Fifty years ago, in April, 1893, I read a paper before the 4th Annual Meeting of the Florida State Horticultural Society giving a list of a number of Citrus fruits not yet grown in this country, and suggesting the organization of a non-profit stock company to introduce new Citrus fruits from the Old World. I expected at best a few words of thanks for my paper and was greatly surprised to see the leading orange growers of Florida (there were no grapefruit growers then) get up, one after another, and give their warm approval to the project. Finally by a unanimous vote of the Society, a committee was appointed to organize such a Citrus introduction company. While this committee still had the matter under consideration the two great freezes of December, 1894, and February, 1895, killed to the ground all the Citrus trees in the commercial groves and it was, of course, impossible to consider going ahead with the Pensacola project.

However, the great interest shown by the leading orange growers of Florida convinced Dr. Herbert J. Webber, Dr. David Fairchild and me that somehow this work of introducing Old World Citrus varieties and wild relatives should be undertaken as soon as possible, if practicable by the U. S. Department of Agriculture if authority could be secured to spend money abroad.

In 1894 Dr. David Fairchild studied Citron culture in Corsica and introduced into this country the famous Corsican citron. In 1898 I sent to Washington from Naples, Italy, the other important citron variety grown in Italy, the Liscio or Diamante citron. This I did while on my way to work on copper fungicides in Europe, with salary but with no expense money of any kind. 1/

By July 1, 1899, the Plant Introduction Service was established in the Department of Agriculture by David Fairchild. Both he and I were commissioned as Agricultural Explorers and sent at once to foreign regions, he to the East Indies, and I to the countries bordering the Mediterranean. From that day to this a stream of Citrus varieties and Citrus wild relatives has been entering this country from all the warmer regions of the world.

Dr. Fairchild, Dr. Webber, Prof. G. W. Groff and I, all members of the Florida State Horticultural Society and the Krome Institute, have all of us worked in season and out to secure new Citrus fruits for this country. Having lost during the great freezes of 1894 and '95, all of the many Citrus hybrids I had made in 1893, I determined to get a Subtropical Station in the Miami

1/ In April, 1899, I made the first successful shipment of the fig wasp (Blastophaga psenes) which breeds in the fruits of the male fig trees (or caprifigs) and carries pollen to the young flowers of the best varieties of figs used for drying. This shipment reached America too late to get established in caprifig trees growing in Fresno, California, but a shipment I made from Algiers in March, 1899, arrived in Fresno on time, and by October 1899 was well established. This introduction of the fig wasp made possible the growing in California of dried figs of the Smyrna type to the extent of 10-12 thousand tons annually.
region where young hybrids and delicate tropical Citrus relatives could be grown safely. Thanks to the efforts of Mr. Ingram, his chief, Mr. Flagler approved the plan, and the Florida East Coast Railway allowed me to select a tract now in the city of Miami, and it was placed at our disposal. A legal technicality prevented the U. S. Department of Agriculture from accepting the deeds tendered to them and finally this property had to be vacated. Dr. David Fairchild thereupon leased properties north of the Miami River, which some years later had to be given up. Due to the tireless efforts, a permanent Plant Introduction Garden was finally established at Chapman Field and for many years rare Citrus fruit trees and related trees have been growing vigorously there.

Thanks to this succession of Federal Subtropical Gardens, to the Florida State University's Subtropical Station at Homestead, and to private gardens like Dr. Fairchild's Kampong, and Col. Montgomery's Arboretum, it has been possible for nearly half a century to grow to full maturity in the continental United States all the many tropical relatives of Citrus that have so far been introduced.

During the campaign for eradication of Citrus canker, an appropriation was made to the Bureau of Plant Industry in 1915 to enable a search to be made for canker-resistant Citrus varieties. These funds permitted me to undertake an exploration of the southeastern Asiatic region, China, Indochina, Thailand, the Philippines and Japan to find canker-resistant varieties and to establish a field station in the Philippines to test the resistance of all obtainable Citrus varieties to Citrus canker. This work continued nearly two decades and resulted in the discovery, description, and illustration of a vast number of Citrus varieties and also canker-resistant wild relatives of Citrus. Many of these had never before been seen by the orange growers of Europe or of the New World.

