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Experiments with new orchard fruits, trees, and shrubs.

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Experiments with

J. L. BUDD.

EXPLANATORY NOTE.

In 1883 a Bulletin was issued by the Horticultural Department giving an outline of our trial since 1879, of some of the fruits and ligneous plants of the steppe sections of Eastern Europe and North Central Asia.

In 1885 we gave in Bulletin form a "Revised list of names of, and notes on, some of the fruits and shrubs of Northeast Europe on trial on the college grounds and which have been sent out for trial during the past six years." In this Bulletin full lists were given of our importations to which was added notes on their behavior on the college grounds, and at our trial stations in the Northwest. In 1892 we gave in Bulletin revised notes on selected varieties compiled mainly from sub-station reports. At this time we give brief notes which summarise our home experience and that of our trial stations up to date with such selected varieties and species as we now have for distribution. But we also have in stock in limited quantity a large number of other varieties and species which have been favorably reported and propagated at other times. We do not graft and bud a full list of our valuable varieties at one time as it would extend our propagating work to a greater extent than our other College duties permit.

APPLES.

The following list only includes varieties now in nursery which have been tested over the West and Northwest since 1883.

The varieties that have stood well on dry soils and in airy positions, North of the 43d parallel are marked with three stars.

Those that will do best south of the 43d parallel are marked with two stars.

Those that will prove of greater value South of the 41st parallel are marked with one star.

The season given is that of Ames. Farther North all will be later.
SUMMER VARIETIES.

Yellow Transparent. (No. 60 and No. 334.) * * * This has become popular across the continent. At the West it blights on certain soils, but usually only on the tips. Fruit is earlier, larger, handsomer and better than the Early Harvest.

Blushed Calville (22 M) * * * This at the West will prove more valuable than Yellow Transparent. The tree is much hardier, more nearly free from blight, and the fruit is about as early, as large in size, is handsomely blushed, is less perishable and better in quality.

Breskovka. (152 M.) * * * Some later than the above and a very regular and full bearer. Fruit in size, color and shape much like Grimes Golden. Quality best for kitchen use and very good for dessert.

Nichner Strawberry. * * * Of the Yellow Transparent family, but much hardier in tree and as free from blight as the Oldenburg. Fruit large, yellow and beautifully blushed on the sunny side. Some earlier than Yellow Transparent and better in quality.

Plodovitka. (No. 246) * * * A valuable early summer apple for the North. Fruit beautifully colored, of medium size and excellent in quality for any use.

Anisette. (No. 185.) * * * Of the Duchess family and hardier in tree. An annual and full bearer of fruit like Duchess in size, shape, and color, but finer in grain, less acid, and several days earlier. Will prove very valuable over a large part of the United States.

Borovinka (No. 245) * * * Like Duchess in tree, foliage and fruit. Indeed trees when laden are always taken for Duchess; but the fruit averages larger and if picked when hard it keeps fully a month longer.

Early Sweet. (9 Vor.) * * * This is one of the best early sweet apples that has been widely tested at the North. Fruit above medium size, yellow, juicy and very sweet.
Gipsey Girl. (56 Vor.) ** This is the famous train boy apple of Eastern Europe on account of its size, smoothness, beauty, and high quality. It may be classed with the fall apples as it is later than the Duchess and keeps well after it gets tender enough for use.

Lubsk Queen. (No. 444) ** A fine tree that promises to prove very valuable. The large and remarkably beautiful fruit has attracted much attention at our State Fairs, and at the Columbian Exposition. It matures in late summer, but is not perishable and can be kept late into the fall, and in cold storage until June with unimpaired flavor.

AUTUMN APPLES.

Revel Bordsdorf. (No. 122) ** This is of the Anisim family and much like it in size, color and flesh. It is becoming a popular market apple where known, for table and dessert use on account of its extreme beauty and high quality.

Longfield. (No. 161 and 57 M) ** A good tree but not much hardier than Wealthy. An annual and full bearer of medium sized, blushed yellow fruit of excellent quality. Will be popular for home use as it never fails to bear, is not excelled for cooking, and pleases all for dessert use. After it has borne two or three heavy crops it should be manured or the fruit will run too small. Season late fall but by early picking it will keep nearly as well as Jonathan.

Rosy Repka. (No. 200) ** A grand tree everywhere it has been tried. Fruit large, even sized, highly colored, sub-acid, and good in quality. Will prove a popular market apple. Season here late fall, and early winter on the north limit of its possible growth.

Recumbent. ** This is the best of the Hibernal family in tree and fruit. It is a fall apple with us, but if picked early it keeps into winter. It will prove one of the
most profitable culinary varieties on account of its size, smoothness, and the quality of its sauce, pies, etc.

*Green Crimean* (No. 399) **A fine upright tree coming early into bearing. Fruit large, smooth, and in our climate its green changes to a brighter yellow, even when picked in its green stage. Of fine quality for any use.

*Pointed Pippin* (No. 361) **As hardy as Hibernal and an early and regular bearer. Fruit large, beautifully splashed and striped, and excellent for any use. If picked early it keeps better than any of the Hibernal family.

*Mallett* (No. 930) **As introduced by the Department of Agriculture this is not true to name as it proves to be the Mallett of the Volga. In size, color and quality it is like Wealthy. If picked early it keeps with us much later than Wealthy. From Minnesota we have received fine specimens in March.

*Sweet Longfield.* (20 M) **This is of the Longfield family, but it is much larger in size, oblong, yellow, with blush on sunny side, and a delicious sweet apple for dessert or baking. It is proving an early and regular bearer, and is free from blight, which is not usual with sweet varieties.

*Sandy Glass* (24 M) **A fine tree, an early bearer, but one that does best on dry soils. Fruit large, yellow, with blush on sunny side. Flesh fine grained, tender, melting, sub-acid. If picked early it keeps into winter.

*English Pippin.* Of Longfield family and much like it in tree and fruit, but the tree has proven hardier and the fruit is larger and keeps some later.

*Antonovka Family.* **The Antonovka we have classed with the Yellow Transparent as to tendency to blight. But we find as the tree gets older and in full bearing it is as free from blight as most of the old varieties of South West Iowa. It is a large, handsome, yellow apple, that takes well
in market during fall, and by early picking it can be held into December with us and into midwinter farther North. When put into cold storage it comes out in late winter with improved flavor and heightened color. When better known it will be prized for home use and market over a large part of the cold North. Yet when left to us we send out numbers 105, 224, 324, and 424, as the fruit is equally fine, will keep later, and the trees are as free from blight as the Duchess.

**Vargulek.** (12 M.) *** * * This fine handsomely colored variety is with us fall or winter depending on the time of picking. This season it proves as late as Roman Stem as picked from well loaded trees.

Fruit medium size, covered with crimson stripes and splashes. Quality nearly best.

**Sweet Pippin.** (5 Orel.) ** * * A fine tree and an early and regular bearer. Fruit medium to large, yellow with red on sunny side. Flesh fine grained, very juicy and sweet. It may prove as hardy as Duchess in the far north as all our reports are favorable, as is our home experience.

