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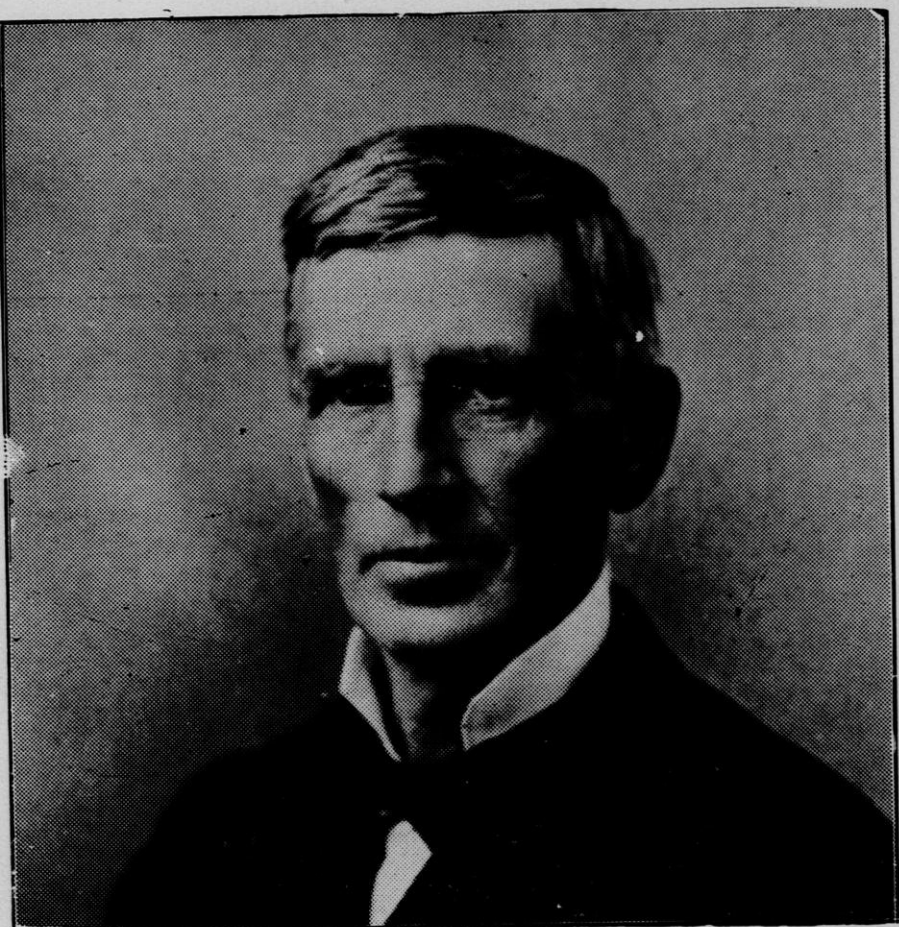
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B. F. ADAMS. See page 32. Courtesy of Milwaukee Sentinel.

The Wisconsin Horticulturist.

VOL. VI.

FEBRUARY.

NO. 12

OFFICERS OF THE STATE HORTICULTURAL SOCIETY FOR 1902.

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WHAT ARE FUNGI

Frederic Cranefield.

Every progressive fruit grower is impressed with the need of spraying his trees and bushes at certain times and for certain diseases. The literature on this subject is plentiful. The component parts of Bordeaux and other mixtures used to combat plant diseases are now familiar to every reader of horticultural publications; spraying pumps of various kinds are no longer curiosities; and the terms, fungus, fungi and fungicides are, if not household words, at

least familiar terms even to the practical man whose book-training was completed in the district school. It has often occurred to me, however, that most of the articles in the agricultural press on spraying, as well as the discussions in meetings of horticulturists, deal with the "how" rather than the "why" and, while many speak glibly of "fungi," few know the life habits of a fungus. In the belief that an elementary outline of the life history of fungi will be acceptable to many readers of the Horticulturist, the following is offered with apologies for its deficiencies and possible errors.

A fungus is a plant,—a plant without leaves, stems, flowers or seeds, but none the less a plant. A more important point of difference is the absence of chlorophyll in the fungus. Chlorophyll is the green-colored substance found in the cells of higher plants, which enables them to transform the inorganic elements of the soil into organic elements—plant tissues. As chlorophyll is the only known substance that will accomplish this, it follows that the fungus must depend for its existence upon organic substances, plant tissues. The various mushrooms and toadstools are fungi, but while these usually appear to spring from the ground, they are always nourished by decaying organic matter present in the soil and not by the inorganic soil elements.

The principal parts of a fungus plant are the hyphae and spores. The former are delicate, thread-like organs which grow either singly or in bundles, penetrating the tissues of the affected (host) plants, and not only appropriate the food of the host, but cause a breaking down of the cells. Collectively, the threads are termed the mycelium. This is the vegetative or growing portion of the fungus and corresponds to the stems and roots of growing plants.

The spores are minute, dust-like bodies, appearing usually on the surface of the affected plant and are borne on short branches or forks of the mycelium, that extend to the surface for this purpose. These spores perform the office of seeds and under proper conditions germinate and send filaments into the tissues of the plants on which they alight and thus perpetuate the species.

A spore, however, usually consists of but a single cell and does not contain an embryo plant as does the seed. The spores of the common mildews of the grape, gooseberry and rose are familiar to all horticulturists. These "summer" spores soon perish unless they find a congenial spot for germination and, were it not for another provision, seemingly expressly designed to vex the culturist, the species would be exterminated at the end of our growing season. This provision is the production of "winter" spores, which are formed within the tissues of the leaf stem, or fruit, of the host and live over winter, to germinate and grow when favorable conditions arrive in the spring. Practically all of the fungi injurious to orchard and garden crops in the North are perpetuated in this way.

Fungi are of two kinds, those that feed on dead or decayed organic matter (mushrooms, etc.) and those that feed on living tissue, i. e. plants. The first named are termed saprophytes, the second, parasites. The parasitic fungi, at least those that concern the horticulturist, may be classified as "surface" fungi, or those that develop mainly on the surface of the host plant, as the powdery mildew of the grape and the more common gooseberry mildew, *Sphaerotheca Mors-uvae*, and those that develop mainly within the tissues, as the downy mildew of the grape. In the treatment of these diseases, it will be evident that the first named class may be very largely destroyed. A cure may be effected by a thorough application of some effective fun-

gicide, as sulfide of potassium. It will also be evident that the diseases of the latter class are too deeply seated to be eradicated by any known methods.

