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FRUITS AND FRUIT TREES.

POINTS FOR PRACTICAL TREE PLANTERS,

WITH NOTES ON A FEW VARIETIES

Worthy of Extended Culture.

An Effort to Win Recognition for the Nurseryman's Art, as well in Methods of PROPAGATION, as in the SELECTION of SORTS.

"This is an art
Which does mend nature, change it rather, but
The art itself is nature."—*Winter's Tale.*

Third Edition.

LOUISIANA, MO.:
MISSOURI NURSERY CO.
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From photo. of **EARLY SWEETHEART** grown on original tree, in the Summer 1890; tree over *forty* years old.

EARLY SWEETHEART—This beautiful, fair and delicious apple is the choicest dessert early variety known to us. We believe there is now no apple in cultivation its equal in either size or *quality*—earliness considered. The old tree, over forty years of age, in the orchard of Mr. Griffith, of this county, is vigorous and bears well; Mr. G. says, "it always bears if any apple does." When visiting the orchard the past Summer, Mr. G. called attention to the difference between this and Early Harvest; the former, large, smooth and perfect, without any trace of scab, while E'y Harvest on

much younger trees, were small, *very scabby*, unsightly for market and hardly touched by the family—the Early Sweetheart "we all like so much better." Tree, thrifty, very vigorous, *long-lived*, *productive*. Fruit large to very large, roundish oblate, regular; very smooth, waxy yellow; dots large, white, scattered. Flesh, light yellow, fine grained, tender, melting and juicy. Flavor, aromatic, almost sweet. Quality, *best early apple*. Use, dessert, and near market. Season, with E'y Harvest.

See "WHOLE ROOT VS. PIECE-ROOT TREES." etc.

MO. STATE HORT. SOCIETY; extracts:

Mr. Kirchgraber: Would plant Clayton largely. It produces to perfection; bears young; keeps long.

C. C. Bell (apple shipper): Bought some Claytons last Fall. Like them so well, would pay extra price for them; would pay more for Clayton than for Ben Davis. Have just received a letter from Tex., saying Clayton sent there were very fine.

Sec'y Goodman: The tree of Shackleford is more like Willow Twig than Ben Davis, but the fruit is much like Ben Davis, fully as large or little larger.

C. C. Bell: Mammoth Black Twig grows in North Ark.; not equal to Mo. apples; I like the fruit but prefer Clayton as it sells well and is a longer keeper.

Pres't Evans: I have kept Mammoth Black Twig until Spring without any loss.

Mr. Gilbert: Ark. Black, it is said, has been kept, with ordinary care, until May and June, in North Ark.

Pres't Evans: A buyer and shipper from Ark. told me it was one of the best and most profitable they grow.

Mr. Thompson: It was thought Gano would supersede Ben Davis.

Pres't Evans: How much better is Gano than Ben Davis?

Mr. Gano: Very little difference in quality. Most difference is in color.

Vice-Pres't Murray: Once I thought I could tell the difference by taste; by trying, got them mixed and now claim cannot tell the difference until see them.

Sec'y Goodman: The Gano is more beautiful than Ben Davis. York Imperial is growing in favor, good bearer, good keeper; gaining in favor wherever grown; worthy of attention.

Prof. Clark (Ag'l College): York Imperial is one of the best keepers we had in 20 varieties.

Sec'y Goodman: The Minkler and Little Romanite family are the best apples we have for S. W. Mo. They are the best keepers, and if larger would be very valuable. [In the Romanite family are included Romanite (*Gilpin*, *Small Romanite*, *Carthouse*), Minkler, Lankford, Nero, Scarlet Cranberry.]

Mr. Wild: Minkler is not so profitable as Little Romanite. Lankford is better than Minkler.

Mr. Nelson: For market purposes, Ben Davis, first, M. Blush for Northern shipments; next, Rome Beauty, Jonathan. Clayton is fine dessert apple. Tree strong, upright grower, good bearer.

Vice-Pres't Murray: Would plant for N. W. Mo., Winesap in place of Rome Beauty. Mam. Black Twig doing well. Jonathan does well if planted on rich soil and well cultivated. E'y Pennoek, good summer apple.

Mr. Gilbert: Two trees E'y Pennoek and one Winesap yielded last year 137 bushels.

Mr. Durkes: Would pick Jonathan early.

Question from Green Co.: Would you advise planting Clayton for market?

Mr. Kirchgraber, of Green Co.: Would plant it.

Mr. Bell (apple shipper) of Cooper Co.: Better market apple than Ben Davis. Prolific bearer.

Sec'y Goodman: Minkler and its seedlings are the best apples we can grow in South Mo. Ben Davis is producing a family. Watch every good seedling. We are going to get some of the best apples known. Babbitt is destined to be a great western apple; hope it will equal the Baldwin in the east.

Apples recommended by the society [in 1886]: Ben Davis, Benoni, Clayton, Duchess, E'y Harvest, Gano, Grimes' Golden, Huntsman, Janeton, Jonathan, Lowell, M. Blush, Mother, Pa. Red Streak, Rambo, Red Astrachan, Rome Beauty, Sops of Wine, Stark, Wealthy, Willow Twig, Wine Sap, York Imperial.

Mr. Blanchard: Chenango Strawberry is excellent. Others present endorsed Mr. Blanchard's opinion.

Vice-Pres't Murray and others endorsed York Imperial as an excellent variety.

Pres't Evans reported Gano as holding its own and a most excellent variety.

Mr. Durand: Every fruit grower should evaporate. Last year I evaporated 8,000 lbs. of apples—culls, &c., and realized \$800. Ben Davis is best for evaporating.

Mr. Laughlin: **Will it pay** to raise apples for market in Mo.? First let us inquire whether it has paid or not in the past. Let facts—bushels, barrels and dollars—be submitted. The importance of a correct answer is immense. The right answer may mean to many a man a **life success**; the wrong one may write all over his earthly span: **FAILURE!** Years ago it was too late to harbor doubts as to the productiveness, size, color or quality of Mo. apples. I give Mr. Harvey's statement:

Orchard planted in 1876; about 500 trees: 250 Ben Davis, 50 Willow Twig, 65 Wine Sap, 48 Romanite, 20 Jonathan, 10 Bellflower, 18 Domine.

Cultivates in corn for several years, then in clover. Usually pastures with hogs during summer. Is not a severe pruner. Tops of trees begin near the ground, and in case of overbearing the ends of the lower limbs rest on the ground, which supports them. Apples sold: in 1881, \$169; in 1882, \$852; in 1883, \$1,628; in 1884, \$1,857; in 1885, \$175; in 1886, \$2,268; in 1887, \$1,204; in 1888, \$1,110.

[These reports made in 1888; in 1889 Mo. had a good crop of apples, and in 1890 more apples than all the other states in the Union put together, the crop of orchards selling as high as \$60,000.]

I also give Vice-Pres't Murray's statement:

"Eight acres of orchard planted 17 years ago each way; Ben Davis, Wine Sap and Jonathan. O planted in corn for first 5 years, then clover, wee hogs for 3 years. Last 9 years have given clean cotton. The showing of my books may be briefly told the last 12 years, average per acre per year has \$64.32. If entire orchard had been Ben Davis, a would at least have been \$100 per acre. My figu for **net proceeds**, after paying all expenses. A large family used a great many apples and we n good deal of cider and fed the refuse to stock; used are not counted. My orchard now is in good dition. Planted on land that had been cultivat usual crops and style for 24 years. Prune exact Mr. Harvey—low heads, careful timely cutting.

I am able only to state general facts but mostly personal knowledge, about orchard of Mr. Davis Co.: Mr. Davis has a large orchard, say 1200 trees, ages. His practice has been corn for first few year clover, weeds and hogs. He is quite particular as time of year when his hogs shall or shall not be: his trees, and now has no damage done by them much good. For some years, his only cultivation soil was hogs, his only pruning essentially the sa that of Mr. Harvey and of Mr. Murray. Profit close alongside of Mr. Murray's and Mr. Harvey's eral varieties besides Ben Davis and Wine Sap done notably well for Mr. Davis. The statement f Harvey challenges our admiration for its deta arrangement. In our region, where he is well k its accuracy goes without question. Mr. Murray's ard joins my own place and has been before my e all times for 8 years. Mr. Davis lives 15 miles awa I have been often among his trees during past 7 and have constantly heard of their good health an crops. No two of these orchards have been treati cially alike, but they all teach us thorough culti While the experience of Mr. Harvey and Mr. Davi strongly to clover and hogs used with care and judg alternated with clean cultivation.

These orchards furnish instances for answeri question, **Will it pay?** When we ask the sam tion about any other business, we do not g answer to the man who, through ignorance, lazir incompetence, has failed, but to the wide awa who has pushed the business and succeeded, or if failed, has done so because it would not pay. (land, of trees, of cultivation, of marketing, abi losses—set the figures beside each other and see have paid the best per cent, r profit, these thre ards or the three most successful farms in your during the same period of years.

[The great importance of at least occasional c tion, was never made so apparent as here in 189 C. W. Pharr, an experienced apple buyer tells us this and adjoining counties, orchards that had be half-cultivated, bore good crops, selling at high while those neglected and grown up in timothy, i and blue grass, produced next to nothing.]

The following was written us by the late Avery, one of the most successful Iowa Horticult

"BURLINGTON, Ia., March 19,
"Stark Bros.: As to varieties to plant in Colc not feel competent to advise men with so much an experience as Stark Bros., but I will name varieti have passed the ordeal and proven most worthy i iness of tree and quality of fruit here in Ia.; and c only would I plant largely to insure success. l Stem is a most hardy tree here. Osceola is the profitable so far with me: all my old trees still while most other kinds are killed or nearly so. (Golden about three-quarters hardy and, next to C and Roman Stem, most profitable, if the fruit is P JUST AS SOON AS IT GETS ITS SIZE and, after sw is put in a dry cool cellar; then no apple superior quality or for profit, but if left on the trees as mos winter apples, they will fall off and be classed amc apples. Treated as above, they keep well into : The quality of Grimes Golden and the bearing of t is such that I would, if a young man, plant it and t others named largely; and perhaps one or two hi ored apples besides for winter, confident with col age, of controlling the price for such high-quality For early, Yel. Transparent, Red June, Red Astr Lowell (I would plant largely), and M. Blush. Of Bezi de la Motte. Of course would try others like Doyenne and Bartlett. Of peaches, Wager is th hardy here of all tried during past 52 years; both a tree and a good peach. Of plums, Maquoketa, W Poole's Pride are most promising; the latter is ve hardy tree, heavy bearer, good size and quality. truly.

HENRY AVE
Mr. Avery writes later: "Am under promise dispose of any cions or buds of Poole's. It has 1

en disseminated, and so far has only been fruited here id, for a number of years, in Union Co., Ill., where I as first impressed with its value."

L. A. Goodman, Jackson Co., Mo. (Sec. Mo. State ort. Soc.), before Mo. Valley Hort. Soc.: Much de nds on selection of proper location. Recently while Louisiana, I had the pleasure of visiting the orchards the Messrs. Stark. They have selected a certain elation (strong clay soil) for pears, and I am satisfied they ve made a wise selection, as the result attained is lendible. In fact they have the finest pears I have ever en. In a letter to us Mr. G. says: For the market hard I know of nothing that will take the place of no. Ben Davis, Wine Sap, Clayton, York Imperial and illow Twig.

From Judge Wellhouse, who owns, perhaps, the most ifitable and largest apple orchard in America—over acres: "LEAVENWORTH CO., Kan., March 7, 1888.

"Friend Stark: Up to this date we have made more ney out of Mo. Pippin than any other variety, but nk in the end Ben Davis will take the lead. Mo. Pip- is remarkable for quick profits; our 8-yr.-old Ben vis trees have given us **one**, and **Mo. Pippin**, ne age, **three paying** crops. Our next planting be half Ben Davis, fourth Mo. Pippin, eighth athan, eighth York Imperial. We are still plant- 32 ft. apart *east* and *west* and 16 ft. *north* and *h*, head low and do but little pruning. Mo. Pippin is tender with us. We cultivate in corn 4 or 5 years, I seed to clover. We are not planting Wine Sap any e; it disappoints us every year; too small for western kets. Yours truly, FRED. WELLHOUSE."

J. A. Bayles, Jackson Co., Mo.: I still adhere to Davis as most profitable; I have 35 acres more to t, and then I will be through; this will make me 475 3 in orchard, over 400 acres Ben Davis. With us ow Twig bears only alternate years. Mo. Pippin gets mall as the trees grow old; Clayton is a good apple, York Imperial; Jonathan has great merits where it hang on the trees till Oct. 1; Huntsman is growing 1 in favor: it is the best yellow apple for market.

SPRAYING.—Col. North, of Greene Co., Ill., was y here, in company with Mr. Brown, the Rose er. Col. N. is planting another very large orchard ill continue until he has 200 acres. He recently the fruit of his orchard at \$60 per acre on the trees, apers spoke about this being a big thing, and so it -for the buyer. The buyer graded the apples, Ben s, into extras, No. 1 and No. 2, the remainder used der, &c. The extras sold for \$10 per barrel.

Why was it that Col. North's apples sold so high? y because, though he is not a professional fruit er, yet he is a business man and looks at things from iness standpoint. He saw that orchardists else e got great results from spraying, and had his trees ed twice at a cost of 10c. per tree. He is a Banker, ist now he is banking more on orchards than any- else, for he is figuring on buying still another 160 which he will plant in orchard.

LI. STATE HORT. SOCIETY; extracts: ples for Southern Ill.: *Early Summer*—Benoni, me, E'y Harvest. *Late Summer*—Chenango Straw- Lowell, M. Blush. *Fall*—Jonathan, Mother, s' Golden. *Winter*—Ben Davis, Wine Sap, Mink- me Beauty. *For trial*—Yel. Transparent, Pickett, r, Mam. Black Twig, and others.

r Central Ill.: *Summer*—Red Astrachan, Benoni, ss; Sops Wine and Golden Sweet also do well. M. Blush, Wealthy, Ramsdell Sweet. *Early Win-* nathan, Grimes' Golden. *Late Winter*—Ben Davis, Twig, Minkler.

r Northern Ill.: *Summer*—Benoni, Duchess. M. Blush, Twenty Oz., Famense, Wealthy. *Win-* nathan, Ben Davis, Willow Twig, Roman Stem, r.

tral Ill. exhibits for family use—Northern Spy, r, Rome Beauty, Jonathan and Wythe. Premium d Jonathan. for the reason it is higher in quality, e better adapted to the various localities than the orts. Northern Spy not worthy of even third n, for the reason that in this short life and fast oo slow coming into bearing.

Webster: Yel. Transparent (Grand Sultan) is mous bearer, medium to large, beautiful clear nost white, very smooth and handsome. Mam. Twig promises to be good for Southern Ill. We number of apples, not generally known, that bid e successful rivals of some older varieties, among ickett, Ingram, Shackleford and York Imperial. s a fine orchard tree.

mium for best new seedling: committee report, s, with scarcely an exception all good enough to mended; size, color, smoothness, quality, &c., ed, premium awarded to Coffelt Beauty. Pre- r best new variety awarded to Nero, an apple of e and color, good quality. Second premium, ord, large size, good color, smooth, second qual- rd premium, Pickett, large, dull red, second Committee report apples on exhibition from

Ky., Ark. and Mo. that are superior to sorts grown in Ill.

Mr. Morris: Have visited 400 orchards in Cham- paign and surrounding counties. I find the healthiest trees are those that have low heads—low enough to shade the body of the tree in the winter—and those grown on high ground and hillsides. M. Blush and some others on a hillside, have stood 35 years and are still sound and robust. Willow Twig is the hardiest and most abundant bearer; a good keeper; sells well and in March is not bad to take. Ben Davis is a short lived tree, second class, but first class yielder and seller; trees planted 8 years ago as *grafts* will make 3 bushels to the tree this season. Minkler is a sturdy tree, an even bearer, a rich apple and will thrive on low land. Sops of Wine is also an exceedingly hardy tree. M. Blush, on high ground, is a long lived tree, a great bearer; good market apple.

Mr. Gaston: The apple and strawberry are the two fruits of greatest commercial value grown in Ill. Both can be grown on the same land. We will take, for ex- ampl-, one acre. It can be multiplied by ten, fifty or a hundred, to suit. Plant first strawberries, putting rows 4 ft. apart, then set every eighth row to apple trees, putting trees 16 ft. apart in the rows, about 80 trees per acre. After 4 years take one ring of bark one inch wide from stem of every other apple tree sometime in the month of June. This will check growth and bring trees into bear- ing; serve the same way each year, and in 10 or 15 years they will have exhausted their strength and should be cut away, when the other half of the trees will require all the land, making them 32 ft. apart each way. [By planting every other tree **Mo. Pippin** it will have born itself to death *without ringing* by the time the other trees need the land; or plant small growing sorts like Yel. Transparent, Tetofsky, Whitney Crab, &c., which will never spread out large enough to interfere.]

Mr. Minkler: My advice is to go slow on Russian Apples. Beware, gentlemen, it is not cold alone that kills apple trees. The most abused thing on the farm is the orchard. It is horn pruned, then two crops of hay taken off the land, then pastured. The result is the orchard is starved to death, yet a full crop is expected. Plant your orchard and take care of it and of the soil.

Mr. Whitney: I hauled manure to my orchard ground; found it a great benefit; consider straw mulch good. Have tried it around some trees and left ground bare under others. Result, a good crop of apples where trees were mulched, none where not. To keep off rabbits and in- sects, I wash my trees every fall with a solution made of half a bushel stone lime, 1 lb. glue, 1 lb. copperas— enough for 200 orchard trees.

Mr. Gregg: What apples should we plant for family use—say 3 each, for summer, fall and winter.

Mr. Leeper: Red Astrachan, Am. Summer Pear- main, E'y Harvest, Rambo, Milam, Ben Davis, Willow Twig, Jonathan.

Sec'y Hammond: Duchess, Red Astrachan, Sops Wine, Wealthy, M. Blush, Porter, Ben Davis, Willow Twig, Jonathan.

Mr. Johnson: Substitute Benoni for Porter and Grimes Golden for Willow Twig, and I like the list better.

Mr. Emerson praised Monte Bello, a local apple; planted 12 years ago, it proves a good grower, upright and handsome. Fruit clusters all along the branches; very fine in appearance, *best* in quality and profuse bearer; begins ripening Sept. 1st and season lasts until early winter. Every family should have Monte Bello.

Warsaw Hort. Society visited Mr. Emerson's orchard; his way of tree planting is novel and a new departure. He takes a 2-horse plow, opens a furrow each way, and with sub-soil plow deepens these checks, at the bottom of which holes are then dug and the trees planted the depth they grew in nursery; next to the trees soil is plowed back 10 or 12 inches *more*. His orchard, now 7 years old, has never needed replanting, has borne *three* full crops of fine fruit, and is to-day one of the thriftiest, healthiest orchards in Ill.—a success on Mr. E.'s loca- tion, and well worth the consideration of tree planters.

Mr. Emerson: No marks from pruning are ever visible on my trees. I prune only in growing season of spring. [Don't prune **too** early; for after buds are burst until leaf is full grown is a **fatal** time; trees bleed and become blackhearted—June is best for *summer* pruning. Feb. and Mar., *before* buds swell, is *best* for main pruning.] I never cut a large limb; promptness makes it unnecessary. To cut a large limb is to cripple your tree for life. My trees are well cared for, and have nicely balanced heads, with side branches along a strong *center* stock; thus trained they never split at the crotches.

Mr. Rockwell: How many members, if but 25 years old, would plant commercial orchards?

Mr. Hammond and a number of others would.

Mr. Rockwell: Then, what would you plant?

Mr. Hammond: Ben Davis, principally, unless I found something of more profit.

Mr. Rockwell: Will the demand justify planting?

Mr. Hammond: Yes; always. There are just now many new and some promising apples being tested.

Sec'y Johnson: Horticulture is an actual necessity, and demands our very greatest efforts.

Mr. Dunlap: On a trip to Wis. found one of the most promising new apples there is McMahon White; it is planted largely. The original tree of Gibb Crab still stands in Nursery row; it was selected from a large number of seedlings; fine quality, ripens late, very superior for cider and canning, and with a few peaches to flavor, *cannot be told from Peaches*. For early Summer, Yel. Transparent may prove valuable to us in Ill., but for later our old sorts are far ahead of any Russians.

Mr. Gaston: Salome fully meets my expectations; quality good and tree hardy, a long keeper.

Mr. Shank: Some apples are hard to grow when taken from Nurseries, but once established, are all right. I know this to be the case with Willow Twig.

Mr. Crane reports, apples worthy of further trial: Mother, excellent quality. Mammoth Black Twig, tree rapid grower, quality much like Wine Sap, but larger. Stump, new; has fruited 3 years, very large, red striped, excellent quality, ripe in Aug., a perfect beauty.

Mr. Dunlap: Many farmers are deterred from planting fruits through ignorance of culture and an idea that it is beneath their dignity. While there is much to learn, it is easy to make a success of fruit by ordinary culture, a knowledge of which every farmer possesses.

Mr. Piper: Have been experimenting growing apples for more than 36 years. I root-grafted with fair success a number of years, until 1885, when I lost many root-grafted trees by freezing. Salome apples here on exhibition are as fine as can be found anywhere, whether you go to Mich., or N. Y. If I had 10,000 barrels of such apples as Salome, there would be a ready sale. It is the best new apple I have; will keep a whole year. Ready for use in Nov. but a keeper of first quality. Of 32 set, would recommend for *early*: Red Astrachan, Excelsior, Yel. Transparent, Tetofsky, Sweet June. *Second early*: Duchess, Gravenstein and Strawberry. *Fall*: Haas, M. Blush; *Jefferis* is the best of all Fall apples, as good as a *Pear*. *Winter*: Salome, Willow Twig, Grimes Golden, Tolman Sweet, Roman Stem and Minkler.

Mr. Riell showed and passed around specimens of Jefferis now in season. He says this is the best late Summer apple we have, mild sub-acid, very agreeable to taste, always fair size and perfect shape and always bears full; a splendid apple for market or family use.

Mr. Minkler: Five million fruit trees are starved to death. No varieties will stand all abuses and starvation—Blue Grass sod, horn pruning, cattle browsing, and the gnawings of calves, sheep, rabbits and mice, and bear a heavy crop every year. What is all this hue and cry about? I say starvation. You have taken all you could from the orchard for 30 years and made no returns whatever. Have not even applied the Scriptural injunction to "dig about and dung it." You ask the cause of trees dying. I repeat it, starvation. You say they winter-kill. I say they are starved to death. When I go through the orchard the trees cry, "Blue Grass, Blue Grass;" but where I manured heavily last year the apples were beautiful and fair.

Mr. Goodrich: Where are we to get fertilizers?

Mr. Minkler: Sow your orchard in clover, and when you have a good strong growth, plow it under; then seed to Buckwheat and plow that under.

Question: What apples best to plant?

Answer: Benoni, E'y Harvest, Duchess, Twenty Oz., M. Blush, Jonathan, Grimes Golden, Minkler and Ben Davis. The latter, though always opposed by some, is always a good seller and profitable apple.

Mr. Fry: Southern Ill. is the most favored region for growing fine keeping and shipping Winter apples. We are asked if there is not danger of overdoing the apple business. We say most emphatically no. There is no danger of ever over-stocking the market with select *Winter* apples. It is a well known fact that the old orchards of N. Y. are failing, and in a few years will be gone entirely, and the new ones are not as good bearers as the old ones, the fruit inferior. Export trade is increasing; in the foreign market King sold at \$4.85 and Ben Davis at \$4.75 in Liverpool, Nov., 1889.

Mr. Hutchison: My orchard contains Ben Davis, Jonathan, Willow Twig, Gilpin, Rome Beauty, Wine Sap, and about 20 sorts planted because they did well in Ohio. The Ohio sorts are all worthless here except M. Blush and Wine Sap. We need a list of *discarded* sorts. Ben Davis is by far our best commercial apple. M. Blush for early Fall; later, the best is Jonathan. These three are all I would like to plant largely. Rome Beauty is fine, but a shy bearer here. We want at least one other Winter apple. Our success depends upon planting large orchards of 3 or 4 sorts. Those who planted whole orchards of Ben Davis have succeeded best.

Ben Davis, it was unanimously agreed, is the most reliable and profitable. As to next best, no agreement was reached. Some favored Jonathan, others Rome Beauty or Willow Twig. Minkler had many firm friends, not only for its appearance, but extra fine, rich flavor.

"THE TOUCH OF A VANISHED HAND."

To the good judgment and wisdom of our honored and lamented father, the late Wm. Stark (deceased 1880) more than to all others is due the success of these nurseries. The broad and firm foundation long ago laid, was chiefly of his building, he having succeeded his father while yet but a mere boy of 14 years. For more than 40 years he successfully labored to advance horticulture in this, his native State. His cherished wish was to place his sons in the business he had always loved, hoping to have it all established and ready for them when they should be old enough—we are glad his wish that we should be nurserymen has been fulfilled, if not exactly in the way he had planned. Man proposes but God disposes. First came the panic of '73—and misfortune. Then too much he indulged his fond pursuit, and in his almost successful efforts to dispel the clouds that lowered upon our house, sacrificed first health, then life itself.—

"Oh what a noble heart was here undone,
When Science's self destroyed her favorite son!"

We cannot hope to render any adequate tribute to his revered memory—we do what we can. Perhaps we cannot say anything so well or that would be half so expressive as the brief tribute paid by the friend who had known him long and well—Prest J. C. Evans: "William Stark was one of the best men I ever knew."

As to the dark times—not one of us now regrets or undervalues the experiences through which we have passed; aye, rather we know only too well how precious a jewel is worn by the ugly toad, adversity.

The following, although published in Mo. State Hort. Reports, 1867 to 1878, has not yet lost its force. Nor will it. For the principles advocated by these pioneers, many of whom have gone over to the silent majority, are not for a day, nor an age, but for all time.

Mr. Wm. Stark, of Louisiana, Vice-Prest., read a Report [1868] for Northern District of Mo. Mr. President and Gentlemen of the Society:

For the consideration of this Society this report on the progress of horticulture in this district is offered:

Having been engaged and interested in the pursuits of horticulture from my earliest boyhood to the present time, and having been for more than a quarter of a century engaged in the nursery business here, in the county of Pike, I have had a fair opportunity to witness many of the difficulties with which our noble pursuit has had to contend—a few of which it may not be deemed out of place to briefly notice here.

Those who contemplated planting orchards for commercial purposes, were *sagely* told by croakers, and many well-meaning, though short-sighted people, that they would have no market for their productions; that fruit-growing was certainly being greatly overdone; and many other similar statements were made, and arguments used which often deterred the beginner.

These people could not fully realize the vast extent of our country, and the further all-important facts, that but a small portion of its area, comparatively speaking, could successfully produce in large quantities, and of fine quality, the most valuable fruits for commercial purposes. Others were deterred from planting orchards because, said they, we cannot afford to invest money and labor, so long before we get returns, forgetting that the increase in value of their lands, appropriated to orchards, well selected and well cared for, was greater than the increase of money at *compound interest*.

Another great drawback has been encountered by beginners, in not knowing what to plant; and further, in not being able in many cases to obtain reliable articles, when they had made up their minds what they wanted. Much too large a number of our selections have been made by consulting lists, good enough, perhaps, where made, but entirely unsuited in the localities, in the soils and climates where used. In this way the value of many orchards has been greatly reduced.

And in connection with these various difficulties, I glance hastily at the operations of the oily-tongued and dishonest tree peddlers. These unprincipled characters use every means and argument to convince their too confiding, and generally inexperienced subjects, that they will furnish them exactly what they need; but, as time too often proves, when too late to remedy the evil, fill their contracts with just what nobody wants. It is a well known fact that this class of swindlers generally procure their supplies where they can buy the cheapest, regardless of quality or variety, all the while professing to represent some responsible nursery as agent, partner or owner, and then dispose of their stock under all the popular names they find in demand. Under the operations of this system, trees are sold and bought, planted and raised, and when they should be worth \$10 apiece, the unfortunate owner too often finds that his lands are cumbered with worthless trees, and acknowledges he would be far better off had the "locusts of Egypt" relieved him of his costly charge in their early days.

How much better if some honest and experienced horticulturist had been consulted. No reference is had here

to responsible agents who conduct a legitimate business and have a local habitation and a name.

Small Fruits: All do well in our district. The cultivation of these indispensable fruits, is increasing; and with proper caution in selection of sorts, and reasonable care in cultivation, success is almost certain. The cultivation of the grape, the most valuable of the small fruits, is no longer an experiment here.

The Quince, Pear, Peach and Apple.

The quince, although cultivated in a very limited way, proves almost everywhere a success.

That delicious fruit, the pear, has been greatly neglected; but as far as the hardier varieties have been planted, in suitable locations, and been properly cared for, there has been but little, if any, just cause to complain of results. A few pear trees in rich garden spots, in manured or shaded localities, have been attacked by blight. Some worthless seedlings and suckers have not borne fruit till they were 12 or 15 years old. Hence the popular delusion that the pear tree will not live in this country, and, if it does, we must wait half a life-time for it to bear; when the fact is, the pear will produce fruit as soon as the apple—and nobody now doubts the expediency of planting apple trees, because they are so long coming into bearing.

The Peach is not produced here with quite so much certainty as with our neighbors, a little south of us. The past season, however, has proved an exception to this rule, for, while the crop this year has been most abundant throughout our entire district, it was badly thinned out by the late spring frosts in various localities, usually more favored than ours. [Same was the case in 1890—history repeats itself.] But, as peach trees are so easily raised, and come so quickly into bearing, all should plant, and be prepared for the good time coming. It is nowhere promised that they shall reap who fail to sow.

The Apple: It has been a long time since our orchards on the Mississippi slope have paid so little. The failure, I think, should not be attributed to any lone cause, but rather to an unfortunate combination of causes. The most prominent one, perhaps, was the great amount of rainy weather, together with the cold east and northeast winds that prevailed during April and May. This view is strengthened by the fact that those locations produced the most favorable results where the shelter on the east and northeast was most complete. [Rural World, Oct. 23, 1890!—"Vermont farmers say the failure of the apple crop is due to northeast winds during the season of blossoms; those orchards protected by hills on the northeast produced good crops."] I am also inclined to the opinion that many supposed fruit buds were imperfect, that the real germ was not fully developed, on account of the early and long continued drouth of last year. Although the buds had vitality sufficient to bloom out, close observation revealed the fact, plainly apparent, that a very large proportion of them bloomed only to "wither and die." There seemed to be so little vitality about them, that they would probably have proved worthless had the spring been ever so favorable. The defective apples also show that the codlin moth and other insect pests did a large share of work for us. The question very naturally arises, should this partial failure of the apple crop discourage either the man who contemplates planting a small orchard for the use of his family, or him who contemplates planting largely for market? Certainly not. We have certainly as few short crops or failures in this section of country as any other. No product is always sure to yield a heavy crop anywhere, and a failure of the apple crop is not so disastrous to the orchardist as the failure of agricultural crops is to the farmer, because the fruit grower bestows comparatively but little labor on his orchards in the seasons of failure.

The planting of orchards is rapidly on the increase. The business of growing apples for market is yet but in its infancy in Missouri. [22 years later, this is no less true!] It is not overrating this district to say that more than half the lands in it are easily susceptible of being made productive orchards, and that a very large proportion of them will produce abundantly, apples which the world cannot surpass. With almost a boundless extent of country, both north and south of us, always for a market, and often elsewhere, it is, I think, a great mistake to waste our time in talking of over-production. For as the price goes down, the consumption increases. The price may go much lower than we generally get, and still, if we will produce largely, the business will pay well. If the proper spirit is manifested in the planting and care of good commercial orchards, the time is not far distant when the return in money therefrom will exceed that of any other one product. And I feel confident, all things considered, that no branch of the whole agricultural and horticultural business of the country will be found to pay better.

Another important fact connected with the production of market apples, especially late varieties, is by very many overlooked. They may be raised in connection with general farming, clashing with that pursuit less, perhaps, than any other branch of horticulture.

List Apples reported for Missouri; 1867:

Summer.—Early Harvest, Red June, Sops of Wine, Red Astraclian, Benoni. *Fall.*—Maiden Blush, Rambo, C. Strawberry, Pa. Redstreak, Porter. *Early Winter.*—Wagener, Newtown Spitzenberg, Fallawater. *Winter.*—Rawle's Janet, Newtown Pippin, Pryor's Red, Winesap, Red Canada.

Mr. Kelly: Is this for a single locality? It is wrong to make a list for the whole State.

Prof. Swallow: Take up *seriatim*. E. Harvest adopted. Prof. Swallow would reject Red June.

Mr. Stark: It is not a good bearer.

Mr. Riell: Near Alton are whole orchards of it. A fair apple, if you manure and prune, and sells well.

Mr. Bowen: Sops of Wine is a great bearer; too small; quality poor but showy; tree hardy.

Mr. Hilliard: Bears transportation best of any. Mr. Huggins puts it at the head of the list. Only second rate. Large, bears well; brings a good price.

Mr. Kelly wants information about C. Strawberry.

Mr. Clagett: Fine, large size, handsome, good flavor, desirable, and salable.

Mr. Hilliard: It is one of the handsomest and best.

Mr. Tice: It is the best bearer we have.

Mr. Kelly: Fall Pippin don't pay for ground used.

Mr. Riell never saw enough of the Porter.

Mr. Stark: Does well. I want a good many of them.

Mr. Hilliard: I sent 300 barrels to the pinery. Ships well. Good bearer, hangs well on the tree.

Mr. Kelly: Newtown Spitzenberg is best in flavor, but falls from the tree. The children will not need to climb the trees—the fruit all lies on the ground!

Mr. Bowen: It produces better fruit here than in Ohio. Hangs well in Jefferson county; one of the best for profit—equals Winesap.

Dr. Edwards: With high culture, on limestone soils, the Newtown Pippin will do, but not for market.

Mr. Stark: On good, high, dry land it is profitable. On ordinary soil will not do; should not be raised extensively.

Dr. Edwards: I reject it for market; unprofitable.

Mr. Clagett moved to add Rome Beauty.

Mr. Stark: I have cultivated it 14 years. A good late fall and early winter apple; will keep till March, but loses its flavor. Trees incline to overbear. Rome Beauty grown on strong land, well cultivated, this year sold for \$4.25. The buyer afterwards told me he was offered \$7 at Louisville, provided they were as good all through as on the tops of barrels—purchaser selected and emptied out two of the 200 barrels, took them to Nashville and sold at \$9 per barrel.

Mr. Clagett: Willow Twig should be put on the list. Keeps and sells well. Added.

Mr. Clagett: Huntsman's Favorite is a fine showy apple; has a fine aroma, very salable, good bearer.

Mr. Whetworth: I brought it into notice in 1843; I went on a visit to Cincinnati in 1844, and exhibited it there. They thought much of it, and got some grafts. It is the finest apple in Johnson county. A Mr. Huntsman moved to Mo.; stopped at Old Franklin; a friend gave him some seedlings; he planted them, and this was one. The trees were 24 years old when I saw them. Keeps a long time; pale green, turning to a beautiful clear orange.

Mr. Sanders: I have some trees, good growers, early bearers, upright trees and bear fine fruit.

Mr. Riell: There is money in Gilpin; ships well, makes good cider, and sells well.

Mr. Clagett: Will do to eat when there is no other.

Mr. Stark: We should be cautious about recommending apples for mere money.

Mr. Colman: Willow Twig is much its superior.

Report, 1878, by Wm. Stark, of Louisiana, vice prest.: * * Although the apple crop is of much more value commercially and otherwise, than any other fruit crop, still occasional partial failures urge the importance of cultivating a full line of all the valuable fruits, for often when we have failures or short crops of some varieties, we have the best of crops of others.

Every family having available ground, should plant and cultivate for their own use, the strawberry, raspberry, gooseberry, currant, grape, plum, cherry, peach, pear and apple. With a crop of all these, ripe fruit can be enjoyed every day during the year. The apricot succeeds when seasons are favorable; but as a rule it does not do well. Having tried the nectarine during a period of 30 years, I find that it is much harder to produce than the peach, and of much less value when produced.

Pears did very well, trees suffered but little from blight. Much of this exemption from blight may, I believe, be attributed to the very mild winter of 1877-78. Some dwarf trees which had been thoroughly cultivated every season, have a very heavy crop of splendid fruit. Although these trees had borne considerable crops of fruit for two or three years before, yet I think the crop of '78 alone would more than repay the entire cost up to this date.

The early peaches gave a good crop. The late ones, gave a very poor yield, both as to quantity and quality. [This has often been the case since, proving that the extra

early peaches have a mission.] I observed several times during the drouth, the orchard of Mr. Miller, near Louisiana, and came to the conclusion that his crop, particularly where the trees were bearing very full, would have been worth much more if he had given his trees better cultivation as he had done in previous seasons.

The new early peaches have mostly fulfilled the highest expectations entertained of them when less known. Trees 100 miles north of St. Louis, heavily laden with ripe fruit the 15th of June, was a sight never before beheld so early in the season.

Amsden's June and Alexander both bore well, and ripened their fruit between the 15th and 25th of June, closely followed by Beatrice, Louise and River's Early; all coming in before Hale's Early. Amsden and Alexander are much alike; I believe Alexander has the advantage in size. River's is large for an early peach, and possesses good quality, but was damaged some by rot. Because it fills a place I think it should have a second trial. Wilkins' or Ringold Mammoth Heath, a new cling lately introduced from Del., is giving good satisfaction.

Utah Hybrid cherry (so-called) has proved utterly worthless as a fruit—a full-fledged humbug.

Miner plum is very ordinary, though the tree is very hardy and bears young. Wild Goose is giving good satisfaction. The fruit is of good size, quality and color; and although not entirely proof against the attacks of the curculio, as claimed, still it withstands to a very great degree the ravages of that insect. "Forest Rose" is a native plum, very hardy and valuable, round, very dark red, but larger and later than Wild Goose. Very highly esteemed by those who have thoroughly tested it.

The disposition on the part of the farmer to plant a full assortment of fruits, seems to be drifting in the right direction. When we consider the great enjoyment to be derived from a full supply of good fruits almost the entire year, the wonder is that so many have shown themselves laggards and drones in this fair and prolific country.

To take another view of this subject, I feel safe in saying that a good supply of the best "home grown fruits" is one of the cheapest articles of diet, and, at the same time, one of the greatest factors in promoting health, without which all else is comparatively worthless. In fact, fruits, in the many ways in which we can now prepare them, have become with some, and should be with all, a necessity. There are very many causes contributing to unsatisfactory results in the culture of the various kinds of fruits. One is that too many worthless varieties, or varieties of comparatively little value, are planted. Another is the want of proper care after planting. Good cultivation is a prime necessity in the production of large and continuous crops of good fruit. I do not wish to be understood as advocating culture (of all varieties) every season, but I do wish to say, in the most unequivocal terms, that to obtain good results, the plants must be so treated as to continue in a vigorous and healthy condition. Then let the watchword be, Cultivation! Cultivation!

Mo. State Hort. Society, from Report 1878:

THE APPLE.

What to Plant and How to Cultivate the Orchard to Make it Profitable for Market.

By William Stark, of Louisiana, Vice-Pres't.

Column upon column might be written on this subject, but I have only a little time now to give to the writing, besides, I must be on my guard for fear I bring myself in too abrupt conflict with the false teachings of some of our fanatical theorists who advocate the system of non-pruning, running the orchard in sod, etc.

I presume you are not expecting anything more than a few short, plain suggestions—a sort of finger-board, pointing the direction of success. I shall not consider summer apples, such as are marketed in a retail way at home, or shipped only short distances; but mainly such as are to be raised in large quantities and gathered wholesale and sent to any market in this country, or even in Europe, that promises the best returns. I shall not undertake to name all the varieties of good market apples; nor do I wish to be understood as conveying the idea that all I do name will succeed well on all sorts of locations, or in a wide range of latitude. * *

In the first place we should plant varieties that are reasonably hardy, and such as will bear good crops and retain the apples on the trees until they are ripe enough to gather in a wholesale way. The apples should be of fair size and good bright color, of good general appearance and the larger the better, other conditions being equal—in a word, be attractive to the eye. The

Size and Appearance,

In the general market, has much more to do with selling apples than actual quality. They should have sufficient firmness to bear shipping long distances, and should be mostly good keepers, so that when the market is glutted, you may have something that you can hold over a few weeks or months, or ship to some far-off market. Some sorts may be deficient in some of these requisites and possess others in a high degree. * *

The following list embraces some of the best and most profitable market apples for this latitude: Ben Davis, Rawle's Janet, Rome Beauty, Smith's Cider and Missouri Pippin, to which might be added, Winesap, Willow Twig and Clayton. Perhaps somebody will want to know why I have not included in this list some of the yellow apples. If so, my answer is, I know of none that are as profitable as several of the red sorts. The Ortle, White-Winter Pearmain and Newtown Pippin are all good and smooth, when we get them well matured; but they have too many faults to fill the requirements of a paying market orchard. If such an orchard has room for any of the yellow apples, it is perhaps Huntman's Favorite. Jonathan is an apple of fair size, fine quality, and one of the most beautiful apples we have, but it will not fill the barrels fast enough. When we have a good crop of them, before they are ripe enough to gather, half of them have fallen to the ground. Stark is a splendid tree, a good apple of fine size, but it lacks a little in color, and does not hang to the tree long enough for a late shipping sort. Northern Spy and King are both large, well colored and of good quality, but will not prove productive enough to be classed as profitable in this section. McAfee's Non-such has good size, fair quality and appearance, but is too subject to scab to risk in a market orchard.

Very many orchards planted for market have been greatly reduced in value by the use of

Too Many Sorts—

And sorts entirely unsuited to the locality where planted. Many of them are perhaps good family apples, and some of them good market sorts in other sections of the country. * *

In about this latitude, in Ind., Clayton is the most profitable market apple they have; but in Missouri it has not yet been thoroughly tested, but it is a long-lived tree, and will doubtless do well here.

Having said this much about varieties, we are now ready to gather up the trees. Now is the time, when you have made up your minds what you want, to

Be Very Certain

That you get the true varieties. A blunder in this can never be remedied without a serious loss of time or money, or both. If you do not know the varieties by their appearance, never buy from a party who is not well known and above suspicion. Never buy sorts you do not want because the trees look nice, or because the nurseryman, being overstocked with this, that or the other sort, offers them to you at a reduced price. Such sorts might be all right in a family orchard, but all wrong in your market orchard. It would be far better to pay two, three—yes, half a dozen—prices for the most valuable varieties, than to take and plant very many sorts that are hawked over the country, at nothing. I have known parties to plant the wrong sorts, not know what they had till the trees came into bearing, and then, when their trees ought to have been worth \$5 to \$10 apiece, they went into the orchard and grubbed them out. And I have known parties do worse than this—leave such trees to cumber the ground to the end of their natural lives.