**Losovka.** (4 Orel.) ** * * * A very hardy fine growing tree. Fruit medium, yellow, striped with red. As the tree gets older the fruit will be classed as large. Quality good for any use.

**Harry Kaump.** ** * * This is an East European variety introduced into Wisconsin by a man of that name. It grades with Wealthy in hardiness but is not as subject to sunscald of stem. It is an early and regular bearer of fair smooth fruit of medium size that keeps well into winter if picked early. When properly ripened the quality is good for dessert and it is one of the best for cooking.

**Large Anis.** (Dep. No. 413.) ** * * * This is not true to name. It is the Large Anis of the Volga. It is an iron clad tree and a great bearer. Fruit much like Rhode Island
Greening. Season here late Autumn but if picked early north of the 43d parallel it will keep into winter if handled with care.

*Rambour Queen.* (No. 502.) ** Tree a fine grower, but not quite as hardy as Duchess. It succeeds, however, where Wealthy fails. Fruit large to very large, yellow, splashed with rich crimson, remarkably handsome. Flesh fine grained, tender and of excellent quality for so large an apple. Season, late fall.

**WINTER APPLES.**

*Bogdanoff.* ** This was grown in Central Russia under the name of "Winter Seedling" but we agreed with the Bogdanoff family to give it a more desirable name. The tree is not so hardy, possibly, as Duchess but on dry soil it is perfect up to the 43d parallel. Fruit large, smooth, finely colored with much bloom. Flesh fine grained, tender, sub-acid, nearly best in quality. Season here, late winter.

*Boiken.* ** This we have noted as grading with the Fameuse in hardiness. But we now find it as hardy over a wide range as the Longfield and about equal to it in bearing. Fruit of size of Rhode Island Greening and much like it in color and texture of flesh. An excellent keeper.

*Regel.* (No. 169.) ** ** A fine tree and an early bearer. Fruit of medium size and much like Rawles Janet in color and flesh and it keeps as well in north Iowa as the latter does when grown in the South District. This belongs to the *Repka Malenka* family but the fruit is larger and better in quality.

*Grandmother.* (No. 469, 6M, and 84 Vor.) ** As imported by the Department No. 469 is not true to name. All of our importations are true. It is hardier in tree than the Wealthy but not as hardy as Duchess. Fruit medium in size oblate, ribbed, yellow, with fine red and crimson on sunny
side. Stem thick and strong. Flesh firm and quality nearly best. Season, mid-winter at Ames, and late winter on high divides in North Iowa.

_Skruishappel._ (42 Vor.) ** This belongs to the true Cross apple family but is not identical with our 15 M or No. 413. The voronesh variety is a better tree and the fruit is larger, equal in quality, and it keeps later. Season at Ames past midwinter with common keeping and much later north.

_Cross._ (15 M. and No. 413.) ** This is the true Cross apple of Central Russia. In close sheltered positions on black soils, it is subject to blight, but like the Yellow Transparent, it blights only on points of growth. On dry soils and in airy positions it will prove very valuable, as it is a heavy and continuous bearer. Fruit medium to large, oblate, ribbed, yellow, with red and crimson stripes. Flesh firm, sub-acid, very good. Season here, midwinter, and it will keep as grown in North Iowa until spring.

_Sweet Cross._ (8 M.) ** A very near relative of 15 M. in tree and fruit including season. But the fruit is sweet. It will prove a very valuable winter sweet apple in exposed positions where the Yellow Transparent does well.

_Ostrakoff._ (4 M.) ** This is hardier than Duchess and less subject to blight. An earlier, heavier and more continuous bearer, but needs manuring to keep up size of fruit after it has borne heavy crops. Fruit medium to large, even in size, yellow. Flesh firm, sub-acid and fine in quality. Midwinter here, and will keep until May on its north limit of growth.

_Red Queen._ (No. 316.) ** As hardy as Wealthy and doing remarkably well on dry soils up to the 43d parallel. Will prove most valuable at the north top-worked on Hibernal. Fruit medium to large, smooth, even sized, colored late in
season. At the North it is usually picked before it is much colored. Flesh firm, fine grained, sub-acid and better than Ben Davis in quality. Season, late winter. Like the Cross apple, this should only be planted on dry soils and in unsheltered positions.

Sklanka. * * * This variety was picked up in 1882 on the Bogdanoff estates in Central Russia. On dry soils it is a true iron clad. Fruit medium to large, oblong, yellow with fine blush on sunny side. Quality better than Baldwin. Season past midwinter here and very late on its north limit of growth.

Arabskoe. (No. 257.) * * On dry soil this is much hardier than Wealthy at the North. Fruit large and much like Blue Pearmain. Quality much better than Willow. Midwinter here, and much later north.

Winsted Pippin. * * This originated in Minnesota. E. R. Heisz, of Nora Springs, in North Iowa says it is nearly as hardy as Duchess. On the College grounds it has proved a perfect tree and a good bearer. Fruit medium to large, mildly acid, fairly well colored, and much better than Willow in quality. Season, late winter.

Volga Cross. * * This appears to be an iron clad on sites with porous sub-soil below. Its one drawback is that it does not endure drouth well on hardpan soils. Fruit of the size and color of Rhode Island Greening and it keeps as well as Willow and is much better in quality.

Swinsovka. (No. 277.) * * * The Department No. 277 is labeled Vargul, but is not true to name. The Swinsovka is of the Lead apple family, but is not identical with 3 M. Fruit medium to large, green, with yellow on Sunny side. Flesh fine grained, firm, sub-acid, juicy and excellent for dessert use. Season, midwinter at Ames, and late winter north.
Lead. (3 M.) ** * * This also does best on dry soils without shelter. Fruit large, oblate, conical, yellow, with red on sunny side, acid and most valuable for cooking, but when ripe it is better for dessert use than Willow or Ben Davis. Midwinter here, and much later north.

Scott's Winter. ** * * We have sent out this Vermont apple for trial for these reasons: (1). The tree is as hardy as Wealthy. (2) It has proven a good bearer. (3). The fruit is as large and handsome as Winesap, a better keeper, an excellent cooker and when fully mature a fairly good dessert fruit.

Crimea. ** * * A variety from the Bogdanoff estates. Fruit large, oblong, highly colored, and is high in quality. Season midwinter here.

Royal Table. (5 M.) ** * * A variety doing best on dry soil with open exposure. Fruit medium to large, conical ribbed, yellow with red on sunny side. Nearly best in quality. Season midwinter here and through winter with best care.

Persian. Another variety from the Bogdanoff estates. Fruit medium, oblong, yellow with marbling and streaks of red. Quality best. Season, late winter.

Aport. (No. 252.) ** * * This is proving an early and regular bearer and promises to be very valuable. Fruit medium to large, oblate, yellow, with splashes and stripes of red on the crimson. Season, midwinter and later.

Aport leuey. (No 166,) ** * * This was imported by the Department of Agriculture in 1870 but does not prove true to name. It belongs to the valuable Cross family. Fruit medium to large, oblate, yellow, with blush on sunny side. Flesh fine grained, sub-acid, and nearly best in quality. Season, late winter.

