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The Shrubs of Wyoming.

By ELIAS E. NELSON.

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The Shrubs of Wyoming.

BY ELIAS NELSON.

Our native shrubs are objects of more or less interest to all, and a bulletin treating of these, it has been thought, would be welcome to the people of the state. This bulletin has therefore been prepared as an aid in the identification of native shrubs, and it is hoped that it may be instrumental in creating a greater interest in these denizens of our hills, plains and mountains, and a more general planting of them for home decoration.

This station has already issued two bulletins on trees, one treating of the cultivated, the other of the native trees of this state.* It is now well to give shrubs some attention, and a bulletin dealing with our native ones is therefore published. It is hoped that this station may issue other bulletins, which shall treat more in detail of certain classes of shrubs of economic importance. It has seemed best to prepare as a first bulletin on the shrubs one including all those known to occur within our borders.

While the kinds of trees in the state are few, we have a great variety of shrubs. As objects of aesthetic value, they are of much interest. They beautify our water courses, forming delightful thickets and lining the streams with a pleasing variety of verdure. They occur as scattered growths on hillsides and in canons; fringe the borders of woods, and grow far up the sides of snow-capped mountain peaks. The copses and thick-

*In Bulletin No. 38, entitled "Cultivated Shade and Forest Trees," Prof. B. C. Buffum treats of the trees which are generally planted or have been tried in Wyoming. Directions as to care and planting are included in this bulletin. Bulletin No. 40, by Prof. Aven Nelson, entitled "The Trees of Wyoming and How to Know Them," describes our native trees and contains numerous illustrations as an aid to their identification. The edition of this bulletin is now exhausted, and, hence, copies of it cannot now be furnished by the station.

ets of shrubs scattered in and about open woods give that charm and naturalness to the scene which man cannot reproduce. No landscape is complete without them.

VALUE OF NATIVE GROWTHS.

Apart from aesthetic considerations, native growths of shrubbery are of much importance. The value of forests in retaining the water from melting snows in the mountains is well known, and in this shrubs aid very largely. Swales and mountain parks with their dense willow growths serve as storehouses of moisture, and thus supplement the influence which forests have in regulating the water supply. The preservation of the shrubs on the banks of our mountain brooklets is therefore of importance, as their destruction by fire or through excessive cropping by grazing animals will have the effect of increasing the flood waters of spring, resulting in a shortage of water later in the season. Small creeks often run dry earlier than otherwise in consequence of destruction of shrubs and other vegetation about their spring heads. The natural thickets in our valleys furnish shelter for stock during inclement weather, and the willows and other shrubs along the streams prevent the banks from washing. Ranch buildings, gardens and orchards can often be so located that they are sheltered by natural thickets. As windbreaks they are a source of some protection to fields of agricultural crops, and by deflecting the wind prevent the excessive evaporation, which accompanies dry winds passing unobstructed over the land.

PLANTING OF NATIVE SHRUBS.

Our native shrubs may be planted for several purposes. Various ones may be used for ornamenting the home grounds. The buffalo-berry is an excellent shrub for hedges; willows may be planted for windbreaks or along canals and ditches to hold the banks in place, and several are of value for their fruits. Though most of them are not readily transplanted, they do

well when once established. The smaller bushes should be selected, and the roots kept moist until planting, which should be as soon as possible. When practicable they may be dug up with the soils remaining about the roots, or wet burlap can be wrapped about the roots while bringing them home. It is best to heal them in temporarily, if they cannot be planted at once. The tops should be pruned to the same extent that the roots have been cut in digging. This is very important, as planting without any pruning accounts for most failures.

NATIVE ORNAMENTAL SHRUBS.

Shrubs are of much value in ornamental gardening, and they add much to the attractiveness and beauty of the home grounds. They are as essential for good landscape effects on the lawn as are the shade trees. In any locality much use can be made of native species, and as a rule these may be secured with little expense. Most of the cultivated shrubs of the Eastern states will not thrive in Wyoming, at least not at the higher altitudes. We must, therefore, depend to a large extent upon the native varieties for home decoration. Many ornamental shrubs procurable from nurserymen do well in the lower altitudes of the eastern and northern parts of Wyoming. Certain native species may be used to advantage on the home grounds. Being natives and therefore suited to our climate, there is greater assurance of success in growing them than with the cultivated ones. They will give variety, and some are not without merit as ornamentals, indeed many are quite desirable for the lawn. To many persons it is a matter of much interest and considerable enjoyment to bring home and endeavor to grow the more deserving of the native sorts.

NATIVE FRUITS.

Many of our native fruits are used to a considerable extent for culinary purposes. As they are often easily secured, they may be planted in gardens for home use. However, since there

are cultivated varieties of various fruits which will succeed in this state it will not be advisable as a pecuniary consideration to make large plantations of any of these wild ones, except perhaps the wild plum or the flowering currant.

Some of our native fruits have no close kin in any of the cultivated fruits. The domestication and improvement of such would therefore be desirable. The buffalo-berry and the service-berry may be mentioned as kinds of fruit which are unknown in the market. Any improved variety of these evolved in the future will therefore be a welcome addition to our wealth of small fruits. The problem of improving certain native fruits will appeal to many persons. Such work is exceedingly engaging, and will afford a pleasurable pastime to those who have some leisure.

PINE FAMILY.

(Pinaceae).

The members of this family are nearly all cone-bearers, such as the pines, spruces and firs, and with a few exceptions are all evergreen. In some of these evergreens, as the common junipers, the cones are very small and modified so as not to be recognized as such, being generally known as berries. The larch, yew, arbor vitae and the giant redwood of California all belong to this family. The evergreens are among the most popular and most handsome of our ornamentals and are largely used for the decoration of home grounds and public parks. The pines and many other evergreen trees furnish us with vast quantities of valuable timber. From the balsam fir is obtained the fine turpentine known as Canada balsam, and the yellow pine of the southern United States yields tar, turpentine and rosin.

*Since the publication of Prof. Aven Nelson's bulletin on "The Trees of Wyoming and How to Know Them," another pine, the white-bark pine (*Pinus albicaulis*) has been found on the high Tetons.

In this state the family is represented by four pines,* two true spruces and the Douglas spruce, one fir and the following shrubs:

JUNIPER. (*Juniperus*).

Five junipers are indigenous to Wyoming. The first three of these, which are also found in Europe and Asia, are low shrubs, while the last two often attain the size of trees.

TWIGS OF THE JUNIPERS—1. Juniper. 2. Low Juniper. 3. Creeping Juniper. 4. Rocky Mountain Juniper. 5. Desert Juniper.

Juniper (*Juniperus communis* L.)

A low spreading shrub with more or less drooping branches. The leaves are about three-quarters of an inch in length, and its dark blue berries are used for flavoring gin. It is found in the lower mountains and in the foothills more or less throughout the state.

Low Juniper (*Juniperus Sibirica* Burgsd.)

A low shrub of the higher mountains, very similar to the preceding, but with shorter leaves (half an inch long or less) and more depressed and somewhat matted.

Creeping Juniper (*Juniperus prostrata* Pers.)

A depressed evergreen shrub, with stems creeping over the surface of the ground. Its leaves are very short, sharp-pointed, somewhat scale-like and closely appressed to the twigs. This juniper is found at lower altitudes in central and northeastern Wyoming.

Rocky Mountain Juniper (*Juniperus scopulorum* Sarg.)

A stunted shrub or low massive tree, with a thick trunk and rounded top or sometimes branched from the base. Its leaves

are mere scales which are opposite (in four ranks), thickened and closely appressed, thus forming a coating over the short slender twigs. The berries are usually very numerous and of a light green color when young, but of a bluish color at the end of the second season when mature. This juniper is common in the foothills more or less throughout the state, being very common on rocky hillsides and in canons.

