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REMINISCENCES OF EARLY PLANT INTRODUCTION WORK IN SOUTH FLORIDA

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Coconut Grove

To look back fifty years and put into words anything but tiny pictures of one's life is almost an impossible undertaking. The difficulty of the task is not, as I once thought it would be, made lighter by accumulations of written notes and photographs. Here in The Kampong the shelves are filled with albums and travel reports dating back to the earliest days of my visits to Florida. Hundreds of tiny red note books record the events of each week. The printed Inventories of Plant

Introductions cover an entire shelf and in them I can find the stories of over 100,000 shipments of seeds or plants which since 1898 have come into America to contribute their part towards the making of a different agriculture from that of the Old World which traces its history back to the men and women of the Stone Age.

What he was like we do not exactly know—the man and his wife who came from somewhere across the land bridge which connected Asia and America, but we do know that he brought with him his dog, for dog skeletons are mingled with his own in the caves and other remains of his early occupancy of this continent. He was a hunter. That he did not bring seeds of any cultivated plants is probable, for when Columbus landed there were nowhere to be found cultivated crops such as had come down through the ages of European history and were the basis of European cultures such as rice, wheat, barley, etc.

In order to give a touch of perspective to this story of a plant introduction garden that was started in a little clearing in "Brickell Hammock" on Biscayne Bay, permit me for a moment to throw on this word screen a few records from the vast literature of agriculture which stretches back to the hieroglyphics of ancient Egypt more than five thousand years ago.

The plants of which we eat the roots or the leaves or the fruit represent objects so old that their beginnings as integral parts of the living bodies of what we call mankind date back beyond the dawn of any written history.

The menu of the average person who sits down today to fill his stomach with those proteins, oils, and carbohydrates out of which his body is formed, is something that has come down in a continuous chain of living history from the days of the men of the Stone Age, and poor indeed is the imagination of anyone who fails to catch the tremendous romance which is in the commonest foods that come upon our tables.

To enjoy an onion soup and not know that the native home of the onion is now unknown; that the Egyptian rulers engraved on the Great Pyramid the sum of money which was expended by them for onions, garlic and radishes to feed the thousands of

slaves who built it; that the traditions of the Orient report that onions sprang up from the spot where Satan put his right foot and garlic from where he put his left one when he stepped out of the garden of Eden: is to throw away a bit of romance quite as thrilling as some which the newspapers attempt to charm us with every day.

Spinach, about which there are hundreds of wise cracks in the funnies, seems to have been used by the Chinese in the seventh century; was eaten by the monks of Europe, on fast days only, in the fourteenth century; is mentioned in a cook book compiled for King Richard the Second in 1390; was well known in England by the middle of the sixteenth century; and as early as 1806 was known in America and was represented here by three varieties.

The Celts and early Germans, far back into those days when they wore skins and lived in the forests of Northern Europe, seem to have first learned to grow the turnip, a wild plant in Russia and Siberia. It was known to the Flemish by 1500 but not in England until fifty years later, when King Henry the Eighth served them baked in the ashes or roasted and at the same time used their young shoots as a "salad."

Cabbages grew wild on the chalk cliffs of the seacoast of England, occur wild today on the coasts all the way from Greece to Denmark, and are still eaten in their wild state at Dover on the coast of the English Channel. It is today one of the most generally cultivated vegetables of temperate climates, but it was not known to Cato, Theophrastus or Dioscorides, even though the Ancient Greek fables deduce its origin from the Father of the Gods. As late as 1649 it was scarcely known in Scotland and is said to have been carried there by Cromwell's soldiers. Kale, however, was probably the form of cabbage known to the ancients.

The cucumber has doubtless been cultivated in Western Asia for more than 3000 years. It found its way into China at least 140 years before Christ. The ancient Greeks and Romans knew it and Pliny mentions even "forced cucumbers." The Emperor Tiberius, says this same authority, had cucumbers on his table every day in the year. Charlemagne ordered cucumbers planted in his royal estates. It was said to be common in England at the time of Edward the Third, in 1327, but during the wars of the houses of York and Lancaster its cultivation was neglected and it was only after two or more centuries that it was reintroduced. In many countries the cucumber is eaten out of hand as one would eat an apple or pear.

Lettuce appeared on the royal tables of the Persian Kings 800 years before Christ; Aristotle praised it (356 B. C.); Pliny enumerated nine varieties of it in 79 B. C.; the Chinese knew it in the fifth century of our era; Chaucer, "well loved his garlic, onions and lettuce." It got to Haiti as early as 1565, only 73 years after Columbus' first voyage.

Celery, or "Smallage" as it was called, is a wild plant of the marshes from Sweden to Algeria. It occurs in Egypt, Abyssinia, Baluchistan, the mountains of British India, and also in the islands of Tierra del Fuego and New Zealand. It is the "Selinon" of the Odyssey and was considered by the ancients rather as a "funereal" or ill-omened plant than as an article of food. By the early modern writers it is mentioned only as a medicinal plant. Not until the beginning of the eighteenth century is celery seed mentioned as offered for sale in England.

Most people know that the tomato was extensively cultivated in Peru long before America was discovered, and represents a domestication of perhaps 2000 years. Not until over half a century had passed after Columbus' first voyage, however, does the tomato appear in the literature of Italy. By 1570 it appears to have been known in Europe; by 1596 it seems still to have been grown as a mere curiosity in English gardens; but by another century and a half (1752) it was much used for soups there. It was not until nearly a century later, however, that it was well known to North America. In 1834 it was still almost unknown, the seed firm of Thorburn offering for sale only a single variety. By 1835 someone was growing it in the state of Maine, for the "Maine Farmer" was recommending it "for everyman's table."

The remains of carbonized apples have been found in the ashes of the Lake Dwellers of Switzerland, and these resemble the wild apples still growing in the mountains. They were raised in the gardens of the Phoenicians. Fifty-six sorts were known by Cosmos III, the Grand Duke of Tuscany, as early as 1670. By 1697, 83 varieties were cultivated by the nurseries about London, and according to Hartliff, 200 varieties were known in 1651. Seeds of the apple were included in the famous memorandum of articles to be sent to the Massachusetts Company in 1629, and it is said that Peregrine White, the first European child born in New England, planted apples at Marshfield, near Duxbury, Massachusetts, in 1648. The great horticulturist Downing in 1866 listed 643 varieties of apple in his volume on fruits.

The quince grew wild in the Caucasus and was dedicated to the Goddess of Love by the ancients, having been brought to Italy from Kydon, a city in the island of Crete. Charlemagne enjoined the culture of the quince in France as early as 812, but perhaps the very first quince served at a banquet in England was not until 1446. This fruit reached America in colonial times, since its seeds were mentioned in the memorandum of March 16, 1629, above mentioned.

The pear, a native of Northern Asia, Europe and the Himalayas, has been in cultivation since ancient times. Neolithic man probably ate it, for remains of it have been found in the charred ruins of the Swiss Lake Dwellers. Like the apple it was cultivated by the Phoenicians and the growth of varieties is indicated by the fact that Theophrastus knew only three kinds, Cato knew six sorts, Pliny knew 41, Palladius knew 56, and Targioni-Tozzetti reported the Duke Cosmos III as having 209 sorts in Tuscany. Whereas in Great Britain only 64 kinds were known in 1640, by 1842, 700 varieties were recorded as distinct by the Horticultural Society Garden tests of that period. In America, pears were planted as early as 1647, one being planted by Gov. Prince at Eastman, Massachusetts, in 1640, and the "Stuyvesant" pear planted in New Amsterdam, was said to have been imported from Holland in 1647. The American Pomological Society recommended 115 varieties as worthy of cultivation as early as 1879.

Even such a sour fruit as the currant has a rather long history, for in 1597 it appeared on the London Market, according to Gerarde, and Camerarius gave directions for sowing the seeds of the wild currants in gardens which procedure may have led to the origin of cultivated sorts. This was in 1586. In 1601, Clusius speaks of a very sweet variety which he saw growing wild in the Alps. When it came to America I do not know, but Downing lists 25 varieties as early as 1866, all but 12 of which seem to have been discarded by 1885.

When we come to mention the Cereals, those grain crops upon which man seems to have leaned heavily for his food support in the early years of his emergence from the Late Stone Age, we are confronted on every side by vistas of many thousands of years. Barley was a grain crop in Egypt in the Fifth Dynasty, over 2440 years before Christ, and together with hops was made into beer from the remotest times. Wheat kernels have been found in the debris left by the Lake Dwellers, and stands of it were figured as a cultivated crop by the Egyptian artists of the Fifth Dynasty.

The origin of maize, a South American plant, is still a puzzling question, for there appears to be no wild plant like it in existence today. This leads to the suspicion that it originated as a hybrid of certain grasses and even one of these seems to have become extinct. Maize is a very old cultivated plant. I have read that the great Humboldt records that a Toltec leader named Xinhlatlo is given the honor of reviving the culture of this marvelous food plant sometime about 1250 A. D., when its culture and the practice of making corn bread were in danger of being lost. Is it imaginable that the corn plant might have become extinct?

But I will not tire you with a recital of the origin and histories of these cultivated plants, fascinating as they are to me because of their bearing upon the general question of Plant Introduction. I have told them with the object of emphasizing two points, viz.: the curious permanence of this stream of living substance, these edible plants upon which we humans subsist; and the slowness with which any new plant species comes to be incorporated in the select crowd called the "cultivated plants of mankind."

It is evident that whereas centuries have passed before a new application for admission to the circle of the elect can be said to have become established, once in that circle, centuries may come and go before it in its turn is left behind and others take its place in the slow progress of mankind toward a new setup of cultivated food plants.

