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THE UNIVERSITY OF TENNESSEE
AGRICULTURAL EXPERIMENT STATION
KNOXVILLE

November 25, 1953

Copy

Professor Ralph H. Sharpe
University of Florida
Agricultural Experiment Station
Gainesville, Florida

Dear Professor Sharpe:

We are preparing a manuscript naming and describing four new pears and would like to acknowledge the cooperation of other station. If your trees are old enough, they should give some indication of local adaptation. A page from the manuscript on each variety should help to make this clear. There is no obligation on your part, and we are not quoting anyone.

note number

The Dabney variety (35S83) ripens the last of July and early August; Ayres (37S21) pear ripens in late August and early September; Mooers (34S272) pear is picked in late September and can be kept until early winter; the Hoskins variety (38S10) is picked about October 1st and can be kept until mid-winter.

There are no patents on these varieties and no restrictions on propagation. We have no trees, and budwood has been supplied nurseries.

Let me know if the acknowledgement meets with your approval.

Cordially yours,

Brooks D. Drain
BROOKS D. DRAIN

BDD:gf

This reproduction doesn't show up too well, but I can not see any depression around the stem attachment in the original

From Southern Forest and Nurseryman Feb 26, 1954

Tennessee Research on Blight-Resistant Pears

The battle of horticulturists with fire blight in pears goes back over a century, but the plantmen are gaining ground every day. This report shows some of the latest and most important developments by specialists at the University of Tennessee

By BROOKS D. DRAIN AND GUY SHUEY*

THE HISTORY of fire-blight-resistant pears is an interesting one and extends over more than a century of time. H. R. Cox, "Oriental Pears and Their Hybrids," gives the origin of 'Le Conte' as a chance seedling discovered about 1846 and that of 'Kieffer' about 1873. He also lists 'Sha Lea' as the seed parent of 'Garber.' The date of its origin has been given as early as 1840 while other writers are less definite.

"The Pears of New York" states that "Garber" is one of many seedlings of the Chinese sand pear raised by J. B. Garber, Columbia, Pa., sometime previous to 1880." There was a very large number of crosses of the European and Chinese sand pear made during this period. Some were named but are unknown in nurseries at this time. 'Pineapple' (developed by the Georgia Station), 'Hood', 'Baldwin' and 'Orient' are in this group and in cultivation at this time. We assume that these varieties are one-half Asiatic pear. "The Pears Of New York" lists the 'Douglas' variety as originating about 1897 from a cross of 'Kieffer' probably with 'Duchesse d'Angouleme', 'Waite', developed by the USDA, belongs in a class with 'Douglas'

and is one-fourth Chinese sand pear.

Any blight-resistant pear tree should be growing on a blight-resistant stock as this disease can develop in roots. "The Pears of New York" states that: "The hybrids (of *Pyrus serotina culta*) do not make good stocks and intergrafts but poorly with the common pear." F. C. Reimer (Blight Resistance in Pears) has made a careful study of pear stocks and their blight resistance.

Pyrus calleryana, a blight-resistant species, thrives in this area and has many characteristics desired by nurserymen. A number of Tennessee nurserymen have used this stock for many years. *Pyrus calleryana* trees at the Knoxville station are growing nearby 'Early Faulkner', 'Kieffer', *Pyrus ussuriensis* (several varieties), 'Late Faulkner' and other trees that all blossom at about the same time. The resulting hybrid seed is vigorous, somewhat more cold-resistant and yet handles like pure *Pyrus calleryana* stock. Local nurseryman have used this seed for years and have had nothing but favorable results. The hybrid *Pyrus calleryana* stock is recommended to nurserymen for propagating Chinese sand pear hybrid varieties if the trees are to be planted in this area.

'Orient', a variety named and described in 1945, has been grown by thousands of growers and is usually free from fire blight under field conditions, both blossom and canker forms. Chilling requirements are

*Dr. Drain is horticulturist at the University of Tennessee and Mr. Shuey is general chemist. Records kept previous to the authors' are by other research workers who have done work on this project and have kept long-term records.

Table I: Pear Blossoming Dates, 1953 at Jackson, Tenn.

Variety	Date of First Bloom	Date of Last Bloom
'Kieffer'	March 6	March 20
'Orient'	March 10	March 24
'Ayres'	March 17	March 27
'Garber'	March 7	March 19
'Shouling'	March 1	March 14

— Late blooming would not suggest very low chilling



Fig. 1: 'Dobney' pear tree 15 years old that has been neglected for many years. It has had very little pruning, but was top grafted on *Pyrus calleryana* stock. Notice small size and shape of the tree



Fig. 2: A fruit of 'Dobney' pear. This variety is attractive and ripens very early



Fig. 3: A fruit of 'Ayres' pear. The yellow color and late date for blossom makes this pear very attractive

mericant 38563 ASHS 91, 1967

Copy

THE UNIVERSITY OF TENNESSEE AGRICULTURAL EXPERIMENT STATION
DEPARTMENT OF HORTICULTURE
Knoxville, Tennessee

Original record
of plant list of
pears received from
Dr. Drain

Agricultural Experiment Station
Knoxville, Tennessee

Address

October 26, 1951

Date

The following plants have been received from the Department of Horticulture, University of Tennessee Agricultural Experiment Station, Knoxville, Tennessee.

Tennessee 38517

" 37810

" 318479

" 318272

" 318300

" 37827

" 37820

Carrich } later named
Mocers }

← This is the number you have in Guatemala. If it was an error in typing, I do not know. 'Ayres' was number 37821, (see Drain's letter of 1953). See the descriptive list. If the number is in error, it was repeated again in the description list sent me in 1951.

