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Bulletin No. 251 - Apricot Varieties

Francis M. Coe

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"Moorpark": An important variety in the older apricot orchards of Utah, but little planted in recent years, this variety is now preferred by Utah shippers. Because of its large size, high quality, productivity, and regular bearing, "Moorpark" should be given an important place in new plantings.

Utah Agricultural Experiment Station
UTAH STATE AGRICULTURAL COLLEGE
Logan, Utah
FOREWORD

While this publication has as its primary purpose the presentation of data as a progress report on the apricot variety testing work of the Utah Agricultural Experiment Station, study of the apricot varieties being grown in the state and of the literature showed such a confusion of varietal nomenclature in orchards, nurseries, and even in the literature on apricot varieties, that it was considered desirable to review the literature and to describe the varieties at hand more completely than is usual with a report of this kind in the hope that by so doing the apricot variety situation might be clarified. It is hoped, also, that other workers interested in apricot variety studies will be assisted in correctly identifying varieties grown in their territory.

As a result of this study, the conclusion was reached that not a single important apricot variety in Utah was being grown under its original or true name as described in the literature on apricot varieties.

This study includes only the following classes of varieties: (1) Varieties grown in the test orchards; (2) varieties found growing in Utah; (3) varieties which may be grown in Utah under local names or incorrect names; and (4) those commended in the literature sufficiently to warrant their inclusion in later variety testing or breeding work. Since much of the literature is found in publications not generally available, it was thought worthwhile to compile and summarize it in available form in this publication. It is regretted that in preparation of the review of literature, the valuable descriptions of Hogg and Downing were not available.
SUMMARY AND CONCLUSIONS

1. This publication seeks to identify, describe, illustrate, and evaluate the apricot varieties growing in Utah, including 26 varieties which have fruited in the Station variety test orchards. Because the trees of new varieties under test are seven years of age or less, information on new varieties is in the nature of a progress report. Technical descriptions have been included as far as possible.

2. The nomenclature and identity of apricot varieties grown in Utah is much confused, nearly all being grown under local names or different names than those published. To aid in their identification, they have been compared with published descriptions, which are summarized here with the results of this study.

3. Although predominantly a California fruit, the production of apricots in the late states, including Utah, is increasing. Over half of the apricot trees in Utah were listed as non-bearing in 1930. Because of the early blooming habit of the apricot and its susceptibility to winter-killing of fruit buds and wood, apricots are best adapted to the warmer upland soils and slopes. Drought resistance of the trees and early ripening of the fruit makes it well adapted to lands with a limited late water-supply.

4. "Chinese" and "Jones"*, the leading apricots in Utah, are identical with each other, and with varieties tested under the names of Colorado, Wilson, and "Montgamet". The correct name of the variety appears to be Large Early Montgamet, as described by Hedrick (1922). The local histories of the "Chinese" and "Jones" support this view. Most of the younger trees in Utah are of this variety, while Moorpark is also important in the older plantings.

5. Large Early Montgamet ("Chinese", "Jones") is popular because of its firmness, large size when well grown, attractive color, high quality, rich aromatic flavor, and its sweet and edible kernel. It is more popular with local consumers and canners than "Moorpark" where equally well grown. The trees appear to be above average in vigor, are hardy and productive, but inclined to alternate bearing. The buds appear more tender to cold than some varieties, yet this variety often requires heavy thinning. Large Early Montgamet will probably continue to hold a major, but not exclusive, place in new plantings.

6. The variety commonly grown in Utah as "Moorpark" appears not to be the Moorpark described by earlier authorities, but to be Routier Peach or Wenatchee Moorpark, although positive identification was not possible. Other varieties of this type grown in Utah are Peach, Cutler, and three types of "Gates" apricots, some of which are probably old varieties renamed.

7. Of the other varieties tested or observed, Tilton, Shense, Riland, Peach, three types of "Gates", and Cutler appear to be worth limited trial. Tilton appears to be superior in hardiness of buds, productiveness, annual bearing, and firmness. It is late in season and moderately large in size. Shense, grown in Utah as "Peach" or Acme, is an early, highly colored sort

*VARIETAL NAMES IN QUOTATION MARKS ARE NOT CONSIDERED TO BE CORRECT NAMES FOR THE VARIETIES AS DESCRIBED IN THE LITERATURE BUT ARE USED HERE TO REFER TO THE VARIETY GROWN LOCALLY IN UTAH UNDER THAT NAME.
which may have value in certain locations as an early variety for shipping, local market, and home use. **Riland** also appears to have promise as an early variety. **Peach, “Gates”,** and **Cutler** are later varieties of Moorpark type which may have value for local market and home use for their large highly flavored fruits and late season.

8. Blenheim, Royal, Derby Early Royal, and Early Newcastle, major canning, drying, and shipping varieties of California, appeared to be too tender to cold and too small-fruited to be of value under Station orchard conditions at Farmington. Blenheim and Royal are grown to a limited extent in Boxelder and Weber Counties, but require heavy thinning, are small, and appear susceptible to bud-killing in cold winters. None of these varieties appear promising for Utah.

9. Early Golden and Sofia have trees superior in vigor and productiveness, but are not promising commercially. Early Golden may have value as a home-orchard variety in colder districts, provided it proves to be extra hardy.

10. The Russian apricots tested—Superb, Gibb, Budd, and Stella—appear to be worthless in Utah.
Importance and Location of the Utah Apricot Industry

While the apricot has been grown in Utah since its first settlement by the "Mormon" pioneers in 1847, it is only recently that this fruit has attained commercial importance. According to the census of 1930, Utah ranked third among the states in the number of apricot trees, with a total of 102,035 trees, of which at that time 48,847 were classed as bearing and 53,035 as non-bearing. Utah is outranked by California, with 6,488,448 trees and by Washington, with 364,404 trees.

In number of trees, the apricot ranks fifth in importance among Utah fruits, being preceded by peaches, apples, cherries, and pears, in the order named. Because of heavy plantings made from 1925 to 1930, the apricot is increasing in importance, approximately half of the trees in 1930 being young bearing trees under eight years of age.

Commercial plantings of apricots are largely concentrated in the three counties of the Salt Lake Valley north of Salt Lake City—Boxelder, Weber, and Davis Counties—which combined have 87,900 of the state's 102,035 trees, or 86 per cent. Other counties which have appreciable numbers of apricot trees are Utah, Salt Lake, Emery, and Washington. The numbers of bearing and non-bearing apricot trees, as given by the census of 1930 for the different counties of Utah, are shown in Table 1.

Table 1—Bearing and non-bearing apricot trees in Utah counties (1930)

<table>
<thead>
<tr>
<th>County</th>
<th>Bearing</th>
<th>Non-Bearing</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boxelder</td>
<td>16,073</td>
<td>17,860</td>
<td>33,933</td>
</tr>
<tr>
<td>Weber</td>
<td>15,050</td>
<td>16,539</td>
<td>31,589</td>
</tr>
<tr>
<td>Davis</td>
<td>9,310</td>
<td>13,068</td>
<td>22,378</td>
</tr>
<tr>
<td>Utah</td>
<td>1,664</td>
<td>2,806</td>
<td>4,470</td>
</tr>
<tr>
<td>Salt Lake</td>
<td>2,068</td>
<td>1,721</td>
<td>3,979</td>
</tr>
<tr>
<td>Emery</td>
<td>797</td>
<td>111</td>
<td>908</td>
</tr>
<tr>
<td>Washington</td>
<td>645</td>
<td>119</td>
<td>764</td>
</tr>
<tr>
<td>THE STATE</td>
<td>48,847</td>
<td>53,035</td>
<td>102,035</td>
</tr>
</tbody>
</table>

In the main, apricots are grown commercially on the warm uplands lying along the western slopes of the Wasatch Mountains, where the climate

1 Contribution from Department of Horticulture.
2 Assistant Horticulturist.

Acknowledgments.—The assistance of the following persons in this work is gratefully acknowledged: Mr. R. K. Gerber, for the photographic work and care of the test orchard in 1932 and 1933; Mr. Edward Morris for assistance with clerical work; Messrs. Arthur Manning, Arvil Stark, and T. A. Merrill, for assistance with care of the test orchards; and Dr. A. L. Wilson, Superintendent of the Davis Experimental Farm, for advice and provision of land.

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is tempered by the shelter of the mountains, the modifying influence of the Great Salt Lake or the Utah Lake to the west, the canyon winds, and the elevation of the orchards above the valley.

Because of the early-blooming habit of the apricot, which makes it particularly susceptible to spring frosts, plantings should be made only in the warmest upper benchlands or slopes, where air-drainage gives the maximum protection against frost. Such locations are also warmer in winter and suffer less from winter-killing of buds and winter injury to the trees to which the apricot is susceptible, the trees being only slightly hardier than those of the peach. Orchards in some locations with only moderately good air-drainage are satisfactory because of dependable cool canyon winds which retard the development of the buds in the spring, as a result of which they suffer less frost damage during some years than orchards in warmer locations. This condition appears to be true of part of northern Davis and southern Weber Counties.

BOTANY, ORIGIN, AND HISTORY OF THE APRICOT

The common apricot is classified as *Prunus armeniaca* (Linn.) and is a close relative of the peach and plum. Two other species of the genus *Prunus* are called apricots, viz., *P. mume*, the Japanese apricot; and *P. dasycarpa*, the black apricot. The Russian apricot is considered by Hedrick (1922) to be a strain of the common apricot, although thought by some to be a distinct species to which the name *sibirica* has been given. The Russian race differs from the common apricots principally in bearing smaller and poorer fruits. They also show characteristic upright growth habit and are usually thickly branched and armed with thorn-like fruiting spurs. The fruits hang in clusters (Fig. 1) and remain small in spite of heavy pruning and thinning. According to Hedrick (1922), they have not proved hardier, although so reputed.

The apricot may be considered intermediate in characteristics between the peach and the plum. These three fruits may be intergrafted, although some combinations do not work as well as others. The peach is commonly used as a rootstock for apricots by Utah nurserymen, although the apricot stock is considered by a few to be better. Peach stock is said to give a much better stand of buds, to be easier to bud, and to give a better root system than

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**Figure 1**—Branch of Gibb, Showing Typical Fruiting Habit of Russian Varieties: Fruits are characteristically clustered and small in size. Even with heading-back pruning and thinning, the fruits remain small (x ٠٠٠).
apricot seedling stocks, the latter being prone to make unbranched taproots which are unsalable and to make poor unions which often break in the nursery. In the Station orchard, however, the trees on apricot roots are in better condition and showed less damage from crowding and cover crop effect than those on peach roots, most of which in 1934 had yellow leaves and were making a spindly growth.

Apricot flowers resemble those of the plum, being white; however, they are showier and much earlier, preceding even the early blossoming almond in blooming season. The trees and fruit, however, are more like the peach, the trees being larger and more spreading in growth habit and not as densely branched. While much fruit is borne on shoots when the trees are young, they tend to bear most of the fruit on spurs as the trees become older. The fruits are smaller than those of the peach, more flattened, less fuzzy, richer in flavor, and more acid. In general, they are softer and do not ship or keep as well as the commercial varieties of peaches. Some varieties of apricots have sweet, edible pits, an important factor in varietal choice by Utah consumers which appears to have been largely overlooked elsewhere.

Apricot trees become much larger and are longer-lived, where given sufficient space and good care, than is commonly believed by Utah growers. Wickson (1891) cites a seedling apricot tree in Calaveras County, California, planted in 1857, which has a trunk 7.5 feet in circumference, which has yielded 1500 pounds of good fruit in one season. He also mentions vigorous trees in New Mexico which were apparently old trees when discovered by trappers fifty years before.

Garcia (1901) states: "In New Mexico, as in other places where the apricot grows, it has given evidence of a longevity greater than that of other orchard trees, with the possible exception of the pear. Some very old seedling apricot trees can still be found growing in some of the Mexican home grounds, especially in the Mesilla Valley... It is claimed that there are seedling trees in Santa Fe known to be over two hundred years old."

According to Budd-Hansen (1902), the apricot in its ancient home in central Asia varies in regard to hardiness, season of blossoming, and ripening of the fruit. They state that Shense and the best Russian varieties are as hardy as most of the domestica plums, with all having the fault of early blossoming. They quote Regel as stating that the earliest apricots ripen in Tashkent (Turkestan) in May, while in the cooler regions of the upper Amudaria the apricots hang until August. In the region of Badachshan, the "beautiful and delicately flavored varieties... before being dried are stoned and then pressed into a long shape like dates." Budd-Hansen quote Lansdell as measuring an apricot tree with a trunk circumference of 5 feet 3 inches at Samarkand in Central Asia. This tree was loaded with large and beautiful fruit.

The apricot is considered a native of western and central Asia, extending eastward to China. According to Hedrick (1922), the apricot was said to have been brought by Alexander the Great from Asia to Greece, from which country it was imported to Italy. It was first mentioned by Pliny, the Roman writer, in the time of Christ. It is reported to have been grown in England in the 14th century. The earliest report of apricot culture in America was in 1720, when it was reported to be growing abundantly in Virginia. Apricots were first planted by the Franciscan missionaries on the Pacific Coast, where they have since reached greater importance than anywhere else in the
world. Commercial planting began in California after the middle of the 19th century. The Russian apricots were introduced into the Middle West by the Russian Mennonites after the middle of the last century.

**REVIEW OF LITERATURE ON APRICOT VARIETIES**

The literature on apricot varieties is neither as extensive nor as complete as is that on the apple, pear, peach, plum, and cherry. This is particularly true of recent literature and is probably due to the limited area in which the apricot is an important commercial fruit.

William Robert Prince, in Part I of his famous Pomological Manual published in 1832, describes 25 varieties of apricots grown in his time, including such widely grown modern varieties as Moorpark, Peach, Royal, and Hemskirke. Elliot (1854) describes 23 varieties in his American Fruit Growers’ Guide, including in addition to those named, Blenheim and Early Golden.

Hooper, in 1857, names Early Golden, Large Early, Moorpark and Breda as the most popular varieties in the vicinity of Cincinnati, Ohio. The apricot descriptions in A. J. Downing’s Fruits and Fruit Trees of America, revised by Charles Downing in 1889, are frequently quoted by later writers on the subject. Thomas (1885) lists 21 varieties in his American Fruit Culturist, citing Breda, Early Golden, Moorpark, and Peach as the most popular varieties.

Watts (1890) lists eight varieties as being grown in the young test orchard of the Tennessee Agricultural Experiment Station at Knoxville. The list includes Alberge de Montgamet, Blenheim, Breda, Early Golden, Large Early, New Large Early, Peach, and Turkey. No descriptions are given.

Kinney (1890) lists Breda, Large Early, Red Masculine, and Royal as being grown in a newly planted orchard at the Rhode Island Station at Kingston, and gives brief descriptions, evidently taken from the literature.

Wickson, in his second edition of California Fruits (1891), describes nine varieties of outside origin grown in California: Large Early, Early Golden, Royal, Blenheim, Hemskirke, Peach, Moorpark, Turkey, and Breda. He mentions and illustrates Large Early Montgamet (now grown in Utah as Chinese or Jones) and St. Ambroise as newly introduced varieties. Twenty varieties of local origin are briefly described, including among others Routier Peach, Spark Mammoth, and Newcastle. A table showing the preferences of growers for different varieties in different counties of the state is also given.

Devol (1895) presents general notes, including some fruit descriptions, on 21 varieties of apricots growing in a 5-year-old test orchard at Phoenix, Arizona, including Moorpark, Large Early Montgamet, Peach, Blenheim, Royal, Hemskirke, Oullins Early, St. Ambroise, Luizet, and others. At that stage, Royal was the most prolific, St. Ambroise bore the finest appearing fruit, and Moorpark and Kaisha were the largest. Fruit was larger, of better quality, and earlier on apricot stock than on myrobolan stock, although the growth of the tree was practically the same on both stocks.

Beach and Paddock (1896) describe nine varieties of apricots grown in the test orchard of the New York Station at Geneva and list 10 common apricot varieties, 6 Russian apricots, and 3 Japanese apricots grown in
1895. Under unfavorable conditions of heavy soil and poor drainage, they state that the Russian type varieties were longer-lived than the common type. None of the nineteen varieties planted in 1884 on imperfectly drained soil lived more than seven years. The rootstock used is not stated. Trees of Russian apricots seven and eight years of age bore an average of 28.7 pounds of fruit in 1895, compared with an 8.3-pound average for 8- and 10-year-old trees of the common varieties. None of the Russian apricots,

![Figure 2—Six-year-old Long-pruned “Moorpark” Tree in Station Variety Test Orchard, Farmington. The spreading, drooping habit is characteristic of this variety.](image)

however, compared in quality or appearance with the common varieties, nor were they considered to have commercial value. Early Moorpark and Large Early, the only large-fruited apricots described were illustrated but not described in detail. Detailed descriptions were given of Alexander, Black or Purple, Budd, Catherine, Early Moorpark, Gibb, Golden Russian, and Large Early, of which the Black apricot, the Catherine, and the Gibb were also illustrated. Oullins Early, Shense, Early Moorpark, and Blenheim were listed as being grown.

Shinn (1896) notes that Shense apricot was planted on the Southern Coast Range Culture Station of the University of California in 1894 as an “iron-clad” variety, one of those which it was hoped would be more frost resistant than the common varieties, all of which had the crop killed by frost in 1894 and 1895.

Garcia (1901) in reporting the results of a variety test orchard planted on the New Mexico Experiment Station grounds at Mesilla Park, in 1891-92, suggests the following varieties for home use: Blenheim, Moorpark, Royal, St. Ambroise, Luizet, Newcastle, and Large Early. Gold Dust and Bungouma were condemned. None of the 13 varieties tested produced a commercial
crop on account of spring frosts. Montgamet, in a 6-year trial, produced a light crop one year, while Moorpark produced three light crops and one medium crop. Blenheim is credited with three light crops and one very light crop, while Royal bore three light crops and one medium crop. Budd and Catherine, Russian varieties, a type commended by a correspondent for Albuquerque and vicinity as being the “best bearers and most popular”, failed to bear at all in the test on account of frosts.