Romna. (No. 599 and 11 M.) ** * * This succeeds best on dry soil where its roots runs very deep. Fruit medium in size, conical, smooth, handsomely colored. Flesh white, firm, quite acid and best for cooking, but when matured it is
much better for dessert use than Willow or Missouri Pippin or other coarse sorts found in our markets. Season, midwinter here, and late winter north of 43d parallel.

**Good Peasant.** (31 M.) * * * A fine tree doing well on varied soils. Fruit large, richly colored, fine grained, subacid, aromatic, and best in quality. It is proving an early and regular bearer. If picked early it keeps into midwinter. It has proven with us much hardier than Longfield.

**Anisim.** (18 M.) * * * A noble tree in all respects and a regular bearer. It has been called the "Jonathan of the North" and it is much like it in color, flavor and season.

**Ledenets.** (30 M) * * * A fine tree but does best on knolls without shelter on the north. Fruit large, oblate, yellow, with blush on sunny side. Flesh fine grained subacid, very good. Season here, picked at proper time, midwinter.

**Zitzoff’s Winter.** (No. 585.) * * In the bulletin of 1890 we did not credit this as a very hardy variety. Our recent reports show it to be as hardy as Wealthy and less subject to blight. It is an annual bearer on account of its very late period of blossoming in the spring. Fruit large to very large, beautifully colored, fine grained, tender, mildly acid and nearly equal to Northern Spy in quality. Season about that of Grimes Golden.

**Large Borsdorfer.** * * At first we sent this out sparingly but it now has a good record. The fruit is of the size, season and quality of Fameuse but if picked when it is half colored it keeps remarkably. We have tested the fruit in fine condition in March kept in an ordinary cellar. A very early and continuous bearer.

**GENERAL NOTES.**

It will be urged by friends who have had considerable experience in growing and fruiting the East European fruits that we have omitted some of the varieties they have found most valuable, and included a number with which they have not been wholly satisfied on account of blight or some other cause.

But it must be kept in mind that this is a report on the varieties and species we will distribute at this time, and that varied soils, elevations
and exposures bring us varying reports. The notes as now given are a summary of the behavior on our own grounds and on the grounds of a large proportion of our reporters over an immense area of our country.

In the autumn list we have included a number of varieties which are proving in winter apples on their north limit of growth; such as Long-fild, Rosa Repka, Repka Aport, Hibernal, Mallett, Large Anis, Posarts Nalivia, Silken Leaf, Pointed Pipka, Bergamot and Harry Kaump.

We cannot too strongly impress the importance of planting apple trees on the highest and driest land available, and furnishing no protection on the north and west. If the elevation is not more than ten feet above the general level of the adjacent lands, it is a great advantage in furnishing air drainage, equalizing the temperature in summer and lessening danger from frosts in the blossoming period.

Another benefit resulting from the selection of dry soil is that it permits deeper setting, which is a protection to the tender roots we are compelled to use in root-grafting.

If compelled to set the family orchard on low, black colored soil, get our selection of best varieties for such soil, set the trees shallow and ridge up for drainage and root protection.

We send out low headed trees, and our advice is to keep them low. In setting, lean the trees toward the one o’clock sun. They will have an awkward appearance at first, but they will soon become erect.

The best crop for a young orchard is buckwheat. Plow the ground very shallow about the middle of June and seed at once. The buckwheat keeps the ground loose, porous and relatively moist, permitting the roots to come up near the surface where the most of the nitrogenous plant food is found. The buckwheat can be harvested or allowed to rot on the ground. Bank the trees in the fall to protect the crowns and to prevent damage by mice. To guard against rabbits, wash the stems with thin whitewash, thickened with copperas and sulfur. If washed off by rains, renew the wash as often as necessary.

PEARS.

Prior to 1882 the writer, in common with all experienced orchardists, believed that pear growing would never prove profitable west of Lake Michigan, except at a few favored points.

The varieties from Southwest Europe and their American seedlings had failed with us as completely as had the grapes, strawberries, raspberries, etc., from that equable climate. Hence, we were astonished to find healthy pear orchards loaded with fruit in the parts of East Europe where our native Black Locust winter-kills as the common peach does with us.

We were still more surprised to find the pear used as a street tree on the Volga, where the Duchess apple will not endure the winters, and where, with scanty snowfalls, the thermometer often goes down fifty or more degrees below zero. We at once decided that some of these varieties were worthy of
trial. The present notes are confined to the varieties which have fruited in our state and have shown the fewest defects of tree and foliage. All of the varieties from South Central Russia have proven as hardy as the Duchess apple in tree, but many of them are far more subject to blight, except when planted on ridges in wholly unsheltered positions.

The notes on varieties are a reprint of those given in 1893. The only changes in our reports are that on unsheltered upland, these pears stand drouth far better than our native forest trees, and that blight is the main drawback to their profitable growth on ordinary black prairie drift.

**Bessemianka.** (No. 508 and 3 M.) On dry soils where it can be planted deeply to protect the tender roots on which we are compelled to graft all our varieties, this is doing well up to the 44th parallel. Fruit medium in size, Bergamot shape, and is nearly or quite seedless, Flesh tender, juicy, sub-acid, almost buttery, and very satisfactory for dessert use. Season last of August.

**Limber Twig.** (No. 513 and 14 M.) Much like the above in hardiness and habits of growth. Fruit larger than Bessemianka and about the same in quality and season.

**Gakovsky.** (No. 347.) This variety can be grown on dry soil at the far North. The fruit in our climate is not as large as we reported in 1890, and it is not as firm in flesh as was reported. It proves to have fair quality for dessert use and is very valuable for cooking. Season. September.

**Autumn Bergamot.** (No. 122.) A very vigorous grower in orchard and nursery, and has done better on common prairie soils than the above noted varieties. Fruit small to medium in size, nearly sweet, very juicy and would be called good in quality in pear growing regions.

**Kurskaya.** (No. 392.) A very hardy tree and has been very free from blight on all soils. Fruit medium in size, Bergamot shaped and excellent in quality. This has fruited very freely even during the past peculiar season.
Victorina. (No. 361 and 106 Vor.) This, by mistake, has been sent out largely as No. 391. It is a very hardy tree and free from blight on soils suitable in any climate for pear growing. Fruit medium size, pyriform, fine grained, tender, and very good in quality when ripened in the house. Season, early September.

Early Bergamot. (No. 418 and 103 Vor.) A fine healthy tree, much hardier than the Wealthy apple. An early summer variety, larger in size and better in quality than the old Summer Bergamot grown in Wisconsin previous to our recent test winters.

Flat Bergamot. (No. 396.) About like the above in hardiness of tree and quality of fruit, but it matures early in September.

Winter Pear. (9 M.) We have very favorable reports of this variety as to hardiness of tree and freedom from blight. Fruit larger than the Bessemianka, as good in quality and three weeks later in season.

Dula. (4 M.) The foliage of this variety indicates close relationship with the Snow pears of Mongolia. Fruit Bergamot shaped and most valuable for culinary use. Season, September.

