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SOUTH DAKOTA HORTICULTURIST

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SOUTH DAKOTA HORTICULTURIST
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PERENNIAL ASTERS

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

The last flowers of the season, have for us a peculiar charm. As we stroll about the garden or fields on a September day, we realize there are not many days left for us to see and admire. When we think of autumn flowers, we have in mind probably more than any other, the beautiful fall asters or Michaelmas daisies, so named by our English gardeners nearly a century ago, from St. Michaels Day, which falls on September 29th. The asters are usually in the height of their beauty at this time. With the arrival of the Michaelmas daisies we stop to think the season of flowers will soon be over and we welcome them almost with a sigh.

Perennial asters give color to the fall garden, with blue, rose, lavender and purple, in combination, with the giant daisies, Helenium, Boltonias and the newer sunflowers, make a gorgeous picture for the closing of the garden year. It has taken a long time for this American wild flower to establish itself, as a desirable resident of our gardens, in spite of its beauty, we forget that all our beautiful flowers, are growing wild in some part of the world, even our "Regale Lily" an aristocrat of our present gardens, is a native of Thibet where it was found growing wild by Mr. Ernest H. Wilson the world famed hunter of unusual plants. Our English gardeners accepted the aster, much sooner than we, and have hybridized and introduced many new varieties. Being a true American flower, and found growing wild in many states, perfectly hardy, and requiring very little in the way of care, it seems strange it has not been used more. I heartily commend them for autumn beauty.

The types best known are Aster Novae-Angliae (New England) and Novi Belgii, (New York). The first named type bears larger flowers, and a gorgeous display of bloom, with a height from four to six feet. The New York type are lower growing, many more varieties of coloring, and are in some ways more desirable. St. Egwin, a dainty rose color is a choice variety, with Climax as a companion, are very attractive, but, there are many other colorings to suit all tastes. These asters make a beautiful solid background border, as they branch freely, thus interlacing, where planted, not too close.

Another autumn flower not so well known here, is the Helenium or Helues flower. They are also tall growing, prolific bloomers and as they are in shades of yellow and brownish red tones, with high button centers of brown, make a fine contrast, and fill a place in the border most worthily. The Boltonias are another fall flower, pink and white, also desirable.

Like the sunflowers, they may be called travelers and one need not expect to find them in the same spot each year. They send out underground runners or stolons, radiating from the plant, at the end of each runner is a bud, which form the plant for the next year. My experience with sunflower "Wolley Dod," will long be remembered, my disappointment, at not finding the root of previous season, but some time later found a wide circle of new sprouts. These plants have to be dealt with severely, but are easily controlled if one knows the nature and habits.

Chrysanthemum uligiuosum formerly, Pyrethrum uligiuosum or giant daisy is familiar to most every one, is easily grown, increases rapidly, and altogether satisfactory for a late bloomer.

WHITEWASH YOUNG TREES

Sun scald and winter injury on the southwest and south side of young fruit and nut trees can largely be prevented by keeping the trees properly whitewashed during the winter months. Such injury usually takes place in the late winter, although it may occur in the late fall or any time throughout the dormant season. It is caused by freezing and thawing of the cambium layer, due to the excessive and rapid change in temperature from the bright, sunny days and cold, frosty nights.

Sun scald is especially injurious to high-headed trees up to the age of eight years. It is more injurious to trees with dark-colored bark and those making little growth.

The temperature of the cambium layer on the sunny side of young trees in the early afternoon may be 15 or 20 degrees higher than that on the shady side of the tree, which is more nearly the same as the prevailing air temperature. The temperature of this cambium rapidly drops to slightly less than the prevailing temperature of the air when the sun disappears. This drop in temperature has been as rapid as 18° F. in three minutes. It often drops from a temperature of 70 to 80° F. in the daytime to below freezing at night.

During winter days with the prevailing temperature running slightly below freezing, considerable damage may be done to the cambium on the south and southwest side of the trees by the passing of occasional clouds temporarily shading the sunny side of the tree, permitting the temperature to drop down below freezing and immediately thawing out and jumping up several degrees above freezing as the sun appears with the passing of the clouds. The rise in temperature of this bark, as the sun reappears, is just as rapid as the drop in temperature as the clouds shade the bark; that is, as high as 18 degrees in three minutes' time.

On bright, sunny winter days the temperature of the cambium on the southwest side of the tree in early afternoon may be as much as 39 degrees higher than that of the northeast side of the tree, due to the dark-colored bark absorbing the suns rays. Where trees have experimentally been treated with coal tar intensifying this blackness, the difference has been as great as 57 degrees, and where whitewashed, the difference has been practically eliminated.

Experimental work carried on in Minnesota by R. B. Harvey shows that the color of the bark of different trees affect the temperature of the cambium on the sunny side of the trees materially. Black, brown or brownish-red bark maintained a temperature of 8 or 10° F. higher than white bark, such as that of white birch. Red-barked trees maintained a lower cambium temperature on the sunny side than other colors, outside the white. Green and yellow bark maintained an intermediate temperature compared to the white and red barks on one side and the brown and black on the other.

