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ALABAMA  
Agricultural Experiment  
Station

OF THE

AGRICULTURAL AND MECHANICAL COLLEGE,  
AUBURN.

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ORCHARD NOTES.

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F. S. EARLE.

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BIRMINGHAM  
ROBERTS & SON.  
1898

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## CONTENTS.

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	PAGE
Apples.....	263
Drawbacks to Apple Culture.....	266
“Whole Root” vs. “Piece Root” Apple Trees.....,	267
Northern vs. Southern Grown Apple Nursery Stock.....	268
Japanese vs. French Pear Stocks for the South.....	269
The Stringfellow Method of Short Root Pruning.....	269
The Blooming Season of Plums.....	271
Spraying with Whitewash to Retard Blooming.....	274
Japanese Persimmons.....	275



## Orchard Notes,

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### APPLES.

Notwithstanding the vast planting of fruit trees throughout the South during recent years, very little attention has been given to the apple. It is an unfortunate fact that Alabama does not begin to grow apples enough to supply the home market, and that those brought in from the North are usually poor in quality and are sold at so high a price as to prevent their coming into general use as food. It is not unusual for apples and oranges to sell at the same price per dozen in our markets. There seems to be no good reason why we should not have a much more abundant home supply of this most useful fruit. In the laudable effort to achieve our agricultural independence by growing all possible food supplies at home, apples are worthy of attention as well as corn or pork. It is true that Middle and South Alabama are below the apple belt proper, and it is perhaps not likely that apple growing will ever reach large commercial proportions in these parts of the State, but with a little care a good home supply can be grown. Some portions of North Alabama seem to be particularly well adapted to apples, and the planting of commercial orchards is earnestly recommended in those localities. No horticultural investment is safer or more certain to yield reasonable and regular profits than a suitably located orchard of properly selected market apples.

It is just at this point that the prospective planter will meet his greatest difficulty, for it is still an open question what varieties are best adapted to the different parts of the State. One great cause for failure in apple planting at the South has been the selection of varieties not suited to our con

ditions. Many of the familiar Northern market varieties will fail entirely if planted here. Some varieties, it is true, are suited to a wide range of conditions, and will succeed both North and South, but if we are to build up an important Southern apple industry we must mostly rely on apples of Southern origin.

As an aid in the study of this important question of varieties there has been planted at this Station during the last two years an orchard of between eighty and ninety kinds selected from those that seemed to give most promise of being useful for this section. It will, of course, be a number of years before results of value can be expected from this planting.

It is also intended to procure scions of all the promising native seedlings and local varieties that can be found in different parts of the State. By bringing them all together on the Station grounds it is hoped that ultimately some may be selected that will prove more valuable under our conditions than the standard kinds now usually planted. The co-operation in this work of all persons in the State who are interested in fruits, is earnestly desired, and the Station will feel under special obligations to any one who will send scions of fine native apples, or who will put us in communication with parties who can furnish such scions. Scions may be cut at any time during the winter while the trees are dormant, and can be sent by mail done up with a little moss or damp grass to keep them fresh.

An apple orchard of some forty-five varieties, two trees of a kind, was planted on the Station grounds in March, 1885. The location selected was rather an unfortunate one, being on a poor gravelly knoll. Apples thrive best on a moist and rather stiff soil. Frequent changes in the management have not led to the carrying out of any continuous system of orchard culture, and a small orchard always seems to suffer more in proportion than a large one from the depredations of insects, birds and boys. For these reasons, although the orchard has borne some fruit for several years past, it is not yet possible to express any final opinion as to the value of the different kinds. There is, however, one result that may be recorded

now, and that is as to the comparative vigor and hardiness of the trees. Many kinds of apple trees are feeble and short lived here, and in planting an orchard it is, of course, vitally important to select only such kinds as are likely to make vigorous, long lived trees. Of the forty-five kinds originally planted in this orchard, fourteen are now dead, seven are still alive but seem feeble and out of condition, while the following twenty-four kinds have proven healthy and fairly vigorous under the rather severe conditions of this test:

American Golden Russet,	Ben Davis,
Cannon Pearmain,	Carter's Blue,
Early Red Margaret,	Elgin Pippin,
Golden Pippin,	Habersham,
Hames,	Hews' Virginia,
Hiley's Eureka,	Horn,
Kittageskee,	Limbertain,
Rawls' Jennet,	Red Astrachan,
Romanite,	Shannon Pippin,
Shockley,	Terry's Winter,
Thornton's Seedling,	Winesap,
Yellow English,	Topp's Favorite.