Saccharine. (12 M.) This appears to be identical with the Zuckerbirn [Sugar pear] of Northeast Germany. It appears to be hardier than the Wealthy apple and has shown no trace of blight on the College grounds. Fruit Bergamot shaped, tender, juicy, nearly melting and sweet. Season, early September.

Lemon. (No. 516 and 7 M.) A very hardy tree, which Dr. Shroeder says is most valuable for culinary use. I have not seen the fruit as yet when fully ripe.

Mongolian Snow Pear. This is hardier in tree than Flemish Beauty and its leaves are always clean, handsome and perfect. On dry soil it will prove valuable up to the 42d parallel. It is a regular bearer, even such unfavorable
seasons as those of 1893 and 1894. Fruit above medium in size, and when ripened in the house it is much better in quality than Kieffer, Le Conte or any of the Chinese pears we have tested grown in the South. It should be ripened in the house and can be kept until late in autumn.

Golden Russet. We suspect this to be identical with the Golden Russet pear of Japan, recently figured and reported upon very favorable in eastern journals. But of this we are not certain, as our trees were received from Northwest China. It is an early and continuous bearer of peculiar flattened russeted fruit, maturing in autumn, and may be kept into early winter. This is not an iron clad in Ames, but if injured at its points of growth during severe winters, it starts vigorous shoots from below and continues its usual habit of free bearing. Valuable for culinary use.

GENERAL NOTES.

As a rule in all countries the pear thrives best on rather high and dry soil, and in our state it has succeeded best on prairie ridges, knolls and bluffs wholly unsheltered at the north and west. Plant on a ridge, even if not more than ten feet above general level. With us the main trouble is from blight with the iron clad varieties, which is not often seen when planted on dry ground in wholly unsheltered positions.

We are compelled to use the seedlings of the French pears in grafting, which in our climate are apt to be injured in open winters unless the trees are planted deeply. On dry ground plant fully six inches deeper than they stood in nursery. In nine cases out of ten, these deeply planted trees will throw out roots from the scion within two years after planting.

We send out and plant for our own use trees only one or two years old from the graft. Even in Michigan the veteran grower, T. T. Lyon loses no opportunity for urging the planting of what he calls 'maiden trees,' i.e., one year old trees. These small trees are more certain to make a good growth the first season, and will make larger and better trees four years after planting than older trees planted at the same time. Again the little trees will permit very low heading and the shaping of the top so as to have a central ascending stem without forking branches.

CHERRIES.

In the summer of 1882 the writer had a fine opportunity for studying the European cherries from the valley of the
Moselle, in France, eastward to North Central Asia. In the spring of 1883, we imported one year old trees of the varieties we decided to be the most promising for trial in the prairie states and in the far North. These little trees were set out in the orchard on the College grounds and have had hard usage. They have been exposed to the recent trying summers and winters that have killed our trees, young and old, of the grade of hardiness of Early Richmond, Montmorency and English Morello. Since their first year of growth they have also been mercilessly cut for scions in autumn and buds in summer, which we need not say is a serious damage to any of the stone fruits.

A better opportunity for determining the relative hardiness of trees and perfection of foliage has not been given in the history of our prairie horticulture.

After this severe ordeal on the College grounds and the extended test on the grounds of experimenters over the North and West, we are now pleased to report that many of the varieties appear to be about as hardy as our native plums.

These Eastern European varieties are also hardier in fruit, bud and blossom than any of our old varieties.

We are also pleased to report that the fruit has fully realized our European estimates as to quality, color and size after the trees come into heavy bearing. But the first fruits on young trees are small on account of being robbed by the rapid growth of the young wood. In the following list, the varieties are given very nearly in the order of maturing their fruit.

**Early Morello. (23 Orel.)** * * * A neat round topped tree, with firm thick leaves. An early and regular bearer. Fruit much like Early Richmond in size and color, but the pit is smaller, the flesh firmer; has more grape sugar, and it is a little earlier in season. Juice uncolored.

**June Morello.** * * Of the Eastern Griotte type with pendulous habit. Fruit much like Early Richmond in size
and color but some later. Flesh firm, meaty, and with much more grape sugar than the Richmond.

_Griotte Précoce._ ** A variety of the same family as the above but ten days later in season. This is proving very valuable across the continent.

_Kings Morello._ ** A stronger growing tree than either of the above but of the same family. Fruit of the Richmond type but larger and much better for any use.

_Griotte du Nord._ ** * Of the Bessarabian type. Fruit increases in size as the trees get older on all of this class, probably on account of rampant growth when younger. A fine canning variety and excellent for dessert use when fully ripe.

_Sklanka._ ** * We give the Michigan Agricultural College description of this fine variety: "Fruit large and handsome, color yellow with red cheek; flesh firm, yellowish; flavor sub-acid, good; pit small and somewhat flat, tree well formed, round topped, branches drooping, foliage good; a handsome tree, producing an abundance of fruit."

_Orel Sweet._ (26 Orel.) ** This is the hardiest of the strictly sweet cherries of East Europe. It is twenty per cent. hardier than the Early Richmond, with good foliage. Fruit medium in size, black, very small pit. Flesh firm and decidedly sweet. Juice colored.

_Strauss Weichsel._ ** We append the description given by Prof. Craig at Ottawa, Canada: "Fruit medium to large, a rich dark red, roundish, flattened at both ends, stalk short, set in a shallow cavity; flesh dark red, firm, juicy and sprightly with slight astringency; pit small; very good. Tree a small upright grower with leaves medium to small, moderately hardy." As ripened in Iowa this variety is very high in quality.

_Bessarabian._ (No. 62) ** * We give Prof. Craig's description: "This variety is said to belong to a race be-
A noble variety roots readily from the scion, or from layers, and is most valuable on its own roots especially when planted on dark colored prairie soils.

**Frauendorfer Weichsel.** * * * A strong growing tree, with weeping habit and fine foliage. Fruit medium in size, dark red, truncate. Flesh tender, juicy, sub-acid. This variety is criticised at first, as the first fruits are small and poor, on account of the rapid growth of the new wood.

**Cerise de Ostheim.** * * * A round topped tree with pendulous habit. It is the best variety of the Ostheim family. Fruit medium in size and nearly black when ripe. Pit small, flesh firm, tender, juicy and very rich in grape sugar. This also is condemned when the trees are bearing their first fruits. Juice highly colored.

**George Glass.** * * * This variety was introduced into Marshall county, Iowa, from North Germany. It has fine foliage and is proving a good bearer. Fruit large, firm and well stocked with grape sugar. Uncolored juice. This is of the Bessarabian type and in Michigan it is decided to be identical with that variety. But this does not prove true with us as it ripens later and is not identical in tree.

**Doute Natte.** * * * This variety was mixed when received. At first we sent out some trees of a spurious variety that has no value. Fruit large and nearly black when ripe. Flesh dark red, firm and of high quality for canning. Juice highly colored. This variety seems to have been introduced
many years ago and has been sold as English Morello, which gives rise to the conflicting reports in regard to the behavior of the English Morello. It is a much better tree and fruit than the latter but of the same family.