The black bark of the Italian prune and the reddish-brown bark of the sweet cherry and certain varieties of apple are very susceptible to this injury. The English walnut and filbert are also rather susceptible and should be given protection.

Shading the southwest side of the trunk from 12 to 3 p. m. by driving barrel staves or boards in the ground on that side of the tree, is a very effective remedy. Heading trees as low as practical, and permitting all the heavy, broad angled growth to continue below the main scaffolding of the young trees, will at least afford partial shade and be worth considering. Whitewash, having sticking and lasting qualities, maintained on the trunk, crotches and main branches of our fruit and nut trees up to eight years of age is probably the most practical and effective means for preventing sun scald and winter injury on the sunny side of the tree. This may be applied by hand with a brush or may be sprayed on the trees with the spray outfit, and should be repeated often enough to maintain a good white coating on the trees at least throughout the dormant season.

There are several good commercial whitewashes on the market for this purpose. The Government Lighthouse formula, although troublesome to make up, is a very good whitewash to use. The formula and directions for making this Government Lighthouse formula is as follows:

Stone Lime	1-2 bushel
Salt	1 peck
Ground rice	3 pounds
Plaster of Paris	1-2 pound
Glue	1 pound
Water	5 gallons

First slake the lime with warm water and strain it through a fine sieve or strainer. Dissolve in warm water and boil the rice flour into a thin paste and dissolve the glue in boiling water. Mix the ingredients in the following order and stir well. Pour the salt solution into the lime, then the rice paste mixed therein boiling hot, the Spanish whiting or Plaster of Paris, and then the glue. Finally add 5 gallons of hot water, stir thoroughly, and let it stand for a few days. This should be applied with the brush.

A prominent Willamette Valley nurseryman claims this whitewash idea saved him $1,000 last year.

CLAYTON L. LONG,
Oregon State Agricultural College.

FRUIT FOR EXHIBITION

R. S. Marsh, Professor of Horticultural Extension in the University of Illinois, gave the following directions for the selection of exhibition fruit in a recent news letter of the Illinois State Horticultural Society:

"First, the grower must secure a premium list in order to determine what entries to make. Next is the selection of the fruit. This is best done by picking it from the tree when the fruit is in prime condition. It is often necessary to pick many times the amount of fruit actually required for an entry so that a final selection can be made when fruit is placed on exhibit. The following score card adopted by the American Society of Horticultural Science should be kept in mind while selecting specimens:

Form	15%
Size	15%
Color	20%
Uniformity	20%
Condition	30%
	100%

"Form means that which is typical of the variety. Size is the most acceptable size in the market such as Arkansas 3-3½ inches, Ben Davis 2¾-3¼ inches, Grimes 2¾-3¼ inches, Jonathan 2¾-3¼ inches, Northwestern Greening 3¼-3¾ inches. Oversized specimens are usually not well colored and should be avoided. Color should be high in red varieties. Yellow and Russet varieties must be true to type. Uniformity is the point on which most exhibitors fail. To secure five specimens, each the counterpart of all the others, requires a degree of skill possessed by only a few growers after long practice. Condition relates to general physical condition and freedom from blemishes. The fruit should be firm and not flabby. Some judges disqualify fruit showing codling moth or scale blemishes.

"When picking fruit for exhibit, care must be used so that the fruit is not bruised and the stems are not broken. Immediately after picking, the fruit should be carefully wrapped and placed in cold storage."—Fruits and Gardens.

EXTRACTS FROM THE DIARY OF A TRAVELING MAN

W. A. Simmons

A considerable portion of North Dakota experienced a hard freeze on August sixth, the earliest on record. It was not merely a frost but temperatures as low as twenty-eight were reported from several localities. This makes a grand total of one month, July, without frost for this year of 1929.

The author, and a very close (though not Scotch) friend.

Several years ago some misguided weather sharps were predicting a year without a summer and lost most of their prestige when it failed to materialize. They were on the right track but several years ahead of the event.

With both late and early frosts, blazing heat and prolonged drought in Pennsylvania, New York and portions of Germany as well as the Dakotas, verily the weather bureau man has done his best this year, apparently, to starve us to death. That he has not succeeded speaks volumes for the resourcefulness of modern agriculture.

Gordon Dillon of Fruit Ridge, Michigan is making his bees work his way through college. A stray swarm of bees captured when he was ten years of age started him in the honey business which has grown to the point where he owns a big bus in which he sleeps and which carries a hive of bees as well as a stock of honey. He parks his bus near the campus and goes to classes and parks it where he pleases at night, cooking his own meals in the car. A large sign on the bus reads, "Methuselah ate honey and lived nine hundred and sixty-nine years," implying that the reader could do likewise. If a honey diet became general and it delivered the goods in longevity, the younger generation would certainly be stung. A boy would be lucky if he got a job by the time he was eight hundred years of age, while a flapper would have to continue to flap for many hundreds of years before her boy friend was in a position to furnish her honey supply. Have always thought the Hebrew gentleman that

wrote that yarn about Methuselah's age was misinformed, but if the latter kept a bee, perhaps it is all explained, but it has always seemed to me that the author of the story was endeavoring to put the bee on his readers.