The destructive portion of the parasite, the hyphae, works within the tissue of the host and will not be affected, to any marked extent, by external applications. The most that we can hope to do is to prevent the lodgment or development of the fruit (spores) on our plants. In other words, the work done should be with the hope of prevention rather than to cure.

Experiment Station, Madison, Wis.

OUT-DOOR ROSES.

Geo. J. Kellogg.

[Read before the Wisconsin State Horticultural Society, at Madison, Feb. 6, 1902.]

With a front yard of one thousand roses dead from the dry winter of 1899, how can I take up this subject? It is always necessary to bury the dead, and we sometimes write up their obituaries, with remembrances of their good qualities. In this case it is the living we wish to commemorate. I know of no flower that grows that is so near queen as the Rose. From early June till snow enshrouds the latest buds there is nothing can compare with the rose. How shall we have them in profusion and enjoy their beauty and fragrance the livelong summer?

PREPARATION OF SOIL.

The best time to prepare the rose border, bed or plantation, is in October, yet it may be done as early in April as the ground will do to work. If the ground is level with clay subsoil it should be underdrained; if any hard subsoil it should be well loosened up at least eighteen inches deep; if clay, the lower nine inches should be inverted and left at the

bottom, and thoroughly mixed with sand at the rate of one two-horse wagon load to every square rod, and the surface nine inches should be well mixed with one-half cord of well rotted cow manure to the square rod. Thoroughly rake and pulverize and your ground is ready to plant. Never plant under the shade of large trees. The plants should be strong two years old; if budded you will need to cut out three-fourths of the top, if on their own roots cut back in proportion to the roots.

DISTANCE TO PLANT.

If there is plenty of room, four feet is near enough, but with the border rich they may be planted from one to two feet apart and prove a success. The climbers will need more room and should be planted alone, still with proper support they may occupy the background along with the free growing Hybrid Perpetuals, placing the smaller growers, such as the Teas, Polyanthas, and any of the smaller classes, in the foreground.

PLANTING.

Best time after danger of frost is past in spring. If your roses are budded it is necessary to incline them at an angle of forty-five degrees in the direction you wish to lay them down for winter, as there is danger of breaking off the top where budded. Set them so this connection will be four inches below the surface. Roses on their own roots are much the best and they too will be easier put down for winter if properly inclined.

If budded roses are planted watch for the sprouts that come below the bud. You will need to dig down and tear them out to prevent their sprouting again. If allowed to grow they will rob the bud or grafted bush which will die. Many a bush has been broken off at the bud and the root has sprouted, and the wonder is, why does not my rose bloom? The fact is you have nothing but the wild stock,

some of which never blooms. Some dealers grow all roses on their own roots; others bud nearly everything.

In planting be sure to place the roots in natural position and press the earth firmly to the roots. Water well and, if plants are in leaf, shade from the hot sun for a few days.

CULTIVATION AND PRUNING.

A heavy mulch of well rotted manure is always beneficial after planting, working it into the soil by frequent cultivation. Let no weed grow, but do not wait for weeds, thoroughly stir the surface two inches deep every week.

The bushes may be kept and trained in any form. I have had Jacqueminot stand without support, in bloom, six feet high from top to bottom. But it is better to pinch off the tall shoots and keep them in more compact form. Some plants set more buds than they can mature; prune them severely. All shoots should be cut back in spring one-third to one-half of the previous season's growth.

VARIETIES.

How can we select when one of our best rose growers catalogues six hundred and thirty kinds, classes and varieties? Of these I have grown over ninety varieties. When there are a hundred new choice roses coming to the front every year how can we make a list?

Of climbers, I would have all the four Ramblers, perhaps the five, Queen of the Prairie, Baltimore Belle, Greville or Seven Sisters, Rosa Categoria or Single Michigan, the only old stand-by that requires no protection, and Gem of the Prairie.

Of Hybrid Perpetuals plant Gen. Jacqueminot, Gen. Washington, Fisher Holmes, Madame Chas. Wood, Dinsmore, Earl of Dufferin, Maurice Bernardin, Magna Charta, Paul Neyron, Jules de Margottin, Vick's Caprice, Baron de Bonstettin, La Riene, Anton Monton, M. P. Wilder, Co-

quette des Alps, Mrs. John Laing, Coquette des Blanche and, while Madam Plantier is classed as an hybrid perpetual and hybrid china, although only a June rose, I would not omit it in any collection because of its vigor, free blooming, beauty and hardiness.

Of the Everblooming, Tea, Bourbon and China, plant Agrippina, The Queen, Hermosa, Malmaison, Perle des Jardins and Papa Gontier.

Of Polyantha, or Fairy Roses, plant Etoile d'Or, Little Pet and Miniature.

Of Mosses, Blanche Moreau, Countess de Murinais, Glory of Mosses, Henry Martin and the old English Moss.

Of Hybrid Teas, Meteor, Pierre Guillot and Souvenir de Wootton. Of Rosa Rugosa plant both white and red. Of Yellow, Harrison and Persian. Do not omit some of the eight new hardy Hybrid Wichuriana, or Memorial roses.

If you have room you will be delighted to add fifty more to the above lists. If you have only room for a dozen then I would select Queen of Prairie, Crimson Rambler, Seven Sisters, Madam Plantier, Gen'l Jacqueminot, Madame Chas. Wood, Paul Neyron, Mrs. John Laing, Baron de Bonstettin, Coquette des Blanche, Little Pet and the old English Moss, and to complete the dozen add Rosa Rugosa and, of the Wichuriana, Jersey Beauty. This makes a full dozen of fourteen! (Best two new roses at Buffalo in October were Burbank and Cochet.)

INSECTS AND REMEDIES.