Desert Juniper (*Juniperus Knighti* Aven Nelson).

Very similar to the preceding, but more bushy in form and usually branched from the base. Its twigs are somewhat thicker than those of the Rocky Mountain juniper, and its scale-like leaves are disposed in only three ranks. The berries are of a blue-green color and with slightly projecting points on the surface. It occurs in the desert region of southwestern Wyoming, where its scraggy clumps may be seen in places on the hills and bluffs otherwise devoid of trees or tree-like growths.

WILLOW FAMILY.

(Salicaceae).

The cottonwoods, the poplars and the aspen, as well as the willows, are all included in this family. The American aspen and four cottonwoods are native in the state, and a score or more of willows occur within our borders.

WILLOW.

(Salix).

Willows are very prevalent and abundant in the state. They are moisture-loving plants, familiar to everyone, occurring on all our streams and very common in the mountains. Their male and female flower clusters or catkins, which are usually erect, are borne on different bushes. The male plants of some of the species are quite handsome when covered with the yellow catkins in early spring. The minute greenish capsules of the

female catkins soon burst open and discharge the silky seeds.

Though several willows of the state attain the size of trees, there is only one which is truly tree-like in its habit of growth. This is the almond-leaf willow (*Salix amygdaloides* Anders.), which may be known by its slender somewhat drooping branches and long-pointed and finely-toothed leaves. It occurs on river bottoms at lower altitudes in the state. Besides the shrubby species noted below, two dwarf diminutive willows, only a few inches high, are found on high mountain peaks.

Western Black Willow (*Salix lasiandra caudata* (Nutt.) Sudw.)

This is a very common willow on river banks in the state. It is shrubby in its habit of growth, and often attains a large size, having many trunks from the root. Its foliage is much like that of the almond-leaf willow, but the twigs are not so slender and the leaves on shorter and stouter stalks.

Sandbar Willow (*Salix fluviatilis* Nutt.)

This has a narrower leaf than any other willow in the state. It is a low shrub, 2-12 feet high, frequenting the moist sandy banks of streams. It has slender stems and branches, and a very erect habit of growth.

Salix lutea Nutt.

A very common willow several to ten feet high, widely distributed and occurring on most of the streams of the state. It has oblong leaves, less than two inches long. At the base of each leaf are two minute rounded leaves (stipules) which do not always persist.

Nuttall's Willow (*Salix Nuttallii* Sarg.)

A common willow on partially wooded slopes in the hills and lower mountains. It may be known by its broad, blunt leaves, which have entire margins, and are from 2 to 4 inches long. As it grows in moderately dry situations, it is the first willow in the spring to flower, the yellow catkins (the staminate ones) appearing very early and long before the leaves.

This willow is one of the best for home decoration, especially as it requires less water than other willows. If the male plants which bear the yellow catkins are planted, the bushes will be quite handsome and attractive when they flower early in the spring.

Barclay's Willow (*Salix Barclayi* Anders.)

This willow occurs in the mountains and is quite rare. It has large leaves much like those of Nuttall's willow, but the leaves are somewhat pointed and the margins toothed.

Bebb's Willow (*Salix Bebbiana* Sarg.)

This is one of the commonest willows in the state, being especially abundant on creeks in the foothills of the mountains. Unlike our other common willows it does not spread from the root, but has one or several large much-branching trunks and a rounded bushy top. Its leaves are of a dull-green color and only an inch and a half long. The small hairy capsules which contain the silky seeds are prominently beaked, and are borne on unusually long stalks.

On account of its striking habit of growth it may be used to advantage for ornamental purposes.

Hoary Willow (*Salix candida* Fluegge).

A low shrub, 2 to 5 feet high, with the young shoots and the under surfaces of the leaves densely white-woolly. The older branches are shining red and the leaves are from 2 to 4 inches long and less than an inch wide. This willow is very rare, being known only from the Centennial Valley.

Green-leaved Willow (*Salix chlorophylla* Anders.)

A low straggling willow, 1½ to 6 feet high, with dark-colored buds and twigs and glossy-green foliage. The leaves are whitish on their under surfaces and one to two inches long. It is a very common willow on the banks of rivulets and in bogs in our mountains.

Bog Willow (*Salix glaucops* Anders.)

A low but diffuse shrub with short, stout branches and oblong leaves, somewhat bluish beneath and about an inch and a half long. It occurs in low swales in the higher mountains.

Hairy Willow (*Salix stricta* (Anders.) Rydb.)

A low scraggy shrub, only one or two feet high, growing in bogs and on moist slopes in the mountains. The leaves are from $\frac{3}{4}$ to $1\frac{1}{2}$ inches long and are covered with woolly hairs, but less densely so on their upper surfaces. In this and the two preceding willows the capsules which contain the seed are quite hairy.

Wolf's Willow (*Salix Wolfii* Bebb.)

Much resembling the bog willow and hairy willow, but the capsules are smooth (without hairs) and its leaves are nearly devoid of woolly hairs. This is also a low mountain willow.

Geyer's Willow (*Salix Geyeriana* Anders.)

This willow is of frequent occurrence along streams in the foothills of the mountains. It grows 6 to 15 feet high, and is characterized by its bluish twigs. The leaves are rather narrow, either smooth or somewhat minutely hairy and from an inch to two inches long.

This is a handsome shrub which well deserves to be planted as an ornamental.

Pelt-leaved Willow (*Salix pellita* Anders.)

This has the bluish twigs of Geyer's willow, but the leaves are much larger (2-4 inches long) and have white shining under surfaces.

BIRCH FAMILY.

(Betulaceae).

This family is represented in Wyoming by three birches and one alder. "As in the willow family the flowers are borne in separate clusters, but in this on the same plant, while in the

willows they are on separate plants. The male flowers are in slender, drooping clusters, while the female form shorter, thicker and erect aments. The numerous fruits in the clusters, when ripe, are small, flattened, one-seeded nutlets with a small thin wing at either side."

Our birches have slender, more or less spicy-aromatic, warty twigs. The paper birch, which becomes quite a tree, is found in the Black Hills of Wyoming. The following two are more generally distributed over the state:

Glandular Birch (*Betula glandulosa* Michx.)

A small shrub, 1 to 6 feet high, with brown or grayish, glandular-warty twigs and small roundish bluntly toothed leaves. It is common in the wet bogs of the higher mountains.

Western Birch (*Betula fontinalis* Sarg.)

A large shrub or tree, 10 to 20 feet high, growing in clumps and having smooth, dark-brown bark and grayish, resin-dotted twigs. Its leaves are sharply toothed, more or less pointed and from one to two inches in length.

The western birch occurs on the banks of many of the smaller streams of the state. It may be used to advantage for home decoration, the clumps with their dark trunks and branches and pretty foliage being very attractive on the borders of lawns.

Paperleaf Alder (*Alnus tenuifolia* Nutt.)

A shrub or small tree, often 20 feet high and with several trunks from the root. It has smooth, light-green, doubly-toothed leaves, considerably larger than those of the western birch. Its flowers are in clustered aments which develop during summer and remain naked on the twigs over winter, opening the next spring before the leaves appear.

The paperleaf alder is common throughout the state, occurring in large clumps on the banks of streams. This large shrub may be transplanted and used effectively to adorn the home grounds.

GOOSEFOOT FAMILY.**(Chenopodiaceae).**

The members of the family are homely herbs and shrubby plants which are usually succulent, generally grayish in color and more or less scurfy, the flowers small, greenish and inconspicuous. To this family belong the cultivated beet, garden spinach, lamb's-quarters and Australian saltbush. It is represented in this state by various perennial herbs, many annuals, some of which are of a weedy character, and by a number of shrubs and undershrubs.