_Lithaur Weichsel._ Prof. Craig says, "This has been distributed to some extent by Canadian nurserymen, notably Stone and Wellington; but while a good tree the fruit is inferior in size and quality to many others. Fruit small, round, almost black. Flesh firm, acid. Tree a free grower, fairly hardy. Prof. Budd says, 'much grown in southwest Russia for drying and cherry wines.' Where Vladimir succeeds, this need not be planted."

_Lutovka._ A strong growing tree with fine foliage like that of the Dukes. Fruit very large and dark red when ripe. Flesh firm, light colored, white with pure flavor, sub-acid when fully ripe. Our No. 24 from Orel appears to be identical with this tree in fruit but later may show points of difference.

_Brusseller Braune._ The Michigan estimate is given: "Fruit large, globular, slightly heart-shaped, a little inclined to be irregular and to vary in size; in color very dark red; flesh firm, reddish, acid and slightly bitter; stalk long, cavity deep; pits large and flat; tree very vigorous and prolific, shoots ascending, foliage good; season middle of July. One of the best of the Russian cherries."

_Gibb._ (No 27 Orel) During his second visit to Russia Mr. Gibb was not able to secure the name of this variety. It is of the Brusseler Braune family and is much like it in tree and fruit. But the tree is hardier and the fruit seems larger and better.

_Orel._ This is a dwarf growing variety of the Vladimir family. It bears good crops when the plants are not more than four feet in height. Fruit large, black, and quite acid. Will be very valuable for the far North. Colored juice.
Shubianca. (6 M.) ** * * Another dwarf variety of the Vladimir family. Fruit much like the Orel, but some later in season. Colored juice. Propagated from sprouts or root cuttings, or budded on the wild red cherry of the North, the two bush cherries here noted will thrive in the far North.

Shadow Morello. ** This is a dwarf variety, remarkable for its heavy and continued bearing. Fruit large and nearly black when ripe. When first colored red, the fruit has a bitter flavor. At this stage of development it is excellent for canning, and when black and fully mature it is excellent for dessert use. Highly colored juice.

Spate Morello. ** Another variety of the same dwarf family of Griottes. Also a remarkable bearer. Fruit much like the above, but some later in season. Highly colored juice.

Large Long Late. ** Still another variety of the same dwarf family. It is known in North Silesia as Double Shadow Morello. Fruit much like the above, but some later in season. Highly colored juice.

Minnesota Ostheim. ** * * For several years we have discarded this variety on account of the larger size of the Griotte de Ostheim. But we now find that trees on their own roots are very hardy at the North, and prove heavy bearers of fruit high in quality for canning. Hence we have propagated the trees of late from root cuttings.

Yellow Glass. * A variety introduced from North Silesia. A fine grower, with perfect leaf. Fruit very large and bright yellow in color. Flesh firm, fine grained, juicy and sweet. This promises to be very valuable. It fruited on the College grounds even the past unfavorable year.

Vilne Sweet. * From Vilne in Southwest Russia. Fruit large, firm fleshed and sweet. This variety should be tested by all who have good cherry soil in the South district,
as the tree promises to be a good bearer and the fruit would be called of excellent quality in California.

GENERAL NOTES.

Dry ridge soils with porous sub-soil are most favorable for cherry growing. But most of the Russian varieties do grandly on second bottom lands such as the most of the city of Ames is built on. On such soil they load with fruit and the foliage is perfect while on hard-pan land only a mile distant the past dry seasons, the fruit has been scanty and small and the leaves rusted. On such soils the trees should be set four to six inches deeper than they stood in the nursery. By deep setting, roots will be thrown out from the scion or from a point above the bud in two or three years.

Indeed the Russian and North German varieties often emit roots from the scion the first year after setting the root-grafts in nursery. Another benefit resulting from deep setting is protection of the tender roots we are obliged to use in propagation.

2. Even in West Europe, low cordon and bush training of the cherry is becoming common among commercial growers. In East Europe in sections remote from the ocean, all stone fruits are headed very low. In the Volga region the cherry is grown in bush form, with several stems like the currant and gooseberry. Experience has also favored very low stems of the stone fruits in the prairie states. With high stems all varieties are liable to sun-scald and stem injury. Fortunately many of the Russian varieties favor the shading of stems by their pendent habit of growth. But even with these it is best to have very low stems.

3. We send out one year old cherry trees exclusively. Many who receive them, we find, set them in nursery rows with a view to planting them in orchard when they attain proper size. This is wrong, as they should be planted at once where they are to stand permanently. It will be found that the one year old cherry tree set in orchard will be larger, thriftier, better shaped and more fruitful than the three year old tree set at the same time.

4. Root-grafting the cherry is far better for the planter than those propagated by budding. The root-grafts are set down in nursery to the top bud of the scion, thus placing the tender root considerably below the surface and favoring the emission of roots from the scion. When set still deeper in the orchard, such trees are not liable to root-killing.

5. Observations in Europe and in this country favor the belief that alternating varieties in the cherry and plum orchard favors regular and continued bearing. A variety that proves a poor bearer when depending on its own pollen supply, is often regularly fruitful when intermingled with other sorts. In our climate, if the weather during the blossoming period is hot and windy, a variety may mature and waste its pollen before the stigmas are ready to receive it. With such varieties, the pollen of adjacent sorts may perform the needed work by the aid of insects and the wind.

6. In planting a cherry orchard, we have much to favor the belief that planting the trees quite thickly in rows running north and south is an advantage; giving a wider space than usual between the rows to let in the sun at mid-day, and to favor the free circulation of air. Orchards planted with trees only ten feet apart in the rows and with a space between the rows of twenty-four feet, have fruited more regularly than those planted in the usual way.

7. In the above list, the varieties marked with three stars (* * *) are hardy enough to be grown on dry soil up to the 44th parallel. Some of them, such as Orel, Shubianca, Vladimir, and possibly Bessarabian,
will succeed on hardy roots far north of that line. The hardy root for the far north is the native Pin Cherry or Red Wild Cherry (*Prunus Pennsylvania*) on which all cherries make a good union by either budding or grafting.

The varieties marked with two stars (**) are hardier on dry soil than any variety of the old list, and may be safely planted up to the 43rd parallel.

8. The name “Amarelle,” previously used, means Morello. Hence the change in some of the names.

**PLUMS.**

**NATIVE VARIETIES.**

Some of our native varieties can only be called “new” in the sense that they are not generally known over the West, though many of them have been prized locally during the past quarter of a century. We are now distributing the following varieties:

*De Soto.* This is more generally known than any of our native sorts, and is generally popular. It does not stand drouth well, hence it should not be planted on dry ridges. Fruit larger than Miner and much better in quality for any use.

*Wolf.* Fully equal to the De Soto as a bearer, and the fruit is larger in size. In quality, however, it does not quite equal the De Soto for dessert use or canning. Its fruit in a very dry season is much superior to the De Soto.

*Wyant.* Known locally on the Cedar River, near Janesville, Iowa, for many years, but recently sent out for trial to other points. A bountiful bearer of fruit as large as De Soto, free stone, and the best in quality for dessert use, uncooked, with cream and sugar, that we have tested. Taking all things into consideration, we regard this the most valuable of the native varieties.