As I review, therefore, the results which are apparent after forty years have gone by, of the attempts which my associates and I have made to induct into the sacred circle of acceptable food and otherwise useful plants, species that were strange to the American public, I get comfort from the thought that the process seems always to have been an extremely slow one, involving not decades but often centuries for its accomplishment. There was no particular reason, for example, why the potato which is now acknowledged to be a very superior vegetable should have been characterized by Mortimer in his *Gardeners Kalendar*, a century after Raleigh grew it in 1585 on his estates in England, as "near the nature of the Jerusalem artichoke although not so good or wholesome, but it may prove good for swine," and by Miller in 1754 as "despized by rich and deemed only proper food for the meaner sorts of persons." I say no reason. I mean no reason other than the "unreasoning prejudice of taste." Nearly a century and a half elapsed between the time of the potato's introduction and culture in Italy in 1596 and the time of its cultivation in the Highlands of Scotland, for example—a time period almost as great as that stretching back from this present moment to that of the signing of the Declaration of Independence. I realize that someone will say that the slowness of transportation in those days will explain this. If these were true, then the introduction of a new and excellent fruit or vegetable should be, let us say, twenty times as fast now as it was then, in making its way with the public. I think this is much too simple an explanation, for it does not take into account the resistance to the introduction of any

new food which seems to be an instinctive part of the behaviour of the human animal. This resistance to change is, I imagine, about as strong now as it was in the sixteenth century, at least when it comes to such things as food. So I find at the close of this nearly half a century of effort to get new vegetables and fruits eaten by the Americans of my acquaintance, that many have not yet learned to like the superb Mango, and about as many have still to acquire a taste for the delicious Avocado, while the Dasheen and Yautia and the Canistel and the Guanábana, not to mention the sprightly flavored Tangelos of Swingle, are lagging behind in a way that would appear to be quite characteristic of fruits and vegetables that are trying to climb up into the ranks of the elite. I never saw Florida until I had visited the tropics of the Old World and, strange as it may seem, I saw my first orange on the shore of the Bay of Naples. It was while there that I got those stirring letters from my old friend, Walter T. Swingle, all of which I still have. Let me read from one written from Eustis on December 22, 1893:

"My dear Friend Fairchild:

"I was overjoyed to have such a full letter from you as your last. I received it the very day I arrived in Eustis after a 29-hour ride from Washington. I was beside myself with joy to reach this delightful climate again. Before I had left Washington, snow had laid a week without melting and I had found Waite's little overcoat rather too thin. Here mocking birds were singing—I had never known before what a cheer they give—and there was light enough in one day to last Washington a week.

"The blue lakes and sky, the lovely orange trees laden with ripe fruit, the mild weather, all seemed too good to be true. I had never before left the North in winter for the South and did not therefore fully realize what a difference there was.

"I have found Webber hard at work actually growing fat under the exhausting heat of summer! The laboratory with its well laden periodical table and clean work tables seems too good after having worked at the Division.

"We have been very busy writing our part of the annual report and I have not been able from this cause to answer your letter sooner. We have made practically three reports this year, one to the State Horticultural Society in April, one when Galloway thought the Division was going in July, and one now. I am heartily tired of such work.

"We are having splendid success in getting cooperation of growers—we now have experiments going in eight groves, and in many cases the owners furnish the labor necessary.

"I am now working to have a permanent endowment fund for the laboratory. I shall get small groves donated free in perpetuity to a board of trustees—the money to be used in studying oranges. Probably the first garden of this character will be at Altoona where Mr. Cunningham thinks he can secure a good four-acre piece, fenced, cleared and planted to old stocks. In a few years the income would render the laboratory independent of any government or state aid and in any event furnish a fund of pocket money easily accessible."

Then followed an account of plans for the acquisition of an orchard and the experiences of his friend Cunningham, who had made a good thing in oranges and was selling his crop to commission men on the open market at a good profit even though it was a time

of serious depression. He was then artificially sweetening his oranges on the trees by means of a special spray.

The report which Swingle referred to as having been made to the Florida Horticultural Society will be found in the Proceedings of that year's meeting, held at Pensacola on April 11, 12, 13, and 14, 1893—forty-five years ago.

This report by a young man then 22 years of age was a remarkable one and deserves to be especially mentioned here, as it had a direct bearing upon the later course of plant introduction in America.

The published record reports that: "Prof. W. T. Swingle read the following paper on, "Some Citrus Fruits that should be introduced into Florida." His leading paragraph outlines the situation as it appeared 45 years ago to the mind of a mere youth from the plains of Kansas—for Swingle was a classmate of mine in the Kansas State Agricultural College in Manhattan. It begins:

"The advances made during recent years in horticulture are, largely due to the introduction of new varieties of cultivated plants or to the improvement of old ones by careful selection and hybridization. When we consider the great changes the introduction of a single good variety may work in the horticulture of a whole district or even whole states, it seems curious, to say the least, why more effort has not been made to procure all known varieties and test them thoroughly in each region.

"A brief sketch of the introduction of citrus fruits in Florida may not be amiss as an example. The sour orange (*Citrus bigaradia*) was probably introduced by Spaniards at about the time of the discovery of America. Afterwards sweet oranges, limes and shaddocks were carried to the West Indies, and from there the sweet orange probably came to Florida. For the first forty years of modern citriculture in this State, practically only a single variety of sweet orange was grown.

"The only lemons known for years were the 'Florida rough' and the Sicily.

"Probably today we would have a scant dozen good varieties of citrus fruits in America, if General Sanford had not by his liberality inaugurated a most extensive introduction of citrus fruits from all parts of the world, but particularly from Italy.

"Rev. Lyman Phelps, one of our members, assisted and advised Gen. Sanford in these importations. Hundreds of varieties and strains were introduced, and it is probably no exaggeration to state that two-thirds of our desirable varieties and a goodly share of those grown in California were brought here and first tested by Gen. Sanford."

There followed a fascinating account of certain citrus fruits and their relatives which Swingle had discovered in the literature and which he thought worthy of introduction, such as *Murraya exotica*, *Clausena wampi*, *Clausena wildenovii*, *Feronia elephantum* and *Aegle marmelos*, some of which have found a congenial home in South Florida since that time.

It was his experience in the little laboratory at Eustis, which he shared with his friend, H. J. Webber, which made him interested in South Florida and led him in 1897 to take the first steps in the establishment of a Sub-Tropical Laboratory and Garden on Biscayne Bay. As mentioned in my paper read last year at the Ocala meeting of this Institute,

Swingle surveyed the land and took title to it in the name of the Government but to our bitter disappointment the legal experts of the Department refused to accept the title, preferring to take a ten-year lease on it. This error on the part of the experts led to no end of difficulties. This was the first field laboratory of any kind that the Federal Department of Agriculture had established anywhere in the United States outside of Washington. Furthermore, these experiences at Eustis made Swingle enthusiastic in his support of the general project of Plant Introduction, and it was as much his conviction of their possibilities as it was my friend Mr. Lathrop's belief in them and Secretary James Wilson's interest which led to the initial step being made which originated the Section of Foreign Seed and Plant Introduction — the "S. P. I.," as it came to be called later on.

I have in my collection of letters of that time one from Webber to Henry M. Flagler and in it he outlines the separate activities of his two friends, Swingle and Fairchild, who he expected would work together with him in the introduction of suitable plants from all over the world. It was written in 1897 when I was in the tropics of the Orient and I never saw it until long after the starting of the little Section of Foreign Seed and Plant Introduction.

My own first visit to Florida was in 1898, when I went to Miami to see Webber who was then in charge of the garden of six acres, which Mrs. Mary Brickell had offered to the Government, and of the frame laboratory, which he was erecting on an acre of land that was washed by the waters of Bay Biscayne, and for which the funds had been given by Flagler.

When I arrived at the tiny railroad station which then was near the new Royal Palm Hotel, now long since a thing of the past, I saw around me little but pines, with here and there a few wooden houses scattered about, for the population then was about 4000 for all of Dade County. I was with James Ingraham, the Vice-President of the Florida East Coast Railroad, and after lunch he took me to call on Mrs. Julia D. Turtle, who lived in a little house near the North Bank of the Miami River, just across from Brickell Point where Mrs. Mary Brickell had her home and where earlier the old store stood from which Mr. Brickell sold groceries to the Indians.

There were few other houses about. Mrs. Tuttle had some red hibiscus bushes around her house and some sisal plants and a few other shrubs, as I recollect. She served tea and talked with Ingraham about the railroad. In those days the coming of the railroad was the great event, for it was supposed to bring with it everything in the way of comfort and civilization that the country could provide.

The following morning I hired a colored man to drive me far out along what was then little more than a trail through the hammock that stretched in one unbroken mass for a mile or more south of a new bridge across the Miami river. I had heard about this "tropical jungle" from my friend, Mrs. Bryan Lathrop, two years before as we sat on a hotel porch overlooking the volcano Gedeh in West Java. She asked me if I had seen the marvelous jungles of South Florida and named in particular this hammock which she had driven through going to Coconut Grove.

It struck me as a piece of splendid tropical forest but without the tall trees and immense climbers of Java. I drove on in the morning sunlight, becoming more charmed by the wildness of the scene as I drove, and soon came to a tiny clearing on the Bay side of the road where a frame building was being erected. Beyond the framework of the

building I could see the waters of Biscayne Bay, for the acre of land that Henry Flagler had given to the Government ran from the road down to the shore. A pier of rock was built from which it was expected that the botanists who were to work in the laboratory would have access to the water, and perhaps some day there would come a "Biological Station" such as had been built on the Bay of Naples and in which I had spent several months in 1894-95.

It was with an enthusiasm of which, alas! I am no longer capable that I brought my kodak to bear on that little laboratory. I seemed to see a great center of biological research growing up there, and felt that I was making a historical photograph which years later, on some such occasion as this perhaps, I would show with pride and have for comparison with it one of a marble palace of research. Alas! How little I knew about the drift of things in the then wilderness of South Florida.

I went across the road and found Webber there among some scattered leggy trees and shrubs that had just been planted out in the chalk-white rocky soil that had been laid bare by the cutting off of the Gumbo Limbo and other hammock trees. A small wooden dwelling house had been erected in one corner of the six-acre tract which Mary Brickell had offered to the Government but which, as I have said, had been refused by Uncle Sam, who at that time was opposed to the accepting of any land from anybody. Those were non-paternalistic days in Washington.

The prospect was anything but promising. The soil seemed to be "all rock." There was a feeling of aridity about the situation. I didn't like the glare of the white sand and rock nor the looks of the starved little plants. But there was Webber full of the optimism of one who had a better knowledge of what could be done with the land than I had, and bursting with plans for the development of the laboratory across the road for which Flagler had given him a thousand dollars.

He had begun to breed and select guavas and had some promising new varieties already coming on of which he was proud. Pineapples were on the program too, and I was to see later thousands of little pineapple seedlings filling the propagating houses in Washington and subsequently to taste the largest and most delicious pines I have ever tasted that came from the pineapple patches in Florida where Swingle and he tested out these thousands of seedlings. Alas! Where are those pineapple sorts now? Gone with the winds of time and change.