The saltbushes (*Atriplex* spp.) are grayish and more or less white-mealy or scurfy annuals or perennials, growing naturally on alkali lands in arid regions. In the Red Desert they are especially abundant and here furnish more than half of the winter forage for vast herds of sheep. All the saltbushes are readily eaten by stock, and several of our native ones are worthy of cultivation. There are seven native saltbushes in this state, three being annuals and four perennials. All the perennial ones are more or less woody at base, but only the two given below are distinctively shrubby. The first of these is commonly known as shad-scale.

Shad-scale (*Atriplex canescens* (Pursh) James).

A low grayish, scurfy shrub, two feet high or less, with narrowly oblong or linear leaves which are one-half to two inches long. This saltbush occurs on clayey hillsides and bluffs, being rather conspicuous toward the close of the growing season, when heavily loaded with the large succulent and 4-winged seeds (technically fruits). It is freely browsed by stock, and in Arizona and New Mexico is considered a valuable forage plant.

Spiny Saltbush (*Atriplex confertifolia* Wats.)

A much-branched, somewhat spiny, grayish shrub, one to several feet high. It is readily distinguished from the preceding by its broad leaves and very different seeds. The bracts

which enclose the seed proper are thick and scurfy, and have broad, rounded, free terminal portions. It is very common in the Red Desert, and occurs on clayey alkaline flats elsewhere in the state.

Winter Fat (*Eurotia lanata* (Pursh) Moq.)

A perennial undershrub, one or two feet high, growing in dry gravelly soil on the plains and in the foothills. It has slender, woolly twigs and narrow, grayish, velvety leaves. Toward the end of the growing season the stems become loaded down with white, cottony seeds. This plant is highly prized by stockmen, especially for winter forage. Both the stems and cottony seeds are greedily eaten by stock, and wherever cattle have free range the plant is kept closely browsed down to the ground.

Grayia (*Grayia spinosa* (Hook.) Moq.)

A somewhat mealy undershrub, one to three feet high, with greenish leaves which are oblong or somewhat narrower. Its seeds (technically fruits) are flat and nearly round, white or pinkish in color and less than half an inch in diameter. Grayia occurs in alkaline soil in the central and southeastern part of Wyoming.

Greasewood (*Sarcobatus vermiculatus* (Hook.) Torr.)

An erect scraggy shrub, two to eight feet high, with white bark, rigid spreading branches and small worm-like leaves. The seeds are rendered quite conspicuous by the horizontal, membranous, veined wings. Greasewood is a characteristic shrub of alkali flats and clayey bluffs throughout the state.

HYDRANGEA FAMILY.

(Hydrangeaceae).

To this family belong the garden and greenhouse hydrangeas, the wild and cultivated syringas or mock oranges of the Eastern states and a number of native shrubs occurring in the

WINTER FAT ON THE PLAINS.

western part of the United States. There are only two representatives of the family in this state.

Dwarf Syringa (*Philadelphus occidentalis* Aven Nelson).

A low, much-branched shrub, with grayish, shreddy bark, the young twigs reddish in color and somewhat hairy. It has very small, sparsely hairy leaves and white flowers, one-half to three-fourths of an inch broad, borne singly or three together at the ends of the branches.

This small-leaved unattractive syringa is known only from the country directly south of Rock Springs, where it was discovered in 1897 by Prof. Aven Nelson, who gave it the name which it now bears. Its flowers alone are suggestive of its relationship to the large-leaved and handsomely flowered syringas with which gardeners in our Eastern States are familiar.

Edwinia (*Edwinia Americana* (T. & G.) Heller).

A diffusely branched shrub, two to four feet high, with shreddy bark and hairy branchlets. The leaves are evenly toothed, green above, soft hairy and grayish beneath, and an inch or more in length. It has showy, white flowers, three-fourths of an inch across and from five to ten in a cluster.

This shrub is found in southeastern Wyoming, especially in the broken country lying east of the Laramie Hills, where it grows among the boulders and clings in crevices on the rugged granite peaks. It is a handsome bush when profusely covered with the clusters of white flowers, and would be a very desirable shrub for the home grounds.

GOOSEBERRY FAMILY.

(*Grossulariaceae*).

This family embraces the grosselles, or the gooseberries and currants, familiar to everyone. These bush fruits are well rep-

resented in Wyoming, being common along our streams and in ravines of the foothills and mountains. The berries of all of them are edible, yet only some of the sorts are of sufficient value for culinary purposes to receive the attention of horticulturists. The one term *Ribes* includes both the currants and the gooseberries.

GOOSEBERRY.

(*Ribes*).

The gooseberries differ from the currants in having from one to three spines below the leaves or clusters of leaves. They often have scattered prickles on the stems as well, and the flowers are borne singly or two or three together.

The best and most successful varieties of gooseberries grown in the United States are of American origin, the English or European gooseberry (*Ribes Grossularia* L.) having been found too liable to the attacks of mildew in this country. The following gooseberries are natives of this state:

Bristly Gooseberry (*Ribes setosum* Lindl.)

This gooseberry occurs in the central and northern part of the state, growing on rocky exposed slopes or in moist places about thickets. Its spines are three together and rather large, and the stems usually densely studded with prickles. The flowers are whiter, somewhat narrower and longer than the western gooseberry. Its berries are red and about a third of an inch in diameter. Being very bristly it is not desirable for cultivation.

Western Gooseberry (*Ribes saxosum* Lindl.)

The most common and valuable of our native gooseberries. It may be distinguished from the preceding by its shorter and broader greenish flowers and its less spiny stems, the prickles being entirely absent or present only on the young branches. The berries are of good size, dark purple in color when ripe and covered with a bluish bloom.

The western gooseberry is very common along streams and creeks and in moist draws in the hills throughout the state. The berries are often gathered and used for pies and sauce. Douglas, an early explorer, says of this gooseberry: "Of all the species which came under my observation during my journeys in America, this is the finest in the flavor of its berries, as well as in their size." On rich river bottoms it is often very productive. In view of its fine berries and great vigor of the plant this gooseberry is well worthy of domestication. It is closely akin to the northern gooseberry (*Ribes oxycanthoides* L.) of Canada and the Eastern States, which is the parent of our American gooseberries like the *Houghton* and *Downing*. Transplanted to the home garden into good soil it would undoubtedly produce a superior quality of fruit.

Swamp Gooseberry (*Ribes parvulum* (A. Gray) Rydb.)

A densely prickly shrub of wet woodlands and swamps. The leaves are smooth, deeply lobed and toothed, three-fourths to two inches broad. It has small saucer-shaped flowers which are purplish or greenish white and borne in drooping clusters. Its berries are dark purple or black when ripe and are beset with reddish bristles.

This shrub is common on the wet, shaded banks of our mountain streams. It does not appear to be of any horticultural value. This and the one following are peculiar in being intermediate between the gooseberries and currants, the berries being in clusters as in the garden currant, while the branches bear spines and prickles as in the gooseberries.

Mountain Gooseberry (*Ribes lentum* Jones).

A low shrub growing in open rocky slopes in the high mountains. Spines are present, but the older stems and often also the young branches are devoid of prickles. It has red berries of a very agreeable flavor. This gooseberry may prove to be of some value for its fruits.

CURRENT.**(Ribes).**

The currants are devoid of spines and prickles and unlike the ordinary gooseberries their berries are several or many in a cluster. The red (*Ribes rubrum* L.) and black garden (*Ribes nigrum* L.) currants cultivated in the United States are of European origin. The American currants have not as yet given rise to any cultural varieties of great value. The first two native currants given below have the large leaves of the garden black currant and are very similar to it.

Wild Black Currant (*Ribes Americanum* Mill.)