The undersigned agrees to grow these plants for test purposes only, and agrees not to sell, give away, or otherwise distribute plants until authorized to do so by the Department of Horticulture of the University of Tennessee Agricultural Experiment Station. Furthermore, the undersigned agrees not to publish or cause to be published a description of these plants until authorized to do so by the above Department.

Ralph W. Hayes

Signature of Firm or Individual

Send File Copy.

Selection No. - Tenn. 38817

Parentage - Seckel x Late Faulkner

Suggested Test Regions: Eastern United States. Now on trial in 5 stations.

Brief Description: A medium sized fruit, greenish yellow in color with a faint brown blush. One spur blighted in 6 years trial. Pick about October 1 and keeps to December.

This is brief description of Tenn. test pears given me by Dr. Drain in 1951 - Copy of his description

Selection No. - Tenn. 37810

Parentage - Seckel x Late Faulkner

Suggested Test Regions: Eastern United States. Three stations are now trying this selection.

Brief Description: Fruit medium sized, shape roundish ovate pyriform. Color attractive golden russet. Reported as blighting slightly (a few twigs) and medium on defoliation. Pick in late September and will keep into December.

later named Carrick - Dr. Sherman then in this is "no good!"

Selection No. - Tenn. 388479

Parentage - Early Faulkner x Bartlett

Suggested Test Regions: Eastern United States. Now on trial in 8 stations.

Brief Description: The original tree is growing in an unfavorable location and notes are limited. Fruits medium to large and russeted. Quality very good. Reports indicate no blight and medium to heavy defoliation. Pick in late August.

Selection No. - Tenn. 388272

Parentage - Late Faulkner x Duchesne d'Angouleme

Suggested Test Regions: Eastern United States.

Brief Description: This is a large pear with crisp, subacid flesh of good quality. No blight or defoliation has been observed to date even when unsprayed. Pick in early September.

later named Mosers

Selection No. - Tenn. 388300

Parentage - Late Faulkner x Duchesne d'Angouleme

Suggested Test Regions: Eastern United States.

Brief Description: Medium sized fruit of medium appearance. Will keep to Christmas if properly handled and refrigerated. Flesh crisp, sweet-subacid and of good quality. No blight and very little defoliation observed.

Selection No. - Tenn. 37827

Parentage - Garber x Anjou

Suggested Test Regions: Eastern United States.

Brief Description: Fruit large in size and yellowish in color. Flesh crisp, sweet-subacid and good. No fire blight observed and defoliation slight. Pick in late September and will keep into November.

Selection No. - Tenn. 37820

Parentage - Garber x Anjou

Suggested Test Regions: Eastern United States *Guatemala trees*

Brief Description: Fruit medium size, color yellow with a rusty blush. Flesh melting, sweet-subacid and very good. A dessert pear and rated very good. Reports indicate no blight and very little defoliation. Pick in early September and can be kept to November.

Note again the number Tenn 37820 Not Tenn 37821. If there was an error it was repeated here

*named Carrick
named Mosers*

Dr. Sherman says Morgan is no good, and I
do not consider 'Orient' of any merit, of all
the Tennessee pears, Sherman considers
'mericourt' and our Tenn 37 & 20 the best.

All of the best numbers on this list failed us
except Tenn 37 & 20.

I would not describe Tenn 37-20 "russet".

FIRE BLIGHT-RESISTANT PEARS

11

THE AYRES PEAR

(37521)

This number obtained from his letter of 1938. Also the number given for Ayres in Small See Hort Soc Register of named fruits.

The Ayres pear⁹ was obtained by crossing Garber ♀ with Anjou ♂ in 1937. The fruits are golden russet with a rose blush, and are very attractive, as shown by the picture on the front cover of this bulletin. This variety was first fruited in 1945 and has a good production record. The trees are good growers, spreading in habits of growth, (see Figure 4) and to date have been free from fire blight. Unsprayed trees vary in the amount of defoliation from very little to very heavy. Replicated trials are located at the West Tennessee Experiment Station, Jackson; and trial plantings have been made at four other experiment stations¹⁰. Persons living near these stations should consult station research workers regarding local adaptation.

Technical Description

Trees: Large, vigorous, upright; top moderately compact; trunk medium in thickness and size, dark gray in color; branches medium to slender, reddish gray; branchlets medium in thickness, brown-gray, dull with small raised lenticels.

Leaf buds long, medium in size, pointed; leaf scars medium prominent. Leaves; petiole 1 3/4 to 1 7/8 inches long, slender, color green tinged pink, surface glabrous; blade 3 3/4 by 2 to 2 1/4 inches wide, folded; midrib straight or nearly so; sides slightly wavy, outline oblong base medium narrow, apex medium broad, point medium size and acute; general color dark green, vein color green tinged pink; position spreading; serrations dentate, direction forward, size small, moderately regular; surface shiny, texture medium, pubescence short, fine and wooly.

Flower-buds large, oblong spherical, pointed, plump, and brown in color; flowers open medium to late, 2/3 open March 18, 1953, at Knob Orchard, Blount County, Tennessee; size medium—1 1/2 inches across; color white, unopened buds pink and stigmas maroon; blossoms appear with the leaves; clusters 7 to 9 blossoms and umbel-like in form; pedicel 3/4 to 7/8 inch long, medium thick and glabrous or nearly so; pollen sterile; distribution spotty.