Budd-Hansen’s Systematic Pomology, which forms Part II of the American Horticultural Manual published in 1903, is a leading work on Russian apricots, although the common type varieties are also included, 39 varieties altogether being described. Shense, Montgamet, and the Russian varieties, Budd, Gibb, Alexander, and Superb are among those described. Budd-Hansen specifically mentioned the following varieties as being grown or recommended in Utah: Breda, Large Early, Orange, Peach, Routier Peach. Howard (1922) discusses the leading apricot varieties grown in California, citing Blenheim and Tilton as being recommended for canning and drying, with Moorpark for drying only. Early Newcastle is mentioned as the leading variety grown for early shipment. Routier Peach and Hemskirke were said to be recommended only as home orchard varieties. Royal has been the leading drying apricot but has been replaced in the recommendations by Blenheim and Tilton.

Hedrick (1922), in his Cyclopedia of Hardy Fruits, gives the most complete compendium of information on apricot varieties in any published American work. His inclusion of technical descriptions wherever available is particularly helpful in identifying and distinguishing between varieties. Because of lack of apricot variety material in New York, however, many of the descriptions given in Hedrick’s Cyclopedia are copied from older works and are lacking in important details.

EARLY APRICOT VARIETY TESTS IN UTAH

According to the records of the Utah Station, eight varieties of apricots were included in the original variety test planting on the campus at Logan started in 1890 by E. S. Richman. These varieties were Alexander, Alexis, Budd, Gibb, Royal, Nicholas, North American, and Shense. Unfortunately, no summary of the results of this experiment was published and no descriptions of the varieties as they grew on the Station grounds were found in available records.

In 1892, Richman reported that “Budd, Gibb, Alexander, and Catherine apricots are doing well; none of them fruiting yet; while North American apricot was killed back three or four inches the past winter”. In 1892, he further reported as follows: “The apricot trees seem to be a little more hardy than the peach trees. The varieties we have fruited are all Russian apricots, and though small are of good quality. The Gibb apricot has given the best returns so far; the Budd and Alexander have each borne a few, and the Catherine none.” In 1894 Richman stated: “The Russian apricots are especially recommended where the larger kinds will not thrive on account of severe winters.”

In 1895, yields up to 42 pounds of fruit per tree were recorded. Yields up to 98 pounds per tree were recorded for 1903. Data on dates of blossoming and ripening are summarized in Table 2.
Table 2—Blossoming dates and ripening dates for apricot varieties at Logan, Utah, for 1898, 1899, and 1903

<table>
<thead>
<tr>
<th>Variety</th>
<th>Blossoming Period</th>
<th>Ripening Period</th>
<th>Yield per Tree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1898</td>
<td>1899</td>
<td>1903</td>
</tr>
<tr>
<td>Alexander</td>
<td>......</td>
<td>......</td>
<td>May 8-11</td>
</tr>
<tr>
<td>Alexis</td>
<td>April 25-29</td>
<td>May 12-20</td>
<td>May 8</td>
</tr>
<tr>
<td>Budd</td>
<td>April 25-29</td>
<td>May 8-19</td>
<td>May 20</td>
</tr>
<tr>
<td>Gibb</td>
<td>April 25-29</td>
<td>May 7-22</td>
<td>Apr. 30</td>
</tr>
<tr>
<td>Nicholas</td>
<td>April 25- May 7</td>
<td>May 7-21</td>
<td>......</td>
</tr>
<tr>
<td>Shense</td>
<td>......</td>
<td>......</td>
<td>May 11</td>
</tr>
</tbody>
</table>


Close (1900) reported that the apricots in the experimental orchard at Logan were heavily loaded and required thinning.

Wright, in 1901, recommended Royal and Moorpark for commercial planting in Utah. Parry, in 1905, recommended June Early, Royal, Hemskirke, and Moorpark.

Northrup (1906) reported that 14 varieties of apricots had been planted on the newly established Central Utah Experimental Farm in that year as follows: Black, Blenheim, Early May, Hemskirke, Montgamet, Moorpark, Newcastle, Pringle, Royal, Routier Peach, Superb, Spark Mammoth, St. Ambroise, and Tilton. Unfortunately, no further reports or records on this planting are available.

Knudson (1915) reports growing Jones and Routier varieties of apricots at Brigham City.

Ballantyne (1913) reported on three apricot varieties grown on the Southern Utah Experiment Farm from 1901 to 1910—Bongoume, Hemskirke, and Cole Mammoth. Owing to the frosty location and poor soil drainage, only light and irregular crops were obtained. Bongoume ripened about June 25, was small and extremely acid, making it undesirable for any purpose. Hemskirke and Cole Mammoth ripened June 25; the fruit was of good quality and flavor. No descriptions were given.

THE VARIETY TEST ORCHARD

The testing of apricot varieties was begun by the writer in 1928 as a part of a general variety test of the stone fruits. The original plantings from which most of the data and descriptions in this report were derived were made on the Davis Experimental Farm of the Utah Agricultural Experiment Station, located between Farmington and Kaysville, approximately half way between Ogden and Salt Lake City. A few of the varieties reported on were grown on the Campus at Logan and in the experimental orchard at Hurricane.

The plantings were made on the upper part of the farm on alluvial stony loam soil of good fertility. The farm lies below the old highway at a level not considered ideal for tender stone fruits nor typical of the best locations for apricots; however, the orchard site has fair air-drainage and was the best available. Subsequent experience has shown it to be colder and frostier than the average stone fruit orchard site; consequently, it is felt that varieties which prove hardy in the test orchard should be satisfactory in this
respect on any good apricot orchard site in the stone-fruit region of northern Utah.

The plantings included 26 varieties; however, so many of these 26 varieties proved to be identical that only 17 different varieties were left to be reported on from the Station orchards.

The trees were planted originally 13 feet apart each way so that the four trees of each variety formed a square, permitting thinning-out by tree removal, first to two trees of a variety and later to one tree of a kind, the permanent trees standing 26 feet apart. The first thinning out was started in 1931 and completed in 1932, so that at the present time (1934) two trees of each variety in most cases are represented in the test.

The trees were pruned to modified leaders the first three years. Little heading-back was done, the trees being "long pruned". In 1932, 1933, and

Figure 3—Four-year-old Shense Tree in Test Orchard: This variety is characterized by its upright, unbranched growth habit, and reddish bark. Later the tree becomes drooping in habit. Trees are large, vigorous, hardy, but are reputed to be alternate bearers and unproductive under some conditions.
1934 one tree of each pair was pruned by thinning-out only in the spring, while the other was thinned-out and headed-back to about half of its new growth.

For the first two years the test orchard was given clean cultivation with intercrops, after which cultivation with fall-sown cover crops of vetch was used. One year the vetch was left until June 15 before disking in. The orchard has been irrigated when needed, four furrows being used between the 13-foot rows since the trees reached bearing age. In the fall of 1933, various cover crops, including oats, barley, rye, vetch, mustard, and rape, were planted in plots in the apricot orchard for a preliminary cover crop trial. These were plowed under late in the spring after the rye and barley had become woody because of the presence of orchard heaters used to prevent frost damage in the orchard. Practically all of the trees on peach roots appeared to be affected by this treatment, having light yellowish-green leaves which were considerably affected by a "shot-hole" condition which appeared to be due to leaf-spot, although sulfur-lime was used in the shuck-fall spray as a fungicide. Such trees made only a spindly growth and the fruit was unusually small in size. At thinning time in May, the fruit was loose and shook off easily. The trees on apricot roots seemed to be affected but little, the foliage being a normal dark green and the fruit of fairly good size, considering the heavy bloom and set and the early and unusually warm spring and summer weather which appeared to reduce the size of the fruit in all Utah orchards where frost did not thin the crop.

It is thought that this cover crop effect was caused by the reduction in the available nitrogen-supply to the trees, first through competition with the cover crop plants, and later after turning under the cover crop, by the nitrogen being used up temporarily by the bacteria carrying on the decomposition of the cover crop. Other observers have noted that the peach is particularly sensitive to lack of available nitrogen and competition with cover crops; in this case apricot trees on peach roots appear to be similarly affected. Because of this condition, yields for 1934 are not included in the data. Descriptions for the most part were made in 1933, being checked over in 1934.

While four crops have been borne by the orchard, the 1931 crop was reduced by spring frost and the 1933 crop by winter-killing of the buds and in some cases of the trees. Since the test winter of 1932-33 was in some respects the most damaging to fruit trees on record, the degree of injury suffered by the different varieties should indicate their hardiness under Utah conditions. It is possible, however, that other test winters may be more damaging to apricots, as the winter of 1932-33 did not injure apricots as much as peaches and cherries. The relative hardiness of varieties, however, should not be much changed.

The fruit has been thinned as was thought needed, although in 1932 thinning did not appear to be heavy enough as the fruit did not size well. Spraying has been done principally for the twig borer. Some damage has been suffered, particularly by the Large Early Montgamet variety (Chinese, Jones), from leaf-spot fungus, which affected this variety to a much greater extent than the others and undoubtedly lowered the average size and yield of the trees of that variety: Sulfur-lime fungicide was included in the regular shuck-fall spray but did not prevent the development of the shot-hole condition, which affected the less vigorous trees the most. Usual tree meas-
urements have been made annually, yield and size records being kept. In addition, weights of trees removed were taken as an indication of varietal vigor.

Varieties which have fruited and are included in this report, together with the source of the trees and the rootstock used, are given in Table 3.

Table 3—Varieties of apricots planted in 1928 and 1929, with source of trees and rootstocks used

<table>
<thead>
<tr>
<th>Variety</th>
<th>Rootstock</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blenheim</td>
<td>Apricot</td>
<td>Silva-Bergtholdt Nursery, Newcastle, California</td>
</tr>
<tr>
<td>Budd¹</td>
<td>Peach</td>
<td>Fruitvale Nursery, Grand Junction, Colorado</td>
</tr>
<tr>
<td>Catherine¹ (Identical with Gibb)</td>
<td>Peach</td>
<td>Willis Nursery, Ottawa, Kansas</td>
</tr>
<tr>
<td>Chinese (Identical with Montgamet)</td>
<td>Peach</td>
<td>Smith Bros. Nursery, Centerville, Utah</td>
</tr>
<tr>
<td>Colorado (Identical with Montgamet)</td>
<td>Peach</td>
<td>Utah Nursery, Salt Lake City, Utah</td>
</tr>
<tr>
<td>Cutler</td>
<td>Peach</td>
<td>Smith Bros. Nursery, Centerville, Utah</td>
</tr>
<tr>
<td>Derby Early Royal</td>
<td>Peach</td>
<td>Silva-Bergtholdt Nursery, Newcastle, California</td>
</tr>
<tr>
<td>Early Golden</td>
<td>Peach</td>
<td>Willis Nursery, Ottawa, Kansas</td>
</tr>
<tr>
<td>Early Newcastle</td>
<td>Apricot</td>
<td>Silva-Bergtholdt Nursery, Newcastle, California</td>
</tr>
<tr>
<td>Gibb¹</td>
<td>Peach</td>
<td>Shenandoah Nursery, Shenandoah, Iowa</td>
</tr>
<tr>
<td>Jones (Identical with Montgamet)</td>
<td>Apricot</td>
<td>J. L. Moore Nursery, Ogden, Utah</td>
</tr>
<tr>
<td>Montgamet (Large Early Montgamet)</td>
<td>Peach</td>
<td>Fruitvale Nursery, Grand Junction, Colorado</td>
</tr>
<tr>
<td>Moorpark²</td>
<td>Peach</td>
<td>Smith Bros. Nursery, Centerville, Utah</td>
</tr>
<tr>
<td>Routier Peach²</td>
<td>Apricot</td>
<td>Silva-Bergtholdt Nursery, Newcastle, California</td>
</tr>
<tr>
<td>Royal</td>
<td>Apricot</td>
<td>Silva-Bergtholdt Nursery, Newcastle, California</td>
</tr>
<tr>
<td>Sofia</td>
<td>Peach</td>
<td>Washington Nursery, Toppenish, Washington</td>
</tr>
<tr>
<td>Stella¹</td>
<td>Peach</td>
<td>Stark Bros., Louisiana, Missouri</td>
</tr>
<tr>
<td>Superb¹</td>
<td>Peach</td>
<td>Fruitvale Nursery, Grand Junction, Colorado</td>
</tr>
<tr>
<td>Tilton</td>
<td>Apricot</td>
<td>Silva-Bergtholdt Nursery, Newcastle, California</td>
</tr>
<tr>
<td>Wenatchee Moorpark²</td>
<td>Peach</td>
<td>Washington Nursery, Toppenish, Washington</td>
</tr>
<tr>
<td>Yakimine</td>
<td>Peach</td>
<td>Milton Nursery, Milton, Oregon</td>
</tr>
</tbody>
</table>

Other Varieties at Logan
Alexander (Identical with Gibb) Willis Nursery, Ottawa, Kansas
Early Golden (Identical with Gibb) Willis Nursery, Ottawa, Kansas
Wilson (Identical with Large Early Montgamet) Willis Nursery, Ottawa, Kansas

Other Varieties at Hurricane
Gilbert          | Peach    | Columbia-Okanagan Nursery, Wenatchee |
Hemskirke        | Apricot  | Silva-Bergtholdt Nursery, Newcastle, California |
Riland           | Peach    | Columbia-Okanagan Nursery, Wenatchee |

¹Russian type apricots. ²Considered to be identical.
Of these varieties, Chinese, Jones, Colorado, Montgamet, and Wilson all proved to be identical and are described under the name Large Early Montgamet, the correct name of this variety, according to Budd-Hansen (1903) and Hedrick (1922). Early Newcastle winter-killed the first winter; therefore, no original description is included. The Routier Peach and Wenatchee Moorpark trees grown on the Station grounds appear to be identical with "Moorpark" from local sources. Yakimine proved to be the variety commonly grown in Utah under the name "Peach Cot"; according to Budd-Hansen (1903) and Hedrick (1922), Shense is the correct name, with Acme as a synonym. Catherine and Alexander (grown at Logan) appear to be identical with Gibb. Early Golden from Willis Nursery, Ottawa, Kansas, also proved to be Gibb.

Varieties which have been added since 1929 are Riland and Gilbert from the Columbia-Okanagan Nursery of Wenatchee, Washington, Hemskirke from Silva-Berghtholdt Nursery, and Noble, from the Experiment Station at Davis, California.

Variety plantings were made in a limited way in 1930 at Logan, in a colder valley than the main fruit section and in 1932 at Hurricane, in Utah's "Dixie", which has a warmer and earlier climate than the main fruit region of northern Utah. This planting has not yet fruited sufficiently to warrant including data from it in this report.

HARDINESS AND VIGOR OF APRICOT VARIETIES

Early Newcastle, Cutler, and Derby Early Royal appeared to be too tender for general commercial use. Royal and Blenheim also appeared to lack somewhat in hardiness of tree in 1933. So far as buds are concerned, Tilton, Sofia, and Catherine, which later proved identical with Gibb, appeared to be the hardiest of the varieties under test, these varieties giving fair crops following the test winter of 1932-33. In 1933, most of the buds on spurs were killed and fruit was borne almost entirely on the new shoots, except with Early Golden. Yields for 1933, indicating the relative hardiness of buds, are given in Table 4.

Table 4—Yields of fruit for 1933 as an indication of bud hardiness (following temperatures of -18° F. in December, 1932)

<table>
<thead>
<tr>
<th>Variety</th>
<th>No. Trees</th>
<th>Yield per Tree (lbs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Long-pruned</td>
</tr>
<tr>
<td>Tilton</td>
<td>2</td>
<td>36.0</td>
</tr>
<tr>
<td>Sophia</td>
<td>2</td>
<td>28.0</td>
</tr>
<tr>
<td>Catherine</td>
<td>2</td>
<td>21.0</td>
</tr>
<tr>
<td>Early Golden</td>
<td>2</td>
<td>6.5</td>
</tr>
<tr>
<td>Moorpark</td>
<td>4</td>
<td>12.7</td>
</tr>
<tr>
<td>Budd</td>
<td>2</td>
<td>10.0</td>
</tr>
<tr>
<td>Large Early Montgamet</td>
<td>5</td>
<td>5.0</td>
</tr>
<tr>
<td>Total Yield</td>
<td></td>
<td>119.2</td>
</tr>
<tr>
<td>Average per Tree</td>
<td></td>
<td>17.0</td>
</tr>
</tbody>
</table>

It is significant that Large Early Montgamet (Chinese, Jones), which makes up the bulk of the younger apricot orchards of Utah, lost most of its buds. Observations in other years of heavy bud-killing of apricots and peaches showed this variety to be tenderer in bud than Moorpark. The ex-
cellent showing of Tilton in this respect, which confirms the claims of hardiness of buds of this variety in Washington and British Columbia, is a point in its favor. While Large Early Montgamet failed to make a good showing in 1933, Blenheim, Royal, Superb, Gibb, and Cutler were even tenderer in bud, as they bore only a trace of fruit.

Varieties differed markedly in their vigor of growth and size of trees at the end of the fourth growing season, when the fillers were removed and weighed. Since little fruit was borne before this time on account of the frost in 1931, the weight of fillers should give a fair indication of the relative vigor of the varieties under the conditions obtaining in the test orchard. The average tree weights are summarized in Table 5. The weights of the roots were not included because of the obvious difficulty of obtaining all of the small roots.