From the time of planting look out for the slugs, later on, the rose bug and the green caterpillar that delights to feed upon buds just ready to open. White hellebore, if fresh and pure, is a safe poison; dust it on with the dew.

KEROSENE EMULSION—Two parts kerosene, one part slightly sour milk, agitate till it forms a jelly, dilute with twenty parts soft water.

TOBACCO WATER—Steep the leaves or stems till you have a tea of good color; spray upper and under sides of foliage or apply it with a whisk broom or sprinkler. Be ever on the watch for the enemies. Apply the remedies freely but avoid covering the opening roses.

Roses should be cut every morning to remove the burden of the bush and to cheer some sick room or as a precious gift to some city friend: never allow any seed buds to remain on the bush except on *Rosa Rugosa*.

WINTER PROTECTION.

Rose dealers do not advise winter protection, they would rather sell a new supply every year. In case of a winter like 1899 I know of no protection that would carry them safely through except it be a heavy mulch and two barrels of water to the square rod in November besides the following winter covering.

If the bushes were set inclined they will easily bend to the ground, a little mound of fresh earth placed about the root will save entire loss, if mice get in. Then add leaves, inverted sods or marsh hay, evergreen boughs, sacking, in fact anything that will keep the sun off and keep from the continual thawing and freezing of February and March. Keep a bush frozen and out of the drying winds and there is little danger from cold. If the border can be enclosed by boards a foot wide, (and your wife does not object), fill the bin with forest leaves, put on a few evergreen boughs and cover with boards, for the half hardy Teas and Everbloomers. Or you can mound up with earth half way up the bush then fill in leaves, cover with marsh hay and boards. This will usually keep any of the half hardy sorts safely. Cover about the 1st of November. Sharp frosts will not injure except in spring. One of our successful amateurs said, "Cover roses election day and take off the covering town meeting day," which is a good rule to follow.

By uncovering early in spring before the buds start, the buds will harden with the cool nights like the grape buds and will stand more frost than if left under cover till the buds are white. Set late enough in spring to avoid the late hard frosts.

THE "STRAYBERRY."

B. R. Bones.

It is a pity we cannot go back to the Old English appropriate name instead of using any meaningless "straw." Always straying and seeking soil that has not been exhausted by its kind is just what the runners do.

I find that if the ends of those runners are put down three inches deep they make big plants. Another discovery is this; if you get plants where they have been a success as a producer the success will follow the plants. I fruited the Jessie when they first came out and discarded them. Years after I got plants from Oberst and they have been a success ever since. It was the same with the Clyde; they were no good until I sent to a man in Michigan who grew 200 bushels of fruit to the acre. Since then I have sold over 200,000 plants here and made it the leading berry and it is a big cropper. Glen Mary was a fraud until a neighbor grew over 100 cases on $\frac{1}{4}$ acre. I got plants of him and the yield that season was immense.

I find that Fall plowing is best for plants set the next Spring, scratching lightly with the harrow so as not to make the soil too loose. I then plant roots straight down with a dibber and the harder the soil the better. Then cultivate with drag tooth cultivator until runners start well, then shovel plow about three times, covering the runners and raising the high ridge. Shall use a celery hiller this year.

I find that 100 lbs. of nitrate of soda strewed along the

rows when the first blossoms appear adds largely to the crop.

I pick as soon as the berries are red. They are poured out on the tables and all that are soft or too small are thrown out and the balance go into the boxes, well shaken and with solid face of fine berries slightly pressed down. This makes "packed fruit," that can be shipped a great distance and does not need to be slaughtered as soon as the case is opened. The packing costs about 7 cts. per case and adds from 25 to 50 cts. to the price. Women, with their deft hands, are the best packers and it is wonderful how long some of them can handle the berries without staining their fingers.

Racine, Wis.



THE USE OF NATIVE PLANTS IN HOME DECORATION.

C. H. Ramsdell.

[Read at meeting of Wisconsin State Horticultural Society.]

It is a very true saying that "Familiarity breeds contempt." How often one sees a man spending hard earned money on an article marked "Made in Germany," or some other foreign country, when the same article is produced near home at smaller cost. A rather amusing incident illustrating this, came to my notice a while ago. A gentleman, being in Minneapolis, bought several articles to carry home, among which were two bunches of fine celery, for which he gave a good price. Interested by the unusual quality of the celery, he asked the dealer where it was raised. To his astonishment, he was told it came from his own town, and was raised by a man well known to him. So he carried his celery back to its native soil, paid liberally for his eighty-mile trip and, we hope, learned a valuable lesson.

The very plants growing under our eyes are often overlooked and tender exotics are cultivated instead, while as a matter of course, the natives grow better. I often hear it said, "Why, that's growing down in my woods," and the person believes it fit only for the brush scythe, and fire. But such persons often do not even know the name of the plant in question, much less its flower, fruit, or uses.

ADVANTAGES OF NATIVE PLANTS.

A native plant, growing under its natural conditions, will thrive better than any introduced specimen, while at the same time it will be more in keeping with its surroundings. What can equal in effectiveness, a well kept grove of pines, oaks, or any of our large trees! Our native shrubs are in greater variety and just as desirable as those of other lands. And even a little collection of wild flowers, the trilliums, violets and hepaticas, can interest as well as the expensive orchids and tender greenhouse plants. The woods themselves become more interesting, if we recognize in them some species growing at home under cultivation.

One does not need to question the hardiness of natives. One can, by planting them, avoid the trouble of winter coverings, early and late frosts, and winterkilling. In the catalogue of one of the largest and most reliable nurseries of the country, located at Rochester, N. Y., are named as deciduous shrubs, about 175 species. Now in this list, there are only 65 of known, tested hardiness to the climate of the northwestern part of this state. As nursery agents offer plants from such catalogues, one can readily see the chances the amateur runs of buying stock which would soon winterkill.

Of course cultivated plants are not to be underrated. If plants of other countries were not cultivated probably most of the interest in horticulture would cease. But, up to this time, the greater part, perhaps, of work in experiment and

cultivation has been with imported plants. Of course this is natural, since one appreciates something rare more than something common. On the other hand, natives are more easily obtained than nursery stock, thrive better and fit into a natural landscape at the same time. Cultivated stock flowers more, perhaps, grows in more conventional forms and is used more in formal gardening. So there is room and good use for both.