Select for the orchard the most suitable piece of land at your command, regardless of the fact that it would be valuable for other purposes. Avoid very poor land as far as practicable, and always avoid very wet land. Comparatively rough land will often make a valuable orchard, but on such locations it requires more labor to take care of the trees, and to keep the land up to a requisite point of productiveness to insure large crops of good apples. Plant your trees with much care, so that all of them will grow; incline them toward the 2 o'clock sun; whenever any trees are lost, re-plant. Some varieties may be planted from twenty to twenty-four feet, while others, on strong soils, may be allowed thirty—but twenty-five is about right for the average orchard.

Give your Trees good Cultivation,

Especially while young, and even when old they should not be allowed to go long at a time without cultivation. Of course, if the land is good, it may be sowed in clover, and pastured with some sort of stock which will not injure the trees. But I believe that the orchard should not be thus treated more than two or three years at any one time; and whether in cultivation or clover, if the land is not rich enough, it should be manured from time to time—enough to keep the trees in a strong, healthy condition of growth. I do not approve of sowing small grain in the orchard, especially wheat or rye sown in the fall. Oats may sometimes be sown in the orchard after it is well grown up, and pastured down with hogs, with but little if any bad effect; but at other times this plan seems to work the orchard an injury. I would never, under any circumstances whatever, allow timothy, red-top, blue grass or any other grass that forms a tough sod, in an apple orchard. When the orchard is not in cultivation, it should be in clover, and kept pretty closely pastured with hogs, if practicable. Sheep may be used sometimes without injury, when the trees are well up out of their reach, and horses may often be safely pastured in the orchard in early spring or when

There are no apples; but cattle should never be allowed to enter the orchard. The very best treatment an orchard could have would be good cultivation, and no crops taken off the land. But if you raise a crop of corn, "hog it down," and the land will not be very much the worse for the crop. But where crops are raised and taken off, care must be taken that the soil is not too much impoverished to keep the trees sufficiently thrifty, whether before or after they are of bearing size. If the trees are not growing rapidly enough, then the land must have some stimulant—lime, ashes or other manure. When it becomes necessary to manure trees, the material used should be scattered over the land at least as far from the trees as the roots extend.

An orchard once badly stunted, seldom, if ever, entirely recovers; and even if it should, there has been a loss in time that cannot be replaced. An orchard should receive its cultivation as early in the season as practicable, so that the growth of the trees can be made early and have time to ripen up thoroughly and be ready for our hard winters, which sometimes come when they are unprepared to stand the extreme cold, as in 1872-3, which followed a very wet July and Aug., causing the trees to grow late and preventing their ripening up properly. Very many trees will never entirely get over the bad effects of that winter, when the thermometer touched forty degrees below zero, for the first and last time since this section of the country was settled. [32 degrees below is the coldest since 1873, and that but once.]

A Little Pruning at the Right Time

Is required on almost every tree, but the operator should know why he prunes, in order to know where and how to do the work. In pruning the tops of trees while yet young, all sharp forks should be destroyed by cutting out the limb that can best be spared, and whenever two prominent limbs start out from the main stem so close together that their future growth would eventually cause them to clash, one of them should, of course, be cut out while small. Some varieties grow in such a manner that many of the leading branches require shortening back to make the tree grow sufficiently stocky. Others require only some of the longer branches to be cropped in order to keep the tree in a comely shape. Just enough should be done to make the wood grow where you want it, and to prevent its growing where you don't want it. If this light pruning is properly done while the trees are comparatively small, they will need but little when they get older—"as the twig is bent, the tree is inclined." Some varieties, of course, need much more cropping, pinching and thinning than others, but they should have careful attention while small, so that it will never become necessary to cut off large branches when they get older. To avoid cutting off large branches, or have your trees and fruit down on the ground, after bearing a few heavy crops, you must start your branches a little higher than has been the practice with many within the last twenty years. Men are ever prone to run to extremes. Forty and fifty years ago nearly all the trees were made to branch very high, and during the last twenty or twenty-five years the inclination has been strong toward the other extreme. From two and a half to four and a half feet—say, mostly from three to four feet—I think is about the best height to branch apple trees, as a rule. All water sprouts should be kept rubbed off from time to time while yet small, and all suckers putting up from the roots should be kept cut off while young and tender. I have but little patience with those impracticable and fanatical theorists who declaim against any and all pruning, for even the most extreme of these theoretical visionaries will practice it themselves. They can point out to you (and so can a practical orchardist) the bad effects of too much pruning, botched work done at an improper time of the year, and all that; but this is no more a good argument against correct pruning, done by sensible, practical orchardists, than to point out the botched work of some poor pretense of a surgeon would be an argument against surgery performed by the skillful surgeon.

Of course the orchardist must keep a sharp look-out for rabbits, field mice, borers and other pests that are liable to invade the orchard and damage or ruin the trees. When the young orchard is growing thriftily, some parties become impatient waiting for apples. But just hold on! They are only getting ready to do more for you after a while. They are developing large limbs, large trunks and long roots and strong constitutions, in order to stand the wear and tear of the hard times coming. Don't resort to root pruning, except in very extreme cases, or you will ruin the future value of your trees. Of course cutting off all the long roots, and many other kinds of misuse, will hurry trees into earlier bearing, but too often the apples obtained in this way prove too costly in the end. In most cases where there seems to be too much inclination to make wood growth after the trees are large enough to go to bearing, it will be found sufficient treatment to slacken the cultivation in a reasonable degree, when fruitfulness usually follows, if you have been fortunate enough to plant the proper varieties in the beginning.

But if you have planted Northern Spy and Yellow Bellflower, and some others of like habits, you should console yourself with the fact that in cultivating such varieties, you are working mainly for the next generation.

Mr. Husmann: I do not think the list of varieties large enough, would strike off Janet, which is excellent for home use, but fails to bring a good price in market. I think very highly of Huntsman's Favorite for market. Have seen them growing in more than a hundred orchards, and know of no more profitable apple. The fruit is usually very perfect, and commands a high price. It is one of the best shipping sorts—firm fleshed, attractive appearance, very fragrant, will always sell at the top of the market. White Pippin is a valuable yellow variety; looks like Newtown Pippin; early and abundant bearer. I would like to hear about Grimes' Golden.

Maj. Ragan: Grimes' Golden is an early and abundant bearer, good shipper. One of our best yellow apples.

Mr. Husmann: Take the place of Y. Bellflower.

Pres't Colman: If you were to plant an orchard of a thousand trees for market only, what would you plant?

Mr. Evans: I think a great deal of Jonathan. I lost heavily last fall by not having them for sale at \$1.50 per bushel, when other apples were selling for \$1 or less. The only objection is that it is not a good keeper. But if I were to plant one thousand or two thousand trees for market only, I would plant Ben Davis ONLY.

Pres't Colman: When will Ben Davis bear?

Mr. Evans: From an orchard of Ben Davis, 5 years from planting I have sold the fruit for \$5.75 per tree. We can depend on trees of that age averaging \$2.50 per tree. The yield constantly increases, and never fails entirely. My Ben Davis trees gave me half a crop last year when almost all other varieties were an utter failure. Trees ten years old will average ten bushels of apples each, though the yield will, of course, vary with the location and management. I plant one hundred trees to the acre.

Mr. Murtfeldt: In 1877, from trees eight years planted, I gathered two barrels each.

Maj. Ragan: I think the essay an excellent one, especially that part of it which refers to pruning. I differ from Mr. Husmann concerning the Janet; it overbears, exhausts itself, and so bears only on alternate years, which is the reason it has become unpopular and been discarded by many. Overbearing can be remedied by thinning, a matter about which we are altogether too careless. The work of thinning pays, and should never be neglected. In one of the best market orchards with which I am acquainted, and containing 10,000 trees, the varieties are Ben Davis, Janet, Huntsman's Favorite, Grimes' Golden, Mo. Pippin, Rome Beauty, Smith's Cider, Wine Sap, Crawford Pippin and Willow Twig. I know a number of market orchards in which Janet is largely grown and well liked. Huntsman's Favorite is a good variety; it bears well and sells well. Grimes' Golden is also good. I do not believe in cutting the list of market varieties down to so few varieties as favored by my friends, Husmann and Evans. We are in danger of running to an extreme in that direction. My customers want apples all the year—Summer and Fall, as well as in the Winter and Spring. Of course, the largest part of the orchard should be of the leading Winter sorts, but we must have some others, too. Northern Spy, although it is so long in coming into bearing, is excellent when it does bear, and others will get the benefit of our planting if we do not, as it is a long-lived tree. Ben Davis is too short-lived. For a market orchard, I would plant Early Pennock, Red Astrachan, Maiden's Blush, Rambo, Mother, Grimes' Golden, Northern Spy, White Pippin, Ben Davis, Clayton, Janet and Huntsman's Favorite. Would also plant some others for family use.

Pres't Colman: In an orchard near St. Louis, of 1,000 trees, 100 are Alexander, and they are more profitable than all the rest of the orchard.

Mr. Husmann: Lowell is excellent; bore well last year, when most others failed. Don't the contrast in color between Jonathan and G. Golden help to sell both?

Mr. Ragan: It is undoubtedly an advantage to both. I always sell my fruit in that way, when possible.

Gen. Minor: What do you mean by "thinning?"

Mr. Ragan: Boys do the work with step-ladders. Begin work as soon as convenient after the fruit is set, and where the fruit hangs in clusters pick off so as to leave only one in a place. The work should be completed by the time the fruit is one-third grown.

Gen. Minor: What crops grow in your orchard?

Mr. Ragan: Corn is the general favorite, but I prefer some root or vine crop as being less exhaustive. We must keep up the fertility of the soil if we want good crops of fruit, and if corn is grown in the orchard it should be "hogged down."

Mr. Monaghan: It seems to me that Mr. Evans' figures are altogether too large. He makes an average crop of apples worth \$1,500 per acre.

Mr. Evans: I have stated facts as I found them in my own orchard.

Mr. Monaghan: Then apples at 5 cents per bushel are worth more than wheat at \$1!

BABBITT (Western Baldwin)—In the judgment of Pomologists who know its history and merits, the longed-for "coming apple" is the Babbitt. "It stands on a record of FIFTY YEARS," and "it is ALL that is CLAIMED for it." The following history and description by Mr. W. R. Laughlin, who has been acquainted with the Babbitt for many years and who first brought it to the notice of the Mo. State Horticultural Society, we extract from Report for 1889:

"Holt Co., Mo., Dec 1, 1889
 "L. A. Goodman, Sec'y Mo. State Hort. Society: In answer to your request for facts as to the Babbitt Apple.
 "The Babbitt was produced from New England Baldwin Origin, Tazewell Co., Ill., at least as early as the year 1838. Propagated by C. W. Babbitt in Woodford Co., Ill., 1844 or 1845. In 1847 I saw trees in my Uncle Babbitt's nursery, and noticed them as the largest trees of their age, among an extensive collection of varieties; also, for the large size of their leaves and the stoutness of their new growth.

"In the Spring of 1848, my father was planting an orchard in Putnam Co., Ill. He allowed me to plant a row of eight Babbitt. Soon I had a row of the very largest and finest trees of their age that I ever saw grow in Northern Illinois, and, in due time, apples.

"My brother and myself went to Oregon in 1853 to start the first nursery in the then new Territory. Beaten by grasshoppers, we returned to the States, and in 1858 J. G. Laughlin & Sons did start our nursery in Page Co., Iowa. About 23 years ago we had the Babbitt sent out from Illinois; and my father and brother each have the trees of that age in their orchards in Page Co., Iowa, lat 41 deg.

"For 32 years I have not seen the trees I used to know in Illinois: but to my personal knowledge they passed the memorable and terrible winter of 1855-6 unhurt, and I have been informed that up to 22 years ago they had stood the winters perfectly. The trees of Babbitt have been under my own eye for 23 years in Iowa, and now for six years in Holt County, Mo. During that six years have occurred several among the very worst winters ever known for apple trees: also the great three-years' drouth of 1885, 1886 and 1887, and not a tree of the Babbitt has been smirched by the winters, nor more than merely held back by the summers of the great drouth. No other tree has endured all these trials any better, if indeed, as well. In Illinois, Iowa and Missouri, the testing has now been going on for half a century. The Babbitt was known as 'Western Baldwin,' until our State Society named it 'Babbitt,' in honor of the man who propagated it 44 years ago; a tardy tribute to the memory of a man whose life was more for others than for himself.

"My father, has in one of his orchards in Page Co., Iowa, 1500 trees planted twenty years ago. The orchard is mostly Ben Davis, Winesap, Willow Twig, Jonathan, &c., with a large number of Babbitt. His testimony is that the Babbitt trees have up to date borne more per tree than the trees of any other variety; that the apples have sold for more per bushel than any others; and that where they are once sold they sell easily ever afterward.

"My brother, J. B. Laughlin, bears similar testimony as to trees in his orchard C. E. Babbitt, son of the man for whom the apple was named, now living in Page Co., says that in his large old orchard they are his best trees and his most profitable variety.

"Description.—The tree is a very strong, large grower; shoots large; leaves very large; wood hard and tough. As a support for a load of apples it is mechanically the best tree I know. It scarcely forks at all, but throws out its limbs in a shape and style peculiar to itself. Every limb has an unusual enlargement where it is jointed to the tree or larger limb. I do not remember ever having seen one split in any way. After 42 years acquaintance, in three States in three different latitudes, and growing from three distinctly different soils, I do not hesitate to place myself on record as saying that it is one of the very best trees in either nursery or orchard.

"Fruit, large, one-fourth to one-third larger than its parent, the Baldwin; shape, like its parent, but with

more red; flesh, fine-grained, juicy, crisp, rich, and of a peculiarly fine acid, that plainly resembles the acid of the lemon; use, baking, stewing, pies or jelly, for each and all of which it is simply the best; in cooking it literally melts. It is ready to cook as soon as it has its size but is so acid that few people like to eat it uncooked until the latter part of its season, when it is a favorite eating apple. Season, 1st of October to April, but can be kept in good condition until May.

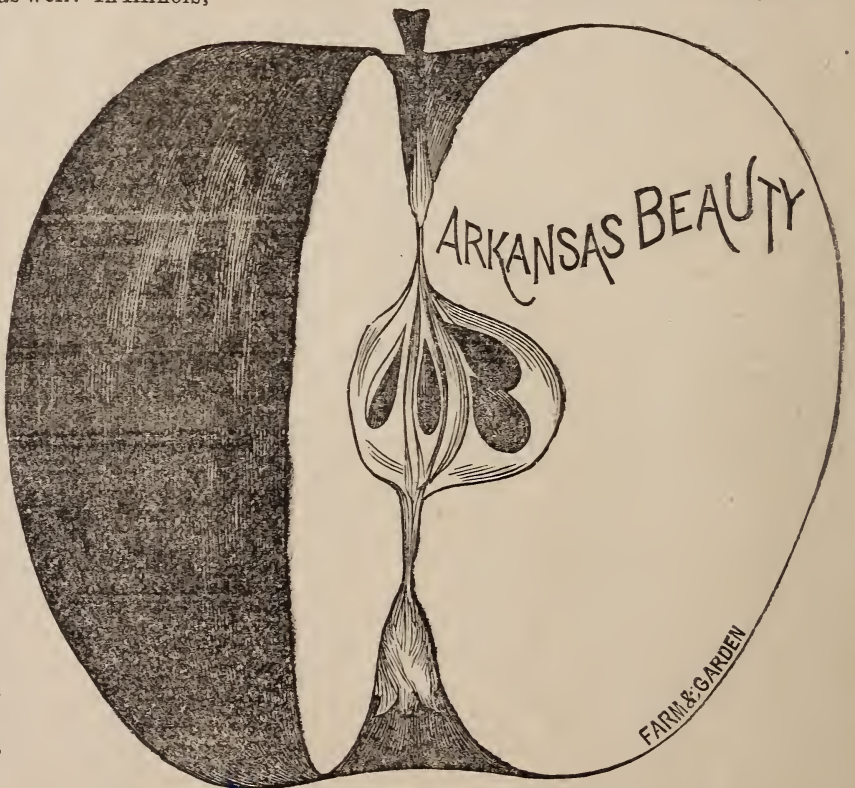
"Babbitt, a child worthy to be born in the Great Wide West from seed of the apple that by reason of its real superiority of tree and fruit has held highest place in our Great Little East for generations.

"I have not, nor do I expect to have, any pecuniary interest in the sale of trees of Babbitt, directly or indirectly, present or remotely, to the value of one cent, but I do expect to plant it in orchard heavily. There is no monopoly of this variety, for it has been already sent to be further tested in five or more States. My motive in this matter is the same that moves our best fruit raisers to hasten to tell all they know, and very often to hurry to give away cions, or trees, of their choicest originations or findings.

"For my own or for my children's sake, I could poorly afford to trifle with the reputation that I have been so many years earning, by making a misstatement or even a mistake. W. R. LAUGHLIN."

N. F. MURRAY, Vice-Prest. Mo. State Hort. Society, a most successful commercial orchardist, says: "The Babbitt took first premium at the last meeting of the Mo. State Hort. Society as the best new apple for market, and has received the highest praise from all who have seen it. It has never taken second premium anywhere. I think it will stand in the West where Baldwin does in the East, and to a large extent, supplant Ben Davis."

A. C. HAMMOND, Sec'y Ill. State Hort. Society, says: "Mr. W. R. Laughlin kindly sent specimens of a promising new variety called Babbitt. It is a seedling of Baldwin, which it resembles somewhat, but is firmer in texture, and an excellent keeper. Described as follows: 'Size, large; quality best; season, Oct. to May. Tree tested for 45 yrs. from lat. 39 deg. to 40 deg. 30 min. Never injured by Winter. Wood, hard and very tough. Shape and style just right to hang heavy crop on. Heavy bearer. This is a good record, and the fruit indicates that it is all that is claimed for it.'"



ARK. BEAUTY.—A recently introduced variety. Mr. Eli Minch, editor *Farm and Garden* said: "It is not like any apple we know, and is one of the most beautiful we ever saw. No painting, however perfect in color, can excel it, and for once we have an apple finer than the pictures we see in Nurserymen's Plate Books." Size, large; color, beautiful light

crimson in the shade, darker in the sun, with indistinct splashes and stripes over whole surface of dark crimson. Flesh, fine grained, whitish, tinged with red and yellow. Flavor, rich sub-acid. Mr. Wilde says: "Tree an enormous bearer. Quality very good to best. A commanding market apple. Nov. to March."

✓ **ARK. BLACK.**—Tree a beautiful upright grower; young wood very dark; an abundant bearer. U. S. Pomologist Van Deman, in report, 1886, says: "There is scarcely an apple that is more brilliantly colored. Size, 2½ to 3 inches in diameter; round or slightly conical, regular; smooth, glossy, yellow where not covered with deep crimson, almost black; flesh very yellow, firm, fine grained, juicy; flavor, sub-acid, pleasant, rich." A long keeper, almost equalling the Romanite Gilpin. A most profitable and attractive market apple. Has been kept till June and later.

✓ **BELFLOWER, FLORY'S**—From Downing's "FRUITS AND FRUIT TREES OF AMERICA": Origin, Ohio. A new variety, highly regarded in the vicinity of its origin. Tree upright grower, abundant bearer. Fruit conical, rich yellow. Flesh yellow, tender, sub-acid. Good. October, November."

Has been doing exceedingly well in Mo. and Kas., the tree being hardy and a great bearer of *extra fine* large golden yellow fruit.

✓ **BEN DAVIS** (Ky. Pippin, N. Y. Pippin).—Large, roundish, oblong; striped, mostly red; very handsome; mild, sub-acid; not rich. Tree very vigorous, hardy; bears early and continuously. For all sorts of locations in the West, this has been for years, the most profitable market variety grown. Nov. to April.

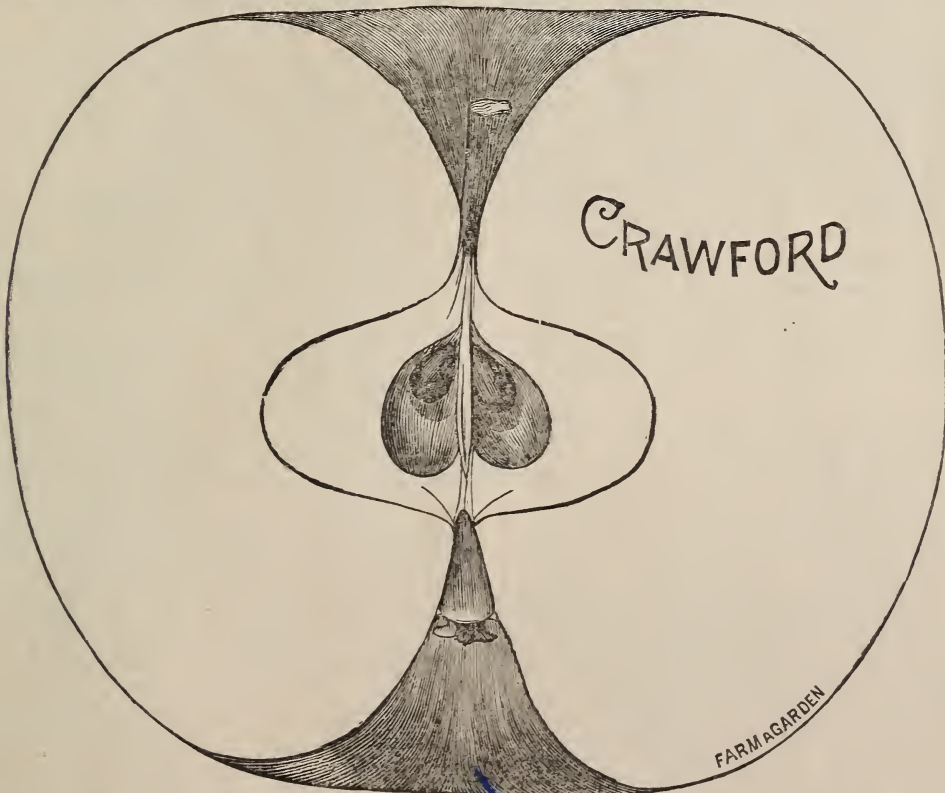
✓ **BOSTICK QUEEN**—"Tree similar to Buckingham or Fall Queen, but more vigorous; fruit also resembles Buckingham, but is larger and more highly colored. Our finest Sept. apple. Sells higher in Nashville than any apple of its season." Ripens with Buckingham or Fall Queen

✓ **CELESTIA.**—Tree a good grower. A most ex-

this fruit agrees with me in according the highest rank, as a dessert fruit, to Celestia. It combines so many excellences that it will be difficult to find its compeer. With greater beauty and perfectness in appearance, the Celestia equals, or perhaps excels, the famous Dyer or Pomme Royale. Fruit large, surface smooth waxen-yellow, core small, flesh yellow, very fine grained, very tender, juicy; flavor sub-acid, very sprightly and spicy, aromatic, delicious; quality, very best; use, table and kitchen; season, Sept "

Mr. Black says: "Time has not only fully sustained all the Doctor's statements above, but has set aside his careful "perhaps" of 15 years ago. Here in Central Ohio, we have kept Celestia in a pile on the floor of an unused room, with no special care, until after Christmas. Grown north of 40 deg. it will without doubt, be an all-winter fruit. Ten years' careful observation of it in orchard and nursery, and on different soils, warrants the conclusion that it is excelled by none, while it excels most, if not all other varieties. It should be remarked that the tenderness, which makes it so desirable for home use, unfits it for marketing."

✓ **CHARLOTTEN THALER**—A hardy variety resembling Yellow Transparent, but surpassing that popular early apple in several important points. It is an earlier bearer; fruits in nursery rows, also often bears the same season transplanted; many trees planted past spring matured apples. It is also several days earlier and is larger than Yel. Trans., and in Wis the tree has proved *hardier*. Exceedingly productive; fruit hangs well on the tree. Perhaps the most valuable very early market apple. From H. C. Miller, Crawford Co., Ark, June 23, 1890.—"Two of the Charlotten Thaler trees planted April 15, 1890, each matured a fine apple this season—less than two months after set."



cellent bearer. Celestia has often been compared with Fall Pippin, and always to the advantage of the former, for while it is free from the defects of Fall Pippin, it has all its excellences and more besides.

In first introducing the Celestia, Dr. J. A. Warder, Pres't. Ohio Hort. Society, and author of "American Pomology," wrote: "Everyone to whom I showed

✓ **CRAWFORD**—Originated in Ark. over 40 years ago. Prof. Van Deman says: "This is an apple worthy of trial. Large, 3½ to 4 inches in diameter, flat, slightly conical, very regular; surface, smooth, yellow, often beautifully blushed; core, very small; flesh, yellow, tender, fine grained, juicy; flavor, sub-acid, rich; season, Dec. to March, or later in Arkansas."

CLAYTON—A valuable late-keeping market apple. Major Ragan, late Prest. Mo. State Hort. Soc., writing us of this apple, said: "My Claytons this year are two to one ahead of the Ben Davis, or anything else in the orchard." L. A. Goodman, in *Colman's Rural World* writes: "Maj. Ragan had a beautiful orchard of trees, and among them were Clayton and Ben Davis. Clayton began to bear first and bore ten bushels to one of the Ben Davis in the space of five years, and yet his Ben Davis were fine, large, handsome trees. What would the Californian do in such a case? Plant Clayton of course, and not Ben Davis. Why not? The same in Missouri." Tree vigorous, long lived, and a wonderful bearer. Fruit large, nearly covered with red; juicy, mild, good. Jan. to May.

COFFELT BEAUTY—"A seedling from Ben Davis, which the tree resembles in growth. It possesses all the good qualities of Ben Davis with none of the bad. A good grower in nursery and in orchard. An abundant and regular bearer. Fruit hangs well on the tree. It is a good handler. Above medium size, resembling the Limber Twig in form, but larger. Beautifully striped and splashed with red, on a yellow ground. A much longer keeper and far superior to Ben Davis in flavor. No new apple has been introduced for years of equal merit, particularly one so well adapted to the Southwest and the Pacific Coast. Keeps, with ordinary care, to May. Combining, as it does, all the requisites of a first-class market apple, it offers an almost absolute guarantee of success. Received highest praise as a new apple from Mich. Hort. Society." Was exhibited at Boston in the collection that received the Wilder Medal. Awarded *First Premium* by Ill. Hort. Society as best new Seedling. On account of its keeping qualities, it is being planted largely where known. Origin Ark.

CULLIN'S KEEPER—Sent us by Mr. Griesa, of Kan. who says: "Of Kansas origin. It is the largest, long keeping, best quality apple to my knowledge; closely resembles Ortley in every way except its long keeping. While Ortley is only a fall apple, Cullins will keep in good condition till July or August; its flesh is tender, crisp and breaking. Tree a good bearer, in nursery grows some like a Ben Davis. A variety of such merit, coming in so late, is destined to be the long keeping apple for commercial orchardists. It was favorably reported in some of the papers last summer. *Orchard and Garden* describe it as 'Keeper,' should be Cullin's Keeper, so named by the Kas. Hort. Soc."

DICKINSON—Raised from seeds of Yellow Bellflower. Large, ovate conical; yellow, almost covered with streaks of red; mild, sub-acid, very juicy and agreeable. Unlike Yellow Bellflower, it is a prolific and regular bearer, and promises to be one of the most valuable winter apples, wherever Bellflower succeeds.

DR. WALKER—A Ky seedling of the popular Janeton, or Rawle's Janet, this most promising new apple certainly marks a long step in advance toward the long sought "perfect apple." We condense from letters of *five well-known* Kentucky horticulturists:

"Dr. Walker is a seedling of Janet, larger, brighter in color, and of superior quality. A very late keeper."

"Better than Janet, is of finest appearance and keeps till May."

"Have fruited Dr. Walker several years, it has the characteristics of Janet, but is much larger and better and keeps longer; of a most deep red color."

"A seedling of Janet, larger and brighter in fruit and of more vigorous growth. Of much value."

"We think this a very promising new apple, embodying all the good qualities of Janet, but brighter color and better quality. Tree a fine grower."

EARLY COLTON—"One of the very best early apples. It is entirely hardy, having been grafted in all parts of the country, and has stood the extreme cold of Minnesota, Wisconsin, New Hampshire. It is an annual and abundant bearer, never in its history over half a century, has it been known to entirely fail of a crop. It is very early, beginning to ripen so it is good to eat ten days or more before Red Astrachan or Early Harvest, and continues to ripen for some time, making it very valuable for family use. It is of beautiful appearance, form regular, nearly round, of uniform medium size, color yellowish white, with a tint of carmine where exposed to the sun, much like Golden Pippin or Belmont in color, and fully equal to them in quality. Owing to fine quality it sells higher than any other."

EVERBEARING ILL. IMPERIAL—A valuable variety from Adams County, Ills. The entire stock has been placed in our hands for dissemination. Tree a superb grower, both in nursery and orchard; hardier than Ben Davis, and a regular bearer of remark-

ably beautiful apples of large size and most excellent quality. A true "All Summer," or Everbearing apple, having green, half-grown, and fully ripe fruit on the tree at the same time. Clear, waxen yellow, shaded and splashed with bright red and delicately striped and pencilled with dark red over almost the entire surface—a perfect beauty. Flesh of highest quality; creamy white, fine tender, sub-acid, with a peculiar and most delightful perfume. Begins ripening last of July and continues during three months.

Mr. L. A. Goodman, Sec'y Mo. State Hort. Soc'y, to whom we sent specimens in '86, was highly pleased and pronounced them something uncommonly fine. In delicate beauty and quality this excels any variety of its season with which we are acquainted. Surely it can hardly help becoming one of the most popular varieties, particularly for the family orchard.

FAMILY FAVORITE—A favorite local variety of unknown origin, which has been propagated in our nurseries for nearly half a century. Tree very vigorous, large, spreading, hardy; somewhat resembles Smokehouse in growth, but very distinct. Evidently belongs to the Vandevere family, but is superior to any of this class; more than twice as large as Vandevere, much higher color, flesh not so compact but better in quality and a longer keeper. A most regular annual bearer. Trees planted in our orchard in 1843 still stand, sound and healthy; have been white with blossoms every spring, and have never failed to bear at least a partial crop. Every other variety planted at the same time vanished years ago, leaving not a wrack behind. Held in high esteem here where it is well known and planted in nearly every orchard. School boys "know apples"; well, it is now nearly 30 years since the writer went regularly to the little red school house, where many a school boy swap was made—"2 Janetons for 1 Favorite." Large, flat, covered with marbled red and crimson stripes; very dark red on the sunny side. Dots, numerous, large, white. Flesh light yellow, firm, crisp, breaking; very juicy and rich. Flavor excellent; peculiarly perfumed. The favorite housekeeper's apple for making "apple butter." Season Nov. to March, but is in its prime at Christmas.

FANNY—This beautiful apple was first sent us by Charles Downing, who advised us to propagate it, it being his favorite summer apple. Superior to most early apples in both beauty and quality. A profitable summer sort for market. Large, roundish, dark rich crimson; firm, juicy, agreeable, sub-acid. Tree vigorous, spreading, productive.

GANO—We clip the following from Report Mo. State Hort. Society: "Yellow, nearly covered with dark red; very handsome; round ovate; medium to large; flesh pale yellow, mild sub-acid; quality excellent; season with Ben Davis; tree strong, upright grower, full and regular bearer."

GREENING, NORTHWESTERN—"This new Wisconsin seedling which received the first prize of the Wisconsin State Hort. Society in 1883, over a large competition, as a 'seedling Winter Apple,' has been thoroughly tested in most trying places in Wisconsin, and proved equal to the Wealthy in every respect as a tree, while in quality of fruit and keeping it is the superior of that variety. Fruit, large, round conic, smooth, greenish yellow, often a fine blush; flesh fine grained, firm, juicy, sub-acid, good. January to Spring. Has had 20 years trial in Wis."

Mr. Geo. J. Kellogg, the well-known Wis. fruit specialist, writes us Feb. '88: "I am very much pleased with your list of new varieties—some may be colored high, but I am well acquainted with the Wisconsin fruits you offer. You want N W Greening; I measured apples at our last State Fair 12 inches in circumference; will stand beside Wolf River; keeps till spring."

GRIMES' GOLDEN—Medium to large, cylindrical; golden yellow, flesh a deeper golden still; sub-acid, aromatic, spicy, rich; one of the very best apples. Tree vigorous, spreading and productive, even while yet young. One of the most profitable market sorts of its season. Dr. Warder says: "Quality very best; use: dessert, too good for aught else." Nov. to Jan. here keeps all winter further East and North.

HAAS—FALL QUEEN—This apple, known also here in Mo., where it originated, as *Gros Pomier* (big apple tree), is a large and handsome red-striped fall apple, of medium quality and large productiveness. Tree very hardy. Distinct from Buckingham or Fall Queen—called also Equinately, Ox-Eye, Bachelor, Winter Queen, Ky. Queen and a host of other names.

HUNTSMAN'S FAVORITE—Origin, Mo. Worthy of special mention, being very fine. Very large, flat; golden yellow, bronzed on the sunny side, fine grained, aromatic and of excellent flavor. The most profitable yellow market apple, having been, for several years past, quoted higher in the St. Louis market than any other variety. Tree a good grower and bearer; *hardier* than W W Pearmain, and fruit thought by many to be better in quality. Dec. to April.

INGRAM—Seedling of Rawles' Janet, which it resembles in form, but is much larger and higher colored; also a better keeper, lasting until May. A very popular apple where it is known. Like its parent, an abundant bearer. Tree a good grower.

IVANHOE—Bears early, often at 2 and 3 years of age, and bears abundantly every year. Fruit excellent, crisp and sprightly. Medium to large. A light golden yellow, occasionally a slight blush. Fruit hangs very late on the tree. Keeps all the year round.

From *Southern Planter*, Richmond, Va.: "We have eaten the Ivanhoe apple and find it firm, after the likeness of Newtown Pippin; very juicy and rich in flavor. A fine apple and should be propagated."

From *The Horticulturist*, Bridgeton, N. J.: "We think the Ivanhoe is destined to become one of our best winter apples. Originating south of us (Virginia) and being one of the best keepers there, when it is brought up to this latitude its keeping qualities are enhanced and it will keep much better here than there; *vice versa* take an apple from the North and bring it here, if a winter apple there, becomes a late fall apple here, and if a fall apple there, then it becomes a summer apple here. The Lankford Seedling, one of our best keepers, originated at Lankford Bay, Maryland."

Notwithstanding the tenor of the above we do not feel like letting it pass without comment; for, although we have not fruited it, yet we do not believe Ivanhoe will prove generally satisfactory.

JONATHAN—Medium size, round to oblong, sometimes conical, deep red; flesh tender, juicy and rich. Tree a moderate grower, slender and spreading, but productive. An excellent family apple, and very profitable for market in many localities. Oct to Jan.

JONES' SEEDLING—A long-keeping Southern apple, highly recommended. Origin, Tennessee. "A very abundant bearer, *blooming late*. Large, round to conical; color light red stripes on yellow ground. Believed to be a cross between Limbertwig and Pearmain [McAfee]. Rich, mild, pleasant sub-acid, almost sweet. Keeps well till April. I have 25 trees in bearing and the more I see of it the more I am convinced of its great value. The earliest and most constant bearer, of any good sort we grow. Large, good quality, and the *best keeper* of any large apple we have. Tree hardy and wood very tough." Will doubtless prove even a later keeper further north.

From "Proceedings of Davidson Co. Fruit Growers' Association: Mr Smith presented a Northern grown Ben Davis, which was a fine specimen of that valuable variety; also a sample of Jones' Seedling. The latter was in excellent condition, and upon comparison with Ben Davis, the members were unanimous in giving the preference to Jones' Seedling, not only on account of its keeping qualities, but for superior flavor, large size and attractive appearance.

KINNAIRD'S CHOICE—Much the finest early to mid-winter apple we know. Fruit medium to large, roundish oblate; skin yellow, almost covered with dark red or crimson; flesh yellow, fine grained, tender, rich, juicy, aromatic, *most excellent*. No apple grown is of better quality. Tree vigorous and bears young, thought to be a seedling of Wine Sap, and is worthy of such parentage. This apple was shown before the Mo. State

Hort. Society and the committee report: "We recommend Kinnaird's Choice, a very high-colored, red apple of medium size and first quality, and doubtless a good keeper. We cannot say too much for this variety. Should the tree prove a good grower, hardy, and prolific bearer, it will take a prominent place among the apples of Mo." It is all of these; the original tree, in Williamson Co., Tenn., was of great size and unknown age, and productive until it blew down in 1888.

KOSSUTH.—A long-keeping Southern sweet apple from Ark. "This is the best sweet apple I have ever known. The tree is an early and abundant bearer and long keeper. They were kept on the tables in New Orleans until the first of June in good condition. In form it resembles Am. Pippin, but is larger and a bright red. Flesh tender and crisp from first to last; unequalled for rich, delicate, saccharine flavor.

LADY SWEET—This was Downing's favorite sweet apple, and he thus describes it in his great book: "One of the finest Winter sweet apples yet known in this country. Its handsome appearance, delightful perfume, sprightly flavor and the long time it remains in perfection, render it universally admired wherever it is known, and no orchard should be without it. Bears abundantly; fruit large; skin very smooth, nearly covered with red in the sun. Flesh white, exceedingly tender, juicy, and crisp, with a delicious, sprightly, agreeably perfumed flavor. Quality best; keeps without shriveling or losing its flavor, till May."

LANKFORD SEEDLING.—Origin, Md. Randolph Peters, says of this valuable sort: "A seedling of great promise. Large size, red and striped, and for Southern culture possesses *more good qualities* than any apple with which I am acquainted. Tree hardy and a good grower; bears *annual crops*; fruit of *excellent quality*; and its *superior keeping qualities* recommend it to all. Keeps until May and June with *ordinary treatment*, where the "Baldwin" raised in the same section will not keep longer than Christmas. No farmer or fruit-grower should be without this apple."

LAWVER (Del. Red Winter)—"An important addition to the list of winter apples and especially for the South. Medium to large, round, bright red, highly colored; flesh fine grained, crisp, juicy, excellent, sub-acid; remarkable for its long-keeping qualities, having been kept in good condition until August. A great grower, and abundant and early bearer. We think it will be to the South what the Baldwin has been to New England, and the Northern Spy has been to Western New York. A valuable characteristic of this apple is its remarkable early bearing, coming into bearing as soon as a peach."

We clip the above from a N. J. catalogue. Since it has conclusively transpired that the Del. Winter is merely the well-known Lawver, under a new name, it has been a mystery to us how, of all varieties, the ridiculous claim of "early bearing," etc., could be urged in favor of this apple. For, on the contrary, it is well understood in the West at least, that the Lawver is a most tardy bearer. We have several 100 trees in our orchard, 17 years planted, which have hardly produced an average of *one apple* each since planted—many of them not an apple! It also has the fault of scabbing badly as the trees attain age. Still it is only fair to say that on high sunny locations and clayey soil it is often very satisfactory, the fruit perfect and very high colored. Has done well in Colorado, from Denver southward, and along the foot hills in Cal., it is highly satisfactory. We are especially glad to know this, as we introduced Lawver nearly 20 years ago.

LONGFIELD—"One of the imported Russian varieties; early and abundant bearer; fruit medium to large, yellow, with a decided blush on the sunny side; rich, sprightly, sub-acid. Dec. to March."

Of value chiefly for the extreme North and Northwest, although it seems to be well liked in N. Y. state.

LOY (Rankin)—Awarded the 1st prize at the New Orleans Exposition, for the **BEST NEW APPLE**. Origin, Missouri; named and recommended by the Missouri State Horticultural Society. The fruit is as large as the Ben Davis; resembles the Willow Twig in form and color; core small; stem short; quality the very best; an extra long keeper. Tree, a good grower, an early and annual bearer, a decided acquisition.

MAMMOTH BLACK TWIG (*Arkansas, Paragon*)—Resembles the Wine Sap in every way, except the tree is a **better** and much more vigorous grower, more **hardy**, and the fruit is **much larger**, many specimens being 12 inches in circumference; color even a **darker red**, flesh firmer, and most important of all, a **LONGER KEEPER**. Flavor milder, more of a pleasant sub-acid, but fully equal to the Wine Sap.

All who know the Wine Sap's value, the chief objection being its small size, will understand at once the great prize found in this new variety, **equal to Wine Sap in ALL, and excelling it in so many most important points.**

There being so much confusion about this apple, some claiming it to be the same as a variety grown in Tennessee, etc., that in order to be *sure* that our stock was genuine, we specially procured all our cions from N. W. Arkansas, the region where this variety has made so much stir among fruit growers. The "Paragon," when first cut for grafting, was accidentally mixed with Wine Sap, by the introducer; hence too much care cannot be used to get pure stock.

Mr. Babcock, of Ark., in charge of the State collection at the New Orleans Exposition, says: "This apple came to my notice while making collections for New Orleans. The fruit resembles Wine Sap but is **very much larger and superior in flavor**. The tree resembles Wine Sap in nothing except in color of young wood. It is the **strongest grower** in the nursery; a **strongly rooted** tree, while its parent, the Wine Sap, is poorly rooted. The tree **bears early and abundantly, holding its load well**. I entered it at New Orleans for the premium offered for the best new apple. But Arkansas was taking too many premiums—the 'State that could not grow apples'—and it became necessary to cry halt at some point, and it was accordingly done. An apple called 'Rankin' from Missouri was awarded the premium. I was com-

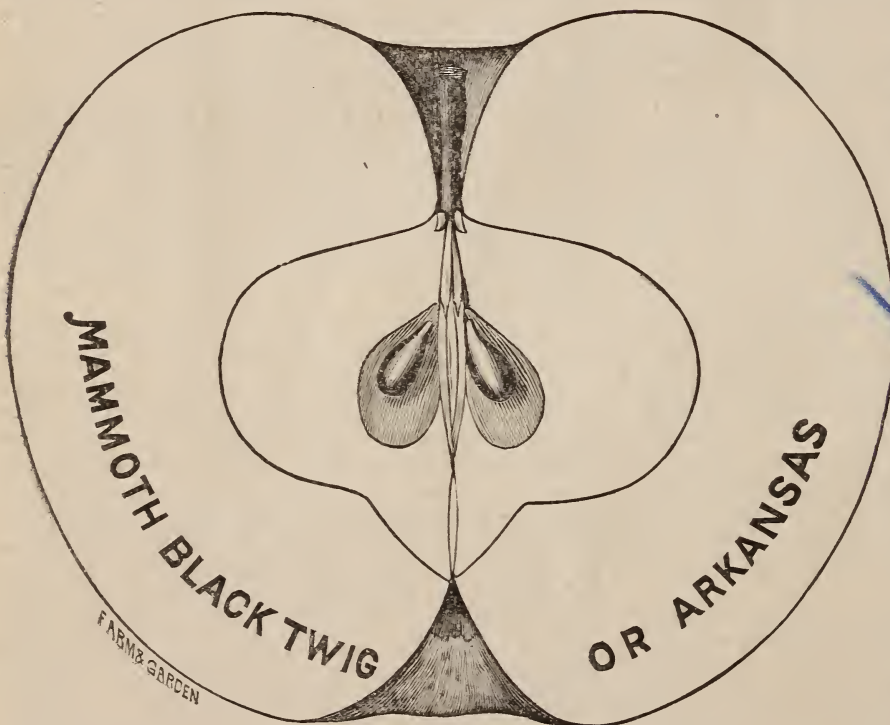
From *Farm and Garden*:—"We give a cut of a promising new apple we saw at New Orleans. The apple from which the cut was taken was **one of the smallest**; we got it ourselves in New Orleans for the purpose of making an **accurate cut**. Being a Southern apple, it would when planted in the middle section of the U. S., be in season from January to April, our season being so much later. The color is a **bright red**, the **texture fine**, and the **flavor a pleasant, sub-acid**. It is **remarkably heavy and a good keeper**. Our illustration gives the size and shape, size of seeds, core, etc., all of which are carefully reproduced."