A native black currant with large leaves, one to four inches broad and resinous-dotted beneath. It has white tubular flowers in drooping clusters, the parts of which are minutely hairy.

This currant is rare in the state, being known only from two localities in east central Wyoming. It is almost unknown in cultivation, but appears to be worthy the attention of fruit gardeners, as the good-sized musky-flavored berries borne in clusters may be capable of improvement.

Northern Black Currant (*Ribes Hudsonianum* Rich.)

This currant has the large leaves and black berries of the preceding, but the clusters of white flowers stand erect, and the individual flowers are shorter and more expanded. It has been found in the Yellowstone National Park.

Pursh's Currant (*Ribes viscosissimum* Pursh).

A bushy shrub, 2-6 feet high, with hairy and sticky foliage and young branches. Its leaves are roundish in outline, one to three inches broad and in appearance somewhat resembling those of the mallows. It has rather large viscid, greenish-white flowers (or sometimes purplish tinged), borne in short clusters. The berries are black, rough and hairy and of an unpleasant flavor.

This currant is found in the northwestern part of Wyoming, where it is not uncommon in dry open woods or on open

slopes. The bushes are rather striking in appearance, and, as large fragrant flowers are produced in great abundance, it may be of some value as an ornamental.

Squaw Currant (*Ribes cereum* Dougl.)

An upright scraggy shrub, 1 to 3 feet high, with reddish brown stems and small (half an inch broad or rarely an inch), rounded, and usually resinous-dotted leaves. It has waxy-white or pinkish tubular flowers and medium sized red berries, which are sweet, but not agreeable to the taste.

Common in dry exposed situations in the foot hills and lower mountains throughout the state.

Flowering Currant (*Ribes longiflorum* Nutt.)

Also called *Buffalo* and *Missouri* Currant. A handsome shrub with glossy, 3- to 5-lobed leaves and yellow tubular flowers produced in great abundance.

The flowering currant is cultivated both in this country and in Europe as a flowering shrub. It is graceful, blossoms profusely, and is very desirable as an ornamental for the home grounds. It is more or less common throughout the state, except at higher altitudes, and adapts itself readily to cultivation. It may be seen on many lawns in the state.

As a bush fruit it is of much importance. The berries are in small and short leafy-bracted clusters, and unlike the red and black garden currants have to be picked singly as do the gooseberries. The fruits are either black, golden-yellow or cherry-red and are often of good size and each has a distinct flavor. The black have a somewhat tough skin and a peculiar flavor which is not agreeable to most people. Some persons, however, do not find them unpleasant to the taste. The berries are much gathered along with the yellow and used especially for making jelly. The cultural variety known as the *Crandall* has been derived from the black form of the flowering currant.

The yellow form is less common in the state than the black. In the valley of the North Platte it is quite abundant and here

its berries are of good size. The residents in the districts where it grows are unanimous in pronouncing it far superior in flavor and value for culinary purposes to the ordinary black form generally growing along with it. It is strange that it should have so long escaped the attention of small-fruit growers.

One need not dwell upon the merits of this currant, as these are quite well known to residents in many parts of the state. Under cultivation it will without doubt be more productive, and farmers and fruit growers may well transplant it to their gardens.

ROSE FAMILY.

(Rosaceae).

To this family belong many useful plants, such as the roses, raspberries, dewberries and strawberries. In this state the family is represented by a few native small fruits and by quite a number of shrubs.

The common ninebark of the Eastern States is not found in Wyoming. We have, however, two species in this state which are akin to it.

Ninebark (*Opulaster monogynus* (Torr.) Kuntze).

A small bushy shrub, 2 or 3 feet high, with small, bright-green, toothed and three-lobed leaves and numerous clusters (about an inch broad) of white flowers. The older branches and the stems have grayish bark which comes off in shreds.

The ninebark, though having smaller leaves and flowers than the eastern one, which is often cultivated, is not without merit as a shrub for the home grounds. It is not especially abundant in Wyoming, but occurs more or less

throughout the state, on rocky hillsides or occasionally on the banks of rivulets.

NINEBARK (*Opthaster monogynus*). (Reproduced from photograph by F. E. Clements.)

Holodiscus dumosus. (Reproduced from photograph by F. E. Clements.)

Ninebark (*Opulaster pauciflorus* (T. & G.) Heller).

With larger leaves and more showy flowers than the preceding. It is a handsome shrub, often 4 to 5 feet tall, very desirable for cultivation. It is known to occur in the Yellowstone National Park and will perhaps be found in other parts of northern Wyoming.

Nuttall's Spiraea (*Spiraea densifolia* Nutt.)

Tufted and with erect branched stems, one to two feet high, arising from underground rootstalks. It has oblong leaves, one to one and a half inches long and the slender erect branches are terminated by small but dense clusters of purple or rose-colored flowers. A very handsome shrub of a low and somewhat bedded habit of growth, occurring in the mountains of northwestern Wyoming.

There is another closely related species (*Spiraea lucida* Dougl.), having unbranched stems and larger clusters of white flowers, which is found in the Teton mountains and in the northern part of the state.

Holodiscus dumosus (Nutt.) Heller.

A diffuse shrub, often 4 feet high or more, with very large clusters of small white flowers terminating the branches. It has small broad leaves which are silky beneath but green above, deeply toothed above the broadly wedge-shaped base.

There is apparently no common name for this handsome and profusely flowered shrub. It is found on rocky slopes and ledges at lower altitudes in the state. In Central Wyoming it is especially common. It is an exceedingly pretty bush when in flower, and is one of the best of our native shrubs for ornamental planting.

Rocky Mountain Thimble-berry (*Rubus parviflorus* Nutt.)

An attractive shrub with erect or drooping stems or canes, three to eight feet high, and very large five-lobed leaves. It has

large white flowers, an inch or two broad, and red pleasantly flavored fruits.

This thimble-berry occurs about thickets along streams in the hills and lower mountains. It is of no value for its berries, but on account of its ample foliage and showy flowers it is a desirable ornamental. Very little has been done to cultivate this shrub in the United States, but it has been introduced into Europe and is there known to gardeners.

American Red Raspberry (*Rubus strigosus* Michx.)

The wild raspberry of Wyoming, which is familiar to everyone, is also found throughout the greater part of the United States. It was early domesticated in the Eastern States, and is the parent of some of the cultivated red raspberries. It is quite common in many localities in this state and its berries are assiduously gathered for home use.

Shrubby Cinquefoil (*Dasiphora fruticosa* (L.) Rydb.)

A much-branched shrub, one to five feet high, with grayish silky leaves. Its yellow flowers, somewhat resembling those of a buttercup, are produced continuously throughout the summer. It is common in swamps and moist places. This shrub is cultivated to some extent and may be used to advantage on the lawn.

Cercocarpus parvifolius Nutt.

A scraggy shrub, three to six feet or more high, hairy toothed leaves more or less silky above but whitish beneath. It has small whitish flowers borne on stout stalks (technically the calyx tube and short pedicel) among the leaves. The seeds have feathery tails, two to four inches long.

This is a characteristic shrub on rocky slopes and ledges in the foothills and lower mountains throughout the state. This species and the following are often called mountain mahogany, but this name is somewhat misleading as

the true mahogany (*Swietenia mahogani* L.) is a tree very different from these shrubs.

Cercocarpus ledifolius Nutt.

This has seeds like those of the preceding, but the young shoots are somewhat woolly and the leaves narrower and not toothed. In Wyoming this is a more diffuse shrub than the preceding. It is known to occur in the Big Horn mountains.

Kunzia tridentata (Pursh) Spreng.