Of these the largest trees are Red Astrachan and Romanite.

It must not be understood that this list is recommended for general planting. It is only intended to record the fact that these trees have remained sound and healthy under rather trying conditions. Much more is required than the mere fact of a healthy tree to make a profitable market apple.

As a provisional list covering a range of season from early summer to late winter the following may be suggested :

Early Harvest,	Red June,
Red Astrachan,	Horse,
Carter's Blue,	Ben Davis,
Limbertain,	Winesap,
York Imperial,	Yates.
Shockley.	

## DRAWBACKS TO APPLE CULTURE IN ALABAMA.

The two most serious enemies to profitable apple growing so far encountered are the various summer rots that attack the green fruit on the tree, and the green louse or aphid. The first of these can doubtless be held in check in some measure by thorough spraying with Bordeaux Mixture, but they are notoriously hard diseases to fully control. A careful selection of varieties will do much to do away with this trouble, as some kinds are much more resistant than others.

The green aphid is very abundant here, and is a veritable pest, especially on young trees. Persistent attempts have been made during the past three summers to control this insect by spraying with the mechanical mixture of kerosene and water. With the Deming pump, set to throw only ten per cent. of kerosene, great damage is done to the new leaves and young shoots, and though many of the lice are killed enough are always protected by the curled up leaves to quickly restock the trees. It has not been found possible to rid the trees of them by this means. This is in striking contrast to the result with the somewhat similar plum aphid. The plum foliage is not at all injured by applications as strong even as twenty per cent. kerosene; and at this strength a single spraying will entirely clean up the worst infested tree. Other remedies will be tried during the coming season.

The apple scab, so troublesome in most parts of the North and East, is seldom seen here. The codling moth, which causes worms in the fruit, and the borers in the trunks, are both troublesome, but perhaps no more so than in most apple growing regions. Twig blight, which is the same as the fire blight in the pear, often does considerable harm by killing the blossoms and fruit spurs. Apple wood is not as susceptible to this disease as pear wood, and it seldom progresses far enough to threaten the life of the tree. It seems probable that blight rarely passes the winter in apple wood, but that it is brought to the trees afresh every spring from blighting pear trees.



“WHOLE ROOT” vs. “PIECE ROOT” APPLE TREES.

In April, 1897, the Station received from the Department of Agriculture at Washington, Division of Pomology, twenty varieties of Hungarian apples. There were three trees of each kind. One had been grafted on a whole root, one on the upper half of a root, and one on the lower half of a root. The trees were all rather undersized yearlings. They were carefully inspected as planted, but no constant difference could be noted in favor of either method of grafting. If anything, the half root trees had developed a better root system than the whole root trees, but the tops averaged about alike. Notwithstanding the lateness of the season most of the trees lived, but they made very little growth during the first year. The past summer they have mostly made a very good growth. The following measurements, the heights in feet and tenths, the caliper near the ground in inches and tenths, were made on October 31, 1898:

	WHOLE ROOT		TOP HALF ROOT		BOTTOM HALF ROOT	
	Caliper	Height	Caliper	Height	Caliper	Height
Oszi-Vaj .....	.7*	4.0	1.0	6.5	.7	5.3
Sabadka .....	.7	5.3	.....	.....	1.0	5.9
Yakor .....	.4*	3.5	1.0	5.5	1.0	5.0
Sekula .....	.9	4.0	.8	3.7	.9	5.5
Keckemet .....	1.1	5.0	.9	4.7	1.2	6.3
Buda Summer .....	1.1	5.0	1.0	4.5	.....	.....
Pasman .....	.8	4.0	.....	.....	.....	.....
Magyur .....	.3*	3.0	1.1	6.7	1.1	5.7
Eper .....	.5*	4.0	1.0	7.0	1.0	7.0
Metell .....	1.1	7.0	1.3	7.5	1.3	7.5
Hyari Piros .....	1.1	5.7	.....	.....	1.0	5.5
Ponyik .....	1.0	3.5	1.0	3.5	1.0	3.5
Cillagos .....	.5	2.7	.6	3.0	.7	3.7
Saxon Priest .....	.7	3.0	.6	4.0	.5*	3.0
Selymes .....	.9	4.7	.....	.....	.9	4.3
Summer Wafer .....	1.2	6.5	1.1	6.0	1.2	6.7
Noble Savar .....	1.3	8.0	1.1	7.0	.....	.....
Dam .....	.....	.....	.9	3.5	.7	3.0
Metalybi .....	.8	4.0	.....	.....	.....	.....
Battyani .....	1.1	4.0	1.1	5.0	1.	4.0
Average, leaving out those accidentally injured .....	.953	4.829	.966	5.206	.98	5.246
Number of trees dead .....	1	.....	5	.....	4	.....