Table 5—Average trunk circumference, weights, heights, and spread of tops of 4-year-old apricot filler trees

<table>
<thead>
<tr>
<th>Rank (by wgt.)</th>
<th>Variety</th>
<th>No. Trees</th>
<th>Weight (lbs.)</th>
<th>Trunk Circumference (in.)</th>
<th>Height (ft.)</th>
<th>Spread (ft.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Blenheim</td>
<td>1</td>
<td>77.5</td>
<td>11.5</td>
<td>12.0</td>
<td>13.5</td>
</tr>
<tr>
<td>2</td>
<td>Early Golden</td>
<td>2</td>
<td>77.0</td>
<td>13.0</td>
<td>11.8</td>
<td>14.5</td>
</tr>
<tr>
<td>3</td>
<td>Catherine</td>
<td>1</td>
<td>75.0</td>
<td>11.0</td>
<td>14.5</td>
<td>14.5</td>
</tr>
<tr>
<td>4</td>
<td>Derby Early Royal</td>
<td>1</td>
<td>69.0</td>
<td>13.0</td>
<td>12.0</td>
<td>11.0</td>
</tr>
<tr>
<td>5</td>
<td>Montgamet</td>
<td>2</td>
<td>56.5</td>
<td>12.5</td>
<td>11.5</td>
<td>11.3</td>
</tr>
<tr>
<td>6</td>
<td>&quot;Moorpark&quot;</td>
<td>2</td>
<td>55.2</td>
<td>11.8</td>
<td>11.0</td>
<td>12.3</td>
</tr>
<tr>
<td>7</td>
<td>Budd</td>
<td>2</td>
<td>55.0</td>
<td>11.8</td>
<td>10.0</td>
<td>12.0</td>
</tr>
<tr>
<td>8</td>
<td>Superb</td>
<td>2</td>
<td>54.5</td>
<td>10.5</td>
<td>11.3</td>
<td>11.0</td>
</tr>
<tr>
<td>9</td>
<td>Tilton</td>
<td>2</td>
<td>53.0</td>
<td>11.5</td>
<td>11.8</td>
<td>11.3</td>
</tr>
<tr>
<td>10</td>
<td>Sofia</td>
<td>2</td>
<td>53.0</td>
<td>12.3</td>
<td>10.8</td>
<td>11.3</td>
</tr>
<tr>
<td>11</td>
<td>Routier Peach</td>
<td>2</td>
<td>47.0</td>
<td>11.0</td>
<td>10.8</td>
<td>12.5</td>
</tr>
<tr>
<td>12</td>
<td>Chinese (on Peach)</td>
<td>6</td>
<td>45.3</td>
<td>10.9</td>
<td>11.3</td>
<td>10.2</td>
</tr>
<tr>
<td>13</td>
<td>Jones (on Cot.) (Small trees planted)</td>
<td>2</td>
<td>43.7</td>
<td>11.3</td>
<td>11.0</td>
<td>9.8</td>
</tr>
<tr>
<td>14</td>
<td>Royal</td>
<td>1</td>
<td>37.5</td>
<td>9.5</td>
<td>10.5</td>
<td>12.0</td>
</tr>
</tbody>
</table>

Avg. Tree Weight (lbs.) 55.6 11.5 11.5 12.3

1 Later proved to be Large Early Montgamet.
2 Considered to be identical with the "Moorpark" from local sources.

While Blenheim topped the list in tree weight, only one tree was weighed and it was inferior to Early Golden, Derby Early Royal, and Montgamet in trunk circumference; also Blenheim ranked next to last in the 1933 measurements. Montgamet ranked fifth and Moorpark sixth. Tilton ranked only eighth but moved up to second place in the 1933 measurements based on trunk circumference, apparently being stockier than most apricot trees. This variation in the relation of circumference to height and spread makes it difficult to compare the vigor of varieties. Because of this factor and the limited number of trees used, only wide differences can be considered significant.

The size of trees of different varieties after several crops were borne is indicated by tree measurements at the end of the 1933 growing season, when the trees were six years of age. These data are presented in Table 6.
Table 6—Tree measurements of apricot varieties at end of sixth year (1933)

<table>
<thead>
<tr>
<th>Variety</th>
<th>No. Trees</th>
<th>Average Circumference (in.)</th>
<th>Height (ft.)</th>
<th>Spread (ft.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Early Golden</td>
<td>2</td>
<td>17.0</td>
<td>14.8</td>
<td>17.8</td>
</tr>
<tr>
<td>Tilton</td>
<td>2</td>
<td>17.0</td>
<td>12.6</td>
<td>15.1</td>
</tr>
<tr>
<td>Catherine</td>
<td>2</td>
<td>16.3</td>
<td>15.0</td>
<td>16.8</td>
</tr>
<tr>
<td>Large Early Montgamet (Chinese, Jones)</td>
<td>11</td>
<td>15.9</td>
<td>13.2</td>
<td>14.6</td>
</tr>
<tr>
<td>Sofia</td>
<td>2</td>
<td>15.8</td>
<td>13.8</td>
<td>17.1</td>
</tr>
<tr>
<td>Derby Early Royal</td>
<td>1</td>
<td>15.5</td>
<td>16.5</td>
<td>15.8</td>
</tr>
<tr>
<td>&quot;Moorpark&quot; and Routier Peach</td>
<td>4</td>
<td>14.6</td>
<td>12.7</td>
<td>15.5</td>
</tr>
<tr>
<td>Budd</td>
<td>2</td>
<td>13.0</td>
<td>13.8</td>
<td>14.6</td>
</tr>
<tr>
<td>Blenheim</td>
<td>2</td>
<td>11.1</td>
<td>10.8</td>
<td>12.9</td>
</tr>
<tr>
<td>Royal</td>
<td>1</td>
<td>10.0</td>
<td>9.9</td>
<td>9.8</td>
</tr>
<tr>
<td>Average</td>
<td>...</td>
<td>14.6</td>
<td>13.3</td>
<td>15.0</td>
</tr>
</tbody>
</table>

In trunk circumference, which is generally used as an index of tree size, Early Golden, Tilton, Catherine, Large Early Montgamet, and Sofia, in the order named, were above average. "Moorpark" was average, and Budd, Blenheim, and Royal were below average. Tilton, while ranking second in trunk circumference, was below average in height and just average in spread. In height of tree, Derby Early Royal ranked first, followed by Catherine, Early Golden, Sofia, and Budd, all above average in the order named, while Large Early Montgamet (Chinese, Jones), Moorpark, Tilton, Blenheim, and Royal fell below average. In total spread, Early Golden led the list with a spread of 17.8 feet, followed by Sophia (17.1), Catherine (16.8), Derby Early Royal (15.8), Moorpark (15.5), Tilton (15.1), Large Early Montgamet and Budd (14.6), Blenheim (12.9), and Royal (9.8 feet). Of the more promising varieties for commercial purposes, Moorpark and Tilton had a greater spread in relation to height than the average, while Large Early Montgamet had more than average height in relation to spread. It is also of interest that the average spread exceeded the average height by 2.7 feet.

PRODUCTIVITY OF APRICOT VARIETIES

While seven years is not long enough to test the productivity of a variety, the total yield figures are of interest in this connection. Because of frost in 1931 and of bud killing in 1933, total yields are relatively low, being equaled in some cases by the 1934 yields; however, they indicate an advantage in this respect for those varieties which are hardy in bud and which have large vigorous trees. Total yields per tree are given in Table 7.

In total yields, Early Golden made the best showing with 71.8 pounds of fruit for the three crops borne, followed by Tilton with 63.3, Sofia with 58.3, and Budd with 42.5, all of which were above average in production. Below average were Catherine (37.5), Large Early Montgamet (35.1), Derby Early Royal (32.5), Moorpark (26.7), Blenheim (21.0), and Superb (19.8 pounds). The poor showing of Large Early Montgamet and "Moorpark", the two varieties grown almost to the exclusion of others in Utah, indicates that these varieties leave much to be desired in hardiness of buds and productivity, at least while the trees are young. It is quite likely, however, that these two varieties would make a better comparative showing in warmer, more frost-free locations.
Table 7—Total yields per tree of apricot varieties planted in 1928 (up to and including 6th season)

<table>
<thead>
<tr>
<th>Rank</th>
<th>Variety</th>
<th>No. Trees</th>
<th>No. Crops</th>
<th>Avg. Yield per Tree (lbs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Early Golden</td>
<td>2</td>
<td>3</td>
<td>71.8</td>
</tr>
<tr>
<td>2</td>
<td>Tilton</td>
<td>2</td>
<td>2</td>
<td>63.3</td>
</tr>
<tr>
<td>3</td>
<td>Sofia</td>
<td>2</td>
<td>2</td>
<td>58.3</td>
</tr>
<tr>
<td>4</td>
<td>Budd</td>
<td>2</td>
<td>3</td>
<td>42.5</td>
</tr>
<tr>
<td>5</td>
<td>Catherine</td>
<td>2</td>
<td>3</td>
<td>37.5</td>
</tr>
<tr>
<td>6</td>
<td>Large Early Montgarnet</td>
<td>10</td>
<td>2</td>
<td>35.1</td>
</tr>
<tr>
<td>7</td>
<td>Derby Early Royal</td>
<td>1</td>
<td>1</td>
<td>32.5</td>
</tr>
<tr>
<td>8</td>
<td>&quot;Moorpark&quot; and</td>
<td>4</td>
<td>3</td>
<td>26.7</td>
</tr>
<tr>
<td></td>
<td>Routier Peach and</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hemskirke</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Blenheim</td>
<td>1</td>
<td>1</td>
<td>21.0</td>
</tr>
<tr>
<td>10</td>
<td>Superb</td>
<td>2</td>
<td>1</td>
<td>19.8</td>
</tr>
<tr>
<td></td>
<td>(all varieties)</td>
<td></td>
<td></td>
<td>40.9</td>
</tr>
<tr>
<td></td>
<td>(all varieties)</td>
<td></td>
<td></td>
<td>40.9</td>
</tr>
</tbody>
</table>

**BLOOMING SEASON OF APRICOT VARIETIES**

The time of blossoming is particularly important with the apricot, because of its generally early blooming season, with resultant frequent frost damage. Of the commercial varieties, Tilton is mentioned favorably by Howard (1922) because of its late-blooming habit. Shinn (1896) gives the blossoming dates for six varieties of interest at the Southern Coast Range Station of the University of California near Paso Robles for 1894 as follows: Newcastle, March 1; Peach, March 8; Turkey, March 10; Large Early Montgamet, March 12; Routier Peach and Hemskirke, March 16. These dates represent a spread of 16 days between varieties. In 1895, the spread was only 10 days, Newcastle blooming February 27; Turkey, March 4; Peach, March 6; and Routier Peach, March 9.

In regard to time of blossoming, Garcia (1901) in New Mexico states: "The blooming period of the apricot ... is not constant from year to year ... and even the time of blooming among the varieties themselves is somewhat variable from year to year." In 1895, time of blossoming ranged from February 25 to March 26. In 1895 the order and time of blooming of varieties of interest were as follows: Bungouma, February 25; Gold Dust, March 11; Montgamet, Royal, Blenheim, Hemskirke, March 16; Moorpark, Large Early, March 18; Budd, Catherine, Prieb, St. Ambroise, March 26. Both Shinn's and Garcia's data place Large Early Montgamet (Chinese, Jones) in the early midseason group as far as blossoming is concerned. Garcia's data indicate that Large Early Montgamet and Moorpark bloom practically at the same time, four days in 1899 being the longest period separating them. Moorpark was earliest in half the years and Large Early Montgamet earliest in the other half; the Russian variety Catherine was consistently later.

Ballantyne (1913) gives blossoming dates for Bongoume, Cole Mammoth, and Hemskirke on the Southern Utah Experimental Farm near St. George, Utah, from 1908 to 1910, the dates of first bloom varying from February 10th, the earliest, to March 30th, the latest. Comparing Cole Mammoth and Hemskirke, both good quality apricots of the Moorpark type, out of eight years for which the record is complete, both varieties started to bloom.
at the same date in six of the years, while Hemskirke was one day later in 1904 and seven days later in 1908. Bongoume, however, while blooming at the same time as the other two varieties two of the eight years, was from five to seventeen days earlier than Hemskirke the other six years, averaging 7.6 days earlier.

The time of full bloom for the different varieties at Farmington in 1933 is given in Table 7. The blossoming season in 1933 was relatively late, the spring being cold and wet.

Table 9—Date of full bloom for apricot varieties, Farmington, Utah, 1933

<table>
<thead>
<tr>
<th>Variety</th>
<th>Date of Full Bloom</th>
</tr>
</thead>
<tbody>
<tr>
<td>Royal</td>
<td>April 30</td>
</tr>
<tr>
<td>Blenheim</td>
<td>May 1</td>
</tr>
<tr>
<td>&quot;Moorpark&quot;</td>
<td>May 1</td>
</tr>
<tr>
<td>Derby Early Royal</td>
<td>May 1</td>
</tr>
<tr>
<td>Early Golden</td>
<td>May 1</td>
</tr>
<tr>
<td>Large Early Montgamet (Chinese, Jones)</td>
<td>May 3</td>
</tr>
<tr>
<td>Tilton</td>
<td>May 8</td>
</tr>
<tr>
<td>Superb</td>
<td>May 8</td>
</tr>
<tr>
<td>Cutler</td>
<td>May 8</td>
</tr>
<tr>
<td>Catherine</td>
<td>May 8</td>
</tr>
<tr>
<td>Sofia</td>
<td>May 8</td>
</tr>
<tr>
<td>Gibb</td>
<td>May 8</td>
</tr>
</tbody>
</table>

Observations upon which this table is based were made by R. K. Gerber.

While it is probable that additional observations would change the relative order of blooming and the interval between blossoming dates for the different varieties, the data for 1933 indicate that there are some differences in the time of blooming of the different varieties, at least in some seasons, which might affect susceptibility to frost damage. Royal, Blenheim, Moorpark, Derby Early Royal, Early Golden, and Large Early Montgamet (Chinese) were in the early-blossoming group, while Tilton, Superb, Cutler, Catherine, Sofia, and Gibb were in the late-blossoming group. It is unfortunate that the major varieties grown in Utah appear to be early bloomers. In 1934, no detailed observations were made, but there appeared to be only a few days' difference between varieties in time of bloom. The spring was unusually early and warm, the apricots blooming in early March. The Russian varieties were observed to open their buds several days later than the common varieties.

DESCRIPTIONS OF APRICOT VARIETIES

Varieties of the Common Type Grown in Utah

The large-fruited or "common" type varieties now grown in Utah are taken up approximately in the order of their present or probable value in Utah, the varieties being grouped by type where possible. The descriptions are original, except where otherwise noted.

It should be kept in mind that the observations and opinions set forth in regard to the newer varieties are not conclusive but merely such as appear to be justified as a result of the studies so far made and that they apply primarily to the conditions in the test orchards or other orchards where the varieties have been observed.
Large Early Montgamet (Chinese, Jones, Colorado, Wilson, Montgamet).—This is the leading variety in Utah and in recent years has been planted practically to the exclusion of other varieties. It has been propagated in this state mainly under the names Chinese and Jones, both of which were formerly thought to have local origins, but now are considered to be

![Figure 4—Large Early Montgamet](image)

Figure 4—Large Early Montgamet: This variety, which is locally called Chinese or Jones, predominates in the younger apricot orchards of Utah. It is popular with consumers and canners because of its good size, attractive color, high quality (especially when canned), and sweet, edible kernels. The trees are hardy, vigorous, and fairly productive, but lack somewhat in hardness of bud and tend to be alternate bearers.

The Chinese was first named and propagated by Charles H. Smith, veteran nurseryman of Centerville, Utah, who found the original tree on the property of Byron Bybee and William Miller of Syracuse in western Davis County; he was attracted by its large handsome fruits. The owner did not know the name but mentioned the fact that he had ordered a Chinese Cling peach. Smith labeled the buds "Chinese" for want of a better name, and the name has since stuck to the variety locally, although the apricot did not come from China nor have anything to do with things Chinese. It was first propagated locally in 1900.

The Jones apricot was propagated from an old tree in North Ogden, which was brought in from the Northwest by Charles A. Jones. The original tree is a budded tree, still alive and in fair condition in spite of lack of care. While considered by some growers as distinct from Chinese, there is little doubt that the varieties are identical with each other and are Large Early Montgamet renamed.
APRICOT VARIETIES

Large Early Montgamet (Coe, 1933). The original Chinese tree is said to have come from Stark Brothers Nurseries of Louisiana, Missouri, which propagated Large Early Montgamet about forty years ago. The original Jones tree, planted by Charles A. Jones, was said to be a budded tree from a northwestern nursery. This tree is still alive and in fair condition.

In addition to the trees secured locally as Chinese and Jones, four trees of “Montgamet” were secured from Grand Junction, Colorado. This variety was said to be the best of several grown there under that name and to have been introduced there from New York. This variety was also propagated locally by the former management of the Utah Nursery of Salt Lake under the name “Colorado”. Trees of “Wilson” from Willis Nursery, Ottawa, Kansas, proved to be this same variety.

These five varieties as grown in the test orchard appear to be identical and agree so closely with the description given by Hedrick (1922) and others of the Large Early Montgamet that little doubt remains but that they really are Large Early Montgamet renamed.

In Utah, the fruit is early, large, and attractive when well grown, but generally small to medium when trees are heavily loaded, roundish-ovate in shape and deep orange in color, with a blush where exposed to the sun. It is firm for an apricot, is preferred for local market and by canners, and is acceptable to shippers. The flavor is rich and sprightly. It is especially good as a canned product, the highly colored orange flesh being semi-translucent with fibrous veining and a distinctive aromatic flavor.

One of the few important apricot varieties to have sweet, edible kernels, this character is liked by consumers, who crack the pits and use the kernels in jam or eat them as nuts, the flavor closely resembling that of almonds. The preference for sweet-pit apricots is so marked in Utah that even quite small fruit of this variety sells readily for jam purposes.