Webber wanted me to see the possibilities of South Florida, for he imagined I was to "scour the world" for plants for this little garden. We all had large plans in those days and a free hand.

I drove to Cutler to see a Mr. Boggs and Dr. Richmond, both with a love of plants in their make-up. The former came out of the woods in his work clothes and so impressed me that I have never forgotten his image as he stood there in the sunlight and talked of mangos and avocados and asked me a lot of searching questions about the tropical plants I had seen in my travels in Java. There was in a clearing near Cutler a small tree of the Canistel (*Lucuma nervosa*), and since I had never seen the species I was interested to taste it, and found it, as most people do at the start, a curious but not unpleasant fruit. I have since become very fond of this fruit and have trees of it all over The Kampong now. My best seedling bears fruits that are keenly appreciated by my

northern visitors during December and January, and I have another seedling which holds its fruit into March, but there are still others with fruits that actually stink and are offensive.

Dr. N. S. Richmond had some papayas, little starved things each with a single large fruit on it, and I recall especially a single seedling alligator pear. There were no budded trees of this fruit in existence then and I had previously seen the fruit of the alligator pear only in Hawaii in 1897, where Gerrit P. Wilder was experimenting with some seedlings on his place in Honolulu. Dr. Richmond seemed a good plant experimenter and I made friends with him at once, and when I got back to Washington I began sending him all sorts of plants. How little I dreamed then, however, that he would show me later the Jumbie bean (*Leucaena glauca*) in his yard and call my attention to its possibilities as a weed. Still less did I imagine that the Sausage Tree I sent him, and which he gave away to a lady friend, would be today the center of a mob of tourists in automobiles, and that its present owner, Mr. Black, would have exploited it and made it one of the most famous trees in the world from the point of numbers of its admiring visitors. But I think I did believe that from the papaya something of great value would emerge, for I started at once a campaign of introduction, getting seeds from every corner of the tropical world, until we had in the little garden some eighty kinds or strains or seedlings of different character. I will not enter here into the complexities of this amazing species—it is the fastest growing tree I know of in the world, and one which produces an amazing proteolytic enzyme in its latex, which, according to Dr. Bergmann of the Rockefeller Institute, seems destined to play a great role in the modern studies which are going on in the biochemical laboratories of this country to determine the structure of the protein molecule. These researches are destined; it would seem, to open the door into a whole new world of possibilities, the extent of whose application still lies beyond our imagination even. The first step into this field lay in the clarifying of beer by means of the papain in its dried form, and Dr. Max Wallerstein, the discoverer of this action of the juice of the papaya, came at my suggestion to Miami in 1914 and we planted for him the first orchard of papaya plants ever set out here. When it transpired that the labor required would make the venture unprofitable, his friend Hagemann, a graduate of Princeton, went in to the growing of these fruits for the table, picking out one of the loveliest hammocks in South Florida for the purpose. What a scolding I got from my old friend, Mr. Lathrop, for aiding and abetting Hagemann to destroy the great oak trees in that hammock. The site of that lovely spot under the branches of whose oaks Hagemann grew his delicious papayas has been swept by storms and bears little resemblance to what it was then.

My first stay in the Biscayne region was short, but it was long enough to convince me that there was, down here on the shores of this Bay, a zone in which some of the gorgeous tropical fruits and flowering trees I had seen in Java and elsewhere could actually be grown. I never stopped to consider that this area was small, and did not apparently dream of the resistance I would encounter on the part of the various Secretaries of Agriculture who would have control of the funds of the little Section and who, strangely enough, were almost without exception to come from the "Corn and Hog Country" of the Great Plains states where I had spent my own boyhood. Thanks to the fact that no secretary can watch very closely what goes on under his very nose, my associates and I slipped in all sorts of tropical seeds and plants from all over the world

and sent them to Miami and recorded them, along with the hardy grains and alfalfas and Brome grasses and hardy elms which we brought in from the wilds of China and Siberia. Hardier varieties of plants which would grow in what has become the "Dust Bowl" of today were considered one of the chief objects of plant introduction in those days. I sometimes wonder now, perhaps idly, whether the encouragement which the introduction of those so-called hardy varieties gave to the early settlers of the Dakotas was entirely justified in the light of subsequent developments. With the melting of the gigantic ice caps that cover the poles, the highly speculative question has been raised by Humphreys, I believe, as to whether the Great Plains are not in for a very slow but steady decline in their average rainfall as the centuries pass.

Soon after this visit to Biscayne Bay in 1898 I went on my first expedition after plants with Mr. Barbour Lathrop of Chicago, who, coming to Washington a year after the little Section was started, convinced me that I knew nothing about the world which I had set out to "comb for plants," as the newspaper men were wont to say.

Since the tropics were fuller of plants than the arctic countries and since the arctic could not be explored except during a few months in high summer, most of our travels were in the warmer parts of the globe and I got interested in those plants which I saw were being used by the peoples of the tropics. The result was that a stream of tropical plants began pouring into the little garden on Brickell Avenue. Naturally enough the majority of these perished, for in those pioneer days the technique of planting out little seedlings in the rocks of the Miami region had not been worked out. It took years to prove that plants should first be grown in good sized boxes. The death roll became something quite appalling. I recall asking for a "show-down" from P. H. Rolfs, who was then in charge of the laboratory of plant pathology and the little garden as well. It was very discouraging. My superior, Dr. Galloway, was even more discouraged than I, for he had never seen South Florida. The gardeners in Washington who propagated in the greenhouses many of the newly introduced species began to knock it as a place of rattlesnakes and rocks— nothing more, and even told the little Englishman, "Ed" Simmonds, then one of their number, who was considering throwing in his lot with the Brickell Avenue Garden, that he would be wasting his life down there in the wilderness and that he would get bitten by a rattler or be eaten up by mosquitoes. Finally, Dr. Galloway decided for purposes of economy to close the garden and save the money—some \$3000 a year, I think it was—and sent his assistant, P. H. Dorsett, with hammer and saw to Miami to box up the books and get rid of the plants and close the whole thing up forever.

Dorsett found conditions not at all as he had been led to believe they were and wired back his opinion that it would be a mistake to abandon the garden. Men like Dr. John Gifford and others then took a hand against the closing of the little garden in which they visioned possibilities for the growing community of Miami, where there were 10,000 inhabitants by that time. They fired telegrams into the Congressmen's mail baskets and organized a committee of citizens to take over the garden in case the Government abandoned it. The result was, as of course it should have been, a capitulation on the part of the "authorities in Washington." I have among my letters a prized one, written years later, in which Dr. Galloway admitted that he had been mistaken and that the Plant Introduction Garden in Miami was, he thought, destined to play a very important role in the development of the State and was an activity of the Federal Government

which could be logically defended and which should not interfere with any of the State activities in the field of agriculture.

This crisis passed, things went on more swiftly, and besides, the Spanish-American War had made the American public more conscious of tropical things. Then, too, the coming need for rubber had made the Secretary aware that one of the most important products of American commerce was tropical in character. I have in my file letters written in 1900 at Secretary Wilson's instigation, asking me while I was out in the Oriental tropics to look into the rubber situation there—even to secure thousands of seeds for planting out somewhere in the United States. I had to write back a discouraging report, for even as late as 1900 the belief among the best experts in Java and Ceylon was that rubber growing would never pay as a business and must be carried on as forestry is, by the State.

Travel after plants, and the work of organizing the Section, and my marriage kept me from Florida until the winter of 1912, when I came down with Mrs. Fairchild and spent a month, February 17 to March 13. As I write these lines I have before me the rather complete journal of that trip, and since it gives a picture of the conditions of the little garden on Brickell Avenue, I propose to use it in the making of my "thumb nail sketches" of the plants in it.

Many of my generalizations in that journal were rather wide of the mark but some of them were not. For example, I wrote:

"I would not be surprised to see the day when 100,000 people are living along the coast between Palm Beach and Homestead. In 1898 when people talked of East Florida as the Riviera of America, I thought they were dreaming. Now I believe this is likely to come about. The drift of all classes of people from the cold North southward is one of the most interesting spectacles in American life. I believe it is a psychological phenomenon which will grow immensely during the next few years and affect the development of subtropical agriculture more radically than any other existing factor.

"Agriculture in a region where the individual plant must be cared for almost as carefully as though it were a potted plant—fertilized, pruned, sprayed, pollinated and protected from cold, cannot fail to develop an intelligent knowledge of plant physiology and pathology quicker than the agriculture of a well-watered, extremely fertile region where trees and shrubs grow if left alone. Where plants die quickly if not properly cared for, people are going to learn to care for them. Miami is like one big botanic garden and we had the remarkable experience of chasing in automobile from one private garden to another six or eight mile away to see a rare tree or shrub. Under these conditions plant amateurs are sure to develop."

We spent a day with Mr. Ingraham at St. Augustine and he told us of the great profits of grapefruit growing at Kendall, where 2000 grapefruit trees netted the East Coast Railway \$567 per acre. Pineapples brought \$125 per acre, he said, and vegetables \$200 per acre, and potatoes \$120 per acre at Hastings, and he thought Miami was doing then a \$2,000,000 business in vegetables.

I was at this time hunting for suitable places where we might plant out the Chinese Tung tree ("Wood-Oil Tree" we called it at that time), and Mr. Ingraham told me that his

company was going to open up a road from Titusville to Lake Okeechobee and that if we wanted him to, he would find a man and five acres of land on which to plant a grove of wood-oil trees. He understood that we proposed to furnish only the trees and had no funds with which to pay any expenses of maintenance. For some reason nothing came of this offer. We had sent two trees to the Tallahassee cemetery, and one of these, which had been saved by Wm. H. Raynes, once a ship's carpenter, had begun to attract our attention to that locality. Later Tennent Ronalds, a Scotch gentleman farmer, had set out the first orchard of this tree on his Live Oak plantation there. I see, however, that I advised that some plants be sent to Gainesville in 1912, fearing that Tallahassee might prove too cold. Even as early as this year we had begun to feel that the wood-oil tree would not thrive in the Brickell Avenue Garden, and had made a large nursery planting of imported seeds in a clearing in a hammock in Brooksville.

I note in this journal of 1912 that Fred S. Morse, whom I had met in 1898 and who was then the only real estate man in the Miami region, had told me that he believed Mr. Ingraham would get for us, should we wish to enlarge our plantings in South Florida, 60 acres of land at Perrine. I noted in my journal:

"Land is now selling for \$60 an acre there and Mr. W. J. Krome is going to settle down there and be a power in horticulture, I believe, I would favor Homestead if land can be found there. I think the matter ought to be given serious attention before the land becomes too valuable."