\* Tree accidentally injured in cultivation.

After throwing out those where the growth has been retarded by some accidental injury the average of the measurements shows a slight advantage both in caliper and height in favor of the trees made on the lower half of the root. The whole root trees average slightly smaller than either of the others. These differences are too slight to be very convincing, but they seem to indicate that the extravagant claims of the advocates of "whole root" trees are not well founded.

#### NORTHERN VS. SOUTHERN GROWN APPLE NURSERY STOCK.

Of the apple trees planted at the Station during January, 1898, part were grown in Missouri, part in Alabama, and part in Georgia. All were first-class in every particular and while planting them the evenly good quality of the stock from the different sources was particularly noted.

On March 11 it was observed that the Missouri grown trees were beginning to leaf out freely, while those from Alabama and Georgia were still entirely dormant. Trees from the Department of Agriculture at Washington, planted the spring before, and those in the old orchard, were also dormant. The young trees all finally started a little before the old ones, but those from Missouri averaged at least ten days earlier than the others. They not only leafed out but started into rapid growth much the earliest, and held the advantage all through the first part of the growing season. Finally the Southern trees caught up with them, and there was little, if any, difference between the lots at the end of the season.

These trees will be watched with interest another spring to see if they still feel the effect of their former Northern environment; but it is altogether probable that they will have become so acclimated as to start no earlier than the others.

## JAPANESE VS. FRENCH PEAR STOCKS FOR THE SOUTH.

Twenty Bartlett pear trees were planted in February, 1896, on poor, gravelly soil. All were from the same nursery and have received the same treatment. Ten of the trees were on Japanese seedling roots, and ten on the usual French seedlings. From the first the trees on Japanese roots have been the most vigorous, and now they average fully twice the size of those on French roots.

## THE STRINGFELLOW METHOD OF SHORT ROOT PRUNING.

The method of pruning away practically all the roots of a young tree before planting it, leaving only short stubs half an inch long or less, seems to be finding an increasing number of advocates. This new method runs so exactly counter to the established practice and teaching of generations of orchardists and nurserymen that conservative people find it difficult to believe the favorable reports of it that they see in print. Having been taught all our lives the necessity for keeping the root system of the young tree as nearly intact as possible when moving it from the nursery to the orchard, it gives one a shock to be told that it would be better to cut it away entirely. The advocates of this system claim that with trees so treated the new roots, springing direct from the crown and from the short stubs, assume a more natural position and strike down more deeply into the soil than when trees are planted in the usual way; and that consequently the tree is more vigorous and longer lived. Second, they point to the undoubted fact that the new plan is much the cheaper. Less care would be required in digging the trees in the nursery; a good share of the top and roots could be cut away

before shipping, thus saving in boxing and freights; and finally the expensive digging of large holes could be dispensed with, and in properly prepared soil the tree, whittled to a neat stub, could be simply shoved into the ground, or planted in a dibble hole like a cutting.

This system of planting originated on the gulf coast of Texas, and has been most extensively practiced there. Being familiar with gulf coast soils and knowing their soft, moist character and great drouth resisting capacity, and their especial adaptability to the growth of all kinds of cuttings, my own opinion was that most of the successes reported with short root pruning were due to the character of the soil, and that it would be likely to fail disastrously on hard and clayey or drouthy land.