A talented young Chinese graduate of Lingnan University, Kwok Wah-Shou, the son of a Citrus grower, worked for me under the immediate supervision of Prof. G. W. Groff for two years on the varieties of Citrus grown around Canton, China. He described and figured about one hundred varieties, mostly oranges and pummelos. Citrus is grown in almost all the lowlands in the south half of China, an area about the size of all of the United States south of the Potomac, Ohio, Missouri and Kansas Rivers! Citrus trees have been grown in many parts of China for three or four thousand years and innumerable seedlings have arisen in dooryard or village groves. A few of them have been proved to be new and superior sorts, some of them complex hybrids made through cross pollinations effected by bees or other insects. Undoubtedly a thousand or more varieties and strains of Citrus fruit trees are now grown in China and many hundreds more in Indochina and India, where also Citrus culture is an ancient art. Here is to be found the richest store of Citrus varieties in the world, at least ten times as many as we know in this country.

The large importations of Citrus plants from Asiatic regions liable to carry Citrus canker, to say nothing of diseases and insects as yet unknown in New World, necessitated the creation by Mr. T. Ralph Robinson, Eugene May and myself of a system which we called aseptic plant propagation (Dept. Agric. Circular 299 (1923)) to prevent any risk of introducing diseases or pests, and at the same time secure vigorous, healthy propagation of all the numerous species and varieties introduced from the home of oranges, kumquats, and pummelos in S. E. Asia and the adjacent islands.

1/ All of the papers mentioned here and very many others on the introduction of Citrus fruit trees, and their use for rootstocks or for hybridizing are cited in full in the bibliography of the first volume of "The Citrus Industry" now being printed at the University of California Press, Berkeley, California.
Because of the long continued effort to carry out the project approved at Pensacola half-a-century ago, we now have growing in Florida more species and varieties of Citrus and related plants of the orange subfamily than are found in cultivation in any Old World country!

As soon as possible after the great freeze of 1894 and '95, I made a number of hybrids and originated the first Citranges and Tangelos, which, when they fruited, were described and figured by Dr. Herbert J. Webber. Impressed by the favorable reception given to these new Citrus fruits, I began in 1909 hybridization work on a much larger scale, using the kumquat to hybridize with the lime and with the very hardy citranges. Thanks to the active cooperation of the experts associated with me, Mr. T. Ralph Robinson, E. M. Savage, and Eugene May, Jr., many hundreds of hybrids were made using more and more hardy, saline-resistant or boron tolerant Citrus relatives, such as the Australian species of Microcitrus and the anomalous desert-inhabiting, gray-green Eremocitrus glauca.

This large-scale, long-continued hybridization work carried on actively for more than 40 years—1893 to 1934—under my general direction showed the unexpectedly high value of many wild relatives of Citrus for use as rootstocks, better adapted to certain soil or climate conditions than any species or variety of Citrus yet tested.

Dr. H. J. Webber, for many years Director of the Citrus Experiment Station of the University of California, at Riverside, California, began some 18 years ago a large-scale, rootstock experiment. I went over these experiments with him in March and April of this year (1943) and am permitted to say that of all the many rootstocks tested for hardy valencias, lemons and other Citrus fruits, the two which made the best showing for 17 years were the Sampson tangelo and the Morton citrange, both of which I made in 1897 at Eustis, Florida.

In view of the very many hardy, vigorous, salinity-resistant and boron-tolerant hybrids we now know that there is every reason to expect very great progress to be made in improving rootstocks by hybridizing Citrus with other related genera such as Poncirus, Fortunella, Microcitrus, Eremocitrus and probably others not yet available for trial.

As soon as it became evident that Citrus could be hybridized with some of the related genera, even with some that looked very unlike Citrus, I began to study the botany of the Orange subfamily.