The trees are hardy, vigorous, and productive although neither as vigorous nor as regularly productive as several other varieties. Faults of the variety are: (1) Tenderness of buds; (2) a tendency to set thickly in clusters and to be small in size unless well pruned and thinned; (3) susceptibility to leaf-spot disease; (4) tendency to alternate bearing; and (5) softness when ripe.

Because of its popularity with shippers and consumers, owing to its size, color, firmness, flavor, and sweet kernels, Large Early Montgamet will probably continue to be one of the leading apricot varieties for Utah for some time in spite of the faults of the trees which reduce the average yields of fruit obtained. Because of consumer preference for the variety, it should continue to hold a major place in new plantings for local market and canning. For shipping, however, Moorpark is becoming increasingly popular and is to be preferred.

It is to be hoped that better varieties of the Montgamet type will be available in the future which will be harder in bud and superior in other characters to the older variety. The Utah Station now has under test about four hundred seedlings of Large Early Montgamet from which it is hoped to select such varieties.

Because of the importance of Large Early Montgamet in Utah and

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*Correspondence, 1932, with Paul C. Stark, who states that his firm discontinued propagating this variety in 1910, as it was not popular, although they considered it a good variety.

*Correspondence, 1932, with Charles M. Jacquette, of Fruitvale Nursery, Grand Junction, Colorado.
the questions that may arise because of its confusion of names, the descriptions of the variety given in the literature will be reproduced here rather fully.

Wickson (1891) in California lists this variety as having been recently propagated and distributed there, and its value not proved. Said to have been largely distributed by the California Nursery Company. He states that it was tested by John Rock, in his orchard at San Jose, and pronounced vigorous and productive. In his table of adaptation of apricot varieties, Early Montgamet is favorably reported on by growers in Alameda, Santa Clara, and Solano Counties (coastal counties). Wickson (1912) further classes it as a variety of foreign origin and says it is "large, orange-yellow, reddish on sunny side".

Shinn (1896) lists Large Early Montgamet as grown at the Southern Coast Range Culture Station near Paso Robles, California. The variety was frozen out in 1894 and failed to blossom in 1895.

Devol (1895) reports on the variety in Arizona as follows: "Growth strong, upright, 4-year-old tree 13 ft. 10 in. tall, having 11 foot spread; stem 4.7 inches in diameter. ... This variety is very large when properly thinned and about a week earlier than Royal. Fruit is conical, orange, with reddish cheek next to sun. Flesh dark yellow or orange, firm."

Garcia (1901) reported on Montgamet in New Mexico, as follows: "Size large, ovate, flattened toward the full apex, cavity deep, abrupt, suture distinct; color deep yellow; flesh deep yellow, firm, moderately juicy, parting freely from the large flat stone. Tree vigorous, spreading with a round head."

Budd-Hansen (1903) state that this variety has rapidly come into notice within recent years from New York to California.

Hedrick (1922) says that it is probably a European sort renamed, which is offered for sale by California nurserymen and found occasionally in eastern America. As grown at Geneva, New York, the fruit is described as follows: "Fruit early; large, 2 inches or more in diameter, round-oval, sides compressed, irregular, ribbed, truncate; cavity large and deep; suture distinct, dividing a prominent swollen ridge; color rich yellow or orange, mottled or blushed with red; flesh deep yellow, juicy, firm, sweet, rich; quality very good; stone large, free, nearly as broad as long, thick, rough, very dark in color; kernel sweet."

Britton (1933)" writes that in British Columbia: "The Montgamet is sometimes referred to as the 'Old Moorpark', but I consider the large, slightly pointed fruit Montgamet, and the large fruit with uneven halves in shape and ripening and deep suture, the Wenatchee Moorpark."

The detailed description of the variety as it grows in Utah follows:

Tree above average in vigor, productive, but inclined to alternate bearing; tree hardy, but buds somewhat tender; head rather open; branches irregular, upright spreading, lower branches drooping, branches assume horizontal or drooping position unless headed back; branches stocky, tend toward sharp-angled, weak crotches; bark reddish-brown, with prominent russet lenticels which give the bark a speckled appearance. Leaves medium to large, ovate, mucronate; susceptible to leaf spot; petiole long; glands 2 to 5 in number, green or brown, sometimes bracted. Fruit clusters and requires considerable thinning.

Fruit early, medium to large (largest 21/4 x 21/4 in.); shape roundish-ovate; moderately compressed, halves unequal; cavity moderately deep, elongated, deeply cleft where suture enters cavity; stem short, often causing twig to indent shoulder of fruit; suture shallow, ending in slightly depressed dot. Color corn yellow to Mirabelle' when ripe, often with a greenish tinge


'Britton, J. E. Assistant Superintendent, Experiment Station for Oakangan Valley, Summerland, B. C. Correspondence with author, 1933.
along lower suture and dorsal ridge; washed with dull carmine where exposed to sun, skin thick, tough, acid; flesh firm even when well-colored, deep orange color, meaty, melting when soft ripe, moderately juicy, but inclined to mealiness when over-ripe; rich, aromatic, highly flavored, quality very good. Stone large (1x1½ in.), free, ovate, bluntly pointed, much compressed, prominently and sharply ridged; surface finely pitted, roughened; kernel sweet.

**Moorpark Type Apricots**

Because there appear to be a number of varieties of the Moorpark type grown in Utah under this name which cannot at this time be identified with certainty, they will be described here as a group, with the hope that they can be later identified and their points of difference made clear. Moorpark, Wenatchee Moorpark, Peach, and Routier Peach are some of the older varieties which are probably grown in Utah under the names “Moorpark” and “Gates”, while it is possible that Early Moorpark, Large Early, Oullins Early, and Hemskirke may also be grown. In most cases, the literature on these varieties is not definite and complete enough in the descriptions given to permit distinguishing similar varieties of the type without growing them side by side. To make their identification still more difficult, many authorities acknowledge that these varieties have become mixed in cultivation and they differ as to whether some of them are identical or distinct.

To further complicate the problem, many new varieties of this type have been introduced which may be grown in this territory, in addition to the possibility that some local seedlings have been propagated, as seedlings of Moorpark and Peach often resemble the parent varieties closely. New varieties of the Moorpark type originating in California mentioned by Wickson (1891) are: Spark’s Mammoth, Vestal Moorpark, Christian Moorpark, Jackson, Steward, and Hind.

In the Station Orchard at Farmington, three varieties of this type were planted—“Moorpark”, from a local source, Wenatchee Moorpark, from Washington State, and Routier Peach, from the Silva-Bergtholdt Nursery, Newcastle, California. All three appear to be identical and are earlier in season than the Moorpark described in the literature, ripening with Large Early Montgamet and before Early Golden, Blenheim, and Royal. Because of the early ripening of these three varieties which appear to be identical, it seems likely that they are Routier Peach or Wenatchee Moorpark, rather than the Moorpark described in the literature, and that these varieties comprise most of the younger “Moorpark” trees in Utah. It is also possible that Routier Peach and Wenatchee Moorpark may be identical, although they are supposed to have a different origin, the Routier originating, according to Wickson (1912), with Joseph Routier near Sacramento, California, as a seedling of Peach, while the Wenatchee Moorpark was said to have originated as a seedling in the Wenatchee Valley, Washington.  

This conclusion that the variety commonly grown in Utah as “Moorpark” is not the true Moorpark described by most pomological authorities on apricot varieties is based on evidence summarized as follows: (1) Trees of Routier Peach from California, and Wenatchee Moorpark from Washington from usually reliable sources appeared to be identical and to bear identical fruit on the Station grounds at Farmington. (2) Most of the authorities on apricot varieties, including Prince ((1832), Elliot (1854), Thomas (1885),

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*Gossman, A. T. Correspondence with author. 1933.*
Wickson (1891), and Devol (1895), state that the Moorpark stone is perforated so that a pin may be easily thrust through. This is not the case with the "Moorpark" grown locally, which usually has a small perforation at the stem end, but is closed or so small at the other end and so curved that a pin cannot be inserted the entire length (Fig 6). On the other hand, Garcia (1901), Budd and Hansen (1903), and Hedrick (1922) do not mention the perforated stone. (3) Moorpark is referred to by several authorities as a mid-season or late variety, while the "Moorpark" grown here is an early variety, ripening with Large Early Montgamet (Chinese, Jones), and preceding by a week or two the Royal, Blenheim, Tilton, and Early Golden in the Station orchard. In Washington, Moorpark is claimed to be two weeks later than Wenatchee, which appears to be identical with the "Moorpark" grown here. Further, Prince (1832) quotes the Bon Jardinier as stating that Royal, then a new variety, ripened a week or ten days before Moorpark, whereas the "Moorpark" grown here precedes Royal by about the
same time. Similarly, Elliot (1854) gives Royal as ripening the last of July, while Moorpark he says ripens early in August. Howard (1922) states that Moorpark is superior for eating purposes but is too late to find a place in the trade. (4) Moorpark is said to lack somewhat in hardiness and to be often unproductive, while Routier is said by Wickson to have excellent

Figure 6—Stones of Moorpark Type Apricot Varieties: Pins have been inserted in perforated pits to show extent of perforation. Note that while pins may be inserted their entire length in stones of “Peach” and “Gates”, they can be only partially inserted in “Moorpark” and Routier Peach, which are probably the same varieties. Where pins are not shown, the stone is not perforated. The “Late Gates” stone is grooved instead of perforated.
tree characters. In Utah, the "Moorpark" commonly grown appears to excel in tree characters, being harder in bud and more productive than the Large Early Montgamet (Chinese, Jones) which is usually the only variety on hand in Utah orchards with which to compare it. (5) W. W. Knudson, of Brigham City, Utah, a grower of long experience and unusual pomological training, states that the Routier and Moorpark as grown in this state are identical, the same variety which was previously sold as Routier being propagated in recent years as Moorpark. This opinion is concurred in by other growers and nurserymen.

Unfortunately, the published descriptions of Routier Peach and Wenatchee are so meager of details as to make it impossible at this time to confirm the conclusion that one or the other, or both, is the variety commonly grown as "Moorpark" in Utah. For this reason and to avoid confusion among Utah planters, this variety commonly grown in Utah is referred to in this publication as "Moorpark", although there is little doubt that it is not the Moorpark described by most authorities. It should be kept in mind, however, by nurserymen and growers, that there appear to be several different varieties being grown as Moorpark, so that they may propagate and plant only the types desired.

Moorpark, according to Elliot (1854), originated a few years previous to 1698 at Moorpark (England), the country seat of Sir William Temple, for which it was named.

Moorpark appears to be the most widely distributed apricot variety in America, being common in the East as well as on the Pacific Coast, where it is prominent in Washington and British Columbia. Because of the popularity and widespread importance of Moorpark in practically all countries where apricots are grown and the consequent importance and interest of the problem of identifying and differentiating the varieties grown under the name as well as in the hope that attention will be given this matter by other workers interested in apricot varieties, the descriptions and references to the Moorpark variety given by previous workers are compiled here rather fully.

Prince (1832) says of Moorpark: "This variety, so far as my experience goes, differs from the Peach apricot in its growth and foliage, although the two fruits exceedingly resemble each other. It is of large size, of a fine yellow or orange color, mottled or spotted with red next the sun; the flesh is also of a bright orange hue, rich, juicy, and excellent—in fact, this fruit is one of the most esteemed; it ripens at the end of July or early in August, and the stone is remarkable for having a passage or hole in the side through which a needle may be easily passed."

Elliot (1854) says: "Moderate bearer. Fruit large, roundish, about two and a quarter inches diameter each way, larger on the side of the suture than the other; skin orange in the shade, but deep orange or brownish red in the sun, marked with numerous carmine specks and dots; flesh, firm, bright orange, parting free from the stone, quite juicy, with a rich and luscious flavor; stone, uneven, peculiarly perforated along the back where a pin may be pushed through nearly from one end to the other; kernel, bitter. Season, early in August. We have been unable to detect any difference between the Moorpark and Peach apricot, and have therefore made Peach a synonym of Moorpark."

Moorpark, with Breda and Large Early, was classified as worthy of general cultivation.

Hooper (1857) writes as follows: "Size 1; color, orange in shade, deep orange in sun; form roundish; flesh, firm, brown orange, juicy, rich and

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8Ira Larsen of Brigham and David Moore of Ogden.
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luscious; freestone; season, July. An old, well-known, fine English variety.”

Thomas (1885) gives as synonyms of Moorpark, “Anson’s”, “Dunmore’s Breda”, “Temple’s”. He describes it as “Large (two inches in diameter), nearly round, slightly compressed; surface orange, with a deep orange red cheek, and with numerous darker dots; flesh free from the stone, bright yellowish orange, rather firm, quite juicy, with a rich, high flavor. Kernel bitter. Stone perforate, or with a hole lengthwise under one edge, so that a pin may be thrust through. Season medium, or two weeks after mid-summer. Requires the shortening-in pruning recommended for the peach. English. Old.”

Wickson (1891), in California, says regarding Moorpark: “A standard of excellence and an old variety which originated in England. Fruit large, roundish, about two inches and a quarter in diameter each way; rather larger on one side of the suture than the other; skin orange in the shade but deep orange or brownish red in the sun, marked with numerous dark specks and dots; flesh quite firm, bright orange, parting free from the stone, quite juicy, with a rich and luscious flavor; stone peculiarly perforated along the back, where a pin may be pushed through; kernel bitter. In California the Moorpark reaches grand size, but has the fault of ripening unevenly in most localities. The tree is tender and bears irregularly, which leads to its rejection by most planters, though some growers cling to it because of its size and quality and occasional grand crops. The San Jose districts lead in the production of this variety, and in some parts of Santa Clara Valley the Moorpark seems to ripen uniformly. The same behavior is reported from localities in the upper San Joaquin Valley, where it also seems to be a more regular bearer. The variety is almost wholly rejected in Southern California.”

Devol (1895) describes Moorpark in Arizona: “... has long been considered the standard of excellence. The fruit is somewhat irregular in form, one cheek being larger than the other. Color of skin is orange in the shade and brownish red where exposed to the sun, covered with numerous dots and specks. The flesh is unusually firm but juicy, rich and luscious in flavor; bright orange in color, parting freely from the pit. Upon the front of the stone is a well marked wing, and upon the back very peculiar pits, quite noticeable when the fruit is freed from them. The kernel of the pit has a very marked bitter taste. Nearly all the fruit upon the trees ripened this year by the middle of June, but the habit of ripening unevenly is quite marked, one side of the fruit frequently being green when the other side is soft. Fruit averaged 12 to the pound, and there were 13 pits to the ounce, or 5.8 per cent of the fruit. When thoroughly ripened the fruit breaks down quickly and decays rapidly. This, and the irregular bearing and uneven ripening have caused this variety to be rejected in many localities.” He notes that grown on apricot stock, the trees are slightly more upright in habit and the fruit somewhat better in quality and in size than when grown on myrobolan. The trees had only about one-third as much fruit in 1894 (fourth year) as did the Royal.

Garcia (1901), in Arizona, says: “Size large; roundish, being compressed at the apex; cavity shallow, slanting; barely distinct suture; color deep yellow to orange, in some cases having a russet appearance; flesh orange, sweet, juicy, rich, parts freely from the roundish, flat stone. Tree vigorous and large.”

Budd-Hansen (1903) describe Moorpark briefly as follows: “Large to very large, compressed at apex; color yellow and orange, often with russet appearance and always with numerous specks and dots; cavity shallow, not regular; suture indistinct. Flesh yellow, sweet, juicy, rich; freestone. One of the most popular varieties across the continent. On the west coast rather shy in bearing.”

Hedrick (1922) says: “Moorpark is probably the most widely and most frequently grown of all apricots. ... The merits of the variety are chiefly to be found in the fruits, which are of largest size, handsome appearance, and best quality. The trees have several faults: They are a little
tender to cold; are uncertain and irregular bearers; and the crop ripens unevenly. . . . Tree very large, with long, strong shoots, tender to cold, sometimes very productive, but often shy and uncertain and not always healthy. Fruit large, more than 2 inches in diameter, round with truncate base and compressed sides; cavity small; suture shallow, dividing the fruit into unequal halves; color pale orange, deeper orange and a distinct blush on side next to sun, with brown and red dots; flesh deep orange, firm, juicy, sweet, rich; best in quality; stone free, large, rough, thick; kernel slightly bitter."

Howard (1922) sums up the present standing of the variety in California as follows: "... is excellent for drying. The trees are unusually large and generally very robust in point of vigor. The fruit is larger than the Royal, Blenheim, or Tilton, and of very fine flavor, which makes it a superior variety for eating purposes. However, it ripens too late to find a place in the trade. The Moorpark as a tree appears to thrive wherever apricots can be grown, but seems to do especially well in the cool coastal valleys. It has the reputation of being a shy bearer. In sections where the Blenheim is grown almost exclusively, the canneries will usually not take the Moorpark, for the reason that they do not care to mix varieties. The Moorpark is very profitable for drying when the trees bear regularly. Nearly all the fruit makes a fancy dried product which is readily accepted under the grading rules of the Prune and Apricot Growers' Association. . . . The planting of Moorpark was recommended (by the fruit variety conference in 1920) for drying purposes only, without mentioning localities."

Palmer (1925) suggests that in British Columbia commercial plantings may well be restricted to the Blenheim, Moorpark, and Tilton.