September 18—

Last week I was in a store when a farmer brought in some wild plums to be sold. The merchant informed me the price was 2c per pound and considering that this was cheaper than stealing them, I got about a peck of them. Today, desiring to make sure I was right, I acquired about half a peck by the other method. The owner, probably Uncle Sam, made no fuss about it, but it is no pleasant occupation picking wild plums in a rattlesnake country. Would put my feet down in the long grass and weeds as gingerly as possible, hoping if any snakes were present they would not take exceptions to their odor and puncture them. Then the plums were small and it took a long time to round them up. As a highly paid writer on the staff of the S. D. Horticulturist, my time is too valuable for that sort of work, and in the future, shall let the farmers do that work.

Sometime back in the dim beginnings of things, some one, probably Adam, becoming enthusiastic over the strawberry, remarked that while the Lord might possibly have created a better fruit, had he really put his mind into it, up to date he had failed ignominously to do so. That statement went reverberating down through the ages, was repeated at each horticultural meeting and still appears in nearly all horticultural magazines at least once a year. Experienced type-setters on horticultural magazines keep that statement set up so they can insert it when needed with a minimum of labor. My theory is that this oft repeated statement finally got under the Creator's skin, so to speak. When one has done a nice workman-like job of creating and considers the universe is about perfect, it isn't exactly pleasant to have a lot of people constantly insinuating that one might have done better if he had taken a little more pains. So to silence these carpers, I believe he created the prunus Americana, knowing that plenty of his lieutenants like Dr. Hansen would take up the work where he left off, planting tons of seeds and continuing to improve it.

But seriously, our wild plum and the improved seedlings have a most delicious flavor all their own, and it does not suffer from comparison with any other fruit whatsoever. It is head and shoulders above the plums of either Europe or Asia. It has been crossed with the plums of Asia to attain a size where picking is easier, as one can grab a handful of some of the hybrids in a single fruit and some of the best of these hybrids retain most of the flavor of the Americana. But eating these large plums is a problem with one whose mouth is normal, as to size. Personally I prefer to take plums aboard in a single mouthful and prefer the smaller sizes.

Noticed the plums in this wild Montana thicket were badly stung by curculio. Evidently we did not have to import this pest.

September 30—

Probably there are no cleaner towns on earth than Deadwood and Lead. twin cities of the northern Hills. Mr. Senn, our enforcement chief came from Deadwood and between he and Mayor Adams they routed vice and rum to the extent that one does not dare even look as though one wanted a drink there now. Probably it has been so long since the residents saw one that they would not know what to do with one if they had it.

But these cities delight in cashing in on the wild and wooly reputation that was anciently theirs. Every summer Deadwood has a '76 week when the male citizens appear "bearded like a pard," whatever a pard may be, and clothed in the red shirts and overalls of placer mining days

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HARDY MANITOBA PLANTS BROUGHT HERE FOR STUDY

Horticulturists Hope to Develop Forms Super-resistant to Cold

Having penetrated the wilds of northern Manitoba on one of the strangest adventures ever undertaken in the interests of agriculture, Prof. H. W. Alderman, chief of the division of horticulture of the University of Minnesota, has brought back to University Farm extensive collections of seeds, plants, cuttings and other specimens of northern plant life—fruits, vines and shrubs of the most hardy and winter-resistant varieties in the world.

These are to be used in propagating and developing varieties of grapes, gooseberries, cranberries and other fruits, shrubs and ornamental plantings that will scoff at Minnesota's biting winds, endure her devitalizing cold and thrive on her most barren and inhospitable soils.

Accompanying Prof. Alderman were two other horticulturists, K. A. Ryerson, head of the office of foreign plant introduction of Washington, and W. R. Leslie, superintendent of the Dominion Experimental farm, Morden, Man.

Travel in Canoe

The trio started August 1 from The Pas, southern terminus of the Hudson Bay railway which is now nearing completion. They traveled in a 20-foot canoe powered with an outboard motor. They covered 600 or 700 miles through the wilderness, guided only by their compasses and a map.

Besides sleeping in the open the three men carried their equipment, weighing more than 1,000 pounds, over numerous portages between lakes.

Prof. Alderman relates that the region abounded in moose, deer, black bear and many species of small fur bearers. The explorers found the region thickly populated with numerous plant forms apparently adapted to conditions and needs farther south, so they made many collections.

Transportation of the collections was one of the chief problems but fortunately the area is frequented by airplanes of the forest service and in some instances these were drafted into service in bringing the plant specimens to shipping points from which they were sent to Morden.

Maximum Hardiness Desired

Occasionally postoffices were reached and the specimens mailed, while in other instances a unique transportation system operated by contractors building a huge power plant at Island Falls was used. Island Falls is about 150 miles north of The Pas and was the northernmost point visited by Prof. Alderman and his associates. The power plant builders have a barge and tractor transportation route covering this 150 miles.

Prof. Alderman said that the sun does not set until 9 P. M. or later and even after that it remains light enough to travel through the woods until 10 P. M. He estimated that daybreak occurs at about 3 A. M.