In my first effort to study the Australian desert lime, a gray-green shrub or small tree, able to live in very dry situations in the interior of Australia, I found only a single herbarium specimen of it in the United States and this specimen had only a single flower. I examined it carefully and found it very like a Citrus flower only very much smaller. Up to this time no taxonomic botanist had suspected that it could be a Citrus highly modified to grow in semiarid regions. It had been referred to the genera Triphasia and Atalantia. Strong efforts were now made to secure seeds of this plant, and in February, 1911, dried fruits containing viable seeds were introduced by Dr. David Fairchild from Queensland, Australia, and distributed under Plant Introduction number 29660; and before the end of March, the tiny seedlings had been approach-grafted successfully on Citrus. I created a new genus, Eremocitrus, for this plant, in May 1914, and a few years later, trees growing at the U. S. Experiment Date Garden at Indio began to fruit. When the seeds germinated, it was found that a considerable portion of them (roughly 20-25 percent) were hybrids due to the pollination by the desert lemon flowers from near-by Citrus trees by bees.

These hybrids grew much more rapidly than the unhybridized Eremocitrus seedlings and were found to make good rootstocks for oranges and lemons and to be able to grow in soils too saline or with too heavy a boron content to support orange or lemon trees grafted on any species of Citrus root.
The fat was now in the fire and I felt it necessary to start serious taxonomic studies on all the plants belonging to the Orange subfamily, studies which have occupied me for more than 30 years during which time I have published some 25 taxonomic papers with numerous illustrations and two general accounts of Citrus and related plants. The first of these general accounts was in Dr. L. H. Bailey's Standard Cyclopeda of Horticulture, Vols. 1-6, 1914-1917, consisting of 37 short articles discussing only the more important species almost all of them growing in the United States. Just a few weeks ago, after more than 9 years' work, I finished correcting the proof of the "Botany of Citrus and its Wild Relatives of the Orange Family" in 345 pages with 50 illustrations. This is a manual of all the species known of all the genera belonging to the Orange subfamily. This work will appear as Chapter IV of Volume I of "The Citrus Industry", under the Editorship of Dr. Herbert J. Webber and Dr. L. D. Batchelor, and will be published in 1943 by the University of California Press.

This is the first work since 1861 to discuss all the known genera and species of the Orange subfamily and their relationships. It includes 203 species belonging to 33 genera, included in two great tribes which we might call the Wampee tribe (Clauseneae) and the Citrus tribe (Citreae). It is difficult to graft Citrus fruit trees on plants of the Wampee tribe but it has been done on two different genera of this tribe in the Washington Citrus greenhouses. The Citrus tribe includes 28 of the 33 genera of the Orange subfamily and 124 of the 203 species. It is divided into 3 subtribes each containing 3 groups of genera. The cultivated Citrus fruits are all included in the subtribe Citrinae with 13 genera. Citrus has been grafted successfully on 9 of these genera which have been introduced into this country. Citrus has already been hybridized with every one of them, and probably can be grafted on the 4 genera not yet introduced.

Doubtless all of the 6 genera and 28 species comprised in the group of True Citrus Fruit Trees can be hybridized and, as a matter of fact, hybrids have already been made with all but one genus, Clymenia, recently discovered in New Zealand north of the Solomon Islands. As soon as the war is over it will be easy to secure seeds of Clymenia by air express and grow it in Coconut Grove where it can be tested as a rootstock and for hybridizing. The hybrids made in this country, most of them in Florida since 1927, have included numerous tangelos as well as tangors of very high quality but not more resistant to cold than the parent species, Citrus sinensis (orange), C. reticulata, (tangerine), C. paradisi (grapefruit). The limequat hybrids of the West Indian lime and one of the kumquats are very like limes in quality and much more cold resistant. The Lakeland limequat has grown and fruited very well both in Florida and in California. A complex hybrid like the Thomasville citrangequat, made by crossing a hardy citrange with a semi-hardy kumquat, is a promising subacid fruit for home gardens in warmer parts of the cotton belt in the Southern States.

The remarkable Altamaha (or Glenn) Citrangequat, a small but beautiful, fine-flavored, acid fruit, which first fruited in the Altamaha River valley in central Georgia, includes the blood of four distinct species of Citrus fruit trees, the sweet orange and the trifoliate orange (the parents of the citrange) and a kumquat and a sour mandarin (the parents of the calamondin). Three different genera, Citrus, Poncirus, and Fortunella are blended in this hybrid.