Fruit: Picked in mid-August at Clarksville, Tennessee; medium or below, 2 1/4 by 2 1/4 inches, roundish slightly pyriform; stem 3/4 to 1 inch long, thick and fleshy at the point of insertion; cavity acute, medium

stem 1 1/4" here at Knoxville in 1971

⁹The Ayres pear was named in honor of Dr. Brown Ayres, who was elected president of the University of Tennessee in 1904. Dr. Ayres, who succeeded Dr. Chas. W. Dabney, was president of the University until his death in 1919.

¹⁰State College, Mississippi; Ardmore, Oklahoma; Urbana, Illinois; and New Brunswick, New Jersey.

ality attracted attention as good, resembling Bartlett but the flesh is more melplots came into bearing at

g, becoming drooping with branches medium slender and reddish-gray, dull with

n-gray; leaf scars obscure. color pinkish green; surface inches wide slightly folded; ved, outline oblong; base d acute; general color dark tion spreading; serrations at irregular; surface shiny, and wooly.

and reddish-brown; flowers at Knob Orchard, Blount color white with maroon s 8-9 blossoms and umbel- somewhat pubescent; pollen

ist at Knoxville, Tennessee: a, oblong obovate, pyriform, nder; cavity acute, shallow, d large; lobes separated at o, wide, abrupt and deeply smooth, waxen and dull; russeted and conspicuous; core-lines clasping; calyx ds 3/16 inches long, narrow tender and juicy; flavor rt quality. The fruit ripens scored low for canning.

Flowering later than Kieffer and Orient suggests higher chilling requirement

Except for russeting and stem attachment, the description could fairly well fit the Tenn 37-20. Stem attachment here in 1971 was distinctly in a depressed basin on all his pictures indicate our "Tenn 37-20" but no. I just DON'T KNOW.

deep, broad and russeted; calyx open and medium sized; lobes separated at the base, medium in length and width, and acute; basin deep, wide, obtuse and corrugated; skin medium thick, tough, russeted and dull; color light yellow blushed and mottled with golden russet and rose; dots many, large russeted and conspicuous; core medium—1 by 1 1/4 inches—closed, abaxile, with core-lines clasping; calyx tube very long, medium wide and funnel form; carpels ovate, seeds long medium wide—3/8 by 3/16 inches wide, plump; flesh white tinged with yellow, melting and juicy; flavor sweet-subacid, sprightly and very good; canning quality, medium.

THE MOOERS PEAR

345 272

The Mooers pear¹¹, has attracted attention as a late fall and winter variety that is resistant to fire blight. It was developed by crossing



Figure 6.—A fruit of Mooers pear.

Duchesse d' Angouleme ♀ with Late Faulkner ♂ in 1934. Observations were delayed by stock troubles. Figure 5 shows the Mericourt tree as it looked in 1953. The tree is upright in habits of growth, sturdy and very healthy. Even unsprayed trees have remained healthy. It is likely to be especially valuable in locations where the leaf spots are very serious. The variety first fruited in 1944 and has produced good annual crops since that time. The crop is harvested in late September and may be ripened from October into December, depending on the method of handling. The fruit is large in size, golden russet in color, and attractive as shown in Figure 6. The flesh is crisp, subacid, and good in quality. We rate it good for canning. Figure 7 shows a sample of the canned product. Replicated trials are located at the Highland Rim

¹¹The Mooers pear was named in honor of Director Emeritus C. A. Mooers, who served as director of the Agricultural Experiment Station, University of Tennessee, from 1923 until his retirement in 1946. It was under his administration that the pear breeding and testing research was started.

Experiment Station¹² have trial

Tree: Large
with loads of
and dark gray; b
medium-sized fru
Leaf buds s
petiole 1 to 1 1/2

?
I rated the
lots unusually
small in our
fruit of
in 1951.
"37a 20"



Figure 7.—Canned pear high for canning.

¹²Gainesville, Florida State College, Mississippi

From North American Pomona
Vol 4, #4 October, 1971

TENNESSEE BRED FIRE BLIGHT RESISTANT PEARS

Brooks D. Drain, Ret. Horticulturist, Univ. of Tenn., Knoxville, Tenn.

801 Vanasdale Rd. " " 37919
A long time ago, I was a little boy and was looking out of windows in my father's home in Southern Ohio and saw a young pear tree of Bartlett, Bosc or Clapp dying in our yard. I was told that it had some disease and that this had gone on since the early settlers had come to America. This disease, later called fire blight, had moved from wild hawthorne to pears of quality and found a more susceptible host.

When I came to Tennessee in 1931, my boss called me in and said that one of my jobs was to secure blight resistant pear varieties of quality for Tennessee and the South. Pear varieties like Kieffer, Baldwin, Garber and Hood were already widely distributed but were not of high quality. Experienced breeders advised me to use varieties like the above in my work and not to use cultivated varieties of Chinese Sand Pear which are commonly grown in China. I took their advice. Later a well educated Chinaman criticized my work because I had not used the large and luscious (from his point of view) cultivated varieties of China. Therefore, I made some selections from the U. S. D. A. collection of cultivated Oriental varieties and made a few thousand crosses. The progenies were a disappointment; high in blighters, small in size and low in quality, even when the best of parents were used. Only one was saved out of the lot and it was just a marble in size.

Most of my progenies in this project are three-fourths European Pear, *pyrus communis*. We realized from the start, that large numbers of my progenies would be susceptible to fire blight. We would need 50,000 or more to select from, to be sure of at least one resistant to this disease. My hope was for resistant varieties; immune varieties were not expected. Cold injury in the spring added to my troubles. We made enough crosses in a favorable season to keep us busy several years.

In 1953 my retirement was approaching and I was ordered to introduce eight varieties. I introduced four varieties in the spring of 1953 and two more in 1957.

