well-known Persian Yellow, which was crossed with the Rugosa. The result is a bush which yields masses of very double, large, orange-

is largely confined to the flower vase. Again I can say fortunately the doorway rose has charm and beauty all its own. It is substantial, both in flower and foliage, while at the same time possessing a quality and fragrance all its own. The greatest satisfaction, after all, comes from substantial hardy doorway roses. The plant scientists have accomplished a great deal in recent years and choice dependable roses are now ready for the doorways of the most northern homes.

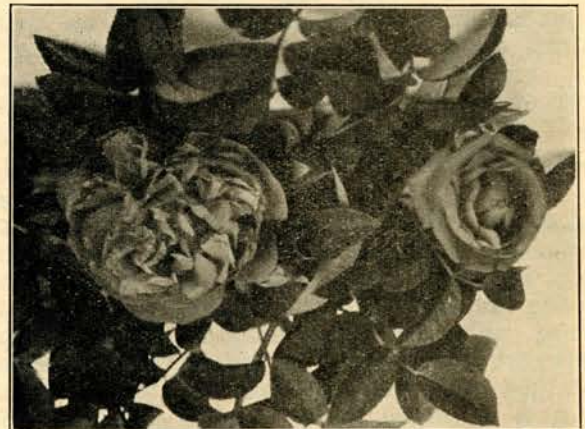
No other plant takes the place of the rose. One's love for it must have been inherited through long generations. The very word rose suggests something of quality, beauty and fragrance, possessed by no other flower. Its habit is world wide and fortunately nearly every part of the earth's surface claims dependable roses peculiar to the climate.

The new hardy Hybrid Rugosa roses mark one of the triumphs of plant scientists. Crowding the snow line high up on the mountainsides of Japan grow the Rugosa roses. These have a rugged constitution. They possess deep green, glossy foliage. They are covered from June to September with large single flowers of pink, white or red. The high quality of these roses caught the attention of rose breeders. These were crossed with the more tender roses of southern gardens and a new generation of roses

HARDY ROSES FOR THE NORTH

By Ernest C. Hilborn

AMELIE GRAVEUREAUX, A REAL ARISTOCRAT



April 1935

PESTS IN THE GARDEN

F. X. Wallner

During the last week in February, while repairing my plant house, I discovered the first insect of the new year, warming up under the glass. It was a big black squash bug, (stink bug) better known as Harmalin bug. There are few sprays that will kill the full grown bugs, but a strong spray of nicotine will kill the younger generation.

The time to kill them in large numbers is in the late fall, when they are found on or under the late green squashes. This bug is more destructive to the squash vines, even when beginning to cover the ground, than all other pests. A small black beetle has been very destructive to early radishes and spinach the past few years; spraying or dusting seems impracticable, but it can be done in a small garden. Cut worms, like the poor, I suppose we will always have with us, to the end of the trail, although we did fool them last spring by putting the wood-veneer bands the plants were in, around the plant after it was set in the field. But we can control them with brans and Paris green, scattered broadcast as for grasshoppers. The white butterfly and green cabbage worm has not been so destructive the past few hot, dry seasons, but the worms can be controlled with a small dusting in the heart of the plant, using either arsenate of lead or Paris green, with lime or flour. The most effective way I have seen to protect a few hills of cucumbers from the yellow striped bug is to put cheese cloth over the hill, then they cannot get to them at all, but dusting an acre or more, two or three times a week is quite a chore. The Ahpis on cucumbers and muskmelons must be watched every day, one should stake the spots where the first sign of them appears, then fight them every day. Black Leaf 40, a teaspoonful to a gallon of water, is better than trying to make a dust spray. I hope the millions of lady bugs that were on the late turnips and Chinese cabbage, wintered over as well as some of the destructive bugs, so they will have a good start on the potato beetle's eggs, as they are supposed to feed on these and on Ahpis. The fight on these and other garden pests, certainly keeps one busy.

NORTH DAKOTA NEWS LETTER

(Continued from page 40)

The same is true of buying bearing-age trees. It does not pay. Bearing-age trees are likely to be overgrown trees that the nurseryman could not sell when they were the proper size for transplanting.

Do not be in too big a hurry about expecting

an apple tree to produce. One should not expect any variety to produce much before it is four years old and the average apple tree will not produce enough crop to amount to anything before it is six or even eight years old. Some varieties may not even bear until they are ten or twelve years old. More than this, the tree which bears very young is not likely to reach any very large size or produce any very great quantity of fruit.