Altogether, first and last from 1893 to 1943, many tens of thousands of scrupulously safeguarded cross pollinations of Citrus species and wild relatives have been made under my supervision by my associates, H. J. Webber, T. R. Robinson, E. M. Savage, Eugene May, Jr., and by myself. Several thousand hybrids have been grown long enough to select the healthy vigorous ones, of which many hundreds have fruited and been carefully tested. No such array
of known hybrids between so many Citrus fruits and wild relatives has ever before been made in any country. Fortunately Mr. E. M. Savage is continuing this breeding work under the direction of Dr. Frank Gardner at Orlando, Florida, in charge of the Bureau of Plant Industry Horticultural Station (1).

There is a great future for such hardy hybrids and others now being tested for culture in home gardens north of the zone where oranges, grapefruit, lemons and limes are now grown. (See page 161).

The present showing as to the species of Citrus and of related genera of the Orange subfamily now growing in this country is as follows:

It is probable that most all of the species of the tribe Citreae are closely enough related to our Citrus fruit trees to be used as rootstocks although in many cases intermediate stocks may be necessary for good growth and long life of the Citrus scion. It has been proved repeatedly through numerous tests made by my staff of workers in the Bureau of Plant Industry that Citrus can be grafted successfully on all of the other members of the subtribe Citrinae available for trial. Severinia, Hesperethusa, Atalantia and Citropsis have some species on which Citrus grafts well. Citrus can be grafted also on some of the members of the subtribe Triphasiinae, but so far, such grafts have made only slow growth.

Citrus can be grafted on at least 2 genera of the Hard-Shelled Citroid Fruit Trees, belonging to the subtribe Balsamecitriinae. Citrus grows very well on the Philippine Tabog, Swinglea glutinosa, provided it is budded on young vigorous tabog seedlings, and provided the grafted trees are planted in a Citrus house where the soil is kept warm (not hot) all winter.

It is very possible the Philippine Tabog may prove to be a good rootstock for Citrus in tropical countries where the soil is warm all winter long.

Citrus has been grafted even on plants belonging to the tribe Clauseneae, plants very different from Citrus in flower and leaf characters. A grapefruit tree was grown for many years in the B. P. I. Citrus greenhouse at Washington, grafted on the Wampee, Clausena Lansium, but such grafts lived only when rough lemon was used as an interstock and only if a few short sprays of wampee foliage were allowed to develop at the top of the Wampee rootstock, just below the graft union. The grapefruit tree ripened fruit for many years, but remained dwarf with a bad union where the rough lemon graft joined the Wampee rootstock.

As there are 22 other species in the genus Clausena besides the Wampee, it is probable that many of these could support Citrus scions if proper interstocks were found.

If we assume that Citrus can be grafted on 9/10 of all of the 124 members of the Tribe Citræae, and on one-quarter of the 79 members of the tribe Clauseneæ, we would get the amazing total of 130 species of possible wild-relative rootstocks for our Citrus fruit trees!

By cross-pollinating these wild relatives of Citrus, it is certain that many hybrids of great vigor could be secured, some of which would make superior disease-resistant rootstocks for Citrus.

The hybridization of Citrus Fruit Trees and their wild relatives is by no means as easily done as the grafting of them. Hybrids have been made between some of the species of all the True Citrus Fruit Trees—Fortunella, Eremcocitrus, Poncirus, Microcitrus and Citrus (Clymenia is not yet available but probably could be hybridized with all of the genera just listed). These genera contain 29 species and an enormous num-
number of hybrids can be made between them. Complex hybrids, such as Citrangequats, Citrangequemos, Citrangeedges and Faustri-medins, which contain blood of three genera, are some of them of decided value and more of them should be made as soon as possible. There is every reason to expect the origination of more and more useful complex Citrus hybrids adapted to grow in regions too cold for pure Citrus varieties, and also other valuable hybrids able to withstand salinity or slight excess of boron in the soil. We now have enough material to work efficiently on such hybridizing—we did not have in 1893!

Census of the tribes, subtribes, genera and species of the Orange subfamily in the world and the number growing in the United States.

The Orange Subfamily AURANTIOIDEAE

33 genera, 24 (75.7%) in U.S.A.
203 species, 44 (21.7%) in U.S.A.