A variety that was one half Chinese Sand Pear was found growing under a number in a nursery row, and was later found to have come from Dr. Van Fleet via U. S. D. A. The U. S. D. A. gave me permission and I named it Orient. There were no breeding records found after Dr. Van Fleet's death. I distributed Orient in 1946, and it is now grown widely over Eastern U. S. It is assumed to be one-half Chinese Sand Pear. Its pollen has always tested sterile but other Sand Pear hybrids that blossom at the same time cross pollinate it readily. See Tennessee Agricultural Experiment Circular Number 95.

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Orient is widely planted in all southeastern states but no report mentions orchards of it although orchards could be taken for granted. Georgia sent in an interesting report. "The Orient is our most popular variety. We have no problems with fire blight or leaf spot diseases on this variety. It is used extensively by our preserving plant for its snow-white flesh with its fewer stone cells makes a beautifully bright preserve. Because of its size and small core area the turn out of fruit is higher than other varieties on a comparative basis.

"The Ayres and Carrick both have proven to be good varieties for us under Georgia conditions."

Louisiana has an interesting report from the lower South and I am quoting from it:

"Carrick was notable for its resistance to blight and leaf spot in planting near Clinton, Louisiana some 40 miles north of Baton Rouge. It was late to begin to flower, however, and we have no notes on fruit from this tree, which was planted into an orchard location in 1960.

"Hoskins was quite resistant to blight in the same planting and bore some fruit of good quality.

"Mooers blighted occasionally into quite large wood (about like Orient) and was susceptible to Fabrae spot. The fruit did not attain very good quality in Baton Rouge, although the crops have been regular since about the fifth year after planting in 1960.

"Ayers has been resistant to blight, except blossom blight which has occasionally gone into the spurs. It is quite susceptible to *Cercospora* spot here and appears to have corky pit virus in the single tree that I have remaining. The bark scales badly and a considerable percentage of the fruit have characteristic pits. The fruit quality is very good, however, in those fruits not badly affected. Crops have been regular since about the eighth year after planting in 1960."

Mississippi reported some time ago that the Morgan rated high as an all-purpose variety although blighting some and was so recommended to their growers. Ayres blighted very little.

Virginia Agricultural Extension Publication 35 reprint January 1971 presents a point of view where large plantings of apple are involved. This holds for parts of the upper South. "If at all possible, pears and apples should not be planted in the same orchard or in adjacent fields. Most of the common varieties of pears are highly susceptible to fire blight. One or more badly diseased pear trees may be the principle source of inoculum for apples. Badly diseased pear trees should be cut down and burned."

Tennessee Agricultural Experiment Station Bulletin 236, 1954, presents a full description of Ayres, Dabney, Mooers and Hoskins pears and discusses various problems in growing this type of fruit. Tennessee Agricultural Experiment Station Bulletin 263 dated 1957 gives a description of Carrick and Morgan varieties. Except for Orient, these varieties from Tennessee have three times as much European pear in them as Chinese Sand pear and their culture should approach that of the European pear. Where this has been followed in Knoxville, Tennessee the trees are healthy, large in size and have been producing wonderful crops. I see no reason why this should not be true in other parts of Southeastern United States. Written reports from various parts of the Southeastern States indicate that many growers treat these hybrid varieties as if they were Chinese Sand Pears.

Parentage of Tennessee fire blight resistant pears:

- Ayres -- Garber x Anjou
- Dabney -- Seckel x Garber
- Mooers -- Duchessee d'Angouleme x Late Faulkner
- Hoskins -- Seckel x Late Faulkner
- Morgan -- Bartlett x Late Faulkner
- Carrick -- Seckel x Garber
- Orient -- Parents unknown.

I will try to outline what I consider better treatment for these European pear hybrids. I assume that you have given them normal orchard care for your section.

First -- Remove and destroy any fire blight from the vicinity of where you are planning to plant.

Second -- Break out, not cut out, any twigs that develop signs of the blight. Cut out blighting wood in any larger branches disinfecting tools before and after using them. Infection is more likely to occur around blossoming time but inspection should be made periodically through the growing season. Only two states mentioned blossom blight. None occurred among our selections in our plots in Tennessee but some did occur among our parent trees. Florida, Circular 343, Agricultural Extension Service, recommends three blossom sprays of streptomycin or streptomycin-copper on varieties such as Hood, Baldwin and Pineapple.

Third -- Harvest the crop when hard ripe and finish ripening the fruit in a cool place off the tree. Wrapping the fruit with paper will lengthen the ripening period. If you are not able to recognize hard ripe, see page 6, Bulletin 236, mentioned above. If you do not have access to a copy, try your local library. Fruit miss-handled at picking and ripening time has no value in checking for fruit quality. Try picking three or four specimens every few days and ripening them under ideal conditions to check your skill at identifying hard ripe.

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Kentucky sent in some interesting facts about these Tennessee pears. "The Morgan has been outstanding with us (at Princeton) and it has blighted very, very little. Also Carrick performed well, as you know the Carrick was a gangling type tree, and the red russett type pears were somewhat late in developing but with us it obtained real good quality and large size. It too, was virtually free of blight here at Princeton. It seems that Carrick was not as high in quality as we judge the Morgan to be." (Princeton is in Western Kentucky and in the upper South.)