The Delicata squash, a small individual variety, is gaining popularity in many sections. In our trials last year with several strains of this variety we did not find it early enough. It is of about the same season as Table Queen which we find usually produces a considerable number of squashes, but these are of poor quality because they are not well ripened. Both of these varieties are, by the way, botanically pumpkins and not squashes and will mix readily with the pumpkins, but may be grown alongside the real squashes without danger of crossing. In this respect they are the same as all our summer squashes; they are really pumpkins.

According to J. R. Magness with apples where 10 well developed leaves are present for each fruit, the fruit is smaller than the best commercial size. They are generally poorly colored, and are likely to be poor in flavor. With 20 large leaves per fruit, a fair product will be forthcoming. With 30 to 40 leaves per fruit, better size and better quality is obtained. Moreover, such trees will be in better condition the following year. He states that factors affecting leaf area are: Rate of growth, insects and diseases, damage of foliage or defoliation due to hail. Factors which effect the functions of the leaf are: The amount of light, drought, the fertility of the soil, particularly nitrogen which results in green color.

It is now possible to manufacture starch from sweet potatoes. This starch has smaller granules than potato starch which makes this produce particularly valuable in the sizing of cotton goods.

Experiments show that different strains of wheat stem rust growing on leaves of barberries may cross and produce new strains of the disease capable of infecting grain, bred for resistance to the parent rust forms.

It is said that more than a thousand new varieties of iris have been introduced during the past five years. Obviously, one would have to be a real fan to keep up with the testing of so many. It is because of the impossibility of testing by everyone that we print at intervals lists of a few of the varieties which authorities on the

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R. W. Vance

SOUTH DAKOTA NOTES

The Ford Motor Company announce that 93,000,000 bees would be required to make the amount of beeswax they will use in their manufacture of one of their products.

Many tree wound disinfectants and dressings have been used. Commercial creosote or creosote oil is one of the best sterilizing products for destroying wood fungi. Copper sulphate solution is often used, one pound of copper sulphate in three or four gallons of water. A 1 to 1000 mercuric chloride solution is also effective. This solution is very poisonous when taken internally and must not be placed in a metal container. It will keep for several months in dark bottles. Dressings of coal tar, asphalt, white lead paint, shellac, spar varnish; liquid grafting wax. Mixtures of one-fourth to one-third creosote in a coal tar creosote mixture; equal parts of asphalt and creosote, mix hot. Creosote is inflammable so do not let it come in contact with a flame. Heat the asphalt, remove it and then stir in the creosote. This mixture must be heated when applied. This mixture may cause burning on some trees especially cherries and plums. Usually no injury occurs when used on common shade trees. We have asphalt emulsions offered on the market that seem to be giving good results. Some of the brands are Tree Seal, Tree Heal, Braco Tree Emulsion and Colas. Graftwax is another preparation for grafting. The brush used in applying this becomes stiff, and keeping it under water when not in use will prevent this to some extent. Hot water can be used to clean the brush. Gasoline will do the cleaning job.

A short item appeared in Wisconsin Horticulture. It was headed "poorest apple", and read as follows: About the poorest apple I have observed this year, both in quality and size, is the Anoka. I would suggest that nurserymen take it from their list and do not try to sell it in Wisconsin." An apple that will grow well in one state may practically be a failure in another state.

Mr. Claude a Barr of Smithwick, S. D., has sent out a pamphlet listing native flowers of western S. D., which he has collected. This is a very commendable piece of work and some one should have made these fine plants available long ago.

The hardness of a variety of grafted or budded fruit is not affected by growing the small tree, north, south, east or west. The root must be hardy as well as the scion and they must be congenial. The hardness is inherited. The following is part of a talk given by Dr. Henry Schmitz, Chief of the Division of Forestry in another state.

estry of Minnesota, before the Nurserymen's meeting, held December 17th and 18th, at St. Paul, and printed in The Minnesota Horticulturist: "Dr. Schmitz graphically reported on the recent survey made by his department of the windbreaks planted in western Minnesota during the past thirty years. Many hundreds of farm windbreaks were covered by the survey, which was conducted chiefly to determine what varieties of trees have best survived the recent years of drought. The subject is of especial interest now in view of the aroused determination of both state and federal government to get trees growing in the prairie regions. Dr. Schmitz's survey demonstrated in a spectacular manner the high value of American Green Ash (Fraxinus lanceolata) as a long-lived drought resistant tree for prairie planting. Common Cottonwood also proved its worth. These two varieties stood head and shoulders above all others in his chart. Next to them stood American Elm and Chinese Elm; although, of course, the latter is comparatively new. The two conifers which appeared best in every way are Black Hills Spruce and Ponderosa Pine."