"All together, we spent four weeks in our explorations," Professor Alderman said. "We wanted to obtain several wild fruits of maximum hardiness and this was an ideal season for the trip, as the region visited had only a light snowfall last winter. This meant that the vegetative growth had had only slight winter protection and that any plants which survived must naturally possess extreme hardiness."

Large Raspberries Found

Among the fruit specimens obtained was a large collection of the seed of splendid large red raspberries found growing shoulder-high at a point at least 600 miles north of Winnipeg. Fine, large gooseberries, the equal in size and appearance of the best Minnesota varieties also were found. Somewhat farther south they found grapes of an early maturing and promising strain which were brought back to be crossed with domestic varieties in hopes of obtaining a super-hardy race. These wild grapes

were found within six miles of the most northern point at which grapes ever have been discovered, Prof. Alderman said.

The party obtained sand cherries from what they believe to be the most northern point at which they have been found. Blueberries were taken from various latitudes and numerous cranberry specimens were obtained. Cranberries seem to grow almost anywhere in the region and many were found thriving on the barren tops of rocks almost destitute of moisture.

Amazed by Hackberries

At the south end of Lake Manitoba the explorers were amazed to discover two small clumps of hackberry bushes. The Twin Cities formerly were believed to be the northern limit for this plant, which is popular here as a shade tree, but those found in Manitoba were much smaller. Seeds were brought back and an attempt will be made to grow new trees of a super-hardy race. In the hundreds of miles separating the Twin Cities from Lake Manitoba not a single intermediary plant of this species is known to exist, Professor Alderman asserted.

Besides the fruit and tree specimens procured, the party obtained some 250 collections of seed or other propagating forms of ornamental plants and shrubs, mostly perennials. Included in these were a dwarf variety of mountain ash potentilla, a yellow-flowered plant that never has been cultivated, dwarf Canadian buffalo berry, and wild asters in colors ranging from white to royal purple.

Another Excursion Planned

The specimens were sent to Morden, when they were inspected by the Canadian authorities for disease and insect pests. There they were apportioned among the three members of the party, Mr. Leslie's share remaining at Morden to be bred there, the remainder being sent to University Farm, whence Mr. Ryerson's share will be shipped to Washington after a thorough inspection by Minnesota authorities.

The collections eventually should mean much to the northwest, in the opinion of Prof. Alderman, but years of breeding and selection may be necessary before suitable varieties can be developed, and further trips into the north may be necessary to obtain more propagating material. The party plans another excursion to about the same latitude, but farther west nearer the Rocky Mountains of northern Canada where they believe other types of valuable plants may be found. This trip may be taken next summer.—News for Nurserymen.

GARDEN NOTES

F. X. Wallner, Sioux Falls, S. D.

Fall work is delayed with another all days rain, on top of all we have had. The ground is thoroughly soaked and I fear also the piles of onions out in the field, lots of extra work and grief to dry them out again.

Parsnips, oysters, carrots and cabbages are making wonderful growth of late, turnips and rutabagas would be good but for the maggots.

In judging the exhibits at the Garretson fair the other day, I noticed a big improvement over former exhibits, the plates of plums sure did disappear and they wondered at the judges' capacity for fruit. I was puzzled at the apple table, some listed Wealthy as a summer apple, others as winter apple; but a plate of late Duchess (September 28) took first in winter apples. This is one holiday I enjoy, sampling the good things at this fair and meeting the people of this community.

Was it the "Traveling Man" or the "Observation Man" who wondered what those healthy Hutchinson County Germans do with so many grapes? The Government wonders what becomes of all the California grapes.

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PEONIES GIVE HAPPINESS

Charles McCaffree, Sioux Falls, S. D.

There are queens by grace of birth and there are queens by grace of God. There are queens of our homes—God bless them—and there are queens of our home grounds, the flowers which bring refinement and charm, painting the high lights in our landscape.

For the unsophisticated it may be stated that of these latter the peony offers the greatest satisfaction for residents of the Sunshine State for (1) it comes at the call of the robin. (2) It is showy and all the world knows when the bloom is out and it lights up the landscape. (3) It is hardy and a planting will last a generation with no greater care than a cultivated field crop.

By proper selection of varieties the peony blooms may be enjoyed from the last of May into early July. But in South Dakota peony time practically means June. The short season is the rub.

All who read this will recall that until a very few years ago strawberries were a June fruit. But no one is surprised in 1929 when the writer states that September 20 he picked strawberries from the garden and ate shortcake which tasted just as good as the June dish. All have accepted everbearing strawberries and some spring flowers have been added to the "everbearing" list. Why not peonies? That is a field for experiment. When we think back to the original Chinese peony with the single flower and recall the advance to wonderful double blooms ten inches across and that the season has been lengthened to a possible six weeks, we may certainly believe the all season blooming plant will be produced. The process is about as slow and difficult as anything in horticulture or floriculture but in these days of scientific cross pollenization and selection nothing seems impossible.