A low, depressed and diffusely branched shrub with grayish branches and very small (less than half an inch long) leaves. The latter are three-toothed and wedge-shaped, green above, white beneath. In spring the bushes become covered with yellow flowers (one-third of an inch broad), which later are replaced by beaked, and somewhat egg-shaped minutely hairy fruits (these not fleshy or berry-like). Common in the hills, usually in draws and ravines or occasionally on sandy plains.

ROSE.

(Rosa).

Native roses are common in the state. Their pink, fragrant flowers and attractive foliage make them general favorites, and they are therefore perhaps more often planted about the home than other native shrubs. On account of their habit of persistently suckering from the root they at times become a nuisance and difficult to eradicate.

Say's Rose (*Rosa Sayi* Schwein.)

The largest flowered as well as the largest leaved of our native roses. It is characterized by the slender prickles of its stems and branches. Its leaves are composed of about seven leaflets which are an inch or more in length. It grows one to two or three feet high and is most frequently found about thickets and on partially wooded slopes.

Prairie Rose (*Rosa pratincola* Greene).

A low (one to two feet high), simple-stemmed rose, bearing

its flowers terminally and having weak purple prickles. The leaflets are nine or eleven (occasionally seven) in number and about an inch long. This rose occurs in the prairie region of the eastern part of the state, where it often becomes a troublesome weed in cultivated fields.

Wyoming Rose (*Rosa grosseserrata* Elias Nelson).

A bushy, much-branched rose, several feet high, usually occurring on river banks. Its leaves are composed of five or seven leaflets, about an inch or an inch and a half long. The prickles are very few but stronger than in the two preceding.

Woods' Rose (*Rosa Woodsii* Lindl.)

The common rose of the rocky slopes and ravines in the hills. It is from a few inches to two or three feet high and has green, shining foliage and much smaller flowers than the prickly rose. The leaflets are from five to seven and about three-quarters of an inch long. The stems are usually beset with stoutish prickles, but may sometimes be found entirely unarmed.

Fendler's Rose (*Rosa Fendleri* Crepin).

The common rose growing along streams. It may be known by the dull-greenish color of its foliage and the very small leaflets, which are only about half an inch long and usually seven in number. It is several feet high and of a bushy habit of growth. This rose and the preceding are the ones generally seen in town lots.

APPLE FAMILY.

(Pomaceae).

This family embraces various trees and shrubs having apple-like fruits or pomes. To it belong such valuable fruits as the apple, pear, and quince. Our hawthorns and the service-berry are also members of the apple family.

American Mountain Ash (*Sorbus sambucifolia* (C. & S.) Roem.)

An erect, elder-leaved shrub, three to eight feet high, with large showy clusters of red berries in autumn. The leaflets are narrowly oblong, sharply toothed and in four to six pairs.

This mountain ash is rare in the mountains of this state. It is closely related to the European and the American mountain ash, both of which are often planted for ornament in the Eastern States.

Western Service-berry or June-berry (*Amelanchier alnifolia* Nutt.)

A common shrub among the hills throughout the state. It may be known by its rounded leaves, toothed above the middle, the clusters of white flowers and the purplish, berry-like, edible fruits, which are one-fourth to one-third of an inch in diameter.

The western service-berry is a very handsome flowering shrub and may well be planted on lawns. Its fruits are sweet and of a pleasant flavor, good to eat from the hand. It is often gathered and used especially for pies. This service-berry is cultivated to some extent both as an ornamental and for its fruits. It has given rise to the cultural varieties, "Alpina," "Gardener," "Williams," and "Greene." It is easily grown, propagating itself readily from seed and is often multiplied from the sprouts which arise about the base of the plants.

HAW or HAWTHORN.
(*Crataegus*).

The haws are shrubs or small trees, bearing large thorns on the branches and with showy white flowers produced in great abundance. They have small berries borne in clusters and containing large bony seeds. There are two species in this state, both of which are desirable ornamentals and well worthy of cultivation. Their berries though edible are apparently of no value.

Black Haw (*Crataegus rivularis* Nutt.)

This grows as a large shrub or a small tree with rounded bushy top. Its small leaves are oblong, pointed at both ends

and sharply toothed. The berries are about three-eighths of an inch in diameter, red in color changing to purple-black when ripe. This species is common about thickets and along streams throughout the state.

Long-spine Haw (*Crataegus macracantha* (Lindl.) Lodd.)

More shrub-like than the preceding and with broader leaves and fruits which are red when ripe. The leafstalks and young branches are somewhat hairy, as also the under surfaces of the leaves. This haw is known to occur in the northeastern part of the state.

PLUM FAMILY.

(Drupaceae).

This family embraces various trees and shrubs bearing stone-fruits (drupes), the stone-like seed or pits singly in each fruit. To it belong the plums, cherries, the almond, apricot and the peach. In this state it is represented by the wild plum and by three native cherries.

Wild Plum (*Prunus Americana* Marsh).

The common wild plum occurs along streams at lower altitudes in the eastern part of the state. It may be distinguished in its winter condition from the native choke-cherry by its tree-like habit of growth and by its branches, which are more or less thorny. Its leaves also have larger teeth and are more pointed than those of the choke-cherry.

The wild plum has given rise to forty or more named varieties cultivated for their fruits. Even in its wild state the fruits are of good quality and very desirable for preserves and jams. This native fruit is easily brought under cultivation, and when grown in the garden produces a better quality of fruit than in the wild state. Its masses of white flowers in spring and its graceful head make it a desirable ornamental. It forms a very

good hedge, and as such will serve the purpose of a windbreak, and would have the additional value of being fruit bearing.

Rocky Mountain Cherry (*Prunus demissa melanocarpa* Aven Nelson).*

This is the well known wild cherry, which is common throughout the state. It is usually only a shrub, often forming small groves along streams, but occasionally attaining tree-like size in favored situations. On account of its showy, white flowers it is of some value as an ornamental, while its sweet, but slightly astringent, black fruits make an excellent jelly. The flowers and the fruits are borne in elongated (racemed) clusters unlike those of the garden cherries. At lower altitudes in the state it is very productive, but in the lower mountains, where it also occurs, it is late in maturing and seldom bears fruit in abundance.

Wild Red Cherry, Pin or Pigeon Cherry (*Prunus Pennsylvanica* L. f.)

This cherry is rare in this state, having been found only in Crook and Sheridan counties. In the Mississippi Valley States and in the Eastern States it grows to be a tree 20 to 30 feet high, but with us it is only a shrub. It differs from the common wild cherry of the state in that its flowers and fruits are not borne in long clusters, but are crowded close together usually at the end of the very short twigs. It has also smaller red fruits which are not edible. This cherry is occasionally used for ornamental purposes in the eastern United States.

Western Sand Cherry (*Prunus Besseyi* Bailey).

A dwarf cherry, a few inches to four feet high, the branches diffuse and spreading. It has small, oblong leaves, which are green and shining above, whitish beneath. The fruits are black when ripe, one-half to three-fourths of an inch in diameter,

*Since the publication of Bulletin No. 40, entitled "The Trees of Wyoming and How to Know Them," Prof. Aven Nelson has found that our native cherry is different from the *Prunus demissa* occurring in Washington and Oregon, and has given it the varietal name of *melanocarpa* meaning black-fruited.

and are borne singly or a few together on short stalks.

This little cherry is rare in this state, being known only from one locality, Glenrock, in Converse county, where it was discovered last year by Prof. Aven Nelson growing on the sandstone cliffs near the city. It is common in Nebraska, Kansas and the Dakotas, where it is being brought under cultivation both for its fruits and as an ornamental flowering shrub. Its fruits are of fair size and of good quality though often bitterish. It has of late years attracted much attention as a cherry for this western region. It is easily propagated and fruits the second and third years from seed. Many culturists are now bent on improving this promising cherry. It has given rise to the "Improved Dwarf Rocky Mountain Cherry" which has been in cultivation for a number of years.