I quote a paragraph from the handbook for home decoration, published by the Stout Manual Training School, and written by Warren H. Manning, the landscape architect of Boston: "In locating and defining outlines of plantations, definite purposes should be had in view, such as the screening of objectionable views, giving seclusion, separating parts of the grounds, uniting buildings with the grounds by a clothing of vines and by planting about foundations. Such plantations will usually be irregular belts and groups of large and small shrubs, and occasional small trees, all selected with regard to height, habit and foliage at maturity and located to serve the particular purposes referred to. They should be arranged to leave the largest available central lawn space, in which there should be but few single specimens of shrubs and trees and no formal beds of flowers, it being best to confine such beds to a special flower garden, or to use flowers in broadenings on the edges of shrub borders. Of course to secure the best results, the whole space to be occupied by plantations should be thoroughly fertilized and spaded up, for shrubs do not do well in grass."

If, on a place to be improved, native vegetation is found, it usually can be used to good advantage. When large trees are so located, by thinning and trimming one can obtain the same result quicker than by planting groves of cultivated trees. Shrubs can be grouped or moved to plantations needed in the general scheme of improvement.

Of course, any kind found undesirable ought to be taken out. Then, if other kinds of trees or shrubs are needed, some cultivated ornamentals may be added, in keeping with those already in place. Even the ferns and shade loving plants can be used where grass would be shaded out, and a little garden or border could be made for the wild flowers growing on the place. In fact, there are few native plants that are not desirable, ornamentally, in flower, foliage, or fruit, at some season of the year; and one will often be surprised to note how quickly they respond to good care and treatment. Some time ago, a lady told me that in a small city in Minnesota, she saw the red-berried elder, planted as an ornamental on a number of places. "Now," she says, "do you know any nursery near here, where I can get one. They are so pretty." I told her if she would go three blocks over to the pond bank, she could find any number of them. This shows how much a native can be improved by care and also how one needs to go away to appreciate the common things at home.

FOR ORNAMENTAL PLANTING.

Ornamental tree planting serves practically the same purpose on the grounds that the interior furnishings serve inside the house, that is, to make the surroundings more attractive. The growing of trees for shade and windbreaks is also very important. Our native trees cannot be improved upon for these uses. Of course if these are fruit or nut bearing trees, then a double use of them is made. The boy on the farm can tell you where they are, their names and all about them, every time you ask him.

We often see native trees giving just as fine effects in foliage as the cut-leaved, scarlet-leaved or other horticultural specimens in the nursery. The birches, willows and mountain ash are among these. The appearance of our woods in fall, gives proof of the rich colors of the trees native to the region. And we can obtain the same results

with the same trees at home, on even a small place. The dark pines and evergreens are a feature of the winter landscape, and the contrast of the living green foliage with the dull winter colors makes their cultivation on the home place quite important.

The shade trees of this state are well known, the maples, preferably the hard or sugar maple, the basswood, the oaks, perhaps the poplars, the elm, the hackberry, and the box elder as a temporary kind. For foliage effects, the birches and willows are useful, the maples and oaks for their colors in fall. Among the smaller trees, the plum, the thorns, cherries and the mountain ash have both attractive flowers and fruit. In the list of nut trees, the black walnut, the butternut and the hickory give some shade, and are good specimen trees, besides affording a supply of nuts.

The mistake is often made of planting too many trees on a small place. This results in a crowded, spindling growth and misshapen specimens, instead of well-formed trees with plenty of air and room. Usually on a small place, one good mature tree will serve all needs. On the sidewalk line, one permanent tree every forty feet is enough. Often one sees trees planted so close to the sidewalk as to be in the way. The foliage close to the ground, holds snow and rain to shower the passerby, or interferes with umbrellas, etc. Then, too, the trunk may interfere with the sidewalk vehicles and have its bark injured thereby. The roots also heave the brick, cement, or other sidewalk material used, and cause it to be uneven.

NATIVE SHRUBS AND VINES.

The sumach well repays its use, with its tropical summer leaves and bright red fall foliage. The dogwoods flower freely and are useful for massing. The elders, both the red and black berried, are desirable for flowers, foliage and

fruit. For quick growing masses of foliage, the ninebark spiraea can hardly be equalled. The wild roses respond readily to good care and the flowers, while they last, are attractive. The high bush cranberry is effective and the other viburnums nearly equal it in flower and fruit. If the Indian currant is found native, use may be made of it, as a low growing plant to face down a group of higher ones. Perhaps the laurel and lambkill may be found in the southern part of the state and if used, their flowers would attract attention.

For hedges the use of the prickly ash, common barberry and thorn apple will be effective. We can find a good substitute for the southern evergreen holly, for Christmas use, in the deciduous holly, growing in many swamps and low places, with red berries, but without the evergreen foliage of the southern species. Sumachs, willows, blackberries and raspberries, will hold a steep bank as well, if not better, than any other shrub.

Vines of all sorts may be found native. The wild cucumber as an annual affords quick protection from the sun, but, as it turns yellow early, is not so desirable as a permanent vine. The woodbine, or five fingered ivy, is very hardy, grows quickly and has beautiful red foliage and purple fruit in fall. The bittersweet is a slower grower, but has more attractive leaves than the woodbine and in fall is covered with orange colored berries. The Minnesota honeysuckle, when found, is ornamental in flower. On some shady piazza or arbor, the clematis would be at home and its masses of white flowers and delicate foliage make it a desirable addition to the list.

NATIVE EVERGREENS.

The use of evergreens for winter foliage effects is widely appreciated. For this purpose the native pines, spruces, firs, cedars, and hemlock are available. Pines can be grown

on almost any soil. If the white pine will not do well, then the Norway might, and as a last resort, the Jack pine can be depended upon. The spruce is very effective as a specimen tree for the lawn. The red cedar and hemlock give a denser foliage effect than the pines and spruces, and therefore can be used for backgrounds. In some localities of this latitude, the arbor-vitae grows native and as an evergreen hedge, its use can hardly be equalled. A sandy bank might be covered with a growth of native juniper to good advantage. But in planting this kind of trees, a few are usually all that is necessary, as they give a somber effect if too close to buildings and are unhealthful there also.