How Propagated

Peonies may be propagated from seed but the modern peonies have so many and such diverse parental characteristics that they—like apples—do not "breed true." A grower will not know what quality he has grown from the seed planted until the plants are about seven years from planting the seed. Seed from the finest double plants may produce plants with single blossoms and will not likely bring anything like the parent's high quality. The propagators have found that only a very small proportion are of fine quality. Therefore to get the superior ones in any number it is necessary to grow a great many. The grower reckons with the rule of averages. Out of a thousand he may find, after his five or seven years closest care and observation that he has one or two or three worthy of introduction to the peony world. The others may go into the general planting of little value or to the bonfire.

Strive for the Best

Perhaps a new variety is superior in some characteristics to any which have been grown before. Then there is happiness among all the peony fans, for the real fan will mortgage his future to get the best and get it before it becomes common. Men are striving with the best skill given by experience and scientific study to produce the finest as judged by this standard of the National Society and known as the "Six Points of Excellence."

The National Peony Society offers a prize of One Hundred Dollars for the best new peony each year and a silver medal for the best seedling on exhibit for the first time. Recognition thus given means that the winner is the reigning queen of peonies for the year.

This brings the finest distinction that may be given this flower of a thousand varieties. These particular new varieties will be propagated very slowly because the number may be increased only by division of the root. It is scarcity that makes possible the sale at a high price, and the originator is of course entitled to the reward of his long sustained effort.

Only a few may hope to get the new creation. The latest and newest each year have been brought to South Dakota.

In the meantime, the rest of us who have the desire and regard for the beautiful flowers which may ornament our home grounds will enjoy the dependable older varieties, which are wonderfully beautiful and gratifying and we will find our satisfaction because we may enjoy them each spring.

Spring flowers are our best and we will be happier when we may speak of our gardens in the words of Longfellow:

"Erect in all her crimson pomp you'll see
With bushy leaves the graceful peony."

OPPORTUNITIES IN BEE CLUB WORK

South Dakota conditions lend themselves very well to bee culture. Boys and girls are interested in studying the handling of bees and, incidentally, to acquire some property and make some money for themselves. A few communities have organized bee clubs, the first one in Brown county about three years ago. This club has been very successful and no less than fifteen boys and girls have been given training in the care and handling of bees.

This year the most active clubs were in Stanley and Potter counties, the former under the leadership of Robert Ashley and the latter under the leadership of R. C. Warring. They have enjoyed a pleasant and profitable season.

The limiting factor in the organization of bee clubs for boys and girls is the finding of local club leaders. Comparatively few people feel that they understand enough about bees to teach it to the boys and girls. In most communities, however, there are a few men or women who have handled bees for years and who are qualified in every way to serve as local club leaders. If they can be interested in the proposition, there should be a great many more boys and girls given an opportunity to join a bee club next year than there were this year.

SPRING'S PALETTE

Who says that yellow and pink don't blend,
When Nature says that they do
By placing in spring, time without end,
These shades in harmony, true?
The warbler flashes glints of yellow
Through apple trees, pink and white;
And the wild canary sings his song
From the early morn to night.
The little Scotch rose of dainty mold,
In June its pinkness sends,
Just as the lilies unfold their gold
Out where the garden ends.
Look at the meadows—billowing seas
Of gold dandelion spray;
While the pink-sailed ships—the old crab trees,
On their heaving bosoms lay.
There's nothing wrong with Nature Mother,
Howe'er she mixes hues;
She is to them an artist lover,
And blends them all with her dews.

—From Wisconsin Horticulture.

ROCK GARDENS

Thomas W. Hobart, Sioux Falls, S. D.

Rock Gardens may be of two types, those intended wholly for alpine or dry weather plants or those for plants loving moisture, and even a third type combining the two with perhaps a lily pool in addition. Perhaps more of the latter are being built in Sioux Falls at the present time.

For the dry weather plants it is best to have the ground unevenly raised above the surface of the surrounding garden, though too much of a raise or the piling up of the rock after the style of our grandmothers "rockery" should be avoided as we do not want an artificial rock piler but are attempting to bring a little of nature into our gardens. In this arid garden there should be spots of nearly clean sand, some clayey slate, and some good rich loam, the type of plants to be used should be decided on first then the soil spots arranged to suit. On this flat rock of various sizes generally the larger sizes give the best effect and but very few need be used, any with conspicuous markings or if odd shape should be placed so as to show to the best advantage and so as not at any time in the future growth of the surrounding plants be entirely hidden for a marked or colored rock can be as ornamental and add as much to the beauty and effectiveness as the best of plants.

A Sioux Falls Rock Garden

The soil from the excavation for the lily pool can in part be used to form the dry land part of the combined garden used in the background or at one side gradually grading to a lower level, with the pool at the lower edge will give the gardener a place to grow every kind of rock plant from the cactus to the arrowhead.

The side hill rock garden as our picture shows should only be used where there is a natural or an artificial terrace that cannot be otherwise utilized. By this I mean that a mound should never be built in the garden to secure this effect as such building without a real utility cause is wholly artificial and never beautiful or of artistic value.