How Miami had grown! I see my journal remarks:

"Aladdin's lamp could not have transformed a town as Miami has been transformed since I last saw it in 1898. Imagine traffic so heavy that carriage drivers can only cross streets at regular crossings."

We drove in a two-seated, one-horse carriage to the little garden about 6:30 A. M. and in my imagination I can see now that dear old plantsman, Edward Simmonds, as he stooped and peered at us through a jungle of Swingle's citrus hybrids that filled a good part of the garden. The entry in my journal continues:

"Mrs. Simmonds insisted that we stop with them at the tiny cottage in the garden and the stop was altogether a memorable one. Seldom have I enjoyed so close an acquaintance with plants as I did during our week's stay there. I am convinced of the fallacy of large laboratory buildings. A shanty in the midst of plants for me! I believe the Bureau is wasting many thousands of dollars, and more than this—*inspiration*, by not housing its men in the midst of the plants."

I am still of this opinion after 25 years have gone. Buildings do not make a garden; they often only serve to keep one farther away from the plants.

Let me take you through the garden as it was that day in 1912. An avenue of Canary Island palms led from the street to the cottage and I did not like it very much, for I had seen the palm everywhere in the Mediterranean region and it was common in Florida. T recommended in its stead a row of Akee trees (*Blighia sapida*), as the species seemed to be doing well in the garden and I loved its brilliant red fruits. This was not done and after 25 years there are only a few scattered trees to be found in the Miami area. Yesterday I set out some which Dr. L. H. Baekeland, who has made a close study of the

Akee, gave to my brother-in-law, Dr. Grosvenor, President of the National Geographic Society, who has bought a place next The Kampong.

The laboratory across the road had become by this time a historic one because of various investigations carried on there. Crotons galore filled its front yard and I asked Simmonds to take them away and plant the Carissa in their stead, for from the quantities of carissa seeds which I had sent in from Natal a host of seedlings had grown. A carissa hedge stood for twenty-odd years along the entrance to the potting shed and parts of it are still standing there. Today there are many thousands of beautiful carissa hedges and individual plantings in South Florida, and who is there who has not tasted carissa jelly? My old friend, the late J. L. Meade of Oviedo, brought the Carissa into North Florida from Australia sometime in the eighties, so Reasoner reported, but I think that most of the plants around Miami came from the Natal seeds.

The sausage tree (*Kigelia pinnata*) was doing well in the garden then, and also the Cajeput tree—the latter coming from some seeds which Dr. Gifford imported direct from Australia and turned over to Ed Simmonds to grow because they were so tiny. Ed sent them up to Washington to be grown in the greenhouses there, as he had no greenhouse facilities at the garden, and later the plants were returned to him and distributed. Who could have imagined that from a row of them planted by Robert Werner in 1914 at an ephemeral experimental farm which was started near the settlement of Davie by some real estate men, Vance Helm among them, there should grow an actual forest of cajeput trees which would destroy even the citrus grove that had been planted close to them? Is someone to see the cajeput become one of the character trees of the Everglades, I wonder. Other trees from other seeds imported a little later by Mr. A. H. Andrews of the American Eagle at Estero have invaded the swamps of that region as well.

Ed Simmonds was hand pollinating the flowers of the Cherimoya (*Annona cherimola*) and had already budded the Sugar-apple on the native Pond-apple (*A. glabra*), and the start had been made towards the origination of the cross between the Cherimoya and the Sugar apple which is today the most fruitful variety of this delicious fruit we have in South Florida.

From some seeds of a curious fruit called the Kaffir-orange (*Strychnos spinosa*) that I had picked up at Mozambique had grown several low, spiny, bushlike trees and these were laden with their perfectly round, hard-shelled fruits. These fruits were so round and hard that to amuse friends in Washington, I took some to a meeting of the Botanical Society in the Cosmos Club there and rolled them down the aisle as if they were made of lignum vitae and the aisles were a bowling alley. How little I dreamed that the President of the Macmillan Publishing Company, Mr. George P. Brett, would one day serve me a "Strychnos Cocktail" made from the pulp of the Kaffir-orange grown on his place south of Coconut Grove, or that it would charm by its fragrance one of my nieces, confined to her bed for weeks. Much less, that Ed Simmonds would one day come with a Kaffir-orange tree in a box and with much ceremony plant it near a little house on the bayfront that we had bought and that it would be the very first tree planted on what has become The Kampong.

Thirty different varieties of avocado in boxes— all budded sorts—filled the slathouse in

1912. This was 11 years after Geo. B. Cellon first budded the Trapp avocado and put it, the very first budded variety of avocado, on the market, and the first boom of this new fruit crop was on in Florida, where it started some years earlier than in California. The 70-year old pioneer of Miami Beach, Mr. Collins of New Jersey, had set out over 100 acres of avocados, mostly budded Trapps, and this was then one of the largest plantings of budded avocado trees in the world. Owing to the uncongenial character of the shell-soils of the beach and the salt breezes that constantly blew across that area, the trees failed to fruit and the venture was a complete failure. In the garden on Brickell Avenue three avocado trees from Guatemala were standing: the Colla and Collins, sent by G. N. Collins from Guatemala in 1906, and the Winslow, presented by Consul General Winslow of Guatemala City. These were six years old from seed but I see no mention in my 1912 report of their having yet fruited. I recall being much disappointed not to see in the collection the hardy Chilean avocado of which I had sent a large box of seeds from Santiago in 1899. It was not until 1919 that I found this variety growing on the place of C. P. Taft in Orange, California, and he told me it was the first avocado seed he had ever planted. Later I had the pleasure of presenting Taft with the Meyer Medal for his distinguished work on the pioneering of the avocado in California, in which the seed of a fruit he bought in the market played the chief part.

The Colla, Collins and Winslow trees in the little garden began to attract attention soon after my visit in 1912 because of their seedlings. These turned out to be hybrids with the West Indian race, and we were obliged to hunt names for them' that would show their parentage. The Collason, Collinson and Winslowson were the first seedlings to come from these trees, and who would say that these have not played something of a role in the avocado business of South Florida. The freezes and hurricanes and factors of the commercial market demand have eliminated them from many orchards, but nevertheless they were eye openers because of their hybrid character and the fact that they were superb tasting varieties and matured in the fall or winter.

I look back to those early days of the great avocado industry with pleasure for they were days of excitement and surprise, and while we may not have appreciated quite fully the importance of the events taking place around us, for no young people do, we certainly were active in our search for avocados that would do well here.

Two years after this visit Wilson Popenoe, who had joined our research staff, came on the scene in Florida and introduced a collection of the varieties which by this time had come into prominence in California, such as the Taft, Dickinson, Meserve, Solano, Blakeman, Ganter, and Harman and the now famous Fuerte which his father's West India Gardens at Altadena, California, had introduced in 1911 from Atlixco, Mexico. Great were our expectations for there had been some unparalleled publicity connected with the furor over such varieties as the Harman and the Taft, etc. But, alas, it soon was evident that not one of the varieties which had done so well in California was happy in South Florida, where the summers are rainy and the soil is surcharged with lime.

Popenoe was sent to Cuba for the best Cuban sorts but these seem all to have faded from our collections. Then, in the fall of 1915, at the meeting of the California Avocado Association, Dr. H. J. Webber introduced a motion to the effect that the Association should petition the Secretary of Agriculture to send an explorer to Guatemala to search for the best varieties of avocado to be found there. We chose Wilson Popenoe for this

work and from September, 1916, until mid-December, 1917, he was actively searching for promising seedlings through the lowlands and highlands of Guatemala.

In preparation for the receipt of the budwood which it was expected he would send in, Edward Simmonds planted seedlings of the Collins tree in the garden at Buena Vista which I shall refer to later. He did this because they showed unusual vigor of growth and he thought they would prove a suitable and uniform stock into which to bud. In October the budsticks began to arrive and one after another he saved them; to insure the getting of the budwood from the same trees again, should he fail, Popenoe cut his field serial numbers into the bark of the trees so that there could be no mistake in identification. Thanks to the skill shown by Ed Simmonds and by Ed. Goucher, who also budded many of the same varieties in the greenhouse in Washington, nearly every one of Popenoe's thirty Guatemalan sorts was saved and at least a preliminary test of each was made. Unfortunately, the stock chosen did not prove congenial at all to some of the sorts, although it did to others. I have a set of photographs of the unions made by these imported buds on the Collins seedling stock. It was apparent from the very start that certain ones, for some reason unknown to us, were not adapted to Florida conditions. While this series was being tried here, a similar series was made in California.

Wilson Popenoe's explorations of Central America after avocados deserve to go down into history as one of the most thorough pieces of horticultural plant hunting work ever carried out, for he not merely secured seeds, which is a comparatively easy thing to do, but successfully landed here thousands of scions in such a condition that their buds could be budded into stocks waiting for them in Florida and California. This was long before the days of air mail.

So much interest was aroused by his work and the new avocado industry came on so fast in Florida and California that in 1920 he was sent to Costa Rica to explore that country for superior avocado seedlings. From there he went down into Ecuador, to the noted Chota Valley, and as a result we had for trial varieties from both those countries. The Ecuadoreans disappointed us, as did also most of the Costa Ricans, but one of these which Popenoe called the Alfaro, S. P. I. 50680, has on The Kampong at least turned out to be a promising dwarf sort which may later be heard from, I think.

He had given serial numbers to his collections but as I had been dealing with S. P. I. numbers until I was tired of them, I asked him when he got back why he could not give the various sorts Mayan names which we could publish in the Inventories which were then going through the press. He returned in a few hours with the most amazing lot of easily pronounceable Mayan names imaginable and these names the varieties bear today. This procedure was in strong contrast with the methods of some of those unimaginative persons who would discard the charming Arabic names of the date varieties which we sent in from Algeria, Egypt, and Arabia, attached to our collections of offshoots, and substitute high-sounding English names.

Today it is perhaps the Itzamna variety of Popenoe which has proven the best of the lot in Florida because of its unusual hardiness and lateness. (This is 55736 of the printed inventories and not 43486, which failed to live and is now only one of the many dead numbers which are to be found in the Inventories.)