Most of the information that I have in Tennessee on these new pears was put in my letter to the various southeastern states. Orient is widely distributed and has been grown for twenty-five years. I mentioned a Dr. Chester H. Crider, 6608 Sherwood Drive, Knoxville, a dentist, has been growing Orient pears on a city lot for twenty-five years. He is well pleased with the variety. The other six varieties of blight resistant pears have been grown in Tennessee for a much shorter time, but all first planted trees should be in bearing. A Mr. Edward Nicholson, 6806 Haverhill Drive, Knoxville, has a nice planting on a city lot. I visited his planting last summer when the crop was ripening. There was no sign of blight and the trees were loaded with fruit. He rated Carrick first, Morgan second and Ayres third. I judge from correspondence and contacts with people in Tennessee that there must be several thousand different plantings of these fire blight resistant pears in the state. This includes both urban as well as rural plantings.

The writer is an old man approaching 80 years of age and has been retired for twelve years. Do not expect me to do much, but I hope that the rest of you can make things so that little boys and girls can look out of windows in their homes and see pears of quality growing and fruiting. One tree and a pollinator could produce enough fruit for one home even on a city lot. May God bless the little boys and little girls.

-----XXXXX-----

For years I have rubbed liver on apple tree trunks to discourage rabbits, this is an old method as you probably know. They always damage my black raspberries. This fall I put a chunk of liver in a bucket of hot water and let it set for a half hour. I then poured this into a hand sprayer and sprayed it on my brambles. So far they haven't touched them and the snow is deep. You have to strain this when pouring it in the tank and also hold your nose as it don't smell good.

--Leonard Wright, Putnam, Ill.

-----XXXXX-----

WHO HAVE YOU TOLD of the POMONA?

Antigua, Guatemala 18 November 1971

Dr Brooks D. Drain
801 Vanasdale Road
Knoxville, Tenn: 37919.

Dear Doctor Drain:

In your interesting paper "Tennessee Bred Fire Blight Resistant Pears", a copy of which Ralph Sharpe of Florida has sent me, you explain that you are approaching 80 years and not doing as much as you used to. I am in the same boat, but having been a pomologist all my life (mainly tropical fruits) I cannot resist the temptation to help establish several of the temperate zone fruits here in the Guatealan highlands, where I have been professionally interested since way back about 1930. We are going pretty well with apples, mainly Winter Banana and Wealthy (with the temperate zone fruit's low chilling requirement has to be thought of first). The Japanese plums give us no trouble. We are getting ahead with peaches, based mainly on the newer varieties from Florida. Ralph Sharpe has of course been a lot of help in this connection, and more recently with pears, about which I am taking the liberty of writing you.

When I came down here first, almost 55 years ago, there were a few communis pears growing here at 6500 to 8000 feet. I believe there were also a few Pineapple at that time, and we introduced Kieffer and Orient and Baldwin.

We have had a hard time introducing the communis varieties but think we have Clapp Favorite and Lincoln as well as half a dozen others which are not so popular here. People are not much interested in Kieffer nor in Orient. Baldwin is scarcely known here.

Incidentally, until three years ago all our pears were grafted on Crataegus rootstocks - a native species, C. pubescens or mexicana. This will grow on poor soils and needs little water but it is slow, very slow. Seven or eight years ago we tried French pear rootstock from California (presumably Bartlett) and it was a flat failure except at the highest elevations. Then I introduced Pyrus calleryana and it is taking over the whole field - practically perfect and has presented no problems as yet. Incidentally, we don't worry much about fire blight. Perhaps for some climatic reason, it has not bothered even those varieties we know are highly susceptible. It is here - the pathologists feel sure of that, but perhaps because we have no rainfall all during the flowering season it has done little damage. Perhaps here is some other reason.

Now here is what I want to talk about. The oriental pears do not require as much cold as the communis pears. We can ~~grow~~^{grow} them as low as 5000 feet - most communis pears require 7000 and Bartlett 8000. And some of the oriental pears (and hybrids) are much more productive than most communis pears.

Seven or eight years ago Ralph Sharpe gave me, when I happened to be at Gainesville, some scions of Tennessee 37-20. This variety at 7000 feet came into fruit for the first time two years ago and this year we had quite a lot of fruit. And the man who brought it into bearing here is so enthusiastic about it he is now planting an orchard of 6000 trees.

Ralph Sharpe says this variety is a mixture of Garber and Anjou, three-fourths Anjou. We find so far that it bears well and we think the quality - by our standards - excellent. And it is a good-looking fruit too; greenish yellow with a good red cheek, Not gritty enough to be objectionable, very juicy, and delicious flavor. Some day blight resistance may be a factor.

Is 37-20 your Ayres variety, by any chance? And are there any varieties you list in your paper which we ought to try? We have Mericourt but it has not yet fruited with us. We do not care much for Orient, and as for Kieffer, they haven't learned how to use it. Oh, I forgot to mention Hood. This does very well here, as low as 6000 or perhaps even 5500 feet, and it appears in the market in considerable quantity - in fact the market is full of it right now.

Can you tell us anything we ought to know about 37-20, and can you suggest any varieties we ought to include in our experiments. The trouble with most of the fine European pears such as Anjou and Comice and Bosc is productiveness. Our trouble may be lack of adequate pollinators - very little attention has been given to this subject - and a variety like Bosc for example, is a slow grower and makes a small tree and commercially is not at all satisfactory.

If you still feel up to it, I am sure you could give us a great deal of advice. Especially if you can suggest varieties which might prove interesting and valuable. We will greatly appreciate any help you can give us.

Faithfully yours,

WILSON POPEHOE

Address simply: Antigua, Guatemala, C.A.

DR. BROOKS D. DRAIN
SHANNONDALE
801 Vanosdale Road
KNOXVILLE, TENNESSEE 37919
Feb. 4, 1972

Mr. Wilson Popenoe
Antigua, Guatemala, N.C.