The above garden is at the side of an entrance drive to the show gardens and greenhouse of a local greenhouse company, and the stones are so placed as to hold the sides of the drive from eroding and form a fine setting for an alpine planting, though some moisture loving plants are set in low ground at the sunken garden level. The steps at the far left are great boulders, some weighing from two to three hundred pounds, the flattest sides being used for the steps which lead from the low garden to the street walk level some six or seven feet higher.

All the stone in this bank or terrace type of rock garden must be set with a backward slant into the bank so that all moisture will drain into the soil and be retained for the use of the plants, It is remarkable

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PREPARING COLONIES OF BEES FOR THE WINTER

The essential requisites of a colony of bees for successful wintering are:

1. Numerous young bees headed by a prolific queen.
2. Sufficient stores of good quality to sustain the colony, not only over winter, but well on into the spring.
3. Adequate protection from the cold.

To secure the above requisites, thought must be given to winter preparations of the colonies in the summer time.

REQUEENING: Six weeks prior to the end of the honey flow replace all old or failing queens with young prolific queens. Requeening this early has its advantages in that queens are more readily accepted during a flow than after the flow has ceased. Brood rearing is checked at a time when the swarming fever is at its height and the bees produced, after the period mentioned, do not mature in time to be a factor in increasing the season's honey production.

UNITING: Every fall certain colonies in the apiary have a tendency to become weak. It does not pay to winter over weak colonies. Therefore, all weak and queenless colonies should be united with medium sized colonies as soon as the flow ceases. These medium colonies will then build up into good strong colonies by fall. Uniting in this manner frequently prevents their being robbed, thus reducing to a minimum the danger of general infection of the apiary with American foul brood; should this disease have, unsuspectedly, gained admittance to the apiary during the summer.

FEEDING: The amount of food consumed by a colony in the winter varies considerably. Nevertheless all colonies in the apiary should be fed sufficient wholesome stores to bring their gross weight to 85 pounds. Feeding should be done early in the fall, preferably the last week in September or first week in October. If left until a later date, weather conditions frequently prevent the bees from storing the food, especially in the case when sugar syrup is used as a feed.

Honeys from different sources vary in their digestibility. It is, therefore, essential that some thought be given to the choice of winter feed. At the Dominion Experimental Station at Morden, Manitoba, an experiment is at present being conducted as to the most suitable food for wintering. The following are being used:

1. Early honey from dandelion and fruit bloom.
2. Best quality procurable of sweet clover honey.
3. Best quality procurable of sweet clover honey and sugar syrup.
4. Granulated sugar, fed as a syrup (2 parts of sugar to 1 of water).

From observations made, it would appear that the combination of clover honey and sugar syrup is the most suitable for Manitoba conditions.

There are two kinds of wintering, namely, inside and outside. When wintering outside in cases the colonies should be packed away before feeding is begun. If cellar wintered, the colonies should be placed in their winter quarters after their last general flight, preferably the first week in November.

—Erdman Braun, Experimental Station, Morden, Man.

We notice in the Pharmacal Advance that the chemical study of chlorophyll dates back to the year 1819, when this name was first applied to the green pigment in plants, by two investigators, Pelletier and Caventon. It was not until 1912 that the chemical composition of chlorophyll was definitely worked out.

Fall planted trees should be firmly staked so that they will not be loosened by the wind. Then a heavy mulch placed around them.

Clean up all fruit in the orchard. This will in many cases prevent disease and insects being carried over winter.

MUSHROOMS AS FOOD

At the present day nature study is popular, and rightly so, but one branch of it is much neglected, that relating to fungi. The study of fungi makes an interesting hobby, and also a useful one. It is rather surprising that so much ignorance concerning mushrooms is prevalent, while other subjects of nature study are well known. The prevailing impression is that edible fungi are few, and are called mushrooms, while the remainder are poisonous or inedible, and are called toadstools. But the terms mushroom and toadstool are synonymous. Therefore, a better division, seeing there are more edible varieties than poisonous, is to call them all mushrooms, either edible or poisonous, as the case may be.

It is commonly supposed that mushrooms spring up or grow in a night. A few of the very fragile kinds, such as those that appear in hotbeds and on manure piles, do appear in a night, but the majority take on an average a week or more to mature above ground.

One need not go far in search for specimens; lawns, vacant city lots, and especially civic dumps, where ashes, leaves, etc., have been deposited, afford likely hunting grounds. Pastures and thin woods are also good places in which to look for them. Some are found very early in the spring, even before the leaves on trees and shrubs appear. Morels are among these, and rank as one of the best in the whole range of the season's growth. Mushrooms are not palatable to all persons; some of the commonest kinds are injurious to some, but on the other hand invalids can eat mushrooms when unable to partake of more hearty food.

In taking up the study of mushrooms beginners meet a difficulty at the start. The long botanical names frighten many away, but these should not deter them from continuing the study. They have not been sufficiently known to have common names, so mainly the botanical names are used. This difficulty is obviated in a recent work on Mushrooms and Toadstools by H. T. Gussow and W. S. Odell, a beautifully cloth bound volume of 274 pages, having 127 full page plates, describing 66 genera and 150 species. It may be obtained by remitting $1 to the King's Printer, Government Printing Bureau, Ottawa.