*Rollingstone.* A heavy and continuous bearer when the tree attains some size and age. Fruit round, firm fleshed and valuable for dessert use. For cooking it is not superior to the De Soto.
Cheney. This has been prized for many years near La Crosse, Wisconsin. Fruit averages larger than that of any of the preceding sorts. Flesh firm, free from astringency and valuable for market or dessert use. We have not yet tested it for cooking. The two past years this variety has been attacked by the fungus known as Plum Pocket. If this continues it will seriously lessen its value.

Hawkeye. This has not been tested to any great extent outside of the home grounds of H. A. Terry, at Crescent, Iowa. Fruit as large as Cheney and excellent in quality. Very promising for trial.

Chippewa. A dwarf variety from Chippewa, Falls, Wisconsin. It often bears when only two feet in height, and the crops of fair sized fruit it carries when only four or five feet in height is surprising.

Pottawattamie. An annual and early bearer of medium sized, bright red fruit of excellent quality for any use. It will not prove hardy north of the 42d parallel, except in favored spots.

Forest Rose. Much like the above in hardiness and quality of fruit, but will sell better on account of larger size. It has proven an excellent bearer at Ames and at many other points south of the 42d parallel.

Maquoketa. This was found on the Maquoketa River in Eastern Iowa. Fruit larger than Miner and better in quality for dessert use or cooking.

The three last named are varieties of the Chicasa species and at present they appear to be the hardiest in tree and the most regular in bearing of the Chickasaw family yet tested.

Other Native Plums. We are sending out in a small way some other native plums for trial, which have been locally prized. Some of these in the near future may take the place of a part of those noted at this time.

EAST EUROPEAN VARIETIES.

The varieties introduced from Southwest Europe and
their American seedlings, which have been grown with greater or less profit in the states east of the lakes, have wholly failed on the College grounds at Ames. The varieties noted at this time were selected by the writer on the steppes of East Europe in 1882, with the exception of the three last named on the list, which have come to us as strays from the same source. The opinions here expressed in regard to their value, are founded on our home experience with trees badly injured by scion-cutting; and on the reports from our trial stations scattered over the Northwest and cold North.

At the recent state fair a better opportunity was given by the numerous exhibits to judge the value these varieties than ever before.

*Moldavka.* ** Fruit large, pear shaped, free stone, yellow. Quality good for any use. It will prove a valuable market sort as it ripens with the wild goose.

*Blue Moldavka.* ** This as received from Russia was mixed with the sprouts received under the name of Moldavka. As the latter is yellow we named this blue Moldavka. It has proven everywhere an early and heavy bearer of large blue fruit as good in quality as the Lombard.

*Leipsic.* (Riga No. 113) ** Fruit of largest size, blue, with much bloom. This will prove most valuable in the south half of the state, yet on dry soils it will stand up to the 43d parallel.

*Dame Aubert Yellow.* ** Fruit medium in size, free-stone, yellow. Quality high; season August. Of the Moldavka family.

*Voronesh Yellow.* ** Another fine yellow variety much like Moldvaka, yet it seems distinct in tree and fruit.

*Early Red.* ** This and its near relative, White Nicholas, have proven very hardy far North and are early bearers of purplish red fruit about as large as Lombard, ripening two weeks earlier. As its leaves are small it is benefitted by close planting north and south and clipping the points of growth to give a dense habit.
Long Blue. (Orel 20.) ** This is an early and heavy bearer of large showy blue fruits, with much bloom. The original sprouts were mixed with a smaller variety which we have now discarded.

Wyzerka. ** We have many favorable reports of this variety from the south half of the state. Fruit large blue, and fine in quality.

Minnesota. ** This variety was introduced into Minnesota from Denmark. It is a strong growing tree, with fine foliage, and so far has proven a perfect ironclad. We have not yet tested the fruit, but it is said to be large, dark blue in color, a perfect free stone, and one of the best in quality of the plums grown in Denmark. It is very promising for trial.

Communia. ** This is a stray from East Europe, introduced by the Communia Colony of Northeast Iowa. A fine grower, with large, perfect foliage, and is an early and continuous bearer of quite large blue fruit, with deep suture and much bloom, which is excellent in quality for any use. On dry soil it will prove quite hardy up to the north line of the state.

Richland. ** This has been long known in parts of Pennsylvania and is now popular in parts of Indiana. Beyond doubt, it was originally introduced from East Europe. It is perfectly hardy at Ames, and a good bearer of medium sized, copper colored fruit of excellent quality.

Trabeshe ** This was introduced by Chas. Gibb on his second visit to Central Russia. A very hardy tree and early bearer. Fruit large, blue, oval, freestone. Ripens in August. Quality best.

HARDY PRUNES.

Hungarian Prune. A very hardy tree and an early and continuous bearer. Fruit of medium size, prune shaped, blue and free stone. So far this variety has been less injured by curculio and plum gouger than any other variety on the grounds.
Ungarish Prune. A low spreading tree that has proven hardy on dry ground up to the 43d parallel. Fruit medium in size, with a deep suture, dark blue, with much bloom, is prune shaped, a perfect free stone and of high quality when fully ripe. But if tested when it first colors, is very sour. When fully ripe it has the flavor and quality of the Italian prunelles.

Hungarian No. 1. This was mixed with the sprouts of the Hungarian Prune above noted and has proven very valuable. Fruit medium in size, prune shaped, bright yellow, free stone and fine in quality.

Black Prune No. 1. This is a true prune of excellent quality. Fruit medium in size and when ripe excellent in quality for dessert use or cooking. Though sweet to the taste when eaten as picked from the tree, it develops much acid in cooking.

Hybrid Plums.

We are distributing in a small way some very promising hybrids originated by crossing the blossoms of the De Soto with pollen of the Japan plums and the pollen of the Maquoketa. These hybrids are very strong growers and their fruit is high in quality.

Apricots.

Shense. This is classed with the plums as it bears best when planted with them. It is a true apricot, grown from a pit received by the College from a missionary in Northwest China. In Nebraska it is grown under the name of Acme, but this is a misnomer. It is a fine grower with perfect foliage, and with low stems will prove hardy on dry soil up to the 42d parallel. The fruit is much better in size, appearance and quality than any of the Russian apricots.

General Notes.

1. Where possible select a north slope with rich soil for the plum orchard. If shelter is given, let it be on the east side, as protection from east storms during the blooming period appears to be an advantage.
2. In practice in our state the best results have been reached by planting rather thickly in the rows running north and south, and giving more room the other way for letting in the sun between the rows, and air circulation. Trees planted ten feet apart in the rows, with space between the rows of twenty-four feet have given the best results.

3. The alternating of varieties in the rows with a view to more perfect fertilization of the blossoms, is also an advantage. With some varieties the mingling of varieties is absolutely essential, and I believe it to be an advantage in all cases.