"Moorpark".—(This description refers to the variety commonly grown in Utah as Moorpark, which is probably Routier Peach or Wenatchee Moorpark, or both. No description of the Moorpark described in the literature is given, as no authentic plantings of the variety were located and studied). This variety has been a standard apricot in Utah for many years. The fruit, which ripens in early mid-season, is well known for its large size, flat shape, greenish-yellow or pale orange color, and its characteristic of ripening and coloring satisfactorily when picked mature green as the color is changing from green to yellow. When picked at this stage it shows bruises less when ripe than the Large Early Montgamet (Chinese, Jones), formerly considered the best apricot for shipment in Utah because of its firmer flesh and habit of coloring before softening. As the shipping quality of "Moorpark" when picked at the proper stage of maturity becomes better known, the variety is becoming more popular with shippers. It is now preferred by several because of its larger size and less evident bruising."

"Moorpark" appears to be slightly hardier in bud than Large Early Montgamet and has produced crops several years in Utah orchards when that variety failed. It is considered by most growers to be more of an annual bearer than Large Early Montgamet, although inclined to alternate bearing when not kept vigorous and when allowed to overload with fruit. The fruit is more easily grown to large size than that of Large Early Montgamet and generally requires less thinning. "Moorpark" fruit is somewhat inclined to sunscald, crack, and shrivel when exposed to the sun.

While "Moorpark" is becoming more popular with shippers, it is not popular with commercial canners because of its comparatively pale, soft flesh which does not hold its shape well in processing if the fruit is ripe

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3 Earl Anderson, fruit shipper of Brigham City, informed the writer that this conclusion was forced on his firm a number of years ago by reports from eastern receivers that Moorparks were received in excellent condition, while Chinese apricots in the same cars were bruised and discolored. He now prefers the Moorpark for shipping.
enough to be completely well colored, as well as because of the uneven coloring of the fruits. Many home canners, also, discriminate against "Moorpark" in favor of the Large Early Montgamet because of the latter's edible, sweet pits, higher color, firmer flesh, and more sprightly, pronounced flavor. Others, however, prefer the milder "Moorpark", with its more delicate flavor. In California, Moorpark is used to a large extent as a drying variety, making a fancy dried product.

Because of the increasing demand for "Moorpark" for shipping, its more regular production, and the greater ease of securing desirable size, this variety should occupy a more important position in new plantings than it has done in recent years, when Large Early Montgamet has been planted almost to the exclusion of "Moorpark".

Routier Peach.—In addition to the trees of this variety in the Station orchard at Farmington, which appear to be identical with the trees of "Moorpark" secured locally, and with Wenatchee Moorpark, several blocks of trees said to be Routier Peach in Brigham City were inspected during the fruiting season. No consistent differences were noted between these trees and fruit of this variety and those of the variety commonly grown in Utah as Moorpark sufficient to distinguish between them as separate varieties.

Routier Peach, according to Wickson (1891), originated with the Hon. Joseph Routier, near Sacramento, California. It was first introduced into Utah about 50 years ago by David M. Moore, pioneer nurseryman of Ogden, Utah31, who obtained the variety from Leonard Coates, of Napa, California.

The important characteristics of the Routier Peach variety as noted by other writers is of interest.

The introducers, W. R. Strong and Company, according to Wickson (1891), described the variety as follows: "Large, yellow in shade, deep orange, mottled or splashed with red in the sun; flesh juicy and rich, high flavor and a good market variety." In 1912, Wickson added: "Blooms a week later than Peach. Very popular in Sacramento and San Joaquin Valleys." Shinn (1896) noted that Routier blossomed 4 days later than Large Early Montgamet in 1894 near Paso Robles, California.

Budd-Hansen (1903) state that Routier Peach is popular in Utah, Colorado, Texas, and California. Knudson (1915) reports growing Routier at Brigham City. Howard (1922) states that Routier Peach and Hemskirke were recommended only for home-orchard varieties by a fruit growers' conference on varieties in California held in 1920. Hedrick (1922) states that the tree is reported as being especially satisfactory in the regions in which the variety is grown. David M. Moore31, who introduced Moorpark three different times from the west coast in order to be sure of getting the true Moorpark, states that Routier has more of a blush than Moorpark and is slightly larger. The trees, he said, are similar.

The description which follows of Routier Peach is thought to apply also to "Moorpark" as commonly grown in Utah.

Trees of average vigor, moderately productive and hardy in tree and bud; tree tends toward alternate bearing, especially if allowed to overbear; branches, spreading with drooping tendency unless cut back heavily, tend

31David M. Moore, of Ogden, now retired from the nursery business, made a substantial contribution to the pomology of Utah through his introduction, testing, and dissemination of new varieties of fruits in the early days of Utah fruit industry. His most valuable introduction from a commercial standpoint was that of the Elberta peach. He also introduced the Windsor and Centennial cherries and the George A. Lowe and Klondyke peaches, of local origin. He fruited over 300 varieties in his test orchard at Ogden. He made it a rule never to propagate a variety until it had fruited and proved valuable. Born in 1851 of pioneer parents, he entered the nursery business at the age of 30, continuing in active business for 42 years. He also served for many years as one of the judges at the Utah State Fair.
to form long, unbranched leaders furnished with short spurs unless headed back; open-topped. Bark light reddish-brown, lenticels small and not conspicuous. Leaves large, broadly ovate, semi-folded, coarsely serrate, petioles long, glands 2 to 4 in number, brown, sometimes with rudimentary bracts.

Fruit early mid-season; medium to very large, roundish oval, somewhat truncate, markedly compressed, often necked; cavity small, narrow, acute; stem short, thick; color sulfur yellow to corn yellow, occasionally with a mottled blush where exposed to sun; skin thin, tender, with short pubescence, mild, not acid or astringent; flesh yellow, changing to corn yellow or mirabelle when fully ripe, soft, juicy, tender, melting, sometimes mealy when over-ripe, fibrous; flavor sweet, rich, mild, agreeable, often with a pineapple flavor; quality excellent. Stone free, large (1\(\frac{1}{2}\) x \(\frac{1}{16}\) inches) flat, oblong-ovate, bluntly pointed; ventral flange sharp and broad, secondary flanges sharp and prominent, rough; surface pitted shallowly, giving appearance of coarse, net-like roughening; perforated, but usually open at stem end and closed, or with perforation too small or curve too great to permit full insertion of a pin, but occasionally perforation is large enough or short enough to permit this to be done; kernel bitter.

**Wenatchee Moorpark.**—This variety also, as received from a Washington source and fruited on the Station grounds at Farmington and observed fruiting on a young tree at Brigham, appeared to be indistinguishable from the local “Moorpark” as grown in the same vicinity. One grower at Brigham City states that Wenatchee and Routier are identical.

According to A. T. Gossman\(^\text{12}\) the Wenatchee originated as a seedling at Walla Walla, Washington, in the late '80's or early '90's. For many years it was distributed by the Pacific Northwest Nurseries as Moorpark, then later as Wenatchee Moorpark. It was first grown commercially in the Wenatchee Valley, where it is the leading variety. It is said to be entirely different from the Moorpark in tree, fruit, and ripening season, being considerably larger than the Moorpark and ripening about two weeks earlier.

Britton (1933) states, “... I consider ... the large fruit with uneven halves in shape and ripening and deep suture, the Wenatchee Moorpark. It is not two weeks earlier than any of the other ...” Wenatchee Moorpark ripened with him in British Columbia on July 23d in 1933, four days before Blenheim and nine days before Tilton.

**Peach.**—The early highly blushed variety commonly grown under this name in Utah is the Shense, also known as Acme. The true Peach apricot described by Prince (1832), Thomas (1885), Wickson (1891) and other pomologists is similar to Moorpark and often confused with it. Although said by Budd-Hansen (1903) to be grown commercially in Utah, the variety has not been propagated here for many years and the author was unable to find trees under this name which fitted the description. E. F. Whaley, veteran nurseryman of Perry, stated that Peach was propagated and grown in Utah years ago. Trees were found in three orchards, however, which fitted the description perfectly and are thought to be that variety. The description given was made of fruit from the home orchard of Hyrum Malmrose of Brigham City.

The fruit where well-grown is large, exceeding even Moorpark in this

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\(^{12}\)Ira Larsen of Brigham, who has grown Wenatchee, Routier, and Moorpark together, considers Wenatchee and Routier identical. He states that Moorpark compared with Routier is about a week later in season, is rounder, although still somewhat flat, and the buds slightly harder. In his opinion most of the "Moorparks" grown in that section are Routier Peach.

\(^{13}\)Correspondence with author, 1933.
respects, specimens this year (1934) measuring 2½ inches across. The fruit is even more delicious than that of Moorpark, standard of quality among apricots, being filled with juice, melting, and having that luscious flavor possessed by some apricots of the Moorpark type which is difficult to describe but resembling the pineapple. The variety is somewhat later than the Moorpark commonly grown in Utah, appears to be softer when ripe, not standing commercial handling well, and ripens unevenly. These disadvantages will probably prevent the variety from becoming important commercially, but its great size and unsurpassed quality make it worth retaining as a home variety par excellence and may make it worth growing for fancy local market trade. It is too soft to can well, although perhaps little worse than the Moorpark, which is largely used in homes for this purpose. Whether it can be shipped satisfactorily when matured green like the Moorpark is not known.

The variety differs from Gates in having a dull rather than glossy surface, in being more compressed, in the stone being more prominently winged along the ventral surface, and in not cracking when dry. It is also earlier in season and softer in flesh than the Gates. It differs from the variety commonly grown here as "Moorpark" in being rounder, not flattened as much, in being more mottled or speckled in color, and in the flesh being of even thickness on both sides of the stone, while the Moorpark has thinner flesh on the dorsal side and thicker on the ventral. The stone is perforated from end to end on the dorsal surface, so that a pin is easily pushed through, while that of "Moorpark" is perforated only at the stem end. The stone of "Moorpark", also, is more necked and has a higher and more irregular dorsal flange.

That the Peach, like Moorpark, is an old favorite is shown by the many laudatory references to the variety in the older literature, which are reproduced here. Modern writers, except those with cyclopedic scope, do not mention the variety, perhaps accepting it as Moorpark, with which it appears to be confused by nurserymen and growers. It is hoped that the situation may be clarified, by calling attention to the differences between this variety and Moorpark, and to the good qualities of the Peach which, although apparently not suited to commercial use, should have a place in home and local market orchards and plantings for roadside trade.

Prince (1832) quotes the New Duhamel as mentioning this variety as being the "largest and best of all that were then known at Paris, often measuring more than 2 inches in diameter; the skin is a fawn yellow, somewhat marked with red next the sun; its flesh is likewise of a peculiar yellow hue, approaching a fawn-colour, of excellent taste, melting, full of very sweet and highly perfumed juice; the stone . . . contains a bitter kernel; the fruit begins ripening in the early part of August, and it continues to mature by degrees during the residue of the month.

"This variety is originally from Piedmont . . . Has been introduced into Paris about 40 years, where it will perhaps cause the culture of some other varieties to be discontinued whose fruits are inferior to this . . . The tree is sometimes so very productive, that unless the fruit is thinned out, it will not attain its proper size."

Prince also describes a "Monstrous Peach Apricot", one of a number of seedlings of Peach originated in France, said to exceed its parent in size. "The growth of the tree is remarkably strong, and the fruit is one of the most esteemed, but does not materially vary in its color from (Peach). I imported it from the South of France, with a number of others of great
excellence. Like the preceding, it requires that the fruit should be thinned out when the tree is too much loaded with it.”

Thomas (1885) gives Anson’s Imperial, Peche, and De Nancy as synonyms and states of Peach: “Very large, slightly larger than Moorpark, roundish, yellowish orange, with a brownish orange cheek, and mottled with dark brown to the sun; flesh rich yellow, juicy, with a rich, high flavor. Kernel bitter. Stone perforate. Ripens about the time of the Moorpark, which it closely resembles, but is of larger size. Origin, Piedmont.”

Wickson (1891), in California, says: “A variety from Piedmont of the largest size, about two inches in diameter, roundish, rather flattened, and somewhat compressed on its sides, with a well-marked suture; skin yellow in the shade, but deep orange, mottled with brown on the sunny side; flesh of a fine yellow, saffron color, juicy, rich, and high-flavored; stone can be penetrated like Moorpark and has bitter kernel. This is a very successful sort in the warmer parts of the State especially, and is a favorite in the Sacramento Valley. It ripens just ahead of the Moorpark.”

Devol (1895) says of Peach in Arizona: “A light grower, but one which fruits early, producing fruit the second year planted ... fruit roundish, considerably compressed on its sides; suture is well marked ... flesh saffron yellow, juicy, having a rich and high flavor ... fruits weigh 11 to 13 to the pound ... pits are large, considerably roughened with peculiar punctures upon the back through which a pin may be thrust to the kernel ... pits weigh 13 to the ounce ... making 6 per cent of the weight of the fruit ... one of the latest, ripening in July and August ...”

Budd-Hansen (1903) say of Peach: “Very large, the largest grown in the States, roundish, flattened, compressed at sides; color yellow, with brownish yellow in sun. Flesh yellow, juicy, rich, high-flavored. Commercial in Utah and South California. About the most profitable variety grown on the west coast. Italy.”

Hedrick (1922) says of Peach: “This is one of the oldest and best-known apricots, having been grown in France for at least three centuries. As might be expected with so old a variety, and a name so likely to be used, there is much confusion in the apricots passing under this name. ... Hogg (English pomologist) ... says it is very similar to Moorpark but not identical ... in California ... the fruit has been a favorite ... for canning and drying, but is being discarded because the crop ripens too rapidly, and the conserved product is inferior in appearance.” He quotes Hogg’s description as follows:

“Fruit large, oval, and flattened, marked with a deep suture at the base, which gradually diminishes towards the apex; skin pale yellow on the shaded side, and with a slight tinge of red next the sun; flesh reddish yellow, very delicate, juicy, and sugary, with a rich and somewhat musky flavor; stone large, flat, rugged, and pervious along the back; kernel bitter.”

The variety which is thought to be Peach in Utah is described as follows:

Tree moderately vigorous, spreading, moderately hardy, generally productive; bark reddish-brown, with grey scarfskin; older bark much roughened by cracking; lenticels few, scattered, short, elliptical; twigs and spurs short, thick, sometimes with 3 or 4 lateral blossom buds; leaves medium-sized, broadly ovate, partly folded, with wavy margins, finely serrate; petioles long, reddish with many glands.

Fruit ripens midseason, beginning with Moorpark and continuing later; large to very large size, 2¾ inches wide by 2¼ thick; form roundish oblong, slightly compressed; cavity deep, abrupt; suture deep, broad, distinct, halves equal, apex depressed; pubescence short, fine; color sulfur-yellow to corn-yellow mottled with greenish-yellow when fully ripe, slight mottled red blush; flesh soft when fully ripe, tender, bruises easily; skin thin, tender, separates readily from flesh; flesh bursting with juice, melting, amber yellow to mirabelle (orange), semi-translucent, veined with net work of straw-colored fibers, rich, sweet, mildly flavored, quality excellent; stone free, centered,
large, round-ovate, necked, compressed, but swelled in the center more than "Moorpark"; tan or light brown color, completely perforated lengthwise through the dorsal edge so that a pin may be pushed through; ventral flange sharp, narrow but not deep, secondary ridges low, irregular, surface comparatively smooth.

Gates.—Four distinct varieties appear to be grown under this name in the Brigham City and Willard districts of Utah. One variety, the earliest, is thought to be the true Peach apricot described by Prince (1832), Hedrick (1922), and others and has therefore been described under that name. It ripens with the variety commonly grown in Utah as "Moorpark", the season extending somewhat longer. Of two types of Gates which ripen ten days to two weeks after "Moorpark", one, termed here "Knudson Gates" because it was found in the orchard of W. W. Knudson of Brigham City, has a stone which is unusually pervious only at one end and closed at the other. The fruit does not have the wrinkling or ridging near the top of the fruit shown by the other variety of the same season, termed simply "Gates", in this publication, which occurs, with both the earlier and later forms, in the orchard of Ben Knudson of Brigham City. The "Gates" variety is distinguished also by having a pervious pit through which a pin may be readily thrust, like the early variety of this type thought to be Peach. The fourth and latest type called here "Late Gates" ripens about a week later than the "Gates" and the "Knudson Gates", is rounder and more necked, has a more sprightly skin and a pit that is completely or partially open and grooved along the dorsal ridge where the others are perforated.

The "Gates" is preferred over the "Late Gates" for home canning by discriminating consumers because of its delicious flavor and mild skin and flesh, which is said to exceed in quality and flavor that of the "Moorpark" and Large Early Montgamet (Chinese or Jones) apricots. The three later types of "Gates" appear to exceed the Peach and "Moorpark" varieties in firmness of flesh, although the "Knudson Gates" appeared to be somewhat softer than the "Gates" and the late type of "Gates" ("Late Gates").

The "Gates" is said to have originated as a local seedling with a resident of that name at Bountiful and to have first been introduced by William Fowler, a pioneer nurseryman of Weber County, Utah, about 55 years ago. Which of the varieties distinguished by the writer is the original Gates is not certain, but it is probably the one referred to here under that name. The others may be older varieties renamed or local seedlings.

The "Gates" apricots are neither widely nor extensively grown, but because of their late season, large size, and high quality they may have possibilities for extending the local market and possibly even the shipping season. They appear to merit wider trial for these purposes, although they do not appear to be serious rivals of Large Early Montgamet and "Moorpark" for commercial main crop purposes because the trees appear to be less hardy and productive than those varieties. To determine which of the types are best will require further trial, although it seems likely that the "Gates" (of Ben Knudson) variety is to be preferred because of its popularity with home canners. The late type, however, may have a limited place to extend the season. A test lot of Gates apricots was processed by the Brigham City cannery this season. The fruit had an excellent flavor and held its shape rather well, but some of the fruits lacked the high color.
desired in commercial canning. The detailed description of the type termed the Gates (of Ben Knudson) is as follows:

Tree large, vigorous, spreading, hardy, very productive; bark brown with grey scarfskin in striped pattern, older bark much roughened and cracked; lenticels scattering, small, short; leaves oval or ovate, with long tapered point, finely serrate; petioles long, slender, mostly green with occasional red coloration, often glandless, with rudimentary glandular bracts at base of leaf.