We will soon be replacing bees in the hives that died the past season with package bees from the south. Mr. A. G. Pastian, Wauabay, S. D., wrote the following suggestions for hiving package bees: "I have been receiving a few shipments of package bees for eight or ten years. Some came through in first class condition and others not so good. Eight or ten years ago, shippers usually put much emphasis on feeding. I am convinced that more bees suffered for want of water than from starvation. Several years ago, I called on a beekeeper in the city and during our visit, the express agent called to tell us he had a shipment of package bees but could not locate the beekeeper to whom they were consigned. We called at the office to see if we could help. We arrived about three in the afternoon and found the bees just inside the door of the express warehouse where they could enjoy the sun! We moved them out of the sun and sprinkled them with water. The bees all quieted down in a few moments.

Could an express man tell the difference between a cluster starving, and a cluster in distress from lack of water? If I receive bees on the side and sprinkle the bees with water, or duck them into a boiler of luke-warm water. Then they are allowed to cluster before releasing. This avoids some of the drifting. The bees are more contented and do not rush out of the hive.

"Here is my usual way of releasing package bees: (1) Remove the retaining strips. (2) (Continued on page 48)





SECRETARY'S CORNER

W. A. Simmons

The American Fruit Grower, an old and always reliable and interesting monthly magazine, is appearing now in new and enlarged form and we take pleasure in recommending it to all those interested in fruit growing. The subscription price is 50 cents per year or 3 years for one dollar. The secretary will be pleased to receive and forward all subscriptions—reason, the publisher gives a substantial portion of it to the society.

Mr. David Tait, of Carterton, St. Joseph Island, Ontario, where winters are winters, writes very interesting and candid letters to Mr. Robertson about the degree of hardiness and general behavior of fruit trees in his orchard.

Without thought of publicity, he merely gives his experience to a friend for his guidance, and this makes his opinions doubly valuable. Excerpts from his last letter follow. Feb. 20th, 1935, "Last winter was a fierce winter of deep snow and very cold weather. On the highlands here it went down to 35 below zero, on the lowlands, to 50 below, and there the apple trees were killed or badly damaged. There was scarcely an apple there, while up here there was a great apple crop. But pears, plums and cherries were no good, the blossom buds were killed, however the trees look pretty good. Beierschmitt, root and top-grafted, stood it very well, Cayuga and Conference are frozen, useless. Zackman stood very well, also Wal-entus Bohemian pears, Bartlett is living, and Louise and Crassane Bergamott, came through well. Patten scarcely bore any, Minnesota looks pretty good but lost all its blossom buds. My No. 2 stood well and bore more than usual. It runs very free from blight. The Clairgeau pear, top grafted on a Russian is almost dead, but the fruit as grown here was of very little value. My No-Blite pear is on the north shore where it went down to 40 below zero, but it bore some fruit. It stood in a terrible den of blight, but not one leaf was hurt; the fruit keeps for some time. The Orleans apple is not hardy here, but the Sharon, is hardy. Melba is very hardy here and very free from blight and Anoka also stands well. Sugar Crab has done exceedingly well here, also Olga. The Early McIntosh apple has done well here but Melba is better, I think. Mount Royal seems to be the most hardy of all European plums; it bore some after standing 35 below zero. The fruit is real good, either raw or cooked is a pure blue. Ste. Anne is also a nice plum from Quebec, a very rapid grower and a great bearer of nice blue plums. Montmorency bears a nice medium sized

yellow plum. The Pond plum from England is very large and a delicious reddish-blue plum, very productive and fine, raw or cooked. My trees look good after 35 below zero and they bore great during the summer of 1903. The Swiss prunes got damaged during last winter but are still alive. The Bradshaw plum stood the winter very well. The Mount Royal and Ste. Anne plums are both hardier than Russian Green Gage although the Russian Green Gage is very hardy. Last winter a number of the McIntosh apples in the nursery froze down to the snow line, Lobo is hardier and Melba, still more so. The new Minnesota apples mostly appear to be very hardy but the fruit, as grown here is not so very good. Of what I have seen, not one compares with Sharon. I am experimenting with a number of Patten pear seedlings, some of them are nice looking trees and are growing fast. Do you know if any of the pear trees which Dr. Hansen sent out last spring are of much value? Can you tell me anything about his apricots from northern Manchuria? He claims that some of them really are delicious. None of his pears which have borne fruit here yet, seem to be of any value.

We hope that all annual members, that have not already done so, will renew their membership at once, thus securing a valuable plant premium. We are badly in need of an increase in membership. If each member would make it a point to secure us at least one new member, the problem would be at once solved.