To the lover of the woods, a wild garden is just as interesting as the usual one containing the standard favorites. One can with little labor grow at home in some protected corner, such plants as the trillium, blood root, violet, lady's slipper, and later the golden rod, wild sunflower and aster. In fact the golden rod and wild sunflower are so easily cultivated, that they are useful as a border to larger shrub beds. Thus they add color at a time when leaves are dull and rather the worse for the summer's heat and drought. In any shady corner a collection of native ferns is interesting and instructive as well. Thus one can avoid the trouble from grass being shaded out.

SELECT GOOD SPECIMENS.

In collecting native plants, much care ought to be used. If those standing alone are taken, better specimens will result. In moving trees, the larger the tree the more care necessary. A root ball is quite essential where possible, especially with evergreens. As many of the smaller roots should be saved as possible. An evergreen, whose fine roots are allowed to dry or wither is almost sure to die. Sometimes it is desirable to cut back the top of deciduous trees if the roots are much damaged. Bruised root ends should

be cut smooth. Those trees having long tap roots, such as the oaks, beeches and the nut trees are especially hard to move. It is often a good plan, where practicable, to transplant these once or twice before planting in permanent place, as this encourages the growth of side roots with their hair roots, so essential to successful moving. Elms, maples, willows and poplars, growing more fine roots, are easier to transplant. Shrubs are easy to move for this reason, also. But the sumach, strange to say, often has long side roots and few small ones, and yet there is nothing easier to move and have it grow. Among the shrubs before mentioned, the sumach, elders, ninebark, roses, Indian currant, and high bush cranberry are quite sure to stand transplanting. The deciduous holly, prickly ash, laurel and lambkill require more care and attention. Transplanting either in spring or fall, when the wood is ripe and the plant not in growth, is practiced successfully. The herbaceous plants may be moved at any time with the earth around the roots. They are not at all difficult to transplant although oftentimes they die afterwards because of unfit conditions. In any extensive cultivation of native plants, select those kinds growing under the same conditions as those where they are to stand. Or if this is impossible, or the selection does not suit, aim to make those conditions as nearly natural as possible. The more natural the conditions, the more satisfactory the results.

There are nurserymen and collectors in nearly all parts of the country who make plant collecting their business. Their prices are lower than on ordinary nursery stock. They will average about \$5.00 per hundred or \$20.00 per thousand. But the plants thus obtained will be smaller than one can collect oneself.

In the cultivation of this branch of plant growing, there is much pleasure to be derived; for, to obtain the trees,

shrubs or flowers, takes one into the woods and requires agreeable work out-of-doors, and in planting them one works out his own ideas. Finally, to watch them develop and improve in flower, fruit, or foliage, is to see the results of one's personal care and attention. But above all, comes the satisfaction of knowing that one has made the best use of what is nearest at hand and also that others may be influenced to appreciate the beauty of the commonplace.

Menomonie, Wis.

HOW PEACHES CAN BE GROWN IN RICHLAND COUNTY.

John T. Wood.

In reply to your request in regard to my experience in growing peaches, I will say we set 100 trees in 1892. They began to bear fruit the second year, and bore for three years, until the cold winter of '98 froze the roots, but did not kill the wood or buds, under our method of setting and protection,—which is as follows. In setting, we use large two-year-old trees, dig the hole the proper size and depth,—a little deeper than for ordinary planting, then make a cone of solid earth across the middle of the hole, in line with the row, or in the direction the tree is to be laid down, then divide the roots into two equal parts, or as near as can be, and saddle them over the cone of dirt, then fill up and pack the dirt as in other planting. In the fall when you wish to lay them down, dig on the side to which you wish the tree to turn, and it will lop over as if on a hinge. Put a little straw under the tree to keep the small branches off the naked ground, fill in the dirt around the roots, over which put a good mulch of straw and over that and the entire tree put six inches of straw or cornstalks, over which put sufficient dirt to hold the straw and tree in place. In the spring remove the covering and dirt, lift the tree and replace the dirt around the roots.

Our peaches were of the finest quality, specimens measuring three inches and over in diameter, and sold readily at \$4.00 per bushel.

Twin Bluffs, Wis.

GROWING PEARS IN WISCONSIN.

W. J. Moyle.

[Read at the Winter Meeting of the Wisconsin Horticultural Society.]

On the west shores of Lake Michigan, extending the entire length of the State, is a belt of land reaching from ten to twenty miles inland, where the pear seems to thrive equally well with the apple. The high, rolling lands of eastern Racine county can be classed among them. In travelling up and down this territory one will come across many small orchards and individual trees, that have paid the planter well for the ground they have occupied.

Surprising as it may seem, nevertheless it is true, that with fifteen years' experience in growing the pear I have found it as hardy in the tree and fruit buds as our best apples, for during the severe winters that we have recently passed through, when fruit trees of all descriptions were killed, my pear trees pulled through and gave me a fair crop of fruit every season,—a very valuable feature with the pear, as after the trees once begin to bear you can always expect some fruit every season; at least this has been my experience. This was well illustrated the past season, which was an off year with the apples and crabs, and we should have had a complete failure of tree fruits had not the pear orchard come to our rescue with a well distributed crop of all varieties, giving us choice fruit from early August to late November.

In looking over the orchard the other day I noted that

most of the varieties are well studded with fruit buds for next season. These trees will blossom and mature their fruit next summer, barring a late frost at blossoming time, which once in a great while happens, thus destroying the bloom.

Another very marked and desirable quality of the fruit, the pear, is its remarkable freedom from insect pests, as apple and plum trees in the same orchard were literally riddled with codling moth, curculio and gouger, while the pears were practically unmolested.

The one great drawback to growing pears, not only in Wisconsin but all over the country, is the blight. No remedy has as yet been found, although it has been pronounced a bacterial disease. We hope that in the near future some antidote will be discovered. In the mean time select a favorable location on which to plant the trees. High rolling land, in exposed situations, should always be chosen, as a free circulation of air and a good drainage are absolutely essential.