In planting some pears and peaches during February, 1896, it was determined to try the experiment. In two rows each of pears and peaches, running twenty-four trees to the row, half the trees were root pruned, leaving stubs less than half an inch long. The others were planted in the usual way; alternating three of the root pruned and three not root pruned trees. The peaches were Lady Ingold, Hale's Early, Alexander, Elberta, Tillotson, Early Crawford, Mountain Rose, and Stump. The pears were Bartlett on French roots, Bartlett on Japanese roots, and Keiffer on Japanese roots. All were well grown one year olds. The soil was a hard, gravelly hillside, with stiff clay sub-soil, and so poor and drouthy that it only made five bushels of corn to the acre the previous season. No more trying condition could be conceived for the test, and it was with many misgivings that the carefully whittled stubs, looking like inverted walking canes, were planted in such uncongenial surroundings. All, of course, were fertilized and cultivated alike. To add to the severity of the test a drouth set in early in April, with unseasonable heat, lasting till the first week in June.

On April 15 it was noted that the root pruned trees were starting much more feebly and slowly than the others, but by April 27 they had fully caught up, and from that day to this the closest inspection has failed to detect any differ-

ence between them. One peach tree from the pruned and one from the unpruned lots have died. The pears are a perfect stand. Certainly so far no increased vigor has been observed in the root pruned trees; but on the other hand no disadvantage can be detected, and the conditions could hardly have been more severe. What the final difference will be, if any, on the health and longevity of the trees, of course, remains to be seen.

#### THE BLOOMING SEASON OF PLUMS.

The flowers of many varieties of plums are now known to be infertile to their own pollen. In order to produce full crops it is necessary that the flowers receive pollen from some other variety. To insure this cross pollination it is necessary to mingle different varieties in the orchard and not plant large blocks of any one kind. Since different varieties of plums have slightly different blooming seasons it becomes necessary to carefully note the blooming habit of each variety, in order to so mate the kinds that those standing near each other in the orchard shall bloom at the same season.

At the South the difference in the blooming season of different kinds is much greater than at the North. The proper mating of varieties is consequently even more important here than there; nor can we be guided by Northern experience, since the sequence of blooming is often quite different here.\*

The following notes on the blooming of plums on the Station grounds are published as a contribution to this important subject.

In 1896 the blooming season was rather late. On March 2 some varieties were almost in bloom, but none were quite open.

March 9:

Abundance—buds separated, not opening.

Babcock—just opening.

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\* For a full discussion of this subject, with tables giving the blooming season of the different varieties at the North, see Bulletin 53 of the Vermont Experiment Station, by F. A. Waugh.

Bailey's Japan—buds white, not open.

Berckmans—just opening.

Blood Plum—full bloom.

Burbank—nearly full bloom.

Chabot—just opening.

Excelsior—nearly full bloom.

Golden Beauty—almost dormant.

Kelsey—full bloom.

Kerr—buds not open.

Mariana—just opening.

Ogon—dormant.

Prunus Pissardi—nearly full bloom.

Red June—buds hardly separated.

Satsuma—full bloom.

Wild Goose—just opening.

Crawford Peach—just opening.

In 1897 the blooming season was nearly two weeks earlier.

No notes were taken, but the sequence was nearly as in 1896.

1898. February 14—Blood plum No. 3 (of Berckmans), full bloom.

February 26—Wild Chickasaw plums beginning to bloom.

March 11—Wild Chickasaw plums past full bloom.

Table showing blooming of Plums in 1898.