Dear Mr. Popenoe:

Just a note to let you know how I am getting along with the pear ~~top~~ scions. I have been retired from the University of Tennessee for 12 years as there are changes. A young man in the Dept. of Hort. has chopped down a lot of trees. It started about this some years ago but he was allowed to go on. Then I just found out that a reorganization has occurred and a Dept. of Soils and Plant Sciences has replaced Horticulture with a Dr. Seato in charge. I talked with Mr. Seato on the phone and he agreed to furnishing or trying to furnish scions of DeWey, Haskins and Moser. It may take him a little while. A Mr. Edward Nicholson, 6506 Averhill Dr. Knoxville has agreed to furnish scions of Morgan and Carrick. A man who headed our nursery inspection service died, I do not know who took his place but will find out.

I will try Ralph Sharpe but will ship direct to you too. Then I had trouble purchasing ^{or finding} polyethylene bags. I will keep on trying but could you send me 7?? It is not a matter of money. Cordially yours

Brooks D. Drain

DR. BROOKS D. DRAIN
SHANNONDALE
801 Vanosdale Road
KNOXVILLE, TENNESSEE 37919
Feb. 9, 1972

Mr. Wilson Popenoe
Antigua, Guatemala C.H.

Dear Mr. Popenoe:

just a note to let you know how things are developing here. The Tenn. State Nursery inspection office is located in Nashville, Tenn. about 200 miles from Knoxville. Local inspections are made by one or more young men appointed by the central office. I arranged to gather scions of Morgan and Cairns pears from Water trees grown by Edward Nicholson. This was made by the new head of the Soil & Plant Sciences Dept. in room 206 Plant Sciences Bldg.

I got word yesterday not to do this as they would. The local inspector notified me that I & they also needed an importation permit to send scions into Guatemala. This was to come via you. Guess I will have to wait a day or two & see what happens. Of course I have Ralph Sharpe of Florida to fall back on. What is his address?

These new Dept's at the

DR. BROOKS D. DRAIN
SHANNONDALE
801 Vanosdale Road
KNOXVILLE, TENNESSEE 37919

#2. M.P.

University of Tennessee are not sure of themselves and are moving slowly. Those thrown out are resentful.

I have run across an extra bulletin no. 263 and am enclosing it.

Cordially yours

Brooks D. Drain
Horticulturist retired, University
of Tennessee.

P.S. I have not been able to locate Polyethylene bags. Can you send me some.
B.D.D.

DR. BROOKS D. DRAIN
SHANNONDALE
801 Vanosdale Road
KNOXVILLE, TENNESSEE 37919

Feb. 17, 1972

Mr. Wilson Popenoe
Antigua, Guatemala, C.R.

Dear Mr. Popenoe:

Just a note to let you know that
I gathered Morgan and Carrick (pearl scions)
took them to a local infestation office and
left them with Dr. Seatz office for
mailing to Prof. Ralph Sharpe, Dept.

of Fruit Crops, University of Florida,
Gainesville, Florida yesterday. They should
be in Prof. Sharpe's hands to-day.

These scions came from Ed. Nicholson's
trees, 14 yrs. old 6806 Haverhill Drive,
Knoxville, Tenn.

I will get + send you
Mooers, Hoshies and Dabney scions
as soon as possible.

Hastily yours

Brooks D. Drain

Shaw-Wandell

Feb. 26, 1972

Dear Dr. Popov:

Excuses me to write you of the delays in shipping the seeds of the Tennessee pears. When you depend on others there are likely to be delays. Two varieties started from Knoxville a few days ago. I do not know whether Prof. Sharpe of Florida sent them on promptly or not.

I was depending on Prof. O'Rourke of Louisiana to send Dabney, Hoskins, and Moers. I received a notice yesterday that he had sent Moers on to me (not received yet) but that his trees of the other two had been destroyed. Since a disgruntled employee had destroyed all the Penn. trees and urged nurserymen not to grow them, I have to go hunting. Sorry these delays. Will write you again when I have further news.

Sincerely yours

Brooks D. Krain

Copy

Shanvondak

Feb. 28, 1972

Prof. Ralph Sharpe
Dep't. of Fruit and Vegetables
Florida State University
Tallahassee, Florida

Dear Prof. Sharpe:

I was part in the inferno
at Shanvondak last week and so things
have been delayed. However you were
shipped scions of *Woods* pear on
Saturday, Feb. 26. There are two more
to go, *Dabney* & *Hoskins*. The
University's original trees have been
destroyed and I will have to locate
trees off the Campus. These woods
scions are from Prof. O'Rourke of
La. Interesting that these scions
arrive in good condition. I remain

Sincerely yours

Brooks D. Drain

Antigua, Guatemala 7 March 1972

Dr Brooks D. Drain
801 Vanosdale Road,
Knoxville, Tenn: 37919

Dear Doctor Drain:

The shipment of Morgan and Carrick pears came through promptly and in beautiful condition. Ralph Sharpe certainly knows how to pack scions for shipment by air mail to this part of the world. There were five pieces of each variety; from each piece we made two scions for the type of veneer graft we use so successfully in this part of the world. The five pieces of each variety were placed in polythelene bags; then laid out flat, and placed between corrugated cardboard, then in a heavy envelop; the result looked like the package contained a small book of something of the sort; it came by letter mail without delay. This time. I am still waiting for a shipment of Grape cuttings from Leesburg, Florida, which was mailed over a month ago. In the last few days I have received two airmail letters post-marked in the States during the month of December.