MAMMOTH PIPPIN—A strong rival of Shannon and its superior in several important respects. Mr. Vincenheller, of N. W. Ark., writes us: "Mammoth Pippin is a good grower and a regular, even bearer; fruit, uniform and very large, *larger* than Shannon; hangs well, and is a good commercial apple. It will please anyone who wants a large, showy apple. One of our best Pippins; spicy, acid; season, Oct. [in Ark]. Planters here set five times as many Mammoth Pippins as Shannon. The latter is our famous show apple and some specimens are very large, but it hangs its fruit badly, in fact is shy as to yield; still everybody plants a Shannon or two, but *never* as a market apple, for while it sells well, its shyness makes it unprofitable."

MARSHALL RED (*Marshall's Seedling, Red Bellflower*)—The California State Horticultural Society has changed the name of this fine apple to *Marshall Red*, there being another and inferior apple called *Red Bellflower*. It is a cross between the Yellow Bellflower and Red June. Introduced by Leonard Coates, Napa, Cal., one of the most reliable California nurserymen and horticulturists. Mr. Coates says: "It is undoubtedly the finest market apple in California, and comes in at a season when good apples are always scarce. Has the deep brilliant red of the Red June, with its sprightly acid flavor, but the exact shape of Yellow Bellflower, although the tree is of more upright growth, and a **regular and heavy bearer**. We do not hesitate to risk our reputation in recommending this apple to all planters." In a letter to us, Mr. C. adds: "Marshall Red is **very large, bright red all over**, ripening about with Yellow Bellflower. The original tree, and two others grafted therefrom, **bear heavily every year**." Being a *good bearer*, while Bellflower is not, and of *finest red color*, and equal in other respects, Marshall Red is rich with promise.

MASON'S ORANGE—Also sent us by Mr. Greisa; he says: "A Kas. Seedling. When first exhibited at Bismarck Fair years ago it excited the admiration of expert fruit growers, because it so closely resembled the Y Bellflower in appearance, that it was thought identical with that excellent kind, but closer examination revealed a difference in outline and taste. The originator sold the right to propagate it to a man who soon after sold out and went to Oregon, when I again tried and succeeded in buying cions. Mr. Mason wrote: This apple may be a seedling of the Y. Bellflower; it certainly has very close resemblance to it except in point of *productiveness*, in which particular it excels all others in my orchard, which is composed of all leading sorts; it *never failed* a full crop since the tree was five or six years old, and that is more than my other kinds have done; it retains its rich juiciness through the *entire season*, which makes it the most desirable winter apple grown. The trees in nursery are vigorous and quite distinct."

McINTOSH RED—A Fameuse seedling, double the size of its parent, and of a rich dark red with a heavy blue bloom; one of the most beautiful apples in the world, and among the best in quality. It can be grown



pelled to submit, of course; however, I had the satisfaction of hearing all who examined and tasted the two apples in my presence, **condemn the award**. The "Rankin" has since been rechristened 'Loy,' and is extensively advertised at \$1.25 each. But the introducer states that the seed came from Ark., and this goes to prove what I have always claimed, *i. e.*, that Ark. produces more seedling apples of sterling merit, than any five States in the Union. The horticultural editor of the *Phila. Farm and Garden* Mr. Eli Minch, was the most critical of all the experts I saw in New Orleans, and whose opinions could not, in my judgment, be influenced by any one. Read what he says."

as far as, or farther north, than its parent. Tree very hardy, long-lived, and a good bearer. Season, early to mid-winter, or longer.

McKINLEY—Description from Dr. Warder's AMERICAN POMOLOGY: "Highly esteemed by Reuben Ragan of Indiana, who finds it profitable. Fruit, medium; roundish; slightly conic; dull red on greenish yellow. Flesh breaking, very fine grained, very juicy. Very good. Use, table; season, Dec. and Jan.

McMAHON WHITE—A new Wisconsin seedling. Large, beautiful glossy white, often with delicate crimson cheek. Flesh white, rather fine grained; juicy with lively tartish flavor, extra for cooking and good for dessert. Autumn, in Wis., but picked early keeps into Winter. Tree ironclad, said to be the hardiest known, vigorous, early, regular, profuse bearer. In Wisconsin and other Northern States it has proved very profitable in orchard culture.

MO. PIPPIN—Large, oblong; bright red, with darker red stripes; very handsome and of fair quality, slightly better than Ben Davis; tree not quite so hardy. A good grower and an early and immense bearer; for years past we have not failed to find apples on trees in nursery rows, only two years from graft—the earliest bearer known to us among apples. Should be the first to be planted on any farm where there are no apples. Also a very profitable market sort. Judge Wellhouse, of Leavenworth Co., Kas., who has over 500 acres in orchard, plants only Ben Davis and Mo. Pippin—16 by 32 ft—says, "at 8 years old Mo. Pippin has given three profitable crops and Ben Davis but one." Being so prolific, the tree is short-lived, and as it attains age overbears, so that the fruit is too small. Dec. to April.

NANSEMOND BEAUTY—From Va.; one of the best winter apples for the South. Said to excel the Wine Sap in beauty, size, and keeping; its uniform size and handsome appearance renders it a desirable sort for marketing. The fruit is large, uniform, of a beautiful crimson red, somewhat shaded with yellow; flesh quite white, crisp, tender, juicy. Since its first introduction this variety has been steadily growing in favor, and from many sections we are now receiving favorable reports as to its value. Dec. to April.

NERO—Randolph Peters says: "A very beautiful winter apple. Tree a good grower and a profuse bearer. Extremely popular in N. J., where it is sought after and planted largely. Prized for its good size, fine appearance and remarkable keeping quality. A seedling of Romanite or Gilpin, retaining all the good qualities of its parent, but much larger in size. No orchard in Maryland, Delaware, or the South, can afford to be without this apple, where a long-keeper and a good and beautiful apple is desired."

Pres't E. A. Riehl wrote us: "I have only fruited the Nero two years on young trees. It appears to be a seedling of Gilpin; has somewhat its shape and firmness but is about twice as large, a better apple, and a long keeper. Tree a fine grower, and very early and abundant bearer. I am favorably impressed with it and shall plant more trees." Nero has taken premiums offered by the Ill. State Hort. Soc. for two years past.

OSCEOLA—Originated in Ind., and was brought into notice by Henry Ward Beecher, who did much to stimulate fruit culture while a resident of that State. Dr. Warder said, "This variety does not seem to have won its way into public favor to the extent that was expected for it some years ago." The reason is not far to seek: the tree is a poor grower in the nursery, hence discarded for inferior sorts, that are cheaper to propagate. The variety was almost extinct until brought to our notice by Mr. Henry Avery, (recently deceased) the experienced Iowa orchardist, who says it has proven his most valuable ironclad. Fruit large, somewhat like Willow Twig in form but much higher colored, being splashed and striped with red; firm, juicy, pleasant, mild, very good. Jan. to March.

PICKARD'S RESERVE—Trees of this variety were planted in the vicinity of St. Joseph, Mo., 31 years

ago by Mr. Stuart, who says: "They bore good crops annually, until 4 or 5 yrs ago when they began to fail, though still bearing more or less good fruit every year. The trees have been the best and most profitable of anything I have ever grown. The specimens which I send you I picked up under the old trees to-day [Oct. 26, '87,] and of course they do not indicate what the fruit is when grown on perfect trees."

The specimens, as sent, were large, flat; surface smooth, pale yellow. Flesh yellow, fine grained, tender, juicy, with a sub-acid, aromatic flavor, making this, as Dr. Warder says, "a fruit of first quality for table and kitchen use." Dec. to Feb. The original tree of this valuable apple is still standing in Parke Co., Ind., proving it a hardy and long lived variety.

POORHOUSE—Origin, Tennessee. Fruit large, roundish, pale yellow and green. Tree of excellent habit and abundant bearer. Nov. to March. Mr. W. H. Smith, of Tenn., writes us: "Poorhouse is our finest green skin apple. I grow only four green-skin apples—Poorhouse, Va Greening, Green Cheese and Tenn. Greening. Poorhouse is the best every way."

PLYLE'S RED WINTER—A very fine apple. The committee of the Mo. State Hort. Society say: "Very large, of good quality, sub-acid; valuable." Very large, roundish oblate, very even; yellow, overspread with light and dark red; tender, juicy, very good. Tree upright, spreading. An early and good annual bearer. Cooks finely some months before picking time. Jan. to March.

RAINBOW—The most profitable apple of its season. Over twenty years ago, Mr. Wells, of this county, now past 80 years old, sent us cions to be grafted for him of his "best apple." In clearing the block, two trees were left to bear; also trees of Chenango, Ren Davis, Benoni, Hubbardston, Jonathan, Lowell, M. Blush and others. All have been in bearing for years. The Rainbow has been for years conspicuously a "barrel-filler," surpassing any of the sorts named—except that some years Hubbardston has borne as much. This year the Rainbow has even exceeded its past record, bearing fully twice as much as any of the sorts of same age, and selling for a higher price. The trees produced more than twice as many barrels per tree as M. Blush, and fully five times as much as Chenango—and the Rainbow has the advantage of Chenango in that it is nearly twice as large and ripens very evenly. The entire crop can be gathered and barreled at one picking. Very large, conical, yellow, striped and splashed scarlet and red. Flesh, firm, yellow, juicy. Flavor aromatic, good. Ripens just ahead of M. Blush. Not only the most profitable market apple of its season, but is preferred for the table by those who have tested it: "I never liked summer apples before, but this tastes just like a winter apple;"—"I like it better than any other summer apple."

On Aug. 7th, we sent samples of Rainbow to U. S. Pomologist Van Deman, who writes us, August 23d, 1890: "Your letter came during my absence and answer has been delayed. I have examined the specimens of the new Apple, Rainbow, and judging from its appearance, fairly good flavor, and from what you say about the tree and its productiveness, it is at least worthy of general trial. Of course you know that any apple ripening at the time of year it does, must have some remarkable points in its favor to warrant its introduction. I think you have acted very judiciously in not urging it upon the public without considerable trial, and as you have done this, I would recommend that it be named Rainbow and placed in the Experiment Stations, and sent to all who wish to give it a trial. Of course it will have to compete with Chenango, specimens of which you have sent, and some other apples ripening at the same time."

REBEL—Origin Va. "We unhesitatingly claim this to be the prettiest apple that grows, and in quality it does not fall a particle below its beauty. Large size, round, bright, clear red, on yellow ground; covered with a fine bloom; flesh yellowish white, rich, with an

agreeable mingling of saccharine and acid." Another Va. horticulturist writes us: "The Rebel is a new and very valuable sort for table use, one of the choicest apples we have. Season, [in Va.] Sept. to Nov."

RED BIETIGHEIMER—A German sort. A very large and beautiful *early* Fall apple, bright purple and crimson all over; wonderfully handsome; flesh white, firm, sub-acid, with a brisk, pleasant flavor; tree hardy, a strong grower with large, luxuriant foliage and a regular bearer. It is one of the largest and handsomest of all apples, and because of its great beauty, sells at high prices. Ripens here in Aug.

SALOME—"From Illinois, and especially valuable for its hardiness, prolific bearing and long keeping. Medium, roundish conical; pale yellow, slightly shaded with pale red, splashed and striped with dark red and sprinkled with small yellow dots; flesh tender, juicy, mild, sub-acid. Tree is round headed, has tough wood; large, thick, leathery leaf, and is as hardy as a wild crab. Fruit hangs tenaciously to the tree and withstands winds that scatter other varieties to the ground. Jan. to June." We find it hardy and productive, a long keeper and fruit good quality; rather too small and light colored for a market apple.

SCARLET CRANBERRY (*Robnett*)—"A large winter apple from Virginia, and such a remarkable keeper that it will remain in good condition a whole year after picked. Color light red, shaded to deep red and striped with mahogany; flesh yellow, sub-acid, rich and good. Tree a strong grower and said to be productive. Its antiseptic properties are so great that when cut to pieces it will dry perfectly in the shade without decaying. Of great value, especially in the South." Mr. Robnett writes us: "Tree very hardy, a vigorous grower, bears annually; being loaded from top to bottom with apples of enormous size, often weighing over one pound. Flesh, yellow, sub-acid, with a rich, spicy flavor found in no other apple. Will keep a whole year without any signs of decay. It is the largest keeping apple we know of, and unequalled for beauty and quality."

SCOTT'S WINTER—Origin, Vermont. *Hardy in severe climates.* Tree thrifty grower; an early bearer. Fruit medium, round; surface deep and light red in blotches and streaks; flesh yellowish white, slightly reddened near the skin; acid; good in quality. Pronounced by Dr. Hoskins, of Vt., his most profitable market apple; Prof. Budd and Mr. Gibb also speak highly of it. Keeps well in the North.

SHACKLEFORD—Awarded 1st prize at Ill. State Hort. Soc 1884, as "The Best New Apple." Has taken numerous prizes since. In our orchard this season surpassed Ben Davis in *size* and productiveness; form, less conical, quality *very* good, far surpassing Ben Davis and entirely distinct in flavor—in fact there are few *keeping* apples so good. We value it highly. Native of N. E. Mo., tree hardy, a moderate grower, and an *early* and profuse bearer. Fruit large, well colored; flesh yellowish; flavor, mild sub-acid, aromatic. Dec. to May. G. C. Baker, Clark county, Mo., says: "My tree *four years* old this fall is bearing its *second* crop, and has on it now (Aug. 16) 145 large, smooth apples." J. T. Newman, Clark Co., Mo., says: "Have had trees in bearing in my orchard the past year and am perfectly delighted with them and their fruit. Tree entirely hardy, good grower, and a most prolific bearer, better even than that 'King of the West,' Ben Davis. Apples large, high color, fine flavor, good keepers. In my judgment the coming apple of the great west—shall plant large y of them in the Spring."

SHANNON—This is the great prize winner at the World's Exposition, New Orleans, taking three first premiums. The tree has the habit in the nursery and orchard of R. I. Greening, being a *poor* grower; rather shy bearer. Very large, golden yellow, sub-acid, sprightly, pleasant, good quality. A very popular apple. See Mammoth Pippin.

SONOMA—(*Cook's Seedling*)—Origin, Sonoma Co., Cal. "Very large, striped, fine quality, rich flavor. One of our best apples. Long keeper."

SPENCER—This is an apple found in the oldest orchards in Howard Co., Mo., many trees being over 50 years old. Mr. Kingsbury, the largest orchardist in the county, says: "It has outlived all other trees; have never known it to fail to bear, and generally very full, too; a slow grower, but very hardy; blooms unusually late; very large, bright red, ready for market the latter part of August, when there is a vacancy, and brings me more money than any other variety I ship; in its season, as popular as Jonathan is later. I want 500 of the trees to plant in new orchard." It is a slow-growing and difficult sort to propagate, hence but few nurseries will ever grow it. But where known the trees will always be wanted.

STARK—Large, oblong, partly covered with red; flavor mild, sub-acid; agreeable, resembling Janeton. Tree one of the very strongest growers, hardy and a *most* regular *annual* bearer; in our orchard has not failed in 14 years. It has also proved a very profitable market sort throughout the West, and is in great demand, even in Canada. A leading orchardist in Calhoun Co., Ill., who bought Stark trees of us which are now in full bearing, lately ordered 500 Ben Davis and 500 Stark; another in Scott Co., Ill., orders *two-thirds* Stark. The Committee of the Missouri Horticultural Society report thus on Stark: "Very fine."

STUART'S GOLDEN—"This delicious long-keeping dessert apple recommends itself to all who appreciate fruit of the *best quality*. It has been disseminated only in a limited way, but wherever tried it has given the best satisfaction for more than 30 years.

"It is a beautiful apple of medium size, clear yellow with a blush. It is after the style of *Grimes Golden*, but a more pleasant apple to most tastes, and it has none of the serious faults of dropping badly and not keeping well, which injure *Grimes* so much. For market it is not, of course, so attractive as red apples, but persons who buy it once are sure to ask for it again, willingly paying more for it than the regular market price. As it becomes known to fruit dealers, it is acquiring a permanent popularity, and is much sought after.

"Its keeping properties make it especially valuable. It continues in use until May, and the percentage of loss during the winter is surprisingly light. In the family it is a most desirable sort, cooking well in any form and at any time during the winter and spring; but it is as a *choice dessert apple* that it is most highly prized, being preferred to all others of its season. Those who appreciate a long-keeping winter apple, of unsurpassed quality, will not be disappointed in Stuart's Golden."

SUTTON BEAUTY—Medium to large, roundish, waxen yellow striped with deep carmine; flesh white, sub-acid; tender, juicy, good. Tree a free grower, vigorous and productive. O. B. Hadwen says: "It is proving the peer of the Hubbardston No. such, in some respects even better: has more character, flesh more tender and juicy, better color and keeps later."

WATER WONDER—Mr. Thomas Meehan, late the veteran and conservative editor of the *Gardener's Monthly*, says: "It is over 20 years ago since we called attention to this *wonderful* apple, and yet little is known of it to-day. It is fully the equal of Smith's Cider in everything, and is besides a good grower. We reproduce a cut we gave of it at the time of first describing it, in hopes that those interested in introducing good apples to orchard planters may give it attention." Coming from so high an authority, this is a most valuable endorsement.

WEALTHY—An apple of fine appearance and quality, an early and too profuse bearer. A good market apple of its season. Tree nearly as hardy as Duchess. Its chief fault is killing itself by its early and excessive bearing. Its keeping quality, if gathered early and carefully handled, is pretty good in the North, but farther south it is only a fine fall apple, ripening with us in September. In size and beauty it equals Baldwin, and a better dessert apple.

WESTERN BEAUTY—Again we quote from

Dr. Warder's book: "A valuable fruit. Tree vigorous, of beautiful appearance; leaves 3 to 5 and 6 inches long. Fruit very large, beautiful, not disposed to rot, except when attacked by the birds, which are very fond of it; pale yellow, covered with mixed red, striped and splashed with bright red. Flesh yellow, brittle, tender, juicy, almost melting, never water-cored; sub-acid, vinous, delicious, satisfying; quality best, either for table or cooking, for the latter purpose may be taken when half grown in beginning of July. In Aug. may be house-ripened and found good, but the proper season is September to Christmas."

WHITE PIPPIN—A fine, large winter Pippin closely resembling the Newtown Pippin and often mistaken for it, but unlike the Newtown, it is nearly everywhere a successful market apple. Pale yellow when ripe, flesh fine grained, juicy, good. Tree a good grower and great bearer. Jan. to March.

WOLF RIVER—The famous prize apple from Wisconsin, which gained so much celebrity at the New Orleans Exposition, taking three first prizes. W. A. Springer, of Wisconsin, writes us: "The tree is the hardest we have, except the Duchess and a few seedlings; is hardier than Wealthy. The old tree is yet alive and will bear next year, 33 years old. Wolf River is a good bearer, fruit large and beautiful and of good quality. Will keep here until March." Tree hardy and a strong grower. Fruit very large; specimens have been shown weighing 27 ounces. Mr. E. Gaylord, Nora Springs, Iowa, writes: "The only apples we tie to here are Duchess, Wealthy and Wolf River." Color light yellow, covered with crimson and red, very showy; flesh white, tender; quality medium only. A fall apple in our latitude.

YELLOW TRANSPARENT.—A new sort imported by the Depart't. of Agriculture. On account of earliness, size, beauty, quality, hardiness, productiveness and early bearing, it is one of the most desirable early apples in cultivation. A. G. Tuttle, of Wis., says: "After 25 years experience in fruit growing, I am convinced it is the earliest apple of any country, and the best early market apple. It is hardy, an early bearer and very profitable." A fruit grower of large experience says: "I know of no horticultural enterprise so promising as to plant a large orchard of Yellow Transparent in the South, to supply Chicago and other Northern markets." Mr. Gibb pronounces it "the best summer apple yet fruited in Minnesota. With it there is no further use for Tetofsky, being earlier, larger, of even size, an enormous bearer, hardy and of good quality." Dr. Hoskins, of Vermont, says: "Not only for the North, but Southward the Yellow Transparent is becoming extremely popular as an early market apple. It ships well, and will go safely a long distance." A. Hansell, of N. J. says: "I have fruited Yel. Trans. for the past two seasons, and so well satisfied am I that last Fall I planted 150 trees of this variety. It ripens ahead of every other apple." See Charlotten Thaler, a still earlier apple.

YORK IMPERIAL or Johnson's Fine Winter—Large, truncated, oval, angular; greenish yellow, nearly covered with bright red; flesh tender, crisp, juicy, aromatic; an enormous bearer, and hangs well on the tree. It is also a good keeper, retaining its flavor to the last. Feb. to April. The Committee, Mo. Hort. Society, say: "York Imperial is now well known in various parts of Mo. Large, red, good keeper, tree bears young; is worthy of cultivation."

One large apple grower, wise beyond his generation, has shown his foresight by planting *twenty-five thousand* York Imperial—for an orchard of 640 acres, knowing that in hardiness of tree, productiveness, fine size and appearance, it equals Ben Davis, while it far excels that much planted apple in quality.

CRABS.

FLORENCE—Originated in Minn., by Peter M. Gideon, who says: "The hardest tree of all; an early and profuse bearer; when in full fruit the most ornamental tree we grow. Color, light yellow, covered with bright red stripes. Size and season same as Transcendent, but far superior to that favorite in productiveness, beauty and quality." We saw the Florence in full bearing at Mr. Gideon's place in 1886—a most beautiful and really a wonderful sight. At a short distance the trees seemed like pyramids of crimson, so great was their crop of vividly colored fruit.

GIBB (Gibb Golden)—Mr. Gibb, the noted Canadian horticulturist, in honor of whom the Gibb was named, writing on "Fruit Growing in Dakota," says: "I have noticed for years that a Sept. or Oct. crab of bright glossy appearance, adapted to shipping so as not to show discoloration from bruises, and of crisp texture and rich crab quality, for canning and preserves, would bring more money in the Chicago market than any other apple. Of all the sorts I have ever seen I would choose the Gibb Crab for an orchard of market

crabs; but it is so hard to grow that nurserymen do not like to propagate it, and it is rarely, if ever seen in their lists. In 1883, when I showed the 140 varieties of Minnesota apples at the meeting of the Am. Pomological Society, the Gibb attracted great attention on account of its bright, glossy orange color, and the experts in apples for canning and drying declared that if they could get the fruit in sufficient quantity, it would be worth more money than all the other apples known."

Prof. Budd, of the Iowa Agricultural College, commenting on the above, says: "I wish to add, that in two or three years the Gibb crab bends under its weight of full even-sized fruit. The prettiest sight I have seen the past week was some Gibb trees, the branches laden so that props were needed to support the load. It should head the list on account of large size, beauty, and quality of fruit, and its perfection of foliage, even when loaded with crabs."

We have fruited the Gibb Golden for a number of years, and like it better each season; it is simply incomparable. Mr. Pepper, of Wis., the originator, says: "The Gibb is the best cross I ever made, and stands at head of all new crabs introduced in the Northern States and Canada, (see Canada Reports '84, '85, also Reports of Minn. and Wis. State Hort. Societies), it has always taken first prizes on quality. Twice the size of Whitney's No. 20, excellent eating fruit, keeping well." With us here in Mo., it ripens in Sept.; very large, skin bright yellow with a blush, and flesh even deeper golden still, fine grained, juicy and rich; quality best. If you plant but one crab, let it be the Gibb.

KENTUCKY RED (Red Crab)—The famous Ky. cider crab. Fruit large for a crab, nearly round; skin mostly covered with a rich clear red and sprinkled with dots; flesh tough, rather astringent equal in all respects, and superior in that it is twice as large as Hewes' Virginia, also redder and tree of better habit.

LOOKER'S WINTER.—C. G. Patten, Pres't Iowa State Hort. Society, when sending us this, Richland Winter Sweet and Sweet Russet Crabs, wrote: "Looker's Winter took 1st premium 5 consecutive years in Richland Co., Wis., as best Winter Crab in all respects—and that is a crab county. No blight, and altogether a most valuable crab." A late keeper.

MARTHA.—A new crab raised by P. M. Gideon, of Minn., who says: "A rapid, stiff grower, a perfect pyramid in tree; a great bearer of the most beautiful fruit we ever grew. Flavor a mild, clear tart, surpassing all other crabs we ever grew for all culinary purposes, and fair to eat from hand." Our experience with this sort convinces us that it is one of the best crabs.

After receiving a box of Marthas, sent to the *Horticultural Art Journal*, Rochester, N. Y., the editor says: "To say that they are handsome conveys but a poor idea of their beauty. Most of the crabs measure 8 inches around or over, and weigh 3½ oz. Marthas, as grown in this section, are never more than half the size, nor half so brilliant in color. If we were truthfully to represent these by a painting, as they to-day appear on our table, some would surely say they were overdrawn. The truth is, no artist who ever lived could truthfully portray this fruit as it appears; were he to do his best it would fall far short of nature. And yet there are those who accuse us of over-drawing specimens sent to us; we say it cannot be done. It is true that varieties do not succeed everywhere alike, but that is not the fault of the variety, but simply of the conditions which surround it. Beautiful fruit and flowers—and which of them is there that is not beautiful?—are beyond comparison."

NORTH STAR.—"The hardest tree grown; bears in profusion every year; is very ornamental, as well as a fine fruit. Size of Transcendent; yellow, beautifully sprinkled and striped bright red, sometimes entirely red. It is finer than Transcendent or Hyslop, and of far better quality, being excellent to eat from hand. Ripe and gone before Transcendent comes in."

Seeing this in fruiting at Excelsior, Minn., in 1886, we were particularly impressed with its evident superiority. This fine crab equals Florence, its only possible rival, in wondrous productiveness, size, brilliant coloring and highly ornamental appearance, but is of finer quality and earlier; it was fully ripe and being gathered at the time of our visit, while Florence was ten days later. Its earliness brings it into market before Transcendent or any other crab, and makes it a most profitable variety.

RICHLAND WINTER SWEET.—Mr. Patten writes: "Originated in Richland Co., Wis. I have fruited it and know it is good and will keep—nearly as well as Talman Sweet apple. It is a very fine crab, and I know of no other winter sweet crab equal to it. The tree is very straight and symmetrical." Has no blight and bears profusely and every year.

SWEET RUSSET (Summer Sweet Russet).—C. G. Patten, Pres't of the Iowa State Horticultural Society, when sending us this, wrote: "Sweet Russet is a very large crab, clear russet; an excellent summer variety. In Wisconsin they call it the finest summer crab." This and the Gibb are placed at the head of the Crab list by

The Wis. State Hort. Society, and both sorts prove excellent with us. Sweet Russet is almost equal to a good pear in quality; and while it is the best of its season, Gibb is the very finest crab of any season.

VAN WYCK SWEET.—From Dutchess Co., N. Y., where it is considered an exceedingly valuable sort. Flesh yellowish-white, moderately juicy, very sweet and tender; core small. Tree fair grower; productive.

WINTER GOLDEN SWEET.—Fruit large, one-half larger than Transcendent, flattened, a beautiful golden yellow. Flesh firm, fine grained, juicy, brittle, rich, sweet—a peculiar condensed sweet seldom found in any apple; entirely free from astringency or "crabbiness." Great and early bearer; keeps well.

YATES (Red Warrior).—Fruit very large for a crab; dark red; flesh yellow, firm, juicy and very aromatic. Immense bearer and a long keeper. Valuable for both cider and dessert,—especially South.

PEARS.

TO PEAR GROWERS: Plant Standard Pears on strong yellow or red clay soil; cultivate well for four years. Then sow blue grass (better than clover), and leave it. Cultivation invites the blight, and should be stopped as soon as the trees have a fair start. Mow the grass twice a season and let it lie. Scatter manure broadcast every winter after the trees begin to bear. There's dollars in this advice.

B. Hendricks, a high authority in popular gardening, says: "Standing as I do, in the light of many years' experience in the culture of fruit, I can say that the man who plants an orchard of standard pears of the best sorts, in proper soil, makes the safest investment which is open to him in fruit culture to-day."

Texas Farm and Ranch, Nov. 1, '90; Pilot Point Farmer's Institute. A paper by H. M. Stringfellow was read, entitled, "Growing Pears for Profit." Mr. S.'s experience is certainly very unique. Over \$500 per acre from 7-yr.-old trees this year is certainly wonderful.

Am. Hort. Society, meeting 1889; extracts:
Mr. Oñner, of Ohio: Experience of 32 years. Planted 4,000 pears. Mistakes: planted too many sorts, and too close together. Find more money in Kieffer than any other. Pears paid better than other tree fruits in spite of blight and other obstacles. Packs firm, ships to large city, sells wholesale. Pack pears soon as they will separate from the stem. Never cultivate the pear after it begins to bear, but keep in clover.

Mr. Stoner, of La.: Experience with 1200 pears in La.: has had wonderful success; thinks they are the most profitable fruit to grow. Cuts off the late summer sappy growth in fall and avoids all blight; says it is a sure preventive of blight.

Ill. State Hort. Society; extracts Report, 1889:
Mr. Riehl: Kieffer and Garber are mentioned. Kieffer has been run down on account of quality; have done so myself. But this year Kieffer, ripened in drawers, were very good pears; others pronounced them the same. Very productive; very large and beautiful; it is a good thing. Wish I had thousands growing. Garber is a better pear. Le Conte is the worst to blight I have.

Mr. Dennis: What about Idaho?
Mr. Riehl: It is a pear of excellent quality.
Mr. Shank: Le Conte is not worth anything. Kieffer has a tendency to overbear. For bearing and quality, it is like Ben Davis among apples. I planted a pear orchard 16 years ago; many have borne for 12 years.

Mr. Thomas: Have been growing pears many years; don't use anything on the trees. Just plant them on the east side of a wall where they get no afternoon sun, and they don't blight.

Mr. Dennis: If you want to plant Kieffer as a dwarf, plant it deep. With me it has grown 10 ft. in two years.

Mr. Riehl: Double work pears that do not unite well on the quince stock. Put on a pear that unites well and then put your graft on that.

Question: What is the proper culture for pears and what varieties are most profitable?

Mr. Riehl: Cultivate 4 years, then seed down, mowing the grass once or twice a season. Cultivation encourages blight and should cease soon as the trees get a fair start. Have not had a plow in my pear orchard for 15 years. Bartlett is perhaps the best paying of all, but Howell has always done just as well. A good early pear is Tyson. Kieffer is unsurpassed for canning. Clapp's no good, rots at the core. Plant standards 10 by 20 ft.

Mr. Jackson: What is best to seed orchard with?
Mr. Riehl: Mix grass seed and sow thick. Kind of grass matters little, just so it covers ground and kills out weeds.

Dr. Ballou: There has been a great revolution in a half century in the culture of the pear by use of methods shortening time for coming into bearing more than four-fifths, by propagating on the quince. The failure of pears is largely due to the lack of skill in digging the trees. The nurseryman lets petty questions govern regarding

increased labor in digging. The planter is disappointed and chagrined. Have seen such trees linger feebly through three or four seasons then die. All this might be averted, if some person with skill to direct were present at the digging. Pear soil must be dry and deep. Well rotted stable compost is the safest nourishment for pear trees. For market, Bartlett possesses high qualities. Boussock, good, also Flemish Beauty, Buffum, Lawrence, Seckel, Anjou, L. B. Jersey, White Doyenne, Howell and Sheldon. One of the mistakes made by pear growers is to send the fruit to market after ripening; market men will not buy fruit already ripe to be kept for several days for sale to the retailers, who in turn must keep it on hand for their consumers.

Sec'y Hammond: There are certain localities in Northern Ill. adapted to growing the pear. Dr. Ballou is evidently situated in one of these places. There is a small pear orchard near Sandwich which has been in existence for 25 years or more and has borne more or less each year. One tree this year bore 13 bushels.

Dr. Ballou: As soon as the blight appears, it should be pruned off. When I first came to Northern Ill., many years ago, I shipped in \$900 worth of pear trees and retailed some of them to farmers, many of whom have made quite a success. I myself have been successful, and shall plant more pear trees.

Mr. Wilson: Our crop this season was good. For several years pears have done fully as well as apples.

Mr. Dunlap: Pear trees should be seeded down to grass early; they are benefited rather than injured by blue grass. They blight less when in sod than under cultivation. The list given by the State Society is good: Flemish Beauty, Howell, Tyson, Seckel and Kieffer.

Mo. State Hort. Society; extracts:
Sorts recommended: Bartlett, Clairgeau, Duchess, Kieffer, Lawrence, Seckel, Sheldon, White Doyenne. Kieffer was agreed upon as among best new sorts.

Mr. Brodbeck: Mr. Luckhardt is about the most successful pear grower in Holt county. Mr. Luckhardt says Pears which are a success and profitable with him, with very little blight, are Anjou, Clapp's, Tyson, White Doyenne—the very best Standards; while Boussock and Sheldon are good. Dwarfs, Duchess, Seckel, White Doyenne, Superfine, [see description Fred Clapp.] Mr. L.'s original orchard consisted of 309 Standard, and 700 Dwarf. He cultivates two or three years, keeps well trimmed, then stops cultivating and trimming and sows in grass. Pears set in 1875 have averaged \$75 to \$100 per acre for twenty-eight years, of the varieties mentioned. Let no standing water be close to trees; the pear cannot stand it. Believes the blight has about run its course; epidemic diseases rage for a while in both animal and vegetable kingdoms, and then subside.

Dr. Bates had only succeeded with Bartlett. Vice-President Murray had only succeeded with Bartlett, Seckel and Duchess.

Mr. Durkes recommends to plant more kinds and make pears as cheap as apples.

Mr. Grover, of South Missouri, does not think pears will succeed in his locality.

Secretary Goodman did not agree with Mr. Grover. Judge Miller will only plant Dwarf Pears hereafter.

Mr. Blumer has never seen the blight and has never missed a crop until this year. Thinks the pear does as well in Southeast Missouri as anywhere in the world.

President Evans says he knows, by actual observation, that the pear is doing well in the Ozarks.

Mr. Kaufman, of Oregon county, says the pear bears every year there, and some trees have been bearing for twenty years.

Mr. Gilbert knows a pear tree now over forty years old that has never missed a crop.

Dr. Bates succeeds only with native kinds and Bartlett.

Mr. Leutz has not heard of any blight in Butler county, and no entire failure of the pear crop.

Mr. Lewis says pears do well about Springfield, and believes they will do well anywhere on the Ozarks.

Mr. Murfield: Bartlett, Duchess and Seckel do well in St. Louis Co; crop was very large, especially of Seckel. Swan's Orange did fairly well.

Mr. Laughlin: There is a new interest in pear growing in Holt Co. Mr. Luckhardt succeeds well with pears.

Vice-Pres't Murray: Pears should be planted on deep soil. If the soil contains iron, so much the better, as it is, in a measure, an antidote to blight. Cultivate 3 years, then sow in grass and let them remain, digging around them annually and giving a top dressing of manure. Dwarf pears should be planted on good, deep, rich land. Should have continuous cultivation not more than one or two inches deep. Give a top dressing of manure at least once in two years. With proper selection of sorts and intelligent culture, pear growing in Mo. has proved remunerative; it is a shameful fact that Missourians, with a soil and climate capable of producing the largest, finest and best flavored pears on this continent, leave our large cities to be supplied with Cal. pears.

Mr. Hollister: Have found only one party who puts

his pears up in proper shape to sell. Missouri people ought to handle their pears as do the California growers. Have seen many nice pears spoiled in handling.

Mr. Durkes: Mo. pears are left on the tree too long; are packed in large packages, hence bruised. Should be wrapped like Cal. pears.

Mr. Gano: Why does Mr. Murray cut back pear trees every second or third year? Why not each year?

Mr. Murray: If the whole tree is cut back, it will grow too thick in the center, and the fruit will be dull colored. Cut half or third each year early in the spring, before the sap starts at all; any time in Feb. or March.

Mr. Ambrose: Best results come from cutting back the young wood of dwarfs each year.

Capt. Hynes: Pears planted 16 years ago in rich garden soil have died; in soil not very rich, are good yet.

Mr. Murray: Where the soil is very strong, much cultivation would be bad. Cultivate so as to have the trees make a good, but not an over-rank growth.

Mr. Ambrose: Good cultivation gives a good crop; no cultivation, no crop. Kieffer bears well.

Mr. Bonham: By planting good sorts we raise fine pears. Of dwarfs, the best are Duchess and Jersey, though Seckel and others do very well.

Mr. Mallinekrodt: What pear trees we have bore abundant crops; less blight than usual. Kieffer has been exempt from blight or other disease and bears well. Tree and fruit quite satisfactory. Many will plant it.

Mr. Luke: Seckel, Clapp's and Kieffer are a success in Grundy Co. Have watched Kieffer in Mr. Lowen's orchard for 3 years. Bears full crops every year. In 1889 was so full that we had to prop the trees. I counted on one small limb 52 large pears. Mr. Lowen sells his pears at \$2 per bushel; now reports he didn't plant 1,000 trees. Kieffer is as easily grown as Ben Davis apples.

Western N. Y. Hort. Soc.: extracts report, 1890: Which, according to the latest experience, is the most profitable to plant, the Standard or Dwarf Pear?

Mr. Bogue thought, take it acre for acre, Dwarf Pears had been the most profitable in Genesee county. Wm. Page had a four and a half acre orchard of Dwarf Duchess that in 1888 produced 441 barrels of first-class fruit. The seconds were sold for a total of \$75. The labor bestowed was: Eleven men picked in a day and a half; five men sorted and packed in five days; two men with teams hauled to station. The crop brought \$4.50 per barrel, or \$1,906.

Mr. Smith asked if much did not depend on soil. Mr. Bogue: Yes, dwarfs should be planted on heavy soil, well cultivated and manured. The Duchess leads all other varieties with us.

Mr. Willard: Dwarf Pear orchards have paid more clean money than standards. If well cared for, trees will last a lifetime. Growers had inclined too much to Duchess. Howell was quite as productive, and Kieffer one of the best he had.

Mr. Smith said that on a strong loam dwarfs would give better results than standards; but on a gravelly soil he would prefer standards. The majority of our well known varieties were improved by working on the quince stock if planted on clay ground.

Mr. Hooker was entirely in favor of dwarfs. While the Duchess was a regular bearer, it was liable to blight.

Mr. Rupert's experience proved that it was best to plant at least four inches below the junction.

Mr. Willard supposed every man planted pears deep. [dwarfs and standards.] It was certainly desirable to do so. He affirmed there was more money in growing pears, dwarfs or standards, than in raising grain. Canning factories were increasing, and a great many pears were wanted; and when cold storage houses were constructed so that stock can be held back till the glut is off the market, people will begin to appreciate the fact.

Prof. Bailey thought much depended on location. He knew an orchard that was planted too high. If the best attention be given, the tops kept where they ought to be, and good culture given, the dwarf was the thing.

Mr. W. C. Barry said one point that ought to have consideration was the small space Dwarf Pears occupied. The returns from them come quick. It was surprising that growers did not raise more dwarfs. The opinion that the Dwarf Pear is short-lived is wrong. If properly [deeply] planted it is long-lived. He recommended the Anjou, which he considered a most valuable variety, and, when properly ripened, it was one of the finest pears. An orchard of them was a pretty sight in Oct., when the fruit was coloring, the specimens uniform in size and perfect in every way.

ANGOLEME (Duchess).—One of the largest of all our good pears; often weighs over a pound, and 65 pears have made a full bushel. Always brings a good price in market. Frequently bears the first season after planting, and is everywhere one of the most profitable market pears when grown on the quince; worthless as a standard. Requires a very rich clay soil. An acre of Duchess or Howell Dwarf pears, well cared for, will net an average income of \$300 to \$500 per acre.

ANJOU (Beurre d').—A large, handsome pear, but-

tery and melting, with sprightly vinous flavor. Tree hardy and good bearer. We have no hesitation in pronouncing it to be one of the most valuable pears in the list. Does equally well as a standard or dwarf. Keeps until the winter holidays, when it commands very high prices in the market.

ANNE OGBEAU.—“The most beautiful pear known!” Almost a counterpart of Vermont Beauty in appearance, but is larger and much earlier, ripening ahead of Bartlett. Highly esteemed in California, where only the best are tolerated. Good quality; only medium size, but for a dessert pear to eat out of hand, it is large enough, and comes at a season when there is a demand for just such fruit. “Tree very hardy and good bearer. Its fine color, yellow almost covered with the most brilliant crimson and early ripening, make it of immense value as a shipper.”

BARTLETT.—One of the most popular pears; large, buttery and melting, with a rich musky flavor. A good grower; bears young and abundantly. Very profitable for market, notwithstanding it is subject to blight.

BESSEMIANKA (Seedless).—This famous seedless pear, the best of all the Russian varieties yet tested, was sent out by the Iowa Agricultural College. Pres't. Watrous, of Iowa, has tried over 30 Russian sorts and this is the only successful one. Tree of complete hardiness, with perfect foliage; never rusts or mildews. Prof. Budd says: “Flesh tender, juicy and better than good; seedless. This pear will prove hardy and bear abundant crops over a wide area of the West.” Blooms late.

BORDEAUX (Duchess de Bordeaux).—A valuable new winter pear, easily ripened and of good quality. Large to very large; skin thick, green, changing to yellow. Flesh white, tender and sweet; tree very productive and a good grower. Especially valuable in the South. Feb. to April.