VARIETIES	MARCH 11	MARCH 17 *	MARCH 21
Yellow Fleshed Botan (Berckmans)	Buds breaking	First blooms	Nearly full bloom
Burbank (Berckmans)	Showing white	Full bloom	Mostly fallen, leaves half grown
Kelsey	Half flowers open	Mostly fallen	Fruit setting, leaves half grown
Maru	Dormant	Dormant	Buds swelling
Berckmans	Showing white	Half flowers open	Full bloom
Blood No. 3	Out of bloom, leaves one inch long	Leaves half grown	New shoots three inches long
Blood No. 4	Full bloom	Flowers fallen	Fruit size of peas
Munson	Showing white	Nearly full bloom	Past full, falling
Chabot (G. L. Tabor)	Showing white, a few open	Full bloom	Past full, falling
Long Fruited	Dormant	Dormant	Buds swelling
Babcock	Showing white	Nearly full bloom	Past full, falling
Orient (Stark Bros.)	Buds breaking	Full bloom	Past full
Berger	Nearly dormant	First blooms	Booming, some buds still dormant
Gold	Buds breaking	Full bloom	Mostly fallen
Red June	Dormant	First blooms	Blooming, many buds dormant
Red Nagate (G. L. Tabor)	Dormant	Nearly dormant	Blooming, many buds dormant
Botan	First blooms	Nearly full bloom	Full bloom
Normand	Showing white	Half full bloom	Past full, falling
Bailey's Japan	First blooms	Full bloom	Mostly fallen
Wickson	Nearly full bloom	Mostly fallen	All fallen, fruit setting
Burbank	First blooms	Full bloom	Mostly fallen
Excelsior	Past full bloom	Fallen	Fruit size of peas
Abundance	Buds breaking	First blooms	Nearly full bloom
Willard	Dormant	Dormant	Entirely dormant
Golden Beauty	Nearly dormant	Buds breaking	Showing white
Yellow Japan	First blooms	Half full bloom	Mostly fallen
Newton (T. V. Munson)	Dormant	Dormant	Buds separating
Rockford	Buds breaking	Half full bloom	Past full
Pres. Wilder	Nearly dormant	Showing white	First bloom
Satsuma	Full bloom	Falling	Fruit size peas
Hammer	Dormant	Dormant	Nearly dormant
Wayland	Buds breaking	Buds breaking	First blooms
Lone Star	Full bloom	Fallen	Fruit setting
Chas. Downing	Dormant	Buds breaking	Buds white
Transparent	Showing white	Full bloom	All fallen, setting
Wild Goose	Buds breaking	First blooms	Full bloom
Weaver	Dormant	Nearly dormant	Buds white
Wyant	Dormant	Dormant	Entirely dormant
Emerson	Full bloom	Fallen	Fruit setting
Wooten	Buds breaking	First blooms	Full bloom
Yosobe	Dormant	Dormant	Entirely dormant
Milton	Buds breaking	Buds white	Full bloom
Hawkeye	Dormant	Dormant	Entirely dormant
Botan	Buds breaking	First blooms	Full bloom
Hattankio	First blooms	Full bloom	Past full
Whittaker	Buds breaking	Buds white	Full bloom

\*Thermometer 80°— Everything rushing.

March 21. Peaches now in fullest bloom. Late blooming kinds like Alexander beginning to open.

These kinds may be roughly classified as to time of blooming in the neighborhood of Auburn about as follows, each group comprising those blooming near enough together in ordinary seasons to affect cross pollination:

**EARLIEST BLOOMER**—Blood plum No. 3.

**VERY EARLY BLOOMERS**—Blood plum No. 4, Kelsey, Satsuma, Wild Chickasaw, Wickson, Excelsior, Emerson, Prunus Pissardi, Lone Star.

Both these groups bloom before peaches and are liable to be killed by spring freezes.

**EARLY BLOOMERS**—Burbank, Mariana, Berckmans, Chabot, Botan, Bailey's Japan, Yellow Japan, Hattankio, and Babcock. These bloom about with the early blooming peaches.

**MEDIUM BLOOMERS**—Yellow Fleshed Botan, Munson, Babcock, Orient, Berger, Gold, Red June, Normand, Abundance, Rockford, Transparent, Wild Goose, Wooten, Botan, Kerr. These bloom with the later peaches and are comparatively safe from frost.

**LATE BLOOMERS**—Maru, Long Fruited, Red Nagate, Golden Beauty, Newton, President Wilder, Wayland, Chas. Downing, Weaver, Milton, Whittaker.

**VERY LATE BLOOMERS**—Ogon, Willard, Hammer, Wyant, Yosobe, and Hawkeye.

A number of the names given in the above lists are usually considered synonyms. They are given just as the trees were sent out by four prominent nurseries. No attempt is made at this time to untangle the nomenclature.

#### SPRAYING WITH WHITEWASH TO RETARD BLOOMING.

The success reported by the Missouri Experiment Station (Bull. 38) in retarding the blooming of peaches in the spring by keeping the trees whitened by spraying with whitewash, suggested the trial of a like experiment here.

On February 2, 1898, every other tree in one row each of peaches, plums and pears was sprayed with whitewash. A rain followed within a few days that washed off part of the



whitewash, so about a week later the same trees were sprayed again. This second spraying left them quite thoroughly whitened. The trees at this time were still entirely dormant. On March 11, these trees were carefully examined, but it was impossible then or at any later time to detect any difference between the sprayed and the unsprayed trees. It is true that the whitewash had been partly washed off by rains subsequent to the second spraying, but the sprayed trees were still conspicuously whitened and could be distinguished at a considerable distance. This experiment is not considered conclusive, but the result is recorded for what it may be worth.