Of the twenty or more varieties now fruiting in our orchard, I consider the Kieffer the most robust and hardy; Osband's Summer, Lawson, Wilder Early, Clapp's Favorite, Marguerite, Bartlett, Souviner de Congress, Flemish Beauty, Seckel, Sheldon, Clairgeau, Anjou and Kieffer have proved the best in their respective seasons; the most profitable Souviner de Congress and Kieffer; the highest in quality, Marguerite.

I have picked up several seedlings throughout the country that have some very deserving merits, many of them being much superior to any of the Russians, of which I have fruited nine varieties the past two seasons. These were all coarse grained and of the poorest quality. In fact I have condemned many of my Kieffer seedlings to the brush heap that were much superior in size and quality to the Russians.

The most interesting and instructive work that I have

carried on in my pear growing are the results I have obtained from a lot of seedlings of the Kieffer, of my own planting for the past three years. I find many of them have better qualities than the parent and all are of good size, very productive and inherit the vigor and vitality of the Kieffer.

In conclusion I would say from past experience, the pear can, in favorable localities, be grown in Wisconsin with considerable profit.

Yorkville, Racine Co., Wis.

SOME PROBLEMS IN RURAL HYGIENE.

One of the most important papers given before the Agricultural Convention recently held in Madison was one by W. D. Frost on rural hygiene. We would gladly print this paper in full, but must be content with a somewhat brief abstract.

Mr. Frost called attention to the progress made in the last century along hygienic lines. In the time of Columbus the average length of life was only 15 years, now it is 39 years. This improvement has been made chiefly in cities. It is time for the farmer to realize his responsibilities. Some one has said "Life is not to live but to be well." The death rate does not represent the amount of misery entailed by violation of the laws of hygiene.

Three things are essential to good health,—pure air, pure water, pure food. For the greater part of the year natural conditions furnish the rural population with pure air. But in the winter the question of obtaining a supply of pure air for house and stables is important. One may as well expect to get full energy from a steam engine when it has an insufficient draft as to enjoy perfect health in an ill-ventilated room. This applies to horses and cattle as well as to men.

Germ of consumption and diphtheria are often carried in the air. The following measures should be enforced to control diphtheria.

1. Examination of all suspicious cases.
2. Isolation and quarantine of all cases of diphtheria.
3. Thorough disinfection of all apartments to which the patient has had access. Practically the only agent which can be relied upon for room disinfection is formaldehyde. Burning a pinch of sulphur is of no value.
4. All persons known to have been exposed should be closely watched. Antiseptic throat washes should be used and if possible preventive doses of antitoxin administered.
5. Public funerals should not be allowed in cases of either diphtheria or membranous croup.

PURE WATER.—The well should be protected from contamination from vaults or drainage or surface water. Typhoid fever is most frequently introduced into the system by the water supply, though the germs may also be taken in food. The fact that wells become infected with typhoid germs is well known. The infected material is often carried a long distance. It may be carried through a layer of coarse sand or through crevices in the rock. The contamination is most apt to come from a vault. It is advisable to use dry earth closets instead of ordinary vaults. Replace the vault by a water-tight receptacle, or a slop-pail may be used. The only other requirement is a supply of dry earth. After every use of the vault throw in a covering of the dry earth. The receptacle can be emptied by removing the material some distance from the house, as in a corner of the garden. Cover it with a few inches of dry earth. In a short time, varying from a few days to a few weeks, it will entirely disappear. Sewage may be disposed of by a septic tank or subsoil drainage.

Insects, such as flies, fleas and mosquitoes, are known

to carry diseases, hence all food should be carefully protected from flies, and the doors and windows provided with screens.

PIONEERS IN HORTICULTURE.

Wm. Toole.

[Read at the State Horticultural Meeting.]

C. S. Harrison of Nebraska, in a recent number of American Gardening, says, "Peter Gideon and Patten have moved the apple belt 300 miles farther north." As the years go by our gratitude to Peter Gideon will increase, with honor to his memory, for what he has done in the interest of apple growing; and we hope that it may be many years before we may be called upon to change our present thankfulness to Chas. G. Patten for what he has done and is doing for fruit culture, to eulogies in his memory. We are grateful to these men, not only for the direct benefit of new varieties adapted to our northern conditions, but also for encouragement and incentive for others to work in the same direction. Still we feel in Wisconsin that the apple growing field is not bounded on the north by the line of adaptation of the two varieties Wealthy and Patten's Greening.

Fortunately we have varieties which we believe are more hardy than the two just mentioned, and we do not yet know our northern limitations, but we do know that we have a number of varieties which can be grown with encouraging success much further north than we formerly supposed. As this knowledge is the result of dearly bought experience of those whose faith overcame discouragements, we feel that we should be prompt to pay the debt of gratitude we owe to the many pioneers in fruit growing, whose work has given us our present knowledge of adaptation of varieties to Wisconsin.

If Father Daniels had not given us the Northwestern Greening and W. A. Springer the Wolf River, it would have been harder for us to have won our laurels at Omaha and Buffalo. And how we would have missed it if we never had a showing of McMahan! Surely we are thankful that Freeborn and Hatch brought this variety to our notice. And what would we do without the best of the Russians? If we have not found in them just what we sought for still we have reason to be thankful that A. G. Tuttle and his co-workers gave us Longfield, Anisim, Yellow Sweet, Transparent, Lowland Raspberry, Repka, Saxonian and others.

If Charles Hirschinger had never done any other good thing besides making known to us the good qualities of Scott's Winter, we would thank him for that alone. Plumb's Cider is valuable enough to be a memorial to J. C. Plumb. We seldom mention the name of Orange Newell, as he was not an active member of our State Horticultural Society, but the variety bearing his name is a lasting honor to his memory.

Friend Chappell, with horticultural enthusiasm and generous readiness to share with others his dearly-earned knowledge, has given through our Horticultural Society continuous and lasting influence for the benefit of fruit culture.

The late G. W. Cairns of Pierce County during his life did much to encourage fruit growing in that part of the State, besides leaving some very promising seedlings, and did not fail to give credit to our Society for the inspiration of its teachings. Lasting will be our regard in honor of the memory of George Peffer of Pewaukee, not alone for the Pewaukee apple, but for a life devoted to the welfare of his fellowmen.