Whether "ultimately," as we so foolishly are inclined to say, one of the direct

introductions of avocados from Central America or Mexico will prove to be the great commercial variety here, who is wise enough to say? More probably it may be from the hybrids of some of them that the local sorts will come on which the grove owners will depend. Curiously enough, the Collinson, that still holds its own in some quarters, originated as one of the stock seedlings upon which Ed Simmonds budded one of the Popenoe importations at Buena Vista Garden in 1916. Mr. Simmonds used to relate how it was blown over by a wind storm and how he asked the old colored man, Stafford, why he hadn't staked it up properly. In a slovenly way he had put up against it a board with a knot hole at the end and the sharp edge of the board had torn the bark off. Simmonds scolded him for such carelessness. To this he replied, "I was going to dig it up and throw it away. Any tree that blows over is no good anyhow." Shortly after this Stafford had a dream in which Simmonds appeared and it so frightened him that he quit his job and never returned.

But I must get back to the little garden on Brickell Avenue as it was in 1912. Turning over a single page in my Journal I find a photograph of Simmonds holding up a Sufaida budded mango plant in a box showing its splendid root system. In those days budding the mango was not understood as it is today and most of the nurserymen preferred to inarch them in the old-fashioned way of the native Indian horticulturists. I saw yesterday a field of several acres at the Coral Reef Nurseries where Ross and his men were budding mangos apparently as easily as peaches are budded in Maryland. It has taken years of study, though, to bring this about, and in 1912 Mr. Cecil Hickson had a scaffold around his Cecil mango tree that was ten feet high. I recall that in 1913 Simmonds had rows of introduced mango varieties that he had budded on seedlings set under an extensive slat shed out of doors—one of the first successful field buddings of the mango, and George B. Celson, who was the pioneer in mango budding, as he was of the avocado, had praised him, saying they had made the best growth of any young mangos in Dade County. In those days we were afraid to plant imported mango trees outside for fear of losing them in a freeze, and the trees planted under slat protection were allowed to grow through the slats before these were taken away.

Five potted plants of the Gordon, the Peters No. 1, and the Pere Louis, which Mr. Lathrop and I arranged for in Trinidad in 1898, arrived in July, 1899, at the garden. These were the first mangos introduced by the Section of Foreign Plant Introduction, but the "Number 11" was already established here, according to P. J. Wester. He relates that when he had charge of the garden, in 1908, there was still standing on what was known as the "Gilbert Place" on the south side of the Miami River a large tree that a Dr. Fletcher had planted as far back as 1862. There is no evidence that the mangos brought in by Henry Perrine lived after the massacre, although he mentioned the mango as one of the fruits he proposed to introduce, in his famous letter to the Secretary in 1833, and doubtless brought seeds of it in. Since the No. 11 was the mango that Captain Marshall of "Flora," frigate of Lord Rodney's fleet, took away from the Frenchman who was bringing it from the Isle of Bourbon to Hispaniola in 1782, and since the No. 11 was known to come true to seed, it is quite possible that the Fletcher tree came from a seed of this famous No. 11 tree, which Captain Marshall planted on the island of St. Vincent, where it is shown with pride today. If this is so, then our No. 11, now scattered about in many yards in South Florida, has a romantic history, whatever else can be said for it.

According to the History of the Royal Society of Arts of London, the first mango ever brought into the West Indies came from Brazil and was called the Guinea, and it is highly probable that this Oriental fruit was taken by the Portuguese missionaries to Brazil sometime in the 17th century.

Between 1898 and 1913 we introduced from India selected lists of their best mangos, and in 1912 Simmonds planted out a little variety orchard in which 80 varieties were grown. The behavior of these was a matter of fascinating interest to us all, for some fruited in the course of a few years and some refused absolutely even to produce a single bloom. These stood as magnificent foliage specimens for twenty-five years and figure in my travel reports of the time as "mules."

What became of all these varieties of mangos? The answer is that they were distributed rather widely through the region and have met a varying fate, just as do most varieties of fruit. Few of the 850 varieties of pear, for example, that were listed by T. W. Field in 1858, could now, I suppose, be found anywhere in the world. It is the fate of varieties to come and go. I could name some introduced mangos, though, which still form a part of our collections in South Florida. There are the Gordon, Julie, Sandersha, Saigon, Cambodiana, Itamaraca, Bennett Alphonse, Pakria, Ameeri, Amini, Lamba Bhadra, Faizan, Rajpuri, Gela, Fajiri Long, Kavas ji Patel, and the gorgeous Borsha, and a good many others, too.

But the native born varieties such as the Haden and Cecil and Brooks have proven in the main more productive, and certainly the Haden is much the most widely cultivated. It is, perhaps, not too much to expect that out of the hybridization which is going on between these various fiberless East Indian sorts will come the Florida mangos of the future.

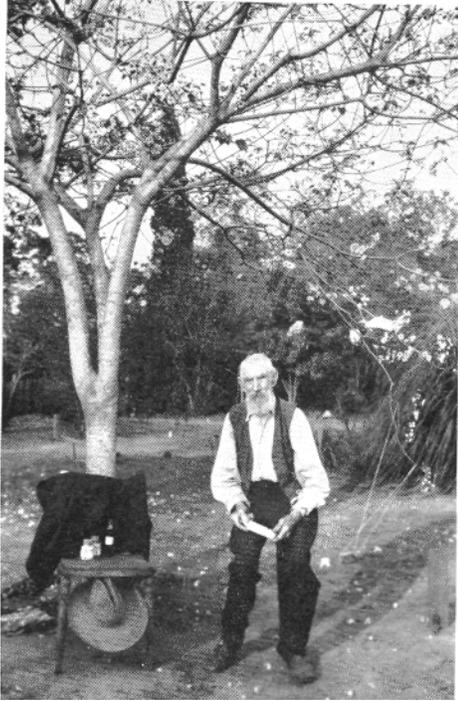
The romantic story of the Mulgoba mango I have told so often that I shall only allude to it now. Only yesterday I sat on the porch and chatted with Mrs. Haden, to whose husband and to her should go the honor of having raised as a seedling of the Mulgoba mango the famous Haden that is making its way in the great markets of this country and converting the skeptical everywhere to the fact that the mango can be eaten with a spoon, and deserves to rank as one of the most showy as well as most delicious fruits of the entire world.



Robert A. Young holding in his hands a "Trinidad" Dasheen corm that weighed 6 and 3/4 pounds and was produced in the collection of Dasheens which Mr. Young had charge of at the Brooksville Field Station and from which garden were distributed many thousands of seed tubers of this excellent new vegetable. Taken in 1914.



Rows of young Tung Oil seedlings growing in the Brooksville Garden in 1913. One of the numerous blocks of trees that were grown and distributed during the early days when the proper climate and soil conditions were being sought throughout the South.



William Raynes seated on his tall stool with a bottle of wood or tung oil in his hands and samples of the meal he had made from the nuts from the tree beside him.

The tree was in its ninth year when I last saw him on April 2nd, 1914, after several years of interesting correspondence. The tree is the one he rescued from the Tallahassee cemetery.

Dr. John Gifford standing beside one of the very first clumps of trees to be planted out in Florida of the Cajiput tree (*Mellaleuca leucadendron*). He was the introducer of this interesting and aggressive tree, which is now spreading rapidly through parts of the Everglades. When in bloom its myriads of flowers make a magnificent sight and attract myriads of bees.





Dr. S. H. Richmond in his clearing at Cutler, Florida, showing, in 1898, a young seedling West Indian avocado tree of which he was especially proud. Dr. Richmond had charge of the distribution of new plants which were distributed among the settlers on the Perrine Grant, the first grant of land ever made by the American Government in aid of agriculture. It is through Dr. Richmond that the sausage tree, now famous, on the road to Cutler, got into the hands of its present owners, Mr. and Mrs. Black.



Dr. C. V. Piper (right) the noted student of cover crops whose enthusiastic endorsement of many new introduced species resulted in their being extensively tried. He is standing beside the pioneer, George B. Cellon, in the latter's orchard, which is covered completely with the rank growth of the Yam Bean (*Cacara erosa*). In the early days in South Florida the need of humus in the soil was very acute and the yam bean furnished a large amount of it. It shaded the ground as well. Its tendency to climb the trees was objected to by some growers. Photograph March 25, 1919.



Herbert J. Webber standing beside an Italian Carob tree (*Ceratonia siliqua*) in the little garden on Brickell Avenue in 1898. The garden was then little more than a small clearing in the hammock and Webber was superintending the erection of a little laboratory across the road for which Mr. Flagler had given the money.



This photograph records an exciting moment, for it shows Wilson Popenoe, Agricultural Explorer, holding the fruit of the Itzamna avocado, first of all his collections in Guatemala to fruit in America. Edward Simmonds has just picked it from a branch of the tree behind him into which he had inserted, in 1916, a bud from the bud-stick as soon as it had come in from Popenoe. J. B. Norton, the Plant Breeder, stands discussing with them both its characteristics. This was in March, 1919, and the variety appeared promising then because of its late ripening habit. Since then it has proven to be one of the hardiest of all the Guatemalan avocados grown in Florida.

The Mulgoba mango was introduced by the Division of Pomology of the Federal Department of Agriculture in 1889. Mr. Van Deman was then its chief. My old teacher of

horticulture, Prof. Elbridge Gale, who had migrated to Lake Worth in the SCPs, was the only man to save the tree, which was sent him by Van Deman, nursing it through two severe freezes at his home at Mangonia. The Mulgoba is still in our collections today, but has refused to bear regularly and is fast disappearing, although its quality entitled it to rank as one of the very best varieties. It is as the mother of the Haden that it will go down into history, for it is from one of a few fruits that Prof. Gale sold to Captain Haden in 1897 that the Haden came. The Cecil is a perfectly delicious sort which found its way into Florida through Cuba. It originated from one of the seeds of 200 fruits of the Philippine mango (a long, golden yellow type) brought in by S. A. Belcher of Miami in 1902 and planted on the place of Cecil Hickson in what is now Coral Gables.

I shall not go farther into this fascinating field, which deserves to be honored by a book, but I cannot close the mango reference without mentioning the name of another pioneer in the mango industry, that of J. W. Barney of Palma Sola. He deserves mention, for like Prof. Gale he immigrated to Florida from the plains of Kansas and became fascinated by the lure of the mango, and he has for forty-odd years grown on his place a variety collection of those sorts sent him from the garden on Brickell Avenue. His "Eleanor," of which he is proud, came from Cuban seed and seems to be unusually productive.