4. The need of very low tops is quite as apparent as with the cherry. I know of no variety of the native or foreign plums that will prove long lived and fruitful with a high exposed stem. If it does not develop the fatal gumming on the south side, the main growth of wood of stem and top will soon be on the north side.

5. It never pays to market plums in rough tubs, baskets or boxes, as is so often practiced. The commercial crates and boxes are now too cheap to be dispensed with in shipping any of the stone fruits.

PEACHES.

In 1885 it was stated in bulletin that we had sent out for trial some varieties of the peach from Northwest China and Bokara. As then noted, they have proven much hardier than any of the varieties hitherto tried in the West, and we are now pleased to report that several of them have been well loaded with fruit of good size and quality during the past six years in the south half of Iowa. At the last state fair many exhibits were made of our Bokara No. 3, North China No. 2, and others, all of which were free stone and compared favorable with the Georgia varieties. Where not hardy enough it will pay to lay them down in winter. If properly grown it is easier to lay down an acre of peach trees than an acre of blackberries. Our peach trees one year old from bud, are from four to six feet in height. These are planted in orchard and given good care. In the fall they will average fully six feet in height. Trim them up late in the fall to a single cane and lay them down flat on the surface of the earth, and cover with straw or old prairie hay with enough earth to hold the covering in place. About the 20th of April, remove the covering permitting the stem to lie prostrate. When growth begins to start, turn up the extreme top and tie to a stake. Keep off all shoots from the prostrate stem and en-
courage upward growth of the erect portion. In the fall before the ground freezes cut the tree loose from the stake and press it down to the earth to the right or left and cover as before. The spring of the stem will permit the laying down of the trees with very little pressure.

The prostrate stem will soon take root if left in contact with the earth. To avoid this place stones or billets of wood under it.

The accompanying diagram will show clearly the mode of procedure.

The hardy peaches are more valuable for laying down than the common varieties, for the reason that they ripen their wood perfectly in the autumn. If unripe wood is covered the fruit buds are usually rotted or fatally injured during the winter.

**DWARF JUNEBERRIES.**

During the past ten years we have been experimenting with several varieties of the Dwarf Juneberry. The Osage, Greene County, Williams and Alpina have borne the best crops of the largest and best fruits, hence we are sending them out for trial. When grown in a small way the fruit is mainly taken by the birds, but as with cherries, when grown by the acre the quantity taken by the birds is scarcely missed. In size and quality these juneberries compare favorably with the large bush huckleberry.
PROTECTION FROM BIRDS.

In this connection a note on the protection of juneberries cherries and other fruits from birds will have some interest. In this country this subject has been much neglected, and so far as I know we have only one manufactory of suitable netting for this purpose in the United States. Neighborhoods wishing to import this twine can order it from The Net and Twine Factory, Boston, Mass. It will cost, laid down in Iowa about three cents a yard, and, with good care when not in use will last twenty years or more.

To favor the covering of many plants of the Juneberry or cherry trees, it is well to select varieties ripening in succession. As an instance, in an orchard of one hundred and fifty cherry trees the whole can be covered with thirty covers, if five varieties are planted, putting out thirty trees of each variety ripening in succession, as noted in our cherry list.

With Juneberries we will have the same succession with the varieties above noted.

SMALL FRUITS.

Our small fruit growers are wide awake in the work of testing and sending out, at a moderate price, the best of the grapes, strawberries, raspberries and blackberries. Hence we do not propagate any of them for distribution, yet we test all promising new varieties, with a view to reporting upon their prospective value.

TREES FOR SHELTER BELTS AND TIMBER.

The need of quick growing trees on the storm-swept prairies of the Northwest, has long been apparent. The cottonwood and white willow have been extensively planted, but on high dry prairies, they have failed on account of leaf rust and other troubles. To meet this want, the College introduced in 1882, some of the rapid-growing poplars and willows of East Europe, which are more valuable for fuel and timber than any of our quick-growing trees. Of the species which
have been given extended trial, the following are proving satisfactory, where the native trees of our river and creek bottoms fail wholly or in part:

**White Poplar.** (Populus alba.) This is the true White Poplar of East Europe and is far more valuable than the Gray Poplar (Abele) which has been known as a great sprouter. It is upright in habit, a very rapid grower and is peculiar and beautiful in foliage. Its timber is close grained and valuable for many uses, including house finishings.

**Silver White Poplar.** (Populus alba argentea.) Standing singly this is spreading in habit, but it is upright in groves. A very rapid grower, with timber quite as valuable as the above. This beautiful silver leaved tree will grow where all native trees fail in the dry parts of the West and Northwest.

**Asiatic Poplar.** (Populus certinensis.) This is a very rapid grower, even where the Box Elder fails. Its leaves are large and thick, with wavy edges, and furnish a fine shade. Its timber is closer grained than any of our native soft woods and it does not warp, shrink or crack after it has become dried. It is much used for house finishing, flooring, joists, etc., in the far East.

**Petrovsk Poplar.** (Populus Petrovsky.) A variety of the above originated near Moscow. In East Europe it is much used as a shade tree on large lawns and on the roadsides. It is also largely used in timber plantations. It thrives on the dry ridges of the Northwest where our native trees fail.

**Red Willow.** (Salix fragilis.) This is the famous Red Willow of East Europe and Asia, used for tanning the Russian glove leather, and upper leather; and for about all the purposes for which we use White Pine. Loudon says of it: “The Redwood Willow produces timber superior to that of any other tree willow.” A very rapid, upright grower, with handsome silver foliage.
Golden Willow. (Salix aurea.) This is wholly distinct from our common Golden Willow. In 1885 it was placed with the ornamental willows. It will prove very valuable for shelter belts and timber.

Pointed-leaved Willow. (Salix acutifolia.) This has no comparative value as a timber tree, except on very dry soils where other trees fail. It is known in the far East as the Desert Willow and is peculiar in having palisade cells on both sides of the leaves, like our native Compass plant. Hence it will thrive with very little water at the roots.

GENERAL NOTES.

1. The two first noted above do not grow readily from cuttings of the young wood, but will grow very readily from root cuttings.

2. The other poplars and willows named will grow as readily from cuttings of the young wood as any of our native poplars and willows.

ORNAMENTAL TREES.

Bolle's Poplar. (Populus Bolleana.) On dry soil this very handsome tree, with upright habit, silvery bark and cut leaves, with the brightest shade of green above and a silvery pubescence below, is proving very valuable. It is propagated like the white poplars from root-cuttings.

Laurel-leaved Willow. (Salix laurifolia.) This is not identical with the Laurel-leaved Willow of some eastern nurseries. It is a neat round topped tree of medium size, with laurel-like, shining leaves that few will recognize as those of a willow. It is specially valuable for certain positions in the back ground of lawns and for ornamental wind-brakes.

Napoleon Willow. (Salix Napoleonis.) Grown from cuttings, this is almost a trailer, but top-worked six feet from the ground on Salix aurea it forms the finest weeping willow I have seen in the West, and one that is perfectly hardy anywhere. Its foliage has a peculiar bluish green tinge which is very pleasing.