BUFFUM.—The original Buffum is still a grand old tree, over a century old, but healthy and bears a good crop annually. Resembles Seckel and is frequently sold in the market under that name, but only to the uninitiated. Still it is a good pear; sweet, juicy, buttery and pleasant. Should be picked before it colors and put in a dark place to ripen. For a beautiful and grand effect, plant a group of Buffums and Garbers on the lawn, or along an avenue or driveway. Besides their fruit, you will be more than repaid with their splendid columns of lying green in summer and gorgeous autumn coloring “in purple and red.”

CLAIERGEAU (Beurre C).—Very large; yellow and red; handsome and attractive. Fair quality; keeps sound long time. A magnificent and valuable market pear; largely grown in California. Liable to be dark colored after being gathered; otherwise fine for market.

CLAPP'S FAVORITE.—A splendid pear, resembling Bartlett, and ripening two weeks earlier; a cross between Bartlett and Flemish Beauty. The tree is hardy and vigorous on the pear; blights on quince. Care should be taken to pick the fruit at least ten days before it would ripen upon the tree, or it will rot at the core.

DANA'S HOVEY (Winter Seckel).—A medium-sized pear of the highest flavor, ranking with Seckel, which it much resembles, except it is one-half larger; One of the most valuable pears, always commanding the very highest prices in the market; good keeper. One of the most popular sorts in Cal., and Prof. Thos. Meehan says it bore a full crop in 1880, when nearly every other sort failed. A poor grower; found in but few nurseries.

FLEMISH BEAUTY.—One of the most popular old sorts. Large, beautiful, melting and sweet. Tree very hardy and fruitful. In good soils and open situations the Flemish Beauty, when in perfection, is one of the most superb pears. The fruit should be gathered sooner than most pears, and ripened in the house; they are then always fine; otherwise often poor. Sept.

FRED CLAPP.—“Size above medium; skin thin, smooth, clear lemon yellow; flesh fine-grained, very juicy and melting; flavor sprightly, rich and aromatic; quality very good to best. Oct.” Of this pear the committee of the Mass. Hort. Society have reported favorably for years. Of its quality they state: “It was pronounced decidedly superior to Superfine, and is regarded by all who have seen it as the highest bred and most refined of all the many seedlings shown by Messrs. Clapp.” We find it too much inclined to blight.

GARBER'S HYBRID.—Judge Miller, in the Rural World, says: “Immensely productive; bears at 3 years from the nursery. On a branch an inch thick I counted 23 pears on 25 inches of the limb, and they averaged half a pound each; it took just 80 of them to make a heaped bushel. Yellow as an orange, larger than Kieffer, better in quality, and four weeks earlier. If there is any tree of the pear family free from blight, I think, this is it. When I saw the original tree, in 1881, it was one mass of fruit. Grows upright, like the Lombardy,

Poplar, with heavy, dark-green glittering foliage. Well worth planting on a lawn for its beauty alone, if it bore neither flower nor fruit." A year later: "The Garber again has a fine crop of handsome pears. The tree is a perfect beauty, has never shown a sign of blight, and is the most rapid grower on my place." Two years later: "Garber deserves extensive trial. It seems to be free from blight, for Le Conte, budded on to it, has succumbed to the blight and been sawed off, while the main Garber tree has not a sign of the disease." Still later: "Garber will soon come to the front, on account of large size and good quality, as well as excellence for canning and preserving. My Garbers sold for \$4 per bushel, while others only brought \$2."

Hon. E. A. Riehl, ex-Prest. Ill. State Hort. Society, writes us: "I consider Bartlett, Howell, Garber's Hybrid, and perhaps Kieffer, the most profitable pears for market purposes. Garber's Hybrid is the best and handsomest of its class. It is earlier than Kieffer, better quality, and makes the best canned fruit or preserves of any pear I know. Tree bears young and abundantly, and has shown no blight so far." The ironclad *hardiness* of the tree is another great point. There are other valuable pears in our list; but (excepting, perhaps, the Idaho), Garber is our first choice for fine pears and bushels of them.

HARDY (Beurre).—Large, melting and fine. Tree remarkably vigorous and productive. One of the *finest pears* received—except in California, where they know what good pears are. Lately the California growers have been shipping almost as many car loads of Hardy Pears east as of the old favorite Bartlett.

HOWELL.—A grand and beautiful pear. A fine grower and bearer, and does well either as a dwarf or standard—especially fine as a dwarf. Ellwanger & Barry say: "One of the finest American pears; large, handsome, sweet, melting. Tree hardy and productive."

IDAHO.—This remarkable pear has more endorsements than any new fruit ever introduced. It is a fine shipping pear, and has been sent through the mails to eminent horticulturists all over the U. S. and Europe, arriving in perfect order. Sent out by the Idaho Pear Co., from whom we obtained our start, at a cost of \$200 per 100 for small 1 yr. old trees. A seedling 20 yrs. old, of an unknown fine, large, red-cheeked pear—most probably Bartlett. The young tree bore at 4 years from seed and has continued bearing ever since. Tree an upright and vigorous grower and a continuous and heavy bearer. The only objection known to the tree is that it bears too heavily. It has endured 32 below zero, and flourishes better during the hot, dry summers of Idaho than any other variety. Four pears sent to the N. J. Fair weighed 19, 19½, 21 and 23 ounces. They were tested by a special committee and awarded the highest prize. Flesh fine, melting, high-flavored, vinous, spicy and excellent; almost seedless and coreless.

From IDAHO PEAR CO., Oct. 20, '90:

"Gentlemen: Yours 13th at hand; having received your previous letter with plain instructions as to shipment of the 900 2-yr. Idaho, everything is straight as far as we know. We very much regret that we omitted you from the list of parties to whom we sent samples of fruit, and are fully aware that some of our finest specimens would have done us more good in your hands than in those of the so-called horticulturists or even hort. editors. However, we will now do the best we can, and mail you to-day 2 cans, each containing an Idaho Pear. The larger Idaho is one of a cluster of 3 raised from a bud inserted in a small quince bush in June '88. It is the scrubbiest one of the lot, and we had retained it to distinguish any possible difference there might be between the fruit on the Pear and Quince; The other two were sent, one to Mr. Carman, of the *Rural New-Yorker*, and one to U. S. Pomologist Van Deman. We had many specimens of over one pound. One peculiarity of the Idaho we find to be that small and poorly grown fruit develops better eating qualities when ripened than other varieties,—and it is mainly to show you this feature that we send you these to-day.

"Mr. Van Deman requested us to send him specimens of fruit some two weeks ago, when we had no good ones left, and we sent some like those we send you to-day. Here is what he says in letter received this morning: 'The largest specimen sent, in flavor is very fine and reminds me of the Bartlett, except the flesh of the former is firmer in quality. I think it will rank fully with this old standard variety, if not a little above it. In size and shape, it is very different.'

"From those who received better specimens, we received more flattering comments, most of which are to the effect that it is the *finest pear* they ever tasted. While we can hardly offer you a discount on trees, we consider it but fair and due to you to give you as liberal

terms as to anyone else on such large quantities. We have no doubt but that you could dispose of thousands for Spring trade if you make a special effort, and we will offer you every possible inducement to make a special run on the Idaho, profitable to us and yourselves."

Reply: Idaho Pear Co.: Gentlemen:—We thank you for your favor of 20th inst. The two pears reached us this morning. The riper one was badly decayed, yet we are very highly pleased with its quality. Since seeing the fruit, we are more than ever convinced, as we have been heretofore, by the growth and appearance of the tree, that Idaho is a seedling of the great leader that stands to-day head and shoulders above any others of the older varieties—Bartlett. Idaho being a so much stronger grower, hardier and less liable to blight, with its prolificness, early and certain bearing, greater size and excellent quality, could not have a brighter prospect of becoming THE PEAR of the future.

Another point that is strongly in favor of its being a seedling of Bartlett, rather than of Duchess, Easter Beurre, or other sort, is the fact that it is "a seedling of a large red-cheeked pear." Now what large, red-cheeked pear so likely to have reached Idaho as Bartlett? The chances, we think, are 99 to 100 in favor of its being a seedling of Bartlett—and it could have no better parentage and no better recommendation than being an *improvement* in so many respects on that great pear.

The Idaho Pear Co. advises us that "many bogus Idaho trees are being disposed of by unscrupulous parties;" every Idaho tree sent out by us, whether propagated by the Idaho Pear Co. or ourselves, will bear our Trade-Mark, white manilla tag seal, together with our special guaranty. Our Trade Mark was the first secured for general nursery stock, same having been registered in U. S. Patent Office nearly 4 yrs. ago. We bought a large lot of Idaho trees from the Idaho Pear Co. in Fall of 1889; also 900 2-yr. Idaho trees, Fall 1890, which, in addition to the Idahos of our own propagation, we hope will enable us to supply all of our customers. All of our Idaho trees were bought without restrictions as to propagation or selling price. In fact we declined point blank to enter a combine or monopoly for keeping up high prices and advertising that all Idahos grown by outsiders were counterfeit and no genuine trees to be had except from the syndicate or monopoly. Most of the Idahos received last fall were cut back close and planted in our test orchards, and the wood used for propagation. Perhaps it is worth mentioning as a single item of our success with the Idaho that from 27 young bearing trees in our test orchard, top-worked with Idaho, we have cut and set over 29,000 Idaho buds; besides, these trees promise to produce a good lot of Idaho Pears season 1891. With an immense lot of buds on strong French and Japan Pear seedlings and Angers Quince stocks, we shall have fine trees in very large supply, Fall 1891 and afterwards.

JONES SEEDLING.—This delicious midwinter pear shows how long it takes for a good thing to become well-known; it originated in Pa. many years ago, yet until within a few years past there was but one nursery in the U. S. besides our own that grew the trees. Medium size, buttery, sugary, vinous and of fine flavor. Tree vigorous and hardy, even in Wis.; bears young and is very productive. A fine pear for both family use and market. What the Seckel is among fall sorts the Jones is among winter pears.

KIEFFER HYBRID.—"Close observation and tests for several years convince me that Kieffer has come to stay, and everybody planting for profit should set it out largely. The 'Ben Davis among pears.'"—*Judge S. Miller*. A most profitable late variety; the demand for the trees is something unprecedented. Thus far it has paid, and profit is a wonderful factor in deciding many disputed points. Quality fair; excellent for canning.

Kieffer bears too full and must be thinned, ripened in a cool room, when the quality is—well, Judge Miller again says: "The more I see of it and eat of the fruit the more I am impressed with its value."

P. J. Berckmans says: "No fall pear has given such profitable returns as Kieffer; its wonderful fertility is

surprising. Many trees planted 4 years ago have each yielded 3 bushels of perfect fruit. It is unfortunate the real merits of this pear have been under-estimated. When allowed to hang on the tree until Oct. and then ripened in a cool, dark room, there are few pears which are more attractive; in quality it combines extreme juiciness with sprightly sub-acid flavor and the peculiar aroma of the Bartlett; it is then an excellent dessert fruit. As to its value for market: shipped after being house-ripened, \$4 per bushel has been realized wholesale; retails readily at 75c. to \$1 per doz. on city fruit stands. So far no cases of blight have appeared in this section, where all the trees now growing were worked on seedling pear stocks; trees now 10 years old."

Others say nay; indeed, the whole discussion might easily resolve itself into:

"Much Ado About Nothing,"
"A Comedy of Errors,"
"As You Like It," or
"What You Will."

but "Richard's himself"—will be long years to come.

LAWRENCE.—Medium size, golden yellow, melting and sweet. Ripens with little care; should be in every orchard. Early winter.

LAWSON (Comet).—Like Early Harvest, Jefferson and others of this class, Lawson is large, early, very beautiful; bears and sells well but is *coarse* and *poor* in quality—"better to look at than to eat."

From Bulletin Mass. Experiment Station: "Lawson and Early Harvest are believed to be synonymous, and the latter is entirely worthless." From Ill. Hort. Report: "E. Harvest and Jefferson are practically one and the same; early and of *third* quality. Have not fruited Lawson." We find Jefferson distinct, larger, more prolific, but equally worthless; we have discarded all three from our recent propagating lists.

LECONTE.—Fruit large, of variable quality, usually *inferior*. We cannot recommend it. Popular South, but even there we would not advise planting it largely. Garber is far superior; even Smith's Hybrid is much better. The latter has fruited with us several years and we find the tree perfectly *hardy* and *healthy*, no blight. (Le Contes along side of same age are nearly gone—some entirely dead;) fruit ripens *earlier* and is *larger* than Le Conte—quality equally poor. Smith's will certainly supersede Le Conte—at least it *ought* to do so.

LONGWORTH NO. 1.—Originated by Mr. Longworth, who writes us: "The Longworth No. 1 is a seedling, and the original tree, over 40 years old, is still standing on my old place at Dubuque, Iowa. When I was last there it was still bearing and doing well. I have sold a good many trees here and at Dubuque, Ia., at from \$1 to \$2.50 each; three years ago I sent a few to a nurseryman in N. W. Iowa, and he says that the first winter after they were planted they stood 40 degrees below zero, and made a growth of 2 to 3 ft. the next season; did not winter-kill nor blight, and that he had no other variety that would stand it there. It has cost me thousands of dollars and 40 years of experimenting; has been thoroughly tested as to hardness of tree and quality of fruit. The tree is very hardy and considered exempt from blight; bears annually, but more on alternate years, when they are loaded with fruit."

A prominent Ill. nurseryman says: "Tree a strong grower, has never been known to blight; prolific bearer; fruit of more than average quality, flavor sweet, very desirable for preserving; ripens in Oct.; is bearing at the present time near Bloomington. This pear is peculiarly adapted to the climate of the Northwest."

And another practical life-long nurseryman writes: "I have often wondered why some one hasn't taken hold of the Longworth No. 1 before now. It has everything requisite for our climate; is far harder than Kieffer, better quality of fruit, was never known to blight, a sure bearer, and is an exceptionally good grower. I am satisfied if you should take hold and push it, you would make a fortune out of it."

We know better than to expect the latter from any new sort. Besides, our experience leads us to believe Longworth is not *good* enough in quality to recommend, unless for the extreme North. Garber is equally *hardy* in tree, bears younger, more abundantly, and is much larger, handsomer, and of vastly better quality.

LOUISE BONNE JERSEY.—A large, beautiful pear, yellow, with a red cheek; melting, juicy and rich. Bears heavily as a dwarf, and *does well only as a dwarf*. Its only fault is that it often blights badly a few years after coming into bearing.

MARGARET (E'y Margaret).—An extra early new pear, now conceded to be the finest and best early sort—the "first juicy gem of summer." The fruit is always beautifully fair, solid and delicious. Flesh fine, melting, juicy, vinous, and of *first quality*—hardly surpassed by any pear of any season. This is all the more remarkable, since no other early pear is of best quality, many of them—such as Early Harvest, Jefferson and Lawson—being absolutely poor. Tree a vigorous, upright grower, and

an early and abundant bearer. Succeeds admirably as a standard or dwarf. Ellwanger & Barry say: "The finest pear of its season, and worthy of special attention." The Am. Pomological Society say: "This seems to supersede Summer Doyenne d'Ete;" much superior in quality and of more than double the size of Sum. Doyenne.

C. G. Wickersham, of Kan., wrote the *Gardener's Monthly*: "My Margaret pear tree has fruited for three years. The last season I picked five bushels and marketed them in small baskets, each holding one-tenth of a bushel, and sold them at \$1 per basket, realizing the sum of \$50 net from this one tree."

MT. VERNON (Walker's Seedling).—A new American pear, the very *best of its season*. Seedling of Winter Nelis, which it strongly resembles in both tree and fruit, but higher colored and averages more than twice as large. Flesh yellow, juicy, vinous and aromatic. Tree hardy, a straggling but free grower and a most extraordinary bearer, being literally loaded down with fine, perfect fruit. A most valuable variety. We have gathered over six bushels each from standard trees seven years planted and nearly as much from dwarfs. Has also done well in many other places. Strongly recommended by Judge Miller, W. S. Little, of N. Y., and others.

OLD KY. HOME (Crow's Choice).—A hardy seedling pear, originated in this Co. nearly 60 years ago, by the father of Judge Martin Crow; the latter's daughter writes us: "I will give the history and description of the tree as my father tells me. The seed was brought from Ky. and planted in the spring of 1831; the pears were like the fruit from which the seed was taken, although another tree from the same lot of seed bore a very different and inferior pear. The tree bore almost every year, usually very abundantly. The pear resembled the Lawrence, had a rich, sweet flavor, and began to ripen about Aug. 20 and lasted about a month. They kept well when properly packed, made beautiful preserves, &c., and were nice dried. Any friends or neighbors who came while the fruit was ripe, would speak of it being so fine, that my grandmother always insisted upon giving them a reticule full to take home with them."

Tree the strongest grower we have, and unquestionably very hardy and long-lived. We believe its good qualities make it an acquisition, especially for the West.

PRESIDENT DROUARD.—This is the most remarkable variety ever tested on our grounds. Introduced from France some years since, it has proved to be the most valuable winter pear we know anything about. Fruit very large; of first quality. The tree is vigorous, a great bearer, very hardy, and as free from leaf-rust as Kieffer. The *longest keeper* in the list.

RUTTER (Smith-Rutter).—Entirely distinct from Smith's *Hybrid*; months later, and far superior. Has fruited in our orchard a number of years and proved one of the most profitable sorts. Juicy, melting, vinous and good. Tree of *great hardness*, perfectly healthy, as vigorous as Kieffer, and a great bearer; begins to fruit when quite young.

G. C. Brackett, Sec'y Kan. State Hort. Society, says: "This is of recent introduction to our state. The tree grows vigorously, appearing to be very healthy. Fruit good size, russet, changing to yellow. Flesh tender, juicy, flavor pleasant, and rich acid. When eaten it becomes a substantial food, satisfying hunger. Oct. to Nov. From my acquaintance with pears generally, I am most favorably impressed with its value as a market variety."

SECKEL.—The standard of excellence in the pear; small, but of the highest flavor. Healthy and long-lived; the original tree is nearly 100 years old, and still bears.

SHELDON.—An American pear of first quality in every respect. Large, russet, handsome; melting, rich, delicious. "One of the finest table pears in the world; even the smallest pears on the tree are always delicious." Tree hardy and vigorous, and bears well as a *standard*.

SMITH'S HYBRID.—See Le Conte.

SUMMER DOYENNE (D'Ete).—An early little pear, yellow, shaded with red; melting, juicy, sweet. Tree not of rugged constitution. Now superseded.

TYSON.—Rather above medium size; melting, juicy, sweet and pleasant. Tree very *hardy*, long-lived, a vigorous and rapid grower; bears abundantly every year; one of the best summer varieties. Early in Aug.

VICAR (of Winkfield).—Large, long; not of good quality, but productive and sometimes profitable as a *dwarf*; rarely succeeds as a standard. Blights badly.

VICTOR.—Judge S. Miller, in the *Rural World*, says: "That this pear is not better known is a pity, for it is among the *very best*. Victor is a name it fully deserves. Tree a beautiful, upright grower, like Buffum, with heavy, dark, glossy foliage, and bears fine crops every year." Has never blighted. Large, regular, pear-shaped; rich, sweet and melting; as delicious as any pear we ever tasted—even "equal to Seckel."

WHITE DOYENNE (Virgalien).—A well-known variety of the highest excellence. Tree vigorous, productive, extremely hardy; medium; yellow and red.

CHERRIES.

BELLE de MONTREUIL.—This new cherry was sent out by the largest nurseries in France, and very highly recommended. There are yet but few trees in the U. S. "Fruit very large, round, marbled with red, flesh firm, deep red, sugary, perfumed. This sort is in likeness with *Reine Hortense*, and has the great advantage of being of even greater production than that variety."

Cherries for Profit.—Plant on the highest, poorest soil you have. Rows along fences and roads pay well. Heart and Bigarreau cherries, such as Early La Maurie and Napoleon are called "Sweets." Dukes such as Royal Duke and Reine Hortense, and Morellos such as Early Richmond, Mont. Ord. and Suda, are called "Sours," all being more or less acid; sours are the best for cooking, preserves and canning; the sweets fine for eating fresh. The Morellos are the *hardest*, the Dukes next. **Plant SOURS for Profit;** the sweets sometimes are attacked by curculio, and often rot in wet weather, and the trees are less hardy, though often very profitable on high, dry soil; still the sours yield *two to one* better returns. The *surest* list for market, in order of ripening, is Dyehouse, Northwest, Early Richmond, Mont. Ord., Eng. Morello, Wragg, Ostheimer and Suda. Branch sweets *low*; see under Napoleon and Windsor.

BLACK MASTODON.—From California. "The largest cherry in the world. Tree of shapely growth; fruit deep purple; flesh very firm and sweet. In size it is enormous. Ripens just after Black Tartarian, and for a shipping cherry is unsurpassed."

CALIFORNIA ADVANCE.—"This is not a chance seedling, but one raised with the specific purpose of producing an improvement on the parent—Early Purple Guigne. It is larger, firmer, a much better bearer, and fully a week earlier; in color almost black. Already a great demand is being created for it in the early fruit sections. It has been fully tested for many years, and is well known and recommended." *Earliest* sweet sort.

CENTENNIAL.—"A seedling of Napoleon, larger than its parent, and beautifully marbled and splashed with crimson. Its phenomenal sweetness is very marked. We have kept it in perfect condition for fifteen days. The finest canning and shipping light-colored cherry in the world. Ripens with the Napoleon."

DUKE, MAY.—A popular old sort and does well on the best light, dry cherry soil, but generally is not quite hardy enough, often dying just when large enough to bear large crops.

DUKE, ROYAL.—One of the largest and finest Duke Cherries; *hardier* than May Duke. We find it very liable to rot; otherwise fine.

DYEHOUSE.—The earliest cherry. From Iowa State Hort. Report, 1878: "Dyehouse has fruited 5 years; it is a much more valuable variety than the much lauded Early Richmond. Its points of excellence are: 1. *Earliness* of ripening. 2. *Large* size. 3. *Fine* flavor. The crop is all picked and marketed before we commence on Early Richmond on the same ground. Fully ten days earlier. In size it is always larger, and in quality better, than Early Richmond. Its good qualities increase in proportion to its size. Tree perfectly hardy and healthy, in growth very similar to Richmond." Another says:

"Often bears at two years old, and a tree in full bearing has the appearance, at a short distance, of being covered with a scarlet cloth, such is the abundance of the fruit. Has the smallest pit of any cherry; a splendid keeper; free from knots. For tarts, pies, and especially canning, it has no near competitor among cherries."

Does not partake of both Duke and Morello classes," as it is said to do by many nurseries; is as true a Morello as Early Richmond, being even a more slender grower. Bore both second and third years in our Colo. orchards.

EARLY LA MAURIE.—Resembles Ey. Purple, but is earlier and a better tree. The earliest sweet cherry except Cal. Advance. In California, where the early cherries are a desideratum, it ripened at the University orchard ahead of any other; Cal. Advance, since tested, has proved earlier.

EUGENIE (Empress Eugenie).—A fine French variety and the best of the Duke Cherries. Tree vigorous; comes into bearing early and produces *great* crops. The fruit, which is produced in profuse clusters, is large, round, and bright red in color, tender in flesh, and sprightly acid in flavor. It is especially valuable for cooking and preserving. For family cultivation in the garden we know of no Duke Cherry which can be so freely recommended. For market purposes, the flesh is so tender that it will not bear transportation well.

EVERBEARING (Esel Kirsche, Christbauer).—A remarkable variety, from Germany. Ripens three to four distinct crops during the summer. Its first crop ripens with the May Duke and is very similar in tree and flavor of fruit, being a real Duke. One of the

strongest growers of the Duke class. N. F. Murray, Vice Pres. Mo. State Hort. Society, says: "This is the only variety [of the Dukes and Sweets] out of the 30 tested that has proved perfectly hardy. Large, purple, nearly black when fully ripe, firm; extra good."

LOUIS PHILLIPPE.—Tested 9 years and discarded. With us, it proves neither productive nor hardy.

MONTMORENCY ORD.—*Grand every way*, and the finest cherry in the list till we come to Wragg, Ostheimer and Suda—all much later kinds. We cannot recommend it too highly for its heavy crops of fine fruit, and the beauty and hardness of the tree. Although a stout, it is a slow grower, and costs nearly double as much as Richmond to propagate, hence but few nurseries will grow it; otherwise its eminent *superiority* would speedily place it ahead of the popular Early Richmond. Ellwanger & Barry say: "A beautiful, large, red cherry; larger and finer than Early Richmond. Being extraordinarily prolific and very hardy, it can be recommended as a variety of great value. The birds do not attack it."

We find the latter are far too good judges to pass it wholly by; but probably its light color until almost ripe, deceives them somewhat.

MONTMORENCY LARGE.—A large, acid cherry of *excellent* quality; does not bear so early nor so abundantly as Mont. Ord, nor is it so hardy. A fine amateur sort, and should by all means be in every family collection; not quite productive enough for market. Tree is not so good a grower as Mont. Ord.

NAPOLEON (Royal Ann).—A magnificent Bigarreau cherry of large size; flesh very firm, juicy and sweet. Tree a vigorous, erect grower, and bears large crops. This is the great California shipping cherry; also does well here in Mo. on good cherry soil. Judge Miller writes: "This splendid variety brings me better returns than any other. Reine Hortense comes next, as fine as I ever saw. From one Napoleon tree I picked 3½ bushels; last season this same tree netted me \$10. The form of the tree is the point; it branches a foot from the ground, spreads 25 feet and is not over 16 feet high; one foot in diameter at the ground. It was budded on Mahaleb stock, which never sucker like Mazzard. Mahaleb stocks succeed everywhere and on soils where the Mazzard wholly fails; and for the South any other stock is worthless. The original tree sprang up where Napoleon fought his last battle, on the field of Waterloo." See Windsor.

NORTHWEST.—Originated in northern Illinois, the best out of thousands of seedlings. "Tree hardy, vigorous and enormously productive. Bright red, very rich acid, firm and fine for canning. Ripens one week ahead of Early Richmond." M. J. Graham, Dallas Co., Iowa, writes us Sept. 10, 1890: "The Northwest fruited here this year and fully sustains all the claims made for it. Can you furnish me more trees? Want to plant more N. W. in my cherry orchard, also want trees to sell."

OLIVET.—"Large; very shining, deep red; tender, rich and vinous, with a very sweet, sub-acidulous flavor; promising." Half dozen Olivet trees in our cherry orchard the past season bore about a dozen cherries each, while Mont. Ord., in the next row, of same age, bore more than as many gallons. Even Mont. Large is far more valuable than the Olivet, better in quality and fairly productive, while Mont. Ord. is beyond comparison.

OSTHEIM (Russian).—Grown in Minn. and quite generally through the Eastern States. Moderate grower, buds quite long and pointed; very hardy. Fruit small, oblate, similar to the common black Morello; only half the size of Ostheimer, and inferior in quality.

OSTHEIMER (Ostheimer Weichsel).—This magnificent late cherry was taken to Germany from Spain in 1814, and brought from there to Kansas, where it was beginning to attract much attention about the time the Ostheim, a much inferior sort, was heralded abroad; when without any apparent cause except the similarity in name, they were tacitly assumed to be identical—greatly to the loss of cherry culture generally. The Ostheimer has done remarkably well with us; both it and Suda Hardy, in our Colo. orchards, in 1889, bore 2 quarts each on little trees less than fourteen months planted. Fruited well again the past season. Dyehouse, Mont. Ord., Ostheimer, Suda and Eng. Morello have all done exceedingly well, both here and in Colo.—where Ey. Richmond blooms too early, being usually killed by late frosts. Maj. Holsinger, the eminent Kansas horticulturist, says of Ostheimer: "It is the latest of all cherries, always holds its fruit, and is invariably large, productive and good in every way. The cherry for the west." Mr. G. F. Espenlaub, of Kansas, says: "The best, most valuable and profitable sort I have. Good grower, bears early, is very productive; fruit large, dark liver-colored when full ripe, juicy, rich, almost sweet."

PURITY.—"So named because of its waxy and almost transparent appearance. A Cal. seedling of Elton, very light-colored, the most beautiful cherry for canning or the table. Tree vigorous, an immense bearer."

REINE HORTENSE.—A French cherry of great excellence. The hardest and longest-lived Duke sort we have yet tested; trees 24 years old are still productive.

Very large, bright red, tender, juicy, nearly sweet; delicious. Should go into every collection.

✓ **SUDA HARDY.**—Perhaps the most valuable late cherry in the list. The original tree, 22 years old, stands in the garden of Capt. Suda, Louisiana, Mo., and has not failed to bear every year for 20 years. Fruit growers about Louisiana all know this great record and the remarkable character of the fruit, and seem to think *there is no other cherry*, at least they all want Suda trees and *won't take anything else*. Large, nearly black when full ripe, rich, juicy, and unsurpassed for all uses. The *latest cherry* we grow; if covered with mosquito netting against the birds, will be in use very late. Never rots. Tree very hardy, similar to Eng. Morello.

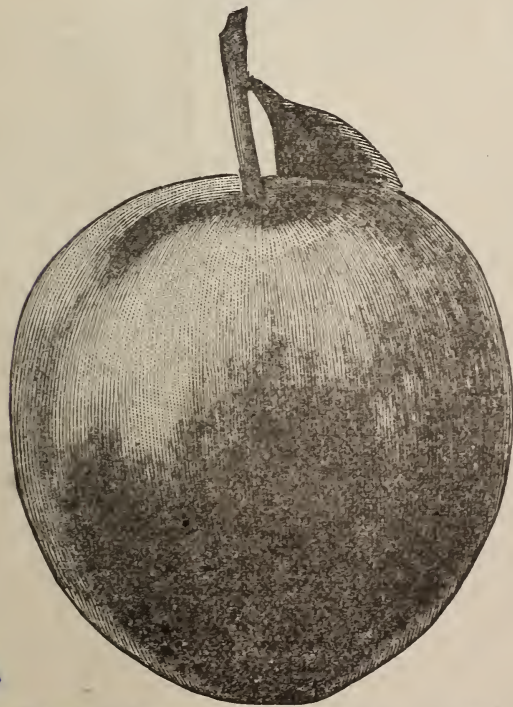
✓ **THOMPSON TARTARIAN.**—A Cal. "seedling of Black Tartarian, which it much resembles, but the fruit is *larger*, and the tree *hardier* and a *better bearer*."

✓ **WINDSOR.**—From Canada. "Large, *remarkably firm* and of fine quality. Tree hardy and prolific, a *valuable late variety*." We find the fruit of largest size, 80 to the pound, a fine shipper, and tree decidedly *hardier* than Black Tartarian or any other black sweet cherry; will succeed in many parts of the west, if headed low—the true system of training for the west, for both sweet cherries and standard pears. See Napoleon.

✓ **WRAGG.**—This now famous cherry originated in Dallas Co., Ia., 20 years ago, and was named by the Iowa Hort. Soc. and recommended for general culture. The original tree, when small, was removed to the open prairie, where it has withstood the severe Iowa climate and never failed to bear a crop annually for 17 years past. Tree vigorous, iron-clad, bears young and is *remarkably productive*. Fruit large, very dark red or purple, with highly colored juice and much richer in grape sugar than Richmond or Eng. Morello. Ripens very late and hangs long on the tree. Mr. Graham, a well-known fruit grower of Dallas Co., Ia., writes to the *Hort. Art Journal*: "Wragg is larger, later and *more productive* than Eng. Morello, and *one tree* of Wragg, six years old, will produce more cherries than *fifty* Ey. Richmond of same age. You may think this putting it pretty strong, but I have the trees all growing together, and *speak from experience*."

✓ **WHITE WESTERN SWEETHEART.**—This is the only sweet cherry that has uniformly done well here during the past ten years, though Windsor and Centennial are promising, while Napoleon, on high, thin, dry land—the only proper cherry soil—has been doing famously. White West. is a very large cherry, pale yellow, with a bright red cheek, flesh firm, juicy and delicious; one of the best, most beautiful and valuable light-colored cherries. Tree hardy for a sweet cherry, and should be planted in all localities where the peach tree will stand. Where peaches are not hardy plant only the Morello class,—and this class is *everywhere the most profitable for market*—except only on the Pacific coast.

PLUMS.



✓ **ABUNDANCE PLUM.**—Showing size and form. There are two distinct varieties of Japan plums, both

known as "Botan." The first or *Sweet Botan* averages about 2½ inches by 2½ inches in size; skin, green, with dull purple bluish. Flesh, yellowish, little coarse, firm; sugary to sub-acid; slightly adherent; quality good.

The second or *Yellow-fleshed Botan* is somewhat the *larger*, is more irregular in form, varying from quite round to sharply pointed. Skin yellow, washed purplish carmine, with a darker cheek. Flesh yellow, very juicy, sub-acid, with an *apricot* flavor; quite firm; skin tough; clingstone; quality *best*. Ripens three to five days after Sweet Botan, and is one of the *very best early plums*. Trees of Abundance, from the "discoverer" prove identical with the *Yellow-fleshed Botan*, and even though

"——that which we call a rose

By any other name would smell as sweet,"

it is doubtful if buyers of Abundance trees will quite appreciate this valuable Japan plum,—and it is valuable, almost beyond belief,—when, to quote the discoverer's identical words (referring, however, to the Del. Winter or Lawver apple), "they have the pleasure (?) of learning it is an old variety under a new name only."

In order to avoid confusion likely to arise from growing two varieties of "Botan," we shall continue to propagate the last described and better sort, as Abundance, the other as Botan or Sweet Botan.

Am. Ass'n Nurserymen, Chicago, 1889; extracts:

Mr. Palmer, of O.: Would like to ask Mr. Willard his opinion of Moore's Arctic.

Mr. Willard, of N. Y.: Can only say we have been disappointed in Moore's Arctic. The tree with us is most tender and the fruit of little value. We could not commend it, nor would it pay us to raise it for market.

Mr. Plumb, of Wis.: Dr. Hoskins, of Vermont, says it is the only plum successfully grown there?

Mr. Willard: This is one of those things governed by latitude. A variety accounted hardy in some higher latitudes is anything but hardy with us. Others have had the same experience. One reason is the foliage drops badly and a tree of this kind inevitably proves tender.

Mr. Chase, of N. Y.: Moore's Arctic is tender with us, but in Maine it is represented hardy. It is one of the plums that sell, we cannot tell why; there is a great demand for it, more than the supply. It is productive.

Mr. Willard: Do not understand me as saying it is not productive. Our experience is the foliage drops so badly the fruit fails to mature.

Mr. Augustine, of Ill.: Will some of our Western nurserymen tell us of a plum that will do well with us? The European sorts are of no value in our section. We have Wild Goose and Wolf, and would give more for an acre of these than 10 acres of the Europeans. Wild Goose is a good bearer when fertilized, and so is Wolf, but they are not the best. What about Potawatomie? I see Prof. Budd is here, who is likely to have made discoveries that will be valuable to us.

Prof. Budd, of Iowa: I may not agree entirely with other Western growers. All native plums of *Americana* race are hardy; among those that bear best are De Soto, Wolf Free and Rollingstone. These bear continuously from the time they are in the nursery row; some of them have been bearing now for 8 years. Of the Chickasaw race, the two varieties that bear continuously and seem to be hardiest in tree and fruit bud and the best in quality are **FOREST ROSE** and Maquoketa. Forest Rose originated with Stark Bro's, of Mo. Nurserymen should form a trust to propagate this fine plum largely. Forest Garden is hardy, but peculiarly liable to abortive fruit. Weaver behaves in the same way. Wild Goose and Mariana are tender with us. P. Simoni when in blossom endured a severe frost, and in addition to that a hard blow of 4 days, but still it held its blossoms and is bearing fruit. Hawkeye is bearing its first fruits.

Mr. Green: Which, Prof. Budd, are the hardest European, or Domestic, plums?

Prof. Budd: I can only speak of those which have stood the hard winters. Early Red (Russian No. 3) has fruited in many places, and seems to be a remarkably good bearer and of good quality.

Mr. Green: What of Lombard?

Prof. Budd: Lombard is tender north of the 40th parallel, but south of that is doing pretty well. We are on the 42d parallel. I will say in regard to Simoni, it will be valuable or not, according to locality. Its native home is a dry interior climate. It will endure heat and drouth, but not extreme cold; on dry soil it is a valuable fruit.

Mr. Patten, of Iowa: Not a single European plum is able to endure a large portion of the Northwest, and if, as nurserymen, we ascertain these facts and act according to the suggestion of our friend Douglas, we could rectify very many evils. If nurserymen, knowing a fruit is suitable to one locality and not to another, will insist that their agents sell only sorts adapted to each locality, a large part of the complaints will be done away with.

There is not a single plum which is successful in the East that is of any value in Iowa on the 43d parallel. A gentleman speaks of Wild Goose being hardy in Ia. On the 43d parallel it is absolutely worthless; also over a large part of Iowa. P. Simoni is not hardy where I live. Of the plums, De Soto and Forest Garden, mentioned by Prof. Budd, the latter, in my experience, is too much given to blight. De Soto is almost free.

Prof. Budd: It was the **FOREST ROSE** that I spoke of, not the Forest Garden.

Mr. Kellogg, of Wis.: De Soto is our best plum for Wis. Wild Goose proved tender for 2 years, then hardened up; but it won't bear one plum to the acre. The worst swindle we ever had in plums was the great Bassett's American, from N. J. They were not worth a cent an acre. Some of you have it in your catalogues yet.

Mr. Chase: Would like to ask about Kelsey Japan being tender. We have had it 3 years in the nursery and it is hardy as Lombard.

Mr. Griesa, of Kan.: The tree is hardy with us. [Abundance, or Yellow-fleshed Botan, has been sent out from many places as Kelsey. Mr. Griesa kindly sent us sample of his Kelsey, which proved to be Abundance; trees examined in the nursery of Mr. Chase, at Rochester, were also Abundance. Kelsey is a much less hardy sort and entirely distinct in foliage and wood; much inclined to make a second growth, continuing green until severe frost, hence is not sufficiently matured to endure cold. Worked on hardy plum stocks it matures earlier, and is then fairly hardy; very tender on peach stocks.]

Mr. Van Lindley, of N. C.: Kelsey is a very valuable plum where hardy. South of Va. it does well, also through the southern part of that state. Bears full when trees are yet quite young. Hardy in N. C.—and we have some pretty cold weather, though rarely below zero.

Mr. Watson, of Ill.: At Bloomington Simoni is perfectly hardy, but Kelsey, especially if the fall be late and warm, is very tender.

Mr. Willard: Botan [Abundance] and Ogon may have value; the fruit is promising and the trees seem hardy. [Mr. Willard has since planted 150 trees of Botan or Abundance in his plum orchards, and thinks very highly of it.] Kelsey is not sufficiently hardy for the Middle States. In my paper I mentioned Garfield, a native plum possessing very marked keeping qualities. Specimens sent me some three years ago kept in my office perfectly sound until Dec. It struck me that if this plum was hardy and productive, it had a value, because it is a rare thing to get a plum that has these keeping qualities. It is very beautiful and very good, but I especially noted its keeping qualities. It keeps until Dec., and there is a demand for anything like a plum at that season of the year. If Garfield is productive and hardy, with its keeping qualities, it ought to become a favorite.

[Garfield is perfectly hardy, but 5 year trees have not yet fruited with us. We do not think it will prove an early bearer; excelled in this respect both by Wayland and World Beater—the fruit of both of which is fine, especially the latter, and keeps equally as long.]

Mr. Plumb, of Wis.: In regard to Kelsey: While visiting in Missouri I asked the president of the local society there whether it was hardy in that latitude. He took me to a tree where Kelsey was grafted on a hardy native plum. "There," he said, "I think that Kelsey tree, grafted on one of our extremely hardy natives, is going to be a success here." This matter of adaptation is a very important feature. Good results can be obtained if varieties like Kelsey are worked on some hardy variety and they will be adapted at least to a latitude one or two degrees further north.

Am. Ass'n Nurserymen, N. Y. City, 1890; extracts:

Hon. H. E. Van Deman, U. S. Pomologist: The Japanese plums are attracting attention. I have examined specimens of Botan [Abundance] from several places, the most northerly Conn.; it matures that far north and seems to be hardy. It is a variety that nurserymen ought to give a fair test. The Ogon has been sent to me from Conn., also from the west. I think it will prove hardy in nearly all the U. S. Kelsey is very large, sometimes 3 inches in diameter. Will not mature north of Tenn., according to my observation, and I doubt if the tree will prove hardy north of Tenn. Burbank is a Japanese plum, medium in size, not much larger than Wild Goose, color exceedingly brilliant crimson purple, very handsome, rich in flavor. Well worthy of attention.

Mr. Willard: Is the Satsuma hardy?

Mr. Van Deman: I think it will be hardy in the Middle States. The Ogon and Satsuma will grow well in N. Y. The Ogon is a poor grower; Botan a good grower. P. Simoni is poor in quality; would not recommend it for general culture. Wolf and Pottawattamie are about like ordinary wild plums. Satsuma is nearly round; dark color outside, and dark cherry red inside; very small stone. Clyman originated in California, a true variety of *Prunus Domestica*, as early as Wild Goose. Sent out by Leonard Coates, Napa City, Cal.

Mr. Stark, of Mo.: The Satsuma on peach stocks killed to the ground the past winter in our orchards in

Colo., but M. Blush, Mo. Pippin, and apples of like hardiness were also badly injured. It is perfectly hardy with us in Mo. Clyman is entirely hardy at Denver.

Question: What is the best stock for Japanese plums? Mr. Stark, of Mo.: Mariana.

Mr. Lovett, of N. J.: We have used the Peach, but find the Mariana plum the best.

Mo. State Hort. Report; Mr. Jacob Faith: Have given blackberries and plums much attention. Some will laugh at the idea of growing blackberries in the orchard. Their laugh won't hurt me, and the berries bring the money, and when the trees need all the ground I kill the blackberries by cutting them while in bloom. Have grown strawberries and raspberries in orchards, but prefer blackberries. Cultivate deep while young, shallow afterwads. Have 2000 plum trees, 15 sorts. It is wonderful to visitors, the way they are loaded with fruit. I propagate plums by grafting on peach whole roots; they succeed well. Can grow more plums per acre than corn, and can grow them cheaper to feed hogs.

Cal. State Hort. Society, Aug. 29, '90:

Prunes exhibited; Prune D'Agen (Robe de Sargent), St. Catharine, Tragedy, French, Fellenberg, also Satsuma, Kelsey and Burbank, Japan Plums; Seller's Orange Cling Peach.