What I have said about the plant studies at the garden does not include any reference to the most excellent pathological work that was done during the years of its existence in the Laboratory which Mr. Flagler built for the Department across the road. The story of the investigation of the insect pests of the mango, avocado and papaya deserves to be treated by such entomologists as Mozzette and Mason and, were he only alive to tell it, by Nathan Cobb, who worked for one winter on the nematodes of this region and discovered many new forms of those creatures to which the noisome rootknot nematode belongs.

Perhaps Ernst Bessey, now professor in Michigan State College, might contribute something that would be interesting about the studies of the marine plants and the excursions made by him and his associates at the time when he was at the head of the garden and laboratory. I recall contributing to the running expenses of a launch for the purpose of these excursions and being disappointed when there did not come into existence down here a Biological Station like the one at which I had studied on the Bay of Naples. But perhaps our dreams were too large. Certainly we had not counted on the drift of the masses and the development of Miami into the great health resort it has become.

But of all the men who could tell us of these early days of the little laboratory after Herbert J. Webber left for larger fields of activity, P. H. Rolfs is the one who could tell the most, for he was in charge until he left for Gainesville to direct the State Experiment Station. But, as they say, all this is another story.

I once and only once saw Henry M. Flagler. Mr. Ingraham arranged for Mrs. Fairchild and me to call on him. It was in 1912, almost at the very close of his life. He told me how he had become discouraged when the government proposed to abandon the garden and laboratory and had told Ingraham that as the government seemed to be doing nothing with it he had better go down and close it up. It gave me real pleasure to assure him that the Plant Introduction Garden which he had helped to establish had

been the means of introducing a number of interesting plants and that these plants would develop industries in South Florida after he was gone. He was more interested, of course, in his Overseas Railroad to Key West, his development of trade with Cuba and in the possibilities of sugar cane cultivation on the Everglades. He was first and foremost an engineer, and I have known only a few engineers, W. J. Krome among them, who could take a very keen interest in anything that could not somehow or other be blueprinted; and Plant Introduction is incapable of being reduced to a plan in blue and white.

But back to the "Little Garden." There was a tree of the White Sapote (*Casimiroa edulis*) in full bloom at the corner of the house and I have a photograph of Mrs. Fairchild holding back the branches so that the flowers could be seen. There was also near by a tree of its cousin, *Casimiroa tetrameria*. I took a fancy to these trees and today, now 25 years later, I have a lot of seedlings of them on my place and am of the opinion that an excellent winter fruit can be evolved by selection and by the crossing of these two species. *Cassia fistula*, the Golden Shower, was a small tree there then, but whether it came from S. P. I. 5469, some seed sent from Honolulu by Prof. Stubbs in 1900 when he was sent to the islands to establish an experiment station there, or through those remarkable young men, Pliny Reasoner and his brother, Egbert, who settled near Manatee in 1882 and founded the firm of Reasoner Brothers, whose name has become a household word among the plant lovers of Florida, I cannot say. In any case, the tree makes a spectacular appearance on the streets of Coconut Grove in spring—unfortunately not every spring—and its glorious golden flower clusters put into the shade the loveliest Laburnum trees that ever flowered in England.

Hearing that Mr. W. J. Krome had started a collection of tropical fruit trees in a clearing in the pines at Homestead, Mrs. Fairchild and I, with Fred Morse of the Model Land Company to guide us, drove down to see it. Mr. Krome was down the line at Marathon directing construction on the Overseas Extension, but his partner, McClure, was there and took us over the raw-looking grove plantings. I see in my journal of the time that he had growing and fruiting the Calamondin. It was the first time I had seen it since I had gotten seeds from a tree of it in Panama, and I felt a proprietary right in it, although later I discovered that Reasoner Brothers had earlier Introduced it into Florida. Mrs. Fairchild was pleased to see a bush of the *Astraphaea*, now called *Dombeya Wallichii*, cuttings of which she had gathered from a tree in a public garden in Funchal, whither I was invalided in 1907. It was her first thrill at seeing a concrete evidence of the value of plant introduction about which I had told her so much.

A young sausage tree (*Kigelia pinnata*) had made a tremendous growth in Mr. Krome's yard and I have a photograph of it with myself standing proudly beside it. Years later I once twitted Mrs. Krome over the fact that the whole orchard of tangelos and mangos in which we were all so interested at that time, and over which Mr. Krome spent so many years of hard work, have not yielded so much in the way of cash profits as has the single tree of this same importation of 1907, No. 21203, that stands beside Mr. Black's filling station on the Cutler Highway.

"Krome has two of Swingle's tangelos in fruit and has set out an acre of young plants. He is planning to put out 8 or 10 acres next year. I believe he will make money out of them, although it may be a difficult proposition to get the trade to take up with a new

fruit," is the way my Journal runs.

Neither of us had ever tasted a tangelo before and we decided then and there that we preferred it to any orange we had ever eaten in Florida. There was a slight pithiness around the stem end and the fruit colored up before it was ripe, but these seemed minor difficulties then. I fear they have loomed as larger ones since.

Mr. McClure showed us with great pride one of his successful attempts to top graft an old seedling avocado with Trapp scions, and I cherish a photograph of it as the first I ever took of an avocado tree, top worked with a named variety of avocado. Now that there are, let us say, 18,000 acres of groves of the avocado in America, all of named varieties, my tiny photograph has a historic interest for me.

Morse wanted us to see the "Davie Experiment Station" on the Everglades, back of what is now Dania, so we motored out there and saw White Mountains of sand and rock that marked the first of the drainage canals. Land was selling along the canal for as high as \$125.00 an acre and the land sellers who had financed the Station were talking wildly about the great fertility of the attractive muck and peat soil there. New settlers had come up from the Panama Canal and settled at a spot they named "Zona" and begun to grow vegetables. Vance Helm and some of his associates had secured the services of Robert Werner to conduct the demonstration station on the Everglades land. The "Station" was short lived, however, for when in 1916 Mrs. Fairchild and I visited it again on our way to Miami, the land company had virtually abandoned it. In less than three days 17 inches of rain fell and flooded the "Station," and for days Werner had to live on Chayotas produced by the vines for which we had supplied the seed. It was a sad sight to see the abandoned plants and I have always regretted that such a start could not have been kept going, for it would have shown many things. For example, to my surprise the citrus trees stood the flooding better than did the bananas and about convinced me that the citrus tribe was a wet land one. We had sent Werner many introduced plants and among them I noticed a row of Cajaput trees (*Melaleuca leucadendron*) from some small plants we had sent him. Through the years that have flown since then, I have periodically visited that row of trees and seen to my amazement the seedlings from it invade and smother the orange trees which were near it and finally cover scores of acres of land with a forest of that Australian tree. But how could I imagine that the time would come when from this forest large trees would be sold to beautify the gardens of millionaires in Palm Beach and Miami, and that the man who first did this transplanting would have his name honored as a discoverer?

Among the interesting plants, and there were many, was one of the Madagascar rubber vine (*Cryptostegia grandiflora*). It had grown amazingly and stood the flooding well. Many years later, when the idea of growing a rubber producing plant on the Everglades was brought tip and Alfred Keys was commissioned to get together a collection of the most promising species for this study, I took him out to this same old "Experiment Station," which had passed into the hands of a dentist. He was ripping out every tree and shrub he did not know the name of, and just as a colored man was about to eradicate this *Cryptostegia* vine, we took a bag full of cuttings from it. It was on one of these cuttings that later on there was produced at Chapman Field the seed of a new and very promising hybrid. I say "promising," but I do not wish to be thought as overlooking the fact that a synthetic rubber is on the market which will make rubber

growing a very different affair from what it seemed to be when rubber was selling for 60 cents a pound in Sumatra and Singapore.

Tetrastigma harmandi, S. P. I. 34630, which that intrepid entomologist, C. F. Baker, had sent us from Los Baños in the Philippines, had grown amazingly and was in full fruit after the flood. I have always taken an unwarranted interest in it, but have met rebuffs on every side because of the fact that it grows too vigorously. A vine of it given to Mrs. Wm. Deering grew over her house and had to be cut down because the rats loved the fruit and lived in the vine. At Van Hermann's in Havana, Cuba, it produced a vine a foot through at the base, and only recently my friend, Mrs. George P. Brett, complained that one was going to completely smother her whole place if she didn't cut it out. With all this experience I doubt if anyone has ever tried to make jelly from it or utilize it in the way Baker reported it was used in the Philippines.

Mr. Werner had imported some seeds of a short "leaved" species of Casuarina, *C. cunninghamiana*, which was quite different in appearance from the common species, *C. equisetifolia*, or the species that suckers, which is now, called *C. lepidophloia*, although it has never fruited and I suspect it of being a hybrid. *C. cunninghamiana* proved quite hardy in the 1917 freeze and specimens of it are to be seen in many places in Coral Gables and up through the state. Alas, the original trees that Werner planted were killed by a hurricane.

It was on this trip of 1916 that I first met Wm. J. Bryan. He spoke at a little schoolhouse in Ft. Lauderdale and Dr. and Mrs. Bell went with us to hear him. He urged the advisability of an experiment station at Rita, on Lake Okeechobee, and like so many others was "taken" by the dark colored soil of the Everglades. Having seen by that time the millions of ducks and other waterfowl flying back and forth across it, I had formed the idea that it would be a wonderful plan to leave it as a wild bird preserve and allow only licensed hunters to shoot on it at proper seasons, so I was not quite so sympathetic as I might have been to the idea. There seemed to be enough tomato land without interfering with the shore of the largest fresh-water lake in the South.

But I am skipping four years. For I have journals covering 1913, 1914 and 1915 in which are accounts of all kinds of romantic plant happenings.

In 1913 I see that Mr. McMurrin, the Plant Pathologist stationed in the little laboratory, had proven that if the mango flowers are sprayed when in flower and repeatedly afterwards, the anthracnose and subsequent spotting of the fruits can be prevented—a procedure which is followed today by those who want spotless fruits.

Then the papaya fruit fly made its appearance and completely baffled us by the destruction of thousands of fine fruit — the maggots, hatching from the hundreds of eggs laid by the fly, forming a swarming mass inside the fruits. For some reason this pest seems not to have stopped the development of papaya growing as an industry and today we have papayas on the Miami market for many months of the year.