PEA FAMILY.

(Papilionaceae).

A large family, including many useful plants. To it belong the garden pea and bean, the leguminous forage plants (alfalfa, clover, vetches, etc.) and the locust tree. In this state it is represented by one hundred or more perennial herbs, but by only one shrub.

False Indigo (*Amorpha fruticosa* L.)

A medium-sized shrub with long spikes of violet-purple flowers, small two-seeded and elongated leaves composed of 5 to 10 pairs of leaflets. It is found along streams in the eastern part of the state. It is a graceful flowering shrub very desirable for ornamental planting.

SUMAC FAMILY.

(Anacardiaceae).

This family is represented by three* species in this state, only two of which are shrubs.

*The third species is the dwarf poison ivy (*Rhus Rydbergii* Small) which is poisonous to some people, causing inflamed eruption of the skin.

Smooth Sumac (*Rhus glabra* L.)

A much-branched shrub, 3 to 12 feet high, with large and dense clusters of yellowish-green flowers and ample foliage. Its leaves are composed of from 8 to 15 pairs of leaflets, which are lance-shaped and coarsely toothed, green above and white beneath. Its fruit is rather attractive, the small berries being hairy and scarlet in color, sour but agreeable to the taste.

This shrub grows on rocky uplands. It is known to occur in a few localities in the northeastern part of the state. The bark and leaves are used for tanning leather, while the fruit is of some medicinal value.

Skunk-bush (*Rhus trilobata* Nutt.)

A low straggling shrub, two to five feet high, having small three-lobed leaves and round clusters of yellowish-green flowers and somewhat sticky red berries.

This ill-scented shrub is found throughout the state in the foothills and on sandy slopes in valleys.

STAFF-TREE FAMILY.

(*Celastraceae*).

To this family belong the staff-tree, the burning bush, the spindle tree and the climbing bittersweet. None of these shrubs are found in this state but the family is represented by the following species:

Western Mountain Lover (*Pachystima Myrsinites* Raf.)

A low evergreen shrub, growing in rocky places on partially wooded slopes in the mountains. Its branches are densely leafy, the leaves being small and firm, oblong and finely and sharply toothed. The purplish flowers are minute and inconspicuous.

This little shrub has been found in several localities in the

western part of the state, and also in the Sierra Madre mountains of Carbon county. This evergreen is quite pretty and very desirable as a small ornamental for the lawn.

MAPLE FAMILY.

(*Aceraceae*).

Only two maples are found in this state. One of these, the large-toothed maple, occurring near Evanston, in the southwestern part of the state, grows as a tree and on account of its thick and firm leaves is usually mistaken for an oak. The other, the dwarf maple, grows in clumps and is hardly more than a shrub. The box elder also belongs to this family.

Dwarf Maple (*Acer glabrum* Torr.)

This rarely grows to the size of a tree. It has the foliage, flowers, and the winged twin fruits characteristic of maples. The foliage though not dense is graceful, making the clumps rather attractive. The shrub is common in canons and on rocky slopes more or less throughout the state.

BUCKTHORN FAMILY.

(*Rhamnaceae*).

This family has three representatives in this state. To it belong the buckthorns, New Jersey tea and Supple-Jack, all of which are natives of the Eastern States.

Alder-leaved Buckthorn (*Rhamnus alnifolia* L'Her.)

A small shrub, 2 to 4 feet high, growing in swamps. The leaves are rather ample, very green and resembling those of an alder. Its flowers are greenish and inconspicuous.

On account of its dark green foliage this shrub is striking in appearance. It occurs in the northwestern part of the state.

Velvety Red-root (*Ceanothus velutinus* Dougl.)

A diffuse and widely spreading evergreen shrub, with shining foliage and showy white flowers. Its leaves are about two inches long, oval in outline and with very minute black-tipped teeth, resinous and shining on their upper surfaces, whitish and more or less velvety beneath. In spring the bushes are profusely covered with large clusters of white flowers, which later are replaced by small, hard, greenish-black, resinous three-lobed fruits.

This red-root is common throughout the state, growing on rocky slopes in the hills and mountains. It often grows in immense patches and when in flower is very handsome. As the single large root is very deep-seated, it would be difficult to transplant.

Fendler's Red-root (*Ceanothus Fendleri* A. Gray).

A low and much-branched spreading shrub with bluish-gray, spiny branches and small narrowly oblong leaves about three-fourths of an inch in length. It has small clusters of white flowers and fruits like the preceding species. An infrequent shrub, growing on canon sides and wooded slopes in the eastern part of the state.

GRAPE FAMILY.
(*Vitaceae*).

Only one group occurs in this state, but another member of this family, the Virginia Creeper,* is common in some localities. **Riverbank Grape** (*Vitis vulpina* L.)

This native grape is found on river banks in canons at lower

*The Virginia creeper is 5-leaved (technically having five leaflets) and should not be confused with the dwarf poison ivy (*Rhus Rydbergii* Small) which often grows along with it.

altitudes in the eastern part of the state. The fruit is often gathered for home use, especially for jelly. It is found throughout the eastern United States and was early brought under cultivation. It has either directly or by crossing given rise to the "Clinton," "Elvira," "Pearl" and other cultivated varieties.

OLEASTER FAMILY.

(*Elaeagnaceae*).

This family embraces some silvery-scurfy shrubs or trees, some of which are desirable ornamentals while others are of value for their fruits. To it belongs the Russian oleaster or Russian olive, which is becoming quite a popular tree for ornament and for hedges in Kansas, Nebraska and the Dakotas. In this state the family is represented by the following shrubs:

Buffalo-berry (*Lepargyrea argentea* (Nutt.) Greene).

A middle-sized or large shrub with thorny twigs and grayish and more or less silvery-scurfy foliage. It has very sour, edible berries, either scarlet or yellow in color. It is common on banks of streams at lower altitudes.

The buffalo-berry is cultivated to some extent both for its fruits and as an ornamental. On account of its dense habit of growth it is one of the best shrubs for hedges. Its berries are of much value, making a jelly of fine quality. Owing to the thorny twigs the berries can not be readily picked by hand. Hence it is a common practice among the berry gatherers to break off the branches of the wild bushes and beat off the berries on a sheet or tarpaulin spread on the ground. Such treatment is destructive of the bushes, and unless an unarmed or thornless variety can be evolved this shrub will never be grown to any great extent for its fruits. It is hardy and very productive and as a small fruit it is well worthy of improvement.

All the bushes do not bear fruit. The sterile plants, or male plants, "may be known in their winter condition by the dense

RIVERBANK GRAPE. (Reproduced from photograph by Aven Nelson.)

BUFFALO BERRY.

clusters of rounded flower buds"; the fruit-bearing or female plants "by the smaller, flattened, fewer, more slender flower buds." If planted for its fruit, both sterile and fruit-bearing plants should be set out, otherwise no fruit will be produced. It may be grown from seed or multiplied by means of cutting and by sprouts from the roots.

Canadian Buffalo-berry (*Lepargyrea Canadensis* (L.) Greene).

A low, depressed shrub, one to several feet high, with brown-dotted and scurfy young twigs, and oval leaves which are green above, silvery-scurfy and brown-dotted beneath. It has a red berry which is bitter to the taste and of no value for culinary purposes.

This low spreading shrub is common on wooded hillsides and on the borders of bogs. It is low and of a spreading habit of growth, bearing very little resemblance to the buffalo-berry.

Silver Berry (*Eleagnus argentea* Pursh).

An unarmed shrub, 4 to 12 feet high, with shining, silvery-scurfy foliage and brown-dotted young twigs. The leaves are oval or oblong, larger and broader than those of the buffalo-berry. It has dry, mealy, one-seeded berries, silvery-gray on the surface.