Silver-leaved Willow. (Salix alba argentea.) A silvery leaved form of the White Willow from East Europe. In contrast with the Laurel-leaved Willow, it has a very pleasing expression.

Rosemary-leaved Willow. (Salix rosemarinfolia.) This is not the Rosemary Willow of eastern nurseries, which will
not endure our summers or winters. It is a shrub variety from central Asia, with narrow, fern-like, dark green leaves, which are decidedly ornamental. Top worked on Salix aurea it makes a beautiful pendulous tree of small size for the lawn.

**Wild Olive.** (Elaeagnus angustifolia.) A medium sized tree with silvery shoots and leaves, It is remarkably similar in leaf and habit to the olive trees of California. Its flowers are not excelled in delicacy of fragrance, and its silvery fruits are ornamental in autumn. For ornamental windbreaks the Wild Olive has no superior, as clover, grass and all crops will grow closer to it than to any small tree known to the writer. In East Europe this peculiarity is well known and that rank clover will grow even under its branches. We have grown from seed several thousand plants which we wish to distribute at very low rates for this use.

**Prunus Maacki.** A small sized tree with spreading top and dense green foliage that is fully expanded earlier in spring than any tree in our collection, native or foreign. In East Europe it is known as the May Day Tree around which the party gathers to crown the May Queen. Its pure white blossoms are in long racemes and are useful in forming the first handsome bouquets for the parlor vase.

**Bird Cherry.** (Prunus padus.) The variety of this handsome small tree that we propagate is weeping in habit. Its racemes of pure white flowers are handsome and fragrant in early spring, and are followed by an abundant crop of dark purple fruit, of which the birds are very fond.

**Acer ginnala.** A dwarf variety of the Maple, with cut leaves, which assume all the colors of the rainbow in autumn. It is a small tree, for the lawn, very closely allied to the Japan Maples, which are becoming very popular in the eastern states.

**Alnus incana.** This form of the Alder is a native of East Europe, and thrives well on dry upland soil, unlike the Alders of West Europe. It is a round topped, handsome tree, with silvery foliage.

**Hop Tree.** (Ptelea trifoliata.) A very handsome small tree which is loaded in autumn with seed capsules resembling
hops. In East Europe they are used as a substitute for hops to a considerable extent in bread making.

**Prunus padus.** The West European form so much planted east of the lakes is not hardy here. But the Russian variety is perfectly hardy and forms a beautiful small tree for the lawn.

**Pyrus puring.** A large bush variety of the apple bearing loads of fruit not larger than marrowfat peas. The blossoms are dark pink in color and handsomer than the wild crab. This very small tree is prized in the states east of the lakes.

**ORNAMENTAL SHRUBS.**

**Amur Tamarix.** (Tamarix Amurensis.) The ordinary Tamarix, so popular on eastern lawns, is not hardy at the West. But the still more beautiful species, from the valley of the Amur, is perfect, up to the 43d parallel, and when properly pruned, it is almost a perpetual bloomer. Like the hardy Hydrangea, this handsome shrub must be annually cut back at its points of growth, to preserve symmetry of form and free blossoming.

**Viburnum lantana.** The rare beauty of foliage, flowers and fruit of this member of the Snowball family, places it well at the head of the list of hardy varieties.

**Russian Snowball.** This is a variety of the common snowball, found in Central Russia. The bush is smaller and more pendent in habit than the common variety, but the flower trusses are larger and handsomer.

**Mock Orange.** As the best varieties of the Mock Orange (Philadelphus) are not common in Iowa, we are propagating the best of them, and send out several fine varieties imported from East Europe. The flowers of some of the species are pure white, fully two inches in diameter and very fragrant. All of them are hardy in any part of the state.

**Amur Barberry.** (Berberis Amurensis.) This is a much larger grower than our common species. Grown as single specimens on the lawn, it forms a large, spreading bush fifteen to eighteen feet in height. It is free from the attacks
of the cluster cup fungus, and is the most valuable species for stock barriers, or, if properly pruned, for ornamental hedges. Its immense load of dark purple fruit is decidedly ornamental, and is useful for the making of healthful marmalades and jellies.

**Chinese Barberry.** (Berberis Thunbergii.) This is a low growing species, with thick, rounded leaves, which change into varied shades of red and purple in autumn. Its load of bright red fruit hangs on well into winter. This is a favorite species in the eastern states, and we are pleased to report it perfectly hardy, and still more beautiful at the West. Very valuable as single specimens and for low division hedges on the lawn.

We have also a dozen or more other varieties and species of the barberry from East Europe and North Esia, which have much interest, most of which are free from cluster cup fungus.

**Privet.** (Ligustrum vulgare.) The West European Privet so much prized in the eastern and southern states, is not hardy in Iowa, but the still more beautiful varieties from Poland and Central Russia are proving hardy in all parts of the state. These have pure white and very fragrant blossoms, resembling those of the lilac, and are loaded in autumn with dark colored berries.

**Lonicera splendens.** This species of the Bush Honeysuckle is much handsomer in form of bush, in foliage, in blossom and in berries, than in the common ones.

**Lonicera Xylosteum.** A species of Bush Honeysuckle, with large dark green leaves and pendent habit. In form and expression it is the handsomest of its family, and its large dark red berries are as large as small cherries, and hang on late in autumn.

**Lonicera Alberti.** A trailing species, with partially upright center. Each year the central part extends upward with all the lateral branches trailing downward to the earth. On the lawn it attracts much attention when in flower and through the growing season.
We have about a dozen other varieties and species of the Bush Honeysuckle, all of which are interesting in a shrub collection.

_Climbing Honeysuckle._ We have three species of Climbing Honeysuckles from East Europe, which are proving perfectly hardy in our climate, and are very handsome in foliage blossoms and berries. These are decided acquisitions, as the eastern varieties are mostly tender with us.

*Rosa rugosa.* The varieties of this unique and beautiful species we send out were imported by the College from Russia and North Central Asia. In habit, flower buds, flowers and foliage they are handsomer than the varieties introduced from Japan. We propagate single red and white varieties, and one red variety which is half double in flower.

_Spiraeas._ We distribute all the hardy varieties and species common in the East such as *S. triloba, S Van Houttei, S. Douglassii* and *S. Nobleana;* and also some hardy varieties of *S. callosa* and other species from East Europe.

**GENERAL NOTE.**

We have on the College grounds very many desirable flowering shrubs, many of them introduced by the College from the most trying positions on the Eastern continent. Many of these not noted in the above list are propagated in a small way for sending out to our trial stations.

**COLLEGE NURSERY.**

The impression seems common that our limited nursery grounds are commercial in character. Very often we receive orders for the common varieties of fruits, shrubs, etc., grown in our nurseries. Our real purposes are:

1. To familiarize students with the modes and methods of propagation and culture.
2. To furnish object lessons as to variations in leaf, bud and habit of growth of varieties and species.
3. To test and send out for trial the hardiest known and most promising varieties of the apple, pear, cherry, plum, prune, apricot, peach, forest trees, ornamental trees, shrubs, etc.
4. To send trees for trial only to those who agree to preserve the names and numbers, and in due time to report the relative value of each for general culture.