Mr. Coates: Prune D'Agen is quite distinct from French Prune; will not thrive on Peach stocks, like the French; upper surface of the leaves is shiny, fruit is more juicy. When dried, has a natural, black, satiny gloss, which is sought after in the markets. Prune D'Agen is identical with the fancy Prunes packed in glass jars which come from Bordeaux. German Prune does well in Napa Co. Tragedy Prune a fine early variety for shipping fresh.

Mr. Hathaway: Have secured fine prices for Bulgarian Prune; but it is valueless in some localities.

Mr. Coates: Satsuma is of superior color and flavor. Bore at 2 years; will be unsurpassed as a shipping plum.

Dr. Kimball: Prune D'Agen is very fine. Sold it dried in Chicago, for 3c. more per lb. than French Prune.

Mr. Shinn: It is very important to have a good early shipping plum. Royal Hatve is too sour.

Mr. Coates: Clyman has exceeded expectations. P. Simoni cracked badly in some sections, but where perfected, brought high prices on account of its extraordinary shipping qualities.

Extract from letter on varieties fruiting in our Colo. orchards in 1890; trees planted spring, 1888:

"LITTLETON, Colo., Oct. 4, 1890.

"Herewith I give you list of plums that fruited this season; Prune D'Agen, Bavay's Green Gage, Prairie Flower, Forest Rose, De Soto, Weaver. There were also two or three other sorts, which will name when you return the record. Prune D'Agen was very fine. Weaver was ripe and De Soto almost ripe Aug. 25. There were also some apples—mainly Duchess, Ben Davis and Shackelford, the latter bearing twice as much as Ben Davis. Were some others, but they dropped before maturity. M. Blush, Loy and York Imperial are the tenderest trees we have; don't think they will do any good here. G. Golden, Willow Twig and Mo. Pippin are not hardy; G. Golden is the tenderest of the three."

Curculio.—U. S. Dep't of Agriculture's Bulletin says: "Concerning the well-known statement that native *Americana* and *Chickasa* plums are curculio proof: the insect attacks the fruit freely, but few of the eggs hatch. The native plums are vigorous and grow very rapidly, hence are able to drown out or squeeze to death any egg laid in them during their most rapid growth. The few eggs which mature each year in these plums are laid after the fruit has somewhat slackened its growth." This is the whole sum and substance of "curculio-proof" plums. The curculio could soon be exterminated by planting only native and Japanese plums, or else catching the insect—the surest way to get rid of this pest.

CLYMAN.—Introduced by Leonard Coates, Napa, Cal., "Raised from seed in Napa Valley, many years ago. For a long time it has been the wonder of the neighbors, ripening so far ahead of other plums, and being of such excellent quality and good size. Mr. J. M. Bassford, of Vacaville, considers it of the greatest value as a shipping fruit. Reddish purple color, covered with a beautiful blue bloom, size of Peach plum, freestone; very firm and dry in texture. Tree is an enormous bearer. Planted in early localities, nothing could be more profitable."

U. S. Pomologist Van Deman, Report Dept. Agr. 1888: "The Clyman is not only a novelty, but a noteworthy departure from the usual type of the varieties of the garden plum of Europe—*Prunus domestica*. It grew from a seed (planted in 1866 by Mrs. Clyman in Napa Valley, Cal.), supposed to have been taken from the old Peach plum. It first attracted attention by maturing its fruit long before any other plum of this family, being about with Wild Goose. The original tree having

outgrown its surroundings three sprouts were dug from the roots, which are now ten years old, and have borne fruit continuously for the last six or seven years. The tree is a very vigorous grower and the leaves are extremely large. The first ripe fruit was picked this season at Napa City, Cal., on June 15, which is fully four to six weeks in advance of ordinary plums. Of course it may be expected to be subject to the attacks of the curculio, and should only be grown where a reasonable degree of immunity exists, or by those who expect to use defensive means against this dread enemy. The fruit is round, slightly flattened, with a distinct suture on one side. The skin is a dark purple, with a heavy bloom over all, which gives it a rich bluish color. The flesh is yellow, firm, and of a delicious flavor. When ripe it is a perfect freestone. The principal merit over the old varieties lies in its earliness, which makes it profitable for market purposes long before all other plums of this class."

Being a supposed seedling of the tender Peach plum, the hardness of the tree is an agreeable surprise to us; it has withstood the winters uninjured in our orchards near Denver, when M. Blush apple trees were badly hurt.

DAMSON, Freestone.—Of all Domestic plums the Damson is the hardiest and least affected by insects. The original *Freestone Damson* tree grows in Clarksville, Mo., and we have bought the sole right of propagation. Tree slender while young, but soon makes a fine orchard tree of immense productiveness. Fruit similar to Blue Damson; medium, juicy, very rich quality; *parts perfectly from the stone*; seed unusually small. Delicious for eating fresh and for canning or preserving.

DAMSON, French.—Mr. S. D. Willard, of N. Y., perhaps the most successful plum grower East of the Pacific slope, says: "Has much to commend it. Tree a much better grower than Shropshire or Blue Damson. Very hardy, an annual bearer, very productive. Fruit medium, dark copper color, with a rich bloom. The best Damson for market we have ever fruited. Ripens two weeks later than Shropshire and Blue Damson."

DAMSON, Red Arctic.—A valuable acquisition. Of exquisite flavor, almost equal to Blue Damson for canning and preserving; fruits at two years old and is a most *extragrdinary* bearer. Dark red, colors a month before it is ripe, hence it is apt to be condemned before its true quality is known; thick skin and practically curculio proof; tree hardy, and with us has never failed to bear a full crop, except in 1887. *Ripens late, colors early.*

DAMSON, Shipper's Pride.—A new plum of the *Damson* type, and like all the Damsons, very prolific and free from insects, but unlike them, it is of *immense size*, very *showy* and fine to look at on the tree and in the baskets; ships and sells for the top of market, hence called Shipper's Pride. Since the original tree was large enough to bear it has not failed. Being largely planted for market on account of its certainty to produce a crop, its fine appearance and superior shipping qualities. Large, round, dark purple; flesh firm, with a Damson flavor. Originated in northern N. Y.; tree hardy.

DAMSON, Shropshire.—A medium sized, dark purple sort, but little superior to Blue Damson. Tree vigorous, but much *less hardy* than the other Damsons; about worthless on peach stocks, but on *hardy* plum stocks is not so tender.

DESOTO.—An early and profuse bearer; large, yellow, marbled with red; good quality. One of the best for planting near Wild Goose, or others requiring fertilization of blossoms. Tree iron-clad; fruit almost as large as Wild Goose, while it is so much better that if ripening at same time, the W. Goose would hardly be touched.

Forest Garden, Miner, Pottawattamie, Quaker, and Robinson were discarded from our budding lists this season. After fruiting these sorts, we find there are others much *better in every way*, which should supersede these less desirable kinds. De Soto, Forest Rose, Hawkeye, Ill. Ironclad, Poole's Pride, Prairie Flower, Mariana, Mo. Apricot, Wayland and World Beater are the best sorts among the native plums we have tested.

FOREST ROSE.—Introduced by us in 1878; has grown steadily in favor wherever planted. Tree a rapid upright grower, hardy as an oak, and bears early; has failed to produce fruit but once in 24 years. Round, very large, beautiful dark red, with delicate bloom; stone small; excellent quality. Prof. Budd says: "The Forest Rose is one of the *hardiest in tree and fruit-bud*, and the *best in quality*. Nurserymen should form a trust to propagate this fine plum largely." The Colo. State Hort. Soc. also recommend it highly. W. W. Smith, editor *Press*, Leipsic, O.: "Purchased 2 trees of Forest Rose in 1882; for the past 4 years they have borne such enormous crops that every limb had to be propped up, and at present, Aug. 19, 1889, there are 40 props under the 2 trees."

Garfield.—See Extracts Am. Ass'n Nurserymen.
GOLDEN BEAUTY.—From Texas. Tree a straggling, poor grower; blooms very late, hence sure to bear wonderfully prolific. "Medium; deep golden yellow when fully ripe; fine quality; seed small, nearly freestone; curculio never *damage* it." Needs thinning and deep,

moist soil to make large fruit. Mo. Apricot is an improvement on Gol. Beauty.

ILLINOIS IRONCLAD.—Discovered about 40 years ago in northern Ill.—in Henderson Co. Specimens sent us in 1888 were the largest and finest in appearance of all the native plums we have yet seen—nearly double the size of Wild Goose. Tree ironclad; has stood the many severe winters of the past 40 years, and is still sound and most prolific. Fruit very large, dark rich red color; skin thick and seems uninjured when stung by curculio; flesh firm, much like Lombard, of good quality and distinct flavor. The most promising plum of the *Americana* species.

KELSEY.—Pres't P. J. Berckmans, of Ga., says: "This we consider a most remarkable variety. It sustains every point of excellence claimed for it. Very large, often 7 to 9 inches in circumference. The abundant yield of 1889 was extraordinary, many trees 3 years old producing ½ bushel of fruit; 6-year trees 2 to 3 bushels each." Budded on hardy plum stocks, Kelsey is almost as hardy as W. Goose. Should be planted on thin, clay soils, and given but little cultivation, except early in the season; this will help both to prevent rotting and to induce early maturity of wood growth, with consequent increased hardness.

LOMBARD.—Large, violet red; flesh yellow, juicy and fine. Tree vigorous; a great bearer, and peculiarly well adapted to light soil. With us, for over a dozen years it has borne immense crops of beautiful plums, delicious to eat out of hand, for dessert or preserves. Indeed the trees were so overloaded we often had to prop them. A basket of Lombard is an attractive sight, all of great size, beautifully colored, and as delicate to the touch as the cheek of a baby. Whoever introduced the Lombard did his country and kind good service.

MARIANA.—Mariana and Abundance were the only sorts that bore with us in 1889, and in 1888 Mariana greatly surpassed Wild Goose in productiveness and again the past season. Mariana greatly improves with age, the fruit ripening *earlier* on the older trees and its productiveness also increasing. Is not so hardy on Peach stocks, especially while young, and much less productive than on plum or its own roots. But the *great value* of the Mariana is in propagation.—See "Proper Stocks," etc.

"For leagues no other tree did mark
The level waste, the rounding gray."

—Tennyson's *Mariana*.

MO. APRICOT (Honey Drop).—The original tree, now more than 30 years old, has not missed a crop in over 20 years. Judge Miller says, in the *Rural World*: "Plums sent by Stark Bros. came in excellent condition. There is no doubt about curculio not seriously hurting them—there is such a mass of fruit that the little Turk abandons the job. Then they are so late that the curculio has nearly given up its work when these are large enough to sting. Flesh sweet and pleasing, with an apricot flavor. I deem this plum well worth looking after, and am sure it has fallen into good hands." It is the best yellow native plum, and in every respect an improvement upon Golden Beauty, being larger, later, tree harder, and a far *better grower*, and above all a most prolific bearer, producing plums in immense clusters, hanging on so firmly "we can't shake them off." Fruit nearly size of Wild Goose, skin thick, clear, rich golden yellow, flesh a deeper golden still; seed very small; of best quality for a native, with pure apricot flavor.

M. B. Irvine, Johnson Co., Mo., writes, June '90: "Mo. Apricot plums, set 2 yrs. ago, are very full; Wild Goose and others are bearing much lighter."

PETER'S YELLOW GAGE.—Large, oval; bright marbled yellow. Rich, juicy and good. Mr. Willard says: "This valuable plum was introduced by Ellwanger & Barry, a long time since, yet has never been generally grown. Very productive and good. If confined to one yellow plum, this one would be my selection."

POOLE'S PRIDE (Kroh).—A native seedling (*P. Chicasa*), originated on the farm of Mr. Poole, Union Co., Ill. A perfectly hardy tree, and a most *marvelous* bearer. Large size, nearly round, bright red, with a beautiful bloom; flavor very sweet and delicious. The late Henry Avery, the noted horticulturist of Burlington, Ia., wrote us March 19, 1888, that this was the *most promising* native plum at Burlington, and on his advice we secured control of the variety from the originator. Mr. Kroh, a fruit grower of Union Co., Ill., writes us: "I grow it in preference to any other. It *never fails to bear*. The frost and freezes never injure the blooms. An early bearer and holds its fruit very late. For general purposes it is the best plum I ever saw, and I would not exchange it for any other. I believe it will succeed in any climate; have fruited it 14 years. I grow plums for *shipping*, and *do not want any other plum*. Have never sold any trees to anyone but you and Mr. Avery." The most valuable sort for double-working in order to get peach trees on Mariana roots.

PRAIRIE FLOWER.—From Audrain Co., Mo., where the original tree has long been noted for its regu-

lar crops of fine fruit. We obtained the right of propagation in 1884. Resembles Forest Rose, but is an *improvement* on that fine plum, being *larger and 2 weeks earlier*. Tree equally *hardy*; very prolific; often bears at 2 years old. The most valuable native plum of its season.—Prairie Flower and Poole's Pride are perhaps the **TWO** most valuable in cultivation.

PRUNE D'AGEN.—Mr. Felix Gillet, the eminent prune expert, of Cal., says: "This is the kind that produces the famous French prune, shipped all over the world from Bordeaux; and it is the very variety cultivated in the great prune district of the Lot, with Agen for an entrepot. Medium to large size, sometimes quite large. Generally pear-shaped or pyriform, broad at the center and tapering towards the stem. Suture slight, skin thin, with heavy bloom; violet red. Pulp yellow, sweet; juicy, but not to excess. Tree vigorous, very productive and a constant bearer."

W. R. Strong & Co., of Cal., say: "Very like the Petite or French Prune, only larger and more desirable. It is now demonstrated that this Prune will bear as heavy crops as the French or Petite Prune, and as it is so much larger and equally as good quality, it is of course the more valuable of the two. There has been some fears that it might not be a good bearer, but that doubt has been dispelled. Many trees are now bearing heavy crops in this State. It will not grow on peach root, but must be grown on plum root. This is the same prune recommended by Felix Gillet, of Nevada City."

We find the tree a moderate grower, but very hardy—much hardier than German Prune, both in tree and blossom, and far more prolific—in short, a better variety. For this and all other prunes and plums, the Mariana makes the best stock; besides its other merits we believe it to be also gum-resistant. See "Proper Stocks," and especially see "Whole Root vs. Piece Root Trees."

PRUNE, FRENCH (*Petite or Cal. d'Ente.*)—Small to medium, reddish purple, very sweet and juicy enough; freestone. One of the best sorts for drying as a prune. Tree a good bearer; should only be planted on rich land. Tree less hardy than Prune D'Agen.

PRUNE, GOLDEN.—A highly recommended new prune from Oregon, a seedling of Italian Prune. "Very large, oval, deep golden yellow; very sweet and rich. Makes the *finest dried prunes known*. Tree a strong, upright grower, hardy and a great bearer."

PRUNE, SILVER—Origin, Oregon. "The fruit is almost a fac-simile of Coe's Golden Drop, and it is yet a question whether it should be called a prune or a plum. A very superior shipper, and certainly produces an excellent dried fruit, either pitted or unpitted, and makes a splendid prune." Said to have a smaller pit than Coe's.

PRUNE, TRAGEDY.—A new prune, originated near Sacramento, Cal. Thought to be a cross between German Prune and Purple Duane. W. R. Strong & Co., extensive Cal. fruit shippers, say: "Fruit medium size, nearly as large as Purple Duane plum; looks much like it, only is more elongated; skin, dark purple, flesh very rich and sweet, parts readily from the pit. Its early ripening (in June) makes it very valuable as a shipping fruit. It will always bring fancy prices, coming as it does before any other good plum. So far it has no rival. They who first get orchards of this, will make fortunes."

PRUNUS SIMONII (*Apricot Plum*).—P. J. Berckmans of Ga., says: "A remarkable fruit indeed. Tree attractive, erect, compact; fruit large, flattened, $\frac{2}{3}$ to $\frac{3}{4}$ inches broad. Flesh yellow, fine grained and exceedingly firm; juicy, acid, and combines the most remarkable flavor of pear, apple, pineapple and muskmelon; quality best. Begins to ripen June 15 and lasts a month; shy bearer." T. V. Munson says: "Shines like apples of gold, becoming a rich vermilion; shows no defects from attacks of curculio or rot. Firm and very meaty, equal to any Blue Gage plum. Tree very thrifty, early and abundant bearer; hardy in Iowa and endures Texas drouth to perfection."

Since seeing the showy fruit of this variety as grown here, in Dallas Co., Iowa, in Utah, and elsewhere, it has risen somewhat in our estimation. It is from a dry interior part of North China, hence is desirable for dry regions, where *only* it is an abundant bearer—shy bearer elsewhere. A desirable ornamental tree, aside from its fruit. The tree is subject to borers, and to gummosis *only* when propagated on peach or myrobalan stocks. Still, we would nowhere plant it for market, because a shy bearer; nor for home use except in dry climates and in the South, because North the fruit is unpalatable until dead ripe, and even then quite sour and bitter.

SATSUMA, or BLOOD PLUM.—Large, skin dark purple and red, with blue bloom. Globular, with sharp point. Flesh firm, juicy, dark red or blood color, well flavored, *good*; pit small. Ripens about three weeks before Kelsey. Tree very vigorous, and hardy as Wild Goose. Will, we think, prove a most valuable plum.

SPAULDING.—This was also discovered in N. J., and is extolled by the great "discoverer" in the wonderful catalogue which gives "honest descriptions"—so the

author finds it necessary to assure the public. Surely this catalogue ought to be honest; for, as a member of the largest nursery Co. in Ohio said, after visiting the establishment: "I never was quite so disappointed; the most of his nursery is in his catalogue; reminded me more than anything else of a very big dog guarding a very small bone; it is easy to see that he still believes—as he once told us when at our place—in blowing his own horn."

We condense from the honest catalogue:
"Has been fruited for over a score of years, never failing to produce a crop, and so enormous as to bend the limbs in rainbow curves. Tree a remarkable grower, being as exceptional in its vigor as a Kieffer pear. Fruit large, exceedingly firm, of sugary sweetness and great richness. Parts readily from the small stone. When canned, it presents not only a most attractive appearance, but the quality is simply superb."

S. D. Willard, of national reputation as an experienced, conservative and reliable authority on the plum and who owns the largest plum orchard in N. Y., declares positively: "The Spaulding is a miserable little third rate yellow plum, unworthy of propagation."

SPANISH KING.—Recommended very highly in Iowa, whence we received it. "Tree vigorous, hardy and very productive. Fruit large, oval, purplish red, with blue bloom. Resembles Lombard, but hardier. Is much more profitable than any of the native sorts."

WOLF FREE.—Prof. Budd says: "This has been fruited 27 years in Iowa. Nearly as large as Lombard and a perfect freestone. Superb for cooking, and for paring, quartering and serving up with sugar, as we use peaches. Very early and wonderfully prolific bearer."

WORLD BEATER.—The best late native plum. "Taken from Tenn. to Northwest Mo. more than 25 years ago, it has never failed to bear at least a partial crop. Mr. Vermillion gathered nearly 4 bushels of perfect fruit from a tree 5 years old. One tree 25 years old measures nearly 3 ft. around and is as sound as a silver dollar; peddlers buy the plums, take them to Kansas City and boss the market. Begins bearing in nursery rows; curculio sting it, but do no injury. Quality best; skin literally melts in cooking, leaving only the seed; preserves a year old retain the fragrance of the ripe fruit. Ripe in Sept., but hangs on until frost; very firm; long keeper."

PEACHES.

ALPHA CLING.—From Cal. "A magnificent new peach, the earliest and best yellow cling; ripens with Crawford Early. Large, rich yellow with red cheek. Fine quality; very valuable for shipping."

AUSTIN WINTER (*Winter's Cling*).—"Latest of all the yellow clingstones. Tree hardy and a good bearer. Originated in Yolo Co., Cal." This is totally distinct from Winter's Cling, which is—"almost a fac simile of Heath;" also from the white Austin's Late.

AMELIA—Very large, conical, white and crimson; juicy, melting, vinous, sweet, and of high flavor. Too tender for shipping, but for home use is truly magnificent. Ripens just ahead of Mt. Rose.

From E. A. Riehl, ex-president Ill. State Horticultural Society, Sept. 5, 1888:—About 10 years ago I bought a lot of peach trees of you, among them several new varieties, which have proven very satisfactory, and I think should be propagated more. Superb, a cling, has been very fine and good, very productive. Great Western is especially good, a white cling like the Heath, but earlier; is very productive and hardier than any others of that class; quite small trees are loaded. Shipley's Late Red, a free, is a very fine peach, and comes at a time when there is a scarcity of good peaches. Future Great is one of the best of its season, white with red cheek, red at stone, *very juicy* and rich, free, ripens between Oldmixon and Stump; bears very full yet is very large, and has proven one of the best paying peaches I have, and should by all means be generally propagated. I have found **AMELIA** by far the best early peach I know anything about. *Later*.—Hollister is a local seedling, white, free; very hardy, bearing when others fail, very productive; ripe after all other peaches are gone. There is no other variety that fills its place. As to Great Western, it bore abundantly in '82 when few others did; is loaded again this year; very valuable. I do not think much of sorts which bear lightly, therefore, grow large and make a big show on the plates. I want something that will *bear bushels*, not specimens. The Great Western does this, so does Amelia. The Superb, too, is a good one, and I like it because it turns out lots of fruit which sells at good prices. I prefer varieties that set so full as to need thinning; it is not much of a job, but you can't put on what don't grow.

Later, Sept. 2, 1889.—My peaches are now netting me \$2 per bushel. The Superb we have just shipped, and a

grand good peach it is. If I were planting another peach orchard, I would plant it largely. It is a large white peach, red at stone, with a fine blush. Of fine quality, productive, and always fair and smooth; never saw any of them cracked or spotted with fungus, as is the case with so many peaches. I consider it *one of the best*, whether for home use or market. Season last half of August. Picquet's Late, ripening before Smock and Salway ripening after it, are sorts that should be in every orchard. Great Western, which I got of you at the same time I got the Superb, is also a very fine peach, like Heath, but ripening earlier. It should be propagated and planted largely. What can you recommend in plums and pears? I intend planting more of both.

BISHOP'S EARLY.—Valued highly in Cal.; larger and better every way than Hale's Early—same season. Very large, white and crimson; freestone.

CHABE'S CHOICE.—Origin Maryland; \$1,000 was paid for the privilege of introducing it. At 4 years of age bore 5 bushels of choice fruit, and has fruited annually since, increasing in quantity each year. Has no superior in quality and flavor, and for profit is without a rival." Large, yellow, free, rich in color, flesh very firm, and ripens after Smock.

ELBERTA.—"Beyond a doubt the best all-purpose peach out." A cross between Crawford's Early and Chinese Cling; very large, bright yellow, with red cheek; juicy, high flavor, very hardy in tree and bud and most prolific. Of all the yellow freestones well tested north, south, east and west, Elberta is the finest. No one can go amiss by planting it largely. The Olden Fruit Co. say it is their most profitable variety; and L. A. Goodman, of the Co., says he would like to plant 6,000 more. Mr. Rumph, of Ga., sold the product of his 100-acre orchard of Elbertas for the largest sum of money ever received by one man for a 100-acre peach crop, a single car netting over \$1,400. Shipped to Chicago and to eastern markets it created a profound sensation everywhere among dealers, who pronounced it the finest peach they had ever seen; brought about double the quotations for other peaches. Now being planted in Ga. by the thousands of acres, large companies being formed for this purpose. Mr. J. H. Hale, the successful Conn. peach grower who sold one crop for over \$25,000, has just bought 900 acres in Ga. to plant in peaches and pears. Mr. H., as special census commissioner for nurseries, recently visited our Nurseries and has since written for 5,000 Elberta.

Mo. Hort. report, 1888, article by W. G. Gano, Supt. of the Olden Fruit Co.: "Eldred Cling, earliest true cling; creamy skin, bright cheek, large and good; a splendid tree. Mountain Rose, first best freestone; large, white, bright red cheek, and good in every particular. Family Favorite, free, very prolific; large, handsome, extra in quality, flesh pearly white. **ELBERTA**, exceedingly large, high color; considering both tree and fruit, I know of no better yellow freestone of its season in existence. Gen. Lee, earlier than Chinese Cling, better color. Mrs. Brett, an improved Oldmixon Free; little shy in bearing while young. Crawford Early, have one strain which has proved to be very prolific. Keyport White, one of the best peaches; very prolific, creamy white, splendid quality. We have many sorts ripening about this time, such as Stump, Mixons and Newton Cling, and of the later kinds we have Picquet's Late, Smock, Salway, Bonanza and others ripening at intervals from Sept. 1st to Oct. 20th."

FOX'S SEEDLING.—Large, white with crimson cheek, freestone; reliable and uniform bearer. "A very valuable peach, ripening at a time that makes it desirable aside from its size, fine quality, shipping and market value." Ripens after Stump.

FUTURE GREAT.—This we consider the very best of all peaches in quality. As much superior to Stump the World and similar sorts as Grimes Golden or Jonathan is superior to Ben Davis. Large in size, skin white, with deep crimson blush. Tender, rich, exceedingly juicy and luscious. When generally known, will stand close to the head of the list, both for market and family use. See under Amelia—from Mr. Riell.

GEN. GRANT.—"One of California's best clings." Very large, white flesh, red cheek, excellent quality; has created much enthusiasm on the Pacific Coast, and being sold by Tex. nurserymen at \$1 per tree. A great revolution has taken place in California peach culture; whereas the demand in Cal. formerly was, as it still is in the East, largely for freestones, the California canners, evaporators and shippers now want chiefly clings. With the new machines for seedling clings they work them as cheaply as freestones, while they are firmer, of better quality, and much more eagerly sought after in the markets.

GLOBE.—Vigorous grower; productive. Large, globular, rich golden yellow, with blush; flesh yellow, rich, free. Valued for its size, beauty, flavor and firmness.

GREAT WESTERN.—See under Amelia.

GROVER CLEVELAND.—This new Cal. peach is pronounced of higher quality than any other yellow cling, and unequalled for canning or shipping. "Very large, round, rich yellow, with red cheek; in quality un-

equalled. The coming clingstone for the canner and shipper. Tree very hardy and prolific."

HARDY TUSCANY.—Very large and handsome, yellow cling; orange, with deep crimson cheek.

HEATH.—See Stark Heath.

HOLLISTER FREE.—See under Amelia.

HYNES' SURPRISE.—Ripens soon after Early Rivers; a true freestone. The best and least inclined to rot of any of the Hale's type yet tested. Large, red; good quality. Hardy in bud and a sure bearer.

West. N. Y. Hort. Soc.: Mr. Snow—Have any peaches been more exempt from freezing than others?

Mr. Willard: After an experience of 6 years with Early Rivers, believe it has a hardy fruit bud, and will stand more cold than others; also Hill's Chili and Jacques' R. R.

Mr. Rupert: Early Rivers and Hill's Chili bore good crops when others failed.

Mr. Arnold: Add **HYNES' SURPRISE**. It proves very hardy, early and absolutely freestone.

JENNIE WORTHEN.—First introduced by us in 1881, this has proven the finest yellow freestone, ripening before Foster and Crawford's Early. Originated in Hancock Co., Ill.—latitude of southern Iowa—and is harder than most yellow peaches. Large size, deep yellow, with a bright crimson cheek, covering half the peach. Rich, juicy, and of highest quality. Quite prolific, but still more so when the tree is well headed back. We have distributed Jennie Worthen from Mass. to Tex. and Cal., and with scarce an exception it has taken front rank wherever fruited.

JONES' SEEDLING.—A fine new Cal. peach, ripening after Crawford Late. Said to be "the largest of all the yellow freestones. Fine shipper. Ripens nearly a month after Crawford Late."

LADY INGOLD.—Not nearly so early as claimed. Inferior to Early St. John (May Beauty).

LOVE ALL.—A Cal. seedling ripening between Picquet's Late and Salway. "Very large, yellow, round; small pit. Flesh firm, excellent, and of unsurpassed quality for canning or drying."

MCCOLLISTER LATE.—An improvement on Smock, which it resembles, but is larger, later, and even more profitable. Largely planted in Del. and Md.

McKEVITT CLING.—"A Cal. seedling. Large, pure white—white to the pit—flesh firm, sugary and rich. Stands shipping well, and good for canning and drying. Tree prolific, hardy, healthy, and a remarkably strong grower; not subject to curl. Ten days after Salway."

MUIR.—"The most valuable peach known for canning and drying; 4½ lbs. will make 1 lb. of dried pecked fruit; Crawfords, Susquehanna, &c., require about 8 lbs. These same combined qualities of firmness, dryness and sweetness make it of such immense value to the canner. Large, yellow, freestone, ripening after Crawford Late; extremely sweet and rich; no red at the pit, which is very small. All things considered, perhaps the most profitable peach." Mr. Normand, of La., says: "This is the best peach we have ever tasted. We believe perfection has been reached in the flavor. Tree thrifty, abundant bearer; stone exceedingly small." W. R. Strong & Co., of Cal., say: "One of the best for canning or drying, for which it is more largely planted than any other peach." Mr. Coates, of Cal., the introducer, writes us: "As to Muir and Wager: I know they are different; have seen them both fruiting together. There has been a long controversy about it, in which Mr. Thissell, of Yolo Co., proved the identity of Muir as a Cal. seedling."

NORTH AM. APRICOT.—Mr. W. J. Boggs, Saline Co., Kan., writes us: "The peach I sent you 3 yrs. ago has been fruited by me in Kan. 15 years. Its history dates back over half a century. Not far from Lake Michigan, in northern Ind., in my boyhood, I first knew it. I lost track of it for some years, but procured 40 trees, and in 1875 they bore their first crop here; all the forty are still alive, healthy and productive. Note the peculiar apricot flavor of the samples sent you; also the very small seed. For an all-purpose peach I consider there is not its equal grown. Medium size, golden yellow, with a fine red cheek—admired by all when hanging on the tree, and they fill the bill on the table. Tree hardy and bears here when all others fail."

We have the pleasure of introducing this variety, which we think will take a leading rank among peaches for home use, particularly where most of the older sorts are tender in tree or bud. The samples sent us were of delicious flavor and stone surprisingly small. It is medium in size, of a golden apricot color, with rich, red cheek. Freestone, and the flesh sweet, melting, again reminding one of an apricot. Ripens before Stump.

PICQUET'S LATE.—Very large, yellow freestone, with a red cheek; flesh yellow, buttery, rich, sweet and of the highest flavor. Seldom fails to bear, and after 26 years test is considered the most profitable late yellow peach. Ripens shortly before Salway.

PRIZE.—Very large, yellow, with bright red cheek; quality delicious, equal to any yellow-fleshed peach we know. Where known it is eagerly sought for and largely planted as a most profitable market variety. Ripens

earlier than Globe and the best judges concede it a finer peach and better market variety. Mr. Cochran, a large Del. peach grower, says: "Prize and Walker's Variegated Free are two of the *best* and most *profitable* peaches in cultivation."

ROSEVILLE CLING.—From Cal. "Very large, round, white, with red cheek. Excellent canning and shipping peach."

SELLER'S ORANGE CLING.—"A Cal. seedling of Orange Cling; larger and finer. Has been more planted than any other clingstone. The canners greatly prefer Seller's, though they often label them "Lemon." Indeed many of the Californians have a way of branding all yellow freestones "Crawford," yellow clings "Lemon," and white clings "Heath"—they say they must call their fruits by names people know.

SHIPLEY LATE RED.—One of the most beautiful late peaches. Owing to the fine appearance of this sort and the high prices it has brought in Phila. and N. Y. markets—the best test it could have—it is very popular in Del. and Md. Large size, freestone, white flesh, with beautiful blush; tree very productive. Ripe just after Smock. See under Amelia, from Mr. Riehl.

STEVENS RARERIPPE.—Pres't A. M. Smith, of Canada, recommending a list of peaches for market in the Niagara district, names Alexander, Ey. Rivers and Wager, and adds: "Stevens R. R. is very desirable, an Oldmixon Free in appearance, but ten days later and much *superior*. It hangs well on the tree without decay."

J. H. Hale, the great Conn. peach grower, whose great success is now of national fame, says: "In Conn. everything must be secondary to the one question of hardiness; it is a hard fight to get peaches here anyway, so the main question is how to get them, and not what to get. Of 20 varieties, the very early sorts such as Alexander have never failed. They are all semi-clings, fairly good flavor, inclined to decay, but sometimes bring a fancy price. Next in hardiness comes Smock, much better as a dessert fruit than none at all. Next in hardiness comes Stump, Oldmixon and Stevens Rareripe, while the Crawford are most tender of all—I would neither plant nor recommend them anywhere in New England."

STARK HEATH (Pride of Pike).—The largest and most superb *Heath* peach ever fruited in this section. Raised from seed by the late Wm. McLeod, an early pioneer, and first grown in our nurseries upwards of 30 years ago. Some years later the stock was accidentally lost, and was not again recovered until 1882, when a farmer of this vicinity was exhibiting on our streets and presenting to the local editors and others, ourselves among the number, what all agreed were the largest peaches ever seen here, and in appearance and quality superior to the well known Heath Cling. Investigation disclosed the fact that the tree was a Stark Heath purchased from our nurseries about the beginning of the war and, although then over 20 years of age, it was still healthy and productive. Mr. Wm. Cutter, then of Ill., but now of Wm. Cutter & Sons, nurserymen, Junction City, Kas., who was at our Nurseries in 1865, obtained a start of this fine peach, and was greatly impressed with its superiority over all other varieties of the Heath known to him, but unfortunately he, too, lost the stock. Tree vigorous, hardy and long-lived, and a remarkable bearer, especially for a Heath. Fruit of immense size, oblong but not so tapering as Heath Cling; creamy white, with a blush or tinge of delicate pink on the sunny side. Flesh white, very tender and melting, exceedingly juicy, with a rich, high and most luscious flavor. Ripens soon after Heath Cling, and will keep for a month after gathering.

SUMMER SNOW (White Heath—incorrectly; English Heath, Jo. Bowers, Mo. Summer Snow Heath)—For 40 years this has been the most popular and largely planted peach in this county—Why? Because it has never failed to **REPRODUCE TRUE FROM SEED**; tree the hardiest, longest-lived, *surest* and most prolific bearer, fruit the most beautiful and best in quality. A modest claim, is it not? Yet it is all true. The original tree sprung up on the old "English" farm (since passed into our possession, and now planted with a large Pear orchard) and soon made a stir; was visited by the late Judge Stark and a son, more than 40 years ago, who soon discovered that it unfailingly came "true from the seed." Aware of the value of this characteristic, he

propagated it in **NO OTHER WAY**; hence its quality of *always reproducing itself* from seed was not impaired.

Notwithstanding the uncertainty of a Peach *seed* crop here, we have hitherto steadily resisted the temptation to rapidly increase our stock by budding—nor shall we now vary from the wise plan outlined so long ago.

In 1859 the late Wm. Stark planted a peach orchard of some 6 acres on the highest of the many high hills surrounding Louisiana; about one-fourth Summer Snow, balance Crawford E'y, Hyslop and others. After the hard winter of 1863, Summer Snow bore nearly a full crop, while all the rest of the orchard bore not a bushel. After other good crops, this orchard bore sold to the late R. J. Henry in 1868, who the same year sold peaches enough to more than pay for it—and other profitable crops afterwards, the Summer Snow always leading. Another peach orchard of 11 acres was planted by Wm. Stark in 1860. one-fourth Summer Snow, the other sorts being Stark Heath, Crawford E'y, Hyslop, Summer Rose and the peach since called Future Great. Here, too, the Summer Snow bore when others were a failure. But in the year 1868, all bore finely, except Crawford, and great prices were realized; old acc't sales yet on file show that Stark Heath and Future Great netted in St. Louis, \$2 and up per one-third bushel box. Summer Snow, of course, not being a peach of such enormous size, sold for less, though it too brought large returns. The largest and finest peaches it has ever been the fortune of the writer to see, were the Stark Heath grown that year—trees bending to the ground with the most magnificent peaches, gloriously beautiful with their delicate sun-kissed cheeks. Here he, a boy of 13 years, with a younger brother, gathered from the trees, packed in boxes and nailed 66 boxes of Stark Heath in part of one afternoon.

The fruit of the **SUMMER SNOW** is snowy white; the foliage and wood are a peculiar light green, like the common Snow peach—which is a *freestone* and not a desirable sort. No tinge of red on either twigs or blossoms. Tree very hardy and prolific, and **BEARS WHEN ALL OTHERS FAIL**. Wm. McIlroy, who has many trees over 20 years old, says: "In 1890, the Snow Heaths bore twice as much as any other trees in our orchard—which is *all* seedlings, not a budded tree left in it." It is **THE** one great canning peach in this county, being always preferred to the late Heath Cling—when the latter "happens to bear. A clingstone, full medium to large, quite large on young trees; perfectly round; skin clear transparent white; always beautifully fair, and unaffected by fungus. Flesh white to the stone, which is remarkably small; very firm, yet extremely juicy, rich and luscious. Flavor—the *sweetest* peach grown. Known by everybody here as requiring but half the usual quantity of sugar in canning. Ripens just after Stump the World. Many seasons we have no trees—because of failure of peach crop the preceding year. When trees are for sale at all they are *always* seedlings, propagated true from the seed.

SUPERB CLING.—See under Amelia, where, among other good things, Mr. Riehl says of this sort: "A grand, good peach. Turns out lots of fruit, which sells at high prices. If planting another peach orchard, should plant it largely. Large size, white, with beautiful blush; red at stone. Of fine quality, very productive and always fair and smooth; never saw any of them cracked or spotted with fungus as is the case with many other peaches. I consider it **ONE OF THE BEST**, whether for home use or for market."

The identity of this fine variety is unknown. We obtained it many years ago as Van Zandt's Superb, but the latter is a *freestone*, and this proved to be a cling—and a most superb one—therefore not Van Zandt.

ULATIS (*Cal. Advance*).—"I have for years given up propagating such varieties as Amsden, Brigg's May, &c., as in comparison with Alexander they were no earlier and not so fine in size or quality. A seedling originated near Vacaville, Cal., has for some time claimed the attention of the few who were aware of its existence, and it is now an undisputed fact that this peach is superior to its parent, the Alexander. It ripens a few days earlier,

but that is not its chief recommendation, which is its great *firmness*, even after it is fully ripe, its *large size*, *smoother skin*, *handsome appearance*, and *superior quality*. The best early *shipping variety*. It seems *perfect*, and will supersede Alexander."

Mr. Eggleston, a Mississippi peach grower, says: "At a late meeting of horticulturists in Ill., the Alexander peach and its near kindred were brought up for trial, and found not a friend to speak a good word for them. A correspondent in your paper takes a similar view, and that view is the one quite prevalent among fruit growers. For my part I hope the feeling will grow until the extra early sorts shall be eradicated from all orchards—but my own. Then I should have a monopoly that would be equivalent to a small fortune. For while much that is said in disparagement of the extra early peaches is true, I have myself found more profit in them than any others. I have sold them in market as high as \$4.50 per bushel, never lower than \$2.25; have shipped three crops. They rot, but not worse than some others; for instance, Crawford Early and Early Rivers. The extra earlys are so very prolific that the grower can afford to lose half the crop by rot or any other cause, and still make more money than from most other sorts. My orchard of 1,000 trees, made up of all the standard sorts, while in full bloom, was struck by a heavy frost and a considerable freeze, March, 1888. The extra earlys bore a full crop, while all the others together did not bear a bushel."

WAGER—Origin Ontario Co., N. Y. Large, yellow, more or less blushed; juicy and of fine flavor. Very hardy in tree and bud; bears when most other sorts fail. The late Henry Avery, of Burlington, Ia., wrote us: "Wager is the most hardy here of any peach tried during past 52 years."

WALKER'S VARIEGATED FREE.—Large, white flesh, with mottled red cheek, "beautiful as a peach;" heavy bearer of *uniform fruit*. A profitable market variety and one of the best peaches in the list.

APRICOTS.

ALEXANDER (Emperor Alexander)—Large, yellow and red, flesh also tinged red. Sweet and delicious. Alexis and Budd are both fine, but of the three, Alexander is the best. July 1st.

See "**Proper Stocks**."—Unnamed or ordinary seedling Russian Apricots necessarily vary greatly, though a large proportion bear fruit of small to medium size, pale yellow, sweet, ripening early. But now that the trees bearing the best fruit have been selected, named and propagated from, surely it were better that the propagation of mixed and unknown seedlings should cease.

Prof. L. H. Bailey, editor *Am. Garden*, has secured a vast array of opinions on the Russian apricots, which are published in issue of Nov. 1890. We extract:

CONCLUSIONS.—The following statements appear to be warranted by the above correspondence:

1. The Russian apricot is somewhat hardier than the peach, and may be expected to endure the climate a degree or two north of the peach belt.

2. It blooms early and is liable to injury from late spring frosts.

3. Seedlings vary widely; many are worthless.

4. The fruit, even of the best sorts, is much inferior to that of the older and better known apricots.

5. There is promise of considerable improvement under proper care and selection.

6. It is particularly liable to attacks of the curculio and plum gouger.

7. It works well upon common plum, upon *Prunus Americana*, Mariana, peach and myrobolan. It is probable that Mariana or some other of the native plums will be found to be the most desirable stock.

8. In general, it appears that on the northern limits of peach culture the best varieties of Russian apricot are worth cultivation on a limited scale; and they may increase in value with further attention.

C. M. STARK, *Stark Nurseries, Louisiana, Mo.*, in *Am. Garden*—Russian apricots are quite hardy here; we have also tested them at Denver, where the climate is even more trying, and apples like Maiden Blush, Mo. Pippin, Northern Spy, etc., do not stand, and they are hardy—hardy as Richmond cherry.

The best sort is doubtless the Shense; then Golden Russia, Alexander, Alexis and Budd; Gibb and Catharine, less desirable; Nicholas discarded. Preib, Evatt, Smith, Byram and Remer are identical with the five last named. Mr. Reiner distributed cions both to nurseries in Kas. and Neb., but to each without the knowledge of the other, hence there was no intentional deception upon the part of introducers. The Kas. man obtained cions a year ahead, but lost them, so the Neb. collection was sent out first.

Perhaps it is too soon to say how much farther north than the common French apricots the Russians will

prove valuable; but it is not a question of hardiness in tree, simply of early blooming and consequent liability to injury by frosts. To say the least, they promise an occasional crop, especially when trained on walls, etc., where it would be hopeless but for the Russians.

Peach stocks should be avoided, also myrobolan; native plums are good, except that they sucker, and are variable as to hardiness. We believe the best stock, not only for the Russians, but for all apricots, is the Mariana plum. Five years ago we sent apricots on Mariana to California and other States, and planted them here, and thus far trees are in perfect health and vigor.

ALEXIS (Grand Duke Alexis)—"Great bearer. Very large, yellow and red; sweet sub-acid, rich and luscious. July 15."