NORTH DAKOTA NEWSLETTER

(Continued from page 44)

subject seem to think most worthwhile and likely to be of permanent value.

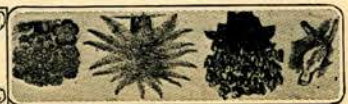
The new Tendergreen variety of string beans introduced only a few years ago seems to be making a very favorable impression upon growers and users. We like it too.

According to "Wisconsin Horticulture" a bitersweet vine which fails to produce berries is quite likely a male plant. Plants with pistillate or female blossoms usually carry pollen also. Hence, the male plants are useless.

California irrigation farmers are said to be fertilizing their crops with nitrogen by mixing the fertilizer with irrigation water.

"Commercial Fertilizer" is the name of a new book published by P. Blakiston's Sons and Company, Inc., Philadelphia, Pa.

To get the best bloom from delphiniums, do not allow them to produce too many spikes. Three or four are sufficient. In our climate, these should be tied to sticks to prevent the wind breaking them down.



Mrs. L. H. Robinson

GARDENING ON A HILLSIDE

A blossom in Lead is a precious thing, though the adjoining hillside is abundant with native flowers.

I wonder if Mother Nature experimented many years to find what would grow on this almost soilless spot, a mile above the sea.

Since starting the Flower Show four years ago, we have done lots of experimenting. Little plots of ground, unheeded before, have been freed from stone, black dirt added.

Our State Poet Gillilan, in describing Lead, says: "The houses climb hillside that not even a goat could negotiate."

That's true. But the flowers can climb. High or low, in sunshine or shade, we have found some flowers will blossom. Do you know our flowers have an unusually deep rich coloring, due to the coolness and not too intense sunshine.

Come see our Dahlias, Asters and Snapdragons! The Flower Show has made us flower conscious. The aim so far has been to encourage the planting of shrubs and hardy perennials, adapted to a short growing season.

Last summer prizes were given for Rock Gardens, Porches and Cut Flowers. What a marvelous setting we have for Rock Gardens! The Rock Garden prize went to the lady who wanted a garden at her back door but was confronted by an abrupt hillside. Most cleverly she terraced it, leaving a rock here and a rock there, and adding black dirt. The sun comes to this garden early in the morning, then disappears around the hilltop to return for an afternoon call. During the first year the perennials did not weather the winter, so hardy annuals—Larkspur, Snapdragons, Nasturtiums and Native Ferns were planted. At the foot was a bird bath, with stone steps leading to the Rock Garden.

A woman who had lived from California to Alaska took the porch prize. California's wealth of color was tempered to our climate by Alaska's experience. House plants were in a corner of this north side porch, protected from the wind by woodvines. Deep purple Petunias filled the porch box, while underneath was a trellis of Scarlet Runner. A border of big, nodding Petunias greeted you across the perfectly kept six feet of lawn.

The Cut Flower prize was awarded to the lady who gardens on the hill top. Sunshine visits her garden all day, but she, too, had to fill in with quantities of good, rich soil. Here is a real yard with a lawn, bordered by stunning Phlox, Roses and all that can grow with us. Of course, there is the bird bath and a pool, bordered by Forget-Me-Nots. And in the

back yard what greets you—row upon row of

Gladoli.

Again, what does our Poet Gillilan say? "Lead is situated on the top of a hill, just this side of the stratosphere. Inhabitants of Lead declare that on still summer evenings they can hear a distant singing, accompanied by a twanging of harps."

That does not seem impossible in a beautiful hill-top garden, so close to the blue sky.

Our Flower Show represents the generous hearted. Spearfish, Rapid City and Sturgis, not being so close to the stratosphere, lend from their abundant gardens, while we fill in with what we have.

Some people refuse us, saying the blooming season is too short to spare us blossoms. Each year greater interest is being shown and more are entering for prizes. The Flower Show brings to the northern hills the beauty and loveliness of flowers that many see only at this time.

To see this genuine appreciation makes all the effort of gardening on the hill side worth while.

CONTROL METHODS FOR FRUIT PESTS

(Continued from page 42)

equal to or better than those I've mentioned. While we do occasionally try new things, I am not much inclined that way when having already found certain proven materials that do the work satisfactorily. Directions for using can be found on all original packages of spray materials. The main thing is to do a careful, thorough job when you spray; observing from year to year where improvement can be made.

ELECTRICITY SPURS VEGETABLE GROWTH

Electricity has been called into play to produce bigger and better vegetable growth, also flowers, and with much greater speed.

Westinghouse electric and manufacturing company engineers have developed an electric heater which "pushes" plant life.