We are accustomed to associate the names of the introducers with varieties of apples we value most highly, hence

it is strange we say so little of the late Judge Clark of Bar-boo, who introduced the Duchess apple to Wisconsin.

Our worthy president, Dr. Loope, and his associate, A. A. Parsons, are bringing to our notice some good things which will honor their memory. A. J. Philips, with his seedlings and what he has done to make us acquainted with other Wisconsin seedlings, has helped to broaden our knowledge of our opportunities, and, if friend Barnes has not yet established the fame of any seedling, he has with others done his share to carry the apple belt farther north.

Our lamented friend and co-worker, B. S. Hoxie, even if he was not an orchardist, did his share to establish fruit growing in Wisconsin, for what would pomology amount to in Wisconsin at the present time if we never had a Wisconsin State Horticultural Society? and the value of our state society for good is the sum of the usefulness of its members.

We have lost many workers in the cause of Horticulture and others must pass away, but their work will be continued and we hope improved upon by the younger horticulturists coming forward. It would seem as if a summary of past achievements in creating, developing and testing varieties might lead to more systematic work with more certain results. The trial orchards established by the Wisconsin State Horticultural Society will do much to help make more progress in acquiring horticultural knowledge and experience than has been made in the past. Future experiments in bringing forth new seedlings must naturally yield more prizes than in the past, because there are now so many orchards which contain only approved varieties, so that seeds may be selected which surely have good parentage. The outlook is encouraging and we surely must believe that when the present life of our State Horticultural Society has been doubled, those then living will have a much greater variety of fruit than we now have, for our development of varieties must not be confined to apples.

Have we done all we could to make pear growing a success in Wisconsin, or has our fear of blight been too great?

Our horticultural brother Harrison of Nebraska would encourage the extension of peach growing in that state and would carry the peach belt further north. We ought to raise more peaches in Wisconsin, not, of course, as a commercial fruit, but as an additional source of pleasure to the family with a treat of better fruit than is brought into our markets. If in the past one-fifth as much effort had been expended in developing peach culture in Wisconsin as has been devoted to apple seedlings, many bushels of peaches would have been raised in Wisconsin the past season.

The improvement of our native plums is in good hands, and we are thankful that Professors Goff and Cranfield are doing so much for us in that line, but there should be more done with seedlings of the domestica plum, and also with crosses of our natives with the domesticas and Japanese.

Friend L. G. Kellogg has given an encouraging impetus to cherry culture in Wisconsin, but who will take in hand the improvement of our native fruits?

Our native cherries are being well looked after and in good time we shall hear of results. Cranberries of course are on a firm basis, and if the original peach was as poor a fruit as we sometimes read of we feel that we might have great expectations for our native apples, hawthorns, viburnums and blueberries.

Among the many who have done pioneer work in testing ornamental trees, shrubs and small fruits, we thankfully remember what we have learned from our departed brother, J. L. Fisk, and our still present Geo. J. Kellogg.

This paper is not offered to our society with the thought of mentioning all who have worked for the advancement of Wisconsin horticulture but rather that we may feel how much gratitude we owe to others for present blessings and realize how much incentive we have, with our better opportunities, to work for ourselves and posterity.

FOR THE HOUSEHOLD.

DANISH PUDDING.—Soak $\frac{1}{2}$ cup of pearl tapioca two or three hours (or over night), in 3 cups of cold water. Boil this until clear and soft, stirring often; it will take about an hour. Then add salt to taste, $\frac{1}{4}$ cup sugar and half a tumbler of currant jelly, stirring steadily until all the jelly is dissolved. Turn into a mold that has been dipped into cold water, and serve very cold with cream and sugar or whipped cream.

VINEGAR SAUCE, as mother made it.—1 cup sugar, 1 cup (or a little more) of water, 1 tablespoonful of butter, 1 tablespoonful (or more) of vinegar, 1 tablespoonful of flour, pinch of salt. Let the water and sugar come to a boil, then stir in the flour previously rubbed smooth in a little cold water. Let this boil five or ten minutes, stirring constantly, then add the butter, vinegar and salt, the amount of vinegar depending upon its strength.

TO WASH CHAMOIS SKIN.—Into two quarts of tepid water put a tablespoonful of aqua ammonia and rub the chamois skin well in it with the hands, or squeeze it for some time in this water. Rinse thoroughly, dry in a shady, cool place and stretch smooth when almost dry. So treated, a chamois skin will be as pliable and useful as when new. Never use hot water.

SAN JOSE SCALE IN A COLD CLIMATE.

At our recent Horticultural convention in Madison, some one asked Prof. Webster of Ohio if the San Jose scale could live as far north as Wisconsin. His reply was: "I would not want to pin my faith on the ability of that thing not to live anywhere; it does very well in Canada. I think it would live at the North Pole, if you could make fruit trees grow there."

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IN MEMORIAM.

B. F. Adams died of pneumonia, Feb. 6, 1902, at the home of his son, H. C. Adams, in Madison, Wis.

Benjamin Franklin Adams was born Dec. 4, 1822, in Verona, Oneida Co., N. Y. In 1845 he graduated at Hamilton College and afterward taught Greek for two years at the academy in Hamilton. In 1848 he moved to Fort Atkinson, Wis., and shortly afterward to Stone's Prairie in Dane Co. Several years later he went to Beaver Dam, then to Liberty Prairie in the town of Pleasant Springs, where he lived fourteen years. In 1873 he bought a fruit farm near the western border of Madison. A part of the farm has since been platted into city lots and is comprised in the suburb known as Wingra Park. He was Member of the Assembly from the First District of Dane County in 1862 and again in 1872.

Soon after moving to his fruit farm Mr. Adams joined the Wisconsin State Horticultural Society and continued an honored member until his death, although for a few years past failing health had debarred him from active participation in the discussions of the Society. At the annual meeting held in Madison in February, 1885, he was elected vice-president and also superintendent of exhibits, and was re-elected to both positions for several consecutive years.