The silver berry is found in the northern and western parts of the state, occurring on bluffs and bench-land adjacent to streams. On account of the grayish color of the plant and its shining foliage, the shrub is striking in appearance and very desirable as an ornamental.

DOGWOOD FAMILY.**(Cornaceae).**

In this family are included the sour gum tree, the common cornels or dogwoods and many other shrubs and trees. Several of the American dogwoods and also some European and a Siberian species are planted for ornament in the East. The following dogwood is indigenous to this state:

Red-osier Cornel, or Dogwood (*Cornus stolonifera* Michx.)

A medium-sized or large shrub with reddish-purple branches and white fruits, which are about one-fourth (or less) of an inch in diameter and contain a two-seeded stone. It has small white flowers borne in clusters and leaves which are green above, whitish beneath and two to four inches long.

This shrub occurs on wooded bottom lands more or less throughout the state. It is a pretty shrub and its bright-colored stems and branches make it rather attractive in winter.

HEATH FAMILY.**(Ericaceae).**

Among the members of this large family may be mentioned such well-known plants as the trailing arbutus, the azalia, the heather, the bearberry and the American laurel. Many of the shrubs belonging to the heath family are evergreen, and quite a number of them are very ornamental. The family is represented in this state by several low undershrubs, but only the following is of any considerable size:

Labrador Tea (*Ledum glandulosum* Nutt.)

An evergreen shrub, two to six feet high, with thick, firm, oblong leaves, whitish beneath, and terminal or lateral clusters of white flowers. The small oblong seed capsules are borne on

recurved stalks. This shrub occurs in the mountains of north-western Wyoming. The Labrador tea of eastern North America is a different species.

HUCKLEBERRY FAMILY.

(*Vacciniaceae*).

The blueberries and cranberries are among the members of this family. Besides the two following shrubby species the dwarf bilberry (*Vaccinium caespitosum* Michx.) and red bilberry (*Vaccinium erythrococcum* Rydb.), often improperly called huckleberry, are found in our mountains.

Western Bilberry (*Vaccinium occidentale* A. Gray).

A low much-branched shrub, a foot or more high, with small, oblong leaves, one-half to one inch long. It has small urn-shaped flowers and blackish-blue berries, one-fourth of an inch in diameter. Found in swales in the mountains of western Wyoming.

Thin-leaved Bilberry (*Vaccinium membranaceum* Dougl.)

A pale-green shrub, one to several feet high, the leaves thin and oval in outline, one to two inches long. It has globular, somewhat urn-shaped flowers and berries like those of the preceding. It occurs in moist woods in the northwestern part of the state.

HONEYSUCKLE FAMILY.

(*Caprifoliaceae*).

This family contains many desirable ornamental shrubs, chief among which are the honeysuckles. It is represented in this state by quite a number of native species.

The elders (*Sambucus* spp.) may be recognized by their vigorous shoots, having large pith, large leaves of mostly seven leaflets and by the clusters of red or black berry-like fruits. Their showy whitish flowers make them quite attractive and

desirable as ornamentals. Three species occur in this state. They grow in moist places in ravines in the foothills and mountains.

American Elder (*Sambucus Canadensis* L.)

A useful ornamental shrub, with broad clusters of flowers and purplish black berries. It is rare in Wyoming, being known only from the northeastern part.

The elders are not without some value for their berries for this species, which is more common eastward, are often used by housewives for the manufacture of elderberry wine and for pies. Some improved forms are now being cultivated and it is very probable that a desirable fruit-bearing variety will be developed.

Rocky Mountain Elder (*Sambucus melanocarpa* A. Gray).

With black berries and smaller clusters of flowers as high as broad. This species is the common one in the state.

Red Elder (*Sambucus pubens* Michx.)

This elder has been found in the northwestern part of the state. It has oblong clusters of flowers and red or scarlet berries.

High Bush-cranberry (*Viburnum Opulus* L.)

A medium-sized shrub, with broad, coarsely-toothed, three-lobed leaves, showy white flowers and bright red berries, each containing a single flat stone. It is found in the Black Hills.

This shrub is a handsome ornamental and its berries are esteemed for jelly and sauce. Though already cultivated to some extent for its fruits, it has not as yet given rise to any named varieties.

Sheepberry (*Viburnum Lentago* L.)

A shrub or small tree, with long-pointed, sharply-toothed leaves, large clusters of white flowers and oval, black fruits with a bluish bloom. Occurring in Sheridan county. Its fruits are sweet and edible. This is a pretty shrub, useful as an ornamental.

Wolfberry (*Symphoricarpos occidentalis* Hook.)

A low shrub very similar to the snowberry, and related to the cultivated coral-berry. It has thickish, oval or oblong leaves, one to two inches long, short, broad pinkish flowers and small white berries borne in the axils of the upper branches. Very common throughout the state. Though not as attractive as the snowberry it may be used to advantage for massing effects, as it suckers freely and soon covers the ground.

Spreading Wolfberry (*Symphoricarpos vaccinioides* Rydb.)

Depressed and of a spreading habit of growth, with much smaller leaves (one-half to an inch long) and longer flowers than the preceding. Of frequent occurrence in the hills and mountains.

HONEYSUCKLE.

(Lonicera).

The honeysuckles are well-known ornamental climbers or bushy shrubs. We have four bush-honeysuckles in this state, while one climber is known to occur in Crook county.

Involucred Fly-honeysuckle (*Lonicera involucrata* (Rich.) Banks).

A low or good-sized shrub with grayish shreddy bark, very ample green foliage and purplish-black twin berries, one-third of an inch in diameter. The yellowish, tubular flowers are subtended by two leaf-like bracts (the involucre), which later nearly enclose the berries.

This is not infrequent on the banks of creeks and rivulets in our hills and mountains. It suckers freely and often forms beds of considerable size.

Utah Fly-honeysuckle (*Lonicera Utahensis* Wats.)

A low straggling shrub with slender branches and thin oval or oblong leaves, whitish below, rounded at both ends and an inch or an inch and a half long. It has honey-yellow flowers, often tinged with purple, and red twin berries.

This is a very pretty, delicate shrub which would be desirable in any home lot. It grows in woodlands in the mountains of the western part of the state.

American Fly-honeysuckle (*Lonicera ciliata* Muhl.)

Very similar to the preceding, but the leaves pointed and usually slightly hairy on the margins. This shrub is rare in the state, being known only from the foothills ten miles west of Cheyenne.

Blue Fly-honeysuckle (*Lonicera caerulea* L.)

A low shrub with erect, stoutish stems, one to three feet high. Its leaves are similar to those of the two preceding, but its yellowish flowers and blue berries are borne on very short stalks. Found in cold boggy swales in the mountains of the extreme western part of the state.

This shrub has numerous varieties in cultivation and is highly esteemed for ornamental planting in the East and also in Europe.

SUNFLOWER FAMILY.**(Compositae).**

A huge family comprising a great number of annuals and perennial herbs and a few shrubs. Its members may be recognized by their "compound flowers," or more properly speaking flower heads, in which the individual flowers are crowded close together on a common receptacle or disk. The sunflower and the thistle are familiar examples. To this family belong such well-known plants as the chrysanthemum, tansy, golden rod,

aster, daisy, yarrow and artichoke. Plants classed in this family abound in this state.

A number of native shrubs and underbushes of the state, such as the sage-brushes and rabbit-bushes, belong to the thistle family. These shrubs have very small flowers little resembling those of the thistle or the sunflower.

TETRADYMIA.

(*Tetradymia*).

The *tetradymias* are low grayish shrubs with yellow flowers clustered at the ends of the branches. They grow naturally on open plains and especially in desert regions. The seeds, which are borne several together in each flower head, are surmounted by numerous long white bristles.