By this time the street tree question began to worry the Miami public and seeds from the trees in the little garden on Brickell Avenue of *Pithecolobium dulce*, S. P. I. 4065, began to be planted by nurserymen and householders. It had been the first foreign plant to be planted in the Brickell Avenue Garden, coming from Guymas, Mexico, where it

was collected by the well-known plant hunter of Mexico, Dr. Edward Palmer. How it came never to have attached to it its Mexican common name of "Huamuchil" I do not know, but I am glad it didn't. It is perhaps much better that the public of South Florida has come to know these introductions by their Latin names rather than by such vague names as are used elsewhere. I hear that the beautiful flowering tree, *Spathodea campanulata*, for example, is known in the Isle of Pines as "The Rose of Burma." Not being a rose and coming from West Africa and not Burma, the name is hardly appropriate. Mention of the name *Spathodea* reminds me to give credit for its introduction to one of our most careful plant enthusiasts, Mrs. Sarah G. H. Jones of Coconut Grove, who brought it in sometime in the early years of the century from Jamaica. Its wide dissemination through the region where today it greets the eyes of thousands of tourists was stimulated by the distribution of many hundreds of plants which were grown from some seeds sent in from Java in 1911 by Dr. Beverly T. Galloway, when he was invalided around the world to recover from a serious breakdown as Chief of the Bureau of Plant Industry. This seed is recorded in the Inventories as No. 31953. This tree was shown to me in the famous Botanic Garden of Buitenzorg in 1895 by its then Director, Melchior Treub, but it did not at that time occur to me to send seeds of it to America.

By 1913 the little garden had become a perfectly fascinating place. There were trees and plants from everywhere and the story of most of them was then fresh in my memory.

Almost within the shade of the first Sycamore fig tree to grow in America, an account of which I gave last year to the Institute, there stood a tree of what a Mr. Longdon of Rhodesia said was the Matondo (*Detarium senegalense*). It was supposed to bear a fruit the size of an apricot and be good to eat, and he sent me one to see what it looked like. The tree grew well and every year I hoped to see it fruit. Once it did bloom and I have photographs of its flowers, but at last I became discouraged, for it simply would not fruit, and gave it up. One day in 1927 I was wandering about near the Water Works at Abuko in the British Colony of Gambia in West Africa, and saw the ground under a tree covered with fruits of what I took to be this same Matondo. I began gathering them to send in and was told to take care, for there was a bitter variety whose fruits looked just like the sweet kind, but which was deadly poison. This gave me pause and I wondered if perhaps it was not quite as well that the tree in the garden on Brickell Avenue had refused to fruit.

Only once in my life have I wished that I had not been quite so brash as to eat the fruits or nuts of the trees about me. This was in the garden which succeeded the one on Brickell Avenue, that at Buena Vista. There were growing in it trees of the Physic-nut, *fatropha curcas*, the seeds of which I had seen children eating in the Homestead region. My friend, G. N. Collins, was with me and he told me how a man from Mexico had come to Washington to exploit this nut—a delicious tasting thing—and had peddled it among the botanists there. We both tasted them—ate three or four of them, in fact—and later got into our automobile with Dr. Harris of the Carnegie Institution, who had undertaken to show us something on the road to Palm Beach. We had not gone a mile until Collins had to get out. "Nothing but biliousness. Had a rotten night. Didn't sleep much. Nothing unusual," he said. Before we had gone another mile he got out again. This time we both

began to be disturbed and talked about the *Jatropha*. A third stop and a fourth, and he got out and rolled on the grass. Leaving him in Dr. Harris' care, I started for a doctor up the line. It was Sunday and I couldn't find one and went on and on until I reached Hollywood. Where I found one. But for the life of me I could not explain to him what the nut was we had eaten. Finally, after what seemed to me a half hour, light dawned on him and he said, "Oh! That thing? Why my wife nearly died once from eating some of them." He prescribed an emetic and ice and I went to the ice house and waited for a chunk of ice to put on my friend's head, but as I waited I, too, began to feel queer, and that feeling increased as I drove frantically back to where Collins sat on the porch of an abandoned house, his head in his hands, for he was a very sick man. But I, too, was a sick man when I reached him, and it was not until the afternoon had passed and whisky, etc., had revived us that either Collins or I felt like doing anything.

One of the things that interested me in 1913 in that garden was an arbor of velvet beans (*Stisolobium*), for those were the days when this leguminous cover crop was exciting the growers of the whole Southern States and when the easiest way to grow hogs was to plant a field with the rank growing velvet beans and turn the hogs into the field to fatten on the millions of nutritious beans. Dr. C. V. Piper had made a trip to the Orient and sent back many sorts of this valuable legume, which he did much to encourage, and this was his arbor of them. Some of the introduced kinds like the Lyon and another from China turned out very well, and I recall Dr. Newell once giving me, for purpose of proving the worth of the garden to the Agricultural Committee in Congress, the number of million dollars which they had been worth to the farmers of Florida. I forget the figures now, but they were very gratifying.

The *Crotalarias*, in which Dr. Piper was also much interested, began to appear early in the little garden, and I see that in 1914 what was then called *Crotalaria madurensis* was being tried there as a cover crop and was producing an amazing amount of humus. I do not find any reference to plants of *Crotalaria striata*, S. P. I. 24119, in those early journals, and I wonder at this, for it was probably there. A German acquaintance of mine, Dr. A. Zimmerman, whom I met at the Carl Zeiss optical establishment in Jena, where he was studying new staining methods for the cell, sent me the first seeds of this species. He had become the head of the Agricultural Institute at Amani, German East Africa, and sent me a collection of seven leguminous species which he was testing there. This was in 1908.

Crotalaria spectabilis I believe came in later from the Punjab, India, through Thomas W. Brown, then in Egypt. At least S. P. I. 5183'). in 1920, is the first reference to it which I find in the Inventories. But I am invading historical territory which has been covered by my friends, Stokes and Pieters, the former of whom has spent years of study of these remarkable soil improving crops. I never pass an extensive field of *Crotalaria*, with its gorgeous yellow blooms shimmering in the sunlight, but my mind wanders to the little garden on Brickell Avenue where I first saw them in bloom; and it brings to my mind Piper's last visit to Miami and his enthusiasm over the future possibilities of the Everglades, when Para and Carib and Japanese cane should have become established there. He had made an expedition to the Orient after forage crops and took a lively interest in the patch of Kudzu which we had established back of the garden and which threatened to drive our neighbors out. This plant was not looked upon with favor by the

"experts," and Mr. C. E. Pleas of Chipley. who almost with fanaticism boosted it, was considered something of a visionary. I wonder what the verdict would be today? As I had been enthusiastic over the Kudzu ever since seeing it in Japan in 1902 and had it growing on my place in Maryland, I wanted so badly to talk with Pleas that I dragged him out of his bath tub one night as I was travelling through, to tell me about his experiments at Chipley. The memory of that incident came back recently as I stood in a field of Kudzu at Cairo, Georgia, and heard its value extolled by Mr. J. B. Wight. But mingled with those memories comes the picture of how the vine climbed over a precious White Barked Pine which Frank Meyer had brought from China and which was growing in my yard at "In the Woods," near Washington. After trying for years to establish it and succeeding, I spent years of unsuccessful effort to eradicate it. It was only after we sold "In the Woods" and the new owner pastured his cow in the yard and kept it browsed down, that it disappeared.

But there was another cover crop in the little garden which excited Piper's admiration, and I took him to see it in action on the place of George B. Cellon. This was the Yam Bean (*Pachyrhizus [Cacara] erosus*), S. P. I. 33258, which came to us from Jamaica in 1912. Only the other day Cellon said to me, "That was a great crop for orchards, once it got established, for a single tuber forty pounds in weight would form in the center of the square and the vine come up every spring and cover the ground completely without bothering the trees."

One little tree from Brazil, the Jaboticaba (*Myrciaria cauliflora*), I must mention. It was 23431 and came from Dr. Bello of Rio, whose acquaintance I had made there in 1899. He sent a number of grafted plants of the Itamaraca mango to me in 1908 and with them some plants of this strange but delicious fruit tree of which the Brazilians are inordinately fond. I speak of this fruit tree because the very specimen that I first saw leafing out on March 27, 1914, was completely hardy and came through the great freeze of 1917 without being injured, and it is this one which has given us the faith to proceed with a new program of its dissemination. Our expedition to Brazil, made by P. H. Dorsett, Wilson Popenoe and A. D. Shamel in 1914, brought back amazing photographs and much material of this new, somewhat hardy fruit tree which deserves to find a place in the dooryards of Florida, and of which there is a fine fruiting specimen here in Winter Haven. See Occasional Paper No. 2, Fairchild Tropical Garden, for a full account of this introduction.

In the spring of 1914 it was decided to enlarge the garden facilities, since the six-acre tract under lease from Mrs. Brickell had become totally inadequate. My friend, O. F. Cook, came with me and we made a thorough search for new sites. Of course, we hadn't a cent of Government money with which to buy land, so we had to depend upon the generosity of private individuals to give us a site. We were modest. We only wanted 25 acres. That seemed a lot then. At first Mrs. Brickell said she would give us a site and we even had it surveyed. But she changed her mind and would only lease it to us. Then other properties were offered, by George Merrick, and Carl Fisher, and Dr. Du Puis, but they were either too far out of town for our bicycle-riding investigators and visitors, or had unsuitable shell-sand soil. Finally Mr. Charles Deering, who had a large tract on the Bay at Buena Vista, came forward and offered us 25 acres, "to be used by the Department for a Plant Introduction Garden as long as it wished to and then to revert to

his estate." On this we started with our slender funds, landscaping it according to the ideas of the great landscape gardener, Mr. O. C. Symonds of Chicago, who was doing Mr. Deering's own estate in such splendid style.

I cannot look back to those days without emotion, for our plans were so perfect. Everything was set for what we thought would be a great garden. And across the wall was the beautiful place which at that time Charles Deering had dreams of making into a large arboretum. Alas! we had neither of us figured on the encroachments of a populous city or the insistent demands of the city commissioners for straight streets with which to reach the "new developments."

After a few years of life in a kind of a fools' paradise the whole dream collapsed when the 1925 boom struck the town, and today only a few introduced trees remain to mark the spot where our dream was located. Immense beautiful trees were torn out by the roots with tractors, and Mr. Deering's "arboretum-that-was-to-be" was laid waste and allowed to grow up to weeds when the boom burst.