Experiments have shown that lettuce breaks ground in three days; tomatoes over the heater are bigger and more uniform than those in adjacent beds unheated; geraniums take root in 18 days instead of 30 days.

From 95 to 96 out a hundred double petunia cuttings take root where five out of a hundred formerly did.

Perhaps after we get our wild Missouri river tamed and harnessed we may all be able to afford to have electric hot beds and also use the "juice" liberally in indoor conservatories.

That river can be made to work for, instead of against us.



SOUTH DAKOTA NOTES

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Lay cage on side. (3) Sprinkle with luke-warm water, outside if weather permits, otherwise in a building. (4) Remove feeder can holder. (5) Allow time for bees to cluster. (6) Remove feeder can and queen cage. (7) Cover the opening and look at the queen to make sure she is O. K. and remove the cover from the candy. (8) Place the queen on top of frames in hive in which package is to be installed with combs at one side and space at the other. (9) Dump wet bees into the hive with the entrance of the hive screened and some feed if the weather is cool and no nectar is coming in."

Our little girl, three years old, when eating breakfast said, "Daddy put some honey on my cereal so it won't taste so helpless."

In the Wisconsin Horticulture a report of tests made at Wooster, Ohio Experiment Station in February, 1934, to determine the depth of frost penetration under different types of orchard soil treatment, February 1934, was one of the coldest on record. "Under decayed mulch the frost penetrated only two inches; under new mulch, three inches; under clean cultivation twelve inches, and in sod not mulched, eight inches."

The mulch also prevents the soil from thawing rapidly in the spring. There is danger from applying a heavy mulch during mid-winter or late winter after the frost has penetrated deeply into the ground. The mulch may hold this frost in the ground with the result that the top of the tree may start growth early and starve before the ground has thawed sufficiently to allow the roots to carry food and moisture to the part of the tree above ground.

SOIL COLOR AND FERTILITY

"A black soil is usually a rich soil and the darker—the more productive" says W. O. Robinson of the U. S. Department of Agriculture. This is because organic matter in combination with lime in the soil gives it the black appearance.

Brown color usually indicates an acid condition because there is not much lime to saturate the organic matter.

Reddish brown soil ordinarily indicates the presence of organic matter and iron oxide.

Red and Yellow soils are due to iron oxide in a free state.

It is the clay or finest particled matter in soil that contains the coloring matter.

HARDY ROSES FOR THE NORTH

(Continued from page 43)

yellow blossoms of very sweet fragrance. Agnes deserves to become popular.

In the second group *Amelie Gravereaux* is, to my mind, the finest of all the *Rugosa* Hybrids. Its full, double blooms are a rich carmine closely resembling *Ulrich Brunner*. This rose can be depended upon to embark upon a liberal blooming career a few weeks after planting. If its strong-growing branches are occasionally trimmed it will enter a heavy blooming period in October. It is a beautiful shrub in any garden, a real aristocrat—refined, graceful, and of real rose quality. It may be trimmed into a tree-rose, quite suggestive of the *Camellias* of the South. A group of seven of this variety has held a place of prominence in my North Dakota garden for eight years and is still bearing roses in spite of cold and drouth.

Sarah Van Fleet, a rich rose pink, is a good companion of *Amelie Gravereaux*. The flowers are only semi-double but of exceptional quality and as a rose shrub it is delightful.

Sir Thomas Lipton, white, is a good shrub rose and blooms through the summer but its flowers are a little disappointing.

Dr. E. M. Mills is one of our most valuable rose shrubs. If people could think of it as a choice shrub rather than a rose its popularity would go beyond such beautiful shrubs as the new *Mock Orange* or even *Flowering Almond*. It is one of the *Dr. Van Fleet Hybrids* and was introduced by the American Rose Society as the outstanding rose of 1926. It grows into a dense, compact bush with low arching branches and for a full three weeks period will rival the *Spiraea Van Houttei* in a striking beauty.

Hybrid *Rugosas* are disappointing only when neglected. Here is a secret—*Rugosas* like to be forced through sharp pruning. Trim them back almost to the ground every spring. Before midseason they will be strong bushes massed with flowers. This applies to all except the *Agnes* and the *Dr. E. M. Mills* types, which have Asiatic parentage.

Many of us have too often compared a single bloom of the Hybrid *Rugosas* with some favorite tender rose and passed a hasty judgment. Although not adapted for use as cutflowers, they form a valuable group, being thrifty, striking in foliage, satisfying in their supply of good roses throughout the entire season, and holding their own as delightful shrubs, either as specimens or as masses in foundation and border. They give us a fine shrub plus a good rose. May their tribe increase.