Gray *Tetradymia* (*Tetradymia canescens* DC.)

The common species throughout the state. The whole plant is gray in color. The leaves are narrow and less than an inch long and the yellow flower heads are very numerous at the ends of the branches.

Nuttall's *Tetradymia* (*Tetradymia Nuttallii* T. & G.)

A low rigid shrub with spiny branches, the short, blunt-pointed leaves arising in tufts. The slender spines are a half to an inch in length, and its flower heads are closely crowded together at the ends of the branches. This shrub occurs in the arid region of southwestern Wyoming.

Spiny *Tetradymia* (*Tetradymia spinosa* H. & A.)

A scraggy shrub with woolly branches and very small tufted green leaves. Its spines are only about one-third of an inch in length and the flowers (heads), which are white-woolly on the exterior, are borne singly on stoutish stalks along the branches. Not uncommon in the Red Desert. This white-stemmed shrub is rather pretty and of striking appearance.

SAGE-BRUSH.**(*Artemisia*).**

LEAVES OF THE SAGE-BRUSHES—

1. Common Sage-brush. 2. Matted Sage-brush. 3. Low Sage-brush. 4. Mountain Sage-brush. 5. Hoary Sage-brush.

The genus *Artemisia*, to which the sage-brushes belong, also includes the common wormwoods. The sage-brushes, of which there are five in this state, are low grayish shrubs very common in valleys and on prairies, especially on plains adjacent to the foothills. They may be known by their characteristic bitter-aromatic odor and by their minute greenish-yellow flowers, which

are very numerous on the shoots of the season.

Common Sage-brush (*Artemisia tridentata* Nutt.)

Readily known by its wedge-shaped leaves, three-toothed at the apex. Though only one to three feet high on the plains it is much taller in the rich soil of draws and valleys, and in rare cases attains the size of a small tree.

Matted Sage-brush (*Artemisia nova* Aven Nelson).

Resembling the common sage-brush, but very low and matted, forming more or less extensive patches on exposed slopes. The leaves are greenish in color and much smaller than those of the preceding.

Low Sage-brush (*Artemisia arbuscula* Nutt.)

A low shrub, less than a foot high, with wedge-shaped, three-lobed leaves and less numerous flowers than the two preceding sage-brushes. Infrequent in the state; occurring in southern and southwestern Wyoming.

Mountain Sage-brush (*Artemisia tripartita* Rydb.)

A low, more or less matted, grayish-white shrub, usually less than a foot high. It may be distinguished from other sage-brushes by its leaves which are divided nearly half way into

three very narrow lobes. Common on bleak slopes and ridges in the lower mountains.

Hoary Sage-brush (*Artemisia cana* Pursh).

A common shrub in clayey soil on the plains. It is one or two feet high and has narrow entire leaves which are silvery-hoary or greenish in color and an inch or two long.

RABBIT-BUSH.

(*Chrysothamnus*).

The rabbit-bushes are characteristic low shrubs or undershrubs of our open plains. They are often improperly called sage-brush, but as they lack the well-known scent of the sage-brush they need not be confused with them. The rabbit-bushes all have narrow leaves and yellow flowers produced in great abundance at the ends of the stems, literally covering the bushes or clumps during August and early September. On account of the large masses of yellow flowers some of them may be used to advantage for bedding purposes. The ornamental rabbit-bush (*Chrysothamnus pulcherrimus*) is especially handsome, producing a wealth of yellow flowers equaled by no other native shrub. The foothill rabbit-bush is also a desirable species.

There is a great variety of these undershrubs in the state. The more shrubby ones are given below. Most of them have more or less hoary leaves and greenish-yellow or yellow branches, which are usually very minutely woolly under a magnifying glass. The first three, however, have smooth whitish stems and very green leaves.

Green Rabbit-bush (*Chrysothamnus pumilus* Nutt.)

Very low and seldom over a foot high. The abundant flowers are crowded into rounded clusters at the ends of the branches, and its leaves are green and very narrow. A common species on the plains.

Foothill Rabbit-bush (*Chrysothamnus glaucus* Aven Nelson).

Similar to the preceding, but larger in every way, one to

three feet high, and with long leaves from an eighth to one-fourth of an inch broad. Common in rocky ravines in the foothills of Albany county.

Desert Rabbit-bush (*Chrysothamnus linifolius* Greene).

An erect shrub, two to five feet high, occurring on moist alkali flats in the Red Desert and adjacent localities. Its trusses of flowers are flat-topped, and its leaves are shorter but as broad as those of the preceding.

Strong-scented Rabbit-bush (*Chrysothamnus graveolens* (Nutt.) Greene).

This and the three following are very similar, being two to several feet high and having yellowish stems and very narrow (linear) leaves one and a half to three inches long. This species has large flat-topped trusses of flowers and its leaves are not at all hoary. It is common in eastern Wyoming.

Rock Rabbit-bush (*Chrysothamnus oreophilus* Aven Nelson).

Like the preceding, but the flower clusters smaller and not as flat-topped and its green leaves are less than two inches long. It occurs in the southern part of Uinta county.

Ornamental Rabbit-bush (*Chrysothamnus pulcherrimus* Aven Nelson).

This rabbit-bush has long hoary leaves and stout erect branches terminated by large trusses of light-yellow flowers. It is common in southern and western Wyoming.

Wyoming Rabbit-bush (*Chrysothamnus Wyomingensis* Aven Nelson).

Fewer-flowered and leaves less hoary than in the preceding. Its flowers are arranged along the upper part of the branches. This species is widely distributed in the state.

Hoary Rabbit-bush (*Chrysothamnus Plattensis* Greene).

Very low and seldom over a foot high. It has yellowish stems and hoary-gray leaves. It is very common on the high

plains of southern Wyoming and especially abundant on the alkali flats of the Laramie plains.

Howard's Rabbit-bush (*Chrysothamnus Howardii* (Parry) Greene).

A low but stoutish and much-branched species with yellowish stems, hoary leaves and few comparatively large but inconspicuous flowers. It occurs on rocky banks in southern Wyoming.

Parry's Rabbit-bush or False Golden-rod (*Chrysothamnus Parryi* (A. Gray) Greene).

A small shrub, one to two feet high, with yellowish gray stems and long and very narrow green leaves. The heads, which are very much larger than those of the other rabbit-bushes, are arranged along the upper part of the branches. This species occurs on open slopes and in parks of the Medicine Bow mountains.

Abbreviations.

A. Gray	Asa Gray
Anders.	N. J. Anderson
Burgsd.	F. A. L. von Burgsdorff
C. & S.	A. von Chamisso and D. F. L. von Schlechtendahl
DC.	A. P. DeCandolle
Dougl.	D. Douglas
Hook.	W. J. Hooker
H. & A.	W. J. Hooker and G. A. W. Arnott
L.	Carolus Linnaeus or Carl von Linné
L. f.	Carl von Linné (the son)
L'Her.	C. L. L'Heritier de Brutelle
Lindl.	J. Lindley
Lodd.	C. Loddiges
Michx.	A. Michaux
Mill.	P. Miller
Moq.	A. Moquin-Tandon
Muhl.	H. L. Muhlenberg
Nutt.	T. Nuttall
Pers.	C. H. Persoon
Raf.	C. S. Rafinesque-Schmaltz
Rich.	J. Richardson
Roem.	J. J. Roemer
Rydb.	P. A. Rydberg
Sarg.	C. S. Sargent
Schwein.	L. D. von Schweinitz
Spreng.	K. Sprengel
Sudw.	G. B. Sudworth
Torr.	J. Torrey
T. & G.	J. Torrey and Asa Gray
Wats.	S. Watson

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