It is true that between 1914 and 1923—nine years—much was done on this Buena Vista Garden, as we called it. In fact, the Popenoe collection of avocados was established there, and a choice collection, of Annonas was planted and also one of Garcinias—relatives of the Mangosteen.

An attractive avenue of the Sycamore fig tree led into it and the test nursery contained a most interesting collection of new introductions. The

Tropical Jujube (*Zisypus mauritiana*) first fruited in this country there, and the thousands of bearing trees of this still undeveloped fruit tree that one sees now all over South Florida came from the trees planted at Buena Vista. In Avon Park a citizen I met insisted it was the "Jay-Pan Apple." Also that curious shrub from the Comoro Islands, off the coast of Zanzibar, *Psychotria bacteriophila*, characterized by having bacterial nodules in its leaves, was first tried out there. Today it is slowly invading my hammock in The Kampong and calling for a wider trial in the hammocks of the State.

Professor Simpson of Little River, with the publication of whose first book Mr. Deering and I had been associated, took a keen interest in everything connected with the new garden and made out a list of all the native plants which it contained for purposes of historical reference.

Then came the great freeze of 1917, the first serious one to visit the gardens since there were enough introductions in them to make it matter much. It occurred on February 3.

The Tamiami Trail had been built out only ten miles from Miami then, and my friend, Mr. Lathrop, Prof. Simpson, Dr. W. E. Safford and I had spent the day of February 2 there botanizing in the beautiful hammocks that were then on both sides of the Trail—hammocks that are, alas, no more.

The temperature began to drop as we returned and Ed Simmonds remarked that we might look for cold weather next day. As Mrs. Fairchild and I had acquired The Kampong in Coconut Grove the fall before, I was more than merely interested—I was much concerned, when next morning I found a large crab in its death throes near my porch and a fruit jar down at the barn half full of water with ice crystals formed in the

upper half inch or so.

I hurried to the garden. There was Simmonds watering the mangos to keep them from thawing out too rapidly. "Like two men at a funeral we wandered about among the plants. The papayas were black, with their fruits covered with masses of papain that had oozed out," is the way the report stands in my Journal.

I decided to go over the whole garden and take photographs and notes of every species in it for future reference in later years, but before anything was done hurried to the "New Garden" at Buena Vista to see how things had fared there. The sight was a blow, for the appearances indicated in no uncertain terms that our new site was colder than the old one. The avenue of young Sycamore figs was cut to within a foot of the ground and the whole collection of Annonas, with the exception of *Annona diversifolia*, had been killed to the ground. The temperature recorded in the little garden was 26.5° F., and in the larger one, where unfortunately there was no self-registering thermometer, it probably went to 25° F.

Since I have just written a bulletin for Dr. Hume that covers the observations of that period and also of the freeze of 1934, and given all of the data at my disposal for those who want to know how much cold their plants can stand, I will pull down the curtain on these sad days of 1917 at the gardens, remarking only that we found the response from the freeze much quicker and more complete than we had expected and learned which were our hardy and which our most tender species. The album of frosted plants which I made at that time, and which was hand colored to show what color changes the plants underwent, is still one of my most interesting volumes.

As by 1914 a special Bamboo Garden had been established by the Office near the little town of Brooksville, because the Japanese and Chinese timber bamboos were unsuited to cultivation in South Florida, my attention was divided between it and the Miami Gardens.

Not only did we do our bamboo work at Brooksville, but the Dasheen and Chayote work as well, and for several years my colleague, Robert A. Young, carried out one of the most intensive attempts ever made to introduce two new and delicious vegetables, the Dasheen and the Chayote, both of which are today on the market in a small way. Had I the time to digress I would like to tell of the many vegetables we tried out at Brooksville, where the conditions for such work were better than here.

The bamboos were transferred to Savannah, Georgia, and formed the nucleus of the Bamboo Garden there, and to my great regret the Brooksville Station was abandoned.

Furthermore a large plant garden was being developed in California and filling up with new plants, and the activities in Washington had so multiplied, due to the Great War, that it was not until 1920 that I again was able to visit the gardens on Brickell Avenue and at Buena Vista. By this time the mango collection had begun to bear and show how varied that species, is in its colors and fiberlessness and flavor. I was proud of these gardens and showed them to my old friend, Barbour Lathrop, who by this time had come to be known as the Patron Saint of Plant Introduction, and am sure he felt that his generosity towards the work had not been in vain. Rows of seedling Mexican, Guatemalan and West Indian avocados were being tested side by side with Popenoe's

introductions, which by this time had been placed at Lucern and other places, and I was able to check up on the congeniality of the various varieties to the stocks they were on. Some of the imported varieties were persistently uncongenial to both seedling Guatemalan hybrid stocks and to West Indian stocks as well.

Some new and promising shade trees had come on the scene and begun to be planted along the streets, such as the *Pongamia pinnata* from the Philippines (which when headed high and trained up makes a beautiful street tree) and the *Terminalia arjuna* from British India, together with the Bo tree of Ceylon, *Ficus religiosa*, and an occasional specimen of *Syzygium cumminii*, the Java Plum, not to mention a whole series of Cassias with beautiful pendant flower clusters, and the *Acrocomia sclerocarpa* palm and that loveliest of blue flowering shrubs, the *Guaiaacum officinale* or Lignum Vitae. The *Holmskioldia* vine with its soft red flowers that Popenoe had brought with him in his cabin from India had begun to be seen about the yards, and the general public had commenced their pilgrimages to Prof. Simpson's hammock in such earnestness that they almost wore him out.

The craze for Coconut Palms was at its height, and Hugh Matheson had worked out the technique of transplanting large specimens which he was able to transport across Biscayne Bay from his plantation of 35,000 palms there, many of which had attained large size. This was shortly before the Mathesons and our Section of Plant Introduction negotiated a cooperative introduction of Malay Dwarf Coconuts from a Mr. W. P. Handover of Port Dickson, Federated Malay States, consisting of 622 nuts. From this shipment have come the beautiful golden-yellow fruited coconut palms which are to be seen in the dooryards of the Miami region. Not all of them by any means remained dwarf, but they retained in part at least the golden color of the fruits. Of the bud-rot scare which attended this introduction and the anguish it caused I would rather not say anything here.

In 1920 the population of Miami had grown from the few hundred inhabitants which were here in 1898, when I first visited it, to over 38,000, and houses had been built all around the New Garden at Buena Vista, and I began to realize that 25 acres would be totally inadequate to contain the trees and the various activities of a Federal Garden which was being fed by the tropical explorers of the Section (which had by this time become an "Office") at the rate of several thousand new introductions a year.

Something would have to be done. I knew there was a large tract of land which the War Department had bought during the war for an air training field and which it was, going to sell. Mr. Simmonds and I had inspected it and decided that with all its faults (for it resembled rather too closely a rock pile to please us and had an area of salt land that might be difficult to tame), it had one indispensable advantage over other tracts. It was near the bay and its climate was tempered by the breezes from off the Gulf Stream.

The Hon. John Weeks was Secretary of War at the time and I heard he was in Miami, and on March 7 I called upon him and presented my case. He seemed interested, for he had ridden over the country 38 years before, when it was a wilderness, and had lived for years in Ocala. We talked for half an hour and he told me how as a boy he had seen his father make a trench and bury his grapefruit in it because there was no market for grapefruit then. He assured me that he was not in favor of selling Chapman Field and

that he saw no reason why he should not give the Secretary of Agriculture a revocable license for its use. But the Secretary changed his mind upon his return to Washington and I saw it announced in the papers when I got back there that Chapman Field was up for sale. Through my old friend and collegemate of Kansas days, General James G. Harbord, then Chief of Staff, I appealed for a hearing with the Secretary, and armed with my big album of frosted plant photographs depicting the effects of the freeze of 1917 and accompanied by Wilson Popenoe, then our Tropical Plant Explorer, I waited in Mr. Weeks' anteroom. He explained that he had been told that there was any amount of good land which the Department of Agriculture could have for the asking and that the Army needed the money for rehabilitation purposes.

But when I explained that I was searching for a piece of Climate, and that General Squires in buying that tract for the Army had happened to take one of the most nearly frostless tracts of any size in the whole State of Florida, and showed him the album, he remarked, "What? Frost in the Miami region? I thought it was frost free. They told me it was." Then leaning back in his chair he said, "I'll tell you what I will do. I'll give you a revocable license on the whole tract of 800 acres and that will afford you, as I figure it out, five years to prove whether you are worthy of having it or not. For I shall be here for three years more and any successor would hardly get around to take any action inside of two years after taking my place." I was bitterly disappointed for, child as I was in such matters, I thought he could give the land outright to the Department of Agriculture. He had not the power, unfortunately, and during my absence on the other side of the world some citizens of Miami who were as air-minded as I am plant-minded chiselled away from us all but 95 acres which was secured permanently by an agreement bearing President Coolidge's signature. Later the War Department allotted 65 more acres for rubber work.

But something else quite unusual happened in February, 1922. Mr. Allison V. Armour anchored his houseboat at Mrs. Brickell's pier on the Miami River and called at the garden on Brickell Avenue. He invited me to dinner and over the coffee we talked of exploring for plants. He said he would buy a boat and equip it and set out for plants if I would go with him. Quite naturally I agreed to go and in October of 1924 set out with the whole family for Europe, as described in a book which Mrs. Fairchild and I later published.

The great boom came to Florida the year following and laid paved sidewalks miles and miles out into the country, and then it burst. Following it came the great storm of September 18, 1926, which poured three feet of salt water over the little garden and almost completely wrecked it. We had returned for a short stay in America and rushed down from Washington to see what had happened, and were met by a spectacle of desolation which words cannot describe. The garden on Brickell Avenue had been wrecked, and whereas "fragments" of it were saved and transplanted to the white, barren-looking, rocky land with its rock pits which composed the new garden at Chapman Field, its charm was gone. Mr. and Mrs. Simmonds, who had barely escaped with their lives, set to work to save what they could, and from its wreckage there has grown a new and a larger and I trust a better garden of introduced plants. It can never have the romance for me which the little garden on Brickell Avenue had. but I suppose that is a small matter anyhow.

And now as the shadows begin to lengthen in my life, the heading of a new chapter of plant introduction has been written. I refer to the ceremonies that took place south of the Matheson Hammock on March 23 which officially dedicated the Tropical Botanical Garden which my friends have done me the honor of naming after me.

I did not mean to bring up this matter in quite such detail here. It is so close to my heart, however, that I cannot get away from it.