BUDD (J. L. Budd)—Named in honor of Prof. Budd. "Profuse bearer. Large, white and red; sweet, juicy, extra fine, with a sweet kernel, as fine flavored as the Almond. The best late variety, and a great acquisition. Aug. 1."

GOLDEN RUSSIA—An excellent variety, selected from among many thousands of seedlings grown by the Russian Mennonites in Kas. Large, yellow and red; flesh yellow, juicy, sweet; best quality. Tree notably hardy and vigorous, an early bearer and most prolific.

LUIZET (French Apricot)—In Cal. this is said to be "superseding all others; very large, good flavor, firm, ripens evenly on both sides; a good shipper, and highly esteemed for canning and drying. A regular and prolific bearer. Ripens with Royal; very popular." Skin thick, orange yellow, washed and dotted with deep crimson; flesh yellow, firm, sugary, perfumed. Freestone.

NEW CASTLE EARLY—From Newcastle, Cal. "By far the best very early Apricot. Nearly as large as Royal and two weeks earlier; very valuable on account of earliness; ships well. Tree a regular bearer."

PEACH (Imperial)—Downing wrote of this: "From Piedmont, France. Has long been considered the finest variety. With me it is the largest and most excellent sort cultivated. Finer and earlier than Moorpark."

ROYAL—A French sort. Nearly as large as Moorpark and ten days earlier. Extensively planted in Cal.

SHENSE (Acme)—The pit from which this wonderful new apricot grew, was sent to Prof. Budd, by an English Missionary from the Province of Shense, in North-west China, near the Siberian border. Prof. Budd says: "Six years ago he wrote me that in parts of Shense and Mongolia an apricot was grown that reproduced itself from pits, and was as fine in growth, foliage and fruit as the apricots he had seen in England and France. Later he sent me pits; only one grew, from which came the Shense. It is much like the best apricots of California; this season I am more convinced than ever of its value over a very large part of the country east of the Rocky Mountains.

"This variety, which I first sent out marked 'Chineso Apricot,' and later named 'Shense,' is now called 'Acme' by —, nurserymen of Neb., and others. This will result in confusion, and I hope the prior name of Shense will be used. This is the more important as this is the most valuable variety of the apricot yet grown and fruited in the prairie states."

QUINCES.

ANGERS—Later than the Orange, not so large, cooks well; tree stronger grower and hardier.

CHAMPION—Tree too tender, and fruit ripens too late to be valuable, except south.

MEECH PROLIFIC—Said to be an early and abundant bearer and the fruit to be of very large size, beautiful appearance and delicious flavor.

MO. MAMMOTH—Endorsed by the Mo. Valley Hort. Society as a quince of great merit. "Large size, perfect shape, very rich and aromatic; tree vigorous, productive, an early bearer, and free from blight and other diseases so common to the quince."

ORANGE—The most popular and extensively cultivated variety. Very large, rich golden yellow, excellent quality.

REAR'S MAMMOTH—Ellwanger & Barry say: "A very early, large and fine variety. Strong grower and productive. We consider this the best of all the quinces." We have found it unexcelled; hardier and earlier than Orange, more productive, bearing fine crops at 3 years old. The earliest quince.

Mo. State Hort. Society; extracts: Mr. Kirehgraber: On one kind of fruit big profits may be made—raising quinces. They are not hard to grow, but are much neglected.

Mr. Espenlaub: Is Mo. Mammoth Quince valuable? Pres't Evans: Mo. Mammoth is THE Quince, the only good quince we have ever grown in Mo. It is hardy at Kansas City.

Sec'y Goodman: We sold all the Mo. Mammoth we could grow for 10 cents each.

Mr. Holman: Champion, with me, blights like Bartlett pear. Orange does not blight, nor Mo. Mammoth.

"A Tree's a Tree?" Yes, but then—there are Trees, and TREES.

"—You see, sweet maid, we marry
A gentler cion to the wildest stock
And make conceive a bark of baser kind
By bud of nobler race: this an art
Which does mend nature, change it rather, but
The art itself is nature."—*Shakespeare*.

In **Trees** there are the same variations in quality found in every other line of goods. But owing to a somewhat wide-spread misapprehension on the part of many tree planters, with regard to the comparative merit of trees of different kinds and qualities, it seems worth while to explain at some length a few of the points of difference between *Whole Root* and *piece root* trees, between trees on *peach* stocks, on *plum* stocks, and on *Mariana* plum stocks, etc., and to quote the matured opinions formed and expressed, after long years of patient research, observation and experience with trees of every kind, by men pre-eminent in the science of Horticulture, such as Chas. Downing, Dr. Warder, P. Barry, J. J. Thomas and many others,—than whom no higher authorities have ever lived in America—or in the world!

Whole Root Trees are best, and the demand grows with each recurring year. And it will continue to grow, as with the wisdom born of experience, and with the mistakes of the past to guide them, practical and far-seeing orchardists prudently take the wise precaution to guard against repeating past mistakes in the orchards of the future. We do not wish to be led in the path of duty; our aim is to go ahead and do the best we know, hence we have, year after year, largely increased our annual propagation of Whole Root trees, while cutting down the proportion of piece-root grafts planted.

We are sorry to say that we cannot, just yet, altogether stop growing piece-root trees, for the reason that it would be ruinous to our pecuniary interests to do so, for there are planters who are "penny-wise and pound foolish," who will not be convinced that one tree is not just as good as another. They will tell you that "a tree is a tree," although they would never speak of other property in this way—a colt for instance. Yet there is as much difference in proportion between trees as colts. What the colt is, however, can generally be seen, but the buyer of trees must wait for years before he sees what the tree is; and the colt if not wanted, may be sold in a month or a year, but if the tree turns out to be a disappointment, it is beyond all remedy.

Our Piece Root Trees are as good as any grown, and while purchasers want and will have them, we will continue to supply these cheaper trees of as good quality as can be produced. But while we wish to make money now, we are more anxious still to build up a trade for the future and do the best we can for our customers by sending out such trees as will make lasting and profitable orchards; and it is as much for this reason as for the profit in selling them, that we urge planters, whether on a large scale or a small, but especially orchardists who **plant for profit**, not to plant piece-root trees.

Dr. Warder, in his renowned book, "American Pomology," says: "A most serious fault of nurserymen is the too common error of crowding the trees." **Our Whole Root Trees** are grown wide apart to allow of full and free development of root and branch. And although Whole Root trees, grown with ample room to allow of the fullest development of both tops and roots, are of necessity more costly, they are worth incalculably more, to planters who plant for fruit, than the slender, ill-developed product of the crowding, close-planting, no-pruning-back, piece-root-grafting system, by which health, vigor and every other valuable and enduring quality is sacrificed in the mad effort to cheapen the cost of production and thereby undersell all competitors by a cent or two on the tree. What profit is it to the orchardist if he save a cent on the first cost of his tree, and then, after years of care, lose the tree just when it is becoming large enough to bear three barrels of fruit! The one great want of orchardists is a long-lived, healthy, fruit-bearing tree—one that will come early into bearing, that will withstand the severest winters and protracted drouths. To produce such a tree it is of the utmost importance, not only that it should not be crowded in the nursery, but that it should also have the advantage of full, natural roots. The original collar of the seedling stock is the only point at which the most perfect and successful union between the aerial and terrestrial portions of trees should, or can be made. Trees propagated by this method are more hardy and better able to resist the severity of the winter than others of the same varieties, which have been grafted in the root, and come sooner into bearing. Further, it has been demonstrated that whole root trees bear more and better fruit. And why? For the reasons, almost innumerable, given herein—not the least of which is the apparent one that deeply

penetrating roots will furnish plenty of moisture, even during a prolonged drouth, and bring nourishment to tree and fruit from far and near.

In the face of the overwhelming testimony he must be a dull nurseryman indeed who will go on declaring to his customers that piece-root trees are "just as good as any!" It is of course useless to try to convince men wise in their own conceit; but if any were necessary, a still further proof of the excellence of Whole Root trees, which is of itself convincing to all observant minds, is found in the thousands of seedling orchards all over the country, almost without exception perfectly healthy, and bearing heavy crops of fruit, notwithstanding many of them have passed their hundredth year. Along the Hudson River, and in many of the New England States, where are found the most experienced orchardists in America, men who have made fruit growing a life business, as did their fathers before them, they will not under any consideration now plant a piece-root grafted tree. Observation of their old seedling orchards, and costly experience with the cheap grafted trees so generally grown by nurserymen of late years, have thoroughly convinced them of the utter worthlessness for permanent orchards of these so-called "improved root-grafted trees." As a consequence they now seek trees in the production of which the immutable laws of Nature herself have not been grossly violated. And in California, where fruit growing is better understood, is a greater business, and is carried to a higher degree of perfection than anywhere else in the world, the best orchardists absolutely will not buy or plant a piece-root graft. We ship large quantities to California every season; latterly, almost every order has been for Whole Root Grafts.

In Western Missouri and adjacent regions, many trees, some just beginning to bear, suffered permanent injury, and in some cases entire orchards perished, in the terrible drouth of 1837, solely because of rooting too near the surface of the ground—for in removing the dead trees, also by observing those uprooted by storms, it was discovered that the trees had formed only lateral roots, running parallel with the surface. The essential bracing and deep-penetrating roots were not there. Again, by a sudden and severe freeze in the Fall, numbers of orchards throughout Northern and Central Illinois were ruined because of the same important lack. In the vicinity of the orchards named in both these cases are old seedling orchards, the trees propagated by nature herself,—and they are standing uninjured to-day.

Indeed, this whole matter of the effect of drouth and of heat and cold is too generally misunderstood. The effect of drouth on quick-growing field crops is readily seen and keenly appreciated, but the effect on fruit trees is not so easily noticed or so quickly felt by the owners. Drouth usually affects field crops only one year, but often undermines the constitution of a tree. No effects may be shown until one or more years later, and then the trouble is attributed to the severe winters. Trees which have been poorly supplied with moisture through the summer become weakened, and are then much more easily injured by severe weather in winter. The lessened vitality of the leaves in time of drouth makes them more subject to rusts and other fungus diseases, blight, sun-scald, etc. Drouth makes the growth uneven, and often causes a second growth to be made after the fall rains come; then there is not time for the new growth to mature before frost comes, and the cold of winter starts the tree far on the road toward premature death. Whole-root trees withstand drouth so much better because they root deeper; and for the reason just cited, they are also less subject to injury, by cold winters, sun-scald, blight and numerous other diseases. Then, again, go into the nursery and notice the trees standing in rows side by side—the whole-root trees remarkable for their almost invariable fine and uniform size, strong sturdy bodies very thick and stocky at the ground, and in diameter and height always ahead of the piece-root trees of the same age, on the same soil, and receiving the same care and culture. Were we to show you a block of whole-root and piece-root trees of the same age, 2 yrs. old say, growing side by side, after looking around you would probably remark, as many visitors have done who have gone before you, "the piece-root must be two-year and the whole-root three-year trees; yet the whole-root trees look much smoother, stockier and better." Indeed, the fact is self-evident.

Judge S. Miller, hort. editor *Colman's Rural World*. "Growing apple trees on a whole seedling or stock, instead of cutting the roots into pieces, as is the usual practice with nurserymen is a mode I have long advocated, but at the present prices of apple trees it don't pay unless a better price be paid for the trees. Mr. P. Barry wrote some years ago that what he considered a good graft was to use but one whole root to a tree. At the time I endorsed the idea and have not since changed my mind."

B. Hathaway, Cass Co., Mich., an experienced horticulturist, writes the *Prairie Farmer*: "That whole stock grafted trees have often, if not always, shown a hardness and productiveness not found in the same varieties as root-grafts, cannot be questioned. My own experience, extending over a period of more than 40 years, enables me to speak with certain knowledge.

"At a meeting of the Northwestern Fruitgrowers' Association, held in Chicago more than 20 years ago, I announced my belief that the propagation of the apple by root-grafting would have to be abandoned. But the meeting, composed principally of nurserymen, committed by large interests to the then almost universal method of root-grafting, would have nothing of it.

"I could only say: 'Gentlemen, I concede your right to bar this question from discussion, but not your wisdom in doing so. You doubt my facts; you suspect my reasoning; but you will listen to the logic of experience before twenty years have gone by.'

"When I first began the nursery business here, the trees I grew for many years were propagated by all three modes—root-grafting, whole stock grafting, and budding; and, as my own orchard was set with trees grown by these three modes, and also hundreds of orchards in Cass and adjoining counties, I had the best possible opportunities for a just comparison; and for all the less hardy varieties the whole stocks, whether budded or grafted, had unequivocally the advantage in both hardness and productiveness.

"Yet nine of ten would take the root grafted instead of the whole stock trees, because of the five cents a tree added to the price of the latter.

"There is another advantage,—that of more early productiveness. This has been demonstrated time and again in my experience. And for certain varieties, the root graft is a failure from the first to last. So well assured am I of the superiority of whole stock trees, that I would set no others, though I could have them for the asking, and had to pay ten prices for the former."

J. J. Arthur, in *Journal of Agriculture*: "I give my experience and mistakes as a horticulturist. Life is too short to make the second mistake in this pursuit, and by telling our mistakes we may prevent others from repeating them. In the spring 1864 we set an orchard of 109 apple trees, all grafts on short pieces of roots. The same spring we planted a small nursery of seeds for budding. By the time these budded trees were large enough to transplant, the borer had played havoc with the 109 trees. We refilled the vacant places with the budded trees which are doing well, while their neighbors have gone the way of all the earth. Some of these budded trees formed an ugly knee at the junction but for all that we find tree and also apples all right, and nearly every fall laden with fruit. Before we were aware that the root grafted tree was an inviting bait for the borer we set another orchard of over 200 trees, more than half of which have succumbed to the borer, despite all our watchful care. The root-grafted trees when laden with fruit or sleet sometimes turn out by the roots, showing no tap roots, all being lateral roots, leaving the **old end of the ORIGINAL ROOT UNHEALED.**"

This most important point is clearly brought out in Prof. Bailey's photographs.—Fig. 1 and Fig. 5; the same fault is noticeable also in cutting trees, as shown in Fig. 3, photograph of pear trees on LeConte roots; see last page of cover.

H. M. Dunlap, ex-pres't Ill. State Horticultural Society, writes us: "The trees arrived in good order. Only 7 of the Willow Twig are alive of those received last year. The Willow Twig you sent me this year [2yr. Whole Root trees] were the finest of this variety I ever saw, and I was somewhat in doubt as to their being true to name, but on closer examination I find they show the characteristic Willow Twig growth."

Mr. Dunlap's surprise at seeing 2 yr. Willow Twig of such size and vigor was natural, it being well known that this variety, although a profitable orchard sort, is a poor grower in nursery; so much so that but few nurserymen propagate it at all, for it is cheaper to grow 200 trees of Ben Davis or other good growers than 100 Willow Twig. The important fact is often overlooked by purchasers, that, although some of the best varieties are the poorest growers, yet there are nurserymen who grow only the finest and most vigorous kinds, thus greatly reducing average cost of production. Or, as one nurseryman expressed it, "we care nothing for the fruit; all we want is size to make the trees sell." Inexperienced planters are highly pleased with this large, smooth stock, and wonder why all nurserymen do not grow such uniformly fine, big trees. This plan, perhaps, is all well enough if fine looking trees be the chief object, and their fruit only a secondary consideration.

PROPER STOCKS as well as right methods, are also of greatest importance, yet thousands of trees, particularly Plums, Prunes and Apricots, are grown on unsuited and uncongenial stocks, thereby condemning them in advance to short and unprofitable careers, and defeating the fond hopes of the unsuspecting planter.

See "Whole Root vs. Piece-root Trees."

Downing, says of the common tender Apricots: "Apricots budded on peach stocks are very inferior, short-lived, more liable to disease—and the fruit of second rate flavor. Budded on the Plum the apricot may be considered a hardy fruit tree, and well adapted to strong soil, in which it always holds its fruit better than in light sandy soil." What a field for the improved hardy Russian Apricots is here presented! They seem particularly rich with promise for sections where neither the peach nor the tenderer varieties of Apricots succeed. But Apricots on the proper stock—the plum—are not alone preferable for cold sections; witness—

A California Experience.—"A number of Apricot trees budded on plum stocks were planted in San Jose 37 years ago, which have borne continuously, and are still bearing good crops, while alongside of these trees two orchards succeeding each other, budded on peach stocks, have actually died."

The plum stock is also the only one of permanent value for its own species, although many nurserymen nowadays use the peach stock, not only for the Apricot but for the Plum as well. This unwise use of peach stocks has caused disappointments and failures innumerable; the trees often grow well for a few years, but soon begin to decline, then utterly perish.

J. J. Thomas, in his large work, "*The American Fruit Culturist*" says, "The peach has been occasionally employed as a stock for the plum. A very few varieties take readily and grow freely; but the great uncertainty which attends its use, and the failure with most varieties indicate the propriety of the rejection of the peach for this purpose. Mr. Thomas also says, "Our native plum makes a good stock for the peach." And Prof. J. L. Budd says, "During the past 20 years I have watched the peach when budded on plum stocks of the Wild Goose and other Chickasaw varieties, and believe they are preferable to peach roots. I have not known the borer to attack trees budded on these plum stocks, and have thought that the peach wood ripened up more perfectly, and that for this reason the fruit buds would endure a lower winter temperature; and also that the peach on the plum stocks would do well on soils where it would entirely fail on peach roots."

C. Hiller, Lancaster Co., Pa., in the *Gardener's Monthly*, writes: "Instead of dropping the Blackman plum [worthless as a fruit tree], use it for stocks for the plum or peach. Its remarkable vigor would make it a desirable stock for peaches; they would be borer proof, and from experiments made, perhaps 'yellows' proof. However, we now have the promise of a better stock [the Mariana] grown from cuttings."

Prof. Meacham, the editor, adds: "Mr. Hiller's suggestion, we regard as well worthy attention. The yellows comes from the attack of a fungus; now if it can be shown that this fungus does not care to attack plum roots—and we believe the evidence tends to favor this view—it will pay the peach grower, even at \$50 per thousand for the stocks, to have the trees on plum roots. A peach tree that is warranted free from the attacks of the yellows, and will continue in bearing for a quarter of a century, will be worth ten-fold more than the ordinary tree, with its short life and great risk."

Mr. Hiller, in a letter to us, writes: "I have been looking over your Wholesale List and find it a regular Encyclopedia of tree knowledge. I see you grow apricot, plum and peach on Mariana stocks, just what I have been looking for for years past. I am experimenting with trees on plum stocks to learn what advantages can be gained in the way of preventing yellows and the borers. I am satisfied that the latter is a practical success; the former will take time to determine, but the growth so far is entirely satisfactory. I feel sanguine that if we had such varieties as Mariana, and perhaps others, as stocks to work peaches on, the yellows and borers would give us but little trouble."

Report Dep't Agriculture, of S. C., Aug., 1890: "Peaches cannot thrive on wet land. Budding on plum stocks has been successful. The plum stock, too, is less subject to the borer, especially the MARIANA. The Wild Goose is more subject to borers than most sorts. The chief difficulty, however, is to find a plum of sufficient affinity for the peach to admit of a proper union."

We have found that the Mariana has not sufficient affinity for the peach when the latter is budded on it direct; but by double-working, exactly as is done with Sheldon and other pears to get them on quince roots, we get a perfect union and a vigorous, healthy growth. For double-working we have tried over twenty sorts and while several are good, the Poole's Pride is best, and we are using it largely for double-working peaches. It is also very hardy—see description under Plums.

[An article contributed to Colman's Rural World, March 20, 1890, by Clarence M. Stark, Littleton, near Denver, Colo., President Stark Bro's Nursery Co.]

*Whole Root vs. Piece Root Trees.

ED. RURAL WORLD:—No consistent argument can be found to show that piece root grafted trees are equal to trees grafted "in the natural crown" (as Downing expresses it), except upon the hypothesis that it is a desirable thing to have orchard trees mainly or wholly "on their own roots." If the true method of propagation be to grow trees from cuttings, or, what is practically the same, to use just as little of the seedling root as will give the cion a start, depending upon the cion to throw out the main system of roots for the support of the future orchard tree, whatever materially interferes with the production of such cutting trees is contrary to the laws of nature; and, as a small piece of root cannot support a vigorous growth, thereby necessarily forcing the cion, if it survives, to put out roots of its own, it is contended by the advocates of piece root grafting that the smaller the piece of root the better, because then the more nearly will the tree be on its "own roots." They assume that piece-root trees are hardier, more productive, longer lived, and in every way superior to trees which have the natural collar of the seedling left intact together with its full natural system of roots radiating downward in all directions. But the facts do not bear out the assumption. And besides the

Misleading inference

is often conveyed that whole root trees are *not* on their own roots; for the fashion is to ignore the fact that properly grown whole root trees possess an ample supply of fibrous horizontal own roots for surface feeders, and are just as truly "on their own roots" as piece-root trees, though unlike the latter their own roots are not their chief stay and support.

The whole argument if it is consistent with itself admits that the effect of the piece root "manufacture" of apple trees is to produce, in direct violation of nature's laws, cheap nursery trees without a natural crown and without the natural system of roots which a seedling out, and a cutting *never*, can give to the future orchard tree; for if this were not the case it is plain that the method could not enable the "wholesale manufacturer" to sell his abnormal piece root grafts at a price which tempts anybody who can plant tur-raps for greens in the Spring to buy and, forsooth, become a "nurseryman." We would not

Disparage Small Nurseries;

far from it. But we feel that the culture and propagation of fruit trees and plants, particularly the apple, is a matter of greatest national importance, closely connected with the welfare and happiness of countless thousands. But who can number the

Decrepit young orchards

scattered over the entire country largely attributable to a vicious system of growing short-lived trees, more like cuttings than nature's plants, by wholesale nurserymen.

In making piece-root grafts, "using a long cion and a

SHORT Piece of root,"

the main dependence is that the cutting or cion will put out roots of its own. But the fact is overlooked that a tree propagated from a cutting is *less hardy* than the same variety grown on an ordinary seedling; this has been fully demonstrated. A leading member of the State Horticultural Society of California utters the warning: "I would caution planters against plum trees raised on Myrobalan stocks which have been grown from cuttings; a seedling is much the hardier and more vigorous." And in our Nurseries at Louisiana, Mo., notably in the case of the Wild Goose and other Plums, we have had two-year-old trees grown from cuttings to winter kill badly, while the same varieties on *Chickasa* and *Americana* plum seedlings as well as on the less hardy Myrobalan were uninjured.

In the next place, as Pres't T. T. Lyon has said, it is

Plainly Against Nature

to take a cion which has grown high up in the sunshine and air, place it almost wholly underground, quite out of its proper element, and then expect that it can so completely change its nature as to make a perfect root system, a crown, and a top—all from a short cion formed by nature for aerial conditions alone. Yet these are precisely the requirements imposed in piece-root grafting. A one-year-old seedling which, as all nurserymen know, grows naturally with long tap roots, is cut into pieces an inch or two long and a six or seven inch cion spliced to each bit of root. When planted only about one inch of the cion is above ground, and but *one* out of the half-dozen or more grafts made from the seedling will have a natural collar—and even it is too deep underground.

*[Copyrighted 1890.]

Besides, as Peter M. Gideon, Sup't Minn. Experimental Orchard, says, this collar piece has been cut so *short* that only fibrous and no deep-reaching roots result.

Third count against piece-root grafts: the faulty and

Unnatural Union

of the cion and all pieces of the root except the collar section. This defect is the consequence of the difference in texture of the wood and bark, as well as a lack of analogy between the albumen of stock and cion. The result of this is two imperfect and dissimilar systems of



[Photo-engraving showing: 1. Piece-root apple, 2-yr., 3 to 4 ft. (and vard stick.) 2. Piece-root apple, 2 yr., 4 to 6 ft. 3. Whole root grafted apple, 2-yr., X X.]

roots, and often an abnormal enlargement at the point of union. This *enlargement*, the difference in *color* above and below the junction, and often their *hair-like* fibres and "horny" roots, afford tests by which with little experience any one may distinguish piece-root trees. It is impossible to detect the point of union in *rightly* grown two-yr. whole root grafted trees. Such is the difference, even while young, that when whole root and piece-root trees of the same variety and size are mixed together, there are but few who could not soon learn to separate them readily. Indeed, E. Moody, one of the oldest and most experienced nurserymen and orchardists of western New York, declares he can distinguish at a glance the two classes of trees even in bearing orchards. Of course varieties root differently, as Wine Sap and Whitney Crab, and each in a measure controls the root formation; but it is apparent that the smaller the piece of root, the greater this influence of the engrafted variety.

In the fourth place, and this is their

Chiefest fault,

one fatal in the extreme and wherein lies their absolute and utter condemnation, the cion emits not only a *scant* but almost invariably a *shallow* system of roots. Hence

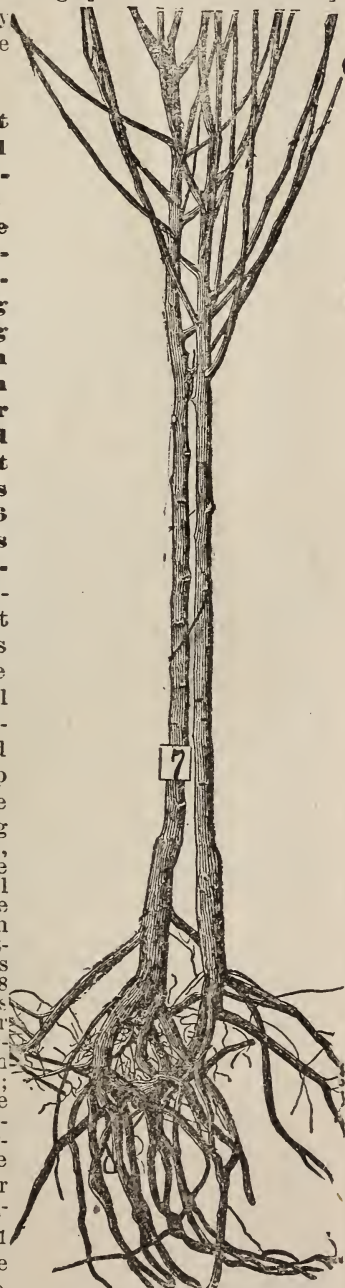
unnumbered thousands of these trees fall before storm and drouth, wet and cold. For all who have observed with any degree of care know that cuttings—be they grape, quince, LeConte pear, [see last page] or the *cion-cuttings* of, piece-root apple grafts—while making an abundance of fibrous and horizontal roots, rarely and almost never put forth any strong, deep-reaching roots. Cuttings are well enough for grapes, currants and such things as do not require far-reaching brace-roots, but apple trees thus grown will cause sore disappointment. Especially should they be avoided in regions where high winds prevail, or where irrigation is practiced—for when the water has long been turned on only those who have seen it can form any idea how completely the soil is soaked, and how often the winds turn out such trees by the roots. In Colo. we have seen many examples of this—not in old worn out orchards, but in apparently vigorous young orchards just beginning to bear.

Trees grafted on pieces of roots are by no means destitute of all value; but the *longer* the piece of root the better the tree. One trouble has been that grafts on bits of roots 2 inches or less, are far more plentiful than on pieces 3, 4 and 5 inches long. [See "The Other Side."]

But unquestionably the best trees are

WHOLE ROOT TREES

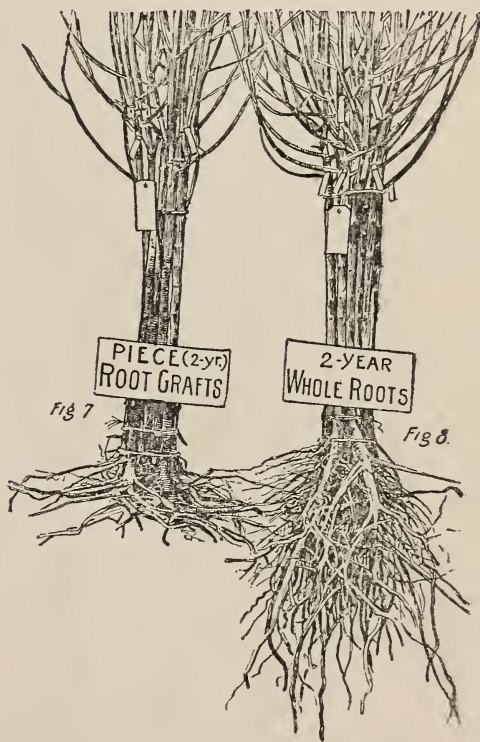
by which is meant such as are grafted or budded on vigorous 1st class stocks just ABOVE the crown with the natural collar left undisturbed, using but ONE seedling for ONE tree. In whole root or crown root grafting a 4 or 5 inch cion is used and the long root of the seedling is shortened to 5 or 6 inches, the same as when transplanting for budding; besides making the graft convenient to plant, this induces more strong side roots to put forth, as well as several vigorous deep-extending roots instead of the one straight tap root. Thus the grafts are 8 or 9 in. long, allowing one inch for the splice, and involve special care and preparation, as well as considerable more work in planting than piece root grafts—the latter being but 5 or 6 inches much oftener than 7 or 8 inches in length. And as the joint is planted 3 or 4 inches below the surface, own roots are often sent out from the cion; but in any event, the tree will always have the support of a *vigorous* foster-root. By leaving the crown root or cut 5 or 6 inches long when shortening instead of but 1 or 2 inches, as is done in piece-grafting, the natural tendency of the middle part of the root when cut off to send forth other roots which will piece deep



[7. Photo-engraving of 2 Whole Root budded Kieffer standard pears, 2-year, XX, showing the point at which the tap root of the seedlings were shortened and the resultant deep-extending roots.]

into the earth is not destroyed, and the several new roots which take the place of the shortened single tap root, naturally go *downward*. It is for this very purpose that the French pear-seedling growers now take up the young seedlings when but one inch high, shorten the tap roots and transplant, thus forming the "branched-root" stocks which every leading Am. nurseryman now uses, though at an advanced price. The principle is the same when we shorten back the one straight leader of a vigorous young tree—instead of the one tall shoot several strong branches put forth forming a symmetrical, well-branched head, the upper branches going straightest *upward*. The stronger the 1-yr. shoot, the better will it branch when shortened back. The strongest growth is made on whole or crown roots, hence they always make the largest and best trees, well supplied both with deep penetrating roots and strong side or brace roots, grow more symmetrical in form, and have well-balanced heads or tops. Yet whole root grafts do not unite so well as piece-roots, the union being made on the harder and tougher wood *above* the crown; piece-roots on the soft wood of the root, unite much more certainly, and give the best stands in nursery rows. But, after it is once made, this very hardness and toughness of wood, being of like nature and texture with the cion, gives a better and more lasting union.

"Budding" and "grafting" are simply two different processes for accomplishing the same end, the one being performed in the summer, the other in winter or early spring, and the resulting budded or grafted trees are of equal value *provided, always*, that each operation has been *properly performed*. Budded whole root trees, if budded low—just above the collar—are equally good with grafted, if rightly planted so that *all* the seedling is well underground; but they are not on own roots and in cold regions not so hardy as grafted trees.



[Photo-engraving showing: Fig. 7, Piece-root Ben Davis, 2-yr., XX. Fig. 8, Whole Root budded Ben Davis, 2-yr., XX. Scale nearly one-half less than preceding cuts—Nos. 1, 2, 3 and 7.]

We are free to confess that we too were opposed to the very idea of whole root trees until we investigated for ourselves; being led thereto no less by the writings of eminent horticulturists than by observing

Old orchards still healthy

which were planted from our nurseries long before piece root grafting was begun there, while much younger orchards of piece root trees were failing. In a small way at first the propagation of whole root trees was commenced both by collar grafting and budding, using always first class stocks for the reason that second and third class seedlings, being weak and dwarfish at one-year are more apt to continue feeble. And in this connection we cannot refrain from mentioning, as an illustration of a characteristic type of unfairness and prejudice, the case of a nurseryman who exhibited what he called first-class budded 2-yr. trees, 3 or 4 ft. high and

evidently grown on cull stocks, along with well-chosen piece root two-year-olds, to show the superiority of the latter. It may be that the effect was not exactly what he anticipated when we brought forward very finely rooted budded *one-year-olds*, standing full 5 to 7 ft.

We grow piece root trees—and just here we will say that we have never sought, and do not now seek, free advertising; so the publisher will please charge our account with all "shop talk.") We must grow these cheap trees because of the

Keen competition

in the nursery line as in all others; for there are planters who always want what is lowest in price. But we know that whole root trees are the better and plainly so state. Then all who buy piece root trees do so on their own judgment, not upon our advice or recommendation.

We have already cited the opinions of Pres't T. T. Lyon, E. Moody and P. M. Gideon, while that of the RURAL WORLD'S own Judge S. Miller, we all know; therefore we will only quote a few extracts giving the

Results of experience

of others whose names are to-day among the most eminent in the annals of American Horticulture. If there be any such names among piece-root advocates a somewhat diligent search has failed to discover them

P. J. Berekmans, Pres't Am. Pomological Society, after an experience of 50 years, says: "The system of grafting on pieces of roots is wrong. No lasting results can possibly be expected from such trees. The system is worthless and only calculated to disappoint."

P. Barry, one of the foremost horticulturists now living, and the leading American authority, describing the operation of budding in his well known book, "Barry's Fruit Garden," speaks of high and low budding and the necessity for the latter; after giving the reasons why stocks should be budded as close to the surface of the ground as possible, even removing some of the earth, he sums up the whole matter in few words—"low budding makes the best trees." Of the kindred operation of grafting he wrote, less than a month ago: "Very good trees are produced on pieces of roots three or four inches in length; but there is no doubt but that the cut next to and including the collar is to be preferred. In either case, the trees get on their own roots."

Franklin Davis, Ex-Vice President American Pomological Society [See Discussion Am. Ass'n Nurserymen, 1859,] thus writes of the evils of piece root grafting: "The roots from these small pieces cannot be so well developed as to properly feed the tree or hold it up; hence, they are often uprooted by storms. We must

Plant the Whole Stock

leaving the crown as nature formed it; then we have the whole root, strong and unimpaired by division to feed and develop the tree. And as the tree is not only held in its place by its roots, but also receives most of its nourishment through them, it is plain to see why it will grow larger, live longer and bear more." Of whole root trees he says: "The superiority of this mode of propagation has long been acknowledged by intelligent nurserymen and orchardists, yet nine-tenths of the apple trees sold are grafted on pieces of roots. Nurserymen have not grown trees on whole roots for the reason that it costs more to propagate them that way, and it has been difficult to get many planters to pay that additional cost; but we are glad to see the people in some sections awakening to their interests. We know such trees are the best; and in making an improvement so important as planting an orchard there is no economy in purchasing an inferior article."

Whole Root or Crown Grafted Apple Trees are the coming trees for Western orchards, a fact we have foreseen for some years. We began their propagation, and have since grown many hundreds of thousands, because we were then satisfied, as we now know, that they are the best. And while we note with pleasure the many recent endorsements by high authorities, horticultural literature has long indicated the now conceded fact, that whole root apple trees are the trees to plant for permanent orchards. Perhaps no stronger or more authoritative western endorsement has been written than the following, condensed from a paper entitled,

"How to Keep our Orchards Healthy,"

read before the Mo. State Horticultural Society so long ago as 1834, by N. F. Murray, the Vice-Prest. of the Society, and who was recently honored by an unanimous re-election. Mr. Murray has long been known as one of the largest and most successful commercial orchardists in N. W. Missouri, and a horticulturist of much experience and wide observation. He says:

"This is a very important question, and one not only affecting the orchardist, but also the commercial interests of our whole country, as well as the health and happiness of the fruit hungry millions who wait for the rich, luscious, and life-giving fruits of our orchards.

"We must seek to find out, as far as possible, the causes of the unhealthy condition and premature decay

of our western orchards, before we attempt to prescribe remedies. That our orchards are in a deplorable condition no one will deny. We look up and down the bluff lands along our rivers, and out over our broad, rich prairies, for healthy orchards, but look in vain. In place of finding the rich, bright, green and glossy leaves, the sign of health and vigor, we see a scant and sickly foliage in which the keen eye of the experienced horticulturist reads starvation, premature decay, death.

"It might be well for us here to inquire how long we may expect our orchards to last—find out, if we can,

How long

each species and variety of our standard fruits is likely to live under favorable conditions and fair treatment, in order that we may know what to expect. We will first speak of the apple, the standard and king of all fruits. Mr. Knight, of England, famous in horticulture, has placed the duration of the apple tree, when worked and grown on a healthy seeding stock, at two hundred years; and speaks of trees over *one thousand* years old, and still in healthy, fruiting condition.

"S. W. Cole, of Massachusetts, in his book published in 1850, tells of apple trees *twelve feet* in circumference; and claims that the apple tree, in a wild state, with moderate, regular growth, would live one hundred years, or more, and states that he had fruit from a tree in Plymouth *two hundred* years old. Mr. Cole also says that under high culture, they often fail at one-half that age. I have myself seen trees of the Roxbury Russet that were planted near Marietta Ohio, by the celebrated Israel Putnam, in 1796, that were 70 years old, still healthy and bearing well. The original Grimes Golden Pippin tree, in Brook Co., West Va., was, some years ago, *eighty years* of age and still in good health.

"From my own experience and observation in the Ohio River Valley, I feel safe in placing the average life of apple orchards there at 60 years. As we come westward we find it much shorter. Some writers claim the average age in Illinois to be 20 years, and in Missouri 25 years. From an experience of 16 years [Mr. Murray wrote *six* years ago] in Northwest Missouri, I would not feel safe in placing the average above 35 years.

"In tracing the cause we fail to find it in any one of the numerous theories advanced, nor do we find it in the geographical position of the country, nor in the climate, nor yet in the soil. * * * * *

"I believe one great cause underlying this question is that in our

Mad rush and greed

to multiply trees, to satisfy the demand for *cheap* nursery trees, we departed from one of the great and grand laws of nature that should never have been violated, when in place of making *one* root for each graft, from each seedling, *grafting at the collar*, we went to cutting them into small roots, often making from two to five or even a dozen roots from each stock.

"This practice may suit the nurseryman who feels that he *must* grow *cheap* trees, so he can compete with others who follow the same practice. The public have no right to complain so long as they are unwilling to pay more than ten or fifteen cents for their trees, but such stock will never make the large, healthy, lasting trees that once flourished in our country, and that were started before this pernicious style was introduced.

"That this is one of the chief causes of the short duration of our apple orchards we learn from our own experience and from the fact that it has been almost universally practiced, east and west, for nearly fifty years, and that we hear our own lamentations re-echoed by our eastern brethren, victims of the same mistake. * * *

"Now, I think that in order to have our orchards healthy, we must, as far as may be, go back to first principles, and pay more attention to the *laws of nature*. We must renounce both the *forced overgrowth* and the *starvation* systems.

"We must start with seeds carefully selected from healthy trees—grow them one year, then graft just above the collar. * * *

Several Western nurserymen recently have been

Denouncing WHOLE ROOT trees

in the horticultural press, many, perhaps all, of whom truly believe that piece roots are better—all the more reason why they should heed the numerous warnings given by the highest authorities. Let us, then, do the best we know and all earnestly strive to advance our beloved Horticulture—man's first occupation; do all the good we can, rejoice at one another's success, adopt better methods, and join with all brother nurserymen to grow the *best trees* that "this art which does mend nature" can produce for the orchards of the future. For, as Prof. Budd well says, "The crown graft is the best, and our nurserymen could afford to make only one tree from one seedling." Answering for ourselves we beg to say that beginning the propagation of whole root apple trees with a plant of 17,000, setting the same sea-

son 240,000 piece root grafts, the number planted last year had increased to over one and one-half million, 600,000 being on whole roots; the plant this year is nearly three million, more than half on whole roots.

And now we must ask the reader's indulgence. A few nurserymen, who evidently grow neither whole root trees nor trees on

Mariana Stocks,

but who feel aggrieved over the persistent demand for a better tree than they grow, have been filling the papers with free advertising of their own stock and at the same time, in the absence of any other objection to urge against whole root trees, trying to give the impression that they are sold at exorbitant prices. One grows virtuously indignant because "the man who pays four prices for an apple tree on whole roots is as effectually robbed as if he had his pocket picked," while another disinterested and unselfish nurseryman tells the dear people that "plums on Mariana roots are not worth four times as much as those worked on Myrobolan stocks." Against our usual custom, we will here notice these oft-repeated assertions, lest by their very repetition they may come to be accepted as true.

We have already shown the fallacy of the arguments for piece root trees; as to "four prices," while we neither know whether others charge "four prices," nor often publish our own, thereby giving competitors a chance to figure just under us, we will say that our *retail* prices for apple trees, of all the leading varieties, have long been 15 cents each for piece root, and 25 cents each for whole root trees—and these prices include all costs of packing, risks of transportation, together with *delivery* in good order to purchasers in any State or Territory, *freight and all charges paid*. If these be "four prices," well and good.

One of these nurserymen, advocating piece-root apple trees and plums on peach roots, after vigorously denouncing the "four prices," further says, "Plums grafted in 1870 on

Myrobolan roots have sprouted

and made a worthless thicket—poor trees and very little fruit;" which, by-the-way, is the usual experience with the Myrobolan stock; and worse still, it is only half-hardy and a far more prolific breeding ground for borers than even the peach. He also triumphantly asks, "Where are your plum trees on Mariana roots 15 or 20 years old that will afford us any tangible proof that they are better than on peach-root or a hundred other native varieties of plums?" By his question he shows either that he is behind the times on varieties, the Mariana having been introduced only some 7 years ago, or then it is a palpable attempt to over-reach. He also wants authorities in support of whole root trees and Mariana stocks (we trust he now has them, authorities undisputed and irresistibly conclusive), yet he himself advances as "arguments" his mere assertions only, the very thing he accuses others of—consistency personified!

In the same journal the other nurseryman like unto him, writes: "While the Mariana stock promises to be very valuable, it lacks the test of years and adaptability; it is a cheaper stock than Myrobolan and buds take to it more readily, hence trees can be grown cheaper on Mariana than on Myrobolan." It is very plain that the one has plum trees on peach roots to sell, the other trees on Myrobolan, and that *neither* has trees on Mariana roots—strange, too, when it is a "cheaper" stock than the notoriously half-hardy, sprouting, borer-ridden Myrobolan. Mariana stocks with this writer must be cheap indeed if cheaper than Myrobolan, for the latter are bought in France at a cost of \$3 per thousand or less; for our part, we should be

Glad to get Mariana

stocks, even if grown from cuttings, at three times the price—for, besides furnishing everything, we pay nearly double, merely as a bonus to encourage our propagators to do their utmost to grow every Mariana possible. And, stranger still, that in this age of wild competition when nurserymen, in order to produce trees at the lowest possible cost, use the cheapest plum stocks obtainable—even the peach and next the Myrobolan—this grower should not avail himself of the "cheap Mariana." But strange as all this may be, surely 'tis passing strange that Mariana should "lack adaptability," yet "buds take to it more readily," than to the Myrobolan! However this paradox, like adversity, has its uses,—it clearly exposes the true animus of the writer.