I note that Morgan is Bartlett x Late Faulkner. I do not know anything about the latter variety, but assume it has some oriental blood or you wouldn't have used it. Bartlett has the highest chilling requirement of any of the commercial pears we have tested down here, but it does well when pushed up against the frost line. Carrick, I note, is Seckel x Garber. This will be an interesting combination to try here, but we have the feeling, without much experience to back it, that Seckel has a high chilling requirement. And for some reason or other, it has not done well here, so far as I have seen up to now.

In your letter to Ralph Sharpe of 28 February you advise that you are sending Mooers. We shall be glad to try this, but I don't

feel sure that it will reach us - our mail service is so unreliable in some respects. But thanks to you, we are now pretty well set for your group of hybrids with Ayres, Morgan and Carrick. Where we have missed the boat is with regard to Mericourt. We got this from Ralph Sharpe several years ago, but it had to be put on Crataegus rootstock (we did not have calleryana at that time, and French pear roots have not done well at the lower elevations where we had most the plants; it seems that this root must have 7500 feet or more); the few plants which were established by Arturo Falla, who is the man who is doing practically all the serious EXPERIMENTAL WORK HERE (pardon me for hitting the wrong key) have made very poor growth and we do not yet have enough material to propagate this variety. From all I can learn, Ayres and Mericourt seem likely to be our best bets. We must get ahead with Mericourt. And by the way, there seems to be a bit of confusion about Ayres. The material we got from Ralph Sharpe was Tennessee 37-20, - at least that was the number under which he was growing the variety. He has written me recently that the number may correctly have been 37S21 and someone has suggested that maybe it should be 37S26. Maybe you can straighten this out, but frankly, I am not seriously interested because whatever we have under the number 37-20 has done so beautifully here at 7000 feet, and is of such good eating quantity, and keeps so well in cold storage that they can call it Drain's Triumph or Cut-and-Come-Again or anything they want to; we've got a pear which is just simply tops from our standpoint and as I think I have told you, Arturo Falla has already grafted 6000 trees of it and planted them in his own orchard.

Many many thanks for your help. We are really getting somewhere in this pear business, and curiously enough our progress is not based on resistance to fireblight.

Faithfully yours,

DR. BROOKS D. DRAIN
SHANNONDALE
801 Vanosdale Road
KNOXVILLE, TENNESSEE 37919

March 10, 1972

Dear Dr. Papeave:

Morgan Carrick and
topus in Southeastern U.S.

Your letter of March 7
arrived to-day which is certainly good
service. I am very glad to know that
Morgan and Carrick has reach you.
They were the first ones shipped from
Knoxville. Movers was secured from
Louisiana, reshipped to Dr. Sharpe which
involved some delay. Dabney &
Hoskins came from North Carolina
shipped with 3 days delay in starting
direct to Prof. Sharpe. He should
have received them by this time. New
growth has started in North Carolina
& this troubled Prof. Correll of U.C.,
He delayed from Friday until
Monday to avoid a delay over
the week end. He used low
refrigeration in holding the sections.

The 7 Faulkner varieties
both Early and Late were found on a
Dairy farm at Powell, Tenn.
and are assumed to be $\frac{1}{2}$ clones
Stand Pear. Named Faulkner
from a workman who showed the
trees. I used Late Faulkner
a good deal as the progenies were

#7. W. P.

Breeders like to have trees by
 using parents that have a good
 record of progenies. Thus Bartlett
 is very promising but most of the
 off-springs will blight in the nursery row.
 Seckel gives quality of fruit but
 the fruit tend to be small. Cultivated
 pears of China give small fruit, low
 quality fruit and very high in blight,
 you see when I studied

Plant Breeding at the University of
 Chicago, I met a lot of my teacher
 but when he came to mixed parentage
 he threw both hands in the air and
 said he knew nothing about them.

We in Horticulture have to work
 with heterozygous parents. It
 results in a delay but we get
 there just the same.

American pear; I will not
 admit that I know anything about it.
 I have never seen the tree or the fruit.

When I was suddenly ordered retired
 I left an orchard of several acres
 called "Second class selections" Progenies
 of some promise but only partly tested.

Univ. of Tenn.

#3 W.P.

My successor is trying to cash
 in on this orchard. He may or
 may not have the wits to do it
 I do not trust him.

Name the 37-20 that you
 have anything that you choose.

The 37-20; 37520; 37521 and 37526

would all be of the same parentage
 and makes little difference. Bartlett
 has one name in Great Britain & another
 in Europe. Ayrer is a standard
 name in U.S.

I have had a few unfavorable
 reports on Mericourt but that is
 confidential. Thanks for your letter
 & let me know when you get the others.

Sincerely yours.

Brooks D. Drain

Antigua, Guatemala 13 March 1972

Dr Brooks D Drain
Knoxville, Tennessee.

Dear Doctor Drain:

Two days ago I received through Ralph Sharpe a nice lot of scions of Mooers, which arrived in perfect condition. On the basis of expensive experience and the loss of an occasional shipment Ralph and I have got this business of important scions pretty well in hand - thanks mainly to the trouble Ralph takes to pack everything just right.

I wrote you on the 7th about Morgan and Carrick. I am glad to get Mooers down here, because of its background - Angouleme x Late Faulknew. We now have a pretty nice representation of your hybrids; I am particularly anxious to see what Carrick does with its Seckel blood.

Where we are weak, right now, is on Mericourt. The scions we got from Ralph are on Crataegus stipulosa as I think I have told you. They aren't half the size they would be in grafted on calleryana (we have just received three pounds of US grown seed of that pear; I think we are about through with Crataegus except perhaps on poor, dry soils. I think we had best get a fresh start with Mericourt.