A safe plan is to become familiar with the few deadly poisonous kinds first, then take up the commonest edible ones, and as opportunity offers, extend one's knowledge as the season advances. It is unwise to gather mushrooms promiscuously, and eat them without ascertaining their edibility. Many so-called "tests" are frequently applied for this purpose, such as peeling, silver coin test, spoon test, etc., all such may be dismissed without comment, as they are unworthy of notice. Since the most deadly kind, Amanita phalloides, or the death cup, peels more readily than a majority of mushrooms, it proves conclusively the fallacy of this test; so with the other tests. The only safe way is to know them one by one, or take the advice of one who can definitely state that a certain kind is harmless. It may be mentioned here that all puffballs are edible, so long as their contents remain white, there are no poisonous kinds. Their edibility is lessened as they become discolored. They finally become a powdery mass.

The services of the staff of the Division of Botany are at the disposal of correspondents for the identification of mushrooms submitted to them.

The food value of mushrooms has frequently been overvalued; statements have appeared that they may take the place of beefsteak. In reality they rank in the same scale as carrots and cabbages. In some respects their place as food is not unlike that of oysters, celery, berries, and other delicacies. They have, however, a distinct and very great value as condiments or food accessories. They are among the most appetizing of table delicacies and add greatly to the palatability of many foods when cooked with them. The moisture content of mushrooms is over 80 per cent.

Many varieties of mushrooms may be readily dried for winter use by placing them facing an open window exposed to the sun and draughts of air. When wanted for use they may be softened by the addition of a little water, which should be utilized later in cooking them.

Many misleading statements have appeared in the papers concerning the easy money that may be made from growing mushrooms in one's cellar. It is a definite business, and like any other, requires some knowledge and much experience before one may reasonably expect to make it profitable. There is no crop more difficult to grow, and no other enterprise in which there are so many failures as this. When one has acquired this knowledge, has the facilities, and is near a large market, much money may be made in this business, during fall and winter months.

Details for growing mushrooms in one's cellar may be obtained by writing to the Division of Botany for Circular No. 45 on Mushroom Culture, in which full details for this process are found.

W. S. ODELL,
Central Experimental Farm, Ottawa.

ROCK GARDENS

(Continued from page 11)

how this garden exposed as it is to the full rays of the western sun returns the moisture and, how the plants of all varieties named here thrive even in the driest weather.

On the highest ground are: Sedums, brilliant sexangulare, sieboldi, acre, stoloniferium, kamtschaticum and spurium, Sempervivium, enctorum, Saxifraga, cordifolia, Gaillardias, Aubrietias in mixture, Arabis throughout the middle ground, Viola, cornuta, blue perfection, lutea splendens and papilo.

Callirhoe (mallow poppy), Candytuft, semperverens, Dianthus, deltoides, Alyssum, ageratum, Cerastium, tomentosum (Snow in Summer) and at the base where the ground tends to be moist are planted: Dielitra or Bleeding Heart, spectabiles, Oneothera, missouriensis (Evening Primrose), Lichnis, viscaria, Mysotis (forget-me-not) Campanula, carpatica and Mertensia, virgenica (bluebells of Virginia) of the above these are still in bloom October 17th this wonder fall. Sedum brilliant, all the violas, Callirhoe, Candytuft, Gaillardia, Dianthus deltoides, Campanula, forget-me-not and Alyssum.

EXTRACTS FROM THE DIARY OF A TRAVELING MAN

(Continued from page 6)

and with hips appropriately adorned with artillery. Of course this is merely scenery and nothing approaching nautiness is pulled off.

Today driving past Lead's famous mile high tourist camp, I found a very fine collection of log cabins each bearing a name. One named Owl's nest was evidently reserved for owly dissatisfied tourists. A suspiciously new looking, large peeled log building bore the sign "Saloon, Buckets of Blood." I did not enter to investigate, thinking the tourist season was so near over that the buckets would probably be empty anyhow.

October 1—

It is time we were giving thought to our coming annual meeting early in January at Watertown. We have always had good meetings at Watertown, as the local people always show their interest by attending, and splendid moderate priced hotels afford comfortable quarters. We hope you are all planning to be with us at this meeting, and we also hope, as many as possible will prepare papers for our program. When you have decided the topic of your paper, please write our Secretary, so he can arrange the programs.

PERENNIAL FLOWERS FOR STATE PARKS

J. B. Taylor, Ipswich, S. D.

Distance lends enchantment so they say and in selecting hardy perennials for our state parks I would like to take stock and see what we now grow naturally within our own state and what are sure to stay with us during all the adverse and uncompromising years.

In the western part where most of the state parks are located and where climatic condition are sometimes no respecter of things horticultural, we have the native Yucca one of the grandest perennials grown as they stay green the whole year through and dotting the landscape and especially the dry hard gravelly knolls and hills and when in blossom are as beautiful as any flower that grows. The seeds pods are interesting, especially to those that have not had the pleasure of their association and if they are not already growing should be transplanted (the young plants only as they are a one rooted specie and the older plants do not transplant readily) or a lazier way—scatter the seeds on the higher and drier places as there are so few varieties that will grow in these locations and to take aff the bareness nothing will fit in more appropriate and will sticketh to us closer even than a brother.