Fruit large, equaling "Moorpark" in this respect, ripens late, two weeks after "Moorpark", somewhat compressed, but less flat than "Moorpark", cavity medium, abrupt; often shouldered or ridged about cavity, suture shallow but distinct; apex rounded or truncated; sides equal or lightly unequal, not swelled along suture; color greenish yellow to corn yellow when ripe, lacks blush; skin glabrous, almost devoid of pubescence; moderately thick and tough, mild, with practically no acid; flesh melting, tender, juicy, sweet, rich, with delicious pineapple-apricot flavor, quality excellent; stone free, light brown, oval, compressed, bluntly pointed, relatively smooth, flattened at neck, pervious so that a pin may easily be pushed through the dorsal flange; ventral flange prominent, blunt, splits of its own accord when the pit is dried a day or two, secondary ridges suppressed. Kernel moderately bitter.

Knudson Gates.—This variety is fully equal to or may be superior to the "Gates" in size, but differs in being more flattened, although it is not as flat as the variety commonly grown in Utah as Moorpark, and in having a flatter stone which is slightly pervious at the stem end of the dorsal ridge, but closed at the other, so it cannot be deeply penetrated with a pin or needle (Fig. 6). The stone is also more sharply winged and ridged and does not crack; the kernel is bitter. This variety was observed and reported to be somewhat tenderer than the "Moorpark" and to be a less reliable producer. If the variety commonly grown here as "Moorpark" is not the true Moorpark, as seems likely and was discussed under another heading, it is possible that the "Knudson Gates" may be the Moorpark described by Hedrick (1922), who failed to note any perforation of the pit. His description of Moorpark fits the "Knudson Gates" (of W. W. Knudson), including his statement as to its being "a little tender to cold, uncertain and irregular bearers . . . " which is echoed by many authorities, but does not seem to fit the variety now grown in Utah as "Moorpark". Devol (1895) and Garcia (1901) also failed to note any perforation of stone in the varieties they described as Moorpark, so it is possible they may have had the same variety.

Late Gates.—This variety, with the one termed "Gates" in this publication, was found in two other orchards besides that of Ben Knudson, being represented by an old tree in the same planting as the original Jones tree on the farm of Charles A. Jones of North Ogden. The "Gates" and "Late Gates" trees, incidentally, were larger and in better condition, growing in a dry pasture, than the Jones tree. The "Late Gates" differs from the "Gates" in being a week later, in being more necked, and in the stone being openly or nearly openly grooved, where the "Gates" is perforated along the dorsal ridge. The skin is more sprightly and the variety is said not to be quite so delicious as a bottled product. The stone also cracks along the ventral flange when it dries. The kernel is bitter.

The leaves of the "Late Gates" differ markedly from the leaves of the Routier, those growing on trees of "Late Gates" at Brigham City being ovate,
with long point, dark green, crenulate, finely serrate, with a long reddish petiole having small rudimentary glands; Routier leaves are broadly round-ovate, dark green, deeply serrate, with long reddish glandulate petioles. The “Late Gates” leaf showed small glandular bracts where the petiole joined the leaf, a character not shown by the Routier. The “Late Gates” tree was upright, stocky, with rough bark, more warted and cracked than Routier. Routier fruits were over-ripe and soft on July 11, 1934, while the “Late Gates” were approaching market ripeness and showed much green fruit. Compared to “Gates”, trees of “Late Gates” were much smaller, in poorer condition,
and showing more winter injury. The leaves appeared to be thicker and more coarsely serrate than those of "Gates".

Cutler (Cutler Late).—This is another variety of the "Gates" type, resembling "Late Gates" in general characteristics, but differing in some respects. The trees also have a marked resemblance to those of "Gates", "Late Gates", and "Knudson Gates", even to showing more winter injury than "Moorpark" and Large Early Montgamet. The fruit differs from "Gates" in being more nearly round, more necked, having a deeper suture, and more unequal halves. The pit also, is quite different, having the perforation small and usually closed at the apical end, while the perforation on the pit of "Gates" is quite large and open.

Cutler is distinguished by being the latest large-fruited variety in the Station orchard, ripening about August 15th in 1933. It also shares the high quality of the "Gates" type apricots. Its disadvantages are uneven ripening, softness, and lack of color when ripened on the trees. When picked while firm, however, it colors more evenly. Cutler should be tried in a limited way where a "Gates" type apricot is wanted for home use or local market to extend the season. It appears to be in season with "Late Gates". Further comparisons in the same orchard will be necessary to determine which of the several varieties of this type are the best.

Cutler was introduced by Charles H. Smith, veteran nurseryman of Centerville, Utah, a few years ago. The technical description is as follows:

Tree moderately vigorous, upright spreading, sharp-angled crotches; bark reddish-brown, lenticels numerous; bark much cracked longitudinally; somewhat tender to cold in tree and bud; subject to crotch injury; dense topped; leaves medium size, cordate to ovate; petioles rather long, glands numerous, numbering 3 to 12, often double, sometimes reniform, leaf margins crenate.

Fruit ripens late; size medium to large (1 ½ x 1 13/16 in.); shape round-oval, smooth, slightly compressed; cavity small, abrupt; suture shallow; apex rounded; color greenish-yellow, ripening unevenly, beginning first at stone, part of fruit remaining green even when the balance is soft ripe; unblushed; skin thick, tough, adherent, acid; flesh greenish-yellow to orange at center, tender, melting, juicy, subacid, pleasantly flavored; quality good to very good. Stone large (~ x 1 in.), free, oval, necked, compressed; surface smooth; ventral flange thin and sharp, secondary flanges irregular, thin, sharp; dorsal ridge pitted; kernel quite bitter.

Other Moorpark Type Varieties.—Other varieties which appear to belong to the Moorpark or Peach type and which may be grown or may have been grown in Utah, although not now grown under their original names, are Early Moorpark, Hemskirke, Large Early, Cullins Early, and Turkey. None of these varieties have been fruited in the Station plantings, but they are of interest and are briefly included here because of the possibility of their being grown in Utah under other names (possibly some of the Gates types) or as unknowns and, also, because they appear from the descriptions given to be worth growing experimentally for trial or for breeding purposes. As only brief descriptions will be given, readers interested in more details are referred to the authors quoted.

Early Moorpark, an old English variety, according to Hedrick (1922), is extra early and a standard early apricot East and West, resembling Moorpark except in being smaller and three weeks earlier, ripening soon after mid-July in New York. Trees are productive, but tender to cold, and the crop ripens unequally. Of the older pomologists, Thomas (1885) says of it:
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"Small, round, compressed, good. Ripens about the first of August". The variety is illustrated and commended by Beach and Paddock (1896). Budd-Hansen (1903) say it is roundish-oval, with deep suture; color yellow, mottled, with show of crimson on exposed side; much earlier but otherwise like Moorpark. Wickson (1912) says its identity has long been in dispute and is not yet fully determined; popular in Southern California. He quotes Hogg as stating that Early Moorpark has flesh in all respects resembling Moorpark; stone oblong, with a covered channel along the back, which is pervious; kernel bitter; ripens three weeks before Moorpark.

**Hemskirke**, according to Howard (1922), is recommended in California as a home-orchard variety because of its high quality but not as a commercial variety because of shy bearing. Hedrick (1922) states that it is a "strain" of Moorpark which surpasses that variety in hardiness of tree, resembles it in wood and foliage, is a more regular bearer, but does not hold the crop well. Fruit resembles Moorpark but ripens evenly on both sides. Wickson (1912) states it is widely grown in California, being esteemed because of hardiness and more regular production than Moorpark and because of more even ripening; ripens later than Royal. Wickson quotes Hogg's description: "Fruit large, roundish, but considerably compressed or flattened on its sides; skin orange; with red cheek; flesh bright orange, tender, rather more juicy and sprightly than the Moorpark, with rich, luscious, plum-like flavor; stone not perforate, rather small, and kernel bitter." Prince (1832) states the origin as unknown, but European; distinguished from Moorpark externally by smaller size and internally by its more tender, juicy flesh, with a particularly rich, delicate flavor, resembling that of an excellent Green Gage plum; stone smaller than Moorpark, without a pervious passage, kernel nearly sweet. Hemskirke is also described by Elliot (1854), Thomas (1885), Devol (1895), Garcia (1901), and Budd-Hansen (1903).

**Large Early** is said by Hedrick (1922) to be an old French variety which is especially valuable because of earliness, large size, attractive appearance, and high quality, but is an uncertain bearer. Wickson (1912) says it is popular in the Southern Coast counties of California, but an uncertain bearer; ripens before Royal; fruit of medium size, rich and juicy, kernel bitter. Elliot (1854) says the variety is the finest large early apricot known and an abundant bearer. The variety is also described by Thomas (1885). Beach and Paddock (1896) illustrate the variety, and state that it is one of the standard sorts of apricots. Garcia (1901) describes what appears to be another variety under this name, his description favoring Shense. Budd-Hansen (1903) state that the variety is grown largely in Colorado and Utah.

**Oullins Early** is stated by Hogg (quoted by Hedrick, 1922) to be an early form of Peach apricot, a statement corroborated by Wickson, who says it ripens in California (Amador County) four weeks earlier than Peach, being of large size and delicious flavor. Devol (1895) says it is a vigorous grower, fruits late and sparingly, of large size. Budd-Hansen (1903) state that in California it is said to be better quality than the Peach and is also a better bearer than this variety in Arizona and on the west coast.

**Turkey** can be distinguished from Moorpark, according to authority quoted by Prince (1832), by its rounder figure, more transparent skin, its stone without a passage through it, its kernel being sweet like an almond instead of bitter. In their opinion, no gardens in which apricots are valued should be without this variety. Thomas (1885) says the variety is rather late, ripening the middle of August. Wickson (1891) says it is medium in size and is commended by the Southern California Nurserymen's Association as good for home use, but too juicy for canning or market. Turkey is also described briefly by Elliot (1854).

**Other Varieties of the Common Type Grown in Utah**

**Tilton.**—Tilton is one of the new varieties that can be recommended for trial in a limited way as a commercial variety. The characters which commend it are hardiness of buds, annual bearing, productiveness, late blos-
soming, late season (being a week later than Moorpark), firmness (which makes it an excellent shipping apricot), and the characteristic of coloring before it is fully ripe and soft (making possible its picking for shipment or market while still quite firm). The tree is hardy, vigorous, and more free from leaf spot than Large Early Montgamet. Because of its lateness, it tends to supplement the Large Early Montgamet and Moorpark, extending the apricot season. To offset these advantages, the fruit is not as large and showy as Moorpark and Large Early Montgamet, being only medium in size. From observations in 1934 it appeared to be more difficult to force Tilton to large size than Moorpark or Large Early Montgamet, since Tilton, under the same conditions of frost at Brigham City which caused Moorpark, Large Early Montgamet and Peach to become extremely large, remained only medium-sized. It appears possible, however, to grow it to acceptable commercial size by proper pruning and thinning, its size comparing favorably with that of Large Early Montgamet and Blenheim when the trees are well loaded. The fruit sets thickly, requiring careful thinning. The kernel is
bitter like the Moorpark, whereas consumers, at least, prefer the sweet-pitted varieties. Because of its indicated dependability, heavy annual bearing and other excellent tree characters and the firmness of its fruits, Tilton should be tried in a limited way as a commercial variety in Utah.

In California, Tilton has been a leading variety for canning and drying in the central valleys but is said to be less popular there in recent years. Howard (1922) states that Tilton was recommended for 100 per cent of the planting in the San Joaquin Valley for drying and for 50 per cent of the planting in the Sacramento Valley for drying and canning, by a conference on fruit varieties held in 1920. He states further: "Tilton is now next in popularity to the Blenheim; grown chiefly in the interior valley sections; often blooms two weeks later than the Royal or Blenheim, which gives it considerable protection from frost. . . . At Davis, the Tilton ripens fully a week later than the Royal or Blenheim. The trees are strong, healthy growers, and excellent producers. . . . The fruit is large, symmetrical, and has a free stone. The flesh has a fine yellow color that makes it acceptable for both drying and canning. The chief drawback to the Tilton is its habit of coloring before it is ripe. If judged by the usual standards, it is apt to be taken to the cannery too green. This is doubtless the reason canners discriminate against it in some quarters. The Tilton is rapidly becoming the favorite for all purposes in the Sacramento and San Joaquin valleys."

Britton (1930) states that Tilton is one of the leading varieties, with Wenatchee Moorpark and Blenheim, in the Okanagan Valley of British Columbia. In 1933, he writes: "Apricot fruit buds were killed last winter in many orchards. . . . I noticed Tilton seemed most hardy while Wenatchee Moorpark and Blenheim carried fruit chiefly on the new wood and upper part of the tree." At Summerland, Wenatchee Moorpark, Blenheim, and Tilton ripened in the order named, respectively, July 23, 27, and August 1. Tilton is said to be the latest to ripen and is well colored while still firm.

The variety and its origin are described by Wickson (1912) as follows: "Chance seedling first noticed about 1885 on place of J. E. Tilton, near Hanford, Kings County (California), and distinguished by regular bearing. . . . Fruit large; freestone; symmetrical, ripening evenly and one week to ten days later than Royal. Tree vigorous and prolific. Widely planted recently and very promising, though condemned for shy bearing in some places."

The description of the tree and fruit as grown on the Station grounds and in the orchard of Alf Olson at Brigham City is as follows:

Tree vigorous, medium to large in size, open-topped, upright, spreading; hardy in tree and bud; healthy; highly productive, late blooming, tends to be annual bearer. Fruit requires thinning. Crotches mostly wide-angled and strong. Leaves medium-sized, round to cordate, dark green, finely serrate; petiole medium length; glands usually seven or more, brownish; bark dark reddish-brown, lenticels numerous, conspicuous, raised.

Fruit late in season (ripened August 3 to 8 in 1932 and 1933); size medium to large (1⅖ x 1½ to 1¾ x 1⅛ in.); shape roundish-oval, somewhat truncate, much compressed, halves equal or slightly unequal; suture shallow to rather deep and narrow; cavity deep, flaring; apex flat; color greenish or lemon yellow on the surface deepening to yellow orange as fruit ripens, washed with light red where exposed to sun; pubescence hardly evident; skin thin, tough, sprightly subacid; flesh firm, tender, juicy, fairly sweet, pleasant, mild flavor, slightly stringy; quality good to very good; stone free, medium sized (11/16 x 1½ in.), oval, necked, compressed to quite plump; ventral flange
a dull ridge, secondary flanges low and rough, becoming grooves at basal end; kernel bitter.

Shense (Acme, Yakimine, "Peach")\textsuperscript{16}.—This variety, which has been grown in a limited way in Utah for many years under the names Acme and "Peach", is of particular interest because it is the earliest apricot to ripen and because of its size, its strikingly beautiful color, and the high price it sometimes commands. Ripening a week or ten days before Large Early Montgamet, it is ready for local market at a time when there are no other apricots available from local sources and no other local fruits save cherries on the markets; hence, it commands good prices. Because of its attractive intensely red blush, which exceeds in beauty of coloration any other apricot, and its size, quality, and firmness when picked at the proper maturity, Shense has brought remunerative prices when shipped to eastern markets in competition with fruit of later varieties from earlier sections of the Pacific Coast. Because of limited production and uncertain cropping of the variety, regular shipments have not been made, however, and the amount of fruit of this variety which the markets will absorb at profitable prices is not known. This tendency toward light and uncertain cropping is

\textsuperscript{16}The true Peach apricot is similar to Moorpark and is discussed in the section on Moorpark type apricots.
the chief fault of the variety, a fault which may keep it from occupying an important place as a commercial variety.

In the Station orchard, in 1934, the fruit showed a tendency to stay green in ground color until mid-season, although on early ground this did not appear to be the case.

The trees are large, vigorous, and apparently hardy in tree and bud. Trees of Shense are distinctive in having an unusually upright habit of growth when young (Fig. 3), the long upright shoots failing to branch well and later becoming drooping in habit, resulting in a tall spreading tree of unusual size. Shense is now grown to a limited extent in the Brigham City and North Ogden districts. While valued for its earliness and appearance, it has the reputation of being a shy and biennial bearer, producing poorly in some locations. Occasionally when it sets a heavy crop, the size becomes small unless heavily thinned. While growers are of the opinion that the failure to produce well is due to early blossoming, in 1903 at Logan Shense bloomed fully as late or later than the Russian varieties (Table 2).

Because of its earliness, Shense should be given further trial in early, frost-free locations where it may prove more productive than its reputation indicates. Prospects for success with the variety should be best on early soils and locations where the variety would have less competition in marketing and so bring the higher prices necessary to make it profitable because of its lighter yields.

Shense, or "Peach Cot" as it is known in Utah, is popularly thought to be the result of a cross between the apricot and the peach. The brilliant red blush, cream-colored flesh, with a mild, peach-like flavor, lend credence to this idea. There is, however, no evidence to support this theory either in the origin of the variety, or in tree characters. The fact that other varieties and strains of apricots having white flesh are known makes it unlikely that Shense is other than a variety of Prunus armeniaca (Linn.).

Shense originated with Professor J. L. Budd, famous authority on Russian fruits, who grew it from a pit received from Northwest China about 1883. He describes it as follows (Budd-Hansen, 1903):

"Large, often two inches in diameter, roundish; color yellow, with rich blush on sunny side; cavity narrow, shallow; suture very distinct. Flesh pale yellow, juicy, sweet, very good; stone free; kernel bitter. This is the hardiest variety yet tested in Iowa. Grown at Ames, Iowa, by the writer from a pit received from Northwest China. Has also been propagated under the name Acme." It is said by Budd to have been grown in Nebraska under this name, although not seen by the author in Nebraska or Iowa during three years of work at the Nebraska Station and one at the Iowa Station (1923-1927).