1. The Wampee Tribe (Clauseneae)

Very Remote and Remote Citroid Fruit Trees

Subtribe I. Micromelinae.
Micromelum

Subtribe II. Clauseninae.
Glycosmis
Clausena
Murraya

Subtribe III. Merrillinae.
Merrillia

5 genera, 4 (80%) in U.S.A.
79 species, 6 (4.8%) in U.S.A.

9 species, none in U.S.A.

Remote Citroid Fruit Trees

35 species, 1 (2.3%) in U.S.A.
23 species, 1 (4.3%) in U.S.A. (G)*
11 species, 2 (18.2%) in U.S.A. (G)

Large-fruitied Remote Citroid Fruit Trees

1 species, 1 (100%) in U.S.A.

2. The Citrus Tribe (Citreae).

Citrus and Citroid Fruit Trees

Subtribe I. Triphasiinae.
Minor Citroid Fruit Trees
Wenzelia
Monanthocitrus
Oxanthera
Merope
Triphasia
Pamburus
Luvunga
Paramignya

Subtribe II. Citrinae.
Citrus Fruit Trees

Group A. Primitive Citrus Fruit Trees
Severinia
Pleiospermium
Burkillanthus
Limnocitrus
Hesperethusa

28 genera, 20 (71.4%) in U.S.A.
124 species, 39 (31.6%) in U.S.A.

8 genera, 4 (50%) in U.S.A.
46 species, 4 (8.7%) in U.S.A.

9 species, none in U.S.A.
1 species, none in U.S.A.
4 species, none in U.S.A.
1 species, none in U.S.A.
3 species, 1 (33.3%) in U.S.A.
1 species, 1 (100%) in U.S.A.
12 species, 1 (8.3%) in U.S.A.
16 species, 1 (6.6%) in U.S.A.

13 genera, 9 (70%) in U.S.A.
65 species, 29 (45%) in U.S.A.

5 genera, 2 (40%) in U.S.A.
14 species, 3 (21.4%) in U.S.A.

6 species, 2 (33.3%) in U.S.A. (G)
5 species, none in U.S.A.
1 species, not in U.S.A.
1 species, not in U.S.A.
1 species, 1 (100%) in U.S.A. (G)
<table>
<thead>
<tr>
<th>Group</th>
<th>Fruit Trees</th>
<th>Genera</th>
<th>Species</th>
<th>In U.S.A.</th>
</tr>
</thead>
<tbody>
<tr>
<td>B. Near-Citrus</td>
<td>Citropsis</td>
<td>2</td>
<td>11</td>
<td>(18.2%)</td>
</tr>
<tr>
<td></td>
<td>Atalantia</td>
<td>2</td>
<td>11</td>
<td>(27.3%)</td>
</tr>
<tr>
<td>C. True Citrus</td>
<td>Fortunella</td>
<td>4</td>
<td>2</td>
<td>(75%)</td>
</tr>
<tr>
<td></td>
<td>Eremocitrus</td>
<td>1</td>
<td>1</td>
<td>(100%)</td>
</tr>
<tr>
<td></td>
<td>Poncirus</td>
<td>1</td>
<td>1</td>
<td>(100%)</td>
</tr>
<tr>
<td></td>
<td>Clymenia</td>
<td>1</td>
<td>1</td>
<td>not in U.S.A.</td>
</tr>
<tr>
<td></td>
<td>Microcitrus</td>
<td>6</td>
<td>4</td>
<td>(66.7%)</td>
</tr>
<tr>
<td></td>
<td>Citrus</td>
<td>16</td>
<td>11</td>
<td>(68.7%)</td>
</tr>
<tr>
<td>Subtribe III</td>
<td>Swinglea</td>
<td>1</td>
<td>1</td>
<td>(100%)</td>
</tr>
<tr>
<td></td>
<td>Aegle</td>
<td>1</td>
<td>1</td>
<td>(100%)</td>
</tr>
<tr>
<td></td>
<td>Aegle Maros</td>
<td>4</td>
<td>2</td>
<td>(50%)</td>
</tr>
<tr>
<td></td>
<td>Aeglopsis</td>
<td>2</td>
<td>1</td>
<td>(50%)</td>
</tr>
<tr>
<td></td>
<td>Balsamocitrus</td>
<td>1</td>
<td>1</td>
<td>(100%)</td>
</tr>
<tr>
<td></td>
<td>Feronia</td>
<td>1</td>
<td>1</td>
<td>(100%)</td>
</tr>
<tr>
<td></td>
<td>Feroniella</td>
<td>3</td>
<td>2</td>
<td>(66.7%)</td>
</tr>
</tbody>
</table>

* In this census tabulation the letter (G) following a genus means that a species of it has been grafted on a True Citrus Fruit Tree or vice versa; (H) indicates that a species has been hybridized with a True Citrus Fruit Tree.