I wrote you about the confusion we are in regarding Ayres. Is it 37-20 or 37-21 or 37-26? As I said in my last letter it doesn't matter; it is a mighty good pear - this one we got as 37-20- and we are going in for it in a big way.

Again thanking you for all the trouble you have taken in helping us grow really good pears in the tropics,

Faithfully yours,

Antigua, Guatemala 15 March 1972

Dr Brooks D Drain
801 Vanosdale Road
Knoxville, Tenn. 37919

Dear Dr Drain:

Yesterday I received via Ralph Sharpe scions of Dabney and Foskian appears in fine condition. We have absolutely no trouble in getting small lots of scions from the States, provided they are shipped in polyethylene bags and sent by air mail. To make assurance doubly sure, it is well to register the packages, but we have only lost one this season which was sent by just ordinary air mail.

I wrote you a few days ago about Ayers or Ayres. In the bulletin (No. 263) which came with the shipment yesterday - Morgan and Carrick - the picture of Carrick sure looks like the one we have here as Ayres.

I think we are pretty well set now, for a trial of your most important introductions. The place where we are weak is Mericourt, which they tell me in Florida is one of the best. When I received some scions of this from Ralph Sharpe three or four years ago, he had to put them on Crataegus rootstocks, and the grafts are still so small he can cut good scions from them. I am asking Ralph to send us, if he has the material, about ten scions of Mericourt which we will put on Calleryana, of which we have several thousand good rootstocks in Guatemala, and last week received three pounds of seed. Our problem now is going to be, where are we going to get enough scions of varieties we know are good here, to graft 25,000 trees. This year they are using mainly Clapp Favorite, Hood, and one or two others which we haven't yet identified. I think I have told you that fireblight is not our problem, as yet - though it has been here for years - our main objective is to get varieties which have a low chilling requirement and bear good crops of bushy, PAasty fruit.

Always faithfully yours,

Shimoda
March 31, 1972

Mr. Wilson Popeae
Antigua, Guatemala C.A.

Dear Mr. Popeae:

yesterday I wrote
Prof. Sharpe a two page letter on
the identification of Agripear.
It is not easy what you are
working with. Prognosis that resemble
each other. *Fernera* Agricultural
Experiment Station Bulletin 234454
gives a complete technical description
of it, leaf, buds, fruit & tree.
Also some pictures. Little mistakes
in spelling & words add to the
trouble. I sent you the copy
of Bulletin 263 but do not have
an extra copy of 236. May I tell you
the story of a Texas fruit grower.
He threw away all his labels so he
could call his orchard chance
seedlings. Then he tried to sell
Agripear to Stark Bros. Nursery as a
Sugar pear. It did not work.
Agripear has long been noted as a
desert pear.

#2, W. P.

I have not been feeling well, I have dizzy spells. I spent last week with my niece in Nashville and fell on my back on the streets of that city. They picked me up & tried to walk but did not do the good job of it. I was only 2 blocks from my niece's home. The girl got her auto and hauled me back. They were 2 high school students, my niece is a registered nurse - leaves in the morning & gets back after 5 P.M. & layed down & after while sat up.

Now I have seen the Shannoude Doctor, I have given up some little jobs around Shannoude that I liked and take Ativan pills. Let me know if I can help you, I may not be able to answer your letter but soon one will & I had a dizzy spell yesterday.

Best wishes to you in your work.

Cordially yours

Brooks D. Davis

Write Bill Roan & ask Measurement for it & Cook & the word in Francis's Journal But the field & help you

Shannondale

April 3, 1972.

Dear Prof. Popenov:

I have not been feeling well and so I delayed answering your letter of March 28, Tenn. A. & S. Bul No 236 on page 6 discuss Maturity and when to pick pears. My sister was called an expert on picking & handling Kieffer. I doubt if there is anything better than experience and that needs to be for each variety as they differ. I can do a good job but not a perfect one and for many varieties. The commercial districts on the Pacific coast U.S. ~~use~~ use lots of care in time of picking & they ship to their dealer in Eastern Markets and he handles the ripening. I used 60°F. for ripening.

I have long considered myself the best eating pear in the South, some think that I am bragging & do not believe me. My political opponents try to discredit my work. I have been amazed at the mistakes of some well educated men. Use several pickings as most crops ripen that way.

(over)

#2 W. P.

Guess I still do not feel too well and will quit for to-day. I take Antisept pills to keep from to^ping over and injuring my self. Where I was ordered retired I had a large orchard of tentatively selected pears. It was passed on to others, all they need to do is make final selection & introduce the new variety.

Thank you again for helping out with new pears.

Sincerely yours

Brooks Gilman

DR. BROOKS D. DRAIN
SHANNONDALE
801 Vanosdale Road
KNOXVILLE, TENNESSEE 37919

June 7, 1972

Wilson Popenoe
Antigua, Guatemala

Dear Mr. Popenoe:

Just a note to let you know how I am getting along. Sometime in April I fell on my face in the Shannondale Lobby. I landed on my nose and blood flew or they said it did. I was taken in an ambulance to Presbyterian Hospital or at least that was where I came to. Then a week and I was returned to Shannondale Infirmary.

They claimed I had "heart trouble" which is different than a heart attack. I was here all the month of May. Then I was wheeled to my room where I am now. I do nothing except to write one letter a day and go to my meals at the Dining Room. The art trouble requires rest and more rest.

A niece visited me yesterday which breaks up the monotony. I do not know when I can have more activity.

Best wishes to you & the pearl. Let me know how they work out.

Sincerely yours
Brooks D. Drain