Native Cactus and we have a lot of it and it generally seeks a location where other perennials will not grow and when they are in blossom are beautiful.

Then there is the Milkweed family—while some classify this as a weed but then it has a place and even after the seed pods burst the fluffy silken seed composite are most attractive and even the foliage blends in well. There is the Snow on the Mountain probably a milkweed specie but nothing more attractive for massing purposes.

The Pasque or native Crocus when in blossom attracts so much attention especially when they grow in a mass and no doubt some of the hardy varieties could be added and especially the Siberian Scillia should adapt itself lending the colors of blue and white and which blossom even before the native Crocus.

The native tall blue Aster no doubt would find many congenial surroundings.

Lead Plant is a native handsome midsummer blooming perennial. This has a green greyish foliage and the rich purple flowers with their golden anthers are born on long spikes.

Meadow Rue another native could also be induced to tarry and grows in a dense clump with foliage reminding one quite a little of the maiden hair fern. It bears tall plumy spikes of creamy pink flowers.

Of course we cannot forget the Golden Rod that lends such a pleasing aspect to the picture and is lasting and comes as a reminder of the fleeting days of summer.

Probably the Blue Bells look better to you than some of the other natives and there is no one who would overlook their beauty.

Even the Wild Morning Glory would cling to like in many places and its near and much discussed Bindweed could be induced to grow most any place where it would not interfere and choke the life of the more tender perennials.

The native Bitterroot or Western Gumbo Lily is truly startling in its beauty and we would want quantities of hem any place they would grow and no doubt it would like the company of the native Red Concolor Lily that grows around Waubay and Webster and the Tiger Lily would pay its homage in brightening up the dreary places.

In lower places especially along some of the creeks or rivers one will find the native Golden Glow growing wild and a cheerier perennial cannot be found.

I have seen lovely Violets growing along the Moreau River and along shady streams these would live to gladden the hearts of any tourist who would find them.

Nearly forgot to mention the Thistle family and which should be associated wit hthe Cactus. I have seen great patches of these blossoming at one time that really looked beautiful. These were the native Bull Thistles.

There is the Rocky Mountain Columbine that should thrive well in some of the parks and especially on partially shaded northern slopes. The purplish flowers would be well received.

Some Flags or Iris are native but like Golden Glow are found near water. This leads me to believe that many of the Iris family would transplant and do well in certain spots and especially the Pumila or Dwarf Iris and the Siberian strain. In the Pumila the old Purple certainly will do well, also the Sky Blue and maybe the Golden. The Siberian is leafier, growing taller and the Blues and Whites should thrive.

Of course knowing me as some do, I cannot help but mention the Peony and believe that on not altogether unfavorable places that it could be planted over a large area. One cannot expect them to flourish on the high rocky places but given any encouragement they would readily adapt themselves as you know that the hardy ancestors of the Peony were found in northern China and even in Siberia. Wouldn't a mass of these beauties in solid colors make one gasp and be one of the happy thoughts never to be forgotten.

The Yellow Blossom and the White Blossom Alfalfas that Prof. Hansen brought over from their cold and dry birthplace would look lovely if grown in large groups or small fields and there are many little swales and valleys that would welcome them and then beside the beauty would be one of those useful dual purpose plants that not only cheer the eye of man but would be a dainty morsel that would be most acceptable to the rabbits, antelope and the buffalo.

Even White and Yellow Blossom Sweet Clover while a biennial with the perfume scented blossoms would compel any traveler to put on his brakes so he could better breathe in the honey scented air. All lends a variety and attracts attention. Hollyhocks like gorgeous colored waving flags could find a place and while like the Sweet Clovers being biennials both will reseed and grow on and on.

The sturdy Bouncing Betty and Asteroides or Boltonia would find a welcome there and especially the native Boltonia which is found nearly all over the state.

And we could add the relatives and near relatives of the many varieties already spoken of and while we would have to pamper them until they could become satisfied to stay with us and adapt themselves quite similar to the early settlers and some of the tenderfeet that came here a few decades ago and who have adapted themselves and became the hardy pioneers, so we could expect some of nature's transplants to weather the first few seasons and be in the same class and even intermarry and produce offprings that will become natives of the Dakotas.

GARDEN NOTES

(Continued from page 8)

We do not even wonder how many pies the last customer made from that 100 pounds of pie-plant, we might wonder how good it will be eight months later, we do not even wonder what becomes of the tubs and tubs full of dandelions that disappear from the Traveling Man's lawn early Sunday mornings. One that travels miles and miles to sample those famous blends, knows what becomes of all those apples out in the hills, then he wonders what becomes of all those grapes.

An authority states that, ten farmers following diversified farming are worth more to a community than 200 mill workers.

At this time, October 9, we are still picking some nice tomatoes, peppers, spinach, radishes and other tender garden stuff, only two light frosts.