According to Hughes, this variety is quite unproductive in California. In Iowa and Nebraska, however, according to Budd ((quoted by Hedrick, 1922)) the tree is productive, as well as being vigorous, handsome, and hardy.

In New York, Hedrick (1922) describes the variety as follows: "Fruit early; large, 2 inches in diameter, round, compressed; suture distinct; color pale yellow, the half exposed to the sun overspread with intense red deepening to purple; flesh deep yellow, juicy, mild subacid, pleasant; good in quality; stone large, free, ovate."

The description which follows was made from fruit grown on the Station grounds, modified to fit that grown on early ground at Brigham City as well:

17 Hughes, E. C. Research Assistant, California Agricultural Experiment Station, Davis, California. Correspondence with author, 1932.
Tree vigorous, upright-growing when young, later becoming drooping, shoots do not branch like most other varieties during the growing season, hence need to be clipped back to cause branching; bark rich mahogany red color; lenticels few, large, raised, usually extensions of bud and leaf scars; leaves large, flat, round or cordate, crenulate; petiole long; glands 1 to 5. Reputed to be quite hardy and appeared to be hardy both in tree and in bud in 1932-33.

Fruit medium to large (1 7/8 x 1 1/4 in.); shape round, slightly compressed; cavity narrow, acute; color greenish-white to deep butter yellow when fully ripe, overlaid with deep solid carmine where exposed to the sun, having the heaviest blush of any apricot variety known to the writer; suture inconspicuous, shallow; skin thick, tough, clings to flesh, acid; flesh pale straw color to light orange, semi-translucent, veinous, ripens near pit first, soft, melting, moderately juicy, aromatic, mild, sweet, peach-like subacid flavor, not pronounced like most apricot varieties; quality good when well ripened but reputed to be low when picked mature green for shipment; pit freestone (1 x 7/8 in.) ovate, bluntly pointed; has broad, thin ventral wing attached to broad, flat ventral surface; kernel moderately bitter.

Blenheim (Shipley).—Although the leading variety grown in the coastal regions of California, Blenheim does not seem well adapted to the conditions in the test orchard. The buds appear to be tender, having been entirely killed in 1932-33. The fruits are medium-sized to rather small, late ripening, and the tree appears not to be as hardy as Moorpark and Large Early Montgamet. The variety makes a better showing, however, in warmer locations. In California it is reputed to be a heavy and regular bearer, preferred for canning, and is also used for shipping and drying. While it is considered superior to Royal in California, being larger than the older variety, it is difficult to distinguish from Royal and the stock of the two is said to be mixed in nurseries in that state. Because of the qualities which have made it the leading commercial apricot in California, Blenheim should be tried further in a limited way in warm locations.

Blenheim originated with a Miss Shipley, Blenheim, England (Hedrick, 1922). Thomas (1885) described Blenheim as: “Large, oval, surface orange; flesh deep yellow, juicy, rather rich; stone roundish, not perforate. Kernel bitter. Inferior to Moorpark, but rather earlier. English.”

Devol (1895) states that in Arizona the Blenheim closely resembled the Royal but was a stronger grower, with somewhat larger fruit. It ripened later than Royal and had the same bad habit of splitting.

Garcia (1901) in New Mexico, describes Blenheim as follows: “Size medium, oval, cavity deep; suture distinct; apex slightly compressed; skin orange with few scale-like spots; flesh deep yellow, firm, moderately dry, free from the oval stone; quality good. Tree vigorous, roundish, and with somewhat spreading head.”

Budd-Hansen (1903) say of Blenheim: “Size medium to large, oval; color orange, with scale-like spots; cavity deep; suture distinct; apex somewhat depressed. Flesh yellow, firm, free from the stone, quality very good. Popular in Southern California, Arizona, New Mexico, and Texas.”

Regarding Blenheim, Wickson (1912) says: “This is a valuable variety in this state (California). He quotes John Rock’s description: ‘A very good variety, above medium, oval; orange, with a deep yellow, juicy, and tolerably rich flesh; vigorous grower and regular prolific bearer.’ . . . in the University orchard at Berkeley . . . it is the best of twenty varieties. It is not reported so constant a bearer in some other parts of the State. Fruit runs a little

Several hundred trees which appear to be Blenheim, or the scarcely distinguishable Royal, which were planted for Tilton, occur in a block of the Alf Olson orchard at Perry, Utah. The trees, which are in good condition in their ninth year, bore only a few fruits following the cold winter of 1932-33. Mr. Olson considers the variety excellent for canning but too soft for shipping. The fruit required heavy thinning to produce desirable size when heavily loaded in 1932 and 1934.
larger than the Royal, and is usually better distributed, but it must be well thinned. This variety has been approved by canners. Ripens a little later than the Royal."

Hedrick (1922) gives the most complete description of the variety published. Because of the confusion of this variety with the Royal and the consequent doubt as to the genuineness of the variety grown as Blenheim in the Station orchard, Hedrick's description is included here for comparison: "Tree vigorous, a regular and productive bearer, hardy. Flowers early, large, white. Fruit midseason; 2 inches in diameter, round-oblong or round-oblate, sides compressed; suture well marked, deep at cavity; apex rounded; color golden-orange with a deep red blush; pubescence short, fine, obscure; stem very short; skin thin, tender, free; flesh deep yellow or orange, juicy, mild, sweet but not rich; stone of medium size, flat, ovate, free or clinging somewhat; pervious channel; kernel bitter."

Figure 10—Blenheim: Although the leading canning variety in California, Blenheim does not seem well adapted and lacks hardiness in the test orchard at Farmington. In a warmer location at Brigham, this variety makes a better showing but does not appear to equal Tilton in value.
According to Howard (1922), Blenheim was recommended 100 per cent for the coastal regions for canning as well as for drying and 50 per cent, with Tilton, for the Sacramento Valley for drying or canning, by the variety conference held to make recommendations for new plantings in California in 1920. Howard further states: “Blenheim is now first in popularity for all purposes; the leading canning variety in the coastal region; so nearly like the Royal that growers of wide experience cannot tell the two varieties apart; a vigorous grower, and on the coast a regular and prolific bearer; reputed to be later in ripening than the Royal, but at Davis the two are ready to harvest at almost the same time. Grown for canning, the fruit must be heavily thinned to secure proper size. Fruit similar in all respects to the Royal. A shy bearer at Davis, but a heavy producer in the San Francisco Bay region and in the coastal valleys to the southward, and also in Riverside County.”

In the Station orchard Blenheim trees ripened their fruit a week earlier than did Royal. The trees in the test orchard from which the following description was made were from the Silva-Bergtholdt Nursery, California, and are on apricot rootstock.

Trees below average in size and vigor, somewhat lacking in hardiness of wood and bud and not productive for the latter reason on the Station grounds; branches upright, spreading, moderately open-topped, crotchless wide-angled; bark reddish-brown, lenticels small and not conspicuous; leaves small to medium size; broadly ovate, mucronate, bluntly serrate; glands usually 2, occasionally 1 to 4, usually near or on leaf.

Fruit ripe in late midseason, approximately a week after Large Early Montgamet. Size medium, ranging from 1½ to 1¾ inches in diameter; shape roundish-oblate, oblique, sides slightly compressed, halves unequal; cavity elliptical, moderately deep, abrupt; suture a well-marked groove, one side usually swollen; apex depressed; color amber yellow to corn yellow, mottled with light red where exposed to the sun; skin moderately thin, somewhat tender, separates readily from the flesh, sprightly subacid; flesh amber yellow to mirabelle, moderately firm to soft when fully ripe, tender, moderately juicy, sweet, slightly stringy, highly flavored; quality good. Stone small to medium size (13/16 to 1/2 in.), free; moderately compressed, ventral flange narrow and moderately sharp, color dark brown; kernel bitter.

Royal.—Royal, like Blenheim which it closely resembles, does not appear to be hardy enough nor to bear sufficiently large fruit to be of value in Utah, although it is one of the important varieties in California, being the leading variety for drying purposes there. Both trees and fruit buds have lacked hardiness in the Station test orchard, two of the four trees originally set dying and a third being in poor condition from winter injury. The fourth is the smallest of the trees of all varieties planted in 1928. The blossom buds were entirely killed in 1933. This variety has also been grown in orchards in Boxelder and Weber Counties where the fruit was reported to be unsatisfactorily small in size.

According to Prince (1832), Royal is an old French variety, being described first in Bon Jardinier in 1826. It originated in the Royal Garden of the Luxembourg.

Says the Bon Jardinier: “It ripens from a week to ten days before that kind (Moorpark), possesses all its good qualities, and is less subject to be imperfectly matured on one side. Its flesh when bruised becomes transparent. It may readily be distinguished from the Moorpark, not only by these characters, but also by the passage in the edge of its stone being scarcely pervious, by its form being less compressed, and by its not acquiring the size of the Moorpark.”

Prince quotes the following description from the Pomological Magazine:
"... leaves very large, roundish-cordate or ovate, in some degree cucullate, generally auricled at the base, petiole with about six equidistant glands, a character, however, which is too variable to be of importance in apricots; flowers of the ordinary size; fruit next in size to the Moorpark, rather oval, slightly compressed, of a dull yellow, slightly colored with red on a small space; suture shallow; flesh pale orange, very firm, juicy, sweet, and high flavored, with a slight degree of acidity; stone large, oval, not adhering to the flesh, blunt at each end, with scarcely any passage on the edge; kernel slightly bitter, much less so than the Moorpark."

Elliot (1854) lists Royal with varieties "adapted to certain localities, gardens of amateurs, new and untested varieties". He describes it as: "A French variety, with large leaves, and vigorous habit of growth. Fruit, above medium, roundish oval, slightly compressed, dull yellow, with a little red; flesh, pale orange, firm and juicy; last of July."

Figure 11—Royal: The principal drying variety of the interior valleys of California, Royal, like Blenheim, does not appear to be hardy and well adapted to conditions in the test orchard. It is said to be undesirably small in Weber and Boxelder Counties.
Thomas (1885) says Royal is “rather large, round-oval, slightly compressed, suture shallow; dull yellow, faintly reddened to the sun; flesh pale orange firm, juicy, sweet, high flavored, slightly subacid, free from the large, oval, nearly impervious stone. Kernel bitter. Ripens a week before Moor-park, smaller than the latter, and with a less bitter kernel.”

Devol (1895) says Royal, one of those most commonly met with in Arizona, is a strong and vigorous grower. “When properly thinned, the fruit is large, but it usually sets much too full and consequently the fruit is small from over-crowding. In this state it does not ripen evenly, but when properly thinned is of fine color; flavor fairly good, fruit rather firm, dark yellow, and much sought after for canning and drying. Fruit is almost round, sometimes slightly pointed, slightly compressed upon one side. Fruit is of rather dull color, greenish yellow, but the cheek of good orange shade in the sun, sometimes with a tinge of red. The suture is deep, and in this climate the fruit is very apt to crack. . . . The flesh being of such a firm nature, it is an excellent shipper. The pits have three small wings upon the front, are very small.”

Garcia (1901) describes Royal in New Mexico as “size medium, roundish, oval with a flattened apex; suture shallow; color pale orange, faintly tinged with red; flesh pale orange, juicy sweet, firm, rich. Tree vigorous, spreading.”

Budd-Hansen (1903) describe Royal as follows: “Large, roundish oval, compressed at apex; color pale orange, with faintly tinged red cheek; cavity quite wide and deep; suture shallow. Flesh light yellow, juicy, sweet, firm, and rich in flavor; quality nearly best. Starrad in several states.”

Wickson, in his sixth edition of “California Fruits” (1912), sums up the experience with Royal in that state as follows: “. . . at the present time the leading California apricot. Of large size (when well thinned out), free stone, fine color and flavor, good bearer, and fruit ripens evenly, when well grown; a favorite with the canners and an excellent variety for drying. Fruit roundish, large, oval, slightly compressed; skin dull yellow with orange cheek, very, faintly tinged with red, and a shallow suture; flesh pale orange, firm and juicy, with a rich vinous flavor. There is a variety somewhat grown in Sacramento and Solano Counties, sometimes called ‘White Royal’, which is not liked by canners, because of its lack of color and flavor.”

Once the predominant variety in California for canning and drying, Royal is being replaced by Blenheim and Tilton in more recent plantings. Howard (1922) states that Royal was recommended by the variety conference of 1920 as a commercial variety, but for what purpose or locality was not stated, it being understood that it might be replaced by Blenheim and Tilton to advantage. He states that Royal is productive, colors evenly when opened up, and has a rich flavor when fully ripe. It has been the chief drying variety and is also excellent for canning.

Hedrick (1922) describes the variety as it grows in New York as follows: “Tree large, vigorous, regular in bearing large crops which ripen uniformly. Fruit midseason; large, oval, sides compressed; suture shallow but distinct; color pale yellow or orange with orange cheek tinged with red with a few red dots; flesh rich, dull yellow, firm, juicy, vinous; very good in quality; stone large, free, round-oblong, thick, rough; kernel bitter.”

The description of Royal as it grows in the Station orchard on apricot stock follows:

Trees lacking in vigor due to winter injury, not healthy and vigorous in Station orchard, but healthy and long-lived in warmer locations; upright, spreading; buds tender; bark reddish-brown; lenticels small, numerous, raised on older bark; leaves small to medium, light green, tending to be chlorotic in Station orchard; broadly ovate to cordate, mucronate, finely dentate; petioles short; glands 2 to 5.

Fruit ripens in late midseason, a few days before Tilton, later than Blenheim in 1934; size medium to above medium (1¼ to 1½ in.); shape
round-oblate, somewhat compressed, oblique, halves unequal; cavity large, flaring, slightly creased on side opposite from suture; suture shallow except at cavity; color yellow-orange with mottled red blush where exposed to the sun; pubescence short, fine; skin thick, tough, sprightly subacid; flesh orange, soft, juicy, sweet, rich, slightly stringy, quality very good; stone free, small (¼ x 13/16 in.); round oblate, ventral groove narrow, sharp; apex rounded; surface finely netted; dorsal ridge pitted on sides; kernel bitter.

**New Varieties of the Common Type**

**Derby Early Royal.**—An early shipping variety in California, Derby Early Royal appears to lack satisfactory hardiness of bud and tree in the test orchard. One tree out of four died; two trees showed crotch weakness and split down with a November snow in their second year; the third produced good crops in 1932 and 1934, but the buds winterkilled in 1932-33. The tree was weakened by black-heart injury more than most varieties under test in 1933. The variety is vigorous and productive and may be satisfactory in warmer parts of the state, such as in Washington County. Ripens with, or a few days earlier than Large Early Montgamet and several days before "Moorpark". Fruit is medium to above medium in size, yellow to orange color, with a reddish blush and is good in quality. Because of lack of hardiness, this variety does not appear promising in northern Utah.

Derby Early Royal originated from a chance seedling, presumably from
the seed of Royal, near Winters, California. It is not mentioned by Wickson (1912) nor by Howard (1922) but is noted by Hedrick (1922) as a strain of Royal which ripens two weeks earlier than that variety in California.

Tree moderately vigorous but somewhat lacking in hardiness on the Station grounds, buds tender; productive following mild winters; crotches frequently narrow and weak; spreading form; bark dark reddish-brown; lenticels small, scattering, raised, conspicuous; leaves small to medium, light green, cordate, margins crenate; petioles short; glands 3 to 5.

Figure 13—Early Golden: Characterized by its vigorous, productive, and hardy trees, which outyielded and exceeded in size of tree all other varieties in the Station test orchard up to 1933, the fruits of the variety are neither particularly early nor golden and lack somewhat in size, color, and firmness for a commercial variety.

Fruit second early (ripe on August 1, 1932); medium to large; round to oblate, truncate, sides compressed, irregular; cavity medium in size, moderately deep; suture a groove; apex rounded; color lemon-yellow to orange, reddish blush; skin thin, tough, slightly astringent; flesh yellow to light orange, slightly juicy, fine-grained, tender, mild; quality good; stone almost free, size \( \frac{2}{3} \times \frac{2}{3} \times \frac{2}{3} \) in; kernel bitter.

Correspondence with J. E. Bergtholdt of the Bergtholdt Nurseries, Newcastle, California, who writes (January 24, 1934): "The Derby Early Royal ... first came under our observation some fifteen years ago. It is very similar to Royal in size and shape, likewise production habits, but matures about ten days in advance of Royal. For canning and drying it is not rated the equal of Royal but is in demand for shipment east on account of its earliness, maturing during a season when there is no apricot of like quality available. It ripens during the season of the Newcastle Early."
Early Golden.—While the fruit of this variety is neither particularly early nor golden and is not as large nor as attractively colored as Large Early Montgamet, with which it is in season, its trees have the distinction of being the largest in spread and circumference of trunk of all varieties under test and of having produced the most fruit of any variety in their first six years in the orchard. It is unfortunate that the fruit is but medium in size, lemon-yellow to amber in color with only a slight blush, as the vigor, hardiness, and productivity of this variety would be a decided advantage to the fruit grower. The fruits are of excellent quality, being melting, sweet, juicy, and rich. The kernels are bitter. While the variety deserves further trial in a strictly limited way, because of its excellent tree qualities, at this time it does not appear to be either large enough nor well-colored enough to warrant commercial planting in Utah. If it proves sufficiently hardy it may have value as a home-orchard fruit in colder sections. Early Golden is of little if any importance in the important western apricot states.

It is probable that the variety grown in the Station orchard is not the same as the Early Golden described by earlier authorities. The variety grown and described here had a bitter kernel, slight blush, ripens in midseason, and compares favorably with Royal and Blenheim in size, while the Early Golden described in the literature has a sweet kernel, unblushed pale orange cheek, is small, and ripens before Royal and Moorpark.