As for peach stocks, J. J. Thomas, for more than a quarter of a century the able editor of the "*Country Gentlemen*," says in his chief work, "The American Fruit Culturist," that "The peach has been occasionally employed as a stock for the plum. A very few varieties take readily and grow freely; but the great uncertainty which attends its use, and the *failure* with most varieties indicate the propriety of the rejection of the peach for this purpose."

Well, notwithstanding all that

may say to the contrary, thinking men will investigate for themselves. The fact is that the Mariana promises to be the most perfect stock known for the plum, prune and apricot, and the best plum stock for the peach when properly *double-worked*. We feel a pardonable pride in its success, inasmuch as we first discovered its value as a stock and first used it, having budded in 1886 over 50,000. That it has been a success may be gathered from the fact that, with the aid of *other* and *more perfect* methods of propagation than from *cuttings*, our plantings have steadily increased until this season it exceeds one million. Of course there are no trees on Mariana "15 or 20 years old," but it is evident that it cannot be worth *less* than "any one of a hundred other native plums" for it has all their advantages, besides being better in that it is perfectly free from their one great fault of suckering; and is also very hardy, a vigorous grower, and more nearly exempt from borers and diseases than any other plum stock in use. Plum, prune and apricot trees on Mariana, shipped to Cal. and elsewhere, have thus far given perfect satisfaction and resulted in a heavy demand for more. In a paper read before our State Hort. Society in 1886, we ventured the prophecy that the time is coming when the importation and use of foreign plum stocks not only will have ceased, but all other plum stocks and the peach stock for the plum, prune and apricot will be superseded by the Mariana! To-day, but with added force, we repeat this prediction.

How easy a thing it is to condemn the use of advanced ideas and methods by others even without any experience of one's own, and especially so if the "shoe pinches." But before trying to

Discredit the Mariana

stock, it might have been safer to learn more definitely who favor and use it; since we began to herald the merits of this stock, many others have adopted it. Would these our horticultural teachers "full of wise saws and modern instances" have cared to go before their readers decrying the merits both of whole root trees and of Mariana stocks if they had kept sufficiently abreast of horticultural progress to acquire, among other possibly useful information, a knowledge of the suggestive fact that this stock has been adopted and is now used by an authority at least as high as they themselves—P. J. Berkmans, Prest. of the Am. Pomological Society! Mr. Berkmans says, "the tree is of a remarkable hardy and thrifty habit and so far seems to be less liable to die back than the Wild Goose," and in a letter he writes us that he has never used but *one* other plum stock besides the Mariana. Another prominent nurseryman, among the several who have begun to use Mariana stocks, says: "The tree possesses great value as a stock upon which to bud other varieties, it being remarkably hardy and of a very thrifty stocky growth. All of the plums that I am offering this season are grown on Mariana plum stocks." Still another says, "The Mariana as a stock is No. 1, don't sucker, is a strong grower and *imparts its vigor* to what is worked on it." Not the least significant point here made is the great *vigor* of trees on Mariana; especially so when it is remembered that trees on the Myrobolan are always *dwarfed*. B. D. Herrman, of Central Iowa, writes the *Prairie Farmer*: "The Mariana stock is better than the Myrobolan; and being a seedling of the native Chickasaw, it is better adapted to this climate; it does not sucker from the roots." W. Jennings, in *Southern Horticultural Journal*, says: "A row of Kelsey plums on peach roots were made worthless by root-knot, while other rows near by on Mariana were perfectly free. This indicates that where root-knot prevails, the

Mariana is invaluable.

I am quite satisfied that it is an excellent stock for the P. Simonii and all the Japan Plums, but for other stone fruits must have time for further observation."

It is in no spirit of boasting that we have given a few items showing the progress made with improved methods, but simply to prove that "the world does move" and horticultural science lags no whit behind, as well as to show to our friends and customers how fully their generous aid and encouragement has helped us to perfect our system of culture and propagation, and to extend the business, in some measure at least, to the grand proportions resolved upon by the writer and his associates, when, with the high hopes of youth, they took the helm. And perchance also it may serve to indicate to some, that the energy and time expended in opposing the use of perfected processes by others could perhaps more profitably be devoted to improving their own methods. Take it for granted such opposition had ruined us; what would it have profited the opposers? Unjust abuse generally does more good than harm. "Running down" another's business will not build up one's own. Besides, this is a large country and there's room for us all. No one person or firm can expect to do all the business.

[Extracts from address of PROF. L. H. BAILEY, of Dep't Horticulture, Cornell University, and Editor of *American Garden*, delivered before the American Nurserymen's Association, New York City, June 1890; also extracts from the discussion which followed:]

"Root-Grafting and Budding.

"This old matter of the relative value of root-grafting, crown-grafting and budding, I have given a great deal of study for years, and have looked into the trees as they grow in the nursery row, propagated in all sorts of ways, and have brought here photographs showing the forming of the tree propagated in the different ways.

[NOTE.—We are indebted to the *Prairie Farmer* for cuts of Prof. Bailey's photos, Figs. 1 to 4. Prof. Bailey kindly furnished us photo for Figs. 5 and 7. All Prof. Bailey's photos were taken from Mann apple trees.]



Fig. 1.—Piece-root tree, 3 yrs. old.

Fig. 2.—Formation of Piece-root grafts.

"We might divide this whole subject into two parts, and discuss one as whole-root trees, and another as piece-root trees. Or speak about root-grafted trees, by which we mean trees grafted upon pieces, and about crown-grafted and budded trees.

"Piece-root grafting is not new, although in America it has recently reached its greatest development, but so far back as 1811 it was used by Knight, the famous horticulturist, of England, who by chance found out that pear trees could be grafted on pieces, and afterwards extended it to apples, peaches and plums, in all of which he was successful. But Mr. Knight never supposed that this was to be applied in a practical way. In fact, in England, to the present day this method of propagation is used to a limited extent, for ornamental trees mostly. It is only in America that we have used it to a very large extent for the propagation of fruit trees, and you sometimes see in English Journals that this root-grafting is an American institution.

"In regard to the relative value of the three methods, while I cannot begin to settle this matter, I can still throw out some hints which, perhaps, may be useful, for it seems to me that we have practiced it long enough to enable us to have some definite practical experience in regard to the matter.

"I refer, first, to the advantages of piece-roots—not the crown-root, which is sometimes called root-grafting, but the pieces of roots, obtained by cutting a root into two or three pieces. In the first place, this method allows us to make more trees from our stocks; it allows

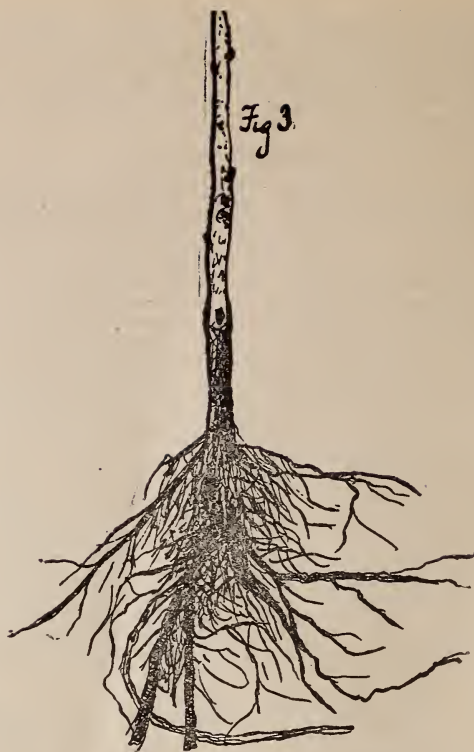


Fig. 3.—Whole-root budded tree, 2-yrs. old.

us to double and treble, and sometimes even quadruple trees. In the second place, it cheapens multiplication.

In the third place, it hastens multiplication. Fourth, it allows deep setting, and is of value especially in our great Northwest.

"Fifth, these piece-roots are often very good as a starter. The Chickasaw and Am. plums have been grafted on peach stock, with the expectation that the peach root will be cut off, or perhaps will die away, and the tree will be on its own roots. I have known many orchards of pears which were grafted on apples, and after awhile the union fails, and the pear grows on its own roots. Quinces have also been grown this way on apple roots.

"Sixth, it enables us to grow rare plants of which perhaps we cannot get seeds or cuttings, or get stocks for grafting. These it occurs to me, are about all the advantages of piece-root grafting.

"There are some disadvantages in this method of propagation. In the first place, the roots from piece-rooted trees always, so far as I have observed, are more prongy, in their character,—not so deep, more horizontal,—have more tendency to grow near the surface, and have not nearly so many roots as those which are worked on whole roots, budded or grafted. When roots begin to form from a cutting, whether that cutting is made from a root or from a stem, the roots will nearly always form on *one side* of that cutting, and will have a tendency to push out and grow in one direction. That would be a disadvantage. I have root-grafted a great many trees for this purpose, and in nine cases out of ten the roots were a great deal heavier and stronger upon one side than the other. Whether the tree overcomes these disadvantages later in life, I cannot say, but I saw a case where two orchards were planted side by side, one

Fig. 4.—Piece-roots, 2-yrs. old.

Fig. 4 shows two 2-year-old piece-root trees. The tree on the left has a root system labeled 'MAJOR' and a stem with a bud. The tree on the right has a root system labeled 'MINOR' and a stem with a bud. The roots of the 'MAJOR' tree are more extensive and deeper than those of the 'MINOR' tree.

set with whole-root trees, and the other piece-root, and up to the present day the latter is not as straight as the other.

"In the second place, root-grafted trees as a rule make a smaller growth the first year. The tree has not so much root to start it off.

"Third. Some have said that the union in piece-root trees is apt to be imperfect,—persons who are familiar with the matter and careful in their observations have made that statement.

"Fourth. Some say that root-grafted trees tend to be more straggling than trees which are worked upon whole roots, whether budded or grafted.

"Fifth. Trees are apt to tip over in the orchard when root-grafted. I am inclined to think that is often true.

"Sixth. People say that these root-grafted trees are not so long-lived as others.

"Now I wish to speak of the advantages of whole roots, whether crown-grafted or crown-budded.

"First. I am satisfied that we get better, deeper and finer roots, in fruit trees; I will not say anything about ornamental trees, but in apple and pear trees, we get better, deeper and finer roots upon trees that are worked upon whole roots.

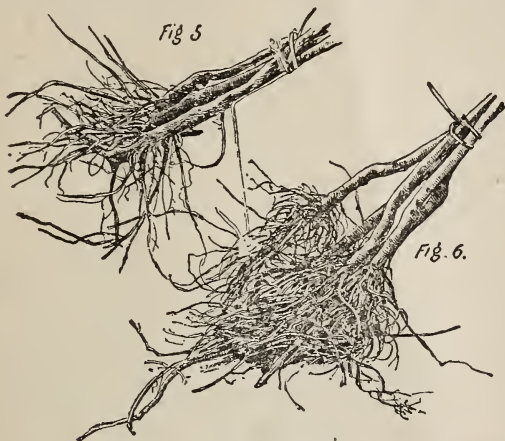


Fig. 5.—Piece-root grafts, 3-yrs. old.
Fig. 6.—Whole-root buds, 2-yrs. old.

"Second. These trees have more force—larger engine and larger power behind. They grow taller the first year.

"Third. Many say the crown of the tree is to be grafted and that it must be a vital part of the tree. A great many think the crown is the best place, and as between crown and root, it would seem to be true.

"These are the three special advantages of whole roots. I might say a word in regard to the relative merits of whole-root budded trees and whole root grafted trees. I see no especial difference between these two, with this exception, that we can use a very long cion and can set the whole-root graft deep down, and in that way get the advantage of growing the variety on its own roots and getting a larger growth the first year. Budded stock is no doubt the best, anyway in regions where hardiness is not so great a desideratum.

"I should be very glad to have this awakened discussion."

Mr. Albaugh, of Ohio said that among the hundreds of thousands of apple trees which they propagate every year, there has not been a piece-root graft for the last six years. He advocated the use of branched roots instead of those with a single long stem. Stand them deep enough so that the union would be, not only in the nursery but in the orchard, under the surface. As far north as Minn. they have planted crown grafts, and had no trouble even in winters when the temperature was 50 deg. below zero.

U. S. Pomologist **Van Deman** stated that several years ago he had made a series of experiments in Eastern Kans. s with root-grafts, using piece-roots from an inch long from different places on the root to the whole root twelve inches long, and found the best success with the top cut, six inches long. Those that were twelve inches long did not develop roots below. These experiments were made with the Ben Davis apple, which is one of the best varieties to throw out roots from cuttings.

Mr. Carpenter, of Neb., thought that the question of grafting was a sectional one. In his section of the country whole roots and budded trees are not a success. The soil is too light and they are subject to root freezing. Another objection to whole-root grafting was that the soil is too rich and they make too strong a growth and run wild.

Mr. Stark, of Missouri, said that he did not agree with Mr. Carpenter in what he said about whole roots. They had been growing both whole-root and piece-root trees for years, and the whole root will mature as early

or earlier than the piece-root, as it starts off quicker and makes its growth early in the season, hence matures even earlier; whole root trees always average much larger, and make very much better rooted trees. The piece-root trees almost invariably tend to throw out roots from one side only, and the consequence is that the trees even in the nursery row will sometimes twist over from the alternate freezing and thawing during winter, while the whole-root trees will stand straight. They had been growing both kinds now for eight or ten years, and were increasing the plant of whole-root trees, for the reason that they make better trees in the nursery and better trees in the orchard.

Mr. Thurlow, of Mass., said: "I am led often to believe that budded trees are better than grafted trees. In Nova Scotia or in New Brunswick I have found whole trees covered with borers, and they find concealment better in a graft than in a bud. In some parts of New Brunswick they will not accept grafted trees, and in our section we have always practiced budding as much preferable to grafting."

Mr. Albaugh stated in answer to a question from Mr. Parsons, of N. Y., that in Ohio and the West, they use seedlings from home-grown apple seeds in budding. They graft upon stocks grown in this country.

Mr. Parsons: I do not think there is any question about stocks. The point I wish to make is this: Is the graft made in the cellar and planted out after being grafted, used to the exclusion of stocks planted in the ground, growing two or three months, and then budded?

Mr. Albaugh: About half and half of each. We graft about half, and bud the other half.

Mr. Stark: We bud very close to the surface of the ground and the trees when planted in orchard are set a little deeper, so that the seedling stock is entirely covered. This will make equally as good a root as the whole graft, and we find we get a better stand in budding than we can from whole root grafting, yet we grow most of our apple the latter way.

Mr. Emery, of Minn.: The question was made by Prof. Bailey as to whether a root-grafted or a budded tree was the more healthy. Now, at the prices that some sell root grafts, I fail to see how very scientific work can be done on root grafts. We use the crown of the root, leaving the root as long as we can handle it, getting good results.

AM. ASS'N NURSERYMEN, Chicago, June, '89:

QUESTION: "Is there any particular advantage in budding or grafting apples on whole roots when trees are transplanted to the orchard in the usual way?"

Prof. Sweet, of N. Y.: Any answer to that? I can say that Chase Bro's are using whole roots.

Mr. Samuels, of Ky.: I believe that Prof. Budd experimented a great deal in that line some years ago. I would like to hear from him.

Prof. Budd: I would say yes, that once I grafted a thousand root grafts at the crown; retained about two-thirds of the root. Then I grafted another thousand with the same varieties on sections of the root, using the second and third sections and not using the crown. I used them all for setting an orchard. The result was, that those grafted on the crown roots when I came to take them up had fewer fibers, but more strong, far-reaching roots than the others. The second and third roots were what would be called better trees to transplant, because they had more fibers and but few strong, far-reaching roots. The result in orchards was very much in favor of the crown roots. Those were the only ones ever planted by myself in orchards. In later experiments I find it is always true with the apple, that the crown graft gives fewer fibers, but stronger, more far-reaching roots; in my opinion it is the best.

Mr. Willard, of N. Y.: I think that Mr. Franklin Davis at Richmond, Va., about 15 years ago made quite an extended experiment in that line. He grafted on different parts of the roots of apples; perhaps he can tell us of his experiment. [See opinion of Mr. Davis quoted in article, "Whole Root vs. Piece Root Trees."]

Mr. Patten, of Iowa: An objection in the northwest to using whole roots as explained by Prof. Budd, is that seedling roots are not sufficiently hardy.

Prof. Budd: In my experiment, it made no difference; and I would say that my plan of grafting pears in Iowa is to use nearly the whole root.

Mr. Samuels, of Ky.: I would ask Prof. Budd if the second section of the pear root would not be better to graft upon than to use the long root?

Prof. Budd: My observation is, sir, that the second section of a pear root does not contain starch enough to unite. I have never used the second section of a pear root with good success; and so with the cherry.

Prof. Thos. Meehan, for 30 years the editor of the *Gardener's Monthly*, and for over 50 years a practical nurseryman and scientist, in his address to the Ass'n, 1890, on "LIVING AND LEARNING", said: "It is a fact we should always bear in mind that when much pruning is done, roots in like proportion always die, and

the large number of decaying roots destroy the healthy ones, thus surely killing the tree. Consequently we should understand that it is not a large number of roots supporting a small head that is beneficial, but it is the large amount of food stored the previous season that causes a stronger growth, or else sustains the tree with its few branches until its roots become established.

"There is a fallacy concerning fibrous roots which should be corrected. It is generally believed that a plant having many *hair-like* fibres on its roots is the best for transplanting, but this is wrong; these fibres bear the same relation to the main roots that leaves bear to the branches, and last only as long *i. e.*, each season they are renewed. Hence the advantage of removing trees in early spring before the season's fibres are started. A few weak, fibrous roots alone are of no value to a tree whatever, as it is the **LARGE ROOTS** which are **FULL OF STRENGTH** that push out the new white rootlets which gather nourishment from the soil. It does not matter how fibrous-rooted a tree may be; thousands of the small fibres must die before becoming established and the white roots are started, as science teaches us that it is only at the tip of the **NEW** fibres that growth is made."

Trade Journal and *International Horticulturist*, N. Y., June 15, 1890: "It is always to be noted at a meeting of tradesmen that it seems a difficult matter ever to arrive at positive conclusions, opinions absolutely diverse, are stated, and held to vigorously. Especially was this noted in the discussion of Prof. Bailey's conclusive photographic evidence of the poor quality of root grafts made on piece-roots. Some *peculiar* excuses were given for continuing this practice!"

Geo. Longman, editor *Colman's Rural World*, writing us relative to publishing "WHOLE ROOT vs. PIECE ROOT TREES", says: "I hold article for the 20th, so that neither the compositors nor myself can make any mistakes. No one, not even you yourselves, can realize the importance of the step you are taking or the value of the article you are having printed, and I must and will, if possible, have it perfect. It is one of those articles which will be referred to as authority for a long time to come, and not only must there be no mistakes, but it must be just perfect. Pardon me for troubling you, but my interest in this matter will not justify half measures or parleying." *Later*—"Haven't heard a word from anyone yet in reply to 'Whole Roots vs. Piece Roots,' and hardly expect to; you have answered the question!"

ENDORSEMENTS and letters complimenting article, we have received by hundreds, and many favorable notices have also appeared in the horticultural press:

Prof. E. S. Goff, U. S. Exp. Stn., Wis.—I regard your article in *Rural World* on "Whole Root vs. Piece Root Trees," as *valuable*.

Pres't T. T. Lyon, U. S. Exp. Stn., Mich.—I have read the article in *Rural World* on Whole Roots and Piece Roots. I regard its doctrines and the proposed practice as sound, save that with weak growers like Red Canada and others, we need to permanently maintain the system of roots from the stock.

Prof. L. H. Bailey, Cornell University.—I read your article with great interest, the more especially as I have been investigating the subject for several years. My experiments and observations are in the same line with your conclusions.

Dr. Alex Shaw, Secy. Colo. State Hort. Society: I have read with much interest your article published in *Colman's Rural World*, and write to ask your permission to use it in the coming annual report of the State Hort. Society. The subject matter of your essay is one of great value, and should be published in book form for future reference.

W. F. Heikes, Wholesale Nurseryman, Madison Co., Ala: I have read your article in the *Rural World* with interest. I consider the Whole Root Doctrine a good thing and I believe in the Mariana as a stock, and intend to change to that stock as fast as possible. Such articles as yours are educating to the public and an honor to the author.

Dr. W. W. Stell, the well known Tex. nurseryman, in *So. Hort. Journal*: In *Colman's Rural World* I find an article on "Whole Root vs. Piece Root Trees," by Clarence M. Stark. There is no question of its being an exhaustive treatise and I fully agree with the writer in all he says of the merits of whole root trees as compared with those propagated on pieces or tips of roots.

In a letter to us Sept. 17, 1890, Dr. Stell says: "I am on the programme of the Pilot Point Hort. Soc. for an essay on whole root trees. I am strictly a whole root man, and have made many, many tests side by side, and I do know of a fact that whole root trees are far superior to those grafted on pieces of roots."

Horticulturist, Pilot Point, Tex: Whole Root vs. Piece Root Trees.—This to horticulturists, is certainly a question of more than passing moment. If in planting a young tree destined to become a source of

profit to the orchardist, the grafting upon a whole root will develop, as claimed by some, a more vigorous and longer lived tree, one more able to stand up against storms or live through destructive drouths, the orchardist who is preparing to set a large orchard wants to know it. If, on the contrary, there is no perceptible advantage in whole root grafting why, we want the *truth*. It is a pleasure to know, that so able a writer as Dr. W. W. Stell, of Paris, will soon prepare a paper that will throw much light on this mooted question.

Dr. A. M. Bagland, the editor of the *Horticulturist*, above quoted, writes us: Please let me hear from you again at your earliest convenience—Stark's "Old Oak Process" trees are creating a good deal of stir among Texas people.

Judge S. Miller, writes us: You may be pleased to learn that many letters reach me expressing approval of the stand I have taken on Whole Roots. One old orchardist writes that he *knows* we are right. My impression is that it will not be long ere no pieces of roots will be used in grafting trees. The whole root is the natural system and we cannot stray far from this line without deterioration sooner or later.

Later.—I see that there are still some who, although telling us they are "out of the nursery business and have no axe to grind," profess to prove that Piece Root trees are as good and as long lived as if worked on whole roots. I wish I could take such men back sixty years and show them Newtown Pippin trees two ft in diameter and 40 ft. high, bearing wagon loads of fine fruit, grown on whole roots; and such trimming as those trees got would send trees into oblivion in less than a score of years here. These trees stood in all their glory long after other trees planted many years later were dead—but which had been worked on the new system of cutting the roots in pieces.

It requires but one sober thought to convince anyone that "a tree is a tree," and that nature never intended a seedling to be mutilated. This thing of their becoming established on own roots in the end will not hold out, for I have dug thousands of trees in nursery that had but a few small roots emerging from the graft. Of course in after years they may strike out roots in self defense.

On some of our Western prairies I have seen orchards just about ready to bear, acres of them, all leaning to the N. E. at an angle of 45 deg., just the position to get sunscalded on the S. W. side, so as to give the flat-headed borer a chance. The end of such orchards is not far off. Were these trees grafted on whole roots and properly planted? They were not!

Later—Oct. 14, 1890: Whole Root grafts got of you last Spring are nearly double the size of the piece-roots.

Western Rural, Chicago: "There is much interest in the propagation of trees, as the frequent inquiries in our columns show—inquiries frequently arising from the misrepresentation of tree agents. The following is from the pen of Clarence M. Stark, of the well known Stark Bro's Nurseries.

M. A. Hooker, (nurseryman), Hamilton Co., Ill., to the *Rural World*: "Whole Root vs. Piece Root Trees." Hurrah for C. M. Stark in this week's *Rural*. He is a man after my own heart. Thousands will want to see and ought to see that article on piece roots. Some men tell us that whole root grafting is foggism; the way our grandfathers grafted, and that we must advance and not go back, etc., etc. May the Lord help us to stop and think and study as we go. It is time, for when we look at the apple trees set out by our grandsires and find them flourishing, standing and bearing fruit, looking like monuments in old, out-of-the-way places, it makes us stop to wonder who put them there; then, look at the orchards set out in the last fifteen years—dead—blown up by the roots—two-thirds gone, and replanted with poor, little, sickly, piece-root trees—a discouragement to the owner.

Yes, as Mr. Stark says, the farmers want cheap trees, and tree dealers and peddlers, with the help of ingenious men, have got them up; and it is true that nine-tenths of the nurseries now make cheap trees, and will continue to do so, till men can or will appreciate a good A No. 1 article. The same principle is found in every other business—boots, for instance; men wanted cheap boots, and machinery was invented to split the leather and put up cheap boots, and we have them.

Now, let us go back to the old style of root grafts; one tree to each seedling crown, grafted honestly, and put up true to name. Though costing a little more, they will give satisfaction, and will establish a name that will live when we are dead. Nurserymen will have to agitate this, or it will not be done, for as a rule, farmers are ignorant of the different modes of grafting.

I like Mr. Stark's article so well, that I could not help saying something. I could say more, and would, but I don't want to say anything that might be construed as advertising, which I do not aim to do.

J. F. Simonds, Washington Co., Ark: I have lately read your "A Tree's a Tree," and was *so glad* to see a nursery advocating and talking right out in meeting, doctrine which I have been advocating for more than

twenty years, for I have been experimenting and practicing on the same line for nearly thirty years, in New York, Iowa, and Arkansas.

J. K. Newton, Venturo Co., Cal.: I have had the privilege of reading an article of yours on "Whole Root vs. Piece Root Trees," re-published in a Texas paper. I have been greatly interested in the discussion, and am entirely convinced that we want no piece root trees; but they will come in by car loads to California, and I want to use my influence in favor of the better trees. I am editing the horticultural column of our paper, and shall make liberal extracts from your article.

J. C. Vaughn, Marion Co., Ill.: Enclosed find stamps, for which please send price list. Think you "scooped" the piece root fellows in last *Rural World*.

E. T. Byram, Jewell Co., Kan.: I have read your very interesting article on root grafting. From an experience running back nearly half a century, I am satisfied your theory is correct. Have done a good deal of grafting and budding, and am now enjoying the fruit of my fourth planting of orchard, and making the fifth planting this spring, with fair prospect of living to see it come into bearing.

G. T. Kimball, Shawnee Co., Kan.: The article in the *Rural World* contains much that is valuable for a fruit grower to read; it is also a booming good advertisement for your nurseries.

M. E. Murtfeldt, St. Louis Co., Mo., State Entomologist: Your most convincing paper on the whole and piece root grafting question. I have read with much interest; I agree with your opinions on the subject, nor did any of the arguments which I heard advanced on the other side, at the recent meeting of the State Horticultural Society, shake my confidence in your position.

Dr. J. W. Green, Livingston Co., Mo.: I believe in the crown graft, and for years have advocated even much more than you in the same direction.

W. F. Wright, Nemaha Co., Neb.: I have grown apple trees in this county for nearly thirty years. Have part of my orchard on budded stock above crown, and part root grafted; while a few of the budded trees are dead, yet by far a greater number of root grafts of two, three, and four years younger trees are dead. I have been studying this problem for years, and am thoroughly convinced that the position taken by C. M. Stark is correct. At what price can you sell Mariana plum stocks?

W. S. Devo, Washoe Co., Nev.: I have just been reading the article in the *Rural World* on "Whole Root vs. Piece Root Trees," and at once decided to have this matter under trial in our experiment orchards—a few varieties of apples, several trees each on whole roots and on piece roots.

D. J. Parsons, Saline County, Mo.: Whenever opportunity offers, I give the people more light on piece-root grafting. Hundreds, I find, know nothing of that system, but it soon becomes obvious to them that it won't do. When inquiries are made as to where to get right kind of trees, I always refer them to you.

C. L. Hughes, Arapahoe Co., Colo.: "Whole Root vs. Piece Root Trees," in *Rural World*, is certainly a masterpiece. I was at first going to suggest that you take the pith of the article, but upon reading again and again, I find it ALL PITH. I have been growing and handling trees in orchards and nursery for 23 years, and a close observer in all branches of the business, and have been convinced for years that whole root trees were worth four times more than ordinary piece roots.

Idaho Pear Co., Sept. 22d, 1890.: Shall plant no other trees but your whole root or budded ones, in our apple orchard. We book you for the 900 2-yr. Idaho trees, and we think we can secure you some nice orders for Idaho trees from parties in your section.

G. R. Fisher, Pueblo Co., Col.: "Whole Root vs. Piece Root Trees" I have read carefully, and I am free to acknowledge that I was accusing you wrongfully in regard to the whole root system of grafting. The article is not only reasonable, but it is indisputable.

Geo. J. Kellogg, Rock Co., Wis.: I have read your article and am very much pleased with its general import and HARD HITS. And notwithstanding the necessity of training salesmen on your plan, I believe in the encouragement of local agents and direct communication with the planters as far as possible.

Dan Carpenter, Clay Co., Mo.: I have read the article by your Prest., and think your position about correct, still I think you may put a little too much stress on the importance of the whole root tree. I read a paper at last meeting of the State Hort. Society, going for nurserymen "rough shod" who would take an order for certain varieties, and then substitute something else, and several of the 8x10 acre nurserymen jumped on to me with both feet. I mentioned one or two instances within my own knowledge where neighbors bought stock for commercial orchards, and when trees came into bearing, they had almost a hundred different sorts, instead of 4 or 5, and very few of them fit to put on the market. This is my own experience; hereafter when needing stock shall buy of you, as I know you are reli-

ble. If you would send a good man to Clay, Clinton and Ray counties, you could sell considerable stock.

Jno. H. Young, Rusk Co., Tex.: Your circular just received, for which please accept thanks. "A Tree's a Tree?" Yes; but then—"should immortalize your nurseries, and secure to you a monopoly of trade. If you could see the disastrous effect of piece root trees in this country, you would emphasize still stronger your condemnation of that system of propagation.

R. McD. Smith, Pike Co., Mo.: MY FRIEND AND I.
(We talked of Orchards and Fruits. He said—)

Come go with me, if you wish to scan
The finest orchard in all the land
Of "Old Oak" trees—and he spoke with pride,
As a groom would speak of his lovely bride.

(I asked—"Who grows them?" He said—)

Nigh on to sixty years ago
The Starks began fruit trees to grow,
And now they say that "Old Oak" trees
Are better than any between the seas.

(I asked why so named? He said—)

You ask why—and the question's fair—
They're called "Old Oak" when they're apple or pear
And other fruits—well, the reason's this:
Stark's trees are lasting as Old Oak is.

(I asked, "What is their process." He said—)

On WHOLE ROOT stocks they place their grafts,
And hence their trees grow stately shafts,
To breast the storms and bear the best—
Stark's "Old Oak" trees stand every test.

(I wanted trees myself and asked "Where grown?"
He said—)

These "Old Oak" trees we so much like
Are born and bred in the county of Pike,
Jo Bowers' home—you've heard of Jo?
Near Louisiana in the State of "Mo."

Natt. Stevens, Tex., in *Tex. Farm and Ranch*: Much interest is manifested in discussion of whole vs. piece roots. This is somewhat like the question of whole or piece potatoes or potato skin for seed. It is demonstrated that whole potatoes are best for seed, but it takes more of them to plant an acre, while quartering them is about one-quarter as good as whole ones, and planting the potato skins is next to nothing. This is a fair illustration of this whole or piece root question. Grafted or budded on all the root, it is no great trouble to grow trees and get the kind you graft, while on the short piece root one may get a fraud or a dead root instead. Thus, if one wants to kill a tree, cut off the top, and to kill one-half of it, cut one-half of it off. The other half will apparently be more vigorous for awhile, but soon meets a premature death.

THE OTHER SIDE, as the *Trade Journal* says, hold opinions directly the opposite—"doctors will disagree." Some of course still fight for, and cling to the "good old way;" all men don't think alike about whole roots, any more than they do about the tariff.

Pres't J. C. Ferris, of Iowa, in *Western Rural*: Whatever may be the opinion of Mr. Stark, or of N. F. Murray, of Missouri, there is not a horticulturist of good standing in Northern Iowa or Minnesota, who will advocate planting apple trees grafted or budded at the surface of the ground, or with the union of stock and cion so near the surface that the cion will not have abundant root above the union. If there is such an horticulturist in the Northwest, let the advocates of whole roots name him. I can name 100 substantial farmers in North Iowa who have tried both root-grafted and budded trees, and now discard the budded trees.

There is but one side to the question of whole or piece roots in Iowa and Minnesota. Let those who hope to again spring the budded tree racket in Iowa be warned for they will be prosecuted for swindling.

Pres't F., like so many others, insists upon classing budded and whole-root grafted trees together. Prof. Bailey shows the distinction very clearly. Prof. Budd's experience also should certainly be of force in the Northwest. As to the surface point—piece-root grafters cannot seem to understand that an equally long cion can be used for a whole or collar-root graft, that it can be set equally deep, and is equally situated to get on its own roots; besides the natural crown or collar will be preserved with plenty of root to support the tree, and at the same time have the seedling deep under the surface.

But suppose that whole root trees will not stand in Iowa and Minnesota, and further North. No more will

Orange trees grow in Manitoba! Because the frozen North cannot grow the finer sorts of apples on trees propagated in nature's way, does not affect their value for the great APPLE REGIONS. Mr. Ferris, you and our other friends nearer the Arctic circle, ought not to try to measure Missouri apples in your cold-contracted half-bushel measures. Besides, you should remember we, in the APPLE BELT, don't want our long-time Northern apple market cut off by a home grown article. Give us protection for our infant industry! (*Sub rosa*—it is now over fifty years since your buyers first came annually to bid against each other for the crop of the "old Judge Stark orchard.") Better grow some sour summer Russians, and every fall cellar a few barrels of Illinois or Missouri grown Jonathan, Grimes Golden and Janeton! Seriously, if whole root trees won't do in the far North, why, don't plant them; but please do generously allow them to be planted in regions where it is proven they are the best trees for profitable long-lived orchards.

D. B. Wier, late of Illinois, later of San Francisco, and later still of ———, a sometime-prolific correspondent of many horticultural papers, surely must be "off" with the editors thereof, for he sends us a profusely marked copy of a California county paper, in which, as he says, he "demolishes" our whole-root arguments. Fearful lest we shall not feel badly enough about it, he even writes us a personal letter, gloating with "ghoulish glee" over his prowess and our prospective discomfiture, and pleasedly adds, that if we don't like it, "to put it in our pipe and smoke it." Mr. W.'s article is couched in equally refined language, and his arguments alike, are logical and convincing to a degree:

"The one great trouble is, that we have so many papers, trying to run horticultural departments, whose editors do not know the least little bit, and such screeds as this of Mr. Stark seem to be exactly the kind they like to get hold of. The whole thing is bosh; it reads with all the force and direct authoritative brevity and unqualified force of Webster's Unabridged Dictionary, and so is well calculated to do great injury; for there is not one truthful or practical statement expressed. To make my meaning clear, I number Mr. Stark's strongly made assertions, and will try to show they are wrong."

Mr. Weir then proceeds to answer *seriatim*. We briefly extract: "1. We will see as we proceed, &c. 2. This is exceedingly silly. 3. This is a direct contradiction of other statements expressed in his screed. 4. This is correct, the only correct sentence in his category. 5. To show how far this sentence gives the true reason would take too much space and time to show up here. 6. Here our friend says exactly what we are trying to prove. 7. Natural crowns and tap roots have no more to do with the future of a tree in any way for good or for evil, than the number of hairs in a pig's tail has with the pig's future."—But enough!

D. S. Vandyke, Waukegan, Ill., in *Southern Horticultural Journal*: "I proved conclusively one year ago that whole roots are a failure, and that one and two-piece grafts were superior to whole root grafts. The spring was wet and rainy. The piece roots grew fine, while the whole roots seemed to stand still; the tap root rotted in nearly every instance."

Mr. V. has thus settled in one year what Downing, Barry, Berekmans, were a lifetime learning. Like others, he, too, mistakes what is meant by crown, collar, or whole root grafts, but planted the long seedling without shortening back. The result was what every practical man would expect, especially in the cold soil of north-eastern Illinois in a "wet and rainy spring." His one piece grafts were likely just what are known to the trade as whole root grafts, and his two piece grafts are a very different thing from the half dozen pieces or more into which piece-root nurserymen cut their seedlings.

Judge Elmer Baldwin, of Illinois, in the *Prairie Farmer*: "Several years ago I cut number one seedlings into two pieces, grafting each alike and setting in separate rows. I also cut like ones into 3 pieces, setting in separate rows. Could see no difference in the growth or vigor of the trees, except that the lower pieces had a stronger tendency to form branch roots than the crown, or top piece, which might be expected, as the further down from the crown the greater the tendency to branch and form fibrous roots. As to whole-root grafting, I cannot comprehend the idea. A No. 1 seedling root is from one to two feet long. The cion should be four inches, and the union of graft and cion should be set at least three inches under the surface. To set 50,000 grafts,

averaging eighteen to twenty inches long would be a serious job. I believe the majority of nurserymen favor grafting on *fair length* piece-roots as the best."

Exactly. And the evidence adduced proves that a *fair length top* part of the root, with the *crown* left intact, is what is required to make the best tree. Shorten the root to a fair length, but not too short; otherwise you cut away the central part of the seedling, where resides the tendency to put forth strong, deep-penetrating roots; the crown graft *cut short* is not so good as the *second cut*, for then it will put out only *shallow* roots. Yet, some nurserymen say "part of their trees are on *whole roots*" because the crown pieces went in with the other pieces. On the other hand, in grafting do not leave enough of the *lower* part of the seedling to form the small, hair-like *fibrous* roots, which Prof. Meehan shows are worthless. Judge Baldwin cutting roots *one to two feet* long into only two and *three* pieces at most, is also very different from the one-inch pieces used by piece-root propagators. Without a doubt, when practical fruit growers understand clearly the aim and proper method of whole-root grafting, the controversy will be at an end.

J. Webster, an Ill. nurseryman, recently elected President of the State Hort. Society: "To my mind there has been enough said but no arguments to prove that we have yet anything as good as a tree on its own roots. As I passed the Am. Ex. Co.'s office in our town this spring, an old and successful apple grower was reading the tags on several bales of trees to the passers-by—*Old Oak Process*. He remarked, if that is not intended to deceive or pull the wool over the eyes of purchasers, he did not know how to express it in the American language. Are not the gentlemen sending out the Old Oak Process, straining at a gnat and swallowing a camel? The demand for cheap trees has created a demand for cheap apple seedlings. No guaranty of hardiness can be sold with such seedlings. They are grown to meet the demands of the manufacturers of piece-root trees, and for that purpose meet the requirements, with few exceptions; if such seedlings make hardy, iron-clad, long-lived trees, when grafted on the collar of a 9 or 10 inch root, and are likely to prove a panacea for all the early decay and decline of our apple orchards, then the sooner every one catches on to the Old Oak Process, the better."

Pres't W. admits the existence of early decay and decline in American orchards, and should he and others still in doubt feel sufficiently interested to study the photographic and other evidence given by Prof. Bailey, and the conclusions arrived at after a life-time of experience by such unquestioned authorities as Downing, Barry, Berekmans, and others, it is a foregone conclusion that his nursery will soon "catch on to the Old Oak Process."

As to the trade-mark: When Pres't W. "catches on" and seeks to obtain *his* trade-mark, he will find that the U. S. patent laws will not permit nurserymen to obtain trade-marks on "Trees grafted on short pieces of roots!" Oh, no, the laws prescribe it *shall* be a *fanciful* name. Perhaps Pres't W. will originate a better name for his trade-mark than ours; the field lies open to him.

Dr. T. H. Hoskins, of Vermont, after reading a brief extract from our article, republished in the *New England Homestead*, writes to that paper: "I have rarely seen so much crudity, so much assertion with so little proof, as in the article by C. M. Stark in the *Homestead* of July 26th. These nursery points in controversy are not a question of whole roots anyway, but whether the second cut is inferior to the crown cut. A whole seedling root means a root a foot long. In root grafting such a root is never used. The top cut is not a whole root. If it is against nature to take a cion that is grown high up in the sunshine, and compel it to grow almost wholly underground, then the whole business of propagation by cuttings is against nature. The only reason we do not propagate the apple by cuttings is because it is more difficult than by grafting and budding. If the apple cuttings would root as easily as the quince, many would be grown that way. In the South the Le Conte pear is grown exactly in that way."

It is only fair to say that the brief extracts made by the *Homestead* did not contain the explanation as to what is meant by crown or whole root grafts, hence, Dr. Hoskins falls into the usual error about using roots a foot or two long. It is true that Le Conte pears are grown from cuttings. It is likewise true that this method is against nature—as may be readily seen by referring to Fig. 3, last cover page, showing exactly what the Le Conte does when grown from cuttings and used as stocks.

W. Jennings, of Ga., in *Southern Hort. Journal*: "Be sure that facts are facts.—There is a wide difference of opinion as to the better method of propagating fruit trees. It will not be so difficult to arrive at the truth, if all parties in the controversy desire truth, and will offer facts in support of their views. It is unfortunate that some have pet theories to maintain. I shall here point out the error of a prominent Western nurseryman. I quote: 'For all who have observed with any degree of care, know that cuttings—be they grape, quince, Le Conte pear or the cion cuttings of piece root apple grafts

—rarely and almost never put forth any strong, deep-reaching roots.' This assertion is untrue as for LeConte cuttings. Pedigree Le Conte are strong-rooted trees."

It is well known that the "pet theory" of Mr. Jennings is "pedigree" Le Conte trees, grown from cuttings, he claiming them to be free from blight and possessed of a thousand and one other points of superiority over Le Conte trees budded on seedling pear stocks. We barely mentioned the word "Le Conte"—"hence these tears."

But perhaps Mr. J.'s irascibility is pardonable, considering that he is kept so busy of late defending his "pet theory." If he "really desires the truth," about pedigree Le Conte cuttings, there are hundreds of prominent Southern growers to assist him in arriving at a consummation so devoutly to be wished. P. J. Berckmans, Pres't Am. Pomological Society, has written time and again that Le Contes grown from cuttings are equally subject to blight with Le Contes budded upon imported pear seedlings; indeed, that the latter are superior in that they arrive sooner at the bearing age and yield larger fruit. Mr. Wm. Watson, the oldest Tex. nurseryman, and ex-Pres't Tex. State Hort. Society, says: "Le Conte blights as bad as any pear we have. I have pedigree Le Contes grown on their own roots and Le Contes grafted on pear roots, but I plant for my own use grafted trees every time, and think such trees are the best."