Citrus relatives with edible fruit new to Florida

**Indian Baelfruit**

The most important of these new relatives of Citrus is the Baelfruit (Aegle Maros) of India. It is the most highly esteemed fruit of the Orange subfamily in India and has been cultivated for ages. It is so different from Citrus in foliage, fruit flavor, etc., that at first it is hard to realize that it is a member of the tribe Citreae. It has a large, broadly oval or subglobose fruit, 4—6 inches in diameter, with a shell almost as hard as a coconut. Inside this hard shell there is a yellowish brown substance filling the broad spaces between the 10—15 narrow cells full of hairy seeds in a mucilaginous fluid. The yellowish brown filling between the narrow segments is more like orange marmalade than any fruit.

The baelfruit may be likened to a jarful of marmalade all ready to eat as soon as you cut, saw or break the shell open. It is said by experts to have valuable medicinal qualities and a standard English book on Indian horticulture states that very few English residents ever eat baelfruit unless ordered to by their physician, but that then almost all of them continue to eat baelfruit the rest of their lives.

Doubtless valuable vitamins account for its habit-forming quality just as the flavone glucosine aurantamarin found in the white peel of the Seville orange makes orange marmalade a “must” breakfast dish for the British and more and more Americans.

Until a few years ago the baelfruit refused to fruit anywhere in continental United States, but in recent years, apparently because of the increasing use of zinc salts for orchard trees, especially Citrus fruit trees, the Baelfruit has begun to fruit freely in southern Florida, and now there...
are many trees at the Sub-Tropical Station of the University of Florida at Homestead and at Dr. Fairchild’s Kampong which fruit freely every year.

As long as the baelfruit did not fruit, it was merely a botanical curiosity. Now that most of the trees in Dade County, Florida, are fruiting freely, it promises to become a striking and popular new subtropical fruit. Dr. Fairchild and I, as well as a few others who have tested the fruits, find they vary greatly in size and flavor. Apparently all the trees now growing in this country are seedlings with small, or at best, medium-sized fruits. In India the best grafted varieties bear fruits 6 or 7 inches in diameter. Large baelfruits are much easier to eat than small ones, as the edible portion of the fruit is composed of the greatly swollen membranes which separate the locules of the fruit. The homologous membranes are as thin as paper in an orange or grapefruit, but up to an inch or more thick in a large baelfruit, which makes them easily scooped out with a spoon.

The baelfruit has no close relatives in Asia, but no fewer than seven species belonging to three genera are found growing in tropical Africa from sea level to 3000 feet altitude. One of these trees, the Nigerian powder-flask fruit, *Afraegle paniculata*, grows vigorously and fruits freely in south Florida and Mr. Jordahn, the superintendent of Col. R. H. Montgomery’s Arboretum at Coconut Grove (where one of the finest collections of Citrus relatives in the world has been built up) grafted the baelfruit on young seedlings of *Afraegle paniculata* in 1941. Late in May, 1943, Dr. Fairchild and I inspected them and were surprised to find veritable young baelfruit trees with a branched top 5—7 feet high, with abundant flowers on the upper branches. There is another African species of *Afraegle*, *A. gabonensis*, which also grows vigorously and fruits freely in Coconut Grove, and Dr. Fairchild has already approach-grafted the baelfruit successfully on it in his Kampong, where so many Citrus varieties and Citrus relatives thrive to perfection.