#### JAPANESE PERSIMMONS.

This comparatively new fruit seems to be gradually winning its way to popular favor. Its many good qualities suggest that it should be much more widely planted both for home use and for market. It grows readily in all parts of Alabama and is a very abundant and constant bearer. It starts into growth quite early in the spring so that the wood is occasionally injured by late freezes, but the flowers, coming as they do on the new wood of this season's growth, are never killed by cold. Trees begin bearing very young, often the first year after planting. They are of dwarfish habit, and may be planted as close as ten or twelve feet apart each way. They should receive liberal fertilizing and good cultivation to enable them to carry their heavy annual crops.

Considerable confusion exists as to the names of varieties of Japanese persimmons. The trees on the Station grounds were mostly procured from G. L. Tabor, of Glen St. Mary Fla., and his names are used in the following notes. Some of the trees have borne three consecutive crops, the oldest were planted in 1895.

TABOR'S No. 23. Fruited in 1897 and 1898. Productive, early, fruit small to medium, irregularly flattened to nearly globular, point flat or sunken, dark orange red, flesh dotted

and streaked with black or entirely yellow in seedless specimens, sweet, fine flavor, without astringency even when still hard, cracks and rots in wet weather. Tree resembles Zingi; a strong grower.

**TANE NASHE.** Fruited in 1897 and 1898. Tree feeble, slow grower, not very productive, fruit one of the finest, large, sub-conic, pointed, yellowish red, sometimes blotched with black, flesh yellow, usually seedless; astringent till fully ripe, then sweet, melting, good. Medium season. So far it decidedly lacks in vigor and productiveness here.

**YEDDO ICHI.** Fruited in 1896, 1897 and 1898. Very productive, fruit medium, flattened to depressed globular, smooth, yellowish red with white bloom, flesh yellow, seedless, astringent till nearly soft, then sweet, good. Season medium to late. Much like Tane Nashe in tree and fruit, scarcely so large but much more productive and reliable; one of the best we have tested; leaves fall rather early. Tabor classes this with the dark fleshed kinds, but with us it has been uniformly yellow and seedless.

**OKAME.** Fruited in 1896, 1897 and 1898. Very productive, fruit large, flattened and somewhat angled, deep orange red with some bloom, flesh yellow, mostly seedless, astringent till soft, late; tree stronger grower and leaves smaller and hanging longer than in Yeddo Ichi and Tane Nashe. The best market variety we have fruited.

**COSTATA.** Fruited in 1896, 1897 and 1898. Fairly productive, fruit large, sub-conic, pointed, somewhat angled, dark orange with bloom, flesh yellow, seedless, astringent till soft. Tree a good grower. A good market variety, but scarcely equal to Okame or Yeddo Ichi.

**TABOR'S NO. 129.** Fruited in 1898 only. Very productive, fruit small, somewhat acorn shaped, pointed, dark yellowish red with glandular sub-pellucid dots, some bloom; flesh dark brown, seedy, very crisp, juicy and high flavored, not at all astringent, can be eaten while quite hard, one of the best in quality, early, tree a good grower.

**HYAKUME.** Fruited in 1898. Fairly productive, fruits large, subovoid, flesh somewhat blackened. A showy kind.

**YEMON.** Fruited in 1896, 1897 and 1898. Productive, fruits large, smooth, slightly flattened, light yellow, flesh yellow or dark, slightly astringent till soft, early, leaves fall early. A valuable kind.

**ZINGI.** Fruited in 1897 and 1898. Productive, fruit small, nearly globular, dark red, flesh dark, nearly black, slightly astringent till nearly soft, crisp, good quality, early, tree a strong grower with foliage hanging late.

The dark fleshed early kinds like Zingi and Tabor's No. 23 and No. 129 are badly wasted by the attacks of various fruit eating insects, and they seem somewhat inclined to crack and rot in wet weather. It is doubtful if they will prove as profitable for market as the later yellow fleshed kinds. They have, however, a rather more sprightly flavor and will be relished by people who find the others a little too cloying.

Our present experience would indicate Okame, Yeddo Ichi, Costata and Yemon as the best market kinds, and valued about in the order named.