Elliot (1854) gives what appears to be the most complete and authoritative description of this once popular variety, which has now practically passed out of existence. He states that the variety originated with Charles Dubois, of Fishkill Landing, New York. “Tree thrifty yet close wooded, hardy, productive, and said to bear considerable of late frost without injury to the blossom. Fruit small, one and a quarter inch diameter, roundish oval, narrow suture; skin smooth, pale orange; flesh orange, moderately juicy and sweet, but not high flavor; separates from the stone; kernel sweet. Season July 10-15. Very valuable as a market variety.”

This variety is also described by Hooper (1857), Thomas (1885), Wicks on (1891, 1912), and Budd-Hansen (1903) and is mentioned by Hedrick (1922) who quotes the description of Wicks on.

The technical description of the variety as it grows at Farmington, Utah, follows. The trees were obtained from the Willis Nursery, Ottawa, Kansas.

Tree vigorous, large, spreading, dense-topped; bark reddish-brown, lenticels medium to large, scattering; unusually productive; hardy in wood and bud. Leaves medium in size, broadly cordate, mucronate, light green, coarsely and deeply serrate, often partly folded; petioles short, usually stipulate, glands numerous, 1 to 5.

Fruit medium to above medium in size (1½x1½ in.) midseason; roundish-truncate, moderately compressed; color lemon-yellow to amber, slight blush; cavity flaring; skin thin, tender, semi-adherent to flesh, subacid; flesh amber yellow to corn yellow, tender, melting, juicy, sweet, semi-translucent, rich; quality excellent; pit small (¾ in. wide x ¾ in. long); nearly round, dorsal ridge flattened, ventral ridge narrow; kernel moderately bitter.

Early Newcastle.—This sort is said to be the earliest commercial variety to ripen in California and to be the leading early shipping variety. Early Newcastle trees planted in 1928 froze out the following winter and were not replanted; consequently, they have not been fruited on the Station grounds in northern Utah. It is said to be a very heavy producer but small in size and of fairly good quality for an early apricot. This variety may be of
value in the "Dixie" section of Utah. It has been planted in the test orchard there but has not as yet fruited sufficiently to describe. It is not considered promising for northern Utah.

Newcastle was mentioned by Wickson (1891), as originating in 1881, with C. M. Silva and Son of Newcastle, Placer County. He describes it as: "Size medium, round; rich golden yellow, with brilliant red cheek in the sun; freestone; flavor sweet and rich; tree a regular, heavy bearer and healthy."

Garcia (1901) reports Newcastle to be a clingstone, as follows: "Size medium, roundish oblate with a slightly flattened apex; cavity wide and deep; suture barely distinguishable; color deep yellow, many specimens having a red cheek; flesh deep yellow, tender, sweet, juicy, adhering to the large stone, quality excellent. Tree vigorous, spreading."

Wickson (1912) reports further on the variety, stating that it is freestone, with a spherical pit, not quite as large as Royal nor as rich in flavor, but more highly colored; tree a medium grower, more upright than Royal; said to ripen 25 days before Royal.

Howard (1922) says that Newcastle is the chief variety shipped to the early eastern markets and that it is grown chiefly in the Coast Range foothills and valleys, particularly in the vicinity of Vacaville. In the Imperial Valley it ripens in April and May.

Britton (1933) states that in British Columbia, Newcastle is their earliest variety (ripened July 18, 1932) but is only fair in appearance.

Gilbert.—A new variety secured from the Columbia and Okanagan Nursery at Wenatchee, Washington, which was said to be extremely early. As grown on 3-year-old trees in the experimental orchard at Hurricane, Washington County, Utah, the fruit appears to be early mid-season, ripening with Large Early Montgamet, well after Derby Early Royal. The fruit was small to medium in size (but will probably be larger in the future when borne on spurs), oblong-oval in shape, freestone, dully blushed, with deep mirabelle-colored, rich, mild flesh of good quality. The kernel is sweet, like that of Large Early Montgamet (Chinese, Jones). Further observation will be necessary to determine its value.

Riland.—Riland, like Gilbert, has been under test such a short time that no opinion can be expressed as to its value. Advertised as an extra early variety of high color and quality, it appears to justify, at least partially, these claims, on the basis of a few fruits borne on 2-year-old trees. The fruits are above medium in size, have an extensive blush like Shense, but have deep orange flesh and ground color. The fruits were soft ripe on June 28 in 1934 (an extra early season) and appeared to be as early as Shense, or a week to ten days earlier than Large Early Montgamet.

Riland was introduced by the Columbia and Okanagan Nursery of Wenatchee, Washington, several years ago and was granted U. S. Patent No. 74 in 1933. In Washington it is said to be seven to ten days earlier than Wenatchee Moorpark and two to three weeks earlier than Blenheim. The fruit is said to be larger than Blenheim and Tilton but smaller than Wenatchee Moorpark. The trees are said to be vigorous growers and productive. While much further testing will be necessary to determine its value in Utah, its earliness (ripening as it appears to do before any other variety except the unproductive Shense), its high color, and good quality make it promising enough to warrant experimental trial in a limited way on early ground for local market. No data are available as to its hardiness under

Utah conditions, as the winter it stood in the test orchard was unusually mild.

The description given is only tentative, subject to later revision. It is included here for completeness and to assist in identification of the variety.

Tree upright-spreading, vigorous, bark on young shoots dark purplish-red where exposed to sun, older bark medium brown with grey scarfskin; lenticels small, scattering, leaves round or round ovate, semi-folded, finely crenate, dark green; petioles reddish, medium length, glands small, numerous, without stipules.

Fruit above medium in size, but nearly as large as any in the test orchard this year (1934), (1 3/4 inches wide x 1 5/8 inches long x 1 1/2 inches thick); nearly round, slightly compressed, cavity narrow, shallow; stem short, thick; suture shallow, halves slightly unequal, apex flattened; skin thin,

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Figure 14—Sofia: Sofia has excellent tree characters, being productive, hardy, vigorous, and late-blooming, but the fruit lacks in size, color, in being semi-clingstone, and in susceptibility to Coryneum blight. Originated in Washington, where the original tree, said to have been planted by an Indian woman, it spreads 40 feet and produces 1500 to 2000 pounds of fruit annually.
tough, adherent, tart; flesh melting, juicy, semi-translucent, slightly coarse; flavor sweet, rich, mild, aromatic; quality excellent; stone free, small (1 3/4 inch wide x 7/16 inch thick), round, bluntly pointed, broadly flanged, with sharp, thin secondary flanges; smooth; medium brown color; kernel bitter.

**Sofia.**—This variety has excellent tree characters, being vigorous, productive, and hardy in wood and bud; however, the fruit is neither large nor attractive enough for commercial purposes, being small to medium in size and often clingstone or semi-clingstone. The fruit is also quite susceptible to Coryneum blight (California Peach Blight), which ruined the crops of 1932 and 1934. Like Large Early Montgamet, it has a sweet and edible kernel. Sofia ranked third in total production following Early Golden and Tilton.

Sofia was introduced by the Washington Nursery of Toppenish, Washington. The original tree was the best of 25 seedlings planted by an Indian woman in that state. It is said to have a spread of 40 feet, to be hardy in wood and bud, and to bear enormous crops—1500 to 2000 pounds annually. It is also said not to propagate true to type in all cases and to ripen extra early. In the trial orchard it was only second early in season. The two trees growing in the Station orchard appeared to be different, one being later, less susceptible to Coryneum blight and less productive than the other.

While not attractive enough for commercial culture, Sofia may have a place as a home-orchard fruit in localities where the larger fruited but tenderer varieties do not produce well because of bud-killing, provided it proves to be hardier under such conditions. The description is of the more productive, early variety.

Tree quite vigorous, hardy; spreading, lower branches drooping, both narrow and wide-angled; highly productive; bud hardy; bark dark brown; lenticels small, numerous, raised. Leaves medium to small, round to cordate, finely serrate; petioles moderately long, glands 2 to 6.

Fruit susceptible to Coryneum blight, ripens in early midseason, with or a few days after Large Early Montgamet; medium size to rather small, ranging from 1 3/4 to 1 5/8 inches in diameter; sides compressed, unequal; cavity long, narrow, deep; suture shallowly grooved; apex rounded; color yellow to orange, rarely blushed; skin thick, tough, sprightly subacid, peels readily from flesh when ripe; flesh amber to mirabelle, soft, melting, juicy to somewhat dry when over-ripe, stringy; flavor rich, sweet, pronounced; quality good. Stone sometimes free, often semi-cling or clinging; elliptical, bluntly pointed, slightly compressed, medium size (13/16 x 9/16); kernel sweet.

**Other Varieties of the Common Type.**—Two other varieties which have not been tested at this station, but which are commended in the literature, are Luizet and St. Ambroise.

Hedrick (1922) says Luizet is a fine early apricot in New York. Wickson (1912) says it is large, oval, distinct suture, one side higher than the other; orange with crimson cheek; flesh deep yellow, firm, rich; especially approved in the San Joaquin Valley, California. The variety is also described or mentioned by Devol (1895), Garcia (1901), and Budd-Hansen (1903). Budd-Hansen state that the variety is partially clingstone and that it was becoming popular in the southwest and on the west coast.

St. Ambroise, an old European variety, is praised by Hedrick (1922) for its excellent tree characters, but its fruits are criticized for coarseness, lack of richness, and adaptation to canning and drying, although said to ship well. The fruit is large and early. Wickson (1912) says it has served

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well as a shipping variety but is condemned by canners for not processing well and by dryers for loss of weight and for white color around the pit. St. Ambroise is commended by Devol (1895) for its size and quality. He states that it ripens in midseason. Garcia (1901) and Budd-Hansen (1903) also describe this variety.

**Russian Type Apricot Varieties**

Unless they prove enough hardier than practically all varieties of the common type apricots and worth growing in frost-free locations in the colder valleys for home-orchard use, the Russian type apricot varieties have no place in Utah. They are small-fruited, generally soft, unattractive in appearance, and often not equal to the larger common type in quality. Several of these varieties are under trial at Logan to determine their hardiness and suitability to Cache Valley and other similar districts.

**Budd.**—A small, soft, clingstone variety, which appears to be worthless in Utah. While reputed to be exceptionally hardy, the buds appeared in 1932-33 to be tenderer than the hardier varieties of the large-fruited
common type, such as Tilton and Early Golden. Even Moorpark made a better showing than Budd in respect to hardiness of buds in 1933.

Budd was described by Beach and Paddock of the Geneva (New York) Station in 1896. Budd-Hansen (1901) describe the variety as follows: "Medium to large, oblong; color light orange with blush on sunny side. Flesh quite juicy, sweet, with peach flavor. Season, very early. Hardier than most varieties. Russia."

According to Hedrick, the variety was introduced a generation ago by Professor J. L. Budd of the Iowa Station, noted authority on Russian fruits. Hedrick remarks that "Budd has the doubtful recommendation of producing the best fruits of the Russian apricots. . . . The variety is not gaining in popularity. Tree vigorous, upright, hardy, productive. Leaves glandular. Fruit very early; small, oval, flattened; suture deep; halves unequal; skin golden-yellow, tinged with red on exposed sides; flesh bright orange, coarse, stringy, juicy, firm, sweet, peach-like in flavor; good; stone cling or half-cling, rather large."

On the grounds of the Utah Station at Farmington, this variety grows as follows:

Tree below average in size and vigor, hardy in wood and bud; branches

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Figure 16—Gibb: Although one of the best of the Russian type apricots. Gibb lacks size and firmness and appears worthless for planting in Utah. This variety appears to be confused with Alexander and Catherine, as trees received under these names proved to be Gibb.
upright spreading, dense-topped; spurs thorn-like; crotches narrow; bark dark brown; lenticels numerous, long, grey, conspicuous; leaves oblong-ovate, light green, finely serrate; petioles medium in length; glands few, 1 to 4 in number.

Fruit early, very small (1 to 1¼ inches); round, sides not compressed; cavity shallow, narrow, flaring; suture a groove; apex rounded; color yellow with orange to reddish blush; skin moderately thick and tough, astringent; flesh yellow to light orange, tender, sweet; mild, slightly juicy; quality fair; stone clinging, cordate, flat (%*%); kernel bitter.

**Gibb, Alexander, Catherine.**—As growing in the Station orchards at Farmington and Logan, trees and fruit of three supposedly different Russian varieties received under these names proved to be identical; hence, they are described together, although they are considered different in the literature. Catherine and Alexander were received from the Willis Nursery, Ottawa, Kansas; while Gibb came from the Shenandoah Nursery, Shenandoah, Iowa. While the trees are hardy, healthy, and productive, the variety is worthless for growing in Utah because of its extremely small, soft fruits. The tree blossoms late, but the fruit ripens early.

Beach and Paddock (1896) considered Gibb the best in quality of the Russian apricots grown at the New York (Geneva) Station. Their description and illustrations fit the variety grown in the Station orchard as Gibb, Alexander, and Catherine, while the illustration of Catherine given by them is different.

Budd-Hansen describe Gibb as follows: “Size medium, roundish; suture distinct; color yellow. Flesh rich, juicy. Season, very early. Grown south as far as Maryland. Russia.” Alexander is given as: “Medium to small, oblong, flattened somewhat at ends, color light orange-yellow with show of color in the sun. Flesh tender, juicy, sweet, quality good. Tree harder than most varieties. Quite popular in Oregon. Origin, Russia.”

Hedrick (1922) says Gibb is named after the famous Canadian authority on Russian fruits (Charles Gibb). He states that Gibb is larger fruited than the other Russians and ripens the latest of any. Hedrick describes Alexander but does not mention Catherine.

The variety grown here coincides best with the descriptions of Gibb given by Beach-Paddock (1896) and Budd-Hansen (1903) but differs materially from the variety described under that name by Hedrick (1922). The local description follows:

Tree hardy, healthy, vigorous; branches upright spreading, dense-topped; bark reddish-brown with grey scarfskin; lenticels moderately numerous, large, conspicuous; spurs sharp and thorn-like, resembling wild or seedling tree; leaves small, oblong-ovate, macronate, smaller leaves narrower, dark green, crenate, petioles short, often stipulate; glands numerous, 0 to 5.

Fruit uniformly small (1½ to 1¾ inches), usually borne in clusters on short spurs along the branches; round to round oval, not compressed; cavity small, oval, abrupt; suture deep, conspicuous; color sulfur-yellow to mirabelle at full maturity, occasionally blushed with mottled red; skin thin, separates readily from flesh, subacid; pubescence short but abundant; flesh soft, juicy, melting, bruises readily when ripe, stringy, sweet, mild; quality good. Stone small, medium brown oblong-ovate, sharply pointed, ventral flange narrow, usually with adherent flesh; usually freestone, but occasionally semi-cling. Kernel bitter.

**Stella** is a characteristically Russian variety, with upright, vigorous tree. The buds appear to be tender, few fruits being borne in 1933 on trees planted in 1929. A good crop was borne in 1934. The fruits are late in
season, small, soft, and fair to good in quality. This variety does not appear to have value in Utah.

Tree vigorous, hardy, upright spreading, of typical Russian habit, dense-topped; bark light brown, with thin gray scarfskin; lenticels numerous, small to medium, raised, straw-colored, cleft; leaves medium-sized, round-ovate, with long tapering point, dark green, petiole long reddish, glandular.

Fruit ripens very late (ripe August 12-15 in 1933); quite small (1 5/16 x 1 3/8 inches); round, oblique-truncate, much compressed; cavity deep, abrupt; suture deeply grooved; color lemon-yellow with light red blush; pubescence short, fine; skin thin, tough, subacid; flesh yellow, fine-grained, tender, subacid to mildly sweet; quality fair to good; stone free or semi-free, small (5/8 x 3/8), compressed, dark brown, round ovate, pointed, ventral flange narrow

Figure 17—Superb: While it appears to be the best of the Russian apricots, the fruit is too small, soft, unattractive, and not good enough in quality to be of value in Utah.
but sharp, secondary flanges mere ridges, dorsal ridge deeply pitted; kernel bitter.

Superb.—If Superb shows exceptional hardiness it may be of value in frost-free locations in colder valleys where larger and better sorts do not thrive; otherwise, there is no place for this variety in Utah. The fruits are small to medium, not particularly attractive, and only fair to poor in quality. They are firmer and bruise less than Catherine or Gibb. The trees are only moderately vigorous and productive, and, from their performance in 1933, do not appear to be as hardy in bud as Tilton.

Superb is described by Budd-Hansen (1903) as: “Medium, roundish oval; surface smooth; color light salmon, with numerous dots of red or russet; down short; cavity medium to large, regular, flaring; suture distinct. Flesh yellow, firm, subacid, good; freestone. Kansas.”

In Utah, the variety grows as follows:

Tree moderately vigorous, hardy, productive, upright spreading, lower branches drooping, somewhat narrow-angled crotches; bark dark brown; lenticels numerous, light grey with tan centers, narrow, raised, conspicuous; leaves medium to small, oblong-ovate, flat, dentate; petioles rather long; glands 0 to 5 in number, dark green.

Fruit late mid-season; small to medium size (largest 1 1/2 to 1 1/2 inches); oblong-oblique-ovate; sides markedly compressed; cavity large, oval, flaring; suture deeply cleft at cavity, prominent; sides usually unequal; apex rounded; color orange yellow, sometimes mottled with red where exposed to sun; skin medium thickness, peels readily, sprightly subacid, short thick pubescence; flesh soft, somewhat dry and mealy, fine-grained, tender, sweet, mildly flavored; quality fair to poor; stone free, medium size, large for the size of the fruit, obliquely ovate, bluntly pointed; ventral suture moderately wide and sharp, secondary flanges suppressed and grooved; color dark brown; kernel sweet.

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