Blank & Bros., nurserymen of S. W. Mo., in their latest Price List say: Misleading statements are put forth, making comparisons between trees after the manner of patent medicine men, "before taking and after taking." They say they deliver nothing but whole root trees—at about double and treble rates, yet "their advertisements gives them away." As the ways of propagation are so easily understood, for a time we omitted mentioning anything about it; but we will here state that the majority of our apple trees are piece-root grafted. We do not claim any advantage for whole roots, nor charge double prices for same. All go at the same price here. Then, we bud trees. This is a whole root process where no deception can be practiced on anyone knowing a bud, and in receiving such trees, the purchaser can see at a glance what he is getting.

Possibly Prof. Bailey's "before and after taking" is what these gentlemen mean—it is certainly bad medicine for piece root nurserymen. "Ways of propagation are so easily understood"—from the length of the controversy and the study given the subject by eminent scientists, it appears there are still some who find it hard to understand, although Messrs. B. assert it is so easy. Possibly the oversight in "omitting mention" of methods has thus tardily been corrected, after "hearing the news" so long ago proclaimed by Downing and Berckmans, and since repeated by inquiring tree planters and buyers from ocean to ocean. As all go at the same price, the minority portion of their apple trees are certain to be quickly sold; the "majority" being piece root grafts, will, without a doubt, move off more slowly. Most Western nurserymen "bud trees;" but very few bud apple trees. We fully agree with our esteemed co-laborers, that no deception can be practiced in the "whole root process;" they do indeed show at a glance what they are.

"So easy" to understand, and settled by Mr. Van Dyke, Prof. Brunk, and others in a single year, yet **Pres. Evans**, of the Mo. State Hort. Society, after a lifetime of experience in practical orcharding, says: "I can not tell now whether it is best to use whole or piece roots." How true it is, Messrs. B., Van D. and others, that "knowledge comes, but wisdom lingers."

Mo. State Hort. Society; extracts:

Mr. Ambrose: What about the whole root?

Prof. Clark: I suppose you mean the "Old Oak Process"; the phrase is intended to deceive. What has an oak to do with an apple tree, anyhow?"

Everything, professor—if the apple tree happen to be grafted on a "vigorous, first-class" white oak sapling!

At the last meeting the subject again "came to the surface;" it will NOT down. Report of proceedings: Piece and whole-root grafting came to the surface again in the discussion, and closed as it started, each party being of the same opinion as before.

Mr. Greathead, (this is not near the correct word, but it has the right number of letters), an erstwhile tree dealer, more lately a piece-root Nebraska nurseryman, and recently of record loudly condemning his late brother tree dealers, of whose swindling schemes he of course speaks with the authority of knowledge, is, as we learn from the coat of arms emblazoned on his firm letter-heads, "Editor 'Piece-root Orchardist' [a semi-occasional advertising sheet, made up of clippings and questions from imaginary correspondents, with the editor's advertisement-answers,] Sec. Neb. State Hort. Society, and First Vice-President of American Nurserymen's Association!"

Now, it was for Mr. G.'s especial benefit that the latter association, at its last annual meeting in New York City, unanimously passed a resolution prohibiting its offi-

cers from using their official position to advertise their own private business; but notwithstanding this richly merited rebuke was thus pointedly administered, Mr. G.'s banners, with the proscribed heraldry, are still hung on the outward walls. This man, who not only brazenly prostituted his late official position in the Am. Association of Nurserymen—which association, in his characteristic loud-mouthed way, he undertook and ignobly failed to "run"—but who also "works" his State Horticultural Society for "all there is in it," engineering through a resolution condemning any and everybody's trees except they be propagated on piece roots and by home nurserymen—this man, this "pure and simple soul," in his wonted gentlemanly manner, writes in his 'Piece-root Orchardist,' a distorted review of our Mr. C. M. S.'s "Whole Root vs. Piece Root" article, in which he plausible asserts, omits, evades—and worse:

We notice an article going the rounds of the press, written by one Stark, of Littleton, Colo. This man Stark is one of the proprietors of the Pike Co. Nurseries, Louisiana, Mo. He praises whole root grafts and condemns piece roots. He claims the sole cause of the early death of apple trees should be attributed to their being propagated from piece roots, or cuttings.

In reality piece root trees are grown from cuttings, as there is only enough root used to furnish water to sustain life until the cion throws out roots and the tree becomes on its own roots. The seedling root being too deep in the cold ground to ever develop much, the cion has to depend upon roots of its own production, and virtually the piece-root graft is a cutting. There are mulberry trees in England 500 years old, olive trees in Spain 1,000 years old, fig trees in Smyrna 1,000 years old and all grown from cuttings.

To cap the climax the talented Mr. Stark, in the very next paragraph, says: "The only stock suitable to bud plum on is the Mariana, grown from cuttings"—practically admitting that trees grown from cuttings are the best. He assails the writer of this article in his position regarding the Mariana plum stock by saying that he is a nurseryman who has no plum to offer on Mariana stock, when the facts are he has over 300,000 for the coming trade. Again, he entirely ignores the statement I make regarding the inability of trees grown on whole roots to stand the climate north of Mason and Dixon's line.

Now, the whole truth is, the Pike Co. Nursery is trying to line its pockets by selling worthless whole-root grafted trees at double the price of piece-root trees, by claiming to credulous people that they cost that much more and are that much better. No. 2 apple seedlings that are used for whole-root grafts could be bought for \$1 per thousand, or one-tenth of a cent apiece; one of these roots would make two piece-root grafts, and yet his same Pike Co. Nursery has the audacity to ask ten cents extra for that which cost them the twentieth of a cent. Verily, Mr. Stark can afford to write long articles on this subject. He is an interested party.

Thus gently and sweetly closes Mr. Greathead, e'en—

"As though a rose should shut, and be a bud again."

It were unkind to suggest that so virtuous and unselfish a nurseryman, himself could have selfish interests to secure by thus impugning the motives actuating others, so we will let his transparent insincerities pass.

Now "this man Stark" said that piece-root nurserymen cut the roots into very short pieces, and he is therefore pleased to note that so eminent a piece-root authority as Mr. G. admits that he uses "only enough root to sustain life" until the weakly cion must perforce throw out own roots or else perish. He is pleased, also, that Mr. G. innocently admits the truth as to piece-root cutting trees—"virtually the piece-root graft is a cutting," says Mr. G.; who now will dare dispute?

The historians of the Dark Ages in their eager search for data bearing upon "affairs of State," will be glad to have access to so minute and complete records as must be the ancient archives, which preserved and hid from the light of day for a thousand years until brought to light by the scholarly Mr. Greathead the record not only of the fact, but of day and date when were planted certain "Russian" mulberry cuttings in England, olive cuttings in Spain, &c. Too bad that records so inferior were in vogue in Spain a scant 400 years ago, else a Columbian World's Fair might give to a continent the details—somewhat less important, 'tis true, than planting mulberry cuttings—which history has left so sadly blank in the life of the Discoverer of America!

The "talented Mr. Stark," when quoted as saying "the only stock suitable to bud plum on is the Mariana grown from cuttings, practically admitting—" is "practically" misrepresented by the talented Mr. Greathead; nor was Mr. Greathead "assailed" by name—but "let the galled jade wince." The 300,000 trees on Mariana stock Mr. G. boasts of having for the "coming trade" were budded the past summer, and no doubt will furnish trees for the "coming trade"—in coming years!

Possibly "one Stark" ignored "the statement I make," because, to quote one of Mr. G.'s fellow-towns-

men, "Greathead talks too much, and not much can be depended upon what he says."

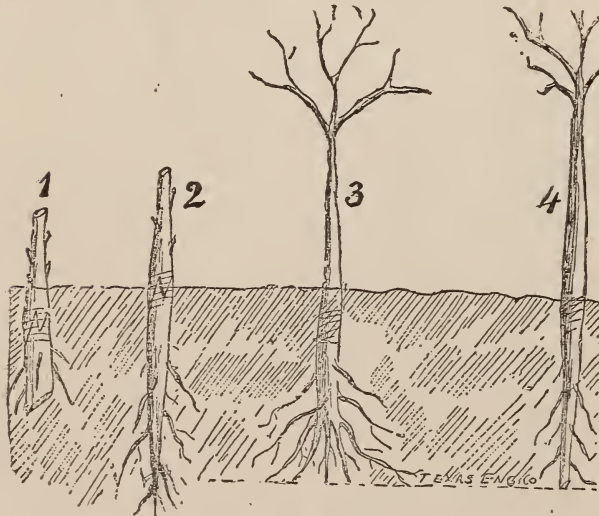
The "No. 2 apple seedlings used for whole-root grafts" by Mr. Greathead (when he makes any whole-root grafts), and which, as he says, "make two piece-root grafts," thus "practically admitting" that he uses second class roots for his piece-root grafts just as we charged is done by piece-root men, may be worth but \$1 per thousand; but "vigorous, first-class stocks," which alone are used by "this man Stark" for making both whole-root and piece-root grafts, are worth to-day \$6 to \$7 per thousand—indeed, the talented Mr. Greathead, in his wholesale list, quotes his "dollar" No. 2 at \$2.50!

"*One-twentieth of a cent*": now the veracious Mr. Greathead, in a paper read before his Neb. Hort. Society, said a whole-root tree "costs *one-fourth of a cent* more than a piece-root tree." Perhaps since then, with Mr. G., apple seedlings have thus fallen to a fifth of their former price; but with all other nurserymen they have advanced 100 per cent. within six months—and this advance is attributable in no small degree to the great demand incident to the larger consumption, caused by the now well nigh universal demand for whole-root trees.

But Mr. G.'s ability to mutilate truth is hardly touched upon as yet. He says: "Now the whole truth is the P. C. N. is trying to line its pockets by selling worthless whole-root trees at double the price of piece-root trees." We state our *retail price delivered* anywhere in the United States is 15c. *each* for piece-root and 25c. *each* for whole-root trees. All nurserymen know that costs of delivering average more than half the gross proceeds; if our prices virtually mean robbery of a "credulous people," how shall Mr. G.'s prices be characterized? For his retail price list quotes piece-root apple trees, buyer paying his own freights and taking his own risks, at—listen, oh, ye outraged and "credulous people!"—at "25c. *each*, \$2 per *ten*!"—*Honest Iago!*

"Verily, Mr. Stark can afford" no more time to devote to gentlemen of Mr. Greathead's "peculiar" talents.

"**TRUTH lies a bleeding,**"—we have mentioned the "characteristic unfairness and prejudice" of piece-root nurserymen. That we put it very mildly, we call the reader to witness. We had always given Mr. "Wisdom" (as we will call him; it is the right number of letters, and *he* thinks it the right word,—the reader can judge for himself) credit for being a fair and unprejudiced seeker after horticultural truth. But who now will fail to give him credit for unsurpassed facility at misrepresentation. Perhaps the fact that our salesmen have been selling tens of thousands of dollars worth of trees in his own State of Texas may help to explain the following spiteful article and its alleged illustration. His cut purports to be truthful, perhaps taken from nature as were Prof. Bailey's photographs and the other illustrations published herein, yet who is so blind he cannot see the gross caricature of truth!



1. "Piece-root graft set in nursery.
2. "Whole root graft.
3. "Piece-root tree transplanted, essentially a *whole root* tree at last. This *lives*.
4. "Whole root tree transplanted, essentially a *piece-root* tree at last. This *dies*."

We reproduce a perfect fac simile of Mr. "Wisdom's" cut and give the malicious inscriptions he must perforce place under each figure. See how he holds the mirror up to nature—the long seedling of the whole-root graft *unshortened*, and the union *above* the surface!

Mr. "Wisdom," in *Tex. Farm and Ranch*, Oct. 1, 1890: THE "WHOLE-ROOT FRAUD."—The country is swarming with "agents" running this *fraud* upon unsuspecting planters, crying down all *honest* nurserymen for using piece-root stocks; and informing the people that their "Greatest Nurseries on Earth" have a patent on grafting on whole roots. The agents show a long, laborious newspaper article, claiming to be an editorial from a prominent agricultural journal, which article any person of business discretion can discern at once to be a labored advertisement undoubtedly paid for, trying to show by most fallacious argument that whole-root grafts are the only grafts worth planting. It is a "whole-root" *he* and advertising dodge to damage *honorable* competitors and *swindle* the people by selling them less valuable trees than the other nurseries grow, at two to *four* times the prices others charge. Even if these "whole-root" patenters do propagate on whole-root (which I MUCH DOUBT) their trees would have to be dug from the nursery. Now note the result of the two methods as *illustrated* on this page. In digging apple trees with whole roots the tap root is necessarily cut off, leaving trees with a central stub, and a *few* or *no* side-roots, which are of far more value to a young tree than a tap-root. When planted the wind shakes the "whole-root" trees about like *straight sticks stuck* in the ground, till the trees *soon die*, not being able to secure sustenance; while trees properly grown on *piece-roots*, have *ample, large, spreading* roots which hold the tree steady and give it plenty of root surface to support the tree from the start. I readily admit that seedling trees coming up and growing permanently without transplanting, will probably grow somewhat more vigorously and possibly live longer on an average than grafted, or budded trees. But is there a man fool enough to think he can make profitable seedling apple orchards? Such fools need the "fool-killer" badly, and he will be around, too, don't you forget it.

Oh, most lame and impotent conclusion!

Mr. W.'s article has been universally recognized in Tex. as a malevolent attack on us and our business. He does not scruple to give the lie—that may be his way, it is not ours. We have ever made it a rule to speak for *our own* goods, never against the goods of competitors, and hundreds of times have impressed upon our salesmen to do likewise—until such competitors show by their acts they are no longer entitled to this consideration. But when we are attacked, we in our turn become aggressive, and strike back with what force and skill we have. As to Mr. Wisdom, we have even gone out of our way to give him praise—as witness the following, from a letter on Tree Salesmen, written by our Mr. W. P. Stark, to Sec'y L. A. Goodman, and published in last Report Mo. State Hort. Society: "Now let me give you an instance, though it is only one among hundreds; you are acquainted with Mr. Wisdom, than whom there is no higher authority in the country on horticulture; he also does a nursery business by sending out catalogues. Now one of his standing, as a man, of course is popular and well thought of at home. Yet this summer our salesmen have gone into Denison, Tex., and sold several thousands of dollars worth of stock—and not one word has been said against Mr. Wisdom or his nursery, for it is above reproach, besides that is not our style of doing business. Now had these Denison people who have sent us their orders been left alone, we think not one out of a hundred would have gone to Mr. W. of their own free will and bought a bill of trees; or have planted any trees at all. And had he mailed them all catalogues perhaps two out of a hundred would have given him an order." Mr. Goodman replied, saying, "I believe every word of it." We wish here to plead guilty to a mistaken estimate of men—in one case at least.

The misanthropic Mr. W., in his turn, malignantly says of us: "It is a whole root lie, and I much doubt" that these whole-root nurserymen propagate on whole roots. An authority atleast equal to Mr. W., says it is well to watch men who are always suspicious of their fellows. That this is true in this case, as always, may be seen by a glance at Mr. Wisdom's "likeness" and then at Prof. Bailey's—"look on this picture, then on that."

Mr. W. lately wrote the *Rural New Yorker*: "So far, in spite of my advertisements, I find myself behind some hundreds of dollars in introducing the Parker Earle Strawberry." This we are pained to hear, but 'tis "the common lot" of introducers of new fruits. He philosophically continues: "Notoriety, fame, wealth, are hollow bubbles. To do good is the only true greatness and joy." With this all good men earnestly agree; but did it not occur to Mr. W. that "the bubble reputation" is as precious to whole-root nurserymen as to piece-root propagators? and could it not occur to Mr. W. that, before "giving the lie" it might be only the part of Christian charity to "come and see," as dozens of prominent nurserymen and others have done, *vide* expressions of Judge Miller and others; also of Maj. G. W. Combs, President Hart Pioneer Nurseries, who came to demolish whole-root trees, but went away converted to the system. An

Ill. nurseryman of many years experience, came lately and was most agreeably surprised at the extent of our stock, especially at our success in pear growing; and before we had gone one-third around our several places, said he had seen more than he expected to find in the whole State of Mo. Among other appreciative visitors, we will mention Messrs. Storrs and Dayton, of the Storrs & Harrison Co., one of the best Eastern nursery firms, doing an immense business, especially in seeds and flowers. We will not undertake to quote all they said, except that Mr. Storrs, after looking over and taking in the extent of our large apple block (four million 1 and 2 year trees, two-thirds on whole roots) said, "This is more trees than I ever before saw at one time." Then, after closely examining our system of handling great numbers of orders, booking, filling, packing, &c., he added: "You have the best system in use. It has been a good thing for you to be away out here where you have had to originate your own methods, instead of copying others; down East every man copies every other man, and so all have kept in the same old ruts until they really believe their way is the only way." So well pleased was Mr. J. H. Hale, particularly with our new packing houses, our pear, peach, and this large block of apple, that he has requested us to have photographs taken to be used in illustrating the Census Report. Mr. Hale is Census Supt. for the Dept. of Nurseries, &c., and is one of the best known men in the East, particularly as a peach grower, having sold his crop last year for \$25,000—and, by the way, he wants us to supply him 5,000 Elberta for his Georgia orchards.

Mr. W. "much doubts" the honesty of others, yet would have us believe that his own virtue is like unto that of Cæsar's wife. Else why does he accuse us with charging **FOUR** prices? Why does he, with his usual headstrong obstinacy after we have been at all the expense of working up orders, come in, and, with malice beyond the bounds of reason, advertise to duplicate at half price, thus practicing a double deception in his vain and ineffective graspings after a trade which his lack of business sagacity and skill has let pass from his control? For verily his scepter hath departed. His vaunted catalogue is his "only authorized agent." Now this "agent," it would appear, has become a disastrously unprofitable one—and no wonder! For the "agent," while traducing and trying to mangle the reputation of competitors in the effort to maintain a waning trade, either forgets or never knew the four things necessary to all successful business: **BRAINS, EXPERIENCE, CAPITAL, ORGANIZATION.** Nor has the "agent" sufficient penetration to see that his cry of "four prices" don't deceive people who are buying from us better trees delivered free of cost at as low, and in fact much lower prices than this "agent" asks them to pay, besides paying their own freights, taking their own risks, etc. A few of the "agent's" prices, Fall '89, compared with our retail prices, Fall '89:

Gano apple,	50c. each;	our retail price,	20c. each.
Loy	50c. " " "	" " "	25c. " "
Lawson pear,	\$1 " " "	" " "	60c. " "
Gen. Grant peach,	\$1 each;	our retail price,	25c. " "
Orange Cl. peach,	50c. " " "	" " "	25c. " "
Ulatis,	\$1 " " "	" " "	25c. " "

"Four prices" forsooth! But the "agent" is at last beginning to realize the truth of Lincoln's words: "You can fool part of the people part of the time, but you can't fool all the people, all the time."

We shall leave this "honest nurseryman" and his "honorable competition," shall say farewell to his glowing, glittering, triumph of art—the life-like picture which points a moral and adorns a tale—shall leave all these, closing with a simple statement of fact: Mr. W., arrogating to himself not only the pharisaical "better than thou" but also absolute infallibility, presumes to impeach the business integrity of nurserymen who sell whole-root trees; why could he not look at home before casting the first stone? Why not visit the Olden Fruit Co.'s immense orchards at Olden, Mo., and go with the able superintendent, Mr. Gano, as we have gone, and see the acres of bearing peach trees in their orchards, sent them by Mr. "Wisdom," and then why not let Mr. Gano tell him, as he told us, how disappointed and surprised he was that Mr. "Wisdom" should send them trees that are bearing any and everything besides the varieties named on the labels!

CONCLUSION: "A word or two before you go" and we have done. The amusing assumption of a few western piece-root nurserymen that to this controversy there is but one side, and that their own side, and that all fruit growers are with them, is only less grotesque than the famous resolution of the tailors, "We, the people of England." All along they take it for granted that their "peculiar excuses" for advocating piece-root trees is the verdict of the great tree-planting public.

Their assumptions are comprehensive, indeed: the choice of honest fruit growers lies between the two systems of propagation, and they regard whole-root propa-

gators in Dr. Johnson's spirit, who said that the devil was the first whig. In the piece-root man's view, whole-root propagation is a conspiracy against the public welfare and the orchards of the future. They say, in effect, it is an organized attempt to maintain at all hazards a vicious system, and to secure selfish interests. It hates good, "honest piece-root" trees, and proposes by every form of fraud to undermine piece-root nurserymen—in short, it is bent upon the ruin of all that good men value.

But this is not half their ridiculous, self-deluding assumptions: the piece-root party, composed of virtuous and unselfish piece-root nurserymen, and including all fruit growers, aims only at honest trees for honest orchards, aims at fairness, justice, general intelligence, universal prosperity and happiness—all to be achieved by the wisdom and self-abnegation of the piece-root nurserymen. The piece-root system it is which has done so much for the country, has made the orchards of to-day so much longer-lived and more productive than were the orchards of fifty years ago!

These are the fundamental assumptions, and all the rest follow. In defending them, the piece-root men plausibly draw conclusions that do not follow from their premises, thereby seeming to justify them. They allege that every requisite of a long-lived orchard tree is met by the piece-root system of manufacture, and the utterances of great men like Downing, Barry, Berekmans, are contemptuously and ostentatiously neglected—all these things are said and done in a way designed to excite the mirth and ridicule of the unthinking crowd, composed, perhaps, of those who wish to have the piece-root system both upheld and justified.

Well, let the piece-root men not forget for an instant that in all their calculations whole-root trees are still to be reckoned with; and, as may be gathered herein, these piece-root people are already becoming extremely uncomfortable. We cannot choose but do our part to soothe them, and at the same time we shall continue to propagate and sell Old Oak Process whole-root trees.

As for the whole-root doctrine, its principles are true, truth is eternal, hence perhaps the discussion, like Wordsworth's streamlet, will—

"Murmur on for a thousand years,
And flow as now it flows."

Dr. W. W. Stell, Paris, Tex., just writes us: "I enclose article read before the Pilot Point Hort. Society. T. V. Munson was not in attendance, neither Prof. Brunk—who learned all there was to be learned about this business in less than 4 months—he having left Tex. for Maryland. A few others, however, stood up against me, but if they made anything they are welcome to it. You see I did not carry along with me a picture of a horse, like the boy's or Mr. Munson's, under which they had to write "this is a horse;" I carried the horse along, and several at that, also some colts 2 yrs. old and some old Choctaw ponies,—as it were.

"If your Mr. C. M. S. wishes to answer Mr. Munson's article, in *Tex. Farm & Ranch*, of Oct. 1, which was a direct attack on you, and wants points on Mr. Munson's high prices on worthless new varieties, going into combines, etc., to keep up three prices, I can tell him where to get a few—for this sort of work simply is not right. He that lives in a glass house has no right to throw stones."

We extract from Dr. Stell's article on "WHOLE ROOT VS. PIECE ROOT TREES: This is a subject of national importance, one that is attracting to-day more discussion than any other horticultural question, and one I consider second to none in importance to the country at large, and especially to the southern states. The mode of propagating the apple is the question at issue. I will, therefore, confine this paper to that tree. Once in every cycle of years the same question springs up. This is to be expected because some egotist or horticultural ignoramus resurrects a dead issue and finds followers, the subject having been dead and buried so long as to have passed out of recollection. After a time, the funeral again takes place, the corpse remains dead for a while and resurrects in due time. This is the history of all controversies where the resurrectionists are empirics.

We who advocate propagating the apple on whole stocks, claim that a tree thus propagated has a more perfect system of roots that will penetrate the earth to a greater depth and thereby safely carry the tree through drouths, storms, etc., and that such a tree is far more vigorous, fruits more abundantly and lives longer because it is more in accord with natural laws; for we claim that nature only intended one tree to grow from one seed. * * But every thing touched by the hand of man changes—and not always for the better. Let no one misunderstand me. I do not recommend the planting of apple seed or seedling trees in the orchard, but I do strongly urge the planting of trees that were propagated on whole, healthy stocks,—which is getting much closer to nature and nature's laws than those grafted on diminutive bits of roots, using long clons and depending on these to throw out a good system of roots, for they will not do it. A cheap method of propagating trees brings

cheaper prices and induces larger purchases. Thirty years ago the first apple trees manufactured under the piece-root method (when I say manufactured I do not mean any other term, because cions are put upon small pieces of machine-cut roots) were introduced in the south. Large orchards were planted, yet to-day there is scarcely a remnant of these first attempts, whereas in the same localities we find old and vigorous apple trees propagated by the whole stock method and planted years before the later-day products. A few years hard struggle to make a tree, a few apples, then a decline—and in 7 or 8 years your piece root tree is gone. Recently I spent some time in north Ark. There I saw many old and vigorous apple trees, with large crops of fruit, that were 15 to 18 inches in diameter. No one could tell me how old they were, although parties could recollect back 50 to 60 years, and said these were good size trees then and bearing fruit. I also noticed many young trees, 4 to 6 years old, but scarcely a middle-aged one, and upon inquiring why this was, the answer came, "apple trees don't live now like they used to." This is the cry to-day all over the country, and why? I claim the main cause is the mode of propagating. These manufactured Cheap-John trees have been introduced all over the country by the many millions annually for the last 30 years. The piece root advocates claim that an apple tree is better when grafted on pieces of roots, and the shorter the piece the better, just so it is long enough to splice to a long cion, as they expect the cion to make the roots to sustain the tree in the future. These advocates have recently stated their positions in the papers, four in the *Southern Hort. Journal* and one in the *Petaluma Courier*, of Cal. One from this state says piece-root trees are as good, if not better; that last winter he grafted both ways and in about four months the piece roots had made as good, if not better growth, than those grafted on whole stock. So a great horticultural question was solved to his entire satisfaction in a third of a year!

Two gentlemen of Ill. said the piece-root trees are better than whole-root ones, but did not venture a reason. The following, from D. S. Vandyke, however, is good reading. [We have already quoted Mr. V.] This is certainly rich, rare and racy. I cannot imagine what Mr. Vandyke meant by one-piece graft, unless it was that he only cut one piece from the seedling for his stock. If so, that is just what we whole-stock grafters do. Then the presumption follows that he made his whole-root grafts on the entire root of the seedling, thus having a graft 15 to 20 inches long that would require a post augur to plant. No wonder the tap roots rotted in such holes in a "wet and rainy Spring." But if I am mistaken, and he cut his stock the usual length, and the tap roots rotted, this proves conclusively two things: First, that his soil is wholly unsuited for nursery and orchard; second, that his piece-root trees made no roots of a penetrating nature, or they would have reached down below the water line into that cold pipe-clay, and they, too, would have had their roots rotted. This I regard as a strong point in favor of whole-root trees on such soils as orchards should be made on. I would not advise anyone to plant fruit trees on soggy lands. If the idea is to propagate apple trees so that they will have no penetrating, but all surface roots, they may live and take on a somewhat vigorous growth during favorable seasons, or on such soils as Mr. V.'s, but in protracted drouths, or when they come into bearing they will be almost certain to die.

In the *Petaluma Courier* of Sonoma Co., Cal., will be seen an article by D. B. Wier. This he intended as a criticism of Mr. Stark's article, written early in the season, on "Whole-Root vs. Piece-Root Trees," which appeared in *Colman's Rural World*. Mr. Wier, after having arranged Mr. Stark's article to suit himself, says: "To make my meaning clear, I have numbered Mr. Stark's strongly made assertions." He arranged his target, stepped off 20 paces, loaded his gun to full capacity, and banged away, but the shots flew wide of the mark! In reviewing Mr. Wier's criticism, of Mr. Stark's "screed," as he prefers to name it, I will only notice such parts as I believe to have the most bearing on the question at issue. I will here state that I have never endorsed all of Mr. Stark's article, nor could that reasonably be expected, but I do fully agree with him on the main points of the "screed." They are strong enough to stand all the hammering the piece-root tree advocates can possibly strike. I take the criticism as numbered by Mr. Wier, first giving the "screed" of Mr. Stark; second, Mr. Wier's criticism, followed by my own:

1. *Stark*: Trees grafted on pieces of roots can never equal those grafted on whole roots. Wier denies; says "they make the best of all trees." My experience has been during 30 years, having propagated many hundred thousands by the two methods, and I fully agree with Stark—and I never used a root under 3 to 4 inches long.

2. *Stark*: A small piece of root cannot support a vigorous growth. Wier says, "this is exceedingly silly; the foliage governs and builds up the roots." Experience teaches that while a small piece root will, under the most favorable circumstances, for a few years support a compara-

tively vigorous growth, the foliage does not build up roots or rule their growth or depth; and that this vigorous growth does not last longer than the first product of fruit. Examine carefully the samples on the table these 7-yr-old small piece-root trees. See if the foliage builds up the roots and governs them in every way. Then examine the 1 and 2-yr-old, grafted upon whole stock and see what a perfect system of roots.

5. *Stark*: Who can number the decrepit young orchards scattered over the country, grown on piece root? Wier says, "piece-root grafting had nothing whatever to do with their decrepitude, and the best orchards and always will be, grafted on piece roots. There is other way by which so good trees can be grown except grow them from ripe wood cuttings." There are many thousands of decaying orchards in the south that were grafted upon piece roots. Piece root grafting had much to do with their decrepitude. Old orchards now in flourishing condition at the north were planted long before the piece-root process was inaugurated, and their very existence refutes the assertion. As to cuttings, a few years ago there were some strong advocates of the method of propagating fruit trees at Pilot Point, and the was so much fuss made about it that your Horticultural Society appointed a committee, consisting in part at least of those advocates, to make a thorough test. What was the result? A perfect failure.

6. *Stark*: Perhaps the ideal tree is one entirely on own roots; a natural sucker from the original tree of variety. Wier makes a long running fight. Goes to England and other countries hunting suitable soils, and says: "A fruit tree's own natural root must be the best of roots, if we are going to plant it in soil adapted to the root." The question is to find the proper soil. Farmers can not run all over the country hunting the proper soil for certain trees. What they want is trees so propagated that they will give the best results on ordinary farm lands. The heavy, cold, wet soils Mr. Wier speaks of, *Texas Farm and Ranch* recommends for a "Frog Ranch" and that paper is eminently correct. As we are striving to get at bottom facts, I must say that I differ entirely from Mr. Stark as to the ideal tree being a sucker from the original tree of its variety. Of all such suckers I have seen tested none succeeded except the old horse apple. This does make a very good tree from the sucker. Other varieties may do so, but not as a rule.

7. *Stark*: The absence of a crown formed by nature a serious defect but still not the most serious fault of piece root trees. Wier denies; says "It matters not how much a tree is mutilated we can nourish into growth any part of it." In this I hold he is correct, provided the remaining part has either a developed or embryonic bud. It can not make a piece of apple limb start in growth if deprived of a bud. A crown is not absolutely necessary if the graft is inserted just below the crown the result are the same as if grafted just above it.

11. *Stark*: It cannot be expected to form a perfect root system, crown and top, all from the same cion. Wier says "it does perfectly." I hold this to be one of the main strong points in the screed. I fully agree with Mr. Stark.

12. *Stark*: These are the requirements imposed upon piece-root grafting. Wier says: "This is entirely too deep or shallow, I think too shallow, for my understanding; Mr. Wier was knocked out of his wits in this round or could have understood readily what was meant, for it just precisely the requirement that Mr. Wier proposed to impose on piece-root grafting.

To all the balance of the screed Mr. Wier enters general denial, with only broad assertions and sometimes with indecorous language, which is frequently resorted to by some writers who are hard pressed for argument. I regard the points in balance of the "screed" very strong and with slight exceptions perfectly correct. Mr. Wier did, however, attempt to make a strong point when he intimated the only object a nurseryman could have in growing whole root trees was because there is more money in such trees to him. This was very unkind as well as true, as I propose to show by the following figures: *

There is thus \$76 advantage for the piece-root nurseryman. Take off \$26 for the extra year of cultivating the piece root grafts, and there will still be a balance of \$50. How do these prices suit the piece-root tree man? Is not a two-year-old piece-root tree worth one-half as much as a one-year-old whole-root tree, if not, why not?

Mr. Wier, I suppose, is now a citizen of Cal., but does he not spend the better part of his life in Ill.? From that State comes, it seems, the most of the opposition to whole-root trees, but there are parties in that State who take a very different view. The following will perhaps be interesting reading to Mr. Wier and others of the piece-root tree advocates:

"Nurserymen, Take Notice.

"South Pass, Union Co., Ill., March 2, 1887

Thos. Meehan, editor *Gardener's Monthly*:

"It has been noticed for some time that a great many apple trees are dying in this region, and the subject assumed so much importance that at two recent meetings

f our Horticultural Society it has been the special subject for discussion. This discussion has proved to the satisfaction of our society that these trees have died because they were manufactured in opposition to scientific rules, viz: by grafting on root-tips. The testimony shows that the stock-grafted trees have invariably done well, and that root-grafted ones have done ill. One man reported that of 800 apple trees, planted eight years ago, 5 are living; and that of 500 planted at the same time, of same varieties, and similarly treated he has lost but five. The first lot were root-grafted, the others grafted on the stock. The society passed the following resolution without dissent:

"Resolved, That we recommend that no root-grafted apple trees be hereafter planted.

"F. A. E. HOLCOMB, Sec'y

"South Pass Horticultural Society."

Sensible people, these South Pass, Ill., men. Many years ago I came in possession of a very interesting little work on "The Apple," written in 1867. The author, under "propagation," said: "Standard trees should be propagated only upon healthy and vigorous stocks, either by grafting or budding. The system of grafting upon pieces of roots is wrong, to say the least of it. As this is the cheapest and quickest method to manufacture trees, it is much resorted to by some nurserymen. No lasting results can possibly be expected from trees propagated upon this plan. They never form any but small fibrous, hair-like roots, and when planted in the orchard they require staking, and seldom ever make a good tree. Several years ago we denounced this system as worthless, and only calculated to disappoint the planter. Our opinion is substantiated by that of reliable cultivators." Twenty or more years ago, when I was preparing to propagate trees, I wrote to this same author for information, and many times since, the last time during the past few months. He has ever advocated the same system as set forth in the pamphlet. The result of the last correspondence is as follows: "My experience in propagating trees dates back to 1840. I then grafted some cherry trees, which, when I saw them last in Belgium, in 1884, were in a vigorous condition. Since 1840 a few millions of trees have been propagated under my supervision, and mainly by my own hands, therefore I refer back to 50 years practical experience, 40 of which I have lived in Georgia, and I hold from close study of fruit tree growth that the most desirable method is to use a whole seedling as a basis for a tree if a standard is expected." This gentleman is a horticulturist with 10 superiors, and but few if any equals in this country. By true merit he has reached and now stands upon the top round of the horticultural ladder, for he is to-day the honorable president of the Pomological Society of America! His address is P. J. Berekmans, Augusta, Ga.!

Paris, Tex., Oct. 4, 1890. This is to certify that in the year 1884 I bought a lot of apple trees of a certain nursery in this State. I examined the roots thoroughly and found the stock below the splice, where they were grafted was generally only about 1 1/2 inches in length. Roots all small and trifling. While I had but little confidence in the trees doing well, I planted them out carefully and cultivated well. Those that lived through the first year only made a growth from 6 to 10 inches, and at the end of the sixth year only 4 to 5 feet high. They never made any roots only small surface roots, and no tap roots. A man can now pull one up very well. Less than one-tenth of these trees are now living, having dug up the worst of them at the end of the first year, and procured trees of a nursery in Paris that were grafted on whole stocks and planted in their place in the same spaces where I had taken out the living and the dead trees. This new lot of whole stock trees grew off well the first season after being planted out, and have continued to do well ever since, and have been bearing for three years. On the 30th of Sept. I measured 6 of these whole stock trees in a row as I came to them, and they measured respectively 19, 16 1/2, 15, 15, 14 and 17 inches in circumference. If necessary I would make oath to this statement. I could much better afford to pay 25 cts. for whole stock trees than to have trees grafted on pieces of roots given to me.

H. L. CLARK.

Mr. Clark is my nearest neighbor. He is an intelligent and successful farmer, and his word would be taken in Lamar county as quickly as any man's in the county. I know of my own personal knowledge that this statement is correct, for I have been familiar with the circumstances all the time. Examine the roots carefully of these two 7-year old piece root trees taken from Mr. Clark's orchard. I could introduce many other witnesses who stand high in horticultural circles, but my paper has grown too long.

P. S. Since my paper has been printed I notice in *Texas Farm and Ranch* Mr. Munson's article on "The Whole Root Fraud," accompanied by the most miserable and misleading illustrations of the piece root and whole

root grafts and trees that it was possible for a prejudiced mind and pen to conceive. The major part of his article is a direct thrust at Stark Bro's, nurserymen, of Mo. To this I have not a word to say. Those gentlemen can look out for themselves. But I will say the day has passed when a speaker or writer can reasonably hope to carry his point by strong assertions only, with the "lie" thrown in for good measure. Mr. Munson says: "I have received some pitiful complaints already of failure in planting the 'whole-root' sticks, and wanting to know my opinion about the matter." By this he certainly proposes to convey the idea that whole root grafting was only recently inaugurated, and is a new departure, when in fact it is the oldest method of propagating the apple after seed and seedling planting was discontinued. Many hundreds of thousands of trees grafted on whole-roots are now in vigorous growth and fruitage that were planted long before he was born. Every single figure in Mr. Munson's illustrations is wrong and will be so pronounced by every propagator who is capable of giving advice on the subject in controversy. Take his own piece-root graft. It is made wrong and planted wrong. The cion should have been much longer and planted deeper so that it would have made roots of its own. This is the theory of piece-root advocates, and they dare not deny it. The whole-root graft is equally wrong. It will be seen that he represents a cion spliced to the entire root of a seedling, when Mr. Stark said it should be cut to 5 or 6 inches long. I say about 8 inches. I call upon all candid nurserymen to say if a whole-root graft is planted as indicated by Mr. M., if they could expect one single tree out of one thousand grafts. We all know when a graft is planted in nursery rows that the union of stock and cion must be well covered, and if not, that it dries out and fails. In case of each mode of grafting the graft should be planted to the top bud. The trees as illustrated are also incorrect. He gives the piece-root tree a fine set of roots, all with a downward tendency and all from the stock and none from the cion, thereby failing completely to fulfill what is expected by the piece-root propagators. It will be seen in case of the whole-root tree that it has not half as many roots as it started out with as a graft. This is too absurdly ridiculous to notice. I may pay my best respects to Mr. Munson's article at some future time in *Texas Farm and Ranch*. W. W. STELL.

J. L. Williams, Robertson Co., Tex., Oct. 25, '90—Have just rec'd price list from T. V. Munson. Mr. M. sells piece root trees, buyer paying express charges, at the same price you deliver them. Inclosed find Munson's circular, "The Whole Root Fraud"—take time to read it and note the picture. It does seem to me a one-eyed negro could see at once Mr. Munson's argument is without foundation.

WORLD BEATER PLUM.

The following, received too late for insertion on proper page, we take from the published proceedings of the Mo. Valley Hort. Society, referring to the new World Beater Plum, named on page 24:

"Clay Co., Mo., Oct. 6, 1890.

"To the **Mo. Valley Hort. Society**: In the year 1838, I brought the original seed from near Nashville, Tenn., to Lincoln Co., Ky., and in 1846, from Lincoln Co., Ky., to Clay Co., Mo., and they have been bearing here since 1849, and **have not missed a crop since 1849.**

J. H. TINSLEY.

"We, the undersigned, do hereby testify that the following description is true of the Plums presented to your Society, Sept. 20, 1890:

"Description—Tree very hardy, upright and spreading; fruit about the size of Wild Goose; skin very thin; in making preserves it all cooks up; commences ripening August 20, and continues in fruit until often frozen on tree; deep cardinal red when fully ripe; can easily be kept ten days to two weeks after becoming ripe before they mellow up, being very desirable for shipping; bears extremely heavy crops and is free from the ravages of curculio.

"We think its hardiness, early productiveness, prolific crops, good shipping qualities, delicate **Peach Flavor** and freedom from curculio, unite to recommend it to fruit growers. In fact, we can truly say it surpasses anything we have ever yet grown or seen and merits the consideration of our horticulturists.

"J. H. TINSLEY,

"JOSHUA KINDRED,

"GEO. RADER,

"WM. YATES."

We have equally favorable testimonials on file from many growers in Clay Co., among them Mr. Geo. Rader and Mr. Wm. Yates, whose names appear above, and with whom we also have contracts for control of the cions and propagation of this extremely valuable Plum.



[From Photo. by J. A. Thomason, Louisiana, Mo.]

- 1.—Garber pear, 2-yr., XX, on Japan pear seedling.
- 2.—Two Kieffer, 1-yr., XX, 5 to 7 ft., on Japan pear seedlings.
- 3.—Three Flemish B., “ $\frac{3}{4}$ inch and up,” on **Le Conte** cuttings—as sent out by a leading Southern nursery.
- 4.—Three Garber 1-yr., XX, 5 to 7 ft., on Imported French pear seedlings.
- 5.—Yard stick—one and one-sixteenth inches wide.
- 6.—Three Kieffer, 2-yr., XX, on Imported French pear seedlings.

The above, except the Flemish B., were grown in our Nurseries. The F. B. on Le Conte were from a lot of over 5000, “ $\frac{3}{4}$ inch and up,” bought last Spring from a Southern grower—as we had sold short on XX grade. But these trees on Le Conte were so poorly rooted that instead of using, we filled orders with our 1-yr., XX, 5 to 7 feet, transplanting the bulk of the Le Conte lot. We also transplanted some pears sent us from N. Y., which were left over—all under exactly similar conditions. The N. Y. trees nearly all grew, while in rows alongside, LESS than a FOURTH of the trees on Le Conte lived. The latter by their behavior have convinced us not only that their foundation is “shaky,” but, as a leading nursery firm in S. W. Mo. says, “They won’t do—they ‘go back.’”

The 3 trees on Le Conte were not the “best” of the

lot—neither were they the worst; few were passable, none good enough—we used best 1 yr. instead. Still, if trees on Le Conte, as said by some, do well in parts of the South, these may have a mission. We hope so.

The Japan Seedlings are of the same race with the Le Conte, Kieffer, &c., and seem likely to supersede the Le Conte as a stock. They are WELL ROOTED, very hardy and are thus far free from blight—three fatal defects of Le Conte cuttings. Japan seedlings are particularly desirable for Kieffer, Garber and other Hybrid pears, and well suited for the older sorts, especially weaker growers, producing a most vigorous growth; being very hardy, they also promise much as a stock for the hardy Russian Bessemianka, or Seedless pear.

See article, “Whole Root vs. Piece Root Trees.”