In the death of Mr. Adams the Wisconsin Horticultural Society loses one of its ablest members.

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THE WINTER MEETING OF THE WISCONSIN STATE HORTICULTURAL SOCIETY.

We heard a reporter remark "This is a hard meeting to report, because it is all so good." Those of our members who wished to spend a part of the time in attendance at other conventions, found ours "a hard meeting to stay away

from." They disliked to lose any part of our interesting program.

Among our guests from other states were Wyman Elliott, A. W. Latham and Oliver Gibbs of Minnesota, C. J. Patten and Frank E. Pease of Iowa, C. E. Bassett, the general secretary of the Michigan Society, Prof. F. M. Webster, of the Ohio Experiment Station, Prof. J. C. Blair of the Illinois Experiment Station, and Jonathan Periam of Chicago. All of these are men of note, whom it was an honor and a pleasure to meet, and who added much to the interest and weight of the discussions. We also were glad to greet again Mr. Kluck of Illinois.

The officers of last year were re-elected without change.

Mr. Ihrig was not present, so his excellent paper on strawberries was read by another. Mr. Herbst prefers women and girls for picking and packing berries; Mr. Geo. J. Kellogg employs boys, doesn't want any girls. The implement, par excellence, recommended by Mr. Hatch was a "Breed's Weeder;" though of course that cannot do all the work. Mr. Ames, in his article on "Fruit for the Farm," appealed to the nurserymen to use greater precautions against sending out varieties not true to name.

Mr. Latham, secretary of the Minnesota Horticultural Society, gave a valuable paper on "Transplanting the apple in the Northwest." His preference for an orchard site is a northeast slope. Protection should be given from southwest winds. Do not locate an orchard on light soil. Plant deep, at least 3 or 4 inches deeper than in nursery row. Mr. Oliver Gibbs, of Chicago World's Fair Fame as well as of fame as a horticulturist, gave a thoughtful and ingenious exposition of "The Variation of Fruits in Changed Environments." He holds that the same variety of apple will differ much in color and quality with difference in soil and conditions.

The Tuesday evening session presented the unusual spee

tacle of three ladies addressing a large audience composed exclusively of men! The paper by Miss Jacobson, "A Vacation in Europe," amply repaid one for the trip to Madison and Miss Treleven's paper was so good that it is to be repeated at an Institute. Miss Cairn's paper on "The Development of Pierce County Orchards" showed thoughtful observation and painstaking research; you will enjoy reading it in some future number of the Horticulturist.

Prof. Goff's address on "The Pruner's Problem" was of importance to every orchardist. (In the summer of 1898 he noticed an old orchard which bore a large crop of apples. The orchard had been well cared for, cultivated and sprayed, but the fruit was undersized. Across the road was a young orchard which had been neglected. The apples were very fine indeed and sold for a dollar per barrel more than the apples from the old trees which had been cared for. Ever since, he has been studying why.) The pruner's problem is, "how can we make old trees bear as large fruit as young trees?" Prof. Goff showed that every time a fruit spur flowers, new branches grow from that point. As the branches grow more numerous, each branch receives a smaller supply of water, hence bears smaller fruit. The professor is experimenting with the hope of solving the problem by a sort of tree renewal, removing the weakened branches and leaving the young and vigorous, that is, pruning the trees so as to have only young fruit spurs.

Prof. Webster warned the inexperienced against attempting to use crude petroleum. No paper was listened to with closer attention than that on "Co-operation in Marketing" by Mr. Bassett of Michigan. Prof. Blair's paper on "Cold Storage" was illustrated by models showing the construction of a cold storage house.

The Assembly Chamber was filled to its utmost capacity Wednesday evening at the joint meeting, the cardinal

ribbons of the Agricultural Experiment Association imparting a gala air. A. J. Meyers, a student in the college of Agriculture, presided. Gov. La Follette was not present, on account of a severe cold. His place on the program was filled by Prof. Henry, whom the presiding officer introduced as "the man who never disappoints." And he didn't disappoint. He recounted his visit to Holland and we came away feeling that we ourselves had been to Holland and had seen its clean domains and thrifty people. Ex-Gov. Hoard, also, received an ear-splitting college welcome and, though pale and weak from recent illness, gave an entertaining address. Recitations by Miss Whittemore and music by Short Course students added to the pleasure of the evening.

Thursday afternoon Mr. Bigger, a young Short Course student, gave a comprehensive account of horticultural instruction at the Experiment Station. Mr. Bigger was made an honorary member of our Society for the ensuing year.

The secretary was instructed, by a rising vote, to send the greetings of the Society to our honored and well beloved members, J. S. Stickney, A. G. Tuttle, F. S. Phoenix and F. C. Curtis and kindly inform them of our regret at their inability to meet with us.

On account of the preceding articles taking more space than we anticipated, our report of the meeting has been greatly abridged, and we are compelled to omit the full notes we had taken on the very valuable papers by Mr. Pease and Mr. Skewes, and the solemn memorial service.

This number closes my editorial connection with the Wisconsin Horticulturist. With best wishes for the success of the new editor, whose announcement appears on the following page, I bid you, each and all, FAREWELL.

MRS. FRANKLIN JOHNSON.

**CHANGE OF EDITORS.**

By the action of The Executive Committee of the Wisconsin State Horticultural Society, the editorship of the Horticulturist passes into the hands of the Secretary of the Society. The change of editors occurs with the March issue and all correspondence, articles contributed for publication and all exchanges should be addressed to J. L. Herbst, Sec'y, Sparta, Wis.

Copy for advertising and contributions for publication should reach the editor the first of each month. Advertising rates will be furnished on application. Contributions are solicited. Write your experiences; they will prove of interest and profit to others. Beginning with the March number we shall have a half-tone in each number of some life member of the Society with a short sketch of his life. Write us your wants. If you have any special topic you wish discussed let us know and we will endeavor to have an article on it. Ask us questions and we will try and answer. The Secretary requests all local societies and others entitled to the Annual Report to report to him, if they have not received their copies, and same will be sent to them.

J. L. HERBST, Sec'y.



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Wisconsin Horticulturist for 1902.

THIS PAPER

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