There is every reason to expect the baelfruit to thrive in Florida and to become a prized breakfast marmalade, picked in a pot right from the tree. The striking variability in botanically important leaf and twig characters of the baelfruit trees now growing in Florida makes it probable that there must have been originally (and perhaps still are) several different species of *Aegle* growing wild in the foothill regions of the Himalaya Mountains in northern India. Seeds of fruits gathered from these different wild species during past ages and planted side by side in dooryard or village gardens all over India led to the production of hybrids through cross-pollination by insects and gave rise to the present exceedingly variable baelfruit trees found there. It is probable that careful search in the regions of northern India would result in finding distinct species which could be used by plant breeders to produce new and superior baelfruit varieties with completely deciduous leaves and hence able to endure severe winter cold. Even now some baelfruit trees are deciduous in India and are able, when leafless, to endure temperatures as low as 17.5° F. without injury.

**Wampees, Chinese and Indian**

One of the favorite fruits of the two southeastern provinces of China is the Wampee, *Clausena Lansium*. It has large leaves and does not look at all like an orange tree; its huge clusters of flowers are borne at the end of the branches and numerous fruits looking very like pale, or even white, loquats, are produced. These fruits are juicy and high-flavored, but vary greatly in size and acidity. Up to now, only seedling Wampees have fruited in Florida and all of them are, I believe, very acid. A recently published monograph describing 7 cultivated varieties of the Wampee grown in the vicinity of Foochow, China, lists 3 sour varieties, 3 sweet subacid and one highly flavored sweet varieties. Some of these varieties are as much as 1⅛-inches long and % of an inch wide,
The harvesting of Wampee is very easy because of the fact that they are borne in clusters at the end of the branches. I have seen one tree in Florida where the fruits were densely crowded and were almost seedless, a few dried on the tree. Years ago we were able to graft Wampee on Citrus stock which dwarfed the tree and would lend itself to the Chinese system of growing Wampees on potted plants which could be placed on the table in front of the customer, so he could pick them straight from the potted plant.

The Wampee is especially interesting for further trial in Florida. Another species called Indian Wampee, Clausena dentata var. dulcis, known to the natives of Anamalai Hills in Madras Presidency as “Mor Koorangee”, has globose fruits the size of a large cherry with very delicious flavor. The tree attains a height of 30 feet and is several feet in girth. It grows at an altitude of 1000 to 4000 feet, flowers in April and produces fruits in May and June. This will, without doubt, be introduced from India as soon as war conditions permit, and hybrids will be made with the Chinese Wampee as soon as the Indian Wampee is old enough to flower.

Another edible species of this same genus, Dr. Henry’s Wampee, the small-fruited hardy Clausena dentata var. Henryi, native around Ichang in central China and said to be cultivated in Hupeh Province, would probably hybridize with the Indian Wampee as both are varieties of the same species, Clausena dentata. Such a hybrid would probably cross more easily with the Chinese wampee than would the unhybridized Indian Wampee, just as the kumquats (Fortunella sp.) are almost impossible to hybridize with the trifoliate orange (Poncirus) but cross freely with the citrange, which as can be seen at a glance, contain the blood of trifoliate orange as well as that of the sweet orange.

To summarize the results of a search for the cultivated Citrus fruits and their wild relatives of the Old World, it appears that many of the cultivated Citrus fruit trees are accidental hybrids which have arisen in Chinese or other Oriental village gardens during the three or four thousand year period in which Citrus fruits have grown there.

We now have available for use in the New World also many species of Citrus and of closely related genera not found in China but native to the East Indian Islands, New Guinea and Australasia. By using them we have already bred new Citrus fruits of high value, and new rootstocks as well.

Citrus fruit trees can be grafted on a great number of wild relatives, some of them so remote botanically from Citrus as to be difficult if not impossible to hybridize. Several such remote wild relatives have already been tested for many years and have made excellent rootstocks for Citrus. Other new rootstocks obtained by hybridizing Citrus with species of other genera not too distantly related have already proved to be of high value to our Citrus growers.

There are several new fruit trees not closely related to Citrus that are promising for culture in this country, such as the baelfruit with a tasty marmalade-like pulp enclosed in a hard shell. The Chinese and Indian Wampee and their hybrids may become valuable fruit trees in Florida and Puerto Rico.

Many of the newly introduced species of Citrus and its wild relatives, and hybrids which have been made with them in this country, are plants of great ornamental value destined to have a place in subtropical gardens for avenues